



GOVERNMENT OF ANDHRA PRADESH

TENDER DOCUMENT

Name of the work: Establishment of New Government Medical College at Parvathipuram in Manyam District

Tender Notice No: /APMSIDC/Technical/2023-24, dt. -12-2023

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION

**TENDER INVITING AUTHORITY:
CHIEF ENGINEER, FOR MANAGING DIRECTOR, APMSIDC, MANGALAGIRI, ANDHRA
PRADESH, REPRESENTING THE GOVERNOR OF ANDHRA PRADESH**

Disclaimer

Andhra Pradesh Medical Services and Infrastructure Development Corporation (APMSIDC) on behalf of Health & Medical Department of GoAP shall be inviting tenders for the work “**Establishment of New Government Medical College at Parvathipuram in Manyam District**”.

The information contained in this Request for Proposal (RFP) document or subsequently provided to bidders whether verbally or in documentary form by or on behalf of APMSIDC, Health & Medical Department, Government of Andhra Pradesh, or any of their employees or advisors, is provided to bidders on the terms and conditions set out in this RFP document and any other terms and conditions subject to which such information is provided.

This RFP document is not an agreement and is not an offer or invitation by APMSIDC, Health & Medical Department, or its representatives to any other party. The purpose of this RFP document is to provide interested parties with information to assist the formulation of their proposal. This RFP document does not purport to contain all the information each applicant may require.

This RFP document may not be appropriate for all persons, and it is not possible for APMSIDC, Health & Medical Department, their employees or advisors to consider the investment objectives, financial situation and particular needs of each entity/bidder who reads or uses this RFP document. Certain bidders may have a better knowledge of the proposed project than others. Each applicant should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP document and obtain independent advice from appropriate sources. APMSIDC, their employees and advisors make no representation or warranty and shall not incur any liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this RFP document.

APMSIDC may, in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information in this RFP document.

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GOVERNMENT OF ANDHRA PRADESH
ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT
CORPORATION

Tender Notice No./APMSIDC/TECHNICAL/2023-24 **Dated: -12-2023**

NAME OF WORK: Establishment of New Government Medical College at Parvathipuram in Manyam District

TENDER INVITING AUTHORITY:

Andhra Pradesh Medical Services & Infrastructure Development Corporation : **CHIEF ENGINEER, FOR MANAGING DIRECTOR, APMSIDC, MANGALAGIRI, ANDHRA PRADESH REPRESENTING THE GOVERNOR OF ANDHRA PRADESH** for the State of Andhra Pradesh (Hereinafter referred as “AMPSIDC or “Client”)

OFFICER INVITING TENDERS: Chief Engineer for the Managing Director, APMSIDC, Mangalagiri

1. Details of tender:

1. Tenders are invited on the e-procurement platform in the form of e-procurement tender cum auction (Reverse Tendering) for the above -mentioned work from the Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) formed for participation in tender for this work /Contractors / Contracting firms registered with Government of Andhra Pradesh or in terms of CPWD or PWD in anywhere in the Country. The details of Tender conditions and terms can be downloaded from the electronic procurement platform of Government of Andhra Pradesh i.e. www.tender.approcurement.gov.in
2. Approximate Estimate Contract value of work: **Rs.419,47,43,179/-**
3. Contractors would be required to register on the e-Procurement Market place “www.tender.approcurement.gov.in” and submit their bids online.
4. Non-refundable Processing fee of **Rs.59,000/- (Rs.50,000/- + GST@18%)** to be paid online as per the procedure in S.No.6
5. **E.M.D.: Rs.419.50 lakhs**
 - a) The bidders can pay by way of unconditional and irrevocable Bank Guarantee issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule (i.e., 1.0% of ECV) drawn in favour of **Managing Director, APMSIDC, Mangalagiri** along with bids and the balance EMD @ 1.50% of Estimate Contract Value / Tender Contract Value whichever is higher is to be paid at the time of concluding agreement. **BG towards EMD has to be scanned and uploaded.** The Bank Guarantee shall be valid for 6 Months from the date of NIT.

Or

TENDERER

4

CHIEF ENGINEER

b) As per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016:

- i) The bidders can pay the EMDs using Net banking/RTGS/NEFT, the bidders should pay EMDs from their registered bank accounts and the unsuccessful bidders EMDs will be refunded to their registered bank accounts in the new e Procurement system.
- ii) The bidders can also pay the EMDs using Credit Card / Debit Card, as per the VISA/Master Card Guidelines, return of EMD will be only to the Originating Card from which payment was made, as per the standard practice of Credit Card / Debit Card refunds.

Note: 1) Proof of paying EMD through Net banking / RTGS / NEFT / Credit Card / Debit Card shall be scanned and uploaded along with other documents / certificates.

2) As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.apmhidc@gmail.com or before 5.00 PM on -11-2023

- c) All the participating bidders should pay a **Transaction fee of Rs.29,500/-** [(@0.03% of ECV (estimate contract value) with a cap of Rs.10,000/- for all works with estimated contract value up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs. 50.00 Crores + GST on transaction fee shall be payable to M/s. Vupadhi Techno Services Pvt. Ltd by using Credit cards (Any MASTER / VISA Card) issued by any bank or through net banking accounts with ICICI or HDFC Banks as per G.O.Ms.No.13 of IT&C Dept. Dt.07.05.06 with effect from 02.02.2007.
6. The tenderer shall remit Processing fee on line to the account of the Managing Director, **APMSIDC, Mangalagiri** to be paid through online from e-procurement portal and upload the original Transaction slip. Failure to pay the Processing fee in the aforesaid manner will entitle for rejection of the bid.
 7. **Period of completion of work: 30 Months for Construction of Civil & MEP Works& Supply, installation, commissioning works of furniture and equipment (hereinafter referred as "Completion of all Works in the Project") and 24 months for Defects Liability Period (DLP) and 60 months for Maintenance Period for maintenance of Civil works, MEP works, furniture and equipment.**
 8. The tenderers can view/ download the tender documents from the 'e' marketplace.
 9. Form of contract – Lump sum contract
 10. **Class of Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) eligible is as given below:**

Eligible class of contractor: **Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a**

partnership firm with name of all partners should be shown in the registration of firms) registered with Government of Andhra Pradesh or in terms of CPWD or PWD codes in anywhere in the Country.

11. Downloading of Tender Documents: **From -12-2023 to -12-2023 up to 3.00 P.M**

12. Date & Time of Receipt of tenders: **From -12-2023 to-12-2023 up to 5.00 P.M**

- (a) Pre-Bid Meeting : Does not arise for the tenders covered under Judicial Preview Process
- (b) Last Date & Time for Receipt of Bids : **-12-2023 @ 5:00 PM**
- (c) e-Auction (Reverse Tendering Process) : **-12-2023 from 10:00 AM onwards**

Note:

- 1) The dates stipulated above are firm and under no circumstances they will be relaxed unless otherwise extended by an official notification or happen to be Public Holidays.
- 2) Submission of Hard Copies of uploaded Scan copies of Demand Draft /Bank Guarantee towards EMD by participating bidders to the tender Inviting authority before opening of Price Bid is dispensed with. as per Government. GO MS. No. 50 (WR(R) Dept) dated 15.10.2020, it cannot be insisted to produce original hard copy of BG with tender submission, so that the intending bidders identity to others may not be revealed by physical presence and for all transparency.

It is the duty of the bidder to coordinate with the employer and the banker to give response by banker to the letter of employer to bank on genuineness of bank guarantee. The banker shall be intimated that without letter of employer, the bank guarantee cannot be revoked during its validity period.

The bidders shall also furnish a declaration online stating that the soft copies of documents etc., uploaded by them are all genuine and the originals are available with him/them/it and the same being produced as and when required. Any incorrectness/ deviation if noticed that can be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like.

Only those bids will be evaluated and considered for comparison to arrive at L1 value and allowed to participate in reverse bidding in whose favour an authorised communication or a letter or a scanned and uploaded copy of that letter on e- procurement Website or an e-mail from the issuing bank or any authorised communication from the bank with regard to issue of the Bank Guarantees/ Demand Draft is sent to the Tender Inviting authority within the stipulated time. All Bank Guarantees uploaded by all Bidders would be verified with the issuing Bank, subsequently and if any uploaded Bank Guarantee is found to be forged or tampered with or fake, then it would be considered as fraud and would be liable for criminal action invariably. All the bidders shall invariably upload the scanned copies of Demand Draft /Bank Guarantee in e- Procurement system and this will be the primary requirement to consider the bid as responsive. The Department shall carry out the technical bid evaluation solely based on the uploaded certificates / documents, DD /

BG towards EMD/ affidavit, in the e-Procurement system and open the price bids of the responsive bidders and proceed further for reverse auctioning. The Department will notify the successful bidder for submission of original hard copies of all uploaded documents, DD / BG towards EMD prior to entering into agreement within the stipulated date shall be the responsibility of the successful bidder. If any successful bidder fails to submit the original Hard Copies of uploaded certificates / Documents, DD / BG towards EMD within the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on eProcurement platform for a period of 3 years. The e-Procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger / recommendation by the Tender Inviting Authority in the system. Besides this, the Department shall invoke all Processes of Law including criminal prosecution of such defaulting bidder as an act of extreme deterrence to deter frivolous bidders and to avoid delays in the tender process for execution of the development schemes taken up by the Government. The information to this extent may be displayed in the e- Procurement platform website and all Government. Dept./Public Sector Units/ Local Bodies/Autonomous Bodies in AP would prevent such bidders from participating in the bidding process. The bidder shall file scanned copy of an affidavit duly notarized to the effect that the information in the documents submitted is genuine and true with undertaking for criminal prosecution if anything found in the information is untrue besides right of the employer to terminate the contract and for other legal recourse. Where the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if anything found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

2. Procedure for submission of tenders:

- a) Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) may contact Chief Engineer, APMSIDC, Mangalagiri for information on e-Procurement.
- b) Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) need to register on the electronic procurement market place of Government of Andhra Pradesh i.e., “www.apecurement.gov.in”. On registration on the e-Procurement market place they will be provided with a user id and password by the system through which they can submit their tenders online
- c) While registering on the e-procurement market Place, Bidder need to scan and upload the required documents as per the Tender requirements onto their profile.
- d) Such uploaded documents pertaining to Technical Bid need to be attached to the tender while submitting the tenders online.

- e) The Tenderers who are desirous of participating in e-procurement shall submit their Technical bids, price bids etc., in the Standard formats prescribed in the Tender documents, displayed at e-market place. The tenderers should upload the scanned copies of documents in support of their Technical bids.
- f) The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Tenderers while submitting his bidsonline.
- g) The tenderers shall authenticate the bid with his digital certificate for submitting the bid electronically on e-Procurement platform and the bids not authenticated by digital certificate of the bidder will not be accepted on the e-Procurement platform.

3. To qualify for opening of price bid:

I. Contractors / Contracting Firms

- i) Copy of Valid Registration as mentioned in NIT. Besides submission of the registration certificate with due renewal required any for which since payment of professional tax is mandatory as per G.O.Ms.No.44, WR (R) Dept., dt.09-09-2021, as per Cir. Memo. No.ICD01-COOR/167/Reforms/2020-2, dt.09-09-2021, the bidder is required to submit proof of payment of annual professional tax for the previous year by duly uploading the same and to produce the original when required as part of the eligibility criteria in the bid evaluation
- ii) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document.
- iii) The details and certificates are to be furnished as per the Proforma available in the tender schedules.
- iv) The bidder should have satisfactorily executed as a prime Bidder building works of value not less than **Rs.76.09 crores** in the same name and style in any one year during the financial years from **2018-2019 to 2022-23**
- v) The bidder should have valid GST Registration with Commercial Tax department of Andhra Pradesh. In case of not having GST registration with Andhra Pradesh while bidding, an undertaking to provide to comply and submit the GST registration certificate from Andhra Pradesh before entering into contract agreement shall be submitted.
- vi) The bidder should furnish copy of Permanent Account Number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt etc.
- vii) The bidder should have executed the minimum quantities of items of work as given below in any one year during the financial years from **2018-2019 to 2022-23**

S.No.	Item	Quantity
1	Earth Work	19120 Cum

2	PCC/RCC/VRCC (Combined)	13500 Cum
3	Stone / Brick masonry (Combined)	5900 Cum
4	Plastering	80000 Sqm

The bidder should submit the particulars preferably in the format specified in the tender schedule along with necessary certificates.

viii) The bidder should further demonstrate availability (either owned or leased) of the following key and critical equipment:

S.No	Location	Steel centering (in sqm)	Pin vibrators (Nos.)	Pan vibrators (Nos.)	Weigh batcher / CC mixers (Nos.)	Batching and mixing plants 15cum to 20 cum / hour capacity (Nos)
1	Establishment of New Government Medical College at Parvathipuram in Manyam District	25000	15	15	4	1

- ix) The bidder should further demonstrate availability of the **key technical personal** with adequate experience as per clause 8.2 of conditions of contract.
- x) Liquid assets / credit Facilities / Solvency certificate from Nationalised Banks /Schedule banks **in their Proforma as per the Guidelense of the RBI (or) the Net Worth Certificate issued by the Chartered Accountant** of value not less than **Rs.41.95 crores**.
- xi) Statement showing existing commitments **(supporting documents for value of work done and balance value of work to be done shall be furnished)**.
- xii) Information on Litigation or Blacklisting history in which Bidder is involved if any. The above information is mandatory, if the bidder is blacklisted in any contract anywhere in India, will not be eligible to participate in this bid.
- xiii) A declaration regarding key & critical equipment owned/leased shall be produced by the Bidder on a non-judicial stamp paper of Rs.100/-.
- xiv) Non refundable Processing fee of **Rs Rs.59,000/- (Rs.50,000/- + GST@18%)** to be paid by way of on line to the account of the Managing Director, APMSIDC, Mangalagiri **to be paid through online from e-procurement portal and upload the original Transaction slip/ to be paid by way of on-line from e-procurement platform.**

xv) **Transaction fee of Rs.29,500/-** [(@0.03% of ECV (estimate contract value) with a cap of Rs.10,000/- for all works with ECV (estimate contract value) up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs.50.00 Crores + GST on transaction fee shall be payable to M/s. Vupadhi Techno Services Pvt. Ltd in the manner mentioned at 5(c) above.

xvi) **E.M.D.: Rs. 419.50 lakhs**

a) The bidders can pay by way of unconditional and irrevocable Bank Guarantee issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule (i.e., 1.0% of ECV) drawn in favour of **Managing Director, APMSIDC, Mangalagiri** along with bids and the balance EMD @ 1.50% of Estimate Contract Value / Tender Contract Value whichever is higher is to be paid at the time of concluding agreement. **BG towards EMD has to be scanned and uploaded.** The Bank Guarantee shall be valid for 6 Months from the date of NIT.

Or

b)As per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016:

- i) The bidders can pay the EMDs using Net banking/RTGS/NEFT, the bidders should pay EMDs from their registered bank accounts and the unsuccessful bidders EMDs will be refunded to their registered bank accounts in the new e Procurement system.
- ii) The bidders can also pay the EMDs using Credit Card / Debit Card, as per the VISA/Master Card Guidelines, return of EMD will be only to the Originating Card from which payment was made, as per the standard practice of Credit Card / Debit Card refunds.

Note: 1) Proof of paying EMD through Net banking / RTGS / NEFT / Credit Card / Debit Card shall be scanned and uploaded along with other documents / certificates.

2) As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.aphmhidc@gmail.com on or before 5.00 PM on-12-2023

xvii) Signed undertaking of tender

Notes: Declaration of the bidder/s along with information on the genuineness of information:

a).Details of the Civil Engineering Works along with experience certificates issued by the Executive Engineer and counter signed by the Superintending Engineer (OR) Annual Turnover Certificate along with Balance Sheet issued by Chartered Accountant in the last 5 financial years (i.e. from 2018-19 to 2022-23) by the Bidder in Statement-I with supporting certificates.

b). Details of similar works completed (Contract Value) by the bidder during the last 5 financial Years (i.e. from 2018-19 to 2022-23) in Statement-II with supporting certificates.

c).Details of year wise physical Quantities of work executed by the bidder in the last 5 financial years (i.e. from 2018-19 to 2022-23) in Statement – III with supporting certificates.

d).Details of existing commitments of the bidder i.e., works on hand in Statement-IV-(A) with Supporting Certificates and also details of tenders Participated /submitted in Statement-IV(B).

e).Availability of Key& critical construction and quality control equipment with the bidder in Statement -V

Note: Availability of (Either own or leased)-with written proof of owning with registration or written lease agreement as the case may be and in case of lease, the lease period shall be for a period not less than 33 months covering the contract period of thirty months and three months more to count from date of LOA followed by contract agreement and with a provision that in case of any extensions of time of completion the lease shall be under taken to be extended till completion & commissioning.

f).Availability of key personnel with the bidder for administration/ site management and execution viz., technical personnel required for the work(Statement-VI)

Note:Availability of the Key personnel: must be the full time employees and out of them atleast 20% must be having experience in Quality control.

g).Information regarding any litigation, with Government during the last five Years, in which the Bidder is involved in (Statement-VII)

h).Availability of working capital for the work

Note.1: [Liquid assets/ credit facility-with proof from chartered accountant certified with audit reports on liquid assets and Bank/financial institution certificate on credit facilities].

Note.2: The solvency certificate provided by the Contractor should not be more than 12 months old and the credit facilities certificate shall be work specific.

i).The experience gained by the bidder as Prime Contractor/ officially permitted as Sub-Contractor by the employer for such work and its value, for the works executed in State/ central/ PSU/ Other Government Department works shall only be considered.

j).The experience certificate/s shall be issued by the Executive Engineer(s) concerned or equivalent and counter signed by Superintending Engineer(s) or Equivalent Rank officer(s).

k).Sub-contractor's experience (chosen if at all), in his name will be taken into account in determining the Bidder's compliance to the Qualification criteria, duly certified by the EE or equivalent and countersigned by SE or equivalent. Sub contractor's experience, in his name for the works awarded by competent authority in terms of Government of Andhra Pradesh/ CPWD/ Other State Governments and PSU as per their norms shall alone be considered. Certificate in proof of such Sub-Contractor's experience as stated above shall be signed by the Executive Engineer or equivalent and counter signed by the Superintending Engineer or equivalent and furnished along with the Bid. Any deviations to these norms shall not be entertained.

l).The Sub-Contractor's experience (chosen if at all) certificate should contain all relevant particulars as required for consideration under Qualification Criteria. It is the responsibility of the Bidder to furnish all relevant documents in proof of official subcontracting for the experience produced.

m).The experience gained by the bidders by execution of private works & foreign works shall not be considered in determining the bidder's compliance to the qualification criteria.

n).General Power of Attorney holder's experience shall not be taken into Account.

o).The Employer reserves the right to undertake a verification of the experience so stated, through engaging the services of its officers or of other departments or of a Professional Agency, and if any discrepancies are

noticed in the information provided by the Contractor/ Successful Contractor/ sub-Contractor (meaning one or more members, in case of JV/consortium) regarding previous relevant experience, said Contractor/ Successful Contractor/ sub-Contractor shall be disqualified duly forfeiting EMD and value of work done and shall be liable to pay damages as determined by the Employer. Further, the Contractor/ Successful Contractor/ sub- Contractor shall be blacklisted.

p).The bidders shall furnish a declaration online stating that the soft copies uploaded by him/them/it in regard to all the above are all genuine and originals are available and can produce at any time and if any incorrectness/ deviation noticed can be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like.

II. In case the bidder/ contractor is a Joint Venture / Consortium (registered as a partnership firm)

- i) The details and certificates are to be furnished as per the Proforma available in the tender schedules.
- ii) The Joint Venture / Consortium should have total annual turnover in civil engineering works to satisfy 2AN-B (Bid capacity) in the same name and style in any one year to the extension of individuals share shall be considered during the financial years from **2018-2019 to 2022-23**

(The individual members of the Joint Venture / Consortium shall have sufficient individual experience in the ratio specified in the JV Agreement)

- iii) Copy of Registration: Lead partner of the JV of the should have a valid registration and shall upload the same as proof.
- iv) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document.
- v) **In case the bidder/ contractor is a Joint Venture / Consortium (registered as a partnership firm)**, the Joint Venture must be registered. In case if Joint venture registration is not available at the time of bidding, an MOU on Rs 100/- non-judicial stamp paper to be provided and Joint Venture registration must be provided before entering into the agreement.
- vi) The Joint Venture should have satisfactorily executed building works of value not less than **Rs.76.09 crores** in the same name and style in any one year during the financial years from **2018-2019 to 2022-23 and the turnover** to the extent of individuals share shall be considered.

Note: In case of works executed by Joint venture or consortium or the like entity by more than one individual, the experience gained to the extent of the bidder's share therein alone shall be taken into account in determining the bidder's compliance with the qualification criteria

- vii) Both the JV partners shall have valid GST Registration with Commercial Tax department of A.P. If not, shall furnish the same before concluding the agreement.
- viii) Both the JV partners should furnish copy of Permanent Account Number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt etc.
- ix) The Joint Venture should have executed the minimum quantities during the financial years from **2018-2019 to 2022-23** and the quantities to the extent of individuals share shall be considered.

S.No.	Item	Quantity
1	Earth Work	19120 Cum
2	PCC//RCC/VRCC (Combined)	13500 Cum
3	Stone / Brick masonry (Combined)	5900 Cum
4	Plastering	80000 Sqm

The Joint Venture should submit the particulars preferably in the format specified in the tender schedule along with necessary certificates.

- x) The Joint Venture should further demonstrate availability (either leased or owned) of the following key and critical equipment:

Quantities same as at 3.I.(viii)

- xi) The Joint Venture should further demonstrate availability of the key technical personnel with adequate experience as per clause 8.2 of conditions of contract.
- xii) Liquid assets / credit Facilities / Solvency certificate of the individuals of the JV shall be of their share value agreement percentages totaling to the requirement of **Rs.41.95 crores**.
- xiii) Statement showing existing commitments of Joint Venture group to the extent of individual share shall be considered.
- xiv) Information on Litigation history in which either member of Joint Venture / Consortium involved if any.
- xv) A declaration regarding key & critical equipment owned/leased shall be reproduced by the lead member on a non judicial stamp paper of Rs.100/-.
- xvi) Nonrefundable Processing fee of **Rs.59,000/- (Rs.50,000/- + GST@18%)** to be paid by way of on line to the account of the Managing Director, APMSIDC, Mangalagiri to be paid through online from e-procurement portal and upload the original Transaction slip/ **to be paid by way of on-line through e-procurement platform**.
- xvii) **Transaction fee of Rs.29,500/-** [(@0.03% of ECV (estimate contract value) with a cap of Rs.10,000/- for all works with ECV (estimate contract value) up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs. 50.00 Crores + GST on transaction fee shall be payable to M/s. Vupadhi Techno Services Pvt. Ltd in the manner mentioned at 5(c) above.
- xviii) **E.M.D.: Rs.419.50 lakhs**

- a) The bidders can pay by way of unconditional and irrevocable Bank Guarantee issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule (i.e., 1.0% of ECV) drawn in favour of **Managing Director, APMSIDC, Mangalagiri** along with bids and the balance EMD @ 1.50% of Estimate Contract Value / Tender Contract Value whichever is higher is to be paid at the time of concluding agreement. **BG towards EMD has to be scanned and uploaded.** The Bank Guarantee shall be valid for 6 Months from the date of NIT.

Or

- b) **As per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016:**

- i) The bidders can pay the EMDs using Net banking/RTGS/NEFT, the bidders should pay EMDs from their registered bank accounts and the unsuccessful bidders EMDs will be refunded to their registered bank accounts in the new e Procurement system.
- ii) The bidders can also pay the EMD using Credit Card / Debit Card, as per the VISA/Master Card Guidelines, return of EMD will be only to the Originating Card from which payment was made, as per the standard practice of Credit Card / Debit Card refunds.

Note: 1) Proof of paying EMD through Net banking / RTGS / NEFT / Credit Card / Debit Card shall be scanned and uploaded along with other documents / certificates.

2) As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.apmhidc@gmail.com on or before 5.00 PM on -12-2023

- xix) The tenderer should submit signed undertaking of tender online.
- xx) If any variation is noticed between the uploaded documents, information furnished in the given templates in respect of both technical and commercial prequalification criteria and the self-declaration submitted by the bidder, the bidder will be suspended from participating in the tenders on e-procurement platform for a period of 3 years. If any of the documents furnished by the bidder are found to be false / fabricated / bogus, at any time the bidder will be black listed and the EMD will be forfeited.
- xxi) The tenderer is subjected to be black listed and the EMD forfeited if he is found to have misled or furnished false information in the forms / statements / certificates submitted in proof of qualification requirements or record of performance such as abandoning of work , not properly completed in earlier contracts, inordinate delays in completion of the works, litigation history and / or financial failures and /or participated in the previous tendering for the same work and had quoted unreasonable high bid prices

Even while execution of the work, if found that the contractor had produced false/fake certificates of experience he will be blacklisted and the contract will be terminated under clause 60 (a) of PS to APSS and his EMD will be forfeited.

Note 1:

- 1) The certificates in support of 3.II.i, 3.II.ii, 3.II.vi, 3.II.xiii in State/Central Government Departments or State/Central Government undertakings issued by the concerned Executive Engineer and counter signed by the Superintending Engineer or equivalent authority.
- 2) **Chartered Accountant Certificate in construction works contracts in support of 3.II.ii will also be considered**
- 3) The GPA holders experience shall not be taken into account in determining the bidders's compliance with qualifying criteria.
- 4) For 'A' Value in Civil Engineering works, 3.I.iv, 3.I.vii, 3.I.viii, 3.I.ix, 3.I (x and xi), resources of the partners of the Joint Venture will be considered to the extent of the individual share.

Note 2 : @ Estimate contract value is of 2023-2024 price level. Weightage of 10% per annum should be given for the annual turn over, building works experience and existing commitments, to bring them to present price level.

Note 3 : The bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) against whom Vigilance / disciplinary / blacklisting cases are pending in the Corporation are not entitled to participate in the tender for the above work.

4. Bid Capacity:

- a. The bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) who meets the above qualification criteria and whose available bid capacity is more than the estimated contract value will be qualified for opening of Price bid. The available bid capacity will be calculated as under:

Available Bid Capacity: **2AN-B**

Where,

A= Maximum value of Civil Engineering works executed in its name in any one financial year during the last five financial years (updated to current Price level) taking into account the works completed as well as works in progress.

Note: The "A" value(maximum) of Civil Engineering works concerned, it invariably requires certification by the Superintending Engineer/ Executive Engineer concerned of what were the works executed (or) Annual Turnover Certificate along with Balance Sheet issued by Chartered Accountant in any one out of five during the last five financial years, indicated above of 2018-19 to 2022-23.

N= Number of years prescribed for completion of the work for which Tenders are invited (**30 Months /12**).

B= Updated Value (at current price level) of all existing Commitments and ongoing works to be completed during the period of completion of works for which tenders are invited.

Note.1: The “B” value as to the existing commitments and on going works concerned, it invariably requires certification by the Superintending Engineer/ Executive Engineer concerned.

Note.2: In case the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if any thing found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

Annual turnover cost of completed works and balance works on hand etc., shall be updated by giving weightage of 10% per year to bring them to current price level.

No relaxation will be given to any of the qualification criteria.

- b. Even though the bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) meet the above qualifying criteria, they are liable to be disqualified / debarred / suspended / blacklisted if they have:
- i. Furnished false / fabricated particulars in the forms, statements and / annexures submitted in proof of the qualification requirements and/or
 - ii. Not turned up for entering into agreement, when called upon.
 - iii. Record of poor progress such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history or financial failures etc. and/or
 - iv. participated in the previous bidding for the same work and had quoted unreasonably high tender percentage and
 - v. even while execution of the work, if found that the work was awarded to the bidder based on false / fake certificates of experience, the bidder will be blacklisted and work will be taken over invoking clause 61(a) of PS to APSS.
 - vi. The tender of the bidder will be disqualified along with the forfeiture of E.M.D. and the Bidder will be debarred from future tendering for a further period of 2 years in the event of furnishing of false/fraudulent certificates along with the tender.

Note: Even though the Contractors meet the above Qualification Criteria, they are subject to be disqualified if they have:

a) Record of poor performance such as abandoning the works, not properly completing or financial failures etc., in preceding 5 (five) financial years (2018-19 to 2022-23).

b) Consistent history of litigation or arbitration awards against the Contractor or any member of the JV in preceding 5 (five) financial years (2018-19 to 2022-23)

5. Qualification Requirements:

To qualify for award of the contract each bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) should fulfil the following criteria:

1. General Requirements:

- a) G.O. Ms. No.94 I & CAD (PW-CAD) Dept.,Dt.01.07.2003
- b) G.O.Ms.No.67 Water Resource (Reforms) Department dated 16-08-2019.

2. a) Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) registered with valid registration in terms of CPWD or PWD codes in anywhere in the Country.

b) In case of J.V, lead member of the J.V group should have a valid registration with Central /any State Government and other member should have applied for registration in relevant class equal his share in JV with the Central /any State Government as on the date of submission of bids. Evidence of their making applications with Central /any State Government will be sufficient to make them eligible for participation.

In case the J.V. happens to be successful Contractor, the other J.V partners who have applied for registration should produce valid registration with Central /any State Government within 3 months after concluding Contract agreement.

Failure to comply with this condition, contract shall be cancelled, duly forfeiting the Performance Security, security deposits and value of work done as on that date besides blacklisting the other J.V partners having valid registration with Central /any State Government.

- c) In case of the bidder/ contractor is a Joint Venture / Consortium (registered as a partnership firm),
 - i. The total members in the joint venture should not be more than two. The Joint venture must be duly registered as a partnership firm with joint liability unlimited.
 - ii. The JV partners should be responsible for liability individually proportionate to the extent of their share in the JV and jointly for 100% share.
 - iii. Shall submit JV agreement (as per format enclosed) on Rs.100/- non-judicial stamp paper with condition that lead partner share shall not be less than 51% in Joint Venture.
 - iv. The JV partner of one bidder shall not enter into JV partnership with another bidder for the bid.
 - v. The change of MOU/ Joint Venture / Consortium partner shall not be accepted under normal conditions after submitting the Bid documents. However the change in joint venture/MOU

partner may be considered in the event of insolvency, death, stoppage of business, abstaining from country for longer period and participation in terms of people's representation Act of India etc, only with the prior approval of the employer.

- vi. The employer reserves the right to reject such requests/proposals from any joint venture / MOU partner if it adversely affects the Joint venture/ MOU strength.
- vii. The Bidder shall be nominated, as being in charge and his authorization shall be evidenced by submitting a power of attorney signed by legal authorities of both the MOU/Joint venture partners.
- viii. The Bidder nominated as in charge shall be authorized to incur liabilities and receive instructions for and on behalf of any and both partners of the MOU/Joint venture and the entire execution of the contract including payments shall be made in favor of joint venture only.
- ix. Both partners of MOU/Joint Venture shall be liable jointly and severally responsible for the execution of contract in accordance with contract terms and a relevant statement to this effect shall be included in the MOU/Joint Venture partnership deed.
- x. Bidder entering for the work in association with their MOU/ Joint Venture / Consortium partners shall obtain and submit along with Bid, an undertaking from the MOU/Joint Venture / Consortium partnership jointly or separately if participating with MOU/Joint Venture / Consortium partner to the effect that they have read the Bid documents and they undertake to effectively associate with the Bidder in discharging the contracting obligations under the contract through out during surveys,detailed investigation, design engineering, execution true to specifications, commissioning, defect liability for a period of 24 months from the date of completion certificate of the entire work and for a period of 84 months for defects liability period and maintenance.

6. Procedure for tender submission:

1. The Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) who are desirous of participating in e-procurement shall submit their Technical bids, price bids etc., in the Standard formats prescribed in the Tender documents, displayed at e-market place. The Bidder should upload the scanned copies of documents in support of their Technical bids. The bidders shall sign on all the statements, documents, certificates, uploaded by them, owning responsibility for their correctness / authenticity.
2. All bidders shall furnish the scanned documents of original copies of the DD / BG for EMD along with necessary affidavit duly notarized for EMDs Genuinity along with tender documents and Initial Price Offer within the stipulated time, failing which their Initial Price Offer shall not be opened and they will not be taken forward into the reverse auction.

3. The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Bidder while submitting his bids online.
4. The Bidder shall authenticate the bid with his digital certificate for submitting the bid electronically on e-Procurement platform and the bids not authenticated by digital certificate of the bidder will not be accepted on the e-Procurement platform.

7. General Terms & Conditions:

Officer inviting tenders: Chief Engineer, APMSIDC for Managing Director, APMSIDC, Mangalagiri representing the Governor of Andhra Pradesh for the State of Andhra Pradesh.

- a. Tenders are invited on the e-procurement platform for the above-mentioned work from the contractors / contracting firms eligible as per clause-1.10 registered with the Government of Andhra Pradesh.
- b. Approximate estimated contract value of work: **Rs.419,47,43,179/-**
 - i) **Processing fee: Rs.59,000/-(Rs.50,000/- + GST@18%)**

The tenderer shall remit Processing fee online to the account of the Managing Director, APMSIDC, Mangalagiri **to be paid through online from e-procurement platform and upload the original Transaction slip.** Failure to pay the Processing fee in the aforesaid manner will entitle for rejection of the bid.
 - ii) All the participating bidders should pay a **Transaction fee of Rs.29,500/-** [(@0.03% of ECV (estimate contract value) with a cap of Rs.10,000/- for all works with estimated contract value up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs. 50.00 Crores + GST on transaction fee shall be payable to M/s. M/s. Vupadhi Techno Services Pvt. Ltd by using Credit cards (Any MASTER / VISA Card) issued by any bank or through net banking accounts with ICICI or HDFC Banks as per G.O.Ms.No.13 of IT&C Dept. Dt.07.05.06 with effect from 02.02.2007.

c. **E.M.D.: Rs.419.50 lakhs**

i. The bidders can pay by way of unconditional and irrevocable Bank Guarantee issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule (i.e., 1.0% of ECV) drawn in favour of **Managing Director, APMSIDC, Mangalagiri** along with bids and the balance EMD @ 1.50% of Estimate Contract Value / Tender Contract Value whichever is higher is to be paid at the time of concluding agreement. **BG towards EMD has to be scanned and uploaded.** The Bank Guarantee shall be valid for 6 Months from the date of NIT.

Or

ii. **As per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016:**

a) The bidders can pay the EMDs using Net banking/RTGS/NEFT, the bidders should pay EMDs from their registered bank accounts and the unsuccessful bidders EMDs will be refunded to their registered bank accounts in the new eProcurement system.

b) The bidders can also pay the EMDs using Credit Card / Debit Card, as per the VISA/Master Card Guidelines, return of EMD will be only to the Originating Card from which payment was made, as per the standard practice of Credit Card / Debit Card refunds.

Note: 1) Proof of paying EMD through Net banking / RTGS / NEFT / Credit Card / Debit Card shall be scanned and uploaded along with other documents / certificates.

2) As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.aphmhidc@gmail.com on or before 5.00 PM on -12-2023

d. Period of completion of work: **30 Months for Construction of Civil & MEP Works & Supply, installation works of furniture and equipment (hereinafter referred as “Completion of all works in the Project”) and 24 months for Defects Liability Period (DLP) and 60 months for Maintenance Period for maintenance of Civil works, MEP works, furniture and equipment.**

e. Tender Schedules: Tender schedules can be downloaded from the Web site “www.tender.apecurement.gov.in”

f. Form of Contract: Lump sum contract.

g. Eligible class of contractor: **Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) registered with Government of Andhra Pradesh or in terms of CPWD or PWD codes in anywhere in the Country.**

h. **Pre-Bid meeting:** Does not arise for tenders covered under Judicial Preview Process

i. **Downloading of tenders: from-12-2023 to -12-2023 up to 3:00 PM**

j.

- (i) Last Date & Time for Receipt of Bids : **-12-2023 @ 5:00 PM**
e-Auction
(ii) (Reverse Tendering Process) : **-12-2023 from 10:00 AM onwards**

Note:

- 1) The dates stipulated above are extendable by an official notification by the department or happen to be Public Holidays
- 2) Submission of Hard Copies of uploaded Scan copies of Demand Draft /Bank Guarantee towards EMD by participating bidders to the tender Inviting authority before opening of Price Bid is dispensed with. as per Government. GO MS. No. 50 (WR(R) Dept) dated 15.10.2020, it cannot be insisted to produce original hard copy of BG with tender submission, so that the intending bidders identity to others may not be revealed by physical presence and for all transparency.

It is the duty of the bidder to coordinate with the employer and the banker to give response by banker to the letter of employer to bank on genuineness of bank guarantee. The banker shall be intimated that without letter of employer, the bank guarantee cannot be revoked during its validity period.

The bidders shall also furnish a declaration online stating that the soft copies of documents etc., uploaded by them are all genuine and the originals are available with him/them/it and the same being produced as and when required. Any incorrectness/ deviation if noticed that can be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like.

Only those bids will be evaluated and considered for comparison to arrive at L1 value and allowed to participate in reverse bidding in whose favour an authorised communication or a letter or a scanned and uploaded copy of that letter on e- procurement Website or an e-mail from the issuing bank or any authorised communication from the bank with regard to issue of the Bank Guarantees/ Demand Draft is sent to the Tender Inviting authority within the stipulated time. All Bank Guarantees uploaded by all Bidders would be verified with the issuing Bank, subsequently and if any uploaded Bank Guarantee is found to be forged or tampered with or fake, then it would be considered as fraud and would be liable for criminal action invariably. All the bidders shall invariably upload the scanned copies of Demand Draft /BankGuarentee in e- Procurement system and this will be the primary requirement to consider the bid as responsive. The Department shall carry out the technical bid evaluation solely based on the uploaded certificates / documents, DD / BG towards EMD/ affidavit, in the e-Procurement system and open the price bids of the responsive bidders and proceed further for reverse auctioning. The Department will notify the successful bidder for submission of original hard copies of all uploaded documents, DD / BG towards EMD prior to entering into agreement within the stipulated date shall be the responsibility of the successful bidder. If any successful bidder fails to submit the original Hard Copies of uploaded certificates / Documents, DD / BG towards EMD within the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on

eProcurement platform for a period of 3 years. The e-Procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger / recommendation by the Tender Inviting Authority in the system. Besides this, the Department shall invoke all Processes of Law including criminal prosecution of such defaulting bidder as an act of extreme deterrence to deter frivolous bidders and to avoid delays in the tender process for execution of the development schemes taken up by the Government. The information to this extent may be displayed in the e-Procurement platform website and all Government. Dept./Public Sector Units/ Local Bodies/Autonomous Bodies in AP would prevent such bidders from participating in the bidding process. The bidder shall file scanned copy of an affidavit duly notarized to the effect that the information in the documents submitted is genuine and true with undertaking for criminal prosecution if anything found in the information is untrue besides right of the employer to terminate the contract and for other legal recourse. Where the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if anything found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

8. The technical bid evaluation of the tenderers will be done on the certificates /documents uploaded through online only towards qualification criteria furnished by them.

Note: 1) The qualification information shall be furnished as per the check list in tender document.

Note: 2) Qualification criteria detailed in tender document only shall be considered for submitting certificates.

9. The tenderer is subject to be disqualified, if he is found to have misled or furnished false information in the forms / statements/ certificates submitted in proof of qualification requirements or record of performance such as abandoning, completion of the works, litigation history and or financial failures and or participated in the previous tendering for the same work and has quoted unreasonable high bid price. The Tenderer shall submit details of all the existing commitments along with supporting documents.
10. Even while execution of the work, if found that the contractor had produced false / fake certificates of experience, he will be blacklisted and the contract will be terminated as per clause 60(a) of PS to APDSS and his EMD will be forfeited.
11. Any other condition regarding receipt of tenders in conventional method appearing in the tender documents may please be treated as not applicable.
12. The contractors are requested **to upload the information in Zip format preferably.**
13. **Transaction fees:** A transaction fee at 0.10% of the estimate contract value of the work towards service charges has to be paid by successful bidder at the time of concluding agreement as follows in favour of:
1. Managing Director, APTS, Vijayawada for **Rs.25,000/-** (towards 'e' procurement services at 0.04% of estimated contract value with a cap of Rs.10,000/- for all works with estimated contract value up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs. 50.00

Crores)(Online payment through digital key and copy of payment receipt to be submitted at the time of concluding agreement)

- 2. Managing Director, APMSIDC, Mangalagiri **Rs.25,16,846/-** (@ 0.06% of estimate contract value. (in the form of Demand draft)**

INSTRUCTION TO TENDERERS

A. GENERAL

- 1 NAME OF WORK: Establishment of New Government Medical College at Parvathipuram in Manyam District**
 - 2 Funds releasing authority: Government of Andhra Pradesh**
 - 3 Scope of Work: Establishment of New Government Medical College at Parvathipuram in Manyam District**
- a) ECV put to tender: **Rs.419,47,43,179/-**
- b) The brief scope of work is given below:
- i. Construction of the buildings as per the specifications and the Bill of Quantity (BOQ) provided with this tender and its maintenance for a period of 7 years from the Completion of all Works in the Project including Defects Liability Period of 24 months from the Completion of all Works in the Project.
 - ii. Supply, installation and commissioning of STP and ETP including warranty provision and 7 years comprehensive operation and maintenance including defects liability period of 24 months from the date of Completion of all Works in the Project as per the specifications and the Bill of Quantity (BOQ) provided with this tender.
 - iii. Supply and installation of furniture including maintenance of furniture for a period of 7 years from the date of Completion of all Works in the Project as per the specifications and the Bill of Quantity (BOQ) provided with this tender including Defects Liability Period of 24 months from the Completion of all Works in the Project.
 - iv. Supply, installation and commissioning of all medical equipment including maintenance of these equipment for a period of 7 years from the date of Completion of all Works in the Project as per the specifications and the Bill of Quantity (BOQ) provided with this tender including Defects Liability Period of 24 months from the Completion of all Works in the Project.
 - v. The Contractor shall also be responsible for interacting with all future vendor deployed by APMSIDC for facility management of all the buildings. The Contractor shall provide all necessary support for all other contractors to complete their scope of work.
- c) The following Bill of Quantities (BOQs) are attached with this tender document:
- i. BOQ for Civil and MEP works including supply, installation and maintenance of MEP equipment
 - ii. BOQ for supply of furniture and its installation
 - iii. BOQ for supply of medical equipment, installation and commissioning
- d) Break-up of cost of major items covered in the ECV:

S. No.	Description	Parvathipuram ECV
1	Civil works	Rs.303,13,13,598/-
2	Water Supply & Sanitary arrangements	Rs.8,56,96,485/-
3	Electrical works	Rs.64,94,10,501/-
4	Maintenance of Electro Mechanical Services	Rs.2,98,01,325/-
5	Eelctro Mechanical Works (STP 0.75 MLD, 0.20 MLD & ETP 0.075 MLD)	Rs.2,06,54,301/-
6	Operation and Maintenance of STP & ETP Plants	Rs.89,08,074/-
7	Medical Gas Pipe Line	Rs.1,74,07,744/-
8	Maintenance of Medical Gas Pipe Line	Rs.9,61,886/-
9	Furniture	Rs.26,02,55,890/-
10	Minor Equipment	Rs.9,03,23,375/-
	Estimate Contract value	Rs.419,47,43,179/-

e) Period of completion: **30 Months for Construction of Civil & MEP Works & Supply, installation works of furniture and equipment (“Completion of all Works in the Project”)** and **24 months for Defects Liability Period (DLP)** and **60 months for Maintenance Period for maintenance of Civil works, MEP works, furniture and equipment.**

f) SSR adopted: **SoR 2023-2024**

g) Rates adopted for

a) Cement : **Rs.4380/ M.T.**

b) Reinforcement Steel

(Fe - 500)/Fe – 500 D : **Rs.61000/ M.T.**

c) Mild Steel(6mm) : **Rs.58000/ M.T.**

h) Allowances

(AAA – Agency Area Allowance, MAA – Municipal Area Allowance)

AAA : **20%**

i) Seigniorage Charges: As per tender condition No.105(Provision loaded in part-B)

j) Goods Service Tax (GST): As per tender condition No.106(Provision loaded in part-B)

k) Labourers: As per tender condition No.107

l) The Managing Director, APMSIDC, Mangalagiri invites tenders for the above works vide **Tender Notice No./APMSIDC/TECHNICAL/ 2023-24, Dated.-12-2023**

n) If any of the certificates, documents, etc., furnished by the tenderer are found to be false / fabricated / bogus, the tenderer will be disqualified, blacklisted, action will be initiated as deemed fit and the EMD will be forfeited.

o) The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Tenderers while submitting his bids online

p) The successful tenderer is expected to complete the work within the time specified in the Tender Notice.

q) The successful (L1) Tenderer shall furnish the hard copies of the all The documents/Certificates/statements up loaded by him at the time of concluding agreement.

4 Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) Contracting firms eligible to Tender:

The Firms who

- i) Possess the valid registration in the class and category mentioned in the Tender Notice and satisfy all the conditions therein.
- ii) are not blacklisted or debarred or suspended by the Government for whatever the reason, prohibiting them not to continue in the contracting business.
- iii) Have complied with the eligibility criteria specified in the Tender Notice are the eligible tenderers.

5 Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) ineligible to Tender:

- i) A retired officer of the Government. of AP or Government. of India executing works is disqualified from tendering for a period of two years from the date of retirement without the prior permission of the Government.
- ii) The Tenderer who has employed any retired officer as mentioned above shall be considered as an ineligible tenderer.
- iii) The contractor himself or any of his employees is found to be Gazetted Officer who retired from Government Service and had not obtained permission from the Government for accepting the contractor's employment within a period of 2 years from the date of his retirement.
- iv) The Contractor or any of his employees is found at any time after award of contract, to be such a person who had not obtained the permission of the Government as aforesaid before submission of the tender or engagement in the Contractor's service.
- v) Contractor shall not be eligible to tender for works in the division / circle where any of his near relatives are employed in the rank of Assistant Engineer or Assistant Executive Engineers and

above on the Engineering side and Divisional Accounts Officer and above on the administrative side. The Contractor shall intimate the names of persons who are working with him in any capacity or are subsequently employed. He shall also furnish a list of Gazetted /Non-Gazetted, State Government Employees related to him. Failure to furnish such information tenderer is liable to be removed from the list of approved contractors and his contract is liable for cancellation.

Note: Near relatives include

1. Sons, step sons, daughters, and stepdaughters.
2. Son-in-law, and daughter-in-law.
3. Brother-in-law, and sister-in-law.
4. Brothers and Sisters.
5. Father and Mother.
6. Wife / Husband.
7. Father-in-law and Mother-in-law
8. Nephews, nieces, uncle and aunts
9. Cousins and
10. Any person residing with or dependent on the contractor.

- vi) The Bidder either Individual or other legal entity like JV or Partnership or even any member of the JV / partnership applied for or availed corporate debt restructuring / strategic debt restructuring and not cleared the loan for more than six years/ whether DRT/NCLT proceedings pending or not, is not eligible to participate in the bid.

6 Qualification data of the tenderers

a. The Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) shall furnish the following particulars in the formats enclosed, supported by documentary evidence as specified in the formats.

b. Check slip to accompany the tender.

Attested copies of documents relating to the Registration of the firm, Registration as Civil Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms), Partnership deed, Articles of Association, Commercial Tax Registration, Permanent Account Number with latest IT returns submitted and proof of receipt etc.

Note: The Partnership firms, which are registered as Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) shall intimate the change in partnership deed, if any as per G.O.Ms.No.58, I & CAD dated 23-04-2002 within one month of such change. Failure to notify the change to the registration authority in time will entail the firms to forfeit their

registration and their tender will be rejected. The intimation of change of partners if any and the acceptance by the Registration authority may be enclosed.

- c. Details of the Civil Engineering Works along with experience certificates issued by the Executive Engineer and counter signed by the Superintending Engineer (OR) Annual Turnover Certificate along with Balance Sheet issued by Chartered Accountant in the last 5 financial years (i.e. from 2018-19 to 2022-23) by the Bidder in Statement-I with supporting certificates.
- d. Details of similar building works completed (Contract Value) in the name of the Bidder as Prime Bidder during the last five financial years i.e., from **2018-2019 to 2022-23** showing year wise break up of value of work executed in Statement II with supporting certificates.
- e. Details of Year-wise specified physical quantities executed by the Bidder during the last five financial years i.e., from **2018-2019 to 2022-23** in Statement III with supporting certificates.
- f. Details of the existing commitments of the bidder i.e., works on hand in Statement-IV-(A) with Supporting Certificates and also details of tenders Participated /submitted in Statement-IV(B).

Note.1: The “B” value as to the existing commitments and on going works concerned, it invariably requires certification by the Superintending Engineer/ Executive Engineer concerned.

Note.2: In case the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if any thing found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

g. availability of Key & critical construction / quality control equipment with the bidder in Statement V;

Note: Availability of (Either own or leased)-with written proof of owning with registration or written lease agreement as the case may be and in case of lease, the lease period shall be for a period not less than 33 months covering the contract period of thirty months and three months more to count from date of LOA followed by contract agreement and with a provision that in case of any extensions of time of completion the lease shall be under taken to be extended till completion & commissioning.

h. availability of key personnel with the bidder for administration / site management and execution viz., technical personnel required for the work (Statement VI);

Note: Availability of the Key personnel: must be the full time employees and out of them atleast 20% must be having experience in Quality control.

i. Information regarding any litigation, with Government during the last five years, in which the Bidder is involved in (Statement VII);

j. Availability of working capital for the work [Liquid assets, Credit facility and availability of other financial resources such as solvency etc.] from any Nationalized Bank / Scheduled Bank;

Note.1: [Liquid assets/ credit facility-with proof from chartered accountant certified with audit reports on liquid assets and Bank/financial institution certificate on credit facilities].

Note.2: The solvency certificate provided by the Contractor should not be more than 10 months old and the credit facilities certificate shall be work specific.

- k. The proposed methodology and program of construction, backed up with equipment, planning and deployment, duly supported with broad calculations, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.
- l. The particulars of quality control testing Lab owned / tie up with established quality control testing laboratories. (for works costing more than Rs.2.00 Crores) Statement VIII.

Note:i)The Bidder shall sign all the statements /documents and certificates up loaded by him owning the responsibility for their correctness/ authenticity.

ii) Bidders against whom Vigilance / disciplinary / blacklistingcases are pending in the Corporation are not entitled to participate in the tender for the above work.

iii).The experience gained by the bidder as Prime Contractor/ officially permitted as Sub-Contractor by the employer for such work and its value, for the works executed in State/ central/ PSU/ Other Government Department works shall only be considered.

iv).The experience certificate/s shall be issued by the Executive Engineer(s) concerned or equivalent and counter signed by Superintending Engineer(s) or Equivalent Rank officer(s).

v).Sub-contractor's experience (chosen if at all), in his name will be taken into account in determining the Bidder's compliance to the Qualification criteria, duly certified by the EE or equivalent and countersigned by SE or equivalent. Sub contractor's experience, in his name for the works awarded by competent authority in terms of Government of Andhra Pradesh/ CPWD/ Other State Governments and PSU as per their norms shall alone be considered. Certificate in proof of such Sub-Contractor's experience as stated above shall be signed by the Executive Engineer or equivalent and counter signed by the Superintending Engineer or equivalent and furnished along with the Bid. Any deviations to these norms shall not be entertained.

vi).The Sub-Contractor's experience (chosen if at all) certificate should contain all relevant particulars as required for consideration under Qualification Criteria. It is the responsibility of the Bidder to furnish all relevant documents in proof of official subcontracting for the experience produced

vii).The experience gained by the bidders by execution of private works & foreign works shall not be considered in determining the bidder's compliance to the qualification criteria.

Viii).General Power of Attorney holder's experience shall not be taken into Account.

ix).The Employer reserves the right to undertake a verification of the experience so stated, through engaging the services of its officers or of other departments or of a Professional Agency, and if any discrepancies are noticed in the information provided by the Contractor/ Successful Contractor/ sub-Contractor (meaning one or more members,

in case of JV/consortium) regarding previous relevant experience, said Contractor/ Successful Contractor/ sub-Contractor shall be disqualified duly forfeiting EMD and value of work done and shall be liable to pay damages as determined by the Employer. Further, the Contractor/ Successful Contractor/ sub- Contractor shall be blacklisted. x).The bidders shall furnish a declaration online stating that the soft copies uploaded by him/them/it in regard to all the above are all genuine and originals are available and can produce at any time and if any incorrectness/ deviation noticed can be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like.

7 Qualification criteria for opening of the price bid

To qualify for opening the price Bid each Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) in their name and style, should have, during the last five financial years i.e. from **2018-2019 to 2022-23**

I. Contractors / Contracting Firms

- i) Copy of Valid Registration as mentioned in NIT. Besides submission of the registration certificate with due renewal required any for which since payment of professional tax is mandatory as per G.O.Ms.No.44, WR (R) Dept., dt.09-09-2021, as per Cir. Memo. No.ICD01-COOR/167/Reforms/2020-2, dt.09-09-2021, the bidder is required to submit proof of payment of annual professional tax for the previous year by duly uploading the same and to produce the original when required as part of the eligibility criteria in the bid evaluation.
- ii) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document.
- iii) The details and certificates are to be furnished as per the Proforma available in the tender schedules.
- iv) The bidder should have satisfactorily executed as a prime Bidder building works of value not less than **Rs.76.09 crores** in the same name and style in any one year during the financial years from **2018-2019 to 2022-23**
- v) The bidder should have valid GST Registration with Commercial Tax department of Andhra Pradesh. In case of not having GST registration with Andhra Pradesh while bidding, an undertaking to provide to comply and submit the GST registration certificate from Andhra Pradesh before entering into contract agreement shall be submitted.
- vi) The bidder should furnish copy of Permanent Account Number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt etc.
- vii) The bidder should have executed the minimum quantities of items of work as given below in any one year during the financial years from **2018-2019 to 2022-23**

S.No.	Item	Quantity
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1	Earth Work	19120 Cum
2	PCC/RCC/VRCC (Combined)	13500 Cum
3	Stone / Brick masonry (Combined)	5900 Cum
4	Plastering	80000 Sqm

The bidder should submit the particulars preferably in the format specified in the tender schedule along with necessary certificates.

viii) The bidder should further demonstrate availability (either owned or leased) of the following key and critical equipment:

Quantities same as at 3.I.(viii)

- ix) The bidder should further demonstrate availability of the **key technical personal** with adequate experience as per clause 8.2 of conditions of contract.
- x) Liquid assets / credit Facilities / Solvency certificate from Nationalised Banks /Schedule banks **in their Proforma as per the Guidelense of the RBI (or) the Net Worth Certificate issued by the Chartered Accountant of value not less than Rs.41.95 crores.**
- xi) Statement showing existing commitments (supporting documents for value of work done shall be furnished).
- xii) Information on Litigation or Blacklisting history in which Bidder is involved if any. The above information is mandatory, if the bidder is blacklisted in any contract anywhere in India, will not be eligible to participate in this bid.
- xiii) A declaration regarding key & critical equipment owned/leased shall be produced by the Bidder on anon judicial stamp paper of Rs.100/-.
- xiv) Non refundable Processing fee of **Rs.59,000/- (Rs.50,000/- + GST@18%)** to be paid by way of on line to the account of the Managing Director, APMSIDC, Mangalagiri to be paid through **online from e-procurement platform and upload the Transaction slip.**
- xv) **Transaction fee of Rs.29,500/-** [(@0.03% of ECV (estimate contract value) with a cap of Rs.10,000/- for all works with ECV (estimate contract value) up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs.50.00 Crores + GST on transaction fee shall be payable to M/s. Vupadhi Techno Services Pvt. Ltd in the manner mentioned at 5(c) above.
- xvi) **E.M.D.: Rs.419.50 lakhs**
 - a) The bidders can pay by way of unconditional and irrevocable Bank Guarantee issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule (i.e., 1.0% of ECV) drawn in favour of **Managing Director, APMSIDC, Mangalagiri** along with bids and the balance EMD @ 1.50% of Estimate Contract Value / Tender Contract Value whichever is higher is to be paid at the time of concluding agreement. **BG towards EMD has**

to be scanned and uploaded. The Bank Guarantee shall be valid for 6 Months from the date of NIT.

Or

b)As per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016:

- i) The bidders can pay the EMDs using Net banking/RTGS/NEFT, the bidders should pay EMDs from their registered bank accounts and the unsuccessful bidders EMDs will be refunded to their registered bank accounts in the new e Procurement system.
- ii) The bidders can also pay the EMDs using Credit Card / Debit Card, as per the VISA/Master Card Guidelines, return of EMD will be only to the Originating Card from which payment was made, as per the standard practice of Credit Card / Debit Card refunds.

Note: 1) Proof of paying EMD through Net banking / RTGS / NEFT / Credit Card / Debit Card shall be scanned and uploaded along with other documents / certificates.

2) As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.aphmhidc@gmail.com on or before 5.00 PM on-12-2023

xvii) Signed undertaking of tender

Notes: Declaration of the bidder/s along with information on the genuineness of information:

a).Details of the Civil Engineering Works along with experience certificates issued by the Executive Engineer and counter signed by the Superintending Engineer (OR) Annual Turnover Certificate along with Balance Sheet issued by Chartered Accountant in the last 5 financial years (i.e. from 2018-19 to 2022-23) by the Bidder in Statement-I with supporting certificates.

b). Details of similar works completed (Contract Value) by the bidder during the last 5 financial Years (i.e. from 2018-19 to 2022-23) in Statement-II with supporting certificates.

c).Details of year wise physical Quantities of work executed by the bidder in the last 5 financial years (i.e. from 2018-19 to 2022-23) in Statement – III with supporting certificates.

d).Details of existing commitments of the bidder i.e., works on hand in Statement-IV-(A) with Supporting Certificates and also details of tenders Participated /submitted in Statement–IV(B).

e).Availability of Key& critical construction and quality control equipment with the bidder in Statement – V

Note: Availability of (Either own or leased)-with written proof of owning with registration or written lease agreement as the case may be and in case of lease, the lease period shall be for a period not less than 33 months covering the contract period of thirty months and three months more to count from date of LOA followed by contract agreement and with a provision that in case of any extensions of time of completion the lease shall be under taken to be extended till completion & commissioning.

f).Availability of key personnel with the bidder for administration/ site management and execution viz., technical personnel required for the work(Statement-VI)

Note:Availability of the Key personnel: must be the full time employees and out of them atleast 20% must be having experience in Quality control.

g).Information regarding any litigation, with Government during the last six Years, in which the Bidder is involved in (Statement-VII)

h.Availability of working capital for the work

Note.1: [Liquid assets/ credit facility-with proof from chartered accountant certified with audit reports on liquid assets and Bank/financial institution certificate on credit facilities].

Note.2: The solvency certificate provided by the Contractor should not be more than 10 months old and the credit facilities certificate shall be work specific.

i).The experience gained by the bidder as Prime Contractor/ officially permitted as Sub-Contractor by the employer for such work and its value, for the works executed in State/ central/ PSU/ Other Government Department works shall only be considered.

j).The experience certificate/s shall be issued by the Executive Engineer(s) concerned or equivalent and counter signed by Superintending Engineer(s) or Equivalent Rank officer(s).

k).Sub-contractor's experience (chosen if at all), in his name will be taken into account in determining the Bidder's compliance to the Qualification criteria, duly certified by the EE or equivalent and countersigned by SE or equivalent. Sub contractor's experience, in his name for the works awarded by competent authority in terms of Government of Andhra Pradesh/ CPWD/ Other State Governments and PSU as per their norms shall alone be considered. Certificate in proof of such Sub-Contractor's experience as stated above shall be signed by the Executive Engineer or equivalent and counter signed by the Superintending Engineer or equivalent and furnished along with the Bid. Any deviations to these norms shall not be entertained.

l).The Sub-Contractor's experience (chosen if at all) certificate should contain all relevant particulars as required for consideration under Qualification Criteria. It is the responsibility of the Bidder to furnish all relevant documents in proof of official subcontracting for the experience produced.

m).The experience gained by the bidders by execution of private works & foreign works shall not be considered in determining the bidder's compliance to the qualification criteria.

n).General Power of Attorney holder's experience shall not be taken into Account.

o).The Employer reserves the right to undertake a verification of the experience so stated, through engaging the services of its officers or of other departments or of a Professional Agency, and if any discrepancies are noticed in the information provided by the Contractor/ Successful Contractor/ sub-Contractor (meaning one or more members, in case of JV/consortium) regarding previous relevant experience, said Contractor/ Successful Contractor/ sub-Contractor shall be disqualified duly forfeiting EMD and value of work done and shall be liable to pay damages as determined by the Employer. Further, the Contractor/ Successful Contractor/ sub- Contractor shall be blacklisted.

p).The bidders shall furnish a declaration online stating that the soft copies uploaded by him/them/it in regard to all the above are all genuine and originals are available and can produce at any time and if any incorrectness/ deviation noticed can be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like.

II. In case the bidder/ contractor is a Joint Venture / Consortium (registered as a partnership firm)

- i) The details and certificates are to be furnished as per the Proforma available in the tender schedules.
- ii) The Joint Venture / Consortium should have total annual turnover in civil engineering works to satisfy 2AN-B (Bid capacity) in the same name and style in any one year to the extension of individuals share shall be considered during the financial years from **2018-2019 to 2022-23** **(The individual members of the Joint Venture / Consortium shall have sufficient individual experience in the ratio specified in the JV Agreement)**
- iii) Copy of Registration: Lead partner of the JV of the should have a valid registration and shall upload the same as proof.
- iv) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document to the extent of individuals share.
- v) **In case the bidder/ contractor is a Joint Venture / Consortium (registered as a partnership firm)**, the Joint Venture must be registered. In case if Joint venture registration is not available at the time of bidding, an MOU on Rs 100/- non-judicial stamp paper to be provided and Joint Venture registration must be provided before entering into the agreement.
- vi) The Joint Venture should have satisfactorily executed building works of value not less than **Rs.76.09 crores** in the same name and style in any one year during the financial years from **2018-2019 to 2022-23** to the extent of individuals share shall be considered.

Note: In case of works executed by Joint venture or consortium or the like entity by more than one individual, the experience gained to the extent of the bidder's share therein alone shall be taken into account in determining the bidder's compliance with the qualification criteria.

- vii) Both the JV partners shall have valid GST Registration with Commercial Tax department of A.P. If not shall furnish the same before concluding the agreement.
- viii) Both the JV partners should furnish copy of Permanent Account Number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt etc.
- ix) The Joint Venture should have executed the minimum quantities during the financial years from **2018-2019 to 2022-23** and the quantities to the extent of individuals share shall be considered.

S.No.	Item	Quantity
1	Earth Work	19120 Cum

2	PCC/RCC/VRCC (Combined)	13500 Cum
3	Stone / Brick masonry (Combined)	5900 Cum
4	Plastering	80000 Sqm

The Joint Venture should submit the particulars preferably in the format specified in the tender schedule along with necessary certificates.

- x) The Joint Venture should further demonstrate availability (either leased or owned) of the following key and critical equipment:
Quantities same as at 3.I.(viii)
- xi) The Joint Venture should further demonstrate availability of the key technical personnel with adequate experience as per clause 8.2 of conditions of contract.
- xii) Liquid assets / credit Facilities / Solvency certificate of the individuals of the JV shall be of their share value agreement percentages totaling to the requirement of **Rs.41.95 crores**.
- xiii) Statement showing existing commitments of Joint Venture group to the extent of individual share shall be considered.
- xiv) Information on Litigation history in which either member of Joint Venture is involved if any.
- xv) A declaration regarding key & critical equipment owned/leased shall be produced by the lead member on a non judicial stamp paper of Rs.100/-.
- xvi) Nonrefundable Processing fee of **Rs.59,000/- (Rs.50,000/- + GST@18%)** to be paid by way of on line to the account of the Managing Director, **APMSIDC, Mangalagiri (Account No.142410011000314 of Union Bank of India, Mangalagiri Branch, Mangalagiri, 522 503, IFSC Code :UBIN 0803669)** and upload the original Transaction slip with UTR number/ to be paid by way of on-line through e-procurement platform.
- xvii) **Transaction fee of Rs.29,500/-** [(@0.03% of ECV (estimate contract value) with a cap of Rs.10,000/- for all works with ECV (estimate contract value) up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs. 50.00 Crores + GST on transaction fee shall be payable to M/s. Vupadhi Techno Services Pvt. Ltd in the manner mentioned at 5(c) above.
- xviii) **E.M.D.: Rs.419.50 lakhs**
- a) The bidders can pay by way of unconditional and irrevocable Bank Guarantee issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule (i.e., 1.0% of ECV) drawn in favour of **Managing Director, APMSIDC, Mangalagiri** along with bids and the balance EMD @ 1.50% of Estimate Contract Value / Tender Contract Value whichever is higher is to be paid at the time of concluding agreement. **BG towards EMD has to be scanned and uploaded.** The Bank Guarantee shall be valid for 6 Months from the date of NIT.

Or

b)As per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016:

- i) The bidders can pay the EMDs using Net banking/RTGS/NEFT, the bidders should pay EMDs from their registered bank accounts and the unsuccessful bidders EMDs will be refunded to their registered bank accounts in the new e Procurement system.
- ii) The bidders can also pay the EMDs using Credit Card / Debit Card, as per the VISA/Master Card Guidelines, return of EMD will be only to the Originating Card from which payment was made, as per the standard practice of Credit Card / Debit Card refunds.

Note: 1) Proof of paying EMD through Net banking / RTGS / NEFT / Credit Card / Debit Card shall be scanned and uploaded along with other documents / certificates.

2) As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.aphmhidc@gmail.com on or before 5.00 PM on -12-2023

xix) The tenderer should submit signed undertaking of tender online.

Note 1:

- 1) The certificates in support of 3.II.i, 3.II.ii, 3.II.vi, 3.II.xiii in State/Central Government Departments or State/Central Government undertakings issued by the concerned Executive Engineer and counter signed by the Superintending Engineer or equivalent authority.
- 2) **Chartered Accountant Certificate in construction works contracts in support of 3.II.ii will also be considered**
- 3) The GPA holders experience shall not be taken into account in determining the bidder's compliance with qualifying criteria.

Note 2: @ Estimate contract value is of 2023-2024 price level. Weightage of 10% per annum should be given for the annual turnover, single work experience, experience of contractor or his sub-contractor in building works to bring them to present price level.

Note 3: Bidders against whom Vigilance / disciplinary / blacklisting cases are pending in the Corporation are not entitled to participate in the tender for the above work.

Note 4: The Tenderer or his identified expert should possess required valid registration under appropriate Class in PH Engineering for executing Water supply & Sanitary Engineering Works and should have executed similar building works totaling to **Rs.1.71 crores in any one financial year during last five financial years i.e., from 2018-2019 to 2022-23 updated to 2023-24 price level.**

Note 5: The contractor or his identified expert should possess required valid registration not below Class I Electrical certificate and "A" grade license for executing Electrical Engineering works and should have executed similar building works totaling to **Rs.8.04 crores in any**

one financial year during last five financial years i.e., from 2018-2019 to 2022-23 updated to 2023-24 price level.

Note 6: The contractor or his identified expert should have executed similar work of supply and installation of furniture for hospital of value totaling to **Rs.5.21 crores** in any one of the last five financial year, i.e. 2018-2019 to 2022-23 updated to 2023-24 price level. Work Order / Contract agreement & Chartered Accountant Certificate for furniture works to establish the above would be considered valid proof.

Note 7: The contractor or his identified expert personnel should have executed similar works of supply and installation of equipment for hospital of value totaling to **Rs.1.81 crores** in any one of the last five financial year i.e. 2018-2019 to 2022-23 updated to 2023-24 price level.

Note 8: The successful tenderer only is required to submit the details in “Note 4, 5, 6 & 7” before concluding agreement.

8 Bid Capacity:

- a. The Bidder (either Individual or Company or any group of any among them not exceeding two members formed as Joint Venture / Consortium and registered as a partnership firm with name of all partners should be shown in the registration of firms) who meets the above qualification criteria and whose available bid capacity is more than the estimated contract value will be qualified for opening of Price bid. The available bid capacity will be calculated as under:

Available Bid Capacity: **2AN-B**

Where,

A= Maximum value of Civil Engineering works executed in its name in any one financial year during the last five financial years (updated to current Price level) taking into account the works completed as well as works in progress.

Note: The “A” value(maximum) of Civil Engineering works concerned, it invariably requires certification by the Superintending Engineer/ Executive Engineer concerned of what were the works executed (or) Annual Turnover Certificate along with Balance Sheet issued by Chartered Accountant in any one out of five during the last five financial years, indicated above of 2018-19 to 2022-23.

N= Number of years prescribed for completion of the work for which Tenders are invited (**30 Months /12**).

B= Updated Value (at current price level) of all existing Commitments and ongoing works to be completed during the period of completion of works for which tenders are invited.

Note.1: The “B” value as to the existing commitments and on going works concerned, it invariably requires certification by the Superintending Engineer/ Executive Engineer concerned.

Note.2: In case the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for

criminal prosecution if any thing found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

Annual turnover cost of completed works and balance works on hand etc., shall be updated by giving weightage of 10% per year to bring them to current price level.

Note: a) The Bidder's experience, in his name will be taken in to account in determining the bidders compliance to the qualification criteria, if it is as per G.O.Ms.No.94, I & CAD (PW-COD) dept. dated 01-07-2003.

b) The experience gained in a registered JV firm to the extent of the bidders share shall be considered if the bidder happens to be the lead partner, for building works criteria also.

No relaxation will be given to any of the qualification criteria.

- b. Even though the bidder meet the above qualifying criteria, they are liable to be disqualified / debarred / suspended / blacklisted if they have:
- i. Furnished false / fabricated particulars in the forms, statements and / annexures submitted in proof of the qualification requirements and/or
 - ii. Not turned up for entering into agreement, when called upon.
 - iii. Record of poor progress such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history or financial failures etc. and/or
 - iv. participated in the previous bidding for the same work and had quoted unreasonably high tender percentage and
 - v. even while execution of the work, if found that the work was awarded to the bidder based on false / fake certificates of experience, the bidder will be blacklisted and work will be taken over invoking clause 61(a) of PS to APSS.
 - vi. The tender of the bidder will be disqualified along with the forfeiture of E.M.D. and the Bidder will be debarred from future tendering for a further period of 2 years in the event of furnishing of false/fraudulent certificates along with the tender.

Note.: Even though the Contractors meet the above Qualification Criteria, they are subject to be disqualified if they have:

a) Record of poor performance such as abandoning the works, not properly completing or financial failures etc., in preceding 5 (five) financial years (2018-19 to 2022-23).

b) Consistent history of litigation or arbitration awards against the Contractor or any member of the JV in preceding 5 (five) financial years (2018-19 to 2022-23)

- c. Tender with more than estimated contract value shall summarily be rejected.

The contract price is inclusive of all overhead charges and include the following elements:

- i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
- ii. Office furniture, equipment and communications.
- iii. Expenditure on:
 - a. Corporate office of contractor.
 - b. Technical agents for site supervision. (Reimbursement to the technical agents provision is dispensed with where 'over heads and contractor's profit' provision is included in the data rates)
 - c. Documentation and "as built" drawings.
 - d. Mobilization/ de-mobilization of resources.
 - e. Labour camps with minimum amenities and transportation to work sites.
 - f. Light vehicles for site supervision including administrative and managerial requirements.
 - g. Laboratory equipment and quality control including field and laboratory testing. (For all the works costing more than Rs. 2.00 Crores contractor have to establish Quality Control laboratory)
 - h. Minor T & P and survey instruments and setting outworks, including verification of line, dimensions, etc.
 - i. Watch and ward
 - j. Traffic management/ Safety management during construction.
 - k. Expenditure on safeguarding environment.
- iv. Sundries.
- v. Financing Expenditure.
- vi. GST (GST at the prescribed rates as indicated by the Government shall be added in the estimates) It is subject to what is stated on GST at para 106.
- vii. Work Insurance/ compensation - Works insurance is dispensed with vide G.O. Ms.No: 61 Irrigation & CAD (PW:Reforms) Department Dt. 25-06-2013. Further, It is decided not to insist upon insuring all the building works as provision for this component is already deleted from the 'Overheads & Contractor's Profit' in building works.

Note 1: The contractor as per the breakup of overheads shall provide the light vehicles and other contingencies to be meet the total breakup of all components together.

Note 2: Any provision provided in the estimate and facility not provided by the contractor, suitable recovery shall be made so that the contractor shall not have any undue benefit. The field engineer shall bestow of this regard in bringing timely to the notice of TIA/Agreement concluding authority for necessary action/recourse including recovery/deduction in respective bills.

Wherever the audit parties of A.G point out that the contractor is unintendedly benefitted, then the employer is empowered to recover the same amount from the Contractor and it is binding on the contractor.

- d. For tenders up to 15% less than the estimated contract value of work, no additional security deposit is required. But for tenders less than 15% of the estimated Contract Value of work, the difference

between the tendered amount and 85% of the estimated contract value, shall be paid by the successful tenderer at the time of concluding agreement as an additional security to fulfill the contract through a Bank Guarantee or Demand Draft on a Nationalised Bank / Scheduled bank in the prescribed format valid till completion of the work in all respects.

- e. (i) If the percentage quoted by a tenderer is found to be either abnormally high or within the permissible ceiling limits prescribed but under collusion or due to unethical practices adopted at the time of tendering process, such tenders shall be rejected.

(ii) A tenderer submitting a Tender which the tender accepting authority considers excessive and or indicative of insufficient knowledge of current prices or definite attempt of profiteering will render himself liable to be debarred permanently from tendering or for such period as the tender accepting authority may decide. The tenderer overall percentage should be based on the controlled prices for the materials, if any, fixed by the Government or the reasonable prices permissible for the tenderer to charge a private purchaser under the provisions of clause-6 of the hoarding and profiteering prevention ordinance of 1943 as amended from time to time and on similar principle in regard to labour supervision on the construction.

f. Conditional Tender:

Conditional tenders are not accepted. Submission of tender would be construed as acceptance to all the terms and conditions of the tender which include conditions of contract, drawings and accompanying specifications.

g. One Tender per Tenderer:

Each bidder shall submit only one Tender for the work. A Bidder who submits more than one Tender either in the form of individual or a partner in the firm / J.V. partners / Companies will cause disqualification of all the Tenders submitted by the Bidder.

h. Cost of tendering:

The Tenderer shall bear all costs associated with the preparation and submission of his Tender and the tender inviting authority will in no case be responsible and liable for those costs.

i. Site Visit:

The Tenderer, at the Tenderer's own responsibility and risk is advised to visit and examine the Site of Work and its surroundings and obtain all information that may be necessary for preparing the Tender for entering into a contract, for construction of the work. The costs of visiting the site shall be at the Tenderer's own expense.

“After submission of the bid and Letter of Acceptance issued, no contractor can claim that the Site Visit not properly made. It is deemed for all purposes that the Site Visit has been properly conducted by the contractor with any Technical Assistance required at their cost and with their men, for nothing contra is left open to raise.”

B. TENDER DOCUMENT

9 Contents of tender document:

One set of Tender document, comprises of the following:

Technical bid:

- 1) Notice Inviting Tenders (NIT)
- 2) Instruction to Tenderer
- 3) Forms of Tender and qualification information
- 4) Conditions of Contract.
- 5) Specifications.
- 6) Drawings.
- 7) Forms of Securities. i.e., EMD, Additional Security etc.

Price bid: Bill of Quantities and Price bid.

10 Clarification on tender documents:

A prospective Tenderer requiring any clarification on Tender documents may contact the Tender Inviting Officer at the address indicated in the NIT. The Tender Inviting Officer will also respond to any request for clarification, received through post.

11 Amendment to tender documents:

- 11.1 Before the last date for submission of Tenders, the Tender Inviting Officer may modify any of the Contents of the Tender Notice, Tender documents by issuing amendment / Addendum.
- 11.2 Any addendum/amendments issued by the Tender Inviting Officer shall be part of the Tender Document and it shall be attached to the Tender Notice on web site (i.e) eprocurement.gov.in
- 11.3 To give prospective Tenderers reasonable time to take an addendum into account in preparing their bids, the Tender Inviting Officer may extend if necessary, the last date for submission of tenders.

C. PREPARATION OF TENDERS

12 Language of tender:

All documents relating to the tender shall be in the English Language only.

13 Documents comprising of the tender:

- 13.1 The bidders who are desirous of participating in e-procurement shall submit their technical bids, price bids etc., in the standard prescribed format in the tender documents, displayed at e market place. The bidders should upload the scanned copies of all the relevant certificates, documents etc., in the e market place in support of their technical bids.
- 13.2 If any of the certificates, documents etc., furnished by the bidder is found to be false/fabricated/bogus, the bidder will be black listed and the EMD forfeited.
- 13.3 The technical bids will be opened on line by the Chief Engineer or his authorized representative at the time and date as specified in the tender documents. All the statements, documents, certificates, DD/BG etc., uploaded by the tenderers will be down loaded for technical evaluation. The clarifications, particulars if any required from the bidders will be obtained in the conventional method by addressing the bidders. The technical bids will be evaluated against the specified parameters/ criteria, same as in the case of conventional tenders and the technically qualified bidders will be identified. The result of technical bid evaluation will be displayed on the e market place, which can be seen by all the bidders who participated in the tenders.

14 Bid offer:

- 14.1 The Bill of Quantities called Schedule "A" and the bid offer accompanies the tender document as Volume - II. It shall be explicitly understood that the Tender Inviting Officer does not accept any responsibility for the correctness or completeness of this schedule 'A' and this schedule 'A' is liable to alterations by omissions, deductions or additions at the discretion of the Chief Engineer or as set forth in the conditions of the contract. The tenderers will have to state clearly their willingness to execute the work at certain specific percentage of excess or less or at par of the ECV indicated at the space provided therein in Schedule 'A'. The tenderer should however quote his lump sum tender based on this schedule of quantities. He should quote his offer as a overall tender percentage. The overall tender percentage should be written both in words and figures. The bid offers i.e., percentage shall be quoted both in figures and words.
- 14.2 The Schedule –A (or Price-bid) contains not only the quantities but also the rates worked out by the Department and the amount for each item and total value of the estimated contract. The tenderer should workout his own rates keeping in view the work, site conditions and quote his overall tender percentage with which he intends to execute the work.
- 14.3 The bid offer shall be for the whole work and not for individual items / part of the work.
- 14.4 All duties, taxes, and other levies payable by the contractor as per State / Central Government rules, shall be included in the tender percentage quoted by the tenderer.
- 14.5 The tendered contract amount as computed based on overall tender percentage is subject to variation during the performance of the Contract in accordance with variation in quantities etc.

15 Transaction Fees:

A transaction fee at 0.10% of the estimate contract value of the work towards service charges has to be paid by successful bidder at the time of concluding agreement as follows in favour of:

1.Managing Director, APTS, Vijayawada for **Rs.25,000/-** (towards 'e' procurement services at 0.04% of estimated contract value with a cap of Rs.10,000/- for all works with estimated contract value up to Rs.50.00 Crores and Rs. 25,000/- for works with estimated contract value above Rs. 50.00 Crores) **(Online payment through digital key and copy of payment receipt to be submitted at the time of concluding agreement)**

2.Managing Director, APMSIDC, Mangalagiri **Rs.25,16,846/-** (@ 0.06% of estimate contract value. **(in the form of Demand draft)**

16 Validity of tenders:

- 16.1 Tenders shall remain valid for a period of not less than three months from the last date for receipt of Tender specified in NIT.
- 16.2 During the above mentioned period no plea by the tenderer for any sort of modification of the tender based upon or arising out of any alleged misunderstanding of misconceptions or mistake or for any reason will be entertained.
- 16.3 In exceptional circumstances, prior to expiry of the original time limit, the Tender Inviting Officer may request the bidders to extend the period of validity for a specified additional period. Such request to the Tenderers shall be made in writing. A Tenderer may refuse the request without forfeiting his E.M.D. A Tenderer agreeing to the request will not be permitted to modify his Tender, but will be required to extend the validity of his E.M.D. for a period of the extension.

17 Processing Fee:

- a) The Tenderer shall pay Processing fee of **Rs.59,000/-**(**Rs.50,000/- + GST@18%**) throughonline from e-procurement platform.
- b) All the participating bidders should pay a transaction fee of **Rs.29,500/-** [(**@0.03%** of ECV (estimate contract value) with a cap of Rs.10,000/- + GST @ 18% on transaction fee)] to M/s. Vupadhi Techno Service Pvt. Ltd in the manner mentioned at 5(b) above.

18 Earnest Money Deposit:

- 18.1 The Tenderer shall furnish, Earnest Money Deposit equivalent to 1% of ECV along with hard copies of Tender documents.

18.2 The successful tenderer should however pay the Earnest Money Deposit as Performance Security at 2½% on Estimated Contract Value / Tender Contract Value (hereinafter referred as “Performance Security”) whichever is higher plus additional Performance Security for tenders less than 15% of the Estimate Contract Value in accordance with Clause 8 (d) at the time of signing the agreement in the shape of crossed Demand Draft on any Nationalised Bank./Scheduled Bank or unconditional and irrevocable Bank Guarantee in the form given in “Formats of Securities” from any Nationalised Bank / Scheduled Bank valid up to completion of maintenance period. The EMD at 2½% shall be paid in the shape of crossed Demand Draft on any Nationalised Bank./Scheduled Bank or unconditional and irrevocable Bank Guarantee work wise while concluding agreement.

19 Return of E.M.D to unsuccessful tenderer:

19.1 The earnest money deposit in the form of Demand Draft will be refunded to the unsuccessful tenderer in the manner stipulated in G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dt.01.06.2016

20 Return of E.M.D to successful tenderer:

20.1 The 1% E.M.D paid by the successful tenderer before opening of the price bid will be discharged as per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dt.01.06.2016.

20.2 The earnest money deposited by the successful tenderer will not carry any interest and it will be dealt with as provided in the conditions stipulated in the tender. The Performance Security given in the form of Bank Guarantee on a Nationalised / Scheduled Bank, shall be valid for the duration of Construction, Supply, installation, commissioning plus defect liability period of two years and Maintenance period of five years and in case any valid extension of contract period is granted, the validity of BG shall also be extended for the corresponding period. The Bank Guarantee on Nationalised / Scheduled Bank furnished by the tenderer towards additional security amount shall be valid till the work is completed in all respects. The same is applicable in case EMD is adjusted as part of performance security.

21 Forfeiture of E.M.D:

21.1 The E.M.D. shall be forfeited.

- a) if the Tenderer withdraws the Tender during the validity period of Tender.
- b) in the case of a successful Tenderer, if he fails to sign the Agreement for whatever the reason.

21.2 In consideration of the Chief Engineer undertaking to investigate and to take into account each tender and in consideration of the work thereby involved, all earnest monies deposited by the tenderer will be forfeited to the Corporation in the event of such tenderer either modifying or with-drawing his tender at his instance within the said validity period of three months.

22 Signing of tenders:

- 22.1 If the tender is made by an individual, it shall be signed with his full name and his address shall be given. If it is made by a firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, and the name and address of each member of the firm shall be given, if the tender is made by a corporation it shall be signed by a duly authorised officer who shall produce with his tender satisfactory evidence of his authorisation. Such tendering corporation may be required before the contract is executed, to furnish evidence of its corporate existence. Tenders signed on behalf of G.P.A holder will be rejected.
- 22.2 The tender shall contain no alterations or additions, except those to comply with instructions issued by the tender inviting officer, or as necessary to correct errors made by the tenderer, in which case all such corrections shall be initialed by the person signing the tender.
- 22.3 No alteration which is made by the tenderer in the contract form, the conditions of the contract, the drawings, specifications or statements / formats or quantities accompanying the same will be recognised, and, if any such alterations are made the tender will be void.

D. SUBMISSION OF TENDERS

23 Submission of tenders:

- 23.1 The Tenderers who are desirous of participating in e-procurement shall submit their Technical bids, price bids etc., in the Standard formats prescribed in the Tender documents, displayed at e-market place. The tenderers should upload the scanned copies in support of their Technical bids. The documents are to be uploaded in ZIP format only.
- 23.2 The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Tenderers while submitting his bids online.
- 23.3 Related certificates, documents etc., duly self attested are to be scanned and uploaded on to the e-procurement platform at www.tender.apetrocurement.gov.in in support of items mentioned in clause.
- 23.4 Any other condition regarding receipt of tenders in conventional method appearing in Tender document may be treated as Non-applicable.

24 Last date / time for submission of tenders:

- 24.1 Tenders must be submitted online not later than the date and time specified in the Tender Notice / Tender Document.
- 24.2 The Chief Engineer or his nominee may extend the date for receipt of Tenders by issuing an amendment in which case all rights and obligations of the Chief Engineer and the Tenderers will remain same as previously.

25 Late tenders:

- 25.1 Tenders will not be received after the last date / time prescribed in NIT / Tender Document.

26 Modification to the tender:

- 26.1 Tenders Tenderers can modify their Tender online before the last date/time prescribed in Tender Notice / Tender Document and amendments issued, if any.
- 26.2 No tender shall be modified after the last date /time of submission of Tenders.

27 Submission the tenders:

- 27.1 The tenderer shall invariably ensure that the following are uploaded online.
- a) Check slip
 - b) Copy of contractor's registration certificate under appropriate class with Government of Andhra Pradesh
 - c) Copy of permanent account number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt.

- d) Copy of AP GST Registration Certificate from Commercial Tax Department.
- e) **The particulars of value of Civil Engineering works executed along with experience certificates in support of the figures (or) Annual Turn Over Certificate along with Balance Sheet issued by Chartered Accountant in the last five financial years in the tenderers name in Statement I.**
- f) The details of similar nature of building works executed as Prime Contractor (in the same name) during the last five financial years, showing year wise break up of value of work executed in Statement II duly supported with work done certificates, work wise.
- g) The physical quantities of specified works executed as Prime Contractor (in the same name) in the last five financial years with year wise break up work wise in Statement III duly supported with work done certificates.
- h) The information on 'existing commitments' *of the bidder i.e., works on hand in Statement-IV-(A) with Supporting Certificates and also details of tenders Participated /submitted in Statement-IV(B)..*
- i) The availability of Key / critical construction / quality control equipment in Statement V & the particulars of quality control testing Lab owned / tie up with established quality control testing laboratories in Statement VIII (for works costing more than Rs.2.00 crores).
- j) The availability of Key personnel in Statement VI
- k) The information on litigation history in Statement VII
- l) Proof of liquid assets / credit Facilities / Solvency certificate from Nationalised Banks / Schedule banks ***in their Proforma as per the Guidelense of the RBI (or) the Net Worth Certificate issued by the Chartered Accountant*** for the required amount.
- m) Non refundable Processing fee to be paid online, DD / BG for EMD.
- n) Signed under taking of tender.

Note: Any incorrectness / deviation noticed in the soft copies will be viewed seriously and apart from cancelling the tender duly forfeiting the EMD, criminal action will be initiated including suspension of business.

E. TENDER OPENING & EVALUATION

28 Reverse tendering process:

- 28.1 **Identification of Eligible Bidders** as per Government GO MS. No. 50 (WR(R) Dept) dated 15.10.2020 as Submission of Hard Copies of uploaded Scan copies of Demand Draft / Bank Guarantee towards EMD by participating bidders to the tender Inviting authority before opening of Price Bid is dispensed with.
- 28.1.1 Only those bids will be evaluated and considered for comparison to arrive at L1 value and allowed to participate in reverse bidding in whose favour an authorised communication or a letter or a scanned and uploaded copy of that letter on e- procurement Website or an e-mail from the issuing bank or any authorised communication from the bank with regard to issue of the Bank Guarantees/ Demand Draft is sent to the Tender Inviting authority within the stipulated time.
- 28.1.2 All Bank Guarantees uploaded by all Bidders would be verified with the issuing Bank, subsequently and if any uploaded Bank Guarantee is found to be forged or tampered with or fake, then it would be considered as fraud and would be liable for criminal action invariably.
- 28.1.3 Tenders up to 25% less (-25%) than the estimate may be accepted. Tenders which are less beyond minus 15% {(<-15%)} of the estimate but upto minus 25%, a Bank Guarantee or Demand Draft for the difference between the tendered amount and 85% of the estimate value should be taken, over and above other guarantee, which would be released after the completion of work with other Bank Guarantees. Illustration: If a L1 bidder quotes Rs 75 for an estimated value of Rs 100, then the bidder will have to give an additional BG/DD of Rs 10 {Rs 85 (that is 85% of Est. Value)- Rs 75 (Tendered amount)}.
- 28.1.4 All the bidders shall invariably upload the scanned copies of Demand Draft /Bank Guarantee in e-Procurement system and this will be the primary requirement to consider the bid as responsive.
- 28.1.5 The Department shall carry out the technical bid evaluation solely based on the uploaded certificates / documents, DD / BG towards EMD/ affidavit, in the e-Procurement system and open the price bids of the responsive bidders and proceed further for reverse auctioning.
- 28.2 After identifying the eligible bidders as per Government GO MS. No. 50 (WR(R) Dept) dated 15.10.2020, eligible bidders to participate in e-auction process in terms of guidelines issued vide G.O.Ms.No.67, Water Resources (Reforms) Dept., Dt.16.08.2019.
- a) All bidders shall upload the scanned documents of original copies of the DD / BG for EMD along with necessary affidavit duly notarized for Genuinity along with tender documents and Initial Price Offer within the stipulated time, failing which their Initial Price Offer shall not be opened and they will not be taken forward into the reverse auction.

- b) After identification of the L-1 Initial Price Offer, eligible (those who have uploaded scanned documents of original copies of the DD/ BG for EMD along with necessary affidavit duly notarized for EMDs Genuinity within the stipulated time) bidders shall be transferred to the Reverse Auction Platform.
- c) The initial period of the Reverse tendering process will start at the stipulated time in the tender document following which there will be auto extensions of time by 15 minutes in case of any reduction in bids recorded in the prior 15 minutes.
- d) The L1 bid may be determined following a period of inactivity of more than 15 minutes of reverse bidding after the initial 3-hour period after closure of the main bidding.
- e) Decrements made in each subsequent bid shall not be less than 0.5% of the IBM/ECV uploaded.

28.3 Conclusion of reverse tendering process:

- a) After conclusion of the reverse auction process, the pre-qualification criteria of L-1 bidder shall be verified. In case of successful verification of pre-qualification criteria of the L-1 Bidder, he will be awarded the contract and the EMDs of other bidders shall be refunded.
- b) The Department will notify the successful bidder for submission of original hard copies of all uploaded documents, DD / BG towards EMD prior to entering into agreement.
- c) The successful bidder shall invariably furnish the original certificates/documents of the uploaded scanned copies to the Tender Inviting Authority, original Bank Guarantee & Demand Draft towards EMD before entering into agreement either personally or through courier or post and the receipt of the same within the stipulated date shall be the responsibility of the successful bidder. The Department will not take any responsibility for any delay in receipt / non-receipt of original DD / BG towards EMD, certificates /documents, from the successful bidder before the stipulated time. On receipt of documents, the Department shall ensure the genuineness of the DD / BG towards EMD and all other certificates / documents uploaded by the bidder in e-Procurement system in support of the qualification criteria before concluding the agreement.
- d) If any successful bidder fails to submit the original Hard Copies of uploaded certificates / Documents, DD / BG towards EMD within the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on e- Procurement platform for a period of 3 years. The e-Procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger / recommendation by the Tender Inviting Authority in the system. Besides this, the Department shall invoke all Processes of Law including criminal prosecution of such defaulting bidder as an act of extreme deterrence to deter frivolous bidders and to avoid delays in the tender process for execution of the development schemes taken up by the Government. The information to this extent may be displayed in the e- Procurement platform website and all Government. Dept./Public Sector Units/ Local Bodies/Autonomous Bodies in AP would prevent such bidders from participating in the bidding process.

c) In case of the L1 bidder being disqualified, the Department reserves the right to restart the reverse auction process with the L2 price of the concluded reverse auction as the start/ maximum bid price **OR** to restart the entire tendering process from the NIT Stage. In either case, the date and time of the subsequent process shall be communicated to the remaining bidders.

F. AWARD OF CONTRACT

29 Award criteria:

- 29.1 The Chief Engineer or his nominee will award the contract on approval of the tender by Competent authority.
- 29.2 The tender accepting authority reserves the right to accept or reject any Tender or all tenders and to cancel the Tendering process, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the reasons for such action.

30 Notification of Award and Signing of Agreement:

- 30.1 The Tenderer whose Tender has been accepted will be notified of the award of the work prior to expiration of the Tender validity period by registered letter. This letter (hereinafter and in the Conditions of Contract called “Letter of Acceptance”) will indicate the sum that the Government will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the “Contract Amount”).
- 30.2 When a tender is accepted , the concerned tenderer shall attend the office of the Chief Engineer on the date fixed in the Letter of acceptance. Upon intimation being given by the Chief Engineer, of acceptance of his tender, the tenderer shall make payment of the Performance Security and additional security deposit wherever needed by way of Demand Draft or unconditional and irrevocable Bank Guarantee obtained from a Nationalised / Scheduled Bank with a validity period of duration of Contract period plus Defects Liability Period of 2 years and Maintenance period of 5 years and sign an agreement in the form prescribed by the department for the due fulfillment of the contract. Failure to attend the Chief Engineer’s office on the date fixed, in the written intimation, to enter into the required agreement shall entail forfeiture of the Earnest Money deposited. The written agreement to be entered into between the contractor and the Corporation shall be the foundation of the rights and obligations of both the parties and the contract shall not be deemed to be complete until the agreement has first been signed by the contractor and then by the proper officer authorised to enter into contract.
- 30.3 The successful tenderer has to sign an agreement within a period of 15 days from the date of receipt of communication of acceptance of his tender. On failure to do so his tender will be cancelled duly forfeiting the E.M.D., paid by him without issuing any further notice and action will be initiated for black listing the tenderer.

31 Corrupt or fraudulent practices:

- 31.1 The Government require that the bidders / suppliers / contractors under Government financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Government

(a) define for the purposes of the provision, the terms set forth below as follows:

- (i) “corrupt practices” means the offering, giving, receiving or soliciting of anything of value to influence the action of a Government official in procurement process or in contract execution: and
 - (ii) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Government and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish in Tender prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition.
- (b) Will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.
 - (c) Will blacklist / or debar a firm, either indefinitely or for a stated period of time, if at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing a Government Contract.
 - (d) Furthermore, Tenderers shall be aware of the provisions stated in the General Conditions of Contract.

32 Rights of Corporation:

- 32.1 The management of the Corporation reserves the right to reject any or all of the tenders, without assigning any reason whatsoever.
- 32.2 In the event of any dispute regarding any of the tender conditions, the decision of the management shall be final.

**FORMS OF TENDER
QUALIFICATION INFORMATION
AND
UNDER TAKING OF TENDERER**

QUALIFICATION INFORMATION

Checklist to accompany the tender:

Documents to be submitted by tenderer on the procurement platform on line

Sl. No.	Document to be uploaded to profile	Description to be given	Scanned documents to be uploaded	Page No. (see Note 6 below)
(1)	(2)	(3)	(4)	(5)
1.a)	Valid Contractors registration under appropriate class	Registration		
b)	Agreement of Joint Venture Partnership deed in case of firms & Article of Association in case of companies	Agreement of JV	Yes / No	
2.	<u>Proof of payment (tax receipt) of annual professional tax for the previous year</u>	<u>Payment receipt</u>	Yes / No	
3.	Copy of Permanent Account Number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt.	PAN & ITCC	Yes / No	
4.	The particulars of Civil Engineering works (list) executed along with experience certificates in support of the figures (or) Annual Turn Over Certificate along with Balance Sheet issued by Chartered Accountant in the last five financial years in the tenderers name in Statement I.	Annual turnover	Yes / No	
5.	Experience certificates in support of satisfactory completion of similar building works (Format at Statement- II)	Similar work	Yes / No	
6.	Experience certificates in support of execution of quantities of Earth work, Concrete, Masonry, & Plastering. (Format at Statement-III)	Executed quantities	Yes / No	
7.	Statement of existing commitments and ongoing Government. works along with supporting experience certificates as in Statement IVA <u>In case the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if any thing found in the affidavit information is</u>	Existing commitments Affidavit	Yes / No	

TENDERER

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CHIEF ENGINEER

Sl. No.	Document to be uploaded to profile	Description to be given	Scanned documents to be uploaded	Page No. (see Note 6 below)
	<u><i>untrue besides right of the employer to terminate the contract and for other legal recourse.</i></u>			
8.	Statement of works for which tenders are submitted as in Statement IV – B	Works awarded/likely to be awarded	Yes / No	
9.	Declaration of critical equipment on non-judicial stamp paper worth of Rs.100/- as in Statement –V <u><i>Availability of (Either own or leased)-with written proof of owning with registration or written lease agreement as the case may be and in case of lease, the lease period shall be for a period not less than 33 months covering the contract period of thirty months and three months more to count from date of LOA followed by contract agreement and with a provision that in case of any extensions of time of completion the lease shall be under taken to be extended till completion & commissioning.</i></u>	Declaration of critical equipment <u><i>lease agreement</i></u>	Yes / No	
10.	Availability of key personnel as in Statement VI (<u><i>must be the full time employees and out of them atleast 20% must be having experience in Quality control</i></u>)	Key personnel	Yes / No	
11.	Information of litigation history <u><i>with Government during the last five Years</i></u> as in Statement VII	Litigation history	Yes / No	
12.	Declaration of lab equipment on a non judicial stamp paper of Rs.100/- as in the statement – VIII	Lab equipment	Yes / No	
13.	Proof of liquid assets/ Credit facilities/solvency certificates from banks in the format given in schedules in their Proforma as per the Guidelines of the RBI (or) the Net Worth Certificate issued by the Chartered Accountant	Credit facilities	Yes / No	
14.	Processing fee in favour of MD, APMSIDC	Processing fee	Yes / No	

Sl. No.	Document to be uploaded to profile	Description to be given	Scanned documents to be uploaded	Page No. (see Note 6 below)
15.	E.M.D	EMD	Yes / No	
16.	GST Registration	GST	Yes / No	
17.	Undertaking of Tender & Declaration	Undertaking	Yes / No	
18.	The bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.apmhdc@gmail.com on or before 5.30 PM on -12-2023	Confirmation of Bank Guarantee	Yes / No	

Note:

1. Please upload documents in ZIP format with suitable description as defined above.
2. The scanned documents shall be legible failing which they will not be considered.
3. All experience certificates including those in support of existing commitments issued by an Officer not below the rank of Executive Engineer and should be countersigned by the Superintending Engineer or equivalent authority.
4. The format of B.G. towards E.M.D. should be adhered to as per prescribed format. Any deviation will result in making the bid non-responsive. Further all other B.Gs to be submitted at the time of agreement and for advance payment should also be in the formats prescribed in the bid document
5. **All the statements copies of the certificates, documents etc., enclosed to the Technical bid shall be given page numbers on the right corner of each certificate, which shall be indicated in column (5) against each item.**
6. **The tenderer shall furnish mail id in undertaking of tender**
7. **As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.apmhdc@gmail.com on or before 5.00 PM on-12-2023**

STATEMENT – I

Details of value of Civil Engineering works executed in each year during the last five financial years by the Tenderer.

Sl. No.	Financial Year	Value in Rs.
1.	2018-2019	
2.	2019-2020	
3.	2020-2021	
4.	2021-2022	
5.	2022-2023	

Attach certificate(s) issued by the Executive Engineer concerned and counter signed by Superintending Engineer or equivalent authority showing work wise / year wise value of work done in respect of all the works executed by the Tenderer in Government Contract works during last five years (i.e. from 2018-19 to 2022-23)

(or)

Annual Turnover Certificate along with Balance Sheet issued by Chartered Accountant during last five years (i.e. from 2018-19 to 2022-23)

Signature of the Contractor

STATEMENT – II

Details of similar building works completed (Contract Value) in the name of the Bidder as Prime Bidder during the last five financial years i.e., from 2018-2019 to 2022-23.

Sl. No	Name of the work	Address of Agt. Concluding Authority	Agreement No. & dated.	Value of Contract
1	2	3	4	5

Stipulated period of completion	Actual date of completion	Value of work done year wise during the last 'five' years.					Total value of work done.
		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	
6	7	9	10	11	12	1	14

Attach certificates issued by the Executive Engineer concerned and countersigned by the Superintending Engineer or equivalent authority showing work wise / year wise value of work done and date of completion with supporting certificates.

Signature of the Contractor

STATEMENT – III

Physical quantities executed by the Tenderer in the last five financial years. [work wise / year wise].

Sl No	Financial Year	Name of work	Agt. No	Quantities executed / Year wise.			
				EWE	PCC/ RCC/ VRCC	Stone / Brick masonry	Plastering
1	2	3	4	5	6	7	8
1	2018-2019						
2	2019-2020						
3	2020-2021						
4	2021-2022						
5	2022-2023						

Attach certificates in support of the above quantities issued by the Executive Engineer concerned and countersigned by the Superintending Engineer or equivalent authority duly showing the quantities executed year wise ***by the bidder in the last 5 financial years (i.e. from 2018-19 to 2022-23).***

Signature of the Contractor

STATEMENT – IV

Details of Existing Commitments

Details of works on hand and, yet to be completed as on the date of submission of the Tender and works for which Tenders have been submitted are to be furnished.

A) Existing Commitments on ongoing works:

Sl. No	Name of work	Address of Agt. Concluding authority	Agt No. & Date	Value of contract	Stipulated period of completion	Value of work done so far.	Balance Value of works to be completed	Anticipated date of completion	Updated value of balance work
1	2	3	4	5	6	7	8	9	10

Attach certificates issued by the Executive Engineer concerned and countersigned by Superintending Engineer or equivalent authority, indicating the balance work to be done, and likely period of completion.

Signature of the Contractor

B) Details of works for which Tenders are submitted [awarded / likely to be awarded]

Sl. No.	Name of work	Address of Agt. Concluding authority	Estimated value of work	Stipulated period of completion	Date on which tender was submitted	Present stage of Tender.
1	2	3	4	5	6	7

Signature of the Contractor

Note: In case the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if any thing found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

STATEMENT - V

Availability of Critical Equipment:

The tenderer should furnish the information required below, regarding the availability of the equipment, required for construction / quality control.

Sl. No	Details of Equipment	Number required	Number		
			Owned	Leased	To be procured
1	2	3	4	5	6

Signature of the Contractor

A declaration regarding the equipment owned shall be produced by the Tenderer on a non-judicial stamp paper of Rs. 100/- as below;

DECLARATION

“I, _____ do hereby solemnly affirm and declare that I /we own the following equipment for using on the subject work and also declare that I / We will abide by any action such as disqualification or determination of Contract or blacklisting or any action deemed fit, if the department detects at any stage that I/we do not possess the equipment listed below.

Sl. No	Details of each Equipment	No.	Year of purchase	Regn. Number	Capacity	Any other data.	Is it in working condition?
1	2	3	4	5	6	7	8

Signature of the Contractor

The tenderer has to submit either a certificate issued by the Executive Engineer or a Declaration on Non – Judicial stamp paper worth Rs.100/- as prescribed in Statement V given above with sufficient proof of owning such as Invoice / certificate by competent authority in support of the critical equipment.

Note: Availability of (Either own or leased)-with written proof of owning with registration or written lease agreement as the case may be and in case of lease, the lease period shall be for a period not less than 33 months covering the contract period of thirty months and three months more to count from date of LOA followed by contract agreement and with a provision that in case of any extensions of time of completion the lease shall be under taken to be extended till completion & commissioning.

STATEMENT – VI.

Availability of Key Personnel:

Qualification and experience of Key Personnel proposed to be deployed for execution of the Contract.

Sl. No	Name	Designation	Qualification	Total Experience	Working with the Tenderer since.
1	2	3	4	5	6

Signature of the Contractor

Note: Availability of the Key personnel: must be the full time employees and out of them atleast 20% must be having experience in Quality control.

STATEMENT - VII

Information on litigation history in which Tenderer is the Petitioner.

S. No	Case No. / Year	Court where filed.	Subject Matter / Prayer in the case.	Respondents i.e., SE / CE	Present Stage.
1	2	3	4	5	6

Signature of the Contractor

Note: Information regarding any litigation, with Government during the last five Years, in which the Bidder is involved in (Statement-VII)

STATEMENT – VIII

DECLARATION (on a non judicial stamp paper of Rs.100/-)

“I, _____ do hereby solemnly affirm and declare that I /we own / leased the following equipment for using on the subject work and also declare that I / We will abide by any action such as disqualification or determination of Contract or blacklisting or any action deemed fit, if the department detects at any stage that I/we do not possess the equipment listed below.

Sl. No	Details of each Equipment	Numbers required	Own	Leased
1	2	3	4	5
1	Vernier Calipers 0-150 mm	10 Nos.		
2	Screw gauge 0-25 mm	10 Nos.		
3.a	Measurement tapes both Steel (3 m, 5m) &Fibre (15m)	20 Nos. each		
3.b	30 cm steel scale	20 Nos		
4	Weighing Machines 5.0 kg capacity	10 Nos.		
5	Sieves for Coarse aggregate	10 Nos.		
6	Sieves for fine aggregate	10 Nos.		
7	Cube moulds ISI marked 150 x150 x 150 mm (6 nos.)	20 Nos.		
8	Compression testing machine 100 MT, hand operated /arrangement for testing at approved lab.	2 Nos.		
9	Slump cone	10 Nos.		
10	Carpenter’s square 150mm with graduations	10 Nos.		
11	Electrical Meggar 1100 V	10 Nos.		
12	Spirit level	10 Nos.		
13	Plum bobs	10 Nos.		
14	Measuring Jars (2) 250ml	10 Nos.		
15	Magnetic compass	4 Nos.		

SIGNATURE OF THE TENDERER

TENDERER

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CHIEF ENGINEER

UNDERTAKING OF TENDERER

Date:

To
The Chief Engineer,
A.P.M.S.I.D.C.
Mangalagiri – 522 503

Sir,

I / we do hereby tender and if this tender be accepted, under take to execute the following work viz “**Establishment of New Government Medical College at Parvathipuram in Manyam District**”

I/WE have also quoted percentage excess or less on E.C.V., in Schedule ‘A’, annexed (in words and figures) for which I/We agree to execute the work when the lump sum payment under the terms of the agreement is varied by payment on measurement quantities.

I/WE have quoted Percentage excess or less on E.C.V., in Schedule ‘A’ both in words & figures. In case of any discrepancy between the Percentage excess or less on E.C.V., in words and figures, the rates quoted in words only shall prevail.

I/WE agree to keep the offer in this tender valid a period of Three months mentioned in the tender notice and not to modify the whole or any part of it for any reason within above period. If the tender is withdrawn by me/us for any reasons whatsoever, the earnest money paid by me/us will be forfeited to Corporation.

I/WE hereby distinctly and expressly, declare and acknowledge that, before the submission of my/our tender I/We have carefully followed the instructions in the tender notice and have read the A.P.S.S. and the preliminary specifications therein and the A.P.S.S. addenda volume and that I/We have made such examination of the contract documents and the plans, specifications and quantities and of the location where the said work is to be done, and such investigation of the work required to be done, and in regard to the material required to be furnished as to enable me/us to thoroughly understand the intention of same and the requirements, covenants, agreements, stipulations and restrictions contained in the contract, and in the said plans and specifications and distinctly agree that I/We will not hereafter make any claim or demand upon the Government based upon or arising out of any alleged misunderstanding or misconception /or mistake on my/or our part of the said requirement, covenants, agreements, stipulations, restrictions and conditions.

I/WE have uploaded copy of crossed Demand Draft / BG (No..... dated:.....) for Rs.....towards Earnest Money Deposit not to bear any interest.

I/WE have paid Rs.....towards Processing fee on line which is non-refundable.

I/WE shall not assign the contract or sublet any portion of the same. In case if it becomes necessary such subletting with the permission of the Engineer-in-Charge shall be limited to (1) Labour contract (2) Material contract (3) Transport contract (4) Engaging specialists for special items of work enjoined in A.P.S.S.

IF MY/OUR tender is not accepted the sum shall be returned to me/us on application when intimation is sent to me/us of rejection or at the expiration of three months from last date of receipt of this tender, whichever is earlier. If my/our tender is accepted the earnest money shall be retained by the Corporation as security for the due fulfillment of this contract. If upon written intimation to me/us by the Managing Director's Office, I/We fail to attend the said office on the date herein fixed or if upon intimation being given to me/us by the Managing Director or acceptance of my/our tender, and if I/We fail to make the additional security deposit or to enter into the required agreement as defined in condition- 18.2 of the tender conditions, then I/We agree the forfeiture of the earnest money. Any notice required to be served on me/us here under shall be sufficiently served on me/us if delivered to me/us personally or forwarded to me/us by post (registered or ordinary) or left at my/our address given herein. Such notice shall if sent by post be deemed to have been served on me/us at the time wherein due course of post it would be delivered at the address to which it is sent.

I/WE fully understand that the written agreement to be entered into between me/us and Corporation shall be the foundation of the rights of the both the parties and the contract shall not be deemed to be complete until the agreement has first been signed by me/us and then by the proper officer authorised to enter into contract on behalf of Government.

I/WE agree to pay the Transaction fee at 0.04% or as amended from time to time on Estimated contract value of the work in favour of MD, APTS, Vijayawada. (Online payment through digital key and copy of payment receipt to be submitted at the time of concluding agreement)

I/WE agree to pay the Service charges at 0.06% or as amended from time to time on Estimated Contract Value of the work through a Demand Draft drawn in favour of MD, APMSIDC, Mangalagiri at the time of conclusion of Agreement.

I/We declare that I / We will submit necessary self / identified expert's registration in relevant class for Public Health Engineering and Electrical and "A" Grade license for executing Electrical Engineering works along with requisite experience certificates before concluding agreement.

I AM/WE ARE professionally qualified an my/our qualifications are given below:

Name	Qualified

I/WE will employ the following technical staff for supervising the work and will see that one of them is always at site during working hours, personally checking all items of works and pay extra attention to such works as required special attention (e.g) Reinforced cement concrete work.

Name of technical staff proposed to be employed	Qualification.

I / WE declare that I/WE agree to recover the salaries of the technical staff actually engaged on the work by the department, from the work bills, if I/We fail to employ technical staff as per the tender condition.

TENDERERS / CONTRACTOR’S CERTIFICATE.

- (1) I/WE hereby declare that I/We have perused in detail and examined closely the Andhra Pradesh Standard Specifications, all clauses of the preliminary specifications with all amendments and have either examined all the standards specifications or will examine all the standard specifications for items for which I/We tender, before I/We submit such tender and agree to be bound and comply with all such specifications for this agreement which I/We execute in the Corporation.
- (2) I/WE certify that I/We have inspected the site of the work before quoting my Percentage excess or less on ECV, I /We have satisfied about the quality, availability and transport facilities for all the materials.
- (3) I/WE am/are prepared to furnish detailed data in support of all my quoted rates, if and when called upon to do so without any reservations.
- (4) I/WE hereby declare that I/We will pay an additional security deposit in terms of conditions, the difference between 85% of ECV and my/our tender amount, in case if my / our offer is less than 15% as per clause 8 (d)
- (5) I/WE hereby declare that I am/we are accepting to reject my tender in terms of condition, if my /our offer is more than ECV as per clause 8 (C).
- (6) I/WE hereby declare that I am/We are accepting for the defect liability period as 24 months instead of 6 Months under clause 28 of APSS and maintenance period of 60 months.
- (7)
 - a) I/WE declare that I/WE will procure the required construction materials including earth and use for the work after approval of the Engineer-in-Charge. The responsibility for arranging and obtaining the land for borrowing or exploitation in any other way shall rest with me/us for the materials for construction, I/WE shall ensure smooth and un-interrupted supply of materials.
 - b) I/WE declare that the responsibility for arranging and obtaining the land for disposal of spoil/soil not useful for construction purposes shall rest with me/us.
 - c) I/WE declare that I/WE shall not claim any compensation or any payment for the land so arranged for disposal of soil and the land for borrow area. My/our quoted percentage excess or less on ECV, are inclusive of the land so arranged and I/We will hand over the land so arranged for disposal of soil to the Corporation after completion of work.

- (8) I/WE declare that I/WE will execute the work as per the mile stone programme, and if I/WE fail to complete the work as per the mile stone programme I abide by the condition to recover liquidated damages as per the tender conditions.
- (9) I/WE declare that I/WE will abide for settlement of disputes as per the tender conditions.

DECLARATION OF THE TENDERER

- 1) I/WE have not been black listed in any department / Corporation of State / Central Government. due to any reasons.
- 2) I/WE have not been demoted to the next lower category for not filing the tenders after buying the tender schedules in a whole year and my/our registration has not been cancelled for a similar default in two consecutive years.
- 3) I/WE agree to disqualify me/us for any wrong declaration in respect of the above and to summarily reject my/our tender.

I / We, _____ have gone through carefully all the Tender conditions and solemnly declare that I / we will abide by any penal action such as disqualification or black listing or determination of contract or any other action deemed fit, taken by, the Department against us, if it is found that the statements, documents, certificates produced by us are false / fabricated.

The soft copies uploaded by me / us are all genuine and originals are available and can be produced at any time

I/WE are aware that, if any incorrectness/ deviation noticed, will be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like.

Address of the Tenderer:

Phone No.:

Fax No.:

Mail id:

Signature of the Tenderer

Note: If the tender is made by an individual, it shall be signed with his full name and his address shall be given. If it is made by a firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, and the name and address of each member of the firm shall be given, if the tender is made by a corporation it shall be signed by a duly authorised officer who shall produce with his tender satisfactory evidence of his authorisation. Such tendering corporation may be required before the contract is executed, to furnish evidence of its corporate existence. Tenders signed on behalf of G.P.A. holder will be rejected.

CONDITIONS OF CONTRACT

A. GENERAL

1 Interpretation:

- 1.1 In interpreting these Conditions of Contract, singular also means plural, male also means female, and vice-versa. Headings have no significance. Words have their normal meaning under the language of the contract unless specifically defined. The Engineers-in-charge will provide instructions clarifying queries about the conditions of Contract.
- 1.2 The documents forming the Contract shall be interpreted in the following order of priority:
 - 1) Agreement
 - 2) Letter of Acceptance, notice to proceed with the works
 - 3) Contractor's Tender (Technical bid)
 - 4) Conditions of contract
 - 5) Specifications
 - 6) Drawings
 - 7) Bill of quantities (Price-bid)
 - 8) Any other document listed as forming part of the Contract.

2 Engineer-in-Charge's decisions:

- 2.1 Except where otherwise specifically stated, the Engineer-in-charge will decide the contractual matters between the Department and the Contractor in the role representing the Department.

3 Delegation:

- 3.1 The Engineer-in-charge may delegate any of his duties and responsibilities to other officers and may Cancel any delegation by an official order issued.

4 Communications:

- 4.1 Communications between parties, which are referred to in the conditions, are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act)

5 Sub-contracting: Deleted

6 Vendors:

- 6.1 The Contractor shall deploy vendor for specific specialized works and supply with prior consent of APMSIDC only.
- 6.2 All supply of furnitures& equipment shall be done after approval by APMSIDC /Committee headed by DME / User department for vendor list approval.

- 6.3 The approval and consent of APMSIDC for Vendor list for supply made shall not relieve Contractor of any of his duties, liabilities or obligations under this Contract, and Contractor shall be liable hereunder to the same extent as if any such sub-contract had not been entered into.
- 6.4 Any inspection review or approval by APMSIDC of any supply by Contractor / Vendor or participation by APMSIDC in any Test conducted by or under the direction or supervision of the Contractor or any Vendor shall not relieve Contractor of any of its work, duties, liabilities or obligations under the Contract. APMSIDC shall not be deemed by virtue of the Contract to have any contractual obligation or liability to, or relationship with, any Vendor.
- 6.5 Contractor shall obtain and maintain from all Vendors and Manufacturers of furniture, equipment, all the required Warranties on all Goods and other items used in connection with the performance of the work or incorporated in or forming part of the Project and such Warranties shall not be amended, modified or otherwise discharged without the prior written consent of APMSIDC. Warranties shall be in the joint names of APMSIDC and Contractor. Such Warranties shall nevertheless and at all times meet the minimum requirements stipulated in the Contract. Also the liability on account of Latent Defects, which are applicable to the Contractor, shall be similarly applicable to all the Vendors of Contractor. It is the responsibility of the Contractor to obtain additional Warranties and / or Comprehensive Maintenance Contracts covering totally 5 years from the Completion of all Works in the Project.
- 6.6 Contractor shall obtain from each Vendor who is party pursuant to which off-the shelf equipment is to be supplied or purchased, the best Guarantee or Warranty commercially available and Contractor shall have the responsibility to maintain it till 7 years from the Completion of all Works in the Project.

7 Other Contractors:

- 7.1 The Contractor shall cooperate and share the Site with other contractors, Public authorities, utilities, and the Department. The Contractor shall also provide facilities and services for them as directed by the Engineer-in-charge.
- 7.2 The Contractor shall have to co-ordinate, support and ensure that interface issues with other Vendors / are managed in a timely and efficient manner. The project shall at least have the following works which shall be allocated to different vendors at different points of time:
- a) Facility Management services for all the Buildings including Sanitation services, pest control, security services etc.
 - b) The Contractor's interface point may include ensuring seepage, leakage works are addressed, any repair in MEP or civil works are timely and correctly addressed for such Facility Management vendor to work efficiently and effectively.

8 Personnel:

- 8.1 The Contractor shall employ the required Key Personnel named in the Schedule of Key Personnel to carry out the functions stated in the Schedule or other personnel approved by the Engineer-in-charge. The Engineer-in-charge will approve any proposed replacement of Key Personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

8.2 Schedule of Key Personnel:

The successful tenderer shall have to employ the following technical staff on full time basis to be available at site. **The qualification and experience certificates of the key personnel shall be uploaded**

S. No.	Graduate Engineers	No of Persons
		Parvathipuram
1	Civil Engineers	12
2	Structural Engineers (M.E./M.Tech in Structural Engineering)	4
3	Electrical Engineers	4
4	Mechanical, Electrical & Plumbing (MEP)	2
5	Bio Medical Engineers	2
6	Quality Control Engineers	6
	Total	30

Note: Availability of the Key personnel: must be the full time employees and out of them atleast 20% must be having experience in Quality control.

8.3 The appointment of technical staff shall be on full time basis.

The Technical staff shall be available at work site for supervising the work including quality checking of all items from time to time. Failure to employ the required technical personnel by the contractor, amounts will be recovered at the following rates from the contractor:

Diploma Engineer: Rs.31,200/- per month.

Graduate Engineer: Rs.40,200/- per month.

8.4 The Engineer-in-charge is the sole judge (a) to decide whether qualified technical staff is actually supervising the work and (b) to decide the actual period of absence of such staff which requires the above recovery to be enforced and his decision is final and binding on the contractor.

8.5 The technical agents appointed by the contractor shall have to maintain properly all the records required by the department under safe custody at site, like checklists, calibration registers/records, Quality Test Registers, Test reports file, site order book, etc. and make signatures at appropriate places towards proof of verifications, conduction of tests, compliance to instructions etc.

8.6 The technical personnel should be on full time and available at site whenever required by Engineer in Charge to take instructions.

- 8.7 The names of the technical personnel to be employed by the contractor should be furnished in the statement enclosed separately.
- 8.8 In case the contractor is already having more than one work on hand and has undertaken more than one work at the same time, he should employ separate technical personnel on each work.
- 8.9 If the Engineer-in-charge asks the Contractor to remove a person who is a member of Contractor's staff or his work force stating the reasons the Contractor shall ensure that the person leaves the site forthwith and has no further connection with the work in the contract

9 Contractor's Risks:

- 9.1 All risks of loss or damage to physical property and of personnel injury and death, which arise during and in consequence of the performance of the Contract are the responsibility of the Contractor.

10 Insurance: Deleted

11 Provident fund registration:

- 11.1 The Contractor must register with concerned provident fund authority within 2 (two) months from the date of signing the agreement, if not done earlier.

12 Site inspections:

- 12.1 The contractor should inspect the site and also quarries for materials, source of water and quote his percentage including quarrying, conveyance and all other charges etc. The contractor shall procure best materials for use on the work.
- 12.2 The responsibility for arranging the land for borrow area rests with the Contractor and no separate payment will be made for procurement or otherwise. The contractor's quoted percentage will be inclusive of land cost.

13 Contractor to construct & maintain the works:

- 13.1 The Contractor shall construct, commission and maintain the Work in accordance with the specifications, BOQ and Drawings.
- 13.2 The Contractor shall supply, test and install all furniture, equipment and maintain that for a period of 7 years including defects liability period of 24 months from the Completion of all the Works in the Project.

14 Diversion of streams / vagus / drains:

- 14.1 The contractor shall at all times carry out construction of cross drainage works in a manner creating least interference to the natural flow of water while consistent with the satisfactory execution of work. A temporary diversion shall be formed by the contractor at his cost where necessary. No extra payment shall be made for this work.

- 14.2 No separate payment for bailing out of sub-soils, water drainage or locked up rain water for diversion, shoring, foundations, bailing of pumping water either from excavation soils from foundations or such other incidental will be paid. The percentage to be quoted by the contractor are for the finished item of work in situ and including all the incidental charges. The borrow pits are also to be dewatered by the contractor himself at his expense, if that should be found necessary.
- 14.3 The work of diversion arrangements should be carefully planned and prepared by the contractor and forwarded to the Executive Engineer technically substantiating the proposals and approval of the Executive Engineer obtained for execution.
- 14.4 The contractor has to arrange for bailing out water, protection to the work in progress and the portion of works already completed and safety measures for men and materials and all necessary arrangements to complete the work.
- 14.5 All the arrangements so required should be carried out and maintained at the cost of the contractor and no separate or additional payments is admissible.
- 14.6 Cofferdams:
Necessary Cofferdams and ring bunds have to be constructed at the cost of contractor and the same are to be removed after the completion of the work. The contractor has to quote his percentage keeping the above in view.

15 Power supply:

- 15.1 The contractor shall make his own arrangements for obtaining power from the Electricity dept., at his own cost. The contractor will pay the bills of Electricity Department for the cost of power consumed by him.
- 15.2 The contractor shall satisfy all the conditions and rules required as per Indian Electricity Act 1910 and under Rule-45(I) of the Indian Electricity Rules, 1956 as amended from time to time and other pertinent rules.
- 15.3 The power shall be used for bona fide Corporation work only.
- 15.4 The contractor shall at all times during the currency of the contract, comply fully with all existing Acts, regulations and bylaws including all statutory amendments and reenactment's of state or central Government., and other local authorities and any other enactment's, notification and acts that may be passed in future either by the state or the central government or local authority including Indian workmen's compensation Act- 192, Control labour (Regulation and Abolition) Act- 1970, The child labour prohibition and regulation Act-1986 and equal remuneration Act- 1976, Factories Act, minimum wage Act- 1948, provident fund regulations, Employees provident fund Act- 1952 schedules made under the same Act. The buildings and other construction workers (Regulation of employment and condition of service) Act- 1996, The Cess Act- 1996 and also applicable labour regulations, health and sanitary arrangement for workmen, insurance and other benefit and shall keep department indemnified in case any action is commenced by competent authorities for contravention by the contractor.

- 15.5 The electrical contractor has to keep his licence in currency till the work is completed. If the licence is suspended during the period in which the work is in progress the contract will be terminated and awarded to some other agency recovering the extra cost if any.
- 15.6 The materials used in the work should be as per the list of materials enclosed. The department reserves the right to insist upon using any of the materials from this list of approved materials.
- 15.7 The work shall be carried out strictly in conformity with (i) code of practice for Electrical wiring and fittings in Government Buildings, (ii) The Indian standard specification (iii) The Department specification. If the work carried out does not comply with the code of practice and the Departmental specifications and if the workmanship is unsatisfactory it will be binding on the contractor to redo the job without any extra cost and pay penalty as decided by the Department towards inconvenience caused if any.
- 15.8 The work should be carried out under the direct supervision of persons holding a certificate of competency for the type of work involved.
- 15.9 After completion of work a plan of building installation should be prepared and furnished indicating the location of various main and sub boards and also the fittings together with a circuit diagram duly numbered (in the diagram). The final bill will not be paid till the above plan and the diagram is submitted and approved after verification. Such completion drawings shall be signed by the licenced electrical contractor through whom the work is executed.
- 15.10 Lugs should be provided for all earth connections.
- 15.11 The contractor himself should arrange for the transportation of men and materials to the work spot.
- 15.12 Concreting to the pole and providing independent earthing should be done in presence of Departmental staff.
- 15.13 On completion of the Electrical Installation a certificate shall be furnished by the Contractor countersigned by a licensed supervisor, that under direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local supply authority. The contractor shall be responsible for getting the Electrical Installation inspected and approved by the local authority concerned.
- 15.14 The contractor shall pay for any inspection fees and for permits required for the installation of the work wherever necessary. The APMSIDC shall arrange only for payment of service connection charges and any other security deposit for getting electrical supply. On completion of the work, the contractor shall obtain and deliver to the APMSIDC, certificates of final inspection and approval by the local Electric Authority as may require. The APMSIDC shall have full powers to test the materials or work to be tested by an independent agency at the Electrical contractor's expense in order to prove their soundness and adequacy.

15.15 Contractor shall provide everything necessary for the proper execution of works according to the intent and meaning of the drawings, specifications, schedule of quantities. Any discrepancy in the documents shall be brought to the notice of the APMSIDC and got clarified prior to taking up the installation.

15.16 Materials and Workmanship:

All materials and workmanship shall confirm to the specifications, relevant IS standards and code of practice and comply with APSEB/CEIG requirements as the case may be. Any work that is not up to the standards shall be dismantled and reconstructed by the contractor to the satisfaction of the APMSIDC.

15.17 Liaison Work:

- a. The Contractor shall be responsible for all liaison work with CEIG and also to obtain approval of drawing from CEIG.
- b. The Contractor shall get all the approvals from the municipal authorities for which necessary statutory fees will be Paidby the Department.
- c. The Contractor shall get all the approvals from the fire authorities for which necessary statutory fees will be paidby the Department.
- d. The Contractor shall get all the installation of the lifts through reputed manufactures i.e., M/s Kone elevators, M/s Jhonson Lifts & M/s OTIS elevators & lifts as per BoQ items.
- e. Fire fighting works shall be got executed through experienced fire fighting contractor.
- f. The Contractor shall be responsible for obtaining the power supply from Electricity Board for which necessary statutory fees will be paidby the Department.

16 Ramps:

16.1 Ramps required during execution may be formed wherever necessary and same are to be removed after completion of the work.No separate payment will be made for this purpose.

17 Monsoon damages:

17.1 Damages due to rain or flood either in cutting or in banks shall have to be made good by the contractor till the work is handed over to the Department. The responsibility of de-silting and making good the damages due to rain or flood rests with the contractor. No extra payment is payable for such operations and the contractor shall therefore, have to take all necessary precautions to protect the work done during the construction period.

18 The works to be Completed by the Intended Completion Date:

18.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the Contractor, as updated with the approval of the Engineer-in-Charge, and complete the work by the Intended Completion Date.

19 Safety:

19.1 The Contractor shall be responsible for the safety of all activities on the Site. The contractor shall strictly follow CPWD guidelines in this regard.

20 Discoveries:

20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Government. The Contractor is to notify the Engineer-in-charge of such discoveries and carry out the Engineer-in-Charge's instructions for dealing with them.

21 Possession of the site:

21.1 The Corporation shall give possession of the site to the Contractor. If possession of a part site is given, the Corporation will ensure that the part site so handed over is amenable to carry out the work at site by the Contractor. The start date of the work is the date of concluding the agreement. If there is any delay in handing over of the site, the contractor must immediately intimate the Engineer-in-Charge in writing to facilitate early possession.

22 Access to the site:

22.1 The Contractor shall provide the Engineer-in-Charge and any person authorised by the Engineer-in-Charge, access to the site and to any place where the work, in connection with the Contract, is being carried out or is intended to be carried out.

23 Instructions:

23.1 The Contractor shall carry out all instructions of the Engineer-in-charge and comply with all the applicable local laws where the Site is located.

24 Modes of Settlement of claims/ disputes and place of exclusive jurisdiction:

24.1 **Settlement of claims for Rs.10,00,000/- and below by in house Arbitration.**

There shall be an in-house arbitration for settlement of several small claims and the SE to the limit Rs.1,00,000/-so also the CE to the limit of Rs.10,00,000/- (other than from the same department the state govt.) as sole Arbitrator as it is a welcome feature to save time, money and manpower of both parties by providing the limit upto Rs.10,00,000/-

24.2 *The Government of Andhra Pradesh(while under the composite state) issued proceedings in G.O.Rt.No.116, Law (M-I) Department, dated.30-01-2002, with finance concurrence, to refer disputes to the ICADR in government contracts for arbitration up to Rs.10.00 Lakhs. Modified proceedings to G.O.Rt.No.116 supra are yet to be issued increasing said sum of Rs.10.00 Lakhs to Rs.1.00 Crore, from the cost of the work components in the present prevailing price from the estimates as per SOR are also increased many more times when compared to past 18-20 years.*

From the above, it is directed that where the claim is below Rs.10.00 Lakhs to settle by in house arbitration supra as per the Indian Arbitration Act,1996 amended from time to time and where the claim is above Rs.10.00 Lakhs, it is up to Rs.10 Crores the dispute shall be referred to the International Centre for Alternative Dispute Resolution, Regional Centre, (ICADR), Andhra Pradesh or any other institution, to nominate a sole Arbitrator from their panel (since covered by G.O.Rt.No.116 up to Rs.10.00 Lakhs, to read as above Rs.10.00 Lakhs and up to Rs.1 Crore till State Government issue modified proceedings by virtue of the above directions).

- 24.3 Further, where the claim value in dispute is above Rs.10 Crores, since the works contracts coming for judicial preview are all above Rs.100 Crores value, it is only to invoke the jurisdiction of civil courts within the State of Andhra Pradesh by excluding jurisdiction outside the State of State of Andhra Pradesh.
- 24.4 So far as seat of Arbitration and place of jurisdiction for the arbitration supra is at Mangalgiri (the seat of the office of TIA) of Guntur district of Andhra Pradesh by excluding seat of Arbitration and place of jurisdiction outside the State of Andhra Pradesh. The language shall be in English with any translation to English from documents in local language with due certification.
- 24.5 The expenses in internal arbitration shall be borne by respective parties and expenses and fees of the sole Arbitrator (external) shall be borne equally by both parties subject to final decision on costs by sole external Arbitrator. The fee is as per schedule-IV of the Indian Arbitration and Conciliation Act-1996 ammended time to time.
- 24.6 The arbitration shall be conducted in accordance with the provisions of Indian Arbitration and Conciliation Act-1996 amended time to time and following the Principals of Natural Justice or any statutory modification thereof.

B. TIME FOR COMPLETION

25 Program:

- 25.1 The total period of completion is **30 Months for the Construction of the Project including supply and commissioning of furniture and equipment** from the date of entering in to agreement to proceed including rainy season. The maintenance period of the assets including Civil works, MEP works, equipment and furniture shall be for a period of **7 years (84 months)** from the Completion of all the Works in the Project including 2 year (24 months) of Defects Liability Period.
- 25.2 The attention of the tenderer is directed to the contract requirement at the time of beginning of the work, the rate of progress and the dates for the whole work and its several parts as per milestones. Time is the essence of the contract. The rate of progress and proportionate value of work done from time to time as will be indicated by the Engineer-in-charge's Certificate for the value of work done and completion of mile-stones will be required.
- 25.3 The following rate of progress will be required to be maintained by the contractor as a minimum. The start date of the work is the date of concluding the agreement. Contractor may give a separate time schedule for the completion of the whole work and the consideration will be given for accelerated programme. It is imperative that the work progress shall be ahead of the rate of progress given below.

Milestone Dates:

Work to be completed	Period from the date of signing the agreement.
Milestone-I:(8 months): Expenditure to be incurred-25% of the contract value	8 months from start date.
Milestone-II:(16months): Expenditure to be incurred-55% of the contract value	16 months from start date.
Milestone-III:(24months): Expenditure to be incurred-85% of the contract value	24 months from start date.
Milestone-IV:(30months): Total work shall be completed fully of 100%, i.e. also with roads and drains, including providing of the Furniture, Equipment supply, installation, MEP, STP & ETP installation and commissioning	30 Months from start date.
Note: Hospital building shall be completed in full shape within 16 months and shall be ready for functioning.	

- 25.4 The Detailed programme in terms of collection of necessary materials and labour and in terms of finished items of work, to confirmation of the above rate of progress shall be prepared by the contractor and got approved by the Engineer-in-charge concerned and which shall be strictly adhered to. This programme of work shall be given based on PERT/CPM charts for works, where ECV exceeds Rs.100 lakhs, in the approved format.
- 25.5 After signing the agreement, the contractor shall forthwith begin the work, shall regularly and continuously proceed with them. Work programme of achieving of milestones (statement) should be submitted from time to time.
- 25.6 After signing the agreement, the contractor shall forthwith begin the work, shall regularly and continuously proceed with them. Work programme of achieving of milestones (statement) should be submitted from time to time
- 25.7 The contractor shall commence the works on site as specified under condition 24.1 and 23.2 above after the receipt by him of a written order to this effect from the Chief Engineer and shall proceed with the same with due expedition and without delay, except as may be expressly sanctioned or ordered by the Chief Engineer or his nominee, or be wholly beyond the contractor's control.
- 25.8 Save in so far as the contractor may prescribe, the extent of portions of the site of which the contractor is to be given possession from time to time and the order in which such portions shall be made available to him and, Subject to any requirement in the contract as to the order in which the works shall be executed, the Chief Engineer or his nominee will, with the Engineer-in-charge's written order to commence the works, give to the contractor possession of so much of the site as may be required to enable the contractor to commence proceed with the execution of the works in accordance with the programme if any, and otherwise in accordance with such reasonable proposals of the contractor as he shall by written notice to the Chief Engineer or his nominee, may and will from time to time as the works proceed, give to the contractor possession of such further portions of the site as may be required to enable the contractor to proceed with the execution of the works with due dispatch in accordance with the said programme or proposals as the case maybe ; if the contractor suffers delay or incurs cost from failure on the part of the Chief Engineer or his nominee to give possession in accordance with the terms of this clause, the Chief Engineer or his nominee shall grant an extension of time for the completion of works.
- 25.9 The contractor shall bear all costs and charges for special or temporary way leases required by him in connection with access to the site. The contractor shall also provide at his own cost any additional accommodation outside the site required by him for the purposes of the work.
- 25.10 Subject to any requirement in the contract as to completion of any section of the works before completion of the whole of the works shall be completed, in accordance with provisions of clauses in the Schedule within the time stated in the contract calculated from the last day of the period named in the statement to the tender as that within which the works are to be commenced or such extended time as may be allowed.

25.11 Delays and extension of time:

No claim for compensation on account of delays or hindrances to the work from any cause whatever shall lie, except as hereafter defined. Reasonable extension of time will be allowed by the Engineer-in-charge or by the office competent to sanction the extension, for unavoidable delays, such as may result from causes, which in the opinion of the Engineer-in-charge, are undoubtedly beyond the control of the contractor. The Engineer-in-charge shall assess the period of delay or hindrance caused by any written instructions issued by him, at twenty five per cent in excess of the actual working period so lost.

In the event of the Engineer-in-charge failing to issue necessary instructions and thereby causing delay and hindrance to the contractor, the latter shall have the right to claim an assessment of such delay by the Chief Engineer whose decision will be final and binding. The contractor shall lodge in writing with the Engineer-in-charge, a statement of claim for any delay or hindrance referred to above, within fourteen days from its commencement, otherwise no extension of time will be allowed.

Whenever authorised alterations or additions made during the progress of the work are of such a nature in the opinion of the Engineer-in-charge as to justify an extension of time in consequence thereof, such extension will be granted in writing by the Engineer-in-charge or other competent authority when ordering such alterations or additions.

25.12 Phase-wise Delivery of Supplies:

APMSIDC and its nominated representative shall have the authority to stagger the supplies of the furniture and equipment according to the construction and operation stage of the Buildings. The Contractor shall plan the procurement and delivery of furniture and equipment strictly in compliance with the plan by the Client. All procurement decision shall be in compliance with Client's approval on delivery schedule.

The following table gives the detailed timeline for supply items (Furniture and Equipment)

Sl. No	Activity	Time Limit
A	Installation & Delivery period	90 days from date of issuance of approval to procure / physical completion of construction, whichever is later
B	Comprehensive warranty period	2 years, the warranty will start from the date of complete installed system go live to treat the patients.
C	CMC period	3 years
D	Frequency of visits to all User Institution concerned during Warranty/CMC	One visit every three months (4 visits in a year) for periodic/preventive maintenance and any time for attending repairs/break down calls.

Sl. No	Activity	Time Limit
E	Maximum time to attend any Repair call	<i>Within 36 hours</i>
F	Uptime in a year	96%

26 Construction Programme:

- 26.1 The Contractor shall furnish within one month of the order of the work a programme showing the sequence in which he proposed to carry out the work, monthly progress expected to be achieved, also indicating date of procurement of materials plant and machinery. The schedule should be such that it is practicable to achieve completion of the whole work within the time limit fixed and in keeping with the Mile stone programme specified and shall obtain the approval of the Engineer-in-charge. Further rate of the progress as in the program shall be kept up to date. In case it is subsequently found necessary to alter this program, the contractor shall submit sufficiently in advance the revised program incorporating necessary modifications and get the same approved by the Engineer-in-charge. No revised program shall be operative without approval of Engineer-in-charge.
- 26.2 The Chief Engineer shall have all times the right, without any way violating this contract, or forming grounds for any claim, to alter the order of progress of the works or any part thereof and the contractor shall after receiving such directions proceed in the order directed. The contractor shall also report the progress to the Chief Engineer within 7 days of the Engineer-in-charge's direction to alter the order of progress of works.
- 26.3 The Contractor shall give written notice to the Engineer-in-Charge whenever planning or progress of the works is likely to be delayed or disrupted unless any further drawings or order including a direction, instruction or approval is issued by the Engineer-in-Charge within a reasonable time. The notice shall include details of the drawing or order required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

27 Speed of work:

- 27.1 The Contractor shall at all times maintain the progress of work to conform to the latest operative progress schedule approved by the Engineer-in-Charge. The contractor should furnish progress report indicating the programme and progress once in a month. The Engineer-in-Charge may at any time in writing direct the contractor to slow down any part or whole of the work for any reason (which shall not be questioned) whatsoever, and the contractor shall comply with such orders of the Engineer-in-Charge. The compliance of such orders shall not entitle the contractor to any claim of compensation. Such orders of the Engineer-in-Charge for slowing down the work will however be duly taken into account while granting extension of time if asked by the contractor for which no extra payment will be entertained.

27.2 Delays in Commencement or progress or neglect of work and forfeiture of Performance Security, Security deposit and withheld amounts:

27.3 If, at any time, the Engineer-in-Charge shall be of the opinion that the Contractor is delaying Commencement of the work or violating any of the provisions, the Contractor is neglecting or delaying the progress of the work as defined by the. "Rate of progress" in the Articles of Agreement, he shall so advise the Contractors in writing and at the same time demand compliance in accordance with conditions of Tender notice. If the Contractor neglects to comply with such demand within seven days after receipt of such notice, it shall then or at any time thereafter, be lawful for the Engineer-in-Charge to take suitable action in accordance with Clause.60 of APSS.

28 Suspension of works by the Contractor:

28.1 If the Contractor shall suspend the works, or sublet the work without sanction of the Engineer-in-Charge, or in the opinion of the Engineer-in-Charge shall neglect or fail to proceed with due diligence in the performance of his part of the Contract as laid down in the Schedule rate of progress, or if he shall continue to default or repeat such default in the respects mentioned in clause 27 of the APSS, the Engineer-in-Charge shall take action in accordance with Clause 61 of APSS.

28.2 If the Contractor stops work for 28 days and the Stoppage has not been authorised by the Engineer-in-Charge the Contract will be terminated under Clause 61 of APSS.

28.3 If the Contractor has delayed the completion of works the Contract will be Terminated under Clause.61 of APSS.

29 Extension of the Intended Completion Date:

29.1 The Engineer-in-Charge shall extend or recommend for extension, in accordance with the delegation of powers in force, the intended completion date if a variation is issued which makes it impossible for Completion to be achieved by the intended completion date.

29.2 The Engineer-in-Charge shall decide whether and by how much to extend the intended completion date within 21 days of the Contractor asking the Engineer for a decision upon the effect of a variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new intended completion date.

30 Delays Ordered by the Engineer-in-Charge:

30.1 The Engineer-in-Charge may instruct the Contractor to delay the start or progress of any activity within the Work.

30.2 The Engineer-in-charge may instruct for furniture, equipment to be delivered in a staggered manner as per the requirement, which shall be followed by the Contractor for procuring, delivering, installation and commissioning at site.

31 Early Warning:

- 31.1 The contractor is to warn the Engineer-in-Charge at the earliest opportunity of specific likely future events or circumstances that may adversely affect the Execution of Works.
- 31.2 The Contractor shall co-operate with the Engineer-in-Charge in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer-in-Charge.

32 Management meetings:

- 32.1 The Engineer-in-Charge may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the programme for remaining work and to deal with matters raised in accordance with the early warning procedure.

Note.1: Management meetings/Review meetings: The contractor shall attend for the weekly review meeting with the field engineer/ Engineer-in-charge & Monthly review meeting with the Superintending Engineer / Chief Engineer / Managing Director, APMSIDC to review the progress of the works till completion in all respects and commissioning.

Note.2: Communications shall be in writing: The contractor shall make any communication with the employer or his assignee or subordinates including the Engineer-in-charge only in writing and no oral communication can be made and for no oral communication can be claimed with any value or sanctity.

C. QUALITY CONTROL

33 Identifying defects:

33.1 The Engineer-in-Charge shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer-in-Charge may instruct the Contractor to verify the Defect and to uncover and test any work that the Engineer considers may be a Defect.

34 Tests:

34.1 If the Engineer-in-Charge instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the Contractor shall pay for the test and any samples.

34.2 All furniture shall be supplied and paid only after third party quality certification by MSME testing lab in Hyderabad or equivalent testing centre.

34.3 All equipment shall be supplied / installed / commissioned and paid as per the BOQ item only after the testing has been conducted and approved by the Client or its authorized representative and all documentation are submitted and cleared by Client representative / Engineer-in-charge.

35 Correction of Defects:

35.1 The Engineer-in-Charge shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins on Completion of of the entire work. The defect liability period shall be extended for as long as defects remain to be corrected by the Contractor.

35.2 Every time notice of a Defect is given, the Contractor shall correct the notified defect within the length of time specified by the Engineer-in-Charge's notice.

35.3 All defects identified during the 7 years of Defects Liability Period /Maintenance Period shall be corrected by the Contractor as part of its scope of work including defects in electro-mechanical items, MEP items, furnitures or any civil works performed by the Contractor within an agreed timeline as per Service Level Agreement (hereinafter referred as "SLA") signed between the parties before start of Maintenance Period.

35.4 **Duty of the Contractor to comply queries on defects in the works:** In case if the Vigilance & Enforcement Dept., and the Anti-Corruption Beareu has taken up any investigation and notices any defects, the contractor has to invariably follow the recommendations including to re-construct or to carry out defects and also accept recoveries for the defective work.

36 Uncorrected Defects:

36.1 If the contractor has not corrected the defect within the time specified in the Engineer-in-Charge's notice, the Engineer-in-Charge will assess the cost of having the defect corrected and the contractor will pay this amount.

36.2 The Engineer-in-Charge shall introduce O.K. cards and prescribed the formats there of. O.K. cards shall relate to all major components of the work. The contractor / his authorised representative shall be required to initiate and fill in and present the O.K. card to the construction staff who would check the respective items and send to the quality control staff for final check and clearance / O.K. Any defects pointed out by the construction supervision staff or by the Quality Control staff shall promptly be attended to by the contractors and the fact of doing so be duly recorded on the back of O.K. card.

36.3 The Engineer-in-Charge may also introduce checklists, which shall be kept in Bound registers by the construction supervision staff. The contractor may be required to fill up these lists in the first instance and shall be subsequently checked by the Construction / Quality Control engineers.

37 Quality Policy:

37.1 The quality of construction shall be of highest standards.

37.2 The materials, equipment, tools and plants and workmanship should be of high standards and acceptable quality conforming to the specifications.

37.3 The contractor attention is directed to the requirements of materials under the clause “Materials and Workmanship” in the preliminary specifications of APSS.

37.4 Materials conforming to the latest relevant I.S. Specifications and other approved Codes and Specifications shall be used on the work.

37.5 The materials supplied under this contract shall conform to the standards mentioned in the Technical specifications and in case no applicable standard is mentioned, the authoritative standard appropriate to the goods country of origin should be followed and such standard shall be the latest issued by the concerned institution. However, for any change / update on the specification given in the Technical Specifications, the Contractor shall refer the same to Engineer-in-charge.

37.6 The Engineer-in-charge shall refer such case of deviation to a committee with user departments, APMSIDC representation and DME as the Chairman for such committee and any such deviation has to be approved by the Committee before procurement.

37.7 The Client or his representatives shall have the right to inspect and / or to test the Goods to confirm their conformity to the contract. The special conditions of contract and / or the Technical specifications shall specify what inspections and tests the Client requires and where they are to be conducted. The Client shall notify the supplier in writing of the identity of any representatives retained for these purposes.

37.8 The inspections and tests may be conducted in the premises of the supplier or its subcontractor(s) at point of delivery and/or at the goods final destination. Where conducted on the premises of the supplier or its subcontractor(s) all reasonable facilities and assistance including access to drawings and production data shall be furnished to the inspectors at no charge to the purchaser.

37.9 Should any inspected or tested goods fail to conform to the specifications, the Client may reject them, and the supplier shall either replace the rejected goods or make necessary alternatives to meet specifications, requirements free of cost to the Client.

37.10 The Client’s right to inspect, test and where necessary reject the goods after the goods arrival at site and shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by the Client or its representative prior to the goods shipment from the country of origin.

37.11 Nothing in this clause shall in any way release the Contractor from any warranty or other obligations under this contract.

38 Quality Plan:

- 38.1 Materials The contractor shall draw quality plan based on the Quality Management System of ISO 9001-2000 and submit the same to the **Executive Engineer, APMSIDC Division, Vizianagaram** before starting the work for his approval.
- 38.2 Quality plan for raw materials/ construction materials/ finished products/works:
- 38.3 It shall be responsibility of the contractor to arrange for testing of all materials procured for the works under such consignment or at regular intervals as may be specified in APSS at his cost and only after the engineer is satisfied fully with the test results the materials of those consignments will be allowed to be utilized on the work. The contractor shall maintain a record of test results which shall be made available to the engineers for the inspection.
- 38.4 The contractor shall collect various raw materials, construction materials well in advance before its use and shall get them tested as per the approved quality plan. No material shall be used unless it passes all the check/tests as per the acceptance criteria given and a record of all checks/tests/ verifications shall be maintained at site.
- 38.5 All the materials used in the works including electrical, Sanitary, water supply, furniture, equipment works should be as per the list of approved materials, makes and suppliers enclosed. The department reserves the right to insist upon using any of the materials from these lists of approved materials.
- 38.6 For all fittings of electrical, sanitary and water supply items, fixtures to doors and windows, supply of steel windows and flush wood doors, paints etc.,, the product marked ISI should be used and shall be of reputed and approved brand/make.
- 38.7 Tests required to be conducted at outside laboratories shall be done at those labs which have availability of required instruments traceable to national standards and which are approved by the Engineer-In-Charge. Reports obtained from such labs should indicate the calibration status and traceability to national standards of their equipments for accepting the results.

38.8 **Quality control tests in laboratories:** In the works contracts even the Government has created quality control mechanism in the movement and progress of works executed through construction and quality control engineers etc., who have also to verify and give certificate on quality control in recommending payment of the bills for the works done with the standard specifications and the quantities / qualities so as to make payments by PAO concerned as part of good governance, the quality control wing duties in some cases are more perfunctory as can be seen from Vigilance & Enforcement and Anti Corruption Bureau investigative reports including on non-adhering to the minimum 30% of super check measure of each and every component of the respective works done, in particular on quality assessment; thereby the Tender Initiating Authority and the Superintending Engineer concerned shall give specific circular instructions fixing responsibility on the Executive Engineer and other Subordinate officers concerned for the works on hand involved under the project are of Rs.100 Crores above and mainly meant for public utility and that to with liability on the state exchequer. The quality control tests can even be done in any laboratories certified by the National accreditation board for testing and calibration laboratories(NABL). However, no any third party quality control agency be permitted in routine or as a matter of course unless there is a clear need and that too only at the choice of employer because of existence of efficient internal quality control mechanisms of employer.

39 Quality Control:

39.1 Quality Establishment of Quality Control Laboratory: The contractor shall establish a quality control laboratory, at the site of work, equipped with calibrated equipment (as per list given below) to perform field tests, batch wise, for various materials, then and there itself, as per quality plan and standards.

39.2 The following minimum equipment should be made available at site by the contractor for testing of materials, samples, cubes etc.

Sl. No.	Description of Item	Recommended Calibration Frequency
1.	Cube moulds ISI marked 150 x150 x 150 mm (6 nos.)	-
2	Compression testing machine 100 MT, hand operated	6 Months
3	Weighing Machine 5.0 kg capacity	6 Months
4.	Vernier Calipers 0-150 mm, Screw gauge 0-25 mm	1 year
5. a 5. b	Measurement tapes both Steel (3.0 m, 5.0 m) &Fibre (15.0 m) 30 cm steel scale	At the time of purchase and the tapes to be changed after 6 Months, if any error is observed
6.	Sieves for Coarse aggregate & fine aggregate	-
7.	Slump cone	-
8.	Carpenter's square 150mm with graduations	

Sl. No.	Description of Item	Recommended Calibration Frequency
9.	Electrical Meggar 1100 V	At the time of purchase
10.	Spirit level, Plum bob	-
11.	Measuring Jars (2) 250ml	-
12.	Magnetic compass	-

- 39.3 **Calibration of Equipment:** All the equipment maintained by the contractor at site shall be calibrated from time to time according to the calibration frequency mentioned, with calibrations traceable to National Standards. Records for proof of such calibrations done for each instrument, with instrument number shall be maintained by the contractor and shall be made available for verification / counter signature by the Engineer-in-charge. Proper storage, handling and use of these instruments shall be ensured so that their calibration does not get disturbed due to weather factors etc., Frequency of the calibration shall be as decided by the Engineer-in-charge.
- 39.4 **Quality Registers:** The contractor shall maintain the Quality Test Registers at site in the format specified and record therein the results of all the tests conducted. The relevant reports of the tests conducted shall be maintained in a separate file.
- 39.5 **Return of site documents:** All the site records/ documents mentioned therein shall be returned to the Engineer-in-charge in full shape after the satisfactory completion of the work.
- 39.6 **Quality control inspections:** In addition to the normal inspections by the regular staff in charge of the construction of work, periodical inspection by the Managing Director or his nominees, the work will also be inspected the Architects and Project Management consultants for this project and any other authorized external quality control agencies. If any sub-standard materials, work or workmanship is noticed, action will be taken based on their observations and these will be affected by the Engineer-in-charge of the execution of the work.
- 39.7 **Quality Audit:** The Department may engage external agencies for conducting quality audit in which case the following methodology would be adopted:
- a) The external agencies shall conduct quality control tests as per the standard procedures in the presence of Construction and Quality Control Engineers and the Contractor.
 - b) The observations of the external agencies on the quality of work should be recorded then and there and signatures of all the concerned obtained as a token of acceptance of the observations.
 - c) If any sub-standard materials, work or workmanship is noticed, action will be taken based on their observations and these will be affected by the Engineer-in-charge of the execution of the work.

D. COST CONTROL

40 Bill of Quantities:

40.1 The Bill of Quantities for Civil, MEP, furniture and equipment shall contain items for the work to be done by the Contractor during the Construction period. The following BOQ are part of the tender document which describes all work as part of Scope of Work to be delivered by the Contractor / bidder during the Contract period:

- i. BOQ for Civil and MEP works including supply, installation and maintenance of MEP equipment
- ii. BOQ for supply of furniture and its installtion
- iii. BOQ for supply of medical equipment, installation and commissioing

40.2 The Contractor is paid for the quantity of the work done at the estimate rate in the Bill of Quantities for each item plus or minus Tender percentage.

40.3 All payments during Defects Liability Period and Maintenance period shall be made on quarterly basis only after certification by Medical Superintendent for performance of the Scope of Work by the Contractor. The scope of work during DLP and Maintenance Period is identified and defined in BOQ for Civil works and the scope of work for furniture and equipment during DLP and Maintenance is rectification of any defects and providing warranty for all furniture and equipment supplied by the Contractor under this Contract. All such scope shall be documented by the Contractor and certified by the Medical Superintendent before submitting invoices for claiming quarterly payment.

40.4 For maintainance of Civil, Water supply & Sanitary arrangments and Electrical (Internal & External) instillations/wiringand other amenities included in this contract beyond Defect Liability Period (DLP) and also existing facilities if any, Sub-estimates will be prepared by the concerned Executive Engineer based on the requirement and as per the SoR rates for any maintainance to be attended by the Contractor for period and items not covered by warranty. It is the duty of the contractor who has to furnish the furniture and other items and equipment and its maintenance including repair and replacement as the case may be during defect liability period unless he demonstrates any damage resulted from misuse by end user of employer.

41 Supplement items:

41.1 The contractor is bound to execute all supplemental works that are found essential, incidental and inevitable during execution of main work.

41.2 The payment of rates for such supplemental items of work will be regulated as under;

41.3 Supplemental items directly deducible from similar items in the original agreement.

41.4 The rates shall be derived by adding to or subtracting from the agreement rate of such similar item the cost of the difference in the quantity of materials, labour between the new items and similar items in the agreement worked out with reference to the Schedule of Rates adopted in the sanctioned estimate with which the tenders are accepted plus or minus over all tender percentage.

- (a) Similar items but the rates of which cannot be directly deduced from the original agreement.
- (b) Purely new items which do not correspond to any item in the agreement.

41.5 The rates of all such items shall be Estimated Rates plus or minus overall Tender premium.

42 Extra items:

42.1 The Extra items of work shall not vitiate the contract. The contractor shall be bound to execute extra items of work as directed by the Engineer-in-Charge. The rates for extra items shall be worked out by the Engineer-in-Charge as per the conditions of the Contract and the same are binding on the Contractor.

42.2 The contractor shall before the 15th day of each month, submit in writing to the Engineer-in-charge a statement of extra items if any that they have executed during the preceding month failing which the contractor shall not be entitled to claim any.

42.3 Entrustment of additional items:

- a) Where ever additional items not contingent on the main work and outside the scope of original agreement are to be entrusted to the original contractor dispensing with bids and if the value of such items exceeds the limits upto which the officer is empowered to entrust works initially to contractor without calling for tenders, approval of competent authority shall be obtained. Entrustment of such items on nomination shall be the estimated rates or agreement rates (-) Tender Percentage whichever is less.
- b) Entrustment of the additional items contingent on the main work will be authorised by the officers up to the monetary limits up to which they themselves are competent to accept items in the original agreement so long as the rates for such items shall be worked out in accordance with the procedure - For all items of work in excess of the quantities shown in the Bill of Quantities of the Tenders, the rate payable for such items shall be estimate rates for the items (+) or (-) over all tender percentage accepted by the competent authority.
- c) Entrustment of either the additional or supplemental items shall be subject to the provisions of the agreement entered into by a Competent Authority after the tender is accepted. The Chief Engineer who entered into the agreement approves the rate for the items / variation in quantity in the current agreement. The items shall not be ordered by an officer on his own responsibility if the revised estimate or deviation statement providing for the same requires the sanction of competent authority.

Note: It may be noted that the term Estimate Rate used above means the rate in the sanctioned estimate with which the tenders are accepted, or if no such rates is available in the estimate, the rate

derived will be with reference to the Schedule of Rates adopted in the sanctioned estimate with which tenders are accepted.

43 Cash flow forecasts:

43.1 When the program is updated, the contractor is to provide the Engineer-in-charge with an updated cash flow forecast.

44 Payment Certificates:

44.1 The Contractor shall submit to the Engineer-in-charge monthly statements of the estimated value of the work completed less the cumulative amount certified previously.

44.2 The Engineer-in-charge shall check the Contractor's monthly statement within 14 days.

44.3 The value of work executed shall be determined by the Engineer-in-charge.

44.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

44.5 The Engineer-in-charge may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

44.6 All payments during Defects Liability Period and Maintenance period shall be made on quarterly basis only after certification by Medical Superintendent for performance of the Scope of Work by the Contractor. The scope of work during DLP and Maintenance Period is identified and defined in BOQ for Civil works and the scope of work for furniture and equipment during DLP and Maintenance is rectification of any defects and providing warranty for all furniture and equipment supplied by the Contractor under this Contract. All such scope shall be documented by the Contractor and certified by the Medical Superintendent before submitting invoices for claiming quarterly payment.

45 Payments:

PROCEDURE - I

45.1(a) Payment of work bills of work in a District are to be submitted to the concerned PAOs/APAOs of the District.

45.1(b) Payment for the work done by the contractor will be made for the finished work based on the measurements recorded in measurement books by concerned officer of the Corporation not lower in rank than a Assistant Engineer and check measured by concerned officer not lower in rank than a Deputy Executive Engineer. The measurement shall be recorded at various stages of the work done and also after work is completed. The contractor shall be present at the time of recording of each set of measurement and their check measurement and accept them then and there so as to avoid disputes at a later stage. If the contractor is not available at the work spot at the time of recording measurements or check measurements, the particulars of measurements shall be signed by the authorised agent of contractor based on which the contractor shall accept the set of measurements without any further

dispute. If for any reason the contractor's authorised agent is also not available at site when the department decides to suspend the work recording of measurements in the absence of the contractor or his authorised representative, the department shall not entertain any claim from the contractor for any loss incurred by him on this account. The Contractor shall however note that the Corporation cannot indefinitely wait for recording the measurement due to the absence of the Contractor and his authorised agent and check measure them even in the absence of the contractor.

or

e-Measurement Book

45.2 Payments and Certificates:

- a) Payments shall be adjusted for recovery of advance payments, liquidated damages in terms of tender conditions and security deposit for the due fulfillment of the contract. Payment will be made to the Contractor under the certificate to be issued at reasonably frequent intervals by the Engineer-in-Charge, and intermediate payment will be the sum equal to 92½% of the value of work done as so certified and balance of 7½% will be withheld and retained as security for the due fulfillment of the contract under the certificate to be issued by the Engineer-in-Charge. On completion of the entire works the contractor will receive the 95% of the total payment of all the money due or payable to him under or by virtue of the Contract, i.e. 5% of the 7.5% retained from each bill will be released on Completion of the Works. The 2.5% retained from each bill and 2.5% of Contract Value submitted as Performance Security shall be released later as explained below. The amount withheld from each bill amounting to 2.5% of the Contract value (work done value) will be released after completion of the 24 months Defects Liability Period (DLP) or rectification of any defects identified during the DLP. The balance 2.5% submitted as the Performance Security shall be retained as security till the completion of Maintenance Period (84 months from the time of Construction / 60 months from the completion of DLP, whichever is later). This 2.5% of the Contract Value shall be released only after the successful completion of Maintenance Period as certified by the Medical Superintendent.
- b) In case of over payments or wrong payment if any made to the contractor due to wrong interpretation of the provisions of the contract, APSS or Contract conditions etc., such unauthorized payment will be deducted in the subsequent bills or final bill for the work or from the bills under any other contracts with the Government or at any time thereafter from the deposits available with the corporation.
- c) Any recovery or recoveries advised by the Government Department either state or central, due to non-fulfillment of any contract entered into with them by the contractor shall be recovered from any bill or deposits of the contractor.
- d) No claim shall be entertained, if the same is not represented in writing to the Engineer-in-Charge within 15 days of its occurrence.

- e) The contractor is not eligible for any compensation for inevitable delay in handing over the site or for any other reason. In such case, suitable extensions of time will be granted after considering the merits of the case.

45.3 Intermediate Payments:

- a) For intermediate Stage of work, only part rates as fixed by the Engineer-in-Charge will be paid.
- b) Part rates shall be worked out for the work done portion based on the actual operations involved keeping in view the value of the balance work to be done, to avoid unintended benefit to the Contractor in initial Stage.
- c) Full rate shall be paid when the work is completed to the full profile as noted in the drawings.
- d) Where payment is intended for aggregates by Bill of Quantities item based on stack measurements, 10% of the quantity measured will be withheld.No payment or advance will be made for unfixed materials when the rates are for finished work in site
- e) The contractor shall supply as built drawings drawn to scale in 5 sets along with original tracings within 28 days of the issue of certificate of completion of work failing which an amount of **Rs.50,00,000/-**will be withheld from the amounts due to the contractor.

List of payments and deductions from bills:

A LIST OF PAYMENTS AND DEDUCTIONS FROM BILLS

Nature of contract	Class of bill	Amount of payment	Nature of Deduction	Refund or deduction
(1)	(2)	(3)	(4)	(5)
Piece work contract* -do-	Intermediate Bill Final Bill	(i) Total value of work done, if it is less than 20 times earnest money. (ii) Total value of work done less amount if any withheld for proper maintenance (L.S.) Contract.	Nil 5% of value of work in excess of 20 times earnest money to be held as security. To be credited to deposit only for the withheld amount excess Rs. 500/-. A suitable amount at the discretion of the Engineer for the proper maintenance.	Nil To be refunded after final bill or deposit as stated in, otherwise to be refund in the final bill itself. To be refunded after expiry of the maintenance period of three months.
L.S. contract (supply of materials only) * -do-	Intermediate Bill Final Bill	90% of the value of work Total value of work done	10% of value towards security. Nil	Nil The 10% value withheld towards security to be refunded after expiry of Guarantee period.
L.S. contract (Supply of materials and constructions)	Intermediate Bill	92 ½% of value of work done.	7½% of value towards security.	NIL
L.S. contract (Supply, Installation and Commissioning of materials /Furniture /Equipment and Construction of Civil & MEP works)	Final Bill	92 ½% of value of work done less amount if any withheld for proper maintenance /rectifications.	7½% of value towards security.	1)5% out of 7½% so far collected from bills to be refunded on completion of the whole work. 2) 2 ½% of the Work done value to be refunded on expiry of defects liability period or on rectification of any defects that appears during the defects liability period which ever happens later. 3)The E.M.D. collected at the time of entering into agreement is also returnable along with item (2) above

Payment for Services during Maintenance Period applicable for a) STP, ETP, b) Fire Fighting, c) HVAC & Substations d) Furniture & Equipment	Quarterly bill derived from the total of all the BOQ items applicable for the DLP and Maintenance Period	100% of Quarterly bill derived from the total amount of all the BOQ items applicable for the DLP and Maintenance Period	Nil	Deduction only in case of recommendation by works approving authority (Medical Superintendent), as applicable.
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***Not Applicable**

46 Recovery towards useful materials like earth, stone etc recovered from earthwork excavation:

46.1 Recovery shall be made from the bills payable to the contractor towards the value of useful materials like sand, stone, clay, ballast, earth, trees and shrubs or other materials obtained in the excavation made or lying on the site of the work, either useful for reuse on the work or elsewhere. The recovery will be made based on the rates of Schedule of Rates adopted while preparing the estimate.

47 Interest on late payments and deductions for advance payments if any:

47.1 Payments shall be adjusted for deductions for advance payments, retention and other recoveries in terms of contract & taxes to be deducted at source [TDS] as per applicable law. The Employer shall pay the Contractor the amounts certified by the Officer In charge who is the Project Manager within 90 days of the date of each certificate. If not so paid within said time, interest shall be payable at 6% simple interest per annum thereon from 91st day onwards i.e. from the date by which the grace period of 90 days to the date of each certificate is expired up till the date when the payment is made. No doubt where any extension of time taken by the contractor for the delayed payment of bills due, he is not entitled to interest on delayed payments supra.

48 Certificate of Completion of works:

48.1 When the whole of the work has been completed and has satisfactory passed any final test that may be prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer-in-Charge accompanied by an undertaking to carry out any rectification work during the period of maintenance, such notice and undertaking shall be in writing and shall be deemed to be request by the Contractor for the Engineer-in-Charge to issue a Certificate of completion in respect of the Works. The Engineer-in-Charge shall, within twenty one days of the date of delivery of such notice either issue to the Contractor, a certificate of completion stating the date on which, in his opinion, the works were completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the Works which, in the Engineer-in-Charge's opinion, required to be done by the Contractor before the issue of such Certificate. The Engineer-in-Charge shall also notify the Contractor of any defects in the Works affecting completion that may appear after such instructions and before completion of the Works specified there in. The Contractor shall be entitled to receive such Certificate of the Completion within twenty one days of completion to the satisfaction of the Engineer-in-Charge of the Works so specified and making good of any defects so notified.

48.2 Similarly, the Contractor may request and the Engineer-in-Charge shall issue a Certificate of Completion in respect of:

- a) Any section of the Permanent works in respect of which a separate time for completion is provided in the Contract, and
- b) Any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer-in-Charge and occupied or used by the Department.

48.3 If any part of the Permanent Works shall have been completed and shall have satisfactorily passed any final test that may be prescribed by the Contract, the Engineer-in-Charge may issue such certificate, and the Contractor shall be deemed to have undertaken to complete any outstanding work in that part of the Works during the period of Maintenance.

49 Taxes included in the bid:

- 49.1 The percentage quoted by the contractor shall be deemed to be inclusive of all cess and taxes on all labour and materials that the contractor will have to purchase or secure for performance of this contract, except GST.
- 49.2 Any Central or State sales and other taxes on completed items of works of this contract as may be levied and paid by the contractor are to be borne by himself / herself.

50 Price Adjustment:

50.1 **Price Adjustment is applicable as per G.O Rt. No. 62. Water Resources (Reforms) Department Dated 30.11.2021.**

50.2 **Differential amount, on account of implementation of price adjustment as per G.O Rt. No. 62. Water Resources (Reforms) Department Dated 30.11.2021 shall be payable after revised administrative (if required) by the competent authority and provision of additional funds (wherever required).**

50.3 The actual mix proportion by weight to be adopted during execution shall be got designed in the standard laboratories to suit the grade of concrete to be used. It will be the responsibility of the Contractor to manufacture concrete of required strength. Less usage of cement than the quantity as adopted in the analysis of rates due to change in mix proportion and the design proportion, if any that will be evolved in the laboratories i.e., NABL accredited/ Government/reputed Private Engineering Colleges will be recovered from the Contractor. No cost due to variation of other materials of mix due to change in mix design (i.e. other than cement) will be paid or recovered.

50.4 No price escalation shall be provided on the cost, supply, installation, commission of furniture and equipment, maintenance cost item rate by the Contractor, hence the Contractor shall be deemed to consider the escalation as part of its price bid.

51 Retention:

51.1 The department shall retain from each payment due to the contractor @ the rate of 7.5% of bill amount until completion of the whole of the works.

51.2 On completion of the entire works the contractor will receive the 95% of the total payment of all the money due or payable to him under or by virtue of the Contract, i.e. 5% of the 7.5% retained from each bill will be released on Completion of the Works. The 2.5% retained from each bill and 2.5% of Contract Value submitted as Performance Security shall be released later as explained below. The amount withheld from each bill amounting to 2.5% of the Contract value (work done value) will be released after completion of the 24 months Defects Liability Period (DLP) or rectification of any defects identified during the DLP. The balance 2.5% submitted as the Performance Security shall be retained as security till the completion of Maintenance Period (84 months from the time of Construction / 60 months from the completion of DLP, whichever is later). This 2.5% of the Contract Value shall be released only after the successful completion of Maintenance Period as certified by the Medical Superintendent.

52 Liquidated Damages:

52.1 If for any reason, which does not entitle the contractor to an extension of item, the rate of progress of works, or any section is at any time, in the opinion of the Chief Engineer too slow to ensure completion by the prescribed time or extended time for completion Chief Engineer shall so notify the contractor in writing and the contractor shall there upon take such steps as are necessary and the Chief Engineer may approve to expedite progress so as to complete the works or such section by the prescribed time

or extended time. The contractor shall not be entitled to any additional payment for taking such steps. If as a result of any notice given by the Chief Engineer under this clause the contractor shall seek the Chief Engineer's permission to do any work at night or on Sundays, if locally recognised as days of rest, or their locally recognised equivalent, such permission shall not be unreasonably refused.

52.2 If the contractor fails to complete whole of the works or any part thereof or section of the works within the stipulated periods of individual mile stones (including any bonafide extensions allowed by the competent authority without levying liquidated damages), the Chief Engineer may without prejudice to any other method of recovery will deduct for the period of delays subject to a maximum of 10% of the contract value from any monies in his hands due or which may become due to the contractor. The payment or deductions of such damages shall not relieve the contractor from his obligation to complete the works, or from any other of his obligations and liabilities under the contract.

52.3 The liquidated damages for the works are as **Rs.20,97,372/-** (amount per day)

For milestone 1	Rs.5,59,229/-
For milestone 2	Rs.5,59,229/-
For milestone 3	Rs.5,59,229/-
For milestone 4	Rs.4,19,475/-

52.4 The maximum amount of liquidated damages for the whole of the works is ten percent of final contract price.

53 Mobilisation Advance: DELETED

54 Securities:

54.1 The Performance Security and Additional Security (for discount tender percentage below 15%) shall be provided to the Department not later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank acceptable to the Department. The Performance Security shall be valid until a date 28 days from the date of expiry of Maintenance Period and the additional security shall be valid until a date 28 days from the date of issue of the certificate of completion.

55 Cost of Repairs:

55.1 Loss or damage to the Works or materials to the Works between the Start Date and the end of the Maintenance Periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. FINISHING OF THE CONTRACT

56 Completion:

56.1 The Contractor shall request the Engineer-in-Charge to issue a Certificate of completion of the Works and the Engineer-in-Charge will do so upon deciding that the work is completed.

57 Taking Over:

57.1 The Department shall take over the Site and the Works within seven days of the Engineer-in-Charge issuing a certificate of Completion.

58 Final Account:

58.1 The Contractor shall supply to the Engineer-in-Charge a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Maintenance Period. The Engineer-in-Charge shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer-in-Charge shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the final Account is still unsatisfactory after it has been resubmitted, the Engineer-in-Charge shall decide on the amount payable to the Contractor and issue a payment certificate within 56 days of receiving the Contractor's revised account.

59 Termination:

59.1 The Corporation may terminate the Contract if the contractor causes a fundamental breach of the Contract.

59.2 Fundamental breaches of Contract include, but shall not be limited to the following.

- a) The Contractor stops work for 28 days when no stoppage of work is shown on the current program and the stoppage has not been authorised by the Engineer-in-Charge.
- b) The Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation.
- c) The Engineer-in-Charge gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer-in-Charge; and
- d) The Contractor does not maintain a security which is required and
- e) The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined.
- f) If the contractor, in the judgment of the Department has engaged in corrupt or fraudulent practices in competing for or in the executing the contract.
- g) The Contractor has contravened Sub-Clause 5 of Conditions of Contract and sublet the work.
- h) The Contractor does not adhere to the agreed construction program (Clause 25.1, 25.2, 25.3 of Conditions of Contract) and also fails to take satisfactory remedial action as per agreements reached in the management meetings (Clause 32.1) for a period of 15 days.

- i) The Contractor fails to carry out the instructions of Engineer-in-Charge within a reasonable time determined by the Engineer-in-Charge.

For the purpose of this paragraph: “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment to the Government and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition.

59.3 Notwithstanding the above the Corporation may terminate the contract for convenience.

59.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secured, leave the Site as soon as reasonably possible.

60 Payment upon Termination:

60.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer-in-Charge shall issue a certificate for the value of the work done less advance payments if any received upon the date of the issue of the certificate, less other recoveries due in terms of the Contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed. Additional Liquidated Damages beyond clause 52.4 above shall not apply. If the total amount due to the Corporation exceeds any payment due to the Contractor the difference shall be a debt payable to the Corporation with interest to recover.

61 Property:

61.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Corporation if the Contract is terminated because of Contractor’s default.

62 Release from Performance:

62.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Corporation or the Contractor the Engineer-in-Charge shall certify that the contract has been frustrated. The Contractor shall make the site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all works carried out before receiving it and for any work carried out after wards to which commitment was made.

Note: the above General Conditions of the Contract incorporated are from the formats with modifications if any. It is made clear thereby that the General Conditions of the Contract are to be read as subject to the Special Conditions of the Contract. Further, in case of inconsistency or irreconcilability between the General Conditions of the Contract and the Special Conditions of the Contract, the Special Conditions shall prevail over the general conditions.

F. SPECIAL CONDITIONS

63 Water Supply:

63.1 The Contractor has to make his own arrangements for water required for the work and to the colonies and work sites, which are to be established by the Contractor.

64 Electrical Power:

64.1 The Contractors will have to make their own arrangements for drawing electric power from the nearest power line after obtaining permission from the Andhra Pradesh State Electricity Board at his own cost. In case of failure of electricity, the Contractor has to make alternative arrangements for supply of electricity by Diesel Generator sets of suitable capacity at place of work. If the supply is arranged by the Department, necessary Tariff rates shall have to be paid based on the prevailing rates.

64.2 The contractor will pay the bills of Electricity Board for the cost of power consumed by him.

64.3 The contractor shall satisfy all the conditions and rules required as per Indian Electricity Act 1910 and under rule –45(I) of the Indian Electricity Rules, 1956 as amended from time to time and other pertinent rules.

64.4 The power shall be used for bonafide Departmental works only.

64.5 Electric Power for Domestic Supply:

- a) The contractor has to make his own arrangements for the supply of electric power for domestic purposes and the charges for this purpose have to be paid by him at the rates as fixed by the Andhra Pradesh State Electricity Board from time to time.
- b) The contractor will have to make his own arrangements to lay and maintain the necessary distribution lines and wiring for the camp at his own cost. The layout and the methods of laying the lines and wiring shall have the prior approval of the Engineer-in-Charge. All camp area shall be properly electrified. All lines, streets, approaches for the camp etc., shall be sufficiently lighted for the safety of staff and labour of the contractor, at the cost of the Contractor and it will be subject to the approval of the Engineer-in-Charge.

65 Land:

65.1 **Land for Contractor's use:**

- a. The contractor will be permitted to use Government land for execution of work. The contractor shall have to make his own arrangements for acquiring and clearing the site, leveling, providing drainage and other facilities for labour staff colonies, site office, work-shop or stores and for related activities. The Contractor shall apply to the Corporation within a reasonable time after the award of the contract and at least 30 days in advance of its use, the details of land required by him for the work at site and the land required for his camp and should any private land which has not been acquired, be required by the contractor for his use. The same may be acquired by the contractor at his own cost by private negotiations and no claim shall be admissible to him on this account.

- b. The Engineer-in-Charge reserves the right to refuse permission for use of any government land for which no claim or compensation shall be admissible to the contractor. The contractor shall, however, not be required to pay cost or any rent for the Government land given to him.

65.2 Surrender of Occupied Land:

- a) The Government land as here in before mentioned shall be surrendered to the Engineer-in-Charge within seven days, after issue of completion certificate. Also no land shall be held by the contractor longer than the Engineer-in-Charge shall deem necessary and the contractor shall on the receipt of due notice from the Engineer-in-Charge, vacate and surrender the land which the Engineer-in-Charge may certify as no longer required by the Contractor for the purpose of the work.
- b) The contractor shall make good to the satisfaction of the Engineer-in-Charge any damage to areas, which he has to return or to other property or land handed over to him for purpose of this work. Temporary structures may be erected by the contractor for storage sheds, offices, residences etc., for non-commercial use, with the permission of the Engineer-in-charge on the land handed over to him at his own cost. At the completion of the work these structures shall be dismantled site cleared and handed over to the Engineer-in-charge. The land required for providing amenities will be given free of cost from Government lands if available otherwise the contractor shall have to make his own arrangements.

65.3 Contractor not to dispose off Spoil etc.:-

The contractor shall not dispose off or remove except for the purpose of fulfillment of this contract, sand, stone, clay ballast, earth, trees and shrubs or other materials obtained in the excavation made or lying on the site of the work, and all such materials and produce shall remain property of the Government. The Department may upon request from the contractor, or if so stipulated in the conditions of the contract allow the contractor to use any of the above materials for the works either free of cost or after payment as may be specifically mentioned or considered necessary during the execution of the work.

- 65.4 The Contractor shall dispose of the pollutants and waste if any time to time during the execution of the contract works as per PCB norms with prior permission of the Employer or as and when required by the Employer.

66 Roads:

- 66.1 In addition to existing public roads and roads Constructed by Government, if any, in work area all additional approach roads inside work area and camp required by the Contractor shall be constructed and maintained by him at his own cost. The layout design, construction and maintenance etc. of the roads shall be subject to the approval of the Engineer-in-Charge. The contractor shall permit the use of these roads by the Government free of charge.

- 66.2 It is possible that work at, or in the vicinity of the work site will be performed by the Government or by other contractors engaged in work for the Government during the contract period. The contractor shall without charge permit the government and such other contractor and other workmen to use the access facilities including roads and other facilities, constructed and acquired by the contractor for use in the performance of the works.

66.3 The contractor's heavy construction traffic or tracked equipment shall not traverse any public roads or bridges unless the contractor has made arrangement with the authority concerned. In case contractor's heavy construction traffic or tracked equipment is not allowed to traverse any public roads or bridges and the contractor is required to make some alternative arrangements, no claim on this account shall be entertained.

66.4 The contractor is cautioned to take necessary precautions in transportation of construction materials to avoid accidents.

67 Payment for Camp Construction:

67.1 No payment will be made to the contractor for construction, operation and maintenance of camp and other camp facilities and the entire cost of such work shall be deemed to have been included in the tendered rate for the various items of work in the schedule of quantities and bids.

68 Explosive And Fuel Storage Tanks:

68.1 No explosive shall be stored within ½ (half) KM of the limit of the camp sites. The storage of gasoline and other fuel oils or of Butane, Propane and other liquefied petroleum gases, shall conform to the regulations of Andhra Pradesh State Government and Government of India. The tanks, above ground and having capacity in excess of 2000 litres, shall not be located within the camp area, nor within 200m, of any building.

69 Labour:

69.1 The contractor shall, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport and also the amenities, facilities, statutory benefits and registrations under various legislations including insurance coverage.

69.2 Labour importation and amenities to labour and contractor's staff shall be to the contractor's account. His quoted percentage shall include the expenditure towards importation of labour and amenities to labour and staff;

69.3 The contractor shall, if required by the Engineer-in-Charge, deliver to the Engineer-in-Charge a written in detail, in such form and at such intervals as the Engineer-in-Charge may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the contractor on the Site and such information pertaining to Contractor's Equipment as the Engineer-in-Charge may require.

69.4 Transportation of Labour:

- a. The contractor shall make his own arrangement for the daily transportation of the labour and staff from labour camps colonies to the work spot and no labour or staff of the contractor shall stay at the work spot. No extra payment will be made to the contractor for the above transportation of the labour and his quoted percentage to the work shall include the transportation charges of labour from colonies to work spot and back.

- b. The contractor will at all times duly observe the provisions of employment of children Act XXVI of 198 and any enactment or modification of the same and will not employ or permit any person to do any work for the purpose under the provisions of this agreement in contravention of said Act. The contractor here by agrees to indemnify the department from and against all claims, penalties which may be suffered by the department or any person employed by the department by any default on the part of the contractor in the observance and performance of the provisions of the employment of children Act. XXVI of 198 or any enactment or modification of the same.
- c. As per Government. memo No.721/Gr.(1)/81-5, dt:17.11.87. The contractor shall obtain the insurance at his own cost to cover the risk on the works to labour engaged by him during period of execution against fire and other usual risks and produce the same to the Engineer-in-charge concerned before commencement of work.

70 Safety Measures:

- 70.1 The contractor shall take necessary precautions for safety of the workers and preserving their health while working in such jobs, which require special protection and precautions. The following are some of the measures listed but they are not exhaustive and contractor shall add to and augment these precautions on his own initiative where necessary and shall comply with directions issued by the Engineer-in-charge or on his behalf from time to time and at all times.
- 70.2 Providing protective foot wear to workers situations like mixing and placing of mortar or concrete, sand in quarries and places where the work is done under much wet conditions.
- 70.3 Providing protective headwear to workers at places like underground excavations to protect them against rock falls.
- 70.4 Providing masks to workers at granulates or at other locations where too much fine dust is floating about and sprinkling water at frequent intervals by water hoses on all stone crushing area and storage bins abate to dust.
- 70.5 Getting the workers in such jobs periodically examined for chest trouble due to too much breathing in to fine dust.
- 70.6 Taking such normal precautions like fencing and lighting in excavation of trenches, not allowing rolls and metal parts of useless timber spread around, marking danger areas for blasting providing whistles etc.
- 70.7 Supply work men with proper belts, ropes etc., when working in precarious slopes and heights etc.
- 70.8 Avoiding un-insulated electrical wire etc., as they would electrocute the workers.
- 70.9 Taking necessary steps towards training the workers concerned on the machinery before they are allowed to handle them independently and taking all necessary precautions in and around the areas where machines hoists and similar units are working.

71 Fair Wage Clause:

- 71.1 The contractor shall pay not less than fair wages to labourers engaged by him on the work.

- 71.2 “Fair” wages means wages whether for time or piecework notified by the Government from time to time in the area in which the work is situated.
- 71.3 The contractor shall notwithstanding the revisions of any contract to the contrary cause to be paid to the labour, in directly engaged on the work including any labour engaged by the sub-contractor in connection with the said work, as if the labourers had been directly employed by him.
- 71.4 In respect of labour directly or indirectly employed in the works for the purpose of the contract part of the agreement the contractor shall comply with the rules and regulations on the maintenance of suitable records prescribed for this purpose from time to time by the Government. He shall maintain his accounts and vouchers on the payment of wages to the labourers to the satisfaction of the Engineer-in-charge.
- 71.5 The Engineer-in-charge shall have the right to call for such record as required to satisfy himself on the payment of fair wages to the labourers and shall have the right to deduct from the contract amount a suitable amount for making good the loss suffered by the worker or workers by reason of the “fair wages” clause to the workers.
- 71.6 The contractor shall be primarily liable for all payments to be made and for the observance of the regulations framed by the Government., from time to time without prejudice to his right to claim indemnity from his sub-contractors.
- 71.7 As per contract labour (Regulation and abolition) Act. 1970 the contractor has to produce the license obtained from the licensing officers of the labour department along with the tender or at the time of agreement.
- 71.8 Any violation of the conditions above shall be deemed to be a breach of his contract.
- 71.9 Equal wages are to be paid for both men and women if the nature of work is same and similar.
- 71.10 The contractor shall arrange for the recruitment of skilled and unskilled labour local and imported to the extent necessary to complete the work within the agreed period as directed by the Engineer-in-charge in writing.

72 Indemnity Bond:

The tenderers should submit Indemnity Bond at the time of the Agreement as specified below.

Name of work: **Establishment of New Government Medical College at Parvathipuram in Parvathipuram Manyam District.**

I _____ contractor S/o. _____ aged _____ Resident of _____ do hereby bind myself to pay all the claims may come (a) under Workmen’s Compensation Act. 1933 with any statutory modification thereof and rules there under or otherwise for or in respect of any damage or compensation payable in connection with any accident or injury sustained (b) under Minimum wages Act 1948 (c) under payment of wages Act.1936 (d) under the Contractor labour (Regulation and Abolition) Act. 1970 by workmen engaged for the performance of the business relating to the above contract ie., Failing such payment of claims of workmen engaged in the above work, I abide in accepting for the recovery of such claims, effected from any of my assets with the Corporation and with other Government Departments / Corporations.

73 Compliance With Labour Regulations:

During continuance of the contract, the contractor and his sub contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notifications that may be issued under any labour law in future either by the State or the Central Government or the local authority and also applicable labour regulations, health and sanitary arrangements for workmen, insurance and other benefits. Salient features of some of the major labour laws that are applicable to construction industry are given below. The contractor shall keep the Corporation indemnified in case any action is taken against Corporation by the competent authority on account of contravention of any of the provisions of any Act or rules made thereunder, regulations or notifications including amendments. If the Corporation is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provision stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the contractor, the Corporation shall have the right to deduct any money due to the contractor including his amount of performance security. The Corporation shall also have right to recover from the contractor any sum required or estimated to be required for making good the loss or damage suffered by the Corporation.

The employees of the Contractor and the Sub-contractor in no case shall be treated as the employees of the Corporation at any point of time.

74 Salient features of some major labour laws applicable to establishment engaged in buildings and other construction work:

- (a) Workmen compensation Act 192: The Act provides for compensation in case if injury by accident arising out of and during the course of employment.
- (b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if any employee has completed 5 years service or more, or on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments, employing 10 or more employees.
- (c) Employees P.F. and Miscellaneous provision Act 1952: The Act provides for monthly contributions by the Department plus workers @ 10% or 8.%. The benefits payable under the Act are:
 - (i) Pension or family pension on retirement or death, as the case may be.
 - (ii) Deposit linked insurance on the death in harness of the worker.
 - (iii) Payment of P.F. accumulation on retirement/death etc.,
- (d) Maternity Benefit Act 1951: The Act provides for leave and some other benefits to women employees in case of confinements or miscarriage etc.

- (e) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided by the Principal Department by Law. The Principal Department is required to take certificate of Registration and the contractor is required to take license from the designated Officer before concluding agreement. The Act is applicable to the establishments or Contractor of Principal Department if they employ 20 or more contract labour.
- (f) Minimum wages Act 1948: The Department is supposed to pay not less than the Minimum wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment construction of Buildings, Roads, Runways are scheduled employments.
- (g) Payment of wages Act 196: It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made form the wages of the workers.
- (h) Equal Remuneration Act 1979: The Act provides for payment of equal wages for work of equal nature to Male or Female workers and for not making discrimination against Female employee in the matters of transfers, training and promotions etc.
- (i) Industrial Disputes Act 1947: The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock- out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- (j) Industrial Employment (Standing Orders) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the State and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Department on matters provided in the Act and get the same certified by the designated Authority.
- (k) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and Departments. The Trade Unions registered under the act have been given certain immunities from civil and criminal liabilities.
- (l) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes, Employment Child Labour is prohibited in Building and Construction Industry.
- (m) Inter-State Migrant workmen's (Regulation of Employment & Conditions of service) Act 1979. The Act applicable to an establishment, which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another State). The inter State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and back, etc.
- (n) The Building and Other Construction workers (regulation of Employment and conditions of service) Act 1996 and the Cess Act of 1996: All the establishments who carry on any building or other

construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Department of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Department to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

- (o) Factories Act 1948: The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 person or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.
- (p) Payment of bonus act 1965: The Act Is applicable to all establishments employing 20 or more employees. The Act provides for payment of annual bonus subject to a minimum of 8.% of wages and maximum of 20% of wages to employees drawing Rs. 500/- per month or less. The bonus to be paid to employees getting Rs.2500/- per months or above and upto Rs.500/- per month shall be worked out by taking wages as Rs.2500/- per monthly only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

75 Liabilities of the Contractor:

75.1 Accident Relief and workmen compensation:

The contractor should make all necessary arrangements for the safety of workmen on the occurrence of the accident, which results in the injury or death of any of the workmen employed by the contractor, the contractor shall within 24 hours of the happenings of the accident and such accidents should intimate in writing to the concerned Asst. Engineer / Asst. Executive Engineer of the Corporation the act of such accident. The contractor shall indemnify Corporation against all loss or damage sustained by the Corporation resulting directly or indirectly from his failure to give intimation in the manner aforesaid including the penalties or fines if any payable by Corporation as a consequence of Corporation failure to give notice under workmen's compensation Act or otherwise conform to the provisions of the said Act. in regard to such accident.

75.2 In the event of an accident in respect of which compensation may become payable under the workmen's compensation Act VIII 2 whether by the contractor, by the Government it shall be lawful for the Engineer-in-charge to retain such sum of money which may in the opinion of the Engineer-in-charge be sufficient to meet such liability. The opinion of the Engineer-in-charge shall be final in regard to all matters arising under this clause.

75.3 The contractor shall at all times indemnify the Corporation against all claims which may be made under the workmen's compensation act or any statutory modification thereafter or rules thereunder or otherwise consequent of any damage or compensation payable in consequent of any accident or injuries sustained or death of any workmen engaged in the performance of the business relating to the contractor.

75.4 In case of any claim by workmen pending in any court of law or tribunal involving the employer also with the contractor, the employer is entitled to retain amount in relation to the claim from final bill of contractor till the claim is cleared

76 Contractor's Staff, Representatives and Labour:

(a) The contractor shall, at all times, maintain on the works, staff of qualified Engineers, and Supervisors of sufficient experience of similar other jobs to assure that the quality of work turned out shall be as intended in the specifications. The contractor shall also maintain at the works, a Work Manager or sufficient status, experience and office and duly authorise him to deal with all aspects of the day-today work. All communications to any commitments by the Work Manager shall be considered as binding on the Contractor.

(b) The Contractor shall at all times submit details of skilled and unskilled labour and equipment employed to the Engineer-in-Charge in prescribed proforma as he may require to assess and ensure the proper progress of work.

77 Accommodation and food:

77.1 The contractor should arrange accommodation he needs, at his own cost. The contractor shall make his own arrangements for supply of food grains, fuel and other provision to his staff and labourers including controlled commodities.

78 Relationship:

78.1 Contractor shall have to furnish information along with tender, about the relationship he is having with any officer of the Corporation.

79 Protection of adjoining premises:

79.1 The contractor shall protect adjoining sites against structural, decorative and other damages that could be caused by the execution of these works and make good at his cost any such damages.

80 Work during night or on Sundays and holidays:

80.1 The works can be allowed to be carried out during night, Sundays or authorised holidays in order to enable him to meet the schedule targets and the work shall require almost round the clock working keeping in view:

(i) The provisions of relevant labour laws being adhered to:

(ii) Adequate lighting, supervision and safety measures are established to the satisfaction of the Engineer-in-Charge and

- (iii) The construction programme given by the Contractor and agreed upon by the Engineer-in-Charge envisages such night working or working during Sundays or authorised holidays.

81 Layout of materials stacks:

81.1 The contractor shall deposit materials for the purpose of the work on such parts only of the ground as may be approved by the Engineer-in-Charge before starting work. A detailed survey, clearly indicating position and areas where materials shall be stacked and sheds built is to be conducted by the contractor at his own cost and only after obtaining necessary approval of the plan for use of sites by the Engineer-in-Charge, the Contractor can use the sites accordingly.

82 Use of blasting materials:

82.1 Procurement of blasting materials and its storage is the responsibility of the contractor. The contractor shall engage licensed blaster for blasting operation. The contractor is to act in accordance with Indian Explosive Act and other rules prevailing, during the execution of work. It is the responsibility of the contractor to see, that works by other agencies in the vicinity are not hampered, in such cases if any claim is made by other agencies that should be borne by the contractor. Carriage of blasting materials, from the magazine to the work site, is the responsibility of the contractor.

83 Plant and Equipment:

83.1 The contractor shall have sufficient plant, equipment and labour and shall work such hours and shifts as may be necessary to maintain the progress on the work as per the approval progress schedule. The working and shifts hours shall comply with the Government. Regulations in force.

83.2 It is to expressly and clearly understood that contractor shall make his own arrangements to equip himself with all machinery and special tools and plant for the speedy and proper execution of the work and the Corporation does not undertake responsibility towards their supply.

83.3 The Corporation shall supply such of the machinery that may be available on hire basis but their supply cannot be demanded as matter of right and no delay in progress can be attributed to such non-supply of the plant by the Corporation and the Corporation cannot be made liable for any damage to the contractor. The Contractor shall be responsible for safe custody of the Corporation machinery supplied to him (which will be delivered to contractor at the machinery yard at site of work) and he has to make good all damages and losses if any other than fire, wear and tear to bring it to the conditions that existed at the time of issue to the contractor before handing over the same to the Corporation. The hire charges for the machinery handed over to the contractor will be recovered at the rate prevalent at the time of supply. The contractor will have to execute supplemental agreement with Engineer-in-charge at the time of supply of the machinery.

83.4 The acceptance of Corporation machinery on hire is optional to the contractor.

84 Steel forms:

84.1 Steel forms should be used for all items involving and use of centering and shuttering shall be leak proof and shall be single plane without any dents and undulations.

85 Inconvenience to public:

85.1 The contractor shall not deposit materials at any site, which will cause inconvenience to public. The Engineer-in-Charge may direct the contractor to remove such materials or may undertake the job at the cost of the contractor.

86 Conflict of interest:

86.1 Any bribe, commission, gift or advantage given, promised or offered by on behalf of contractor or his partner, agent or servant or any one on his behalf to any officer, servant, representatives, agents of Engineer-in-Charge, or any persons on their behalf, in relation to the obtaining or to execution of this, or any other contract with Engineer-in-Charge shall in addition to any criminal liability, which it may occur, subject to the cancellation of this or all other contracts and also to payment of any loss or damage resulting from any such cancellation. Engineer-in-Charge shall then be entitled to deduct the amount, so payable from any money, otherwise due to the contractor under this or any other contract.

87 Contract documents and materials to be treated as confidential:

87.1 All documents, correspondences, decisions and orders, concerning the contract shall be considered as confidential and/or restricted in nature by the contractor and he shall not divulge or allow access to them by any unauthorised person.

88 General obligations of Contractor:

88.1 The contractor shall, subject to the provision of the contract and with due care and diligence, execute and maintain the works in accordance with specifications and drawings.

88.2 The contractor shall promptly inform the Corporation and the Engineer-in-Charge of any error, omission, fault, defect in the design of or specifications for the works which are discovered when reviewing the contract documents or in the process of execution of the works.

89 Disputes

89.1 If Contractor believes that a decision taken by the Engineer-in-Charge was either outside the authority given to the Engineer-in-Charge by the Contract or that the decision was wrongly taken, the decision shall be referred to the technical expert within 14 days of the notification of the Engineer-in-Charge's decisions on occurrence of such event.

89.2 Procedures for disputes: Subject to what is stated in clause 24 on disputes

- a) The technical expert shall give a decision in writing with in 28 days after receipt of a notification of a dispute.
- b) The Technical expert shall be paid daily at the rate specified in the contract data together with reimbursable expenses of the types specified in the contract Data and the cost shall be divided equally between the employer and the contractor, whatever decision is reached by the technical expert. Either party may refer a decision of the technical expert to an Arbitrator within 28 days of the technical expert's written decision. If neither party refers the dispute to arbitration within the above 28 days, the technical expert's decision will be final and binding.
- c) Appointing Authority for the Technical Expert:

Chairman, Institute of Engineers,A.P. Chapter, Khairatabad, Hyderabad.

d) The Technical expert's daily fee is Rs.1,000/- together with reimbursable expenses as of the type like stationery, typing, postage, conveyance etc. . Arbitration takes place in Mangalagiri.

e) Replacement of Technical Expert:

Should the Technical expert resign or die, or should the employer and the contractor agree that the Technical Expert is not fulfilling his functions in accordance with the provisions of the contract, a new Technical expert will be jointly appointed by the employer and the contractor. In case of disagreement between the employer and contractor, within 30 days, the Technical expert shall be designated by the Appointing Authority designated in the Contract data at the request of either part, within 14 days of receipt of such request.

89.3 Pending finalisation of disputes, the contractor shall proceed with execution of work with all due diligence.

90 Security measures:

- a) Security requirements for the work shall be in accordance with the Corporation / Government's general requirements including provisions of this clause and the Contractor shall conform to such requirements and shall be held responsible for the actions of all his staff, employees and the staff and employees of his sub-contractors.
- b) All contractors' employees, representatives and sub-contractor's employees shall wear identifications badges provided by the contractor. Badges shall identify the contractor, showing employee's number and shall be worn at all times while at the site. Individual labour will not be required to wear identification badges.
- c) All vehicles used by the contractor shall be clearly marked with contractor's name.
- d) The contractor shall be responsible for the security of the works for the duration of the contract and shall provide and maintain continuously adequate security personnel to fulfill these obligations. The requirements of security measures shall include, but not limited to maintenance of order on the site, provision of all lighting, fencing, guard flagmen and all other measures necessary for the protection of the works within the colonies, camps and elsewhere on the site, all materials delivered to the site, all persons employed in connection with the works continuously throughout working and non working period including nights, Sundays and holidays for duration of the contract.
- e) Other contractors working on the site concurrently with the contractor will provide security for their own plant and materials. However, their security provisions shall in no way relieve the contractor of his responsibilities in this respect
- f) Separate payment for provision of security services will not be made and its cost shall be deemed to have been included in the offer of the tenderer.

91 Fire fighting measures:

- a) The contractor shall provide and maintain adequate firefighting equipment and take adequate fire precaution measures for the safety of all personnel and temporary and permanent works and shall take action to prevent damage to destruction by fire of trees shrubs and grasses.
- b) Separate payment will not be made for the provision of fire prevention measures.

92 Provisions of Health and Sanitation:

- 92.1 The contractor shall implement the sanitary and watch and ward rules and regulations for all forces employed under this contract and if the Contractor fails to enforce these rules, the Engineer-in-Charge may enforce them at the expenses of the Contractor.
- 92.2 The contractors special attention is invited to clause 7, 8, 9 and 51 of the preliminary specification to the A.P.S.S. and he is requested to provide at his own expenses the following amenities to the satisfaction of Engineer-in-charge concerned.
- 92.3 **First Aid:** At the work site there shall be maintained in a readily accessible place, first aid appliances and medicine including adequate supply of sterilized dressing and sterilized cotton wool. The appliance shall be kept in good order. They shall be placed under the charge of a responsible person, who shall be readily available during working hours.
- 92.4 **Drinking water:** Water of good quality for drinking purpose shall be provided for the worker on a scale of not less than 2 gallons per head per day.
- a) Where drinking water is obtained from an intermittent public water supply each work site shall be provided with a storage tank, where such drinking water shall be stored.
 - b) Every water supply storage shall be at a distance of not less than 10 M. from any latrine drain or other source of pollution where water has to be drained. Any existing well, which is within such proximity of any latrine, drain or other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be dust and water proof.
 - c) A reliable pump shall be fitted to each inner well. The trap door shall be keep locked and opened only for inspection or cleaning which shall be done at least once a month.
- 92.5 **Washing and bathing place:** Adequate washing and bathing places shall be provided separately for men and women. Such place shall be keep clean and well drained, bathing or washing should not be allowed in or near any drinking water well.
- 92.6 **Latrine and Urinals:** There shall be provided within the area of every work site latrines and urinals in an accessible place to men and women separately. For each of them shall be on the following scales or the scale as directed by Engineer-in-charge in any particular case.
- 1. Where the number of persons employed does not exceed 50: 2
 - 2. Where the number of persons employed exceeds 50 but does not exceed 100: 3
 - 3. For every additional 100: 3

- a. If women are employed, separate latrines and urinals separated from those for men shall be provided on the same scale.
- b. Except in work site provided with water flushed latrines connected with a water borne sewage systems all latrine shall be cleaned at least four times daily and at least twice during working hours and kept in a strict sanitary condition. The receipt scales shall be tarred inside and outside at least once a year.
- c. The excrete from the latrines shall be disposed off at the contractors expenses in a way approved by the local public health authority. The contractor shall also employ adequate number of scavengers and conservancy shall to keep the latrines and urinals in a clean condition.

92.7 **Shelters during Rest:**At the work site there shall be provided free of cost two suitable sheds, one for meals and other for rest for the use of workers.

92.8 **Creches:**At every work site at which 50 or more women workers are ordinarily employed there shall be provided two huts of suitable size for use of children under the age of 6 years. One hut shall be used for infants games and other as a bed room. The hut shall be constructed on a standard not lower than the following.

1. Thatched roofs
2. Mud floors and wall
3. Planks spread over the mud floor and covered with matting. The use of huts shall be restricted to children, their attendants and mothers of the children.

92.9 **Canteens:**A cook for canteen on a moderate scale shall be provided for the benefit of works if it is considered essential.

92.10 **Sheds for the workers:**The contractor should provide at his own expense sheds for housing the workers. The sheds shall be on a standard not less than the cheap shelter type to have in which the workers in the locality are accustomed. The sheds are to be in rows with 1.5 Mts., clear space between sheds and 2.5 Mts. clear space between roofs. If conditions permit, the workers camp shall be laid out in units of 400 persons each unit to have a clear space of 4' each side.

92.11 Land should be acquired temporarily for Storing Contractor's materials or for housing their staff.

92.12 The contractor should make his own arrangements for temporary acquisition of land required for storing his materials and for the housing of his staff at his own expenses

93 Training of personnel:

93.1 The contractor, shall, if and as directed by the Engineer-in-Charge provide free of any charge adequate facilities, for vocational training of Government Officers, students, Engineers, supervisors, foremen, skilled workmen etc. not exceeding six in number at any one time on the contractor's work. Their salaries, allowances etc. will be borne by the Government and the training schemes will be drawn up by the Engineer-in-Charge in consultation with the contractor.

94 Ecological balance:

- a) The contractor shall maintain ecological balance by preventing de-forestation, water pollution and defacing of natural landscape. The contractor shall so conduct his construction operation as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. In respect of the ecological balance, Contractor shall observe the following instructions.
- i) Where unnecessary destruction, scarring, damage or defacing may occur, as result of the operation, the same shall be repaired replanted or otherwise corrected at the contractor's expense. The contractor shall adopt precautions when using explosives, which will prevent scattering of rocks or other debris outside the work area. All work area including borrow areas shall be smoothed and graded in a manner to conform to the natural appearances of the landscape as directed by the Engineer-in-Charge.
 - ii) All trees and shrubbery which are not specifically required to be cleared or removed for construction purposes shall be preserved and shall be protected from any damage that may be caused by the contractor's construction operation and equipment. The removal of trees and shrubs will be permitted only after prior approval by the Engineer-in-Charge. Special care shall be exercised where trees or shrubs are exposed to injuries by construction equipment, blasting, excavating, dumping, chemical damage or other operation and the contractor shall adequately protect such trees by use of protective barriers or other methods approval by the Engineer-in-Charge. Trees shall not be used for anchorages. The contractor shall be responsible for injuries to trees and shrubs caused by his operations. The term "injury" shall include, without limitation bruising, scarring, tearing and breaking of roots, trunks or branches. All injured trees and shrubs be restored as nearly as practicable without delay to their original condition at the contractor's expense.
 - (iii) The contractor's construction activities shall be performed by methods that will prevent entrance or accidental spillage of solid matter contaminants, debris and other objectionable pollutants and wastage into river. Such pollutant and waste include earth and earth products, garbage, cement concrete, sewage effluent, industrial wastes, radio-active substances, mercury, oil and other petroleum products, aggregate processing, mineral salts and thermal pollution. Pollutants and wastes shall be disposed off in a manner and at sites approved by the Engineer-in-Charge.
 - (iv) In conduct of construction activities and operation of equipments the contractor shall utilise such practicable methods and devices as are reasonably available to control, prevent and

otherwise minimise the air pollution. The excessive omission of dust in to the atmosphere will not be permitted during the manufacture, handling and storage of concrete aggregates and the contractor shall use such methods and equipment as a necessary for collection and disposal or prevention of dust during these operations. The contractor's methods of storing and handling cement shall also include means of eliminating atmospheric discharges of dust, equipment and vehicles that give objectionable omission of exhaust gases shall not be operated. Burning of materials resulting from clearing of trees, bushes, combustible construction materials and rubbish may be permitted only when atmospheric conditions for burning are considered favourable.

- (v) The contractor shall during the execution of the entire contract work particularly by engaging man power as per the requirements however strictly observe the COVID -19 Central Government norms and guidelines so long in force about the strict observations as part of the project work.
- b) Separate payment will not be made for complying with the provisions of this clause and all cost shall be deemed to have been included in the unit rates and prices included in the contract if any provision is not complied with within a reasonable time even after issue of a notice in this respect, the necessary operations would be carried out by the Engineer-in-Charge at the cost of the Contractor, Orders of the Engineer-in-Charge in this respect would be final and binding on the contractor.

95 Preservation of existing vegetation:

- 95.1 The contractor will preserve and protect all existing vegetation such as trees, on or adjacent to the site which do not unreasonably interfere with the construction as may be determined by the Engineer-in-Charge. The contractor will be held responsible for all unauthorised cutting or damage of trees, including damage due to careless operation of equipment, stockpiling of materials or trecking of grass areas by equipment. Care shall be taken by the Contractor in felling tressauthorised for removal to avoid any unnecessary damages to vegetation and tress that are to remain in place and to structures under construction or in existence and to workmen.
- 95.2 All the produce from such cutting of trees by the contractor shall remain the property of Government and shall be properly stacked at site, approved by the Engineer-in-Charge. No payment whatsoever, shall be made for such cutting and its stacking by the Contractor. If any produce from such cutting is not handed over to the Government by the contractor, he shall be charged for the same at the rates to be decided by the Engineer-in-Charge. The recovery of this amount shall be made in full from the intermediate bill that follows.
- 95.3 The contractor shall also make arrangements of fuel deposits for supply of required fuel for the labourer to be employed for cooking purpose at his own cost in order to prevent destruction of vegetation growth in the surrounding area of the work site.

96 Possession prior to completion:

96.1 The Engineer-in-charge shall have the right to take possession of or use any completed part of work or works or any part thereof under construction either temporarily or permanently. Such possession or use shall not be deemed as an acceptance of any work either completed or not completed in accordance with the contract with in the interest of Clause 28 of APSS except where expressly otherwise specified by the Engineer-in-charge.

97 Payment upon termination:

97.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer-in-Charge shall issue a certificate for the value of the work done less advance payments received upon the date of the issue of the certificate, less other recoveries due in terms of the Contract, less taxes due to be deducted at source as perapplicable law and less the percentage to apply to the work not completed. Additional Liquidated Damages shall not apply. If the total amount due to the Corporation exceeds any payment due to the Contractor the difference shall be a debt payable to the Corporation. In case of default for payment within 28 days from the date of issue of notice to the above effect, the contractor shall be liable to pay interest at 12% per annum for the period of delay.

98 Access to the contractor's books:

98.1 Whenever it is considered necessary by the Engineer-in-Charge to ascertain the actual cost of execution of any particular extra item of work or supply of the plant or material on which advance is to be made or of extra items or claims, he shall direct the contractor to produce the relevant documents such as payrolls, records of personnel, invoices of materials and any or all data relevant to the item or necessary to determine its cost etc. and the contractor shall when so required furnish all information pertaining to the aforesaid items in the mode and manner that may be specified by the Engineer-in-Charge.

99 Drawing to be kept at site:

99.1 One copy of the drawings furnished to the contractor shall be kept by the contractor on the site and the same shall at all reasonable time be available for inspection and use by the Engineer-in-Charge and the Engineer-in-Charge's representative and by any other persons authorised by the Engineer-in-Charge in writing.

100 B.I.S. [I.S.I.] books and APSS to be kept at site:

100.1 A complete set of Indian Standard specification referred to in "Technical Specifications" and A.P.S.S. shall be kept at site for reference.

101 Variations by way of modification, omissions or additions:

101.1 For all modifications, omissions from or additions to the drawings and specifications, the Engineer-in-charge will issue revised plans, or written instructions, or both and no modification, omission or addition shall be made unless so authorised and directed by the Executive Engineer in writing.

101.2 The Engineer-in-Charge shall have the privilege of ordering modifications, omission or additions at any time before the completion of the work and such orders shall not operate to annul those portions of the specifications with which said changes do not conflict.

101.3 Engineer-in-Charge's Decision:

It shall be accepted as in separable part of the contract that in matters regarding materials, workmanship, removal of improper work, interpretation of the contract drawings and contract specification, mode of the procedure and the carrying out of the work, the decision of the Engineer-in-Charge, which shall be given in writing shall be binding on the contractor.

102 Site Order Book:

102.1 An order book shall be kept at the Department office on the site of the work. As far as possible all orders regarding the work are to be entered in this book. All entries shall be signed and dated by the Departmental officer who issues such orders and by the contractor or by his representative. The order book shall not be removed from the work spot except with the written permission of the Executive Engineer.

103 Care and diversion of river/stream:

103.1 The contractor shall submit details regarding the diversion and care of river or stream during construction of the work along with a separate print-out of the time table showing earliest and latest start and finish dates of various activities. He should submit a detailed layout plan with drawings for the diversion and care of river or stream during construction of work. The above arrangements shall be at contractor's cost.

104 Income tax:

104.1 During the currency of the contract, deduction of income tax at 2.24% or amended from time to time shall be made from the gross value of each bill of the contract, the contract value of which is in excess of Rs.10,000/- for deduction of tax at rates stipulated under section 194-C(4) of Income Tax Act, 1961 shall be followed.

104.2 Income Tax clearance certificate should be furnished before the payment of final bill.

104.3 The contractor's staff, personnel and labour will be liable to pay personnel income taxes in respect of their salaries and wages as are chargeable under the laws and regulations for the time being in force, and the contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws and regulations.

105 Seigniorage charges:

105.1 Seigniorage charges will be added to the bill amount and equal amount will be deducted from the bill amount as per Government Orders / Mines and Geology Dept. issued from time to time from the work bills of the contract and based on the theoretical requirement of materials at the following rates:

S. No.	Material	Seigniorage
1.	Sand	Rs: 100.00 / Cum
2.	Metal	Rs: 90.00 / Cum
3.	C.R. stone , R.R stone for masonry	Rs: 90.00 / Cum
4.	Burnt clay bricks	Rs.80.00/1000 Nos.
5.	Gravel / Earth	Rs: 45.00 / Cum
6.	Polished Shahabad / Tandur stone slabs 15 to 18mm thick	Rs: 10.00 / Sqm
7.	Polished black Kadapa slabs minimum of 15mm thick	Rs: 6.00 / Sqm
8.	Colour Granite 16mm to 18mm thick	Rs: 45.90 / Sqm
9.	Black Granite 16mm to 18mm thick	Rs: 58.65 / Sqm
10.	Marble 16mm to 20mm thick	Rs: 5.40 / Sqm

105.2 The percentage quoted by the Contractor is exclusive of Seigniorage charges on all materials that the contractor will have to purchase for performance of this contract.

105.3 Seigniorage component loaded in Part-B of the estimate shall be added in each bill of the Contractor and recovered.

106 Goods and Service Tax on works contracts:

- i) The rates included in BoQ (Schedule – A) are exclusive of GST
- ii) GST at the prescribed rates as indicated by the Government from time to time will be worked out and added in the work bill. The GST component added thus to the work be recovered as per statutory requirement.
- iii) The contractor shall produce a valid GST clearance certificate before payment of the final bill. Otherwise payment to the contractor will be withheld.
- iv) GST loaded on the works/ service contract, if any exemption or input tax credit claimed by the Contractor, he must intimate the Employer and obtain acknowledgement to that effect and without such proof the Commercial tax Department shall not process the input tax credit claim. The chief Commissioner of State Tax shall issue circular instructions required if any to their departmental officials and staff in this regard.

107 LabourCess:

As per the Building and other Construction Workers Welfare CESS Act, 1996, Section 3 of CESS Act, read with rule 4(3) of the cases rules and in accordance with S.O.No.2899, dt.28-03-1996 of Government of India, 1% CESS will be deducted from the bills paid for works from the contractor. The deducted amount will be remitted by way of challan to be payable in any branches of Andhra Bank to the savings Bank Account No. 805015 of the labour Commissioner office Extension counter (code No. 9039) as per the procedure prescribed under G.O.Ms.No.42 of LET&F Department, dt.30-04-2007.

108 Corpus Fund – National Academy of Construction:

An amount equivalent to 0.10% of the gross bill will be added to the bill amount and equal amount will be deducted from the bill amount and credited to corpus fund of National Academy of Construction (GO.Ms.No.27 of Transport, Roads & Buildings (R.III) department, dt.29-06-2015).

109 Defect Liability Period / Warranty Period:

109.1 The defect liability period is 24 months(for lifts defect liability period is 36 months) from the date of certification of completion of all works in the Project and the defect liability period shall be extended for as long as defects remain to be corrected by the Contractor, which is without prejudice to the right of the employer to cause rectify and recover. For defect liability the performance guarantee deposit (PGD) given in the form of Bank Guarantee on a Nationalised / Scheduled Bank, shall be valid for the duration of contract period plus the defect liability period of two years and in case any valid extension of contract period is granted, the validity of BG shall also be extended for the corresponding period and further till rectification of defects. The Performance Bank Guarantee on Nationalised / Scheduled Bank that is required to be furnished by the tenderer shall be valid till the work is completed, defects are rectified in all respects including Maintenance period and the same will be refunded only after above period and compliance. However, during the defect liability periods, operation/maintenance also where involved respectively, no charges can be claimed for defects and maintenance, but for nominal charges of operation/consumables, for not covered of defect liabilities

109.2 Any damage due to end user will be paid separately on the case to case basis on approval from the concerned Executive Engineer beyond warranty on approval of the Superintendent/Principal of the institutes. It is the duty of the contractor who has to furnish the furniture and other items and equipment and its maintenance including repair and replacement as the case may be during defect liability period, unless he demonstrates any damage resulted from misuse by end user of employer.

110 Maintenance Period:

The Maintenance Period of the Works shall include the following general obligations of the Contractor:

- a. The Start date of the Maintenance Period shall be on Completion of all Works for each location.
- b. The Contractor shall be responsible for maintaining all initial warranty & DLP for civil works, MEP works, Medical Gas Pipe Line, HVAC, All ELV System Lifts, Fire-Fighting, DG, Transformer Yard, furniture and equipment supplied and installed by the Contractor. Post this initial warranty and DLP period, the Contractor shall be responsible for extending comprehensive maintenance contract or deploying personnel for maintenance of all the Civil, MEP works, equipment and furniture supplied by the Contractor.
- c. The Contractor shall get preventive maintenance schedule submitted and approved by APMSIDC /Medical Superintendent and shall be responsible for getting all these maintenance works done in time. Any approval by APMSIDC doesn't relieve the Contractor from performing its duties

and APMSIDC or Medical Superintendent shall have the right to audit maintenance records at any time during the currency of the Contract

- d. The Contractor shall ensure to sign off a breakdown maintenance service level agreement (“SLA”) with APMSIDC before the start of maintenance period and the same shall be followed for any repair and maintenance works. Any violation of the SLA shall make the Contractor responsible for penalty as per the decision of Engineer-in-charge / Medical Superintendent.
- e. The Contractor shall provide the services during the Maintenance Period as single point of responsibility and any consumables or spares shall be included in the scope of the Contractor.
- f. The Contractor shall have its maintenance personnel available at short notice as decided in the SLA for any breakdown / repair and maintenance works in the building premises.
- g. During the Maintenance Period, the Contractor shall be responsible for operations and maintenance for the STP (Sewage Treatment Plant) and ETP (Effluent Treatment Plant) as a single point of responsibility basis including all costs like manpower, spares, consumables etc. Only the cost of power shall be borne by the Client.

111 Warranty

- a. The Contractor warrants that all the goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract. The Contractor further warrants that the goods supplied under this contract shall have no defect arising from design materials or workmanship (except insofar as the design or material is required by the specifications).
- b. This warranty shall remain valid for 84 months after the goods have been delivered at the final destination indicated in the contract, unless specified otherwise in the special conditions of the contract. The warranty period starts after Completion of all Works in the Project.
- c. The Contractor shall submit monthly report on health of each and every equipment supplied by him under this contract duly mentioning repairs, preventive maintenance, any other action taken by him including activity proposed to be undertaken by him in the next month. This reporting shall be applicable during CMC and warranty period.
- d. Notwithstanding 111 (c) above, the Contractor shall at his own cost, within 24 hours, repair or replace the defective goods or parts thereof without cost to the Client other than, where applicable, the cost of inland delivery of the repaired or replaced goods or parts from the port of entry to the final destination. It shall be responsibility of the Contractor to bring the equipment to normal/ standard status of functioning to make it fit for conducting tests etc. of patients. In case of emergency situation, critical equipment shall have to be rectified /provided with replacement within 1 hour period as per agreed SLA.
- e. If the Contractor, having been notified, fails to remedy the defect (s) within a reasonable period, the Client may proceed to take such remedial action as may be necessary, at the Contractor’s risk and expenses and without prejudices to any other right which the Client may have against the Contractor under the contract.

- f. Site Visits: The successful tenderer shall visit each User department as part of preventive maintenance as per the frequency agreed during the warranty period. The tenderer shall attend any number of break down/repair calls as and when informed by the Client/User department.
- g. During every visit, a copy of the service report/break down call report, duly signed by the custodian of the equipment/head of the health care institution and stamped shall be forwarded by email/fax/post to the APMSIDC office within 10 days from the due date.
- h. A warranty certificate duly signed and with proper stamp of the institution concerned and also signed by the authorized signatory with the stamp of the Contractor shall be submitted to the Client for keeping it under safe custody along with the Installation Certificate. A copy of the original warranty papers has to be given to the institution head concerned.
- i. The tenderer shall submit the activities to be carried out during the preventive maintenance visit.

112 Country of origin:

All goods and related services to be supplied under the contract / agreement shall have their origin in India or any other country with which India has not banned trade relations.

113 Special Conditions for Sewage Treatment Plant

- a. The bidder has to inspect the site before tendering and assure himself that with technology and the BOQ items provided, the wastewater generated can be treated effectively.
- b. The Bidder should establish his own laboratory during trial run period and required chemicals and laboratory staff should be employed on his own. These expenses may be considered while quoting the tender. Space for establishment of laboratory will be provided.
- c. The contractor should hand over all the guarantee/warranty cards to the corporation on the expiry of trial run. All the mechanical equipment shall have guarantee for minimum of (2) years.
- d. Safety and control of equipment lies with contractor till the STP is handed over to the head of the User department.
- e. The rates given in BOQ for various mechanical equipment are inclusive of packing, transportation, installation and erection charges and trail running charges etc.,
- f. After completion of the scheme, trial running shall be done for 10 days followed by 7 years operation & maintenance. The power charges will be borne by the concerned authorities.
- g. Operation and maintenance period commences only after successful completion of trial run period. All expenses for the tests required during commissioning and trial run period should be borne by the bidder.
- h. Treated Effluent characteristics should conform to the standards prescribed by Andhra Pradesh State Pollution Control Board.
- i. Trail run period will extend automatically till satisfactory test results are achieved and there will not be any payment for the extended period to a maximum of (1) month. If satisfactory test result are not shown even after (1) month, penalties will be imposed @ **Rs.4,429/- (per day)**.

- j. Final bill for the main work (Civil + Mechanical Equipment excluding Operation & Maintenance) will be paid only after successful operation of the STP for (1) month.
- k. This agreement covers the Construction Works which shall be for a period of 30 months from the Start date and Operation and Maintenance Works for a period of 7 years (84 months) after the Construction and Supply works including 2 years (24 months) of Defects Liability Period.
- l. Quarterly payments will be made for Operation and Maintenance work during the Maintenance Period only after the certification of the work by the Medical Superintendent.

114 Project Management Consultancy

a) Compliance with PMC's Instructions

- i. PMC has been appointed to supervise the entire project to ensure timely and quality completion as well as to inspect, certify and pass instructions as applicable. PMC shall be acting as the delegate of Engineer-in-Charge under this contract.
- ii. The contractor shall comply with and duly execute any work as per the PMC's instructions provided always that verbal instructions, directions and explanations given to the Contractor or his representative upon the work by the Engineer-in-charge or the PMC shall, if involving a variation, be confirmed in writing before execution.
- iii. The Contractor shall also follow the necessary reporting requirements as mentioned in Annexure (Management Plans and Reporting Requirements) and any other planning and reporting requirements as specified by the Engineer-in-Charge or the PMC.

b) Management Plans and Reporting Requirements

1. MANAGEMENT PLANS

1.1 General

1.1.1 In order to ensure satisfactory execution of the Contract, completion of works within specified targets, and quality in design, building, construction and execution of Works, a series of management plans shall be developed. The following plans shall be developed and submitted by the Contractor for Engineer-in-charge's review:

- a) Project Management Plan
- b) Interface Management Plan
- c) Work Plan (incorporating Works Programme and Submittals Schedule)
- d) Quality Plan
- e) Quality Assurance Management Plan
- f) Design Management Plan
- g) Environmental Plan
- h) Procurement Management Plan
- i) Installation Plan
- j) Testing and Commissioning Management Plan
- k) Defects Liability Management Plan
- l) Maintenance Plan

1.1.2 The plans and documents shall be co-ordinated with each other and shall collectively define, describe and encompass the Contractor's proposed methods, procedures, processes, organisation, sequencing of activities to meet the requirements of the Technical Specification in respect of the subjects listed. The respective plans shall be submitted which shall have received Advice of No Objection from the Engineer-in-charge.

1.1.3 The Contractor shall, within thirty (30) days of the date of signing of Contract, submit the initial management plans based on the plans submitted in the Contractor's Proposal. In particular, this submission shall include the confirmation of the management process and fundamental requirements for all technical interfaces; and the initial version of the Contractor's design programme. These plans shall be further developed / modified / magnified in accordance with Client's Requirements during the course of the Project.

1.1.4 The following documents, referred to as "Client's Requirements", have been supplied to the Contractor:

- Technical Specifications
- Bill of Quantity
- Tender Drawings

The order of precedence of documents is as shown above with the earlier document having priority over the documents that follow.

1.1.5 The Contractor shall produce all necessary documentation and studies in respect of the Project in a form and content to be fully compatible with these documents and sufficiently comprehensive to enable the Client to utilise them.

1.2 Project Management Plan

- 1.2.1 The Project Management Plan shall provide a clear over-view of the Contractor's organisation, the management system and methods to be used for completion of the Works. The organisation resources for the design, building, construction and testing, shall be clearly defined.
- 1.2.2 The Contractor shall submit a Project Management Plan, which shall provide the following information:
- a) A diagram showing the organisational structure for the management of the Contract, with locations, names and position titles of the Contractor's personnel and their line and staff relationship. The diagram shall include associate organisations and Vendors to be engaged in the Execution of the Works and show clearly the individuals and lines of responsibility linking the various groups. It shall also identify the persons designated as contacts with the Engineer-in-charge.
 - b) The names, qualifications, positions and current resumes of key executive, supervisory and engineering staff to be employed full-time for the works, separately for principals and Vendors.
 - c) A narrative describing the sequence, nature and inter-relationship of the main Contract activities including timing for exchange of information.
 - d) Procedure for documentation control.
- 1.2.3 The Contractor shall nominate a suitably qualified and experienced English-speaking engineer from his staff to be Project Manager. The nominee shall be subject to acceptance of the Engineer-in-charge, who shall have the right to demand his replacement at any time after the work commences, should the Engineer-in-charge consider this to be in the best interest of the Project.
- 1.2.4 The Contractor shall also nominate a senior engineer to co-ordinate activities of the design offices responsible for designing and construction of the Works. This senior engineer shall be responsible to the Project Manager for all works for ensuring that effective co-ordination is maintained with the various manufacturing units of the Contractor and Vendors and that contract delivery schedules are met.
- 1.2.5 The Project Manager shall be continuously on site and devote himself full-time to the Project, commencing not later than Thirty (30) calendar days from the date of the Effective Date and a relevant competent person shall be engaged in Defects Liability Period and Maintenance Period.
- 1.2.6 The Contractor will submit a Project Management Plan. The Engineer-in-charge will review the Contractor's Project Management Plan and shall have the right to require the Contractor to make amendments as deemed necessary by the Engineer-in-charge. The Contractor shall submit in accordance with the Contract for review of the Engineer-in-charge.
- 1.2.7 Construction Management
- (a) Supervision – superintendents and foremen

The Contractor shall also provide a sufficient number of superintendents and foremen, experienced in the construction and supervision of the Works, at all times and at all places when the Works are in progress, to ensure that the Contractor meets all its obligations under the Contract.
 - (b) Authority of supervisory personnel

The Contractor shall provide and designate supervisory personnel at each part of the Site where the Works are being carried out.

1.3 Interface Management Plan

1.3.1 The Contractor shall interface and liaise with Other Contractors in accordance with the requirements of the Project.

1.3.2 The Engineer-in-charge should make available the details of works to be done by other contractors, role of Client and others as the case may be to make enable the Contractor to submit the interface management plan. The Interface Management Plan shall:

- a) identify the equipment / furniture as well as the civil works and facilities with interfacing requirements;
- b) define the authority and responsibility of the Contractor's and Other Contractors' (and any relevant vendors') staff involved in interface management and development;
- c) Identify the information to be exchanged, precise division of responsibility between the Contractor and Other Contractors and integrated tests to be performed at each phase of the Contractor's and Other Contractors' works.
- d) address the works programme of the Contract to meet the key dates of each Contractor and highlight any programme risks requiring management's attention

The Engineer-in-charge shall review the Contractor's initial Interface Management Plan and shall have the right to require the Contractor to make amendments as deemed necessary by the Engineer-in-charge. The Contractor shall amend the initial Interface Management Plan based on the comments received from the Engineer-in-charge and submit the final Interface Management Plan.

1.4 Work Plan (Works Programme and Submittals Schedule).

1.4.1 The Contractor shall submit a Work Plan which shall contain the following:

- a) Proposed Works Programme
- b) Proposed Submittals Schedule

1.4.2 The Contractor's proposed Works Programme shall indicate how the Contractor intends to organise and carry out the Works and achieve stages and complete the whole of the Works by the appropriate Key Dates. The Works Programme shall be prepared in terms of weeks/months from the Effective Date.

1.4.3 The Submittals Schedule shall cover the full span of the contract duration and shall include a schedule identifying, describing, cross-referencing and explaining the design packages and all other submissions.

1.4.4 The Submittals Schedule shall take due account of the design co-ordination interface periods with other contractors and be consistent with the Works Programme.

1.4.5 The Works Programme and Submittals Schedule shall include details for review by the Engineer-in-charge.

1.5 Quality Plan

- 1.5.1 The Contractor shall submit an Outline Quality Plan, illustrating the intended means of compliance with the Client's Requirements - Technical Specification, and setting out in summary form an adequate basis for the development of the more detailed document. The Outline Quality Plan shall contain sufficient information to demonstrate clearly the proposed method of achieving the quality objectives with regard to the requirements of the Contract.
- 1.5.2 The Plan shall be based on acceptable international standards. The Quality Plan shall embrace all activities of contractors, Vendors of any tiers including its suppliers and design consultants, if any. The Quality Plan shall indicate the approach and structure that the detailed plan will take and shall include the following:
- a) a summary of the Project requirements including all proposed quality activities;
 - b) all quality assurance and quality control procedures proposed by the Contractor for his use in the execution of the Works;
 - c) a list of all the Codes of Practice, Standards and Specifications that the Contractor proposes to apply to his work;
 - d) the Contractor's proposals for internal and Vendor quality assurance audits;
 - e) a statement detailing the records that the Contractor proposes to keep, the time during which they will be prepared and the subsequent period and manner in which they will be stored;
 - f) inspection and test plans for every activity requiring inspection. The plans shall identify the level of inspection required, Quality Control Points and Quality Hold Points.
 - g) procedure for maintenance of records of inspection/tests.
- 1.5.3 The Quality management system shall be applied without prejudice to, or without in any way limiting, any Quality Management system that the Contractor already maintains.

1.6 Quality Assurance Management Plan

- 1.6.1 The Contractor shall provide the Engineer-in-charge with a detailed Quality Assurance Management Plan taking into account any directions or requirements from the Engineer-in-charge on the Outline Quality Plan. The detailed plan shall be updated as necessary from time to time to incorporate, to the Engineer-in-charge's satisfaction, all changes to the Contractor's procedures. The Quality Assurance Management Plan shall comprise:
- a) A management quality plan for control of management related activities
 - b) A design quality plan for control of design related activities
- 1.6.2 **Quality Organisation:** The Contractor shall submit a detailed organisation chart identifying the responsibilities, authority and inter-relation of all personnel who manage, perform and verify work involving quality in respect of all quality plans. The organisation chart submitted in accordance with this clause shall be specific to this Contract. The chart shall identify the quality management representative who shall act as the Quality Co-ordinator for the Contractor in all dealings with the Engineer-in-charge.
- 1.6.3 **Quality Audit:** The Contractor shall audit, using an independent team in compliance with, all the activities in each quality plan at quarterly intervals or at other such intervals as the Engineer-in-charge may require, to ensure continuing suitability and effectiveness of the quality management

system. The Contractor shall make available upon request any document, which relates to his recent internal audits.

1.6.4 The Engineer-in-charge may by issuing a prior notice for requirement of compliance audits of the Contractor's quality system to be conducted. During audits, the Contractor shall provide suitably qualified staff to accompany the auditor and provide all such assistance as may be required by the Engineer-in-charge or the auditor appointed by the Engineer-in-charge.

1.7 Design Management Plan

1.7.1 The Contractor shall submit a Design Management Plan detailing the design process and describing:

- i. The organization chart for the design team
- ii. The process for internal design review and "sign-off" of drawings and design documentation prior to submission for review by the Engineer-in-charge
- iii. The design programme
- iv. The process for design change control

1.7.2 The Design Management Plan may be incorporated into the Quality Management Plan.

1.8 Environmental Plan

1.8.1 The Contractor shall submit an Environmental Plan illustrating the intended means of compliance with the Client's Safety, Health, and Environmental Requirements Manual. The Environmental Plan shall contain sufficient information to demonstrate clearly the proposed method of achieving the Environmental objectives with particular reference to Noise, Vibration, and EMC/EMI etc. to meet the stipulations of the Client's Requirements -Technical Specification.

1.8.2 Environmental audit may be conducted by the Client or its appointed agency.

1.9 Procurement Management Plan

1.9.1 The Contractor shall submit for review by the Engineer-in-charge a Procurement Management Plan in respect of all items and goods. Separate parts of the plan shall also be prepared by the Contractor, his suppliers and subcontractors for their off-site activities.

1.9.2 The plan shall identify the scope of work to be applied. In relation to such scope of work, it shall, without limitation, define:

- a) the organisation of the Contractor's personnel directly responsible for the day-to-day management of the construction activity on or off the Site;
- b) the specific allocations of responsibility and authority given to identified personnel for the day-to-day management of the work with particular reference to the supervision, inspection and testing of the work;
- c) the interfacing or co-ordination required with the Contractor's other related plans;
- d) a full list of construction method statements for major components, equipment and/or systems to identify the specific methods of construction; and
- e) the format of the material control schedule to monitor and control the Execution of the Works, for the Contractor, Vendors of any tier, suppliers and sub-suppliers.

1.10 Installation Plan

The Contractor shall submit coordinated installation plan for Engineer-in-charge approval 90 days before start of installation of works

1.11 Testing and Commissioning Management Plan

1.11.1 The Contractor shall submit a Testing and Commissioning Management Plan in accordance with this Client's Requirement & Technical Specification only related to the Works.

1.12 Defects Liability Management Plan

1.12.1 The Contractor shall submit for review by the Engineer-in-charge a Defects Liability Management Plan to repair, replace and perform any remedial item upon the Works identified by the Engineer-in-charge during the Defects Liability Period (DLP). The Contractor shall:

- a) complete all necessary work in a timely and responsible manner and in accordance with the Conditions of Contract.;
- b) submit a plan that details the methods and timing of any proposed work;
- c) update the plan monthly, showing progress of the work and the time to completion;
- d) not proceed with any remedial work without the consent of the Engineer-in-charge; and
- e) not interfere with the operations of Hospital and Medical College in completing work in the DLP.

1.13 Maintenance Plan

1.13.1 The Contractor shall submit for review by the Engineer-in-charge a Maintenance Plan for the duration of the Maintenance Period detailing the plan for preventive and breakdown maintenance of the Works identified by the Engineer-in-charge during the Maintenance Period (MP). The Contractor shall:

- a) complete all necessary work in a timely and responsible manner and in accordance with the Conditions of Contract.;
- b) submit a plan that details the methods and timing of any proposed work;
- c) update the plan monthly, showing progress of the work and the time to completion;
- d) not proceed with any maintenance work without the consent of the Engineer-in-charge; and
- e) not interfere with the operations of Hospital and Medical College in completing work without approval of Engineer-in-charge / Medical Superintendent.

2 PLANNING, PROGRAMME AND PROGRESS MONITORING

2.1 General Requirements

- 2.1.1 The Contractor shall programme his work at all times to meet the Key Dates. During the progress of the Works the Contractor shall constantly monitor and report to the Engineer-in-charge his progress against the programmes described herein.
- 2.1.2 Programme activities shall be discrete items of work, which when combined, produce definable elements, components, Milestones, of the Works and clearly identify the completion obligations of the Contractor. Design programmes shall be organised by design stages and plans.
- 2.1.3 Key Dates and Milestones shall be an integral part of all programmes and all activities, and sequencing and interrelationships required to achieve each completion obligation shall be shown. Milestones shall not impose constraints that in any way affect the programme logic and float or limit the achievement of Key Dates. Milestones shall not be introduced into any programme as constrained dates.
- 2.1.4 The critical path shall be clearly identified in the programme and fully described in the accompanying programme narrative.
- 2.1.5 Activity descriptions shall clearly convey the nature and scope of the Works. The Works Programmes shall take into account the activities of precursor, concurrent, adjacent and follow on the other contractors as well as utility service diversions, new utilities and connections and any other activity that may affect the progress of the Works.
- 2.1.6 The Contractor shall also incorporate the Engineer-in-charge's requirements for additional activities, to further explain or subdivide complex or long duration tasks, without affecting completion dates.
- 2.1.7 The Contractor shall include in all programmes his work obligations towards shared access, shared Site areas and other coincident or adjacent areas to the Site.
- 2.1.8 The computerized critical path method ("CPM") network using the precedence diagramming method ("PDM") has been selected by the Client as the technique for contract management system and in co-ordinating the project. This technique shall also be employed by the Contractor in their Execution of the Works especially during the construction stage submissions.
- 2.1.9 Unless otherwise agreed by the Engineer-in-charge, all programmes submitted by the Contractor shall be produced using CPM networks developed implementing the PDM with cost loaded charts and tables.
- 2.1.10 The Contractor shall implement and use throughout the duration of the Contract, a computerized system as defined below to plan, execute, maintain and manage the planning, design, pre-construction, construction, and sub-contracts in executing the CPM scheduling by PDM. The reports, documents and data provided shall be an accurate representation of the current status of the Works and of the work remaining to be accomplished; shall provide a sound basis for identifying problems, deviations from the planned works, and for making decisions; and shall enable timely preparation of the same for presentation to the Engineer-in-charge.
- 2.1.11 CPM programming software to be used for the programme submitted with the Contractor's Proposal, the Works Programme and all subsequent programmes shall be Microsoft Project.

2.2 Works Programme Submission Requirements

2.2.1 The Works Programme to be submitted shall be developed along with the Contract's Tender. Similarly, the submittal schedule shall be developed from the outline submittals schedule submitted as part of the Contractor's Tender.

2.3 Mobilisation Programme

2.3.1 The Contractor shall within 7 days from the Effective Date submit a mobilisation schedule for the Engineer-in-charge's review that details all the work activities planned to take place during the first 90 days of the project.

2.3.2 The schedule shall clearly list all activities requiring the Engineer-in-charges input and reflect any agreements regarding responses outside the standard 30 day response time.

2.3.3 The schedule shall include but not be limited to mobilisation of the Contractor's personnel, procurement of facilities, Information required from Engineer-in-charge and deliverables to be submitted.

2.3.4 The mobilisation schedule shall be supported by a narrative which clearly states any assumptions made by the contractor, any items that the contractor identifies as being at risk and any action required to be undertaken by the Engineer-in-charge.

2.3.5 The duration for any activity shown on the mobilisation schedule with the exception of the Engineer-in-charge thirty (30) working day approval periods shall not exceed 7 days.

2.4 Initial Works Programme

2.4.1 Within 30 calendar days of the Effective Date, the Contractor shall submit for review by the Engineer-in-charge, his proposed initial version of the Works Programme. The initial Works Programme shall be based on the programme submitted with the Contractor's Proposal and incorporate any changes agreed during the Contract negotiations. The programme shall reference the mobilisation programme and provide detail of the activities to be performed during the first six (6) Months of the Project.

2.4.2 Long lead items shall be clearly identified in the initial Works Programme.

2.5 Final Works Programme

2.5.1 Within 60 calendar days of the Effective Date, the Contractor shall submit for review by the Engineer-in-charge the proposed full version of the Works Programme.

2.5.2 Should the Contractor fail to submit the initial and/or full versions of the Works Programme within the timescales nominated above the Client shall consider the programme submitted by the Contractor in the Contractor's Proposal or initial Works Programme as the first issue of the Works Programme required under the Contract.

2.5.3 In the event that the Client does consider the initial Works Programme as the first issue of the Works Programme under the Contract the Engineer-in-charge may include any amendments that he sees fit to change external constraining dates, duration of activities by parties other than the Contractor and subdivide the Contractor's own activities to provide additional detail and links to other activities but without altering the duration or sequencing of the activities shown on the initial Works Programme.

2.5.4 Either Initial or Final Works Programme resulting from a nomination by the Client of the initial Works Programme as amended shall be taken by the Contractor as his own work and any responsibility for further maintenance of the Works Programme as nominated shall remain with the Contractor.

2.6 Content of Programmes

2.6.1 The Works Programme shall demonstrate by reference to its sub-programmes, supplementary programmes and associated management plans, the sequence and duration of activities and any restraints thereto, that the Contractor shall adopt to achieve Key Dates and to fulfil all Contract obligations. The Works Programme shall become the Engineer-in-charge's basis of administration of the time-related aspects of the Contract.

2.6.2 The Contractor shall provide the Engineer-in-charge with substantiation for each constraint whether target start, target finish or mandatory constraint entered by the Contractor into the Works Programme. The number of constraints shall be kept to an absolute minimum in order that the CPM networks developed can be freely analysed.

2.6.3 The Works Programme shall include activities for all the phases and stages of the Works, clearly showing all logical interdependencies and stages in the development of the Contractor's design, procurement, installation, commissioning and setting to work. As a minimum, it shall include:

- a) all work comprising the Permanent Works;
- b) preparation, submission and review of Design Documentation showing all items where review by the Engineer-in-charge is required;
- c) preparation and submission for review of mock-ups and prototypes;
- d) procurement of all major materials and items of Contractor's Equipment for the Works, including the dates when the orders are to be placed, manufacture period and the expected delivery date to the Site for each item, long lead items to be clearly identified.
- e) all manufacture or prefabrication of materials or components;
- f) all design and installation of major Temporary Works;
- g) all activities associated with the securing of necessary permits and other statutory approvals for the Works;
- h) access and availability dates for all Other Contractors;
- i) all interfaces related to the Project that may affect the progress of the Works;
- j) testing activities which demonstrate an understanding of the interfaces and requirements of testing and commissioning and the dependencies of these activities with other activities of the Contractor and of Other Contractors;

2.6.4 The Works Programme shall be divided into sub-programmes of manageable sizes addressing in more specific detail, the content of the management plans. The sub-programmes shall be as follows:

- a) Submittal Schedule;
- b) Design, Procurement and Construction Programme;
- c) Construction Programme
- d) Installation Programme;

e) Testing and Commissioning Programme (to the extent required by the contract);

2.6.5 The submission of the full version of the Works Programme shall include the design, and procurement programme, construction programme and the testing programme identifying all major construction, testing activities and associated interfaces.

2.6.6 The sub-programmes shall be further substantiated by the following supplementary programmes:

- a) Three Month Rolling Programme;
- b) Three Week Rolling Programme;
- c) Other programmes required by the Engineer-in-charge.

2.6.7 The Contractor's Works Programme shall comply with the following:

- a) all programmes, except the Three Week Rolling Programme, shall be computerized CPM networks developed using the PDM, and submitted in both hard copy and electronic data format;
- b) all programmes, except the Three Week Rolling Programme, shall be prepared using the specified version of CPM scheduling software.
- c) unless consent is otherwise obtained from the Engineer-in-charge, all programmes shall be accompanied by a programme analysis report;
- d) a standard Gregorian calendar shall be used for planning and execution of the Works. All programme submissions shall include details of the Contractor's allowance for Public Holidays and non-work periods. If a Key Date or Milestone falls on a public holiday or non-work day, it shall be effective the next working day;
- e) the planning unit for the duration of all programme activities shall be the day. Any activity having a duration of more than fourteen (14) days shall be divided into sub-activities that shall not exceed (14) days, other than the long-led procurement activities;
- f) CPM programmes shall reflect status using remaining duration and percent complete;
- g) all programmes shall be fully resource loaded as appropriate or required by the Engineer-in-charge covering all stages and aspects of the Contract and shall include, but not be limited to:
 - v. major manpower for both design and installation ;
 - vi. number of items of Contractor's Equipment ;
 - vii. number of drawings and other design deliverables ;
 - viii. principal quantities of components or parts ;

2.6.8 All programmes constituting the Works Programme shall be organised in a logical work breakdown structure including work stages or phases. Each activity shall be coded to indicate, as a minimum, the work group or entity responsible for the activity, the area, facility or location and the cost centre in which the activity is included, from information provided. Key Dates and Milestones shall be coded so as to be separately identifiable. The Contractor may be required to assign additional activity codes as required by the Engineer-in-charge.

2.7 Submittals Schedule

2.7.1 The Contractor shall, within 30 calendar days of the Effective Date, submit a Submittal Schedule covering all proposed submissions to the Engineer-in-charge. The Submittals Schedule shall be

broken down into a submission programme for each of the management plans, each of which shall define the dates for individual submissions and these shall conform to the baseline dates shown in the Works Programme.

- 2.7.2 The Submittal Schedule shall include each submission for every item listed in the specification as being required to be submitted.
- 2.7.3 The Submittal Schedule shall ensure that all submissions are properly co-ordinated with the Contractor's overall Works Programme, particularly in respect of the following:-
- a) progress of design, building, construction, and testing work;
 - b) co-ordination with other contractors and statutory bodies; and
 - c) including due allowance for the Engineer-in-charge's review process to be undertaken, including the time needed for any re-submissions.
- 2.7.4 The Submittal Schedule shall specifically include a milestone for the submission by the Contractor of the Detailed Design on completion of the Detailed Design stage. The Detailed Design shall include at least but not limited to; details showing all of the proposed equipment, interconnections, physical layout, installation locations and interfaces to other suppliers.

2.8 Design and Procurement and Construction Programme

- 2.8.1 Within 30 Calendar days of the Effective Date, the Contractor shall submit for review by the Engineer-in-charge a design and procurement and Construction Programme that shall be an integrated part of the overall Works Programme.
- 2.8.2 The design and procurement and Construction Programme shall show the interdependencies between engineering disciplines as well as between the Contractor and its Vendors. This programme shall demonstrate compliance with the requirements of the Submittal Schedule.
- 2.8.3 The Contractor shall submit a weighted bar chart of the Contractor's design and procurement activities. Each activity weight shall normally not be more than 5% of the total man-hour content or value of the respective work.
- 2.8.4 The design and procurement programme shall include a separate breakdown, supported by the material control schedule, which shall be a complete amplification of the Contractor's programme and equipment list, including those items which are subject to long lead time or component parts which are manufactured from countries outside the country of assembly and testing.
- 2.8.5 The material control schedule shall be automated, and shall detail the following information for each permanent major and minor material and significant component. The format of such a schedule shall include:
- a) name, description, supplier/sub-supplier details;
 - b) drawing information (where appropriate), title, drawing status, submission dates, shop drawings/ fabrication drawing preparation, etc.;
 - c) the manufacturing process, manufacturing of test pieces, trial production, Engineer-in-charge's inspection, monthly production of components and monthly supply of components;

- d) the assembly process, erection and assembly sequences, test assemblies, monthly assembly requirement, Engineer-in-charge's inspection, testing of assemblies; and
- e) the transportation process, quality release from factory, factory storage, transport to dock, shipment (where applicable).

2.8.6 The Contractor shall continuously maintain this schedule and report upon the status of each item as part of the Contractor's regular progress reporting.

2.8.7 From this base data, the Contractor shall prepare an exception report detailing all components that are in delay. This report shall be annotated with the reason for the delay and shall indicate what action the Contractor is taking to recover the lost time.

2.8.8 The Contractor shall submit, as part of the design, procurement and manufacturing programme, a factory testing programme that shall support all aspects of the factory testing plan. This programme shall be limited to those articles/equipment as required by the Engineer-in-charge for MEP services. This programme shall clearly demonstrate the logic of the process and all related processes.

2.8.9 The factory testing programme shall be fully detailed, with activities individually identifying all tests for which a certificate will be issued, and shall include activities for preparation, submittal and review of the test procedures. This programme shall be limited to those articles/equipment as required by the Engineer-in-charge for MEP services.

2.8.10 The factory testing programme shall demonstrate the logical dependencies between the individual tests of the Works and shall also show the interfaces and dependencies with the Contractor's delivery programme. This programme and any interfaces shall be limited to those articles/equipment as required by the Engineer-in-charge for MEP services.

2.8.11 The factory testing programme, when required by the Engineer-in-charge, shall include details of inspection, testing and witnessing of the Contractor's and subcontractor's procurement and manufacturing activities. As a minimum, it shall include:

- a) Quality Hold Points;
- b) Quality Control Points;
- c) Type Tests; and
- d) Routine tests.

2.9 Coordinated Construction Plan

2.9.1 The Coordinated Construction Plan shall be submitted not less than 3 months before the start of construction activities or as directed by the Engineer-in-charge.

2.9.2 The construction programme shall include detailed activities describing all aspects of the construction of the Works, to meet all Milestones and Key Dates given in the Contract. It shall be clearly linked to the design and procurement programme and Testing Programme to form an integrated part of the Works Programme.

2.9.3 The construction programme shall be fully supported by the construction management plan.

- 2.9.4 The construction programme shall indicate the physical areas to which the Contractor requires access, access date, duration required and the required degree of completion for civil or architectural finishes prior to the access date.
- 2.9.5 The construction programme shall take into account the requirements for arrival at port, delivery, storage, preservation and positioning of large items of Contractor's Equipment and Permanent Works and shall set out the Contractor's proposed delivery route for such items to the Site.
- 2.9.6 Installation Tests shall be clearly shown in the Installation Programme and shall include those interface tests required to be carried out by others to establish a timetable for these tests.
- 2.9.7 Activities that may be expedited by the use of overtime, additional shifts or by any other means shall be identified and explained.
- 2.9.8 In preparing the Installation Programme, the Contractor should note that the following conditions shall apply:
- a) the Contractor shall not have exclusive access to any part of the Site except by the specific consent of the Engineer-in-charge;
 - b) the Contractor shall take note that concurrent time allocations for certain areas may be given to more than one contractor. The Contractor shall co-ordinate the Contractor's work in such areas with that of Other Contractors;
 - c) the absence of a programme date or installation period for the Contractor in a specific area shall not prejudice the right of the Engineer-in-charge to establish a reasonable programme date or installation period for that area;
 - d) the Contractor shall comply with the identified Key Dates. The Contractor shall also comply with the Milestone dates identified in the Schedule of Milestones; and
 - e) the Contractor shall deliver all Contractor's Equipment and Permanent Works for stations and depots by road and via temporary access openings unless otherwise reviewed without objection by the Engineer-in-charge.

2.10 Testing and Commissioning Programme (for MEP works & Equipment only)

- 2.10.1 The testing and commissioning programme shall be submitted not less than 3 months before the start of testing activities or such earlier date as directed by the Engineer-in-charge
- 2.10.2 The Contractor shall submit the testing and commissioning programme that shall fulfil all the on-Site testing requirements. The testing programme shall clearly demonstrate the logic and highlight the topics listed in the on-Site testing plan.
- 2.10.3 The testing and commissioning programme shall be fully detailed, with activities individually identifying all tests for which a certificate will be issued, and shall include activities for preparation, submittal and review of the test procedures.
- 2.10.4 The testing and commissioning programme shall demonstrate the logical dependencies between the individual tests of the Works, and shall also show the interfaces and dependencies with all of the Other Contractors' tests required to commission the Works.

2.11 Training Programme (applicable only to MEP services and as agreed with the Engineer-in-charge)

- 2.11.1 The Contractor shall, within 180 days of the Effective Date, submit for review by the Engineer-in-charge, a Training programme covering all proposed formal training courses, delivery of training equipment and accesses by the Client's personnel for informal 'hands on training'.
- 2.11.2 The training programme shall be sufficiently detailed for the Client to ensure the availability of staff for all the courses required.
- 2.11.3 The training programme shall include the training of all Vendors.

2.12 Three Month Rolling Programme

- 2.12.1 Within 30 days of the Effective Date, the Contractor shall submit to the Engineer-in-charge for review his initial three month rolling programme. The initial submission shall show in detail all activities that have commenced or are due to start within the first three calendar month period to meet Key Dates and Milestones and any other dates set out in the Contract. Thereafter, the Contractor shall submit a new three month rolling programme every month as part of the Monthly Progress Report.
- 2.12.2 The three month rolling programme shall after the initial submittal:
- a) provide details of all activities that are in progress, or are due to start, within the forthcoming two month period and the previous one month period shall also be shown;
 - b) be updated every month and be submitted concurrent with the Monthly Progress Report;
 - c) highlight all required dates for transmittal or receipt of information to or from the Engineer-in-charge, Vendors or Other Contractors; and
 - d) consist of a three month time window extracted from the Works Programme.

2.13 Three Week Rolling Programme

- 2.13.1 Prior to the start of the Site mobilisation and each week during the construction and testing and commissioning phases, a time-scaled three week rolling programme shall be prepared and submitted to the Engineer-in-charge for review. The three week programme shall show in detail all activities that are in progress or due to start or finish within two weeks of its submission. The third week prior to the submission date shall show activities in progress or completed.
- 2.13.2 The activities shown on the three week rolling programme shall be an amplification of and compatible with the latest version of the three month rolling programme in all respects.
- 2.13.3 The three week rolling programme need not be computer generated and does not require a detailed programme analysis report. Any activity exceeding one week in duration shall be divided into sub-activities, the duration of which shall not exceed one week.

2.14 Programme Submissions

- 2.14.1 The Contractor shall submit all programmes described in this Chapter in conjunction with the Management Plans to the Engineer-in-charge for review.

2.15 Programme Review

- 2.15.1 The Engineer-in-charge shall review / comment / approve within 21 days of receipt of the initial submission of any programme. The Contractor shall amend the programme taking into account the Engineer-in-charge's comments and/or requirements and resubmit the programme within 21 days.
- 2.15.2 In the case of further re-submittals, the resubmission time shall also be 21 days.

2.16 Works Programme Revisions

- 2.16.1 The Contractor shall immediately notify the Engineer-in-charge in writing of the need for any change in the Works Programme, whether due to a change of intention or circumstances or for any other reason. Where such a proposed change affects the timely completion of the Works or part thereof; the Contractor shall within 14 days of the date of notifying the Engineer-in-charge submit for the Engineer-in-charge's review his proposed revised Works Programme and accompanying programme analysis report. The proposed revised Works Programme shall show the sequence of operations of any and all work related to the change and the impact of changed work or changed conditions on the Works and Other Contractors and their works.
- 2.16.2 If at any time the Engineer-in-charge considers the actual or anticipated progress of the work reflects a significant deviation from the Works Programme, he may request the Contractor to submit a proposed revised Works Programme. Upon receipt of such a request the Contractor shall submit within 14 days a revised Works Programme, together with an accompanying programme analysis report and narrative statement that shall demonstrate the means by which the Contractor intends to eliminate the deviation.

2.17 Progress Monitoring

- 2.17.1 The Contractor shall monitor its own and its vendors' performance and against programmes to ensure its compliance with its obligations under the Contract. Monitoring of the Works shall include direct, daily monitoring of the progress of the Works and the preparation of written and computerised reports to be submitted to the Engineer-in-charge. The reports shall include all necessary supporting data to apprise the Engineer-in-charge of the status of the completion of the Works as described below.
- 2.17.2 The Contractor shall prepare Monthly Progress Reports covering all aspects of the execution of the Works. Such Monthly Progress Reports shall be in writing and shall be delivered to the Engineer-in-charge by the 25th day of the month of the Monthly Progress Report. The Monthly Progress Report shall take account of work performed from 25th of the previous month to the 25th of the current month to which the Monthly Progress Report relates.
- 2.17.3 The Monthly Progress Report shall include an executive summary and contain clear and concise statements in respect of every significant aspect of the Works.
- 2.17.4 The Monthly Progress Report shall contain evidence that documents and supports the progress of the Works, as stated in the Request for Payment, to the satisfaction of the Engineer-in-charge.
- 2.17.5 The reports, documents and data provided shall be an accurate representation of the current status of the Works and of the work to be accomplished and shall provide the Engineer-in-charge with a sound basis for identifying problems and deviations from planned work and for making decisions.

2.17.6 Monthly Progress Report

- a. Monthly Report to be in the format supplied
- b. A format complete with Appendices is attached for reference in Appendix 6
- c. The contents should include the following information:
 - i. Executive Summary
 - ii. Achievements of the month
 - iii. Top 10 significant issues
 - iv. Health, Safety and Environment
 - v. Quality Assurance
 - vi. Design / Engineering Status
 - vii. Procurement and Contract Status
 - viii. Programme status

2.17.7 Updating of Works Programme

- a) The Works Programme shall be updated on fortnightly / monthly basis and submitted in linked bar chart form with monthly progress report. The updated version shall be compared with the original schedule.
- b) Client to provide a turn-around document to the Contractor five (5) business days prior to progress “cut off” date detailing the information required to be updated.
- c) While updating, the following shall be considered:
 - a) Actual date of start and completion for the activities.
 - b) Contractual completion dates for vendors and Vendors/turnkey agencies, any change of duration due to offloading of vendors/Vendors/turnkey agencies to be reflected.
 - c) Duration of activities not yet started shall remain the same as per the original schedule.
 - d) Anticipated dates of activities in progress.
 - e) Addition/deletion of any activity if required or any change on job logic.
 - f) Any change in drawing/material availability or change in activity duration.
 - g) Any change in resource planning.
 - h) Change in philosophy/strategy in execution of balance works, keeping in mind the actual status of the project.
 - i) While updating of the construction schedule, the recovery schedules shall be shown in bar charts along with the original schedule.

2.18 Programme Analysis Report

2.18.1 The Contractor shall submit a programme analysis report that shall, in narrative format, describe the basis and assumptions used to develop all programme submissions. The programme analysis report shall be prepared in a format having been reviewed and issued by the Engineer-in-charge and shall contain as a minimum the following:

- a) cycle times and work sequences;
- b) the deployment of Contractor's Equipment and labour;

- c) the production rates used in determining duration;
- d) the shifts assumed in determining duration;
- e) the breakdown of labour requirements by trades;
- f) the schedules of quantities used in developing the programme, to the extent that such information is not provided elsewhere;
- g) interfaces with the Engineer-in-charge and Other Contractors and other constraints; and
- h) any assumptions used in the programme.

2.18.2 The programme analysis report shall be in sufficient detail to enable the duration, leads and lags in the logic diagram to be reconciled and substantiated, and to enable the projected levels of labour (by trade) and staff and flows of goods, materials and equipment to be substantiated.

2.19 Key Date and Milestone Report

2.19.1 The Key Date and Milestone Report shall be prepared in a format reviewed by the Engineer-in-charge and shall identify and state the status of:-

- a) all Key Dates and Milestones that were planned to be achieved in the reporting period or earlier but have not been achieved;
- b) all Key Dates and Milestones that have been achieved in the reporting period;
- c) all Key Dates and Milestones that are planned to be achieved in the next reporting period; and
- d) any future Key Dates and Milestones those appear unlikely to be achieved on time.

2.19.2 The Key Date and Milestone Report shall identify, for all relevant Key Dates and Milestones, the planned dates, the actual dates achieved, and where the original planned dates are forecast to be unachieved, the revised dates identified in the Contract, as the same may be revised from time to time in accordance with the Contract.

2.19.3 The Key Date and Milestone Report shall also provide an explanation for any deviation from the planned dates. Measures taken or required to recover programme delays shall also be identified.

2.20 Shipping Log / Materials Tracking Schedule

2.20.1 The Contractor shall prepare a materials/equipment procurement and delivery schedule to assist in planning, execution and monitoring the Project construction and which shall become a part of the final project record set, to contain the following:

- a) Specification Section/Paragraph.
- b) Item Description.
- c) Time required for construction.
- e) Quantity needed for construction.
- f) Source (Vendor) Contractor furnished.
- g) Purchase Order Date.
- h) Scheduled Shipping Date.
- i) Scheduled Job Site Arrival Date.
- j) Shipping Method Air/Ocean Classified/Unclassified.

- k) Actual Shipping Date.
- l) Actual Arrival date.
- m) Date Cleared Customs.
- n) Quantity Actually Received.

2.21 The schedule shall tie materials tracking to the respective work activity. Not all materials shall be required to be reported in this format. The Engineer-in-charge shall confirm, in consultation with the Contractor, what materials are required to be tracked and reported.

2.22 Schedule Recovery

2.22.1 If, in the opinion of the Client, the Contractor's execution of the Works falls behind the accepted works Programme, the Engineer-in-charge shall so notify the Contractor, in writing.

2.22.2 The Contractor shall take any and all steps necessary within the agreed work period parameters to improve progress. to complete all works at or before the agreed upon Contract completion date.

2.23 Completion Baseline Schedule

2.23.1 The Contractor shall establish a baseline schedule for incorporation of:

- a) Revisions to the network logic;
- b) Impact of potential Variations;
- c) Impact of delays in the Works;
- d) Requests for extension of the Time for Completion;
- e) Requests for equitable adjustment;
- f) Variation of the Contract;
- g) Changes that affect resource or cost loading;
- h) Changes that affect one or more existing activities; or
- i) Insertion of new activities in the existing baseline schedule.

2.23.2 Proposed revisions to the Works Programme: The Contractor shall submit a proposal for revision to the Works Programme within 15 days after occurrence of a delay.

2.23.3 Time Impact Analysis:

- a) Should the Contractor consider that potential Variation may have an impact on the duration of any activity or activities, the Contractor shall submit a proposal to include justification for proposed revision(s), including a written narrative of supporting specialized Works scheduling time and value analysis products developed from the scheduling software.
- b) The analysis shall identify cause of delay being corrected, recovered, or the basis for additional time requests, and shall include the following:
 - a) Description of impact upon all float.
 - b) List of affected activities with their activity numbers.

- c) Fragnet demonstrating proposal to incorporate Variation of the Contract into the Works Programme.
 - d) Demonstration of the estimated time impact based on the events of delay, the date the Variation order was issued, the current status of construction, and the event time computation of all activities affected by the Variation or delay. Event times used in the analysis shall be those included in the latest update of the Works Programme or as adjusted for the events of delay.
 - e) Other specialized Project scheduling time and value analysis products illustrating the influence of each change, delay, etc. upon the current Contract completion date, as required.
- c) Acceptance and Incorporation:
- a) Acceptance or rejection of time impact analysis by the Engineer-in-charge will be made after reasonable review and analysis, unless subsequent meetings and negotiations are necessary.
 - b) Upon acceptance, a copy of the time impact analysis signed by the Engineer-in-charge will be returned to Contractor for incorporation into the Works Programme.
 - c) The Contractor shall incorporate the accepted fragnets into the Works Programme during the first update after agreement is reached, without waiting to receive an executed modification, if one is to be issued.
 - d) Upon acceptance of the revised Works Programme by the Engineer-in-charge, the Contractor shall, enter the schedule for the record as the revised baseline Works Programme.

2.23.4 The Contractor shall ensure that the act of preparing any substantiation proposal, in presenting alternatives to the accepted baseline schedule, does not corrupt the operational database. Accurate maintenance of the baseline schedule is a deliverable of the Contract under the Contract.

2.23.5 Delays that are found to be caused by Contractor's own actions will not be considered as an acceptable cause for an extension in the Time of Completion.

2.23.6 Directed Changes:

- a) If Contractor fails to submit proposed revisions to the Works Programme within the specified time following receipt of a variation order, the Engineer-in-charge may furnish Contractor with suggested revisions to the Works Programme. Such suggested revisions may not change the Time for Completion.
- b) The Contractor shall include such revisions in the Works Programme until the revisions, and final changes and impacts submitted by the Contractor have been negotiated. If Contractor has any objection to the suggested revision, he shall advise the Engineer-in-charge within 2 (two) weeks of receipt of the suggested revisions. Regardless of objections, the Contractor shall incorporate the suggested revisions in updates to the Works Programme until a mutual agreement is reached.
- c) If Contractor fails to submit alternative revisions within 2 weeks of receipt of the suggested revisions, Contractor will be deemed to have concurred with the suggested revisions by the Engineer-in-charge. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

2.23.7 Revisions: the Contractor shall make no revisions to the logic, duration, cost, or manpower baseline in any previously accepted Works Programme unless and until a substantiation proposal,

including full justification, has been submitted to and a Variation Order to that extent has been issued by the Engineer-in-charge.

2.24 Final Report Project Schedule

2.24.1 The Contractor shall prepare and certify a final updated and detailed Works Programme reflecting the actual conditions and performance incurred during the course of design, construction, and commissioning which shall serve as a formal record of the final reported execution of the Works.

2.25 Progress Meetings

2.25.1 The Client will chair progress meetings to be held fortnightly with the Contractor. These meetings will be held at dates and times to be advised by the Engineer-in-charge. Progress meetings shall not be later than 10 days after the issue of the Contractor's Monthly Progress Report.

2.25.2 The Engineer-in-charge may convene at his discretion, at any time upon reasonable notice to the Contractor, any meeting, either on or off the Site, to discuss and address any aspect of the Works or the Contract. The Contractor shall attend any such meetings convened by the Engineer-in-charge.

2.25.3 All meetings shall be convened at Site unless directed otherwise by the Engineer-in-charge. Meetings shall be attended by senior personnel from the Contractor who shall arrive properly briefed for all aspects of the meeting and shall be empowered to make executive decisions in respect of the execution of the Works.

2.25.4 Kick Off Meeting

- a) A kick off meeting shall be organized within two weeks of the signing of the Contract. The meeting shall be attended by Contractor's Representative and Engineer-in-charges. During the meeting the following with respect to planning, scheduling, monitoring and control system shall be discussed and finalized.
- b) Planning deliverables required for monitoring and control of Execution of the Works.
- c) Work breakdown structure for Project schedules, organization and level of detailing for overall Project schedule.
- d) Procedure for planning, scheduling, monitoring and control system of the Works including all reporting formats.
- e) List of engineering deliverables with indicative schedule for submission, if applicable.
- f) List of critical equipment and materials for the fortnightly expediting report to be issued by the Contractor.
- g) Works Programme activity coding as proposed by the Client to be followed.
- h) Inputs as per the demands of the Client shall be submitted by the Contractor.

2.26 Quarterly Review Meetings

2.26.1 The Engineer-in-charge may at the end of each quarter in an Accounting Year convene quarterly review meetings at site. The Engineer-in-charge will notify the Contractor the date of such quarterly review meetings not less than 28 days before they are to be held.

- 2.26.2 Quarterly review meetings shall be held over a period of up to 3 days in order to Review the overall progress of the Works in the context of the Project as a whole and to address and resolve any issues relevant to the execution and progress of the Works. The Contractor shall have in attendance one senior representative equivalent to that of a BU Head from each of the companies comprising the Contractor (together with the Managing Director of the company acting as leader or sponsor of the Contractor if it is a joint venture, consortium or partnership whenever necessary and required by the Engineer-in-charge).
- 2.26.3 The Contractor shall submit names of the persons whom the Contractor proposes to attend each quarterly review meeting to the Engineer-in-charge for review not less than 7 days prior to each Quarterly Review Meeting.
- 2.26.4 The Contractor shall provide to the Client for every calendar quarter, a video recording, which will be compiled into a 3 (three) – hour compact disc or digital video disc, as the case may be, covering the status in that quarter. The first such video recording shall be provided to the Client within 7 (seven) days of the Award of Contract and thereafter, no later than 15 (fifteen) days after the close of each quarter.

3. OPERATION AND MAINTENANCE MANUALS

3.1 General

- 3.1.1 The Contractor shall provide maintenance manuals (the “Maintenance Manuals”) for the regular and preventive maintenance of the Works.
- 3.1.2 The Maintenance Manual shall, in particular, include provisions for maintenance of the Works and shall provide for life cycle maintenance, routine maintenance and reactive maintenance which may be reasonably necessary for maintenance and repair of the Works, including replacement thereof, such that its overall condition conforms to Good Industry Practice.

3.2 Maintenance Manual

- 3.2.1 The Maintenance Manual shall include:
- a) preventive maintenance schedule;
 - b) arrangements and procedures for carrying out urgent repairs;
 - c) criteria to be adopted for deciding maintenance needs;
 - d) intervals and procedures for carrying out inspection of all equipment supplied under the Contract;
 - e) intervals at which the Client shall carry out periodic maintenance;
 - f) arrangements and procedures for carrying out safety related measures;
 - g) intervals for major maintenance works and the scope thereof;

3.3 As Built drawings and Documentation

- 3.3.1 The Contractor shall prepare and submit to the Engineer-in-charge as-built drawings and documents of the Works, showing all Works as executed. The drawings shall be prepared as the Works proceed, and shall be submitted to the Engineer-in-charge for his inspection. The Contractor shall obtain the consent of the Engineer-in-charge as to their size, the referencing system, and other pertinent details. Contractor shall submit as-built drawings and Documents in six hard copies and one electronic copy at least one month prior to the Tests on Completion for review by the Engineer-in-charge. The drawings shall represent a true scale picture of the works
- 3.3.2 All The drawings shall represent to scale picture of the Works. The As-Built Drawings and documents shall include but not limited to:
- i) Arrangement drawings for all individual sections of the Works;
 - ii) interface systems and individual sections of the Works;
 - iii) Schematic drawings for all pneumatic, hydraulic, electric, water and drainage systems etc.;
 - iv) Sizes, material and finish of all fixtures
 - v) drawings and reference numbers;
 - vi) Wiring diagrams including internal wiring of sealed unit items;
 - vii) Setting dimensions and tolerances; and
 - viii) Asset register of all the assets procured under the contract indicating the manufactures name, Sr. no., quantity, year of manufacture/installation/ commissioning.

4 APPENDIX 6: MONTHLY PROGRESS REPORT FORMAT

1. **EXECUTIVE SUMMARY** ERROR! BOOKMARK NOT DEFINED.
2. **ACHIEVEMENTS OF THE MONTH**..... ERROR! BOOKMARK NOT DEFINED.
3. **TOP SIGNIFICANT ISSUES**..... ERROR! BOOKMARK NOT DEFINED.
4. **HEALTH, SAFETY AND ENVIRONMENT**..... ERROR! BOOKMARK NOT DEFINED.
5. **QUALITY ASSURANCE** ERROR! BOOKMARK NOT DEFINED.
6. **DESIGN/ ENGINEERING STATUS**..... ERROR! BOOKMARK NOT DEFINED.
7. **PROCUREMENT & CONTRACT STATUS** ERROR! BOOKMARK NOT DEFINED.
8. **ROLLING STOCK WORKS OVERVIEW** ERROR! BOOKMARK NOT DEFINED.
9. **PROGRAMME STATUS**..... ERROR! BOOKMARK NOT DEFINED.

APPENDICES ERROR! BOOKMARK NOT DEFINED.

Appendix 1 *Master Schedule Progress*.....**Error! Bookmark not defined.**

Appendix 1.1 *Current Progress against Baseline***Error! Bookmark not defined.**

Appendix 1.2 *Planned % Completion against Actual Level Completion***Error! Bookmark not defined.**

Appendix 1.3 *Progress Curve*.....**Error! Bookmark not defined.**

Appendix 1.4 *WBS Schedule and Timechainage***Error! Bookmark not defined.**

Appendix 1.5 *Master Schedule 3 Month Look ahead*.....**Error! Bookmark not defined.**

Appendix 2 *Master Schedule Critical Path***Error! Bookmark not defined.**

Appendix 2.1 *Longest Path*.....**Error! Bookmark not defined.**

Appendix 2.2 *Critical Activities*.....**Error! Bookmark not defined.**

APPENDIX 3: *Progress Photographs* **Error! Bookmark not defined.**

EXECUTIVE SUMMARY

PROCUREMENT

DESIGN

OTHER

<i>SL. NO.</i>	<i>CATEGORY</i>	<i>ACHIEVEMENTs</i>

TOP SIGNIFICANT ISSUES

<i>CRITICALITY</i>	<i>ISSUE</i>	<i>DESCRIPTION</i>	<i>POSSIBLE CONSEQUENCES (QUALITATIVE ASSESSMENT)</i>	<i>PROPOSED ACTIONS</i>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

HEALTH, SAFETY AND ENVIRONMENT

HSE ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

Narrative

QUALITY ASSURANCE

ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

DESIGN/ ENGINEERING STATUS

DESIGN ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

Narrative

PROCUREMENT & CONTRACT STATUS

PROCUREMENT ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

Narrative

APPROVAL & NOC STATUS

APPROVAL AND NOC ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

Narrative

XXXXXXXXXXXXXXXXXX

CONSTRUCTION STATUS

CONSTRUCTION ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

Narrative

XXXXXXXXXXXXXXXXXXXX

OVERALL CONSTRUCTION STATUS

<i>Element</i>	<i>Planned construction at end of month % complete</i>	<i>Actual construction at end of month % complete</i>	<i>Variance in Percentages</i>
<i>Element 1</i>			
<i>Element 2</i>			
<i>Element 3</i>			
<i>Element 4</i>			
<i>Element 5</i>			

NARRATIVE

OVERALL CONSTRUCTION STATUS

MOBILIZATION

PROGRAMME STATUS

Outputs from Master Schedule will be included in next month's report following finalisation

ACTIVITIES

Major Activities Achieved during the Reporting Period

<i>DESCRIPTION</i>	<i>DATE ACHIEVED</i>	<i>COMMENTS</i>

Major Activities not Achieved and Reasons

<i>DESCRIPTION</i>	<i>REASON FOR NON ACHIEVEMENT</i>	<i>SCHEDULE IMPACT (DAYS)</i>	<i>MEASURES BEING TAKEN</i>

Major Activities Planned for Next Reporting Period

<i>DESCRIPTION</i>	<i>DATE</i>	<i>COMMENTS</i>

Narrative

Planning and Implementation Schedule

APPENDICES

APPENDIX 1	MASTER SCHEDULE PROGRESS
APPENDIX 1.1	CURRENT PROGRESS AGAINST BASELINE
APPENDIX 1.2	PLANNED % COMPLETION AGAINST ACTUAL LEVEL COMPLETION
APPENDIX 1.3	PROGRESS CURVE
APPENDIX 1.4	WBS SCHEDULE AND TIMECHAINAGE
APPENDIX 1.5	MASTER SCHEDULE 3 MONTH LOOK AHEAD
APPENDIX 2	MASTER SCHEDULE CRITICAL PATH
APPENDIX 2.1	LONGEST PATH
APPENDIX 2.2	CRITICAL ACTIVITIES
APPENDIX 3:	PROGRESS PHOTOGRAPHS

6. APPENDIX 8: TURN-AROUND DOCUMENT SAMPLE

TECHNICAL SPECIFICATIONS

**[TO BE INCORPORATED AS PER REQUIREMENT OF THE WORK PUT TO
TENDER DULY QUOTING THE RELEVANT SPECIFICATION NUMBER OF
APSS. BSI Code No. , MORT&H, etc. STANDARD SPECIFICATION NO.]**

STANDARD SPECIFICATION FOR BUILDING WORK (AS PER A.P.S.S.)

All the items of work shall be executed as per the Standard Specifications laid down in APSS, the relevant I.S Codes of the Special Specification as indicated in Schedule - 'A' of the tender

Sl.No.	Name of the specification	Specification No.of.APSS
1.	STANDARD SPECIFICATION FOR MATERIALS	
1.01	General	101
1.02	Common Burnt Clay Brick	102
1.03	Broken Brick	103
1.04	Surki	104
1.05	Fly Ash	105-
1.06	Rough Stones for dry packed Revetments and aprons	106
1.07	Stone for Masonry	107
1.08	Broken Stone/Coarse Aggregate for Concrete	108
1.09	Marble	109
1.10	Sand	110
1.11	Lime	111
1.12	Portland Cement of not less than '43' glade	112
1.13	Lime Mortar	113
1.14	Surki Mortar	114
1.15	Cement Mortar	115
1.16	Cement Lime Mortar	116
1.17	Sebara Putty (Lime Putty)	117
1.18	Pan Tiles	118
1.19	Burnt Clay Flat Terracing Tiles	119
1.20	Clay Roofing Tiles, Mangalore pattern	120
1.21	Glazed Tiles	121
1.22	Bitumen Felts for Water Proofing and Damp Proofing	122
1.23	Cuddapah/Shahbad Slabs	123

Sl.No.	Name of the specification	Specification No.of.APSS
1.24	Galvanized Steel Sheets (Plain and Corrugated)	124
1.25	Un-reinforced Corrugated Asbestos Cement sheets	125
1.26	Steel for Reinforcement	126
1.27	Steel for Structural Work	127
1.28	Asbestos Cement Flat Sheets	128
1.29	Water	129
1.30	Teak Wood	130
1.31	Bamboos	131
1.32	Ballies	132
1.33	Steel Sheets piling Sections	133
1.34	Bitumen Emulsion for Roads (Anionic Type)	134
1.35	Cut back Bitumen	135
1.36	Paving Bitumen	136
1.37	Coal Tar Pitch	137
1.38	Morrum	138
2.	STANDARD SPECIFICATIONS FOR CLEARING SITE, DISMANTLING BUILDING AND OTHER STRUCTURES AND BLASTING	
2.01	Clearing Site	201
2.02	Dismantling of Buildings and other Structures	202
2.03	Blasting	203
3.	STANDARD SPECIFICATIONS FOR EARTH WORK	
3.01	Excavation and Forming un compacted banks	301
3.02	Embankment compacted by other than driven equipment	302
3.03	Embankment compacted by power driven equipment	303
3.04	Clay blankets	304
3.05	Filters	305
3.06	Rock-fill in toe of embankment	306

Sl.No.	Name of the specification	Specification No.of.APSS
3.07	Turfing	307
3.08	Excavation of foundation	308
3.09	Filling in foundations	309
3.10	Filling in Basement	310
3.11	Well sinking for foundations	311
3.12	Well sinking for Water Supply	312
3.13	RCC Precast and Cast-in-situ pile foundations	313
4.	STANDARD SPECIFICATIONS FOR CONCRETES	
4.01	lime Concrete and surki concrete	401
4.02	Cement Concrete for plain and reinforced works.	402
4.03	Reinforced cement concrete work	403
4.04	Repair grouting to aprons and revetments with surki Concrete and pointing with surki mortar	404
4.05	Prestressed concrete work.	405
5.	STANDARD SECIFICATIONS FOR BRICK MASONRY	
5.01	Brick Masonry-General	501
5.02	Brick in Lime Mortar	502
5.03	Brick in Surki Mortar	503
5.04	Brick in Cement Mortar	504
5.05	Brick in Cement Lime Mortar	505
5.06	Brick in clay	506
5.07	Brick Arch work	507
5.08	Brick in Honey Comb work	508
5.09	Reinforced half-brick partition walls	509
5.10	Boiler Brick works	510
5.11	Honey Comb works with white washed pan tiles	511
5.12	Brick Nagging	512

Sl.No.	Name of the specification	Specification No.of.APSS
6.	STANDARD SPECIFICATIONS FOR STONE MASONRY	
6.01	Stone Masonry-General	601
6.02	Cut stone in Lime Mortar	602
6.03	Cut stone in Surki Mortar	603
6.04	Cut stone in Cement Mortar	604
6.05	Cut stone-Rock Rustic or quarry faced in mortar	605
6.06	Cut stone string course and other cornice etc. in mortar	606
6.07	Cut stone arch work	607
6.08	Rubble arching	608
6.09	Coursed Rubble in Lime Mortar (1 st sort)	609
6.10	Coursed Rubble in Surki Mortar (1 st sort)	610
6.11	Coursed Rubble in Cement Mortar (1 st sort)	611
6.12	Coursed Rubble in Mortar (2nd sort)	612
6.13	Uncoursed Rubble or random rubble in lime mortar	613
6.14	Random Rubble in surki mortar	614
6.15	Random Rubble in Cement Mortar'	615
6.16	Random Rubble in Clay	616
6.17	Dry stone masonry (for retaining wall)	617
6.18	Damp proof (or any proof) course with Shahabad stone/Cuddapah stone 50mm thick in cement mortar 1:3	618
6.19	Rough stone dry packing for aprons and revetment	619
6.20	Laterite or rough stone pitching for fiver conservancy works	620
6.21	Moorum back to rough stone dry packing and gravelling to top and side slopes of bunds 150 mm thick	621
7.	STADARD SPECIFICATIONS FOR FLOORING GENERAL	
7.01	Flooring General	701
7.02	Flooring with Shahabad/Cuddapah slabs	702
7.03	Flooring with polished Shahabad/Cuddapah slabs	703

Sl.No.	Name of the specification	Specification No.of.APSS
7.04	Flooring with Cement Mortar (1 :3) 12mm thick	704
7.05	Flooring with coloured cement mortar (1 :3),12mm thick	705
7.06	Terraced flooring with brick on edge, 75mm thick broken brick aggregate concrete and 12mm thick cement plastering (1 :3) on top	706
7.07	Flooring with Glazed Tiles	707
7.08	Flooring with in-situ Terrazzo finish	708
7.09	Flooring with Cement Tiles (A) plain or coloured (B) Terrazzo (C) Chequered or embossed	709
7.10	In-situ-Granolithic concrete flooring	710
8.	STANDARD SPECIFICATIONS FOR ROOFING AND CEILING	
8.01	Roofing with pan tiles set mortar over flat tiles with lime mortar borders including reepers	801
8.02	Roofing with pan tiles and lime mortar borders including reepers	802
8.03	Roofing with Mangalore tiles set in mortar over flat tiles and including reepers	803
8.04	Roofing with Mangalore tiles including reepers	804
8.05	Roofing with Mangalore tiles over ceiling tiles with air spaces and including reepers	805
8.06	Madras terraced roofing with brick on edge 75mm thick broken brick aggregate concrete three courses flat tiles and three coats of lime plaster to top and bottom	806
8.07	Madras terraced roofing with brick on edge, 75mm thick broken brick aggregate concrete three courses of flat tiles and three coats of lime plaster to top and one coat of 12mm thick cement plaster (1 :3) to bottom	807
8.08	Terraced roofing with brick on edge, 75mm thick broken brick aggregate concrete two courses of flat tiles to top and one coat of cement plaster (1 :3) to bottom	808
8.09	Weather proof course for reinforced cement concrete roofing with Lime broken brick aggregate concrete and two courses of flat tiles	809
8.10	Water proof course for reinforced cement concrete roofing with two courses of flat tiles	810
8.11	Complete surface repair to leaky lime plastered terrace roof	811

Sl.No.	Name of the specification	Specification No.of.APSS
8.12	Water proofing of concrete and masonry (flat or sloping) roofs with Bitumen felts Normal treatment	812
8.13	Water proofing of concrete and masonry (flat or sloping) roofs with Bitumen felts Heavy treatment	813
8.14	Roofing with corrugated galvanized steel sheets	814
8.15	Roofing with corrugated asbestos cement sheets	815
8.16	Roofing with semi-corrugated asbestos cement sheets	816
8.17	False ceilings	817
9.	STANDARD SPECIFICATION FOR PLASTERING, POINTING, WHITE WASHING, COLOUR WASHING, DISTEMPERING AND WATER PROOF CEMENT PAINTING ETC.	
9.01	Plastering General	901
9.02	Plastering with lime mortar one coat, 12mm thick, including fine Rendering	902
9.03	Plastering with cement mortar, one coat 12mm or 20mm thick including fine rendering	903
9.04	Plastering with cement mortar 2 coats 20mm thick with sponge finish	904
9.05	Plastering with combination mortar, one coat 12mm thick including fine rendering	905
9.06	Pointing to masonry with cement mortar	906
9.07	Pointing to masonry with surki mortar	907
9.08	White-washing	908
9.09	Colour-washing	909
9.10	Dry distempering	910
9.11	Oil bound distempering	911
9.12	Water proof cement painting	912
10.	STANDARD SPECIFICATIONS FOR WOOD WORK	
10.1	Wood work-General	1001
10.2	Doors, windows, ventilators, ward robes and cup-boards etc.,	1002
10.3	Frame work for Roofs	1003

Sl.No.	Name of the specification	Specification No.of.APSS
10.4	Wooden Partitions	1004
10.5	Wall Paneling	1005
10.6	Wooden Railing	1006
11.	STANDARD SPECIFICATIONS FOR STRUCTURAL STEEL WORK	
11.01	Materials	1101
11.02	Steel work in single section of R.S. Joists, Flats, Tees Angles and Channels etc.	1102
11.03	Steel work Riveted and bolted in built-up sections, trusses and framed work	1103
11.04	Steel work (welded) in built-up sections trusses and Framed works	1104
11.05	Miscellaneous Steel work Collapsible steel structures	1105
11.06	M.S.Steel sliding shutters	1106
11.07	M.S. Sheet Doors	1107
11.08	Rolling Shutters	1108
11.09	Clamps for ceiling Fan	1109
12.	STANDARD SPECIFICATIONS FOR PAINTING AND VARNISHING	
12.01	Painting-General	1201
12.02	Removing old paint with patent paint remover	1202
12.03	Removing old paint with caustic soda solution	1203
12.04	Removing old paint with blow lamp	1204
12.05	Painting with wood preservative	1205
12.06	Coal tarring	1206
12.07	Painting priming coat on wood, iron or plastered surfaces	1207
12.08	Painting with ready mixed paint	1208
12.09	Painting of Gl. sheets with ready mixed paint	1209
12.10	Spray painting with flat wall paint on new work including priming coat	1210
12.11	Spray painting with flat wall paint on old work	1211
12.12	Painting with synthetic enamel paint	1212

Sl.No.	Name of the specification	Specification No.of.APSS
12.13	Painting with Aluminum paint	1213
12.14	Painting with acid proof paint	1214
12.15	Painting with anti-corrosive bitumanistic paint	1215
12.16	Wall painting with plastic emulsion paint	1216
12.17	Varnishing	1217
12.18	Oiling with raw linseed oil	1218
12.19	Wax polishing with readymade wax polish	1219
12.20	Painting cast iron rain water, soil waste and vent pipes and fittings including priming coat	1220
12.21	Lettering with paint	1221
12.22	French polishing.	1222
16.	STANDARD SPECIFICATIONS FOR MISCELLANEOUS	
16.01	Bamboo chucks with blue Dungary cloth pulleys, rings, ropes, hools, staples etc., complete including painting two coats.	1601
16.02	Teak wood trellis work for verandahs	1602
16.03	Forming black boards on walls	1603
16.04	Barbed wire for fencing	1604
16.05	Reinforced concrete fence posts	1605
16.06	Fencing with barbed wire or chain link mesh	1606
16.07	Protection of building and altered structures against lightning	1607
16.08	Steel doors, windows and ventilators	1608
16.09	Aluminum doors, windows and ventilators	1609
16.10	Fixing and glazing of metal (steel and aluminum) doors and	1610

SPECIFICATIONS

1.0 PREAMBLE

The technical specifications for various items of work contained herein shall be read in conjunction with the specifications mentioned for each item of work in bill of quantities part-I (Schedule – A) and also plans and drawings in part III.

2.0 GENERAL TECHNICAL SPECIFICATIONS

2.1 The following are the general technical specifications to be adopted for construction of buildings. Each item of work shall be executed according to the relevant standard specification number as described in the “Andhra Pradesh Standard Specification” (APSS) and Indian Standard (I.S) Specifications, including Water supply, Sanitary and Electrical Installations. In the absence of any definite provisions on any particular item of work in the aforesaid specifications in A.P.S.S., reference may be made to the latest codes and specifications of Indian Standards or Indian Roads congress (IRC in case of Roads). Where even these are silent, the construction and completion of works shall conform to sound engineering practice as approved by Engineer-in-charge and in case of dispute arising out of the interpretation of the above, the decision of Engineer-in-charge shall be final and binding on the contractor.

3.0 GENERAL INSTRUCTIONS

3.1 Drawings, Instructions, Measurements

All works shall be done according to the detailed drawings and specifications. Figured dimensions shall be followed. Measurement shall be taken of the actual work done but shall not exceed those marked on the drawings for payments.

3.2 Site Clearance and Demolition

The site shall be cleared of all trees, stumps, roots, brush wood, bushes and other objectionable materials. Useful and saleable material shall be the property of the Owner (A.P.S.F.C.) and shall be stacked properly as directed by the Engineer-in-charge. The areas to be covered with embankments shall be stripped of top soil to required depths to expose acceptable founding strata. Top soil unsuitable for use in embankment construction and other fills shall be disposed off as directed. All combustible materials shall be stacked and burnt in locations sufficiently remote to eliminate all danger of fire hazards. All old concrete, brick works and drains which interfere with construction works shall be dismantled with the approval of the Engineer-in-charge duly taking all necessary precautions prescribed in safety specification. Top soil which is suitable for use in construction work shall be stockpiled for later use. Other objectionable materials such as trash, debris, stones, brick, broken concrete, scrap metal etc., shall be disposed off as directed by the Engineer. Payment for cutting and removal of trees, stumps, dismantling existing structures and stripping shall be regulated by the description in the Schedule of Items or Section 2 of A.P.S.S.

3.3 Precision: The works shall be set to the highest precision of dimensions, levels, grades and lines as per designs and drawings using precise scientific equipments and measuring instruments.

3.4 Quality of work:

To be the best quality: All the materials, workmanship, articles, Equipment, tools and plants should be of high and acceptable quality conforming to the standard specifications.

All materials shall be new and of the kinds and qualities described in the contract.

3.5 Testing of works and materials

3.5.1 All materials used and works done shall be subject to approval of the Engineer-in-charge.

3.5.2 The contractor shall arrange sufficiently in advance to test materials and portions of works in order to prove their soundness and efficiency if required, including samples and supporting test results from the approved laboratory and other documentary evidence from the manufacturer, wherever applicable, and indicate the types of materials and their respective sources. The delivery of materials at site shall commence only after the approval of the quality, grading and sources of the materials by the Engineer-in-charge.

3.5.3 The quality of all materials approved shall be maintained throughout the period of construction and periodical tests shall be carried out to ensure that it is maintained. The contractor shall conduct tests at work site/approved laboratories and shall maintain test reports at site for cement, coarse aggregates, fine aggregates, water, steel, bricks and concrete at the following frequency:

Sl. No.	Description of material	Frequency of test	Allowable limits
1.	CEMENT : (IS : 8112-1989)		
	a) Fineness	One for each source of supply in a month	Shall not be less than 3500 sqcm / gm
	b) Setting time	-do-	Initial setting time shall not be less than 30 minutes and final setting time shall not be more than 60 minutes.
	c) Soundness	-do-	Expansion (un-aerated) shall be not more than 10mm by "Le Chatelier" method; if it fails, expansion of aerated sample shall be not more than 5 mm.
	d) Compressive strength of cement mortar cubes 1:3 (1 cement :3 standard sand) by mass	-do-	Compressive strength for 7 days shall not be less than 330 kg/cm ² and compressive strength for 28 days shall not be less than 430 kg/cm ²

Sl. No.	Description of material	Frequency of test	Allowable limits
2.	Coarse aggregate : (IS383-1970) a) Gradation b) Aggregate impact value	One test for 15 Cum or at least on the day of concrete if concrete quantity is less than 15 cum. Once for each source of supply or when ever change in texture is noticed.	40mm Metal : a) Sieve analysis : - 63mm – 100% 40mm-85 to 100% 20mm-0-2-%; 10mm-0.5% b) Flakiness Index : shall be less than 30% by weight 20mm Metal : a) Sieve analysis : -Limits : 40mm – 100%; 20mm-95 to 100%; 10mm-25 to 55%; 4.75-0 to 10% b) Flakiness Index : less than 25% c) Aggregate impact value: 20-40(IS 2386-1963)
3.	FINE AGGREGATE (IS383 –m1970) a) Gradation for concrete	One test for every 15 cum.	Fineness modules : Fine sand limit 2.2 to 2.6
	b) Gradation for masonry	At least once on the day of work	Medium sand limit 2.6 to 2.9
	c) Gradation for finishing	-do-	Coarse sand limit 2.9 to 3.2
	d) Bulkage	Three for each day of work i.e. morning noon and evening	b) Silt Content : shall be less than 4% by weight
	e) Silt content	At least once on the day of work	
4.	WATER : Chemical test	One test for each source	The water quantity shall be as per clause 5.4 of ISI 456-2000. The PH value of water shall not be less than 6.
5.	STEEL : (Fe 500/500D (IS1786-2008)) a) 0.2% proof stress	One for each source of supply and once in six months for fresh supply	Fe 500: 5000 kg/cm ² (Minimum) Fe 500D: 5000 kg/cm ² (Minimum)

Sl. No.	Description of material	Frequency of test	Allowable limits
	b) Elongation	-do-	Fe 500 Percentage of elongation 12% minimum Fe 500D Percentage of elongation 16% minimum
	c) Tensile strength	-do-	Fe 500 Ultimate tensile strength 5450 kg/cm ² (Minimum) Fe 500D Ultimate tensile strength 5650 kg/cm ² (Minimum)
6.	BRICKS : (IS:1077-1976) a) Compressive strength	One for each source of supply and once in two months when change in texture is noticed	Shall not be less than 40 Kg/cm ²
	b) Water absorption	-do-	Shall not be greater than 20% by weight
7.	CONCRETE : (IS456:2000) a) Cube strength	Frequency of testing as per clause 15.2 of IS 456-2000 for example 6 cube specimens, 3 each for 7 days & 28 days strength for every 15 cum. Cube shall be prepared, cured and tested in accordance with the requirement of IS 516.	a) Compressive strength (7 days) M25-170 Kg/cm ² (Minimum) M30-200 KG.cm ² (Minimum) b) Compressive strength (28 days) M25-250 Kg/cm ² (Minimum) M30-300 Kg/cm ² (Minimum)
	b) Slump	Thrice in a day of concrete in morning, noon and evening	a) Foundation footing – 10mm to 25mm b) Column beams and slabs – 25mm to 40mm (with normal reinforcement) c) Beams, slabs – 40mm to 50mm (with congested reinforcement)

A Register of record of material testing and Register of daily events showing materials received, labour engaged, out turn of work etc. shall be maintained at site and shall be signed by the contractor or his authorised representative and the Engineer

3.6 Rejection of Materials/works

3.6.1 Any material brought to site which in the opinion of the Engineer is defective, sub-standard, damaged, contaminated, deteriorated or does not comply with the requirement of the specification shall be rejected. The contractor shall remove from site such materials within 4 hours of notice from site.

3.6.2 If the work or portion of the work which in the opinion of the Engineer is found to be defective or unsound, the contractor shall pull it down and re-execute the same work at his own cost.

3.7 Measurement Materials

For Design mix where site mixing is permitted shall be with concrete mixtures fitted with weigh batching scale. Materials shall be weighed and batched in mechanical weigh batchers as per the specified proportions of the approved design mix.

Materials requiring Volumetric mixing, wherever permitted, should be measured separately in boxes of appropriate size before being mixed in the specified proportions.

3.8 Storage of Materials

3.8.1 Adequate safe, dry storage shall be provided for all materials particularly cement.

3.9 Codes

3.9.1 Unless mentioned otherwise, current versions of all codes, specifications and standards issued by the Indian Standards Institution and Indian Roads Congress shall be fully applicable to these specifications. In the absence of appropriate publications by ISI or IRC, adoptable specification of the International Organization for Standardization shall apply.

3.9.2 In case of any conflict in meaning between the specifications mentioned here in and those of ISI or IRC, the provisions of these specifications shall prevail.

3.9.3 The following codes shall be applicable for the purpose. However, the latest revision of these codes shall only be used.

**LIST OF SPECIFICATIONS FOR THE VARIOUS ITEMS OF WORKS SUPPLEMENTING
THOSE DESCRIBED IN SCHEDULE 'A' BY S.S. NUMBERS
GENERAL SPECIFICATIONS**

Sl.No.	Short title/ Description	IS.No. and as amended from time to time
A) LIST OF INDIAN STANDARDS		
I.	CEMENT	
1	Specifications for 43 Grade ordinary portland cement	IS 8112:1989
2	Methods of physical tests for hydraulic comments	IS 4031 (part 1 to 15) :1988
3	53 Grade cement	IS 12269:1989
II.	AGGREGATES	
1	Specifications for Coarse and Fine aggregates from Natural resources for concrete	IS 383:1970
2	Specification for Sand for Masonry	IS 2116:1980
3	Methods of tests for aggregates for concrete. Part-1 Particle size and shape	IS 2386:1963 (Part I to IV)
	Schedule - B Estimation of deleterious materials & Organic impurities	
	Part-III – Soundness	
4	Specification for test sieves. Part-I Wire cloth test sieves	IS 460:1978 (Part-I)
III.	BRICKS	
1	Specifications for Common burnt clay building bricks	IS 1077:1992
2	Methods of test for burnt clay building bricks	IS 3495:1992 (Part I to IV)
3	Pulverized Fuel Ash-Lime Bricks - Specification	IS 12894:2002
4	Specification for concrete masonry units Part 3 Autoclaved cellular Aerated concrete blocks	IS 2185:1984 (Part-III)
IV	BUILDING STONES:	
1	Method of Tests for determination of strength properties of natural building stones (compressive strength, Transverse strength, Tensile Strength, Shear Strength.	IS 1121 (Part –1 to Part 4): 1974

Sl.No.	Short title/ Description	IS.No. and as amended from time to time
2	Schedule of properties and availability of stones for construction purposes	IS 7779:1975 (Part 1 to Part 5)
3	Quarrying stones for construction purposes, recommended practice	IS 8381:1977
4	Stone Masonry: Specifications for dressing natural building stones	IS 1129:1972 (Part-IV)
V.	STEEL	
1	Specification of Mild steel and medium tensile steel bars and hard drawn steel wires for concrete reinforcement. Part-I Mild Steel & Medium tensile steel bars	IS 432:1982 (Part I & II)
2	Specifications for Cold-worked steel, High strength deformed steel bars and wires for concrete reinforcement.	IS 1786:2008
3	Specification for steel for General structural purposes	IS 2062:1999
4	Specification for structural steel (Standard quality)	IS 226:1975
5	Specification for steel tubes for structural purposes	IS 1161:1998
6	Hand Drawn Wire	IS432:1953
VI	CERAMIC TILES	IS 13712:2006
VII	STACKING AND STORAGE OF MATERIALS	
1	Recommendation of stacking and storage of construction materials and components at site	IS 4082:1996
VIII	MASONRY	
1	Brick Masonry	IS 2212:1962
2	Code of practice for construction of Stone Masonry Part-1 (Rubble stone masonry)	IS 1597:1992
3	Code of practice for permeability test for masonry (during and after construction)	IS 11216:1985
4	Code of practice for brick work	IS 2212:1991
5	Construction of hollow and solid concrete block masonry	IS 2572:2005

Sl.No.	Short title/ Description	IS.No. and as amended from time to time
6	Code of practice for construction of autoclaved cellular concrete block masonry	IS 6041:1985
IX	CONCRETE	
1	Code of practice for Plain and reinforced concrete	IS 456:2000
2	Method of Sampling and analysis of concrete	IS 1199:1959
3	Method of test for strength of concrete	IS 516:1959
4	Recommended guide lines for Concrete Mix Design	IS 10262:1982
5	Code of practice for Ready-Mixed Concrete	IS 4926:2003
6	Specification for Admixtures for concrete	IS 9103:1999
7	Guidelines for false work for concrete structures.	IS:14687:1999
8	Code of practice for use of immersion vibrators for consolidating concrete	IS 3558:1983
9	Specifications for Pre-cast concrete coping blocks	IS 5751:1984
10	Laying in situ cement concrete flooring	IS 2571:1970
11	Code of practice for concrete structures for the storage of liquids	IS 3370:1965 (Part 1 & 2) IS 3370-1967 (Part 3 & 4)
12	Code of practice for concrete roads	IRC: 15-2002
X	REINFORCEMENT/ STRUCTURAL STEELWORK	
1	Code of Practice for Bending and fixing of bars for concrete reinforcement	IS 2502:1963
2	Recommendations for detailing of reinforcement in reinforced cement concrete works	IS 5525:1969
3	Mils steel wire for General Engineering purposes	IS 280:2006
4	Recommendation for welding of cold worked bars for Reinforced concrete construction	IS 9417:1989
5	Code of practice for general construction in steel	IS 800:1984
6	Code of practice for use of metal arc welding for general construction in mild steel	IS 816:1969
7	Safety code for erection of structural steel work	IS 7205:1974
8	Tolerance for fabrication of steel structures	IS 7215:1974

Sl.No.	Short title/ Description	IS.No. and as amended from time to time
XI.	JOINERY:	
1	Specifications for timber paneled and glazed door, window and ventilator shutters	IS 1003-Pat 1-2003 and IS1003-Part2-1994
2	Specifications for cut size timber	IS 1331:1971
3	Code of practice for Glazing in Buildings	IS 3548:1988
4	Specification for aluminum doors, windows and ventilators	IS 1948:1961
XII	EARTH WORK:	
1	Code of Safety for excavation works	IS 3764:1966
2	Safety code for piling and other deep foundations	IS 5121:1969
3	Code of practice for earth work on canals	IS 4701:1982
4	Methods of Test for soils	IS 2720
XIII	OTHER SUBJECTS:	
1	Code of practice for design and insulation of joints in buildings.	IS 3414:1968
2	Code of practice for design and construction of foundations in soils : general requirement	IS 1904:1986
	Colors for Ready mixed paints & enamels	IS 5: 2004
XIV.	MACHINERY	
1	Batch type concrete mixer	IS 1791:1968
2	Concrete Vibrators – Immersible type	IS 2505:1980
3	Specifications for moulds for use in tests of cement and concrete	IS 10086:1982
4	Compression testing machine used for testing of concrete and mortar	IS 14858:2000
5	Sheep foot roller	IS 4616:1968
XV.	SAFETY	

Sl.No.	Short title/ Description	IS.No. and as amended from time to time
1	Code of practice for fire safety of buildings (general): Details of construction	IS 1642:1989
2	Criteria for earthquake resistant design of structures.	IS 1893:2002 Part-1
3	Code of practice for earthquake resistant design and construction of buildings.	IS 4326:1993
4	Safety code for scaffolds and ladders	
	Part-I – Scaffolds	IS 3696:1987 (Part-I)
	Part-I – Ladders	IS 3696:1991 (Part-II)
XVI	DRAWINGS:	
1	Code of practice for general engineering drawings	IS 696:1972
2	Code of practice for architectural and building drawings (First revision).	IS 962: 1989
XVI I	MEASUREMENT	
1	Methods of measurement of building and civil engineering works.	IS : 1200

Note: The above I.S specifications mean latest over and above with amendments if any.

3.10 PERFORMANCE OF WORK

3.10.1 Execution of Works

3.10.1.1 All the works shall be executed in strict conformity with the provisions of the contract documents, explanatory detailed drawings and specifications.

3.10.1.2 The site should be cleared of all obstructions, vegetation, loose stones and materials before start of work.

3.10.1.3 The Engineer in charge, Supervisor will inspect the work on a Day-to-Day basis.

3.10.2 Work in Monsoon

3.10.2.1 The construction may entail working in monsoon also. The contractor must maintain a minimum labour force and execute the construction according to the prescribed schedule.

3.10.2.2 Contractor is responsible for keeping the construction work site free from water.

3.10.3 Plinth Levels

3.10.3.1 A proper level should be maintained, in terms of horizontal and vertical alignment. A minimum acceptable plinth level above road level shall be maintained. The plinth level shall be agreed with the Engineer's representative.

4.0 DETAILED SPECIFICATIONS OF MATERIALS

4.1 Water (APSS No. 129)

4.1.1 Water should be clean, fresh and free from all chemicals, oils, salts and deleterious materials and vegetable growth. Water has to meet the requirements mentioned in Cl. 5.4 of IS:456-2000. Storage for water should be sufficient and adequate for the regular consumption of works and for the use of labour on site.

4.2 Earth (APSS No. 309 & 310)

4.2.1 For filling, the soil shall be free from all rubbish, organic or vegetable growth including roots, weeds etc. Black cotton soil should not be used for basement filling.

4.3 Sand/ fine aggregate (APSS No. 110)

4.3.1 Sand to be used shall be composed of hard siliceous material and shall be clean, sharp, hard, strong and angular type. Sand shall be clean river or pit sand of approved quality and free from salts, earth, dust or other impurities. Sand for plain and reinforced concrete shall confirm to IS : 383-1970. Sand for various purposes shall confirm grading as below.

Sand for Masonry --- table 110-A of APSS No.110

Sand for Plastering --- table 110-B & 110-C of APSS No. 110

Sand for Plain and Reinforced concrete Zone I to III of table 110-D of APSS No.110

Reinforced concrete

TABLE – II				
4.3 FINE AGGREGATE (SAND)				
Percentage passing by Mass				
L.S. Sieve Designation	Grading Zone - I	Grading Zone – II	Grading Zone - III	Grading Zone - IV
10 mm	100	100	100	100
4.75 mm	90-100	90-100	90-100	95-100
2.36 mm	60-95	75-100	85-100	95-100
1.18 mm	30-70	55-90	75-100	90-100
600.00 microns	15-34	35-59	60-79	80-100
300.00 microns	5-20	8-30	12-40	15-50
150.00 microns	0-10	0-10	0-10	0-15

4.4 Stone for Masonry (APSS No. 107)

- 4.4.1 Stones used shall be strong, durable, dense, compact, close grained, homogeneous, fire resistant and shall be obtained from sources approved by Engineer. Stones shall additionally be hard, sound, free from cracks, decay and other flaws or weathering and shall be easily workable. Stones with round surfaces shall not be made use of.
- 4.4.2 Stones shall have a crushing strength of not less than 1000 Kg/cm². Stones with lesser crushing strength may be used in works with prior approval of the Engineer. Stones shall be non-porous and when tested in accordance with IS: 1124-“Method of Test for Determination of Water Absorption” etc., shall show water absorption of less than 5% of its dry weight when soaked in water for 24 hours. Tests for durability and weathering shall be done in accordance with ARE: 1126 and IS: 1125 respectively. The working of stones to required sizes and their dressing shall be as per IS: 1127 “Recommendations for dimensions and workmanship of natural building stones for Masonry work” and IS: 1129 “Dressing of Natural Building Stones”. Stones especially lime stones and sand stones, shall be well seasoned by exposure to air before use in construction works.

4.5 Cement (APSS No. 112)

Any of the following cements may be used with prior approval of the competent authority.

S.No.	Type	Conforming to
(i)	Ordinary Portland Cement 43 Grade	IS : 8112
(ii)	Ordinary Portland Cement 53 Grade	IS : 12269
(iii)	Portland Pozzolana Cement 53 Grade	IS : 1489-Part-I
(iv)	Portland Blast Furnace Slag Cement 53 Grade	IS : 455

- 4.5.1 For concrete made with Portland Pozzolana cement, Portland Blast Furnace Slag cement or mineral admixtures, the setting time and rate of gain of strength are different from those of concrete made with OPC alone. Cognizance of such modified properties shall be taken in deciding de-shuttering time, initial time of pre-stressing, curing period and for early age loading.
- 4.5.2 Compatibility of chemical admixtures and super-plasticizers with Portland Pozzolana cement, Portland blast furnace slag cement and mineral admixtures shall be ensured by trials.
- 4.5.3 Some other properties of concrete such as modulus of elasticity, tensile strength, creep and shrinkage are not likely to be significantly different. For design purposes, it will be sufficiently accurate to take the same values as those used for concrete made with OPC.
- 4.5.4 Cement should comply with the requirements of IS:8112-1989 for making plain and reinforced concrete, mortar etc. The quality of cement shall be in conformity to the performance characteristics given in IS : 8112 - 1989.
- 4.5.5 The contractor shall procure bulk cement required for the works only from reputed cement factories (main producers) acceptable to the Engineer and should obtain, furnish from suppliers of cement a

test certificate for every consignment of cement. The cement bag shall bear the manufacturer's name or their registered trade mark. Cement shall be tested in accordance with IS: 4031-1988 and IS: 4032-1988.

4.5.6 The cement should be delivered to the site in sound dry bags and shall be stored properly. Cement packed in LDPE Bags may be preferred to ensure protection from moisture and dampness.

4.5.7 The contractor has to make his own arrangements for the procurement of cement of required specification for works subject to the following:

- a) The contractor shall procure bulk cement required for the works, only from cement factories (Main producers) of approved make and brand only as approved by the Engineer-in-charge. The contractor shall make own arrangements for adequate storage of cement.
- b) The contractor shall procure cement in standard packing (50 Kg per bag) from the authorised manufacturers. The contractor shall make necessary arrangement at his own cost to the satisfaction of Engineer-in-charge for actual weighment of random sample from the available stock and shall confirm with the specification laid down by the Bureau of Indian standards or other standard institutions as the case may be. Cement shall be got tested for all the tests as directed by the Engineer-in-charge at least once in a month in advance before the use of cement bags brought and kept at site godown.
- c) Cement bags required for testing shall be supplied by the contractor free of cost.
- d) The contractor should store the cement of 60 days requirement at least one month in advance to ensure the quality of cement so brought to site and shall not remove the same without the written permission of the Engineer-in-charge.
- e) The contractor shall forthwith remove from the works area any cement that the Engineer-in-charge may disallow for use on account of failure to meet with required quality and standard. Damaged or reclaimed or partly set cement will not be permitted to be used and shall be removed from the site.
- f) The contractor will have to construct sheds for storing cement having capacity not less than the cement required for 90 days use at appropriate locations at the work site. The Engineer-in-charge or the representatives shall have free access to such stores at all times.
- g) The contractor shall further at all times satisfy the Engineer-in-charge on demand by production of records and books or by submission of returns and other proofs as directed that the cement is being used as tested and approved by Engineer-in-charge for the purpose and the contractor shall at all times keep his records up to date to enable the Engineer-in-charge to apply such checks as he may desire.
- h) Cement which has been unduly long in storage with the contractor or alternatively has deteriorated due to inadequate storage and thus become unfit for use on the work shall be rejected by the department and no claims will be entertained. The contractor shall forthwith remove from the work area any cement the Engineer-in-charge may disallow for use on work and replace it by cement complying with the relevant Indian Standards.

4.5.8 STORAGE OF CEMENT

4.5.8.1 Portland cement readily absorbs moisture not only in the form of free water but also moisture from the atmosphere or from damp material in contact with it and becomes hydrated and loses strength. It is necessary therefore that it should be protected from absorption of moisture before it is used if it is to fulfill its function. An absorption of one or two percent of water has not appreciable effect but further amounts of absorption, results in hardening of the cement and reduced the strength. If the absorption exceeds 5% the cement is for all ordinary purposes ruined.

4.5.8.2 American, Spanish and German experiments have shown that on average the strength of cement stress in bags is reduced.

After 3 months by 15 to 20 percent.

After 6 months by 20 to 30 percent.

After 12 months by 30 to 50 percent.

After 2 years by 40 to 50 percent.

These figures prove that special attention should be paid to the storage of cement, even when its strength is equal to or suspense's the specified normal strength.

4.5.8.3 As a general principle the cement must be protected as far as possible from any form of moisture prior to mixing concrete mortar.

4.5.8.4 The cement should be stored in a well constructed dry godown or shed. The cement store should be weather tight construction with a sound wooden or ground to ensure that it is damp proof building. The storage place required for a given quantity of cement can be calculated at the rate of 2.50 sqm for a ton of cement. Cement should not be placed directly on cement plaster flooring and other types of flooring commonly meant with which are not damp proof. A wooden platform or false floor a sheet of water proof paper should be provided.

If none of these is possible, then floor should be covered with straw, hay, cinder or ash or such other material densely and uniformly packed to a thickness of at least one inch and over a laid worth tarpaulin of old cement. Large windows and ventilators if any should be tightly shut to prevent from circulation of air inside the stores. Drainage should be provided if necessary to prevent accumulation of water in the vicinity of the store.

4.5.8.5 Cement should be stored in piles arranged parallel to the walls. It is not advisable to pile bags against the walls and an allowance of at least 0.3M all round should be made between the exterior walls and piles. At least 0.6M wide should be left for each access and delivery.

When storing the bags, the floor should be raised 30 cms. above the ground and stacked in rows not exceeding 10 bags high. The cement is to be stored in such a manner that easy access and proper inspection and counting is possible.

Successive consignments covered with some water proof cover as a both measure of protection and prevent the free circulation of air as each lot of proper fresh air will bring in more moisture. Once the cement has been properly stored should not be disturbed until it is to be used. There is no advantage in moving and stacking the bags to reduce where house set as this practice only

exposes fresh cement to the air resulting in loss due to the shifting of cement through the cloth mesh and in damage to the stacks.

- 4.5.8.6 Even during the dry weather and when the relative humidity of the atmosphere even in nights is low (that is to say when there is very little moisture in the air) the cement in its stock shall be protected with a tarpaulin through for the stack. When the atmosphere is damp at any time of day or night, greater care has to be taken of the cement and proper strength provided it from the damp.
- 4.5.8.7 Cement required for use immediately after delivery to the site may be stored in the open on a raised damp proof floor so long as it is fully protected by tarpaulin or either weather resisting covers. Storage under these conditions should be limited to 48 hours. The tarpaulin should be raised well above the top most Ties of bags and must be sloped for rapid drainage in case of showers.
- 4.5.8.8 Consignments should be used in the same sequences as they are delivered. To ensure this the date of arrival of each consignment should be clearly indicated. This is best done by tying a piece of country twines or cord to the end bags in the bottom most tier of the days pile, tacking the two places of card up the sides and along the top of pile an tying the main the center. The date of receipt in the store being clearly written on a bin card high from the card. Dead storage where the cement remains in place for a long time which other consignments of cement come in and out should be avoided.
- 4.5.8.9 In issuing cement from a store the cement bags should be removed in vertical column of the pile and not horizontal so as to avoid dead stoppage space.
- 4.5.8.10 As a rule cement should not be stored longer than three months. Cement held in storage for a period of 90 days or longer shall be re-tested. Especially in the rainy season prolonged storage should be avoided. If stock is likely to be held over for more than three months anticipatory measures should be taken to use it on the works.
- 4.5.8.11 Cement that has become supply due to storage in damp positions due to exposure to the weather is generally useless for making concrete and should be removed from the site.

4.6 Bricks(APSS No. 102)

- 4.6.1 Bricks for masonry shall be common burnt clay building bricks having minimum crushing strength of 40 Kg/cm² and shall conform the relevant specifications of IS 1077-1992.
- 4.6.2 They shall be sound, hard and thoroughly well burnt, but not over-burnt, with uniform size having rectangular faces with parallel sides and sharp straight right angled edges and be of uniform colour with fine compact uniform texture. Bricks shall be of uniform deep red cherry or copper colour. They shall be free from flaws, cracks and nodules of free lime.
- 4.6.3 Water absorption after 24 hours immersion in cold water shall be not more than 20% by weight. They shall not absorb more than 10% by weight of water after immersion for six hours.
- 4.6.4 They shall emit a clear metallic ringing sound when struck by a mallet and shall not break when dropped on their face, from a height of 60 cm.
- 4.6.5 Fractured surface shall show homogeneous, fine grained uniform texture, free from cracks, air holes, laminations, grits, lumps of lime, efflorescence or any other defect which may impair their strength,

durability, appearance and usefulness for the purpose intended. Under-burnt or vitrified bricks shall not be used.

4.6.6 Samples of bricks brought to the site shall be tested periodically for compression and other tests according to IS: 3495, Parts-I, II & III - "Method of Test for Burnt Clay Building Bricks".

4.7 Coarse Aggregate (APSS No. 108)

The coarse aggregate shall be from hard granite crushed stone conforming to IS 383 :1970. The pieces of aggregate shall be non porous, hard, strong durable clean and free from clay, rounded in shape and shall have granular or crystalline non powdery surfaces. The aggregate shall be well graded. Tests where required shall be carried out in accordance with IS : 2386 - 1963.

I.S. 383 / 1970 Table – I						
4.7.1 Coarse Aggregate						
I.S. Sieve designation	Percent passing for single-sized aggregate of metal size			Percentage passing for graded-aggregate of nominal size		
mm	40 mm	20 mm	12.50 mm	10 mm	40 mm	20 mm
(1)	(3)	(4)	(6)	(7)	(8)	(9)
80 mm	---	---	---	---	100	---
63 mm	100	---	---	---	---	---
40 mm	85-100	100	---	---	95-100	100
20 mm	0-20	85 - 100	---	---	30-70	95-100
16 mm	---	---	100	---	---	---
12.50 mm	---	---	85 - 100	100	---	---
10 mm	0-5	0-20	0-45	85 - 100	10-35	25-55
4.75 mm	---	0-5	0-10	0-20	0-5	0-10
2.36 mm	---	---	---	0-5	---	---

TABLE – III		
ALL-IN AGGREGATE GRADING		
L.S. Sieve Designation	40mm Nominal	20mm Nominal
80.00 mm	100	---
40.00 mm	95-100	100
20.00 mm	45-75	95-100
4.75 mm	25-45	30-50
600.00 microns	8-30	10-35
150.00 microns	0-6	0-6

4.8 Steel Reinforcement(APSS No. 126) - STEEL

4.8.1 Mild steel bars shall conform to Grade I of IS:432.

- 4.8.2 High yield steel strength deformed bars shall conform to IS:1786-2008. Binding wire shall conform to IS:280. The various types of steel shall conform to the relevant IS specification as provided in A.P.S.S. No.126.
- 4.8.3 The contractor has to make his own arrangements for procurement of tested steel required for the work. He shall also make his own arrangements for transportation and storage.
- 4.8.4 The contractor shall procure mild steel (MS) reinforcement bars, High yield strength deformed bars (HYSD) bars, rods and structural steel etc., required for the works, only from the reputed main steel manufacturing units manufacturing the steel to the prescribed specification of Bureau of Indian Standards or equivalent and licensed to affix ISI or other equivalent certifications, marks and acceptable to the Engineer-in-charge.
- 4.8.5 The contractor should invariably obtain necessary ISI test certificates from the suppliers of steel for each and every consignment and furnish them to the Engineer-in-charge, before use on works. Test certificates conforming to IS 1786-2008 are to be furnished. The HYSD steel (IS 1786-2008) bars should have TOR mark. The original bills of procurement should be submitted to the Engineer-in-charge for making payment of the item. The contractor shall purchase the steel on the name of the work, number and the name of the contractor and furnish the same to the Engineer-In-Charge. The steel without the above two names will not be accepted on the works. Vendors test certificates and weighment bills are to be furnished to the Engineer-In-Charge and any quantity purchased without test certificates will not be accepted for use on the works.
- 4.8.6 If any difference is observed on carriage inwards, carriage outwards and theoretical requirement of steel for finished work, the contract will be cancelled and the contractor will be blacklisted.
- 4.8.7 The diameter and weight of steel should be as per IS 1786-2008 or relevant IS specification with subsequent revisions from time to time:

S. No.	Diameter of rod	Sectional weight in Kg/ RM both for Plain and HYSD steel
1	6 mm	0.22
2	8 mm	0.39
3	10 mm	0.62
4	12 mm	0.89
5	14 mm	1.21
6	16 mm	1.58
7	18 mm	2.00
8	20 mm	2.47
9	22 mm	2.98
10	25 mm	3.85

S. No.	Diameter of rod	Sectional weight in Kg/ RM both for Plain and HYSD steel
11	28 mm	4.83
12	32 mm	6.31
13	33 mm	6.71
14	36 mm	7.99
15	40 mm	9.86
16	42 mm	10.88

Note: If any rods other than those diameters specified above are procured the weights shall be as per standard steel tables.

4.8.8. **Quality control:** The contractor shall furnish the samples for testing for each batch and consignment along with the test certificates issued by the vendors to the Engineer-In-Charge immediately after receipt of the steel in the stockyard at site of work for verification and testing.

No steel procured by the contractor shall be used in any work until the Engineer-In-Charge has given notice that the test results are satisfactory.

4.8.9. STEEL STORAGE:

- a. Reinforcement steel and binding wire shall be stored above ground surface upon platform, skids or other supports protected as far as possible from surface deterioration by direct contact with undesirable elements or by exposure to conditions producing rust and corrosion. Bars shall be so supported as to avoid distortion and sagging of long lengths. All the reinforcement of same designation shall be stacked separately and distinctly marked.
- b. Steel shall be stacked and stored in accordance with IS 4082: 1996 as per Recommendations on stacking and storage of construction materials.
- c. If the reinforcing rods have to be stored for a long duration, they shall be coated with cement wash before stacking and/or be kept under cover.

4.8.10 Reinforcement shall be free from pitting due to corrosion and free from loose rust, dirt, dust, mill scale, paint, oil, grease, adhering earth etc.

4.8.11 Erected and secured reinforcement after fabrication shall be inspected and approved by the Engineer-in-Charge prior to placement of concrete.

4.9.1 TEAK WOOD FOR JOINERY/ DOORS

The wood shall be well seasoned, uniformly coloured and shall be free from knots, cracks, shakes, splits, cross grains etc.

The wood shall be durable and of reasonably straight grains.

Moisture content of wood used shall be as near as possible to the following values:

Recommended values of moisture content in timber at the time of assembly or framing:

Type of work	Coastal area	Inland area
Frames for doors and windows	16 to 18%	14 to 15%
Shutters of doors and windows etc	15 to 16%	12 to 14%

4.9.2 GLAZED TILES (APSS No. 121)

The tiles shall be covered by a glaze on the top and under side. The edges shall be free from glaze in order that the tiles may adhere properly to the base. The glaze shall be uniform in quality and free from welts, ships, craze, specks, crawling, or other imperfections visible from a distance of one meter. The glazed tiles shall be white or color and size of 300mm x 200 mm with a thickness of 7mm. The tiles shall be true to shape and conform to the performance requirements of IS 13712:2006 and supplier shall submit a certificate with respect to the quality of tiles and detailed there in.

5.0 DETAILED SPECIFICATION OF WORKS

5.1 Standard

A high standard of workmanship in all trades will be required. The Contractor shall ensure that only skilled and experienced workmen are employed.

5.2 Supervision

5.2.1 The Contractor's supervising staff shall be fully qualified and experienced in the types of work being carried out under the supervision and shall be capable of ensuring that they are done well and efficiently.

5.3 Temporary works

Where required, the Contractor shall furnish such details of his temporary works as may be called for by the Engineer and the Contractor shall satisfy the Engineer as to their safety and efficiency. The Engineer may direct that temporary works, which he considers unsafe or insufficient, shall be removed and replaced in a satisfactory manner.

5.4 Codes

5.4.1 Unless mentioned otherwise, current versions of all codes, specifications and standards issued by the Indian Standards Institution and Indian Roads Congress, wherever mentioned, shall be fully applicable to these specifications. Where standards are not yet published by the ISI or IRC, adaptable British Standards or Specifications of the International Organization for standardization shall apply.

5.4.2 In case of any conflict in meaning between the specifications mentioned herein and those of ISI or IRC, the provisions of these specifications shall be prevail.

5.5 Base lines and bench marks

5.5.1 The Contractor shall establish and maintain, to the satisfaction of Engineer, the base lines and bench marks, based on which the works are set out. Where such base lines and bench marks are provided by

the Engineer, the Contractor shall maintain these throughout the period of construction without causing any disturbance to them.

5.6 Setting out

5.6.1 The Contractor shall set out all the works to be executed by him, in line with the standard base lines, position and bench marks and truly as per drawings within the accepted tolerance limits at no extra cost to Owner. The Contractor shall be solely responsible for the correct setting out of all the works, to be executed by him and the approval of such setting out by the Engineer shall in no way absolve the Contractor of his responsibility for carrying the work to the true lines, levels and positions as per drawings.

5.7 Dewatering

5.7.1 The Contractor shall carryout all the works, in dry and workable condition and maintain the same in dry condition till the final handing over of works at no extra cost to the Owner. For this the Contractor shall make at his cost all the necessary provisions of dewatering, wherever necessary, to the full satisfaction of the Engineer.

5.8 Safety of existing work

5.8.1 Before taking up any construction adjoining other property or existing work, the Contractor shall take all steps necessary for the safety and protection of such property or work.

5.9 Protection of existing services

5.9.1 The Contractor shall take all precautions necessary to prevent damage to or interference with underground or over-ground services such as cables, drains, piping or piles, whether shown on drawings or not. Equipment etc., mounted in position shall be protected against falling debris etc., by means of tarpaulin or such other material.

5.10 Handing over of work site

5.10.1 On completion of work, the Contractor shall remove all rubbish, debris, surplus materials, temporary work etc., from the site. The site shall be handed over in a tidy and workmanlike manner.

5.11 CRS Masonry in CM (1:8) in 1st sort (APSS 107 & APSS 611)

5.11.1 The work shall consist of a facing of selected stones hammer dressed at faces and joints with only a small proportion of smaller stones in the hearting.

5.11.2 The face stones shall be set in regular courses of uniform thickness from bottom to the top throughout. The height of the course should be uniform throughout by using stones of same height. The face stones shall be laid in headers and stretchers alternately so as to break joint by atleast 75mm and headers shall project atleast 100mm beyond stretchers. The stones shall be solidly bedded, set full in mortar with joints not exceeding 12mm in thickness and shall extend well back into the hearting.

5.11.3 Bond stones shall be placed in the wall @ interval of 2m in length and 600mm in height and shall run through the wall if the wall is not more than 600mm thick. If the wall is more than 600mm thick line of headers shall be laid from face to back each header overlapping the other by atleast 150mm.

5.11.4 The heart portion shall be filled with good flat bedded stones set as close as possible, well set in mortar.

5.11.5 The work on interior face shall be precisely the same as on the exterior face unless the work is to be plastered in which case the side joints need not be vertical.

5.12 Coursed Rubble Masonry in CM (1:8) 2nd sort: (APSS NO. 612)

5.12.1 This work shall be executed similar to the specifications for C.R.S. masonry 1st sort with the exception that the hearting and backing shall conform to the standard specification for random rubble masonry and bond with the face stones being carried up continuously with the face work.

5.13 RRS Masonry in CM (1:8) (APSS 107 & APSS 615)

5.13.1 The face stone be hammered dressed on the face, side and the beds to enable to come into close proximity with the neighboring stone. Face stone shall be of not less width in plan than 150mm for walls of 400mm thick, 200mm for walls of 450mm thick. The face stone shall be laid in headers and stretchers alternatively so as to break joints by at least 75mm. Care is to be taken to break joints vertically.

5.13.2 Bond stones should built in the wall at intervals of 2m in length and 600mm in height and shall run through the wall if the wall is not more than 600mm thick. The heart portion shall be filled with good flat bedded stone set as close as possible, well set in mortar.

5.14 Brick Work: (APSS 102 APSS 501 & 504)

5.14.1 All bricks to be used in the work shall be thoroughly soaked in water before use to prevent absorption of water from the mortar.

5.14.2 The bricks shall be set in cement mortar of 1:6 proportions by adopting a proper bond (preferably either English bond or a Flemish bond) throughout the wall.

5.14.3 The walls shall be taken up truly plumb. All courses shall be truly horizontal (level) and truly vertical. Vertical joints of consecutive courses shall not come directly over one another. Vertical joints, in alternate course shall come directly over one another. Joint's shall be fully filled with mortar and raked. Every brick shall be laid with full joints of cement mortar on its bed, ends and side in one operation. No feeding of mortar by using excess water shall be allowed.

5.15 Reinforced Half Brick Partition Walls (APSS 102, 501, 504, 509)

5.15.1 All bricks to be used in the work shall be thoroughly soaked in water before use to prevent absorption of water from the mortar.

5.15.2 The cement mortar used for reinforced brick work shall be in cm (1:4) and mortar used shall conform APSS No. 113. Reinforcement for half brick walls shall be in the form of MS Bars and shall be of specified qualities. The brick shall be constructed only in stretcher bond. The reinforcement shall be well embedded in cement mortar at every third course and half the joint thickness of mortar shall first

be laid and the other half laid after the reinforcement is placed in the position. The free ends of the reinforcement where ever possible shall be pegged into the mortar joints of main brick walls.

5.16 NOTES ON MASONRY

- 1) All stones, bricks etc., used in the masonry work shall be thoroughly soaked in water before use to prevent absorption of water from the mortar.
- 2) Stones shall be laid on their broadest faces which give better opportunity to fill the faces between stones.
- 3) To give sufficient lateral bond a stone in any course shall overlap the stone in the course below i.e. joints parallel to the pressure in two adjoining course shall not lie too closely in the same vertical line. A minimum overlap of 6" shall be maintained.
- 4) To give sufficient transverse bond, prescribed no. of headers shall be used.
- 5) The practice of building two thin faces, tying width occasionally through stones and filling up the middle with small stones or dry packing shall be strictly guarded against.
- 6) Jambs for door and window opening shall be formed with quoins of the full height of the course. The quoins shall be of breadth at least one and a half times the depth for the course and in length at least twice the depth.
- 7) It is advisable to erect the door and window frames first and build the masonry around.
- 8) Thickness of the joint should not be more than 12mm.
- 9) Every course of the masonry shall be truly vertical. Use of plumb bob to check verticality by the mason shall be encouraged.
- 10) Care should be taken to keep all corners and sides including door and window opening truly vertical.

5.16.2 Theoretical requirement of cement should be as follows: -

Cement bags of 50 kgs.

a. C.R.S. Masonry in C.M. (1:6)	1.54 bags per Cum
b. C.R.S. Masonry in C.M. (1:8)	1.15 bags per Cum
c. Brick Masonry in C.M. (1:4)	1.44 bags per Cum
d. Brick Masonry in C.M(1:6)	0.96 bags per Cum
e. Brick Masonry in C.M. (1:8)	0.72 bags per Cum

5.17 Plain and Reinforced cement concrete (A.P.S.S. 402 & 403)

5.17.1 All R.C.C. work shall be carried out in strict accordance with latest IS specification. No concrete work shall be cast in the absence of the works-in-charge/Engineer. All the materials used should be of good quality as mentioned in Sec. 4.0 above.

5.17.2 Cast-in-place concrete for the structures shall conform to the requirements of the section. The structures shall be built to the lines, grades and dimensions as per the designs and drawings.

5.18 Deleted.

5.19 Mix Proportions & Strength requirement of concrete: The proportions of various ingredients to

be used in the concrete for different parts of the work shall be established by proper mix through design mix. The contractor shall produce concrete mix design and establish the strength of concrete with this concrete mix design for 3 days, 7 days and 21 days as per IS 456-2000. For controlled concrete, the mix design shall be so designed as to attain in preliminary tests a strength atleast 33 percent higher than that required on work tests. The design mix shall be got approved by the Engineer-in-charge before proceeding with the concreting. The contractor is required to carry out the mix design and the design mix shall be got approved by the Engineer-in-charge and the mix shall be within the limitations of parameters and other stipulations laid down in IS-456/2000.

The specified characteristic compressive strength of 150 mm size cube at 28 days attained for M20, M25 and M30 grades of concrete shall be 20 N/sqmm, 25N/sqmm and 30 N/sqmm respectively. The mix shall be designed to produce the grade of concrete having the required workability and a characteristic strength at 28 days not less than the appropriate values mentioned in Table-2 of IS-456:2000 The target mean strength of the concrete mix should be equal to the characteristic strength plus 1.65 times the standard deviation.

TABLE
MINIMUM COMPRESSIVE STRENGTH OF 15 CM. CUBES
AT 7 AND 28 DAYS AFTER MIXING, CONDUCTED
IN ACCORDANCE WITH IS.516

Grade	Preliminary test N/mm ²		Works test N/mm ²		Maximum size of aggregate mm
	at 7 days	at 28 days	at 7 days	at 28 days	
M 40	33.50	50.00	27.00	40.00	20
M 35	30.00	44.00	23.50	35.00	20
M 30	25.00	38.00	20.00	30.00	40 or 20
M 25	22.00	32.00	17.00	25.00	40 or 20
M 20	17.50	26.00	13.50	20.00	40 or 20
M 15	13.50	20.00	10.00	15.00	40 or 20

Whenever the grade of concrete such as M25, M30 etc., is specified it shall be Contractor's responsibility to ensure the minimum crushing strength stipulated for the respective grade of concrete is obtained at works.

In the case of M 25 grade concrete, cement content of 380Kgs/ Cum is adopted in rate analysis as per the A P Revised Standard Data (Part III) for estimate purpose only. Design mix for M 25 grade is to be obtained from Standard Laboratories and ensure minimum cube strength of 25N/mm² at 28 days age.

In the case of M 30 grade concrete, cement content of 400Kgs/ Cum is adopted in rate analysis as per the A P Revised Standard Data (Part III) for estimate purpose only. Design mix for M 30 grade is to be obtained from Standard Laboratories and ensure minimum cube strength of 30N/mm² at 28 days age.

The contractor shall maintain the test results on regular basis as indicated in I.S.456/2000 and subsequent amendments thereon.

In all cases, the 28 days compressive strength specified shall be the criterion for acceptance or rejection of the concrete.

The sample of water taken for testing shall be typical of the water proposed to be used for

concreting.

The contractor shall be responsible for production of controlled concrete as per design mix to ensure the required works cube strength is attained and maintained. In the designation of concrete mix, letter 'M' refers to the Mix and the number to the specified 28 days works cube compressive strength in Newton per sq.mm.

The concrete where site mixing is permitted shall be with concrete mixtures fitted with weigh batching scale. All measuring equipment shall be maintained in a clean serviceable condition and their accuracy periodically checked.

- 5.19.1 The proportions of cement concrete, if specified in volumetric proportions i.e., nominal mixes shall be as follows which are indication of approximate proportion of cement, fine aggregate and coarse aggregate which may have to be altered suitably at site to obtain desired strength and workability. However, the quantity of cement shall not be less than specified below.

<u>Nominal Mix</u>	<u>Cement in bags of 50 kgs / 1Cum (net) of cement concrete</u>
a) 1:3:6	4.42 bags of 50 Kgs
b) 1:4:8	3.31 bags of 50 Kgs
c) 1:5:10	2.65 bags of 50 Kgs

As per sanctioned estimate, the following cement content is proposed for all the design mix proposed for all RCC members as per A P Standard Data (Part III) which is adopted in rate analysis for estimate purpose only. Ensure minimum cube strength as per IS 456 duly testing all the materials required and obtaining design mix as per IS 10262 at Standard Laboratories.

<u>Design Mix</u>	<u>Cement in Kgs</u>
a) M25	380 Kgs
b) M30	400 Kgs

The contractor shall ensure the tests of Design Mix from from the Standard Laboratories for ensuring the strength of Design Mix. Above is adopted for estimate purpose as a provision only and recovery will be affected based on the design mix to be affected in the presence of field level engineers and if anything done in their absence only it to be taken as per IS 456. It is made clear that for any design mix report showing above to the higher quantity will not be considered at all as made clear at clause No.50.3.

- 5.19.2 The quantity of water shall be varied to suit the moisture content of the aggregate and shall be just sufficient in produce a dense concrete with workability. Workability should be checked at frequent intervals as per **IS: 1199**. An accurate and strict control shall be kept on the quantity of mixing water.

5.20 ConcretequalitycontrolmeasuresandconcretequalityAssuranceTest Programme

- a) Concrete quality control measures: The contractor shall be responsible for providing quality

concrete to ensure compliance of the bid requirements.

- b) Concrete quality Assurance Programme: The concrete samples will be taken by the Department and its quality will be tested in any other recognized laboratory per the relevant Indian Standard Specifications IS 516:1959 and LS. 1199-1959.

Samples shall be drawn on each day for each type of concrete.

Tests: The Department will obtain samples and conduct tests as specified in B.I.S. 456- 2000, I.S. 1199- 1959 and I.S. 416 - 1959.

Test Facilities : The contractor shall furnish free of cost samples of all ingredients of concrete for testing and obtain approval from the Engineer-in-Charge. He should also supply free of cost, the samples of all the ingredients of concrete for conducting the required tests.

Test results: The Engineer-in-charge will pass the concrete if average strength of the specimens tested is not less than the strength specified. Concrete not meeting requirements of specification in all respects may be rejected by the Engineer-in-charge in which case it shall be removed and reconstructed entirely at the expense of the contractor.

5.21 Preparation for placing: No concrete shall be placed until preparation of surface involved, all form work, reinforcement, installation of items to be embedded have been approved by the Engineer-in-charge.

- 5.21.1 All surfaces, forms, embedded material shall be free from dried mortar, dirt, foreign substances, waste papers etc. Temporary openings shall be provided to facilitate inspection, especially of bottoms of columns and wall forms, to permit removal of sawdust, wood shavings, binding wire, dirt etc. Such openings/holes shall be suitably plugged later.
- 5.21.2 Foundation surface: Rock surfaces shall be free from oil, objectionable coatings, loose, semi-detached and unsound fragments. Immediately prior to placement of concrete, surfaces of rock shall be washed with an air water jet and shall be brought to a uniform surface dry condition.
- 5.21.3 Concrete shall not be placed in standing water or on a water-covered surface. Any concrete that has been washed away by heavy rains shall be entirely removed, if there is any sign of cement and sand having been washed away from the concrete mixture.
- 5.21.4 Starters: Before proceeding with erection of form work for RCC columns, Starters shall be cast with 25 mm thick concrete with string lines placed in position as per the layout.
- 5.21.5 Slots, openings, holes, pockets etc shall be provided in the concrete work in the positions specified or required or as directed by Engineer-in-charge.
- 5.21.6 Reinforcement and other items to be cast in concrete shall have clean surfaces that will not impair bond.
- 5.21.7 Approval by the Engineer-in-charge of any materials and work as required herein shall not relieve the contractor from his obligation to produce finished concrete in accordance with the requirements of the specifications.

5.22 Placing of Concrete: The contractor shall notify the Engineer-in-charge before batching begins. Batching, mixing and placing of concrete shall be performed only in the presence of an authorized representative of the Engineer-in-charge.

5.23 Weather: Concrete shall not be placed in rain sufficiently heavy or prolonged to wash mortar from concrete.

The contractor is not entitled for any additional payment over the unit prices bid in the schedule for concrete, by reason of any limitation in placing of concrete under the above paragraphs.

5.24 Mixing: All cement concrete shall be machine mixed and machine vibrated.

5.24.1 The mixer machines should comply with IS 1971-1968 (IS specifications for batch type concrete mixers).

5.24.2 The mixers with other accessories shall be kept in first class working condition and so maintained throughout the construction.

5.24.3 Any mixer that at any time produces unsatisfactory mix, shall not be used until repaired. If repair attempts are not successful, the defective mixer shall be replaced.

5.24.4 The Cement and aggregates shall be mixed thoroughly in the specified proportion in a mechanical mixer until the mixture is of uniform colour. Where machine mixing is done the concrete shall be mixed, until the mixture is of uniform colour and, in no case, for less than two minutes.

5.25 Transportation, placing and compaction of concrete:

5.25.1 Equipment & methods: Equipment for conveying concrete shall be of such size and design as to ensure a practically continuous flow of concrete during depositing without segregation of materials. The entire placing programme consisting of equipment, layout, proposed procedures and methods shall be submitted to the Engineer-in-charge for approval

5.25.2 After mixing, the concrete shall be transported from the mixer to the position of placing as rapidly as possible by appropriate mean without causing separation or segregation of concrete, maintaining the required workability.

5.25.3 Concrete shall only be placed after the Engineer has inspected the shuttering and reinforcement. The concrete shall be placed and compacted before initial setting of concrete commences and should not be subsequently disturbed.

5.25.4 The concrete shall be deposited as nearly as practicable directly in its final position and shall not be rehandled in a manner which will cause segregation, loss of materials, displacement of reinforcement, shuttering or embedded inserts, or impair its strength. Concrete shall be placed in the shuttering by approved implements and shall not be dropped into place from a height exceeding 1 meter or handled in a manner which will cause segregation.

5.25.5 Concrete shall be deposited in successive horizontal layers to a compacted depth of not more than 0.45 meters. These shall be placed as rapidly practicable to prevent the formation of cold joints or planes of weakness between each succeeding layer within the pour.

5.25.6 When concrete is conveyed by chutes, the plant shall be of such size and design as to ensure practically continuous flow. Slope of the chute shall be so adjusted that the concrete flows without the use of any excessive quantity of water and without segregation of its ingredients. The delivery end of the 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 form work.

5.26 Compaction: All concrete shall be compacted to produce a dense homogeneous mass. Concrete after depositing should be compacted thoroughly by means of a mechanical vibration. Vibrators

shall conform to IS specifications. Vibrators of the surface, form or Immersion type shall be used and the concrete shall be thoroughly worked out around the reinforcement, around embedded fixtures and into corners of form work. The hardened concrete shall be free from voids or cavities. Over vibration and under vibration of concrete are harmful and should be avoided. Use of polythene sheet is recommended above the shuttering to arrest the slurry loss through the shuttering joints while placing and compacting the concrete.

- 5.26.1 Vibrators shall be operated by experienced men. Immersion vibrators shall be inserted vertically at points not more than 45 cms apart. Immersion vibrators shall be withdrawn slowly. Blending and melding of the concrete between successive layers shall be ensured. Vibrations shall not be applied through reinforcement and where vibrators of the immersion type are used, contact with reinforcement and all inserts shall be avoided.
- 5.26.2 Prior to beginning concrete placement the contractor shall make ready sufficient number of properly operating vibrators & operators and shall have readily available additional vibrators to replace defective ones during the progress of concrete placement.
- 5.27 Finishing :** When the structure is in service all the surfaces shall receive no special finish except removal of fine and abrupt irregularities and clean up of loose debris. Unless varied by the Engineer-in-charge, the type of finish for formed concrete shall be as follows. The concrete surfaces shall be consolidated, smooth screeded, and leveled to produce even surfaces. Floating shall be done only after the screeded surface has attained a stiffness to permit finishing operations. The surface shall be uniform in texture and free from screed marks or other imperfections.
- 5.27.1 Concreting shall be carried out continuously up to construction joints already planned. Joint shall be kept where shear force is minimum. The work shall be resumed at the earliest by scrubbing the wet surface with wire brush and coating the surface with neat cement slurry. The prepared surface shall be approved by the Engineer-in-charge. Special care shall be taken to obtain thorough compaction and to avoid segregation of the concrete along the joint plane.
- 5.28 Protection of works:** The contractor shall protect all concrete against damage until final acceptance by Engineer-in-Charge. The fresh concrete shall be protected from defacements and damage due to construction operations, rain, sun and winds. The contractor shall provide protection to prevent erosion to fresh concrete whenever precipitation either periodic or sustaining is imminent or occurring. All fresh concrete surfaces shall be protected from contamination and from foot traffic until the concrete has hardened.
- 5.29 Replacement of unsatisfactory concrete:** Immediately after the shuttering is removed, the surface of the concrete shall be very carefully gone over and all defective areas called to the attention of Engineer-in-charge. If reinforcement is exposed or the honey combing occurs the work may be rejected. Rejected concrete shall be removed and replaced by the contractor. Superficial honey combed surfaces and rough patches if permitted by the Engineer-in-charge shall be made good and finished neatly as per specifications and as directed.
- 5.30 Curing of concrete:** Rigid supervision shall be maintained for curing the concrete after laying for complete hydration and hardening to take place. The set concrete shall be cured by ponding with clean water. All exposed faces of concrete shall be kept continuously moist for a minimum period of 28 days by spraying water or by covering with gunny bags which shall be constantly sprinkled

with water. The curing operation should be done by using stirrup pump, or by any other methods given code IS 456-1984. For curing floors, flat roofs, concrete pavements and other level surfaces the ponding method of curing shall be adopted.

5.31 CENTERING (FORM WORK) AND SHUTTERING

5.31.1 **Steel Formwork:** Only steel forms of approved make (Acrow steel centering) shall be used. Forms with surface dents, bulges, undulations or holes shall not be used on the work and shall be removed from the site.

5.31.2 Form work shall be substantially and rigidly constructed of steel and shall be true to the dimensions described. Form work shall be constructed to confine and shape the concrete to the required shape, lines and dimensions described. Liners and cores shall be provided where necessary and shall be true to space and securely fixed.

5.31.3 Shuttering shall be erected true to line and securely braced, cross braced, strutted and supported to prevent deformation under the weight of pressured wet concrete and constructional loads, wind pressure and other forces.

5.31.4 The surfaces of the forms shall be clean and free encrustation of mortar, grout or other foreign materials.

5.31.5 The variation in thickness of RCC roof slab due to varying spans or special covering materials should not effect the general roof bed which should be uniform, unless otherwise shown in drawing or as instructed.

5.31.6 All joints shall be sufficiently tight to prevent leakage of cement slurry. All faulty joints shall be adequately caulked.

5.32.1 Mould Oil: Before laying the reinforcement, all faces of shuttering and moulds in contact with wet concrete shall be treated with a coat of oil to prevent adherence to concrete. Release agent should be applied so as to provide thin uniform to the forms without coating the reinforcement.

5.32.2 The mould oil (The de-bonding agent) to be applied shall be standard shuttering oil, engine oil or filtered waste oil (Carbon particles and impurities should not be present).

5.32.3 Plumb and string lines in sufficient numbers shall be installed before and maintained during concrete placement. During concrete placement the contractor shall continuously monitor plumb, string line and form positions.

5.32.4 In case of columns, retaining walls and vertical structural components suitable arrangement shall be made for securing the form to the already poured concrete.

5.33 Reinforcement for RCC works:

5.33.1 Unless shown otherwise in the drawings, the reinforcement to be used shall be bars of grade Fe-500/500D conforming to IS 1786-2008.

5.33.2 Reinforcement shall be steel and shall be free from corrosion, oil, grease, paint or dirt at the time of fixing in position and subsequent concreting.

5.33.3 Reinforcing steel bars shall conform accurately to the sizes, dimensions and shapes given as per designs and drawings. Bars shall be bent cold to the specified shape and dimensions and the bars

shall be hooked or bent accurately and placed in exact position as per designs and drawings. Bars having kinks or bends other than those required by design shall not be used.

- 5.33.4 Bars of full length shall be used. Reinforcement shall be lap jointed or spliced only if unavoidable. The overlaps shall be staggered for different bars and located at points, along the span where neither shear nor bending moment is maximum. Not more than 33% of the bars as specified in drawing shall be lapped at one section.
- 5.33.5 The reinforcement shall be securely held in position and bound together tight by annealed binding wire, and by using stays, blocks or metal chairs, spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals.
- 5.33.6 Bars shall not be allowed to sag between supports. Layers of bars shall be separated by spacer bars, pre-cast blocks or other approved devices. Binders, stirrups, links should be securely wired to the main ring.
- 5.34.1 **Binding Wire:** Wire for binding reinforcement shall be soft and annealed mild steel of 16 SWG and shall conform to IS: 280-2006. Binding wire shall have tensile strength of not less than 5600 Kg/Cm² and a yield point of less than 3850 Kg/Cm².
- 5.34.2 Proper cover shall be maintained between the reinforcement and the shuttering as per approved drawings and IS codes.
- 5.34.3 The contractor shall ensure that the bars are not displaced during concreting or any other operation over the work. The contractor shall also ensure that there is no disturbance is caused to the reinforcing bars in concrete that has already been placed.
- 5.34.4 All bars protruding from concrete and to which other bars are to be spliced and which are likely to be exposed for an indefinite period shall be protected by a thick coat of neat cement grout.

5.35 Measurement and payment

a. Measurement:

Measurement for payment for the reinforcing bars will be made only on the calculated weight of the bars placed in concrete, in accordance with the drawings or as directed by the engineer. The calculated weight for reinforcing bars shall be determined as follows:

- i. Reinforcement shall be measured in length separately for different diameters as actually used in the work including the lengths of hooks at ends, spacer bars; reinforcement chairs and overlaps to the extent permitted by Engineer-in-charge.
- ii. From the length measured, weight of reinforcing bars shall be calculated on the basis of weights specified in the table in this section.
- iii. Wastage and annealed steel wire for binding shall not be measured as the cost of these items were already included in the unit rate for reinforcement.

Payment rate

The unit rate in the bill of quantities for reinforcement is inclusive of the cost of all wastage of steel and the cost of binding wire or welding materials at site of work, cover blocks and cost of all incidental and operational charges in cutting , bending ,cleaning , placing , binding or

welding and fixing in position as shown on the drawings and as necessary to complete the work as per specification.

5.36 Cover Blocks

- a) Before concreting, cover blocks shall be fixed in all R.C.C works to separate the reinforcement from the shuttering so that when the concrete is set the reinforcement is well within the concrete section at a distance from the outer surface, with specified cover to reinforcement.
- b) Use of stone chips as cover for the reinforcement will not be accepted. Only cement mortar cover blocks of required thickness to maintain the specified cover shall be used.
- c) Normally a bottom cover of 12mm to 15mm is sufficient for slabs. For columns the cover should be about 40mm, and for beams it is 25mm.
- d) Cover blocks shall be reasonably good for using in appropriate grade of R.C.C. work. The mortar for preparing cover blocks shall at least be of proportion 1:2. Cover blocks shall be prepared on a clean and level platform by spreading the mortar in the moulds of required size and depth. When the mortar is still green strands of tying wire shall be inserted into each block. This wire is useful for tying the block to the reinforcement. After 24 hours the blocks shall be removed from the mould and cured for about seven days.
- e) A properly made cover block does not get crushed when the reinforcement is tied over it and during the concreting work.

5.37 Reinforcement chairs

- a) When the reinforcement is tied there is a need to separate bottom steel from the top steel and to maintain correct effective depth.
- b) For ensuring separation to top and bottom steel and to ensure that the reinforcement work does not get disturbed due to the load or movement of workers when concrete is being laid, reinforcement spacers or chairs shall be fixed.
- c) Use of large sized stones or bricks to separate top and bottom steel will not be allowed.
- d) Reinforcement chairs shall be of slightly lesser size so as to accommodate the chair underneath the top steel and after allowing for the required covers to the top and bottom steel.
- e) The chair shall be minimum 450mm long and should have legs bent in opposite directions to ensure stability,
- f) The chairs shall be placed on a cover block so that the legs do not stick out once the shuttering is removed.

5.38 Removal of Form work: Centering and shuttering shall be removed after maturity gradually without jerking. Before removal of the shuttering the concrete shall be examined properly. Form shall not be released until the concrete has achieved strength of at least twice the stress to which the concrete may be subjected at time of removal of form work. The strength referred to shall be that of concrete using the same cement and aggregates, with the same proportions and cured under conditions of temperature and moisture similar to these existing on the work. Where possible, the form work shall be left longer as it would assist the curing.

Stripping Time: In normal circumstances where ordinary portland cement is used and adequate curing is done, form work may generally be removed after expiry of the following period:

Type of Formwork	Minimum Period Before Striking Formwork
a) Vertical formwork to columns, walls, beams	24-48 hours
b) Soffit formwork to slabs (Props to be refixed Immediately after removal of formwork)	3 days
c) Soffit formwork to beams/ Flat slabs (Props to be refixed immediately after removal of formwork)	7 days
d) Props to slabs:	
1) Spanning up to 4.5 m	7 days
2) Spanning over 4.5 m	14 days
e) Props to beams and arches:	
1) Spanning upto 6 m	14 days
2) Spanning over 6 m	21 days

The number of props left under the concrete element, their sizes and dispositions shall be such that they shall be able to safely carry the full dead load and live load likely to occur during further construction.

The contractor shall be liable for damage and injury caused by removing the forms or props before the concrete has gained sufficient strength.

5.39 Conditions on RCC slabs/ Roof Slabs

5.39.1 The R.C.C. slab laid should be leak proof. After observing for two rainy seasons as defect liability period if the roof or floor is found to be perfectly leak proof and no moisture or dampness is seen underneath at ceiling of the slab, the contractor can ask for refund of E.M.D. or F.S.D. from the department. If there are any defects noticed after laying of roof they must be attended to by the contractor at his own cost. Further the contractor must arrange to get the structure treated as per clause 21 of ISI code No.456/2000 at his own cost on the instructions of the department.

When R.C.C. slab is laid, the contractor shall carry out the following tests at his own cost to prove that the slab is impervious.

- a) After the centering is removed and curing period is over the slabs shall be put to test by stagnating water of 15 cms depth for one week and watched carefully to test the leakages if any.
- b) If there are any leakages, the contractor shall immediately rectify the same at his own cost and again test the same to see that there are no leakages. No payment will be made to the contractor on this account either for testing or for rectifications thus carried out.
- c) The officer observing the leakage test shall issue a certificate to this effect before final bill is made.

5.39.2 The variation thickness of R.C.C. roof slab due to varying spans, or special covering materials should not effect the general roof bed which should be uniform unless otherwise shown in drawings or instructed.

5.39.3 For all slabs to be laid MS hooks to be provided as directed by the department for fixing fans and lights etc., G.I. pipes or PVC pipes has to be provided as directed by the department in the masonry walls or concrete at the specified places for making electrical wiring.

TABLE – IV

For Vibrated Reinforced Concrete Items (V.R.C.C.)

Characteristic Strength of Cube at the age of 28 days of curing

M-30	Design mix	30 N/mm ²	=	300 Kgs / cm ²
M-25	Design mix	25 N/mm ²	=	250 Kgs / cm ²
Nominal mix	1:1 1/2:3	20 N/mm ²	=	200 Kgs / cm ²
Nominal mix	1:2:4	15 N/mm ²	=	150 Kgs / cm ²

5.40 Cement Plastering in two coats CM 1:6 & CM 1:4 (APSS 901, 903 & 904)

5.40.1 The surface shall be prepared by roughening of the back ground and raking the joints. The surface of the wall shall be kept wet for 2 hours before plastering.

5.40.2 Guides: Patches of 15cm x 15cm of required thickness at not more than 2 meters intervals horizontally and vertically shall be applied over the entire surface truly in the plane and truly plumb to serve as guides.

5.40.3 Plaster shall be started from the top and worked down towards plinth. The work shall be tested frequently with a plumb bob and straight edge.

5.40.4 The Mortar in 1:6 proportions shall be dashed and pressed over the surface and then brought to smooth and uniform surface by means of float and trowel. The plaster shall be well pressed into the joints.

5.40.5 After the first coat the surface is left rough to receive the second coat. The final coat shall be applied a day or two after the first coat put on has set, but the first coat shall not be allowed to dry. The final

coat shall consist of 1 part of cement to 4 parts of fine sieved sand and shall be applied as in the first coat and brought to a uniform surface and then finished with a sponge to give granular appearance.

5.40.6 All corners, junctions and arises shall be brought truly to a line, level and plumb.

5.40.7 The finished surface shall be watered for a period of atleast 10 days.

5.40.8 Theoretical requirement of cement for plastering should be as follows :-

Cement bags of 50 kgs.

- | | | |
|----|--|-----------------------|
| a. | 12 mm plastering in C.M. (1:5)& C.M. (1:3) | 1.02 bags per 10 Sqm. |
| b. | 12 mm plastering in C.M. (1:6)& C.M. (1:4) | 0.82 bags per 10 Sqm. |
| c. | 20 mm plastering in C.M. (1:6)& C.M. (1:4) | 1.15 bags per 10 Sqm. |
| d. | 12 mm plastering in C.M. (1:4) | 1.08 bags per 10 Sqm. |
| e. | 12 mm plastering in C.M. (1:6) | 0.72 bags per 10 Sqm. |

5.41 Water proof plaster over the roof

5.41.1 On the clean wet surface of the concrete slab, before it has set, a layer of cement plaster shall be laid to give an average depth of 20mm over the concrete.

5.41.2 The Mortar to be used shall be of CM 1:3 proportions mixed thoroughly with a standard water proofing material with water repelling properties to ensure non-absorption.

5.41.3 Gauges should be put on the floor about ten feet apart to ensure even thickness.

5.41.4 Plastering must be done in squares or strips to avoid cracks. After the floor has been completed, it shall be covered with two inches of grass; sand or saw-dust and kept wet for three weeks.

5.42 Pointing: (APSS - 906)

5.42.1 Cement mortar for pointing shall conform to SS:115 and shall be of 1:3 proportions.

5.42.2 The joints in the masonry shall be raked out to a depth not less than the width of the joint, when the mortar is green. Joints are to be brushed clean of dust and loose particles with a stiff brush. The area shall then be washed and the joints thoroughly wetted before pointing is commenced.

5.42.3 The mortar shall be pressed into the raked out joints according to the type of joint required. The mortar shall not be spread over the corners, edges or surface of the masonry. The pointing shall then be finished with proper tool. The superfluous mortar shall be cut off from the edges of the line and the surface of the masonry shall be cleaned of all mortar.

5.42.4 Pointing could be either flush pointing, or groove pointing.

5.43 Notes on Pointing

- i) Flush pointing with a groove or a line appears neat and does not spoil the look of the stone or brick masonry.
- ii) As far as possible a minimum amount of mortar shall be used to avoid wastage.
- iii) The edges shall be neatly trimmed with a trowel and a straight edge.

- iv) While mortar is green a groove shall be formed by running a tool along the center lines of the joints. This operation shall be continued till a smooth and hard surface is obtained.
- v) Even the vertical joints shall be finished in a similar fashion.
- vi) Even when the job is done carefully, there is always an amount of superfluous mortar sticking to the masonry. This should be wiped off with a wet cloth.
- vii) After the work is set and dry i.e., after one or two days the stones shall be cleaned with a strong acid so as to remove the cement stains.
- viii) After cleaning with acid the stones shall be cleaned with soap water to ensure natural colour of the stones.
- ix) If care is taken as shown above the pointing work will look attractive and neat, and the natural appearance of the stone masonry is retained.

5.44 Flooring: (APSS 701 & 702)

5.44.1 Granite Flooring:

Flooring shall be with high polished colour granite stone slabs 18 to 20 mm thick of size not less than 2.40 mts length, laid over existing RCC slab or CC bed.

All the stones in one room shall be preferably of same width and shade. The width of all the slabs in one row must be uniform with longitudinal joints parallel to each other.

The joint width shall be kept minimum and the sides of the slab shall be chisel dressed to ensure a correct joint.

5.44.2 Granolithic concrete flooring (APSS No. 701 & 710)

The mix proportions for the Granolithic concrete floor topping shall be (1:2:4) (Cement : F.A. : C.A) by volume. The minimum amount of water which will give necessary workability for adequate compaction shall be added. The grading of the course aggregate for Granolithic concrete shall be from 6mm to 12mm. The finished thickness of flooring shall be 50mm thick or as specified in the approved drawings and the panels into which the floor is divided for laying the Granolithic concrete shall not have any panel dimensions in excess of 5.0m.

5.45 Joinery :

For all wood/iron/ Aluminium work a sample of each item i.e., frame with shutters complete should be prepared and got approved by the Engineer-in-Charge before they are manufactured in full quantities and fixed in position.

The furniture and fixtures and wind appliances for wood work should be of best quality available in the market, and should be got approved by the Engineer-in-Charge before fixing.

5.46 Door Frame :

Wooden Doors & Windows:

The wood shall be of Best Sal wood/Best Teak wood as specified in Bill of quantities for frames and shutters.

The wood shall be well seasoned, uniformly coloured and shall be free from knots, cracks, shakes, splits, cross grains etc.

The wood shall be durable and of reasonably straight grains.

Moisture content of the wood used shall be as near as possible to the following values:

Recommended **values of moisture content** in timber at the time of assembly or framing.

Type of work	Coastal area	Inland area
Frames of windows	16 to 18%	14 to 15%
Shutters of windows etc.	15 to 16%	12 to 14%

Construction and fixing

Frames shall have dovetail, tenon or mortise joints.

Before fixing in position, the frames shall be inspected and passed by the Engineer-in-charge. A coat of primer shall be applied before the frames are fixed in position. All portions of untreated timber abutting against masonry or concrete shall be painted with boiling coal tar or approved preservative, before placed in position.

The frames shall be erected in position and held plumb with strong supports from both sides.

Hold fasts shall be embedded in C.C. beds as specified.

Frames shall have dovetail, tenon or mortise joints.

Frames without sills shall be provided with temporary wooden bracings between the styles at sill level which can be withdrawn after the frame is firmly set.

5.47 Flush shutters for doors:

5.47.1 **Flush shutters (Double/Single)** :should be factory made ISI marked confirming to IS 2202-1991 (part-I), 35mm thick with bond wood solid block board type core having cross bonds and face veneers hot pressed bonded with water proof phenol formaldehyde synthetic resin, with lipping on all sides.

5.48 Construction :The block board core shall confirm to the requirements specified in clause 7.1.1. of IS 2202 (Part I) : 1991. The frame constructed of stiles and rails shall be provided for holding the core. The width of the frame including internal lipping shall not be less than 45 mm and not more than 75 mm.

5.49.1 **Plywood** :used in flush door shutter shall confirm to IS 710 : 1976 with surface requirements confirming to type AB of IS 303 : 1989.

5.49.2 Cross-bands used in flush door shutter shall confirm to the requirements laid down in IS 710:1976.

5.50.1 Face Veneers :used in flush door shutters shall confirm to the requirements laid down for veneer for BWP grade plywood in IS 710:1976.

5.50.2 All Plywood, cross – boards and veneer used shall be treated in accordance with clause 6.1.5.1. of IS 2202 (Part I) : 1991.

5.50.3 Adhesive used for bonding plywood or cross bond and face veneer to core shall be phenol formaldehyde synthetic resin adhesive confirming to BWP grade specified in IS 949:1974.

5.50.4 Internal lipping shall be of Teak wood and shall have a total depth not less than 25mm. It may be provided separately, when it is of species different from that of backing or as one piece with the style, designated as frame-cum-lipping, when internal lipping and backing are of the same species.

5.50.5 External lipping shall be of teak wood and shall be solid and shall measure at least 6mm on the face of the door. It shall be provided all round the shutter in case of single shutter and on three sides in case of double shutter.

5.50.6 In case of double leaved shutters, the sheeting of the stiles shall be rebated by 8mm to 10mm. The rebating shall be either splayed or square type as per clause 7.7 of IS 2202 (Part – I) : 1991. The depth of lipping at the meeting of stiles shall not be less than 30mm.

5.50.7 Shutter shall be shop prepared for taking mortise locks or latches as may be ordered.

5.50.8 Workmanship and the finish of the face panels shall be in conformity with those specified in IS 303:1989

5.51 Tests :Knife test, glue Adhesion test, End Immersion test, slamming test shall be carried out as per clause 10 of IS 2202 (Part – I) 1991. The sampling and criteria for conformity, making etc. shall also be as per IS 2202 (Part – I) : 1991.

5.52 Windows

5.52.1 Seccolar Systems

Windows / Ventilators

Windows / Ventilators fabricated from pre painted Steel Sections, made out of cold rolled steel as per ISD 513 of 0.6mm thick 'D' quality, galvanized as per IS 277 with zinc of 120 gm/sq.mtr. Primer Coat of Epoxy Primer of 7 microns thick, finish paint with a modified polyester paint of thickness between 13 – 20 microns, and back coat with Alkyd/Polyester of 7-12 microns. The size of profiles is approximately 56 x 46mm for internal shutter frames and 46 x 52mm for External shutter frames. Shutter is fitted with 4mm thick plain/pinheaded glass fixed with EPDM gaskets in the groove provided in the profile.

5.53 ALLUMINUM DOORS, WINDOW & VENTILATORS:

- (i) Aluminium doors, windows and ventilators: All extruded aluminium section to be used for fabrication shall be hollow aluminium alloy extrusions conforming to designation 63400 of IS: 1285. Aluminium Doors, Windows and Ventilators shall conform to IS 1948:1961
- (ii) All extruded aluminium sections and fixtures shall be coated with natural colour anodic coating in accordance with IS 1868.
- (iii) The mortice locks shall be provided in accordance with IS 2209.
- (vi) The floor springs (hydraulically regulated) shall be in accordance with IS 6315:1992.

5.53 Q.C. Clearance: The doors & windows (both frames & shutters) and ventilators should be got cleared by the Engineer / Quality Control agency authorised by the Engineer-in-Chief. The tests will be conducted at the manufacturer's place and Q.C. clearance certificate will be issued for the lot before supply to site for use in construction. All the arrangements for testing at the manufacturer's place should be made by the contractor at his cost. No door, window or ventilator should be fixed without clearance of Engineer/ Q.C. agency. The contractor should inform the Engineer/Q.C. agency for testing and clearing at least 7 days in advance.

6.0 ADDITIONAL SPECIFICATIONS:

6.1 Anti Termite Treatment

If the site is infected with white ants, all the ant hills shall be dug out completely and queen ants destroyed. Anti-termite treatment, before construction in foundation and basement where required shall be done as per I.S. code 6313 Part II 2001.

Chemicals used, the relevant I.S. specifications for the same and their usual concentrations as water emulsions for soil treatment shall be as given in table 201.9 of S.S. 201 APSS.

6.2 Structural Glazing:

The structural glazing shall be made up of electro colour anodized (having 15 micron anodic coating) aluminium structural sections of not less than 101.5 x 57 x 2 mm box sections for all mullions and not less than 63 x 57 x 2 mm box section for all transoms of structural glazing system and sub frame of 26.5 x 20 x 1.8 mm size. The members shall be fixed in grid pattern mechanically joined with Aluminium cleats and GI metal screws. The frame shall be fixed to the beam / slab/ soffit with GI brackets and fasteners. Glazed panels shall be made using 5 mm thick heat strengthened reflective

glass of St.Gobain / Glaverbel / Equivalent make fixed to the sub frame with 6 x 12mm spacer tapes of Norton make or equivalent and structural silicone bonding using G.E. SILICONE (SSG 4000) or DOW CORNING (795). The gaps between glazed panels shall be sealed with suitable Bakor rod and Silicon weather sealant of GE / DOW CORNING are to be applied to provide water tightness of glazing frame. Necessary masking tapes are to be used to prevent spreading of sealant over glass panels.

6.3 ACP Cladding:

The Aluminium wall cladding shall be fabricated with a minimum of 4mm thick Aluminium composite panel of approved make comprising of thermoplastic resin core sandwiched between two skins of 0.25mm thick aluminium alloy. The panel shall be PVDF coated to minimum 35 micron thickness of approved metallic colour. The resin content of PVDF shall be 75% to 80%. The back of the panel shall be chromatised 3 -4 microns. The Aluminium composite panel shall be mounted on frames made of 50 x 25 x 1.5 mm aluminium extruded tubes fixed to the column / beams / walls with Anchor bolts, screws and GI brackets and fasteners wherever required.

6.4 Aluminium Louvers:

Supply and fixing of powder coated (approved shade) Aluminium Louvers, using 63 x 37 x 1.5mm, Aluminium box section for main frame, the aluminium louver blades of size 103 x 50 x 1.5 mm thick shall be fixed to the main frame using G.I sheet metal screw as shown in the drawing. The spacing between the each louver blade shall be 75 mm.

6.5 Blasting Operations

Blasting operations when considered necessary shall be resorted to only with written permission of the Engineer-in-charge. Where blasting is resorted to only small charges shall be used. Prior inspection shall be carried out for the safety and stability of the public property. Blasting operations in the proximity of over head power lines, communication lines, or other structures shall not be carried until the operator or the owner of both of such lines have been notified and precautionary measures deemed necessary shall be taken as per the procedure laid down in S.S. No. 203 APSS and code 4081-1986 shall be followed.

Excavation in Hard rocky chiseling:

This includes rock which is easily excavated by blasting, but due to close proximity of structures or any other reason that the Engineer-in-charge may consider, will have to be excavated by chiseling.

The contractor may resort to any of the following methods to excavated rock by chiseling:

- (i) Wedging by means of crowbars, pick axes or pneumatic drills
- (ii) Heating and quenching
- (iii) Controlled blasting with a small charge just sufficient to make a crack in rock which will be subsequently removed by wedging.

No extra payment shall be made for removal of rock by chiseling and controlled blasting.

6.6 a) Expansion Joints

Structures in which marked changes in plan dimension take place abruptly shall be provided with expansion joint at the section where such changes occur. Expansion joint shall be so provided that the necessary movement occurs with a minimum resistance at the joint. The structures adjacent should preferably supported on separate columns or walls but not necessarily on separate foundations reinforcement shall not extend across an expansion joint and the break between the sections shall be complete. The details as to the length of a structure where expansion joints have to be provided can be determined after taking into consideration various factors such as temperature exposure to weather etc. For the purpose of general guidance however it is recommended that structure exceeding 45M in level to shall be decided by one or more expansion joints (SS No. 403.8 & IS 456).

b) Construction Joints

Vertical joints in floor and roof slabs shall be provided in the case of long building of more than 30M in length specially when the width or depth of such buildings are less than 15M and when narrow corridors connect blocks of relatively greater width. The most suitable position for such vertical joints are where the corridors take off from inner blocks. On soils such as black cotton, such joints are more essential shall be invariably provided at the places shown in the drawing or as directed by the Engineer-in-charge. Construction joints when necessary shall be located as follows.

In the main beam over the centre of support. No vertical joint shall be permitted in case of main beams. In other cases they shall be provided if necessary in the following location.

- i) In subsidiary beams at mid span.
- ii) In the case of slabs the joints wherever possible shall be parallel to main reinforcement. In the case of one way reinforced slabs and over the centre of supporting beams or walls in other cases. In general the joints shall not be provided in locations of considerable shear or under concentrated loads.

Suitable water stops as specified shall be provided in the case of water retain structures (SS No. 403.7).

6.7 Bearings of R.C.C. Slabs & Beams

- a. Where supports are not monolithic with the beam or slab the bearing surface shall be plastered with cement mortar 1:3 with the craft paper laid over the plaster, before laying the concrete.
- b. The vertical face of the masonry rebate at bearings shall be plastered smooth with CM 1:3. For beams the craft paper shall be continued to the sides by folding the paper neatly to the plastered vertical face of the masonry opening.

6.8 Load testing of structures

Load testing of structures shall conform to SS No. 403 APSS. Load tests on completed structures shall be made of required by the specifications or condition of contract or by the Engineer-in-Charge in the event of reasonable doubt as to the adequacy of the strength of the structure. Such tests shall be carried out after expiry of 56 days of effective hardening of the concrete test loading of structures, allowable deflections, recovery of deflection etc., shall be as per clause 17.6 of IS: 456-2000.

6.9 OVERHEAD TANKS

- 6.9.1 The tenderer shall be solely responsible for handing over a watertight structure. Failing which, he will not be entitled to final payment under this contract. The period of guarantee required for the contract, before which he will not be entitled to final payment under this contract, shall be two years after completion of the reservoir and putting in into commission and-during this period the structure under full working head of water shall neither develop any defects which will endanger its stability nor shall it show signs of leakage. The above guarantee period of two years shall commence from the date of first filling of the reservoir with water upto the maximum water level.
- 6.9.2 Cash security to the value of 5 (five) percent of each bill will be recovered from payments due to be made to the contractor and credited to deposits. These deposits together with Performance Security deposit required under the terms of the contract will be retained till the expiry of the Guarantee & Maintenance period and until a certificate of soundness of the structure is furnished by the Engineer-in-charge & Medical Superintendent. The whole of the above sum together with any recovery, from the payment already made, as may be assessed by the Engineer-in-charge shall be forfeited to the Department if the reservoir developed leaks. The above percentage recovery shall be exclusive of the amount with-held under Clause 68 of Preliminary Specifications to the APSS.
- 6.9.3 The work shall be executed according to the standard specifications for the reinforced concrete given in APSS and relevant Indian Standard No. IS:3370 parts I, II and IV and also the notes on reinforced concrete, contained therein, subject however to the modifications indicated hereunder. All concrete shall be mixed in power or diesel driven concrete mixers and placed in such a manner so as to prevent segregation of heavy aggregate. It is absolutely essential that most careful attention is to be paid by the contractor in preparation, mixing and placing to secure a dense concrete necessary for water tight structure. Special care is necessary at expansion joints, where 6" wide Rubber water stopper is to be inserted and all construction joints shall be treated as stipulated in IS:3370 part I to ensure water tightness. The amount of water required to produce the least shrinkage effects should be carefully gauged. The clear cover of reinforcement rods shall confirm to those specified in IS:3370 Part II.
- 6.9.4 The contractor should be prepared to arrange on his own responsibility sufficient number of concrete mixers and vibrators as may be required. Test cubes' should be taken and got tested periodically at the expense of the contractor and the results shall confirm to IS:456-1964. No patent water proofing compound shall be mixed in concrete, nor applied to the surface nor shall plastering be done to the interior of the reservoir as those are liable to give defective results on the life and water tightness of the reservoir.
- 6.9.5 All faces of the reservoir interior, and sub-structures shall be free from honey-combing and shall present a smooth dense surface and shall be free from work ridges and shall be given cement wash to improve the appearance. If any honey combing is seen on the finished surface of the concrete, it shall be rectified by gunting at the contractor's expense.

6.9.6 Testing and Inspection of Tanks:

After the tank is constructed, it shall be filled gradually with potable water. During testing, lime or sodium silicate or any other chemical shall be added to the water. After filling the water upto full supply level (Le. MWL) of the tank, it is maintained for seven days initially. After this initial period, the fall in the water level shall be obtained at every 24 hours interval for a further period of seven days. The average loss of water in 24 hours shall not exceed the following:

- a) 0.1% of the capacity of tank
- b) 5mm fall in the level
- c) 2 Litres per Sq. Metre of the water contact area.

6.9.7 Additional allowance up to 0.5mm fall in level may be made for high exported loss in summer depending upon the local conditions. Records shall be kept of leaks, if any, at different levels of water.

6.9.8 If the water tightness test is still found to be not satisfactory the contractor shall be required to carryout tests to localise the leakages at his cost.

The contractor shall then be required to take such measures as the Engineer-in-Charge specify to make the structure water tight to the extent described. Entire rectification work shall be at the contractor's cost. All the arrangements required for testing shall be at the contractor's cost. Payment will be made at the quoted rate only after conducting water tightness test successfully however subject to operation of condition.

7.0 Safety Specification:

7.0.1 All the necessary safety appliances as per IS: 4130 shall be issued to the workers and their use explained. It shall be ensured that the workers are using all the safety appliances while at work.

7.0.2 Walkways and passageways shall be provided for the use of the workman who shall be instructed to use them and all such walkways and passageways shall be kept adequately lighted, free from debris and other materials.

7.0.3 During night, red lights shall be placed on or about all the barricades.

7.0.4 All the roads and open area adjacent to the work site shall either be closed or suitably protected.

7.0.5 All nails in any kind of lumber shall be withdrawn, hammered or bent over as soon as such lumber is removed from the structure and placed in pipes for future cleaning or burning.

7.0.6 No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electricity charged.

7.0.7 Where in any work of demolition it is imperative, because of danger existing to ensure that no unauthorized person shall enter the site of demolition outside working hours, a watchman should be employed. In addition to watching the site, he shall also be responsible for maintaining all notices, lights and barricades.

- 7.0.8** On every demolition job, danger signs shall be conspicuously posted all-round the structure and all door openings giving access to structure shall be barricaded or marked except during the movement of actual workmen or equipment. However provision shall be made for at least two independent exits for escape of workmen during any emergency.
- 7.0.9** The removal of a member may weaken the side wall of an adjoining structure and to prevent possible damage, these walls shall be supported until such time as permanent protection is provided. In case any danger is anticipated to the adjoining structure the same shall be got vacated to avoid any danger to human life.
- 7.0.10** The power on all electrical service lines shall be shut off and all such lines cut or disconnected at or outside the property line, before the demolition work is started. Prior to cutting of such lines the necessary approval shall be obtained from the electrical authorities concerned for demolition work itself.
- 7.0.11** All gas, water, steam and other service lines shall be shut off and capped or otherwise controlled at or outside the building line, before demolition work is started.
- 7.0.12** All the mains and meters of the building shall be removed or protected from damage.
- 7.0.13** If a structure to be demolished has been partially wrecked by fire, explosion or other catastrophe, the walls and damaged roofs shall be shored or braced suitably.
- 7.0.14** All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris

8. SPECIFICATION FOR PILES

1. BORED CAST-IN-SITU CONCRETE PILE

- 1.1. General: This specification covers the piling work required for the construction.
- 1.2. Codes: IS:2911 (Part 1/Section 2)-1979 : 'Code of practice for design & construction of Bored Cast-in-Situ concrete piles' shall be referred to in conjunction with this specification during the entire design & construction work. If for any material or workmanship, appropriate Indian Standards or Codes are not available or have not been adequately specified in the Technical Specification, such materials & workmanship shall conform to other suitable Standard & Codes.
- 1.3. Design: The piles shall be bored cast-in-situ cylindrical type RCC piles and shall be founded on suitable approved strata to achieve the design capacity.
- 1.4. Materials: All the materials proposed to be used, shall be free from any objectionable substances, shall conform the following stipulation. Any testing required to prove the suitability of such materials should be carried out.
- 1.4.1. Reinforced Cement Concrete for Piles and pile caps shall be as per the approved design mix. The slump of concrete for piles shall be between 160 mm to 180 mm. The water-cement ratio shall not exceed 0.45. To achieve the specified slump using specified water cement ratio without

compromising with strength, if required, suitable admixture shall be used subject to approval of the Purchaser.

- 1.4.2. Preliminary mix design shall be done in accordance with IS: 10262-1982 & SP:23 subject to approval of the Purchaser. Cube tests, slump test & other relevant tests for preliminary mix design and Routine cube test, slump test for regular concreting shall be carried out at site / site laboratory at contractor's own cost. Concrete cube tests shall be done as per IS:516-1959. Frequency of cube test shall be guided by clause 15.2 of IS: '456-2000. Slump tests (apparatus conforming to IS:IS:7320-1974) shall be carried out at least once for each pile or more frequently, if desired by the Purchaser.

1.4.3. Equipment & Accessories

The equipment & accessories should be compatible with the type of sub-soil, method of installation, type of founding strata & required penetration in the founding strata.

The capacity of rig shall be adequate so as to bore upto required depth with specified diameter. Rig shall be equipped with suitable chisel to penetrate through any local obstruction/ hard strata.

1.4.4. Construction

- 1.4.4.1. The permissible positional deviation in horizontal direction shall not be exceed 1.5 % from the designed location in more in case of piles having diameter more than 600mm.
- 1.4.4.2. Stabilisation of the side of borehole shall be done by the use of bentonite slurry, Direct Mud Circulation (DMC) process shall be adopted. In such cases the bentonite slurry must be used at least from the level of sub-soilwater, as the hole shall then be always kept almost full with the fluid. The specific gravity of bentonite slurry shall be in the range of 1.05 to 1.10. This shall be checked regularly for each or at any change in its specified consistency. Pressure of slurry pump shall be sufficient enough to clear out all cuttings efficiently from the hole. Prevention of side collapse of boreholes shall be taken care by with use of temporary casing if necessary.

At the last stage of *boring* or in intermediate hard layers chisel may be used. The piles shall be installed with due consideration for safety of adjacent structures by a method, which leaves their strength unimpaired, and which develops and retains the required bearing resistance.

- 1.4.4.3. Reinforcement as required shall be made into stiff cages sufficiently welded to withstand handling without any damage or distortion. Reinforcement shall be placed immediately after cleaning and inspection of the bottom of bore holes. The reinforcement should be supported away from the sides of the shaft by means of suitable space block to ensure concentric alignment in the shaft. Steps shall be taken to ensure correct positioning during concreting of reinforcement in the piles without any distortion.
- 1.4.4.4. Immediately before placing of reinforcement and concreting, the boredhole shall be cleaned of all the loose material, debris and all the water shall be removed. The pile tip zone shall be thoroughly cleaned by flushing the bore with fresh bentonite slurry to completely replace the old bentonite slurry used during the previous operations. This shall be carried out for about 45 minutes in two stages. Cleaning for about first 30 minutes shall be done before lowering of reinforcement cage & cleaning of about 2nd 15 minutes after lowering the reinforcement cage.

Concrete shall be so placed as to fill the entire volume of the tube or bore without the formation of voids caused by the faulty consolidation or entrapped air. Proper care shall be taken to ensure that the fluid alluvial soil does not penetrate between batches of the concrete.

In case of boreholes stabilised by bentonite slurry, concrete shall be placed by means of tremie pipe, which will be suitably closed at bottom at the start of concreting. The tremie pipe must extend upto the bottom of the borehole at the start and may be withdrawn in sections as the level of concrete rises in the borehole; but its discharge end shall at all times be embedded in the concrete to a minimum depth of 2m. Placing of concrete should be continuous and the pile holes will be maintained full with the bentonite slurry where used throughout the concreting operation. Slurry displaced from the borehole by the concrete shall be channeled away or pumped into suitable mud pond for re-use or disposal to waste.

In case of cased holes, after the required founding level is encountered, the bottom shall be sealed with concrete and the reinforcement cage shall be lowered. If the borehole is dry, concrete shall be deposited in such a manner so as to avoid any segregation of concrete followed by gradual withdrawal of casings. If water is present in the borehole, it shall be bailed out by bailer. If it is difficult to dewater by the bailer, concrete shall be placed under

water by means of a placer. After the head of water has been neutralised by the head or the concrete, excess water shall be bailed out and concrete shall then be deposited by direct pouring from the top. as is done, if the borehole is dry.

1.4.4.5. The concreted length of piles shall be measured from the toe of pile to cutoff level of pile.

1.4.4.6. Temporary stoppage of work may be permitted only during boring stage. Thereafter right from boring or chiselling of final portion of pile length through subsequent activities of flushing, lowering of reinforcement cage, lowering of tremie, pre-concrete flushing & upto concreting of full pile length, no halt whatsoever in the execution of work shall be permitted.

1.4.4.7. Boring for any pile shall not be carried out within a clear distance of four times of the pile diameter from the adjacent pile, which has been freshly concreted within past 24 hours.

1.4.4.8. Concreting of Pile shall continue until the Pile is fully formed upto a level of not less than 500 mm above cut off level of piles. Extraction of casing wherever used shall be done in such a way that no necking or shearing of the concrete in the shaft takes place. Pile length above cut off level shall not be measured for payment and shall be trimmed off free of cost. Trimming of pile top shall not be permitted before 7 days of concreting in case of mechanical chipping & 3 days in case of manual chipping.

1.4.5. Founding Strata

All the piles shall be founded in specified strata.

SPT shall be carried out at founding level for at least one pile at every 10 m distance subject to minimum of one test for every 25 piles or part thereof within a pile cap.

1.4.6. Pile Load Test

1.4.6.1. Maximum load in case of routine tests shall be limited to 1.5 times of the corresponding safe design load.

1.4.6.2. For all types of Routine load tests the testing arrangement, procedure & interpretation shall follow relevant criteria set out in IS:291 (part 4) -1985 along with the following stipulations:

- i) Load test shall be carried out after 28 days from the date of casting unless otherwise directed.

- ii) Test load shall be applied at cut-off level, [f the test level is below the ground water table, suitable arrangement for dewatering shall be made.
- iii) Loading shall be applied by reaction method consisting of a hydraulic jack placed centrally against a suitable loaded platform / anchorage system. Reaction system shall be well designed & capable of taking 1.25 times of the maximum load to be applied.
- iv) Test load shall be applied to pile in a static manner. Stage loading shall be applied in equal increments of 20% of estimated safe design load. Unloading may be done in higher decrements with at least 5 stages. For Cyclic Load test, each stage of loading shall correspond to unloading upto zero load. At each stage of loading & unloading, deflection of pile top shall be recorded accurate to 0.02 mm at an interval of 1, 2, 4, S, 15, 30, 60 & 120 minutes upto a time when the deflection rate reduces to 0.1mm in 30 minutes or 0.2 mm in one hour or till two hours whichever occurs earlier.
- v) Increments of loads shall be continued upto maximum Load of 1.5 times of safe design load for Routine Test or failure (soil-pile yielding or structural failure) whichever occurs earlier.
- vi) Where failure does not occur, the final test load shall be maintained for 24 hours and deflection records shall be taken at every 6 hours interval, including initial 2 hours detailed records, as mentioned earlier.
- vii) Assessment of Safe Load for different types of test shall follow relevant clauses of IS : 2911 (part 4)-1985.
- viii) After completion of load test, the following records / reports shall be furnished.
 - a) Tabular & Graphical representation of Load vs. Settlement during loading and unloading.
 - b) Tabular & Graphical representation of the Time vs. Settlement for each load.
 - c) Graphical analysis of initial cyclic load test results to separate skin friction & end-bearing as per Annexure A. IS 291 1 (part 4).
 - d) Remarks concerning any unusual occurrence (if any) during boring, installation or testing of piles.

1.4.7. Standard of Acceptance

The piles shall be accepted as satisfactory only when the work has been executed in accordance with this specification. IS Codes, and the Standards stated hereinafter and instructions given by Purchaser at sue from time to time:

- a) The total volume of concrete shall not be less than actual shaft volume and not more than 40% of the calculated volume. The calculated volume for this purpose shall be the cross-sectional area inside the bore multiplied by the length of the shaft. The concrete shall show the specified strength as indicated by the cube test results.
- b) The toe of pile shall be at approved bearing level in each case.
- c) Tolerances specified in clause No. 1.4.4 shall be satisfied.

If an individual pile fails to meet the requirements specified in any of above clause/s, such pile shall be deemed to be defective.

When any pile is found defective, one or more pile shall be installed as a replacement of defective pile as necessary.

1.4.8. **Record**

A record for each pile indicating the following data shall be maintained.

- a) The date and time of commencement and completion of the piling operation.
- b) The particulars of the equipment and method of boring and concreting.
- c) The location and type of pile. Pile number, with a reference to approved drawings.
- d) The diameter of the pile and verticality.
- e) Bored depth, concreted depth, empty boring and nature of stratum at founding Level.
- f) The volume of concrete poured, quantity of cement, w/c ratio used and slump of poured concrete.
- g) Details of reinforcement provided.
- h) The sequence of installation of pile groups.
- i) During boring operation, a separate record for rate of advancement of borehole in terms of effective time vs. boring depth shall be maintained for each pile. The effective time implies the time required exclusively for boring operation barring the time *for* oilier activities such as temporary stoppage, cleaning of hole, in-situ tests, if taken etc.

**TECHNICAL SPECIFICATIONS
SANITARY AND WATER SUPPLY**

STANDARD SPECIFICATION FOR BUILDING WORK (AS PER A.P.S.S.)

All the items of work shall be executed as per the Standard Specifications laid down in APSS, the relevant I.S Codes of the Special Specification as indicated in Schedule - 'A' of the tender

Sl. No.	Name of the specification	Specification No.of.APSS
13.	SANITARY WORKS AND ROOF PLUMBING	
13.01	Stoneware pipes and fittings	1301
13.02	Cast iron pipes & special castings for water & Sewage	1302
13.03	Galvanised mild Steel Pipes & Fittings	1303
13.04	Concrete & pre-stressed Concrete Pipes & Collars	1304
13.05	Asbestos Cement Pressure Pipes & Fittings	1305
13.06	Unplasticised (Rigid) PVC pipes and fittings for potable water supplies	1306
13.07	Polyethylene pipes and fittings for potable water supplies	1307
13.08	Cast iron manhole covers & frames intended for use in drainage works	1308
13.09	C.I. Surface boxes for sluice valves, fire hydrants and air valves	1309
13.10	C.I. Grating for drainage works	1310
13.11	Sheet metal rain Water Pipes, gutters, fitting & accessories	1311
13.12	C.I. Rain water pipes and fittings	1312
13.13	Asbestos cement rain water pipes, gutters and fittings (spigot and socket type)	1313
13.14	Asbestos cement soil, waste and ventilating pipes and fittings	1314
13.15	C.I. Soil, waste and ventilating pipes & fittings	1315
13.16	Handling, transport and custody of pipes, fittings valves etc.	1316
13.17	Trench work excavation and back filling	1317
13.18	Laying and Jointing of glazed stoneware pipes and fittings	1318
13.19	Laying & Jointing of C.I. pipes, fittings & fixing accessories	1319
13.20	Laying & Jointing of Galvanised mild steel pipes & fittings	1320
13.21	Laying & jointing of cement pipes	1321

Sl. No.	Name of the specification	Specification No.of.APSS
13.22	Laying & jointing of AC pressure pipes & fittings	1322
13.23	Laying & jointing of Unplasticised (Rigid) PVC pipes and fittings for potable water supplies	1323
13.24	Disinfection of water mains before commissioning	1324
13.25	Construction of manholes, flush tanks & other masonry works on sewers	1325
13.26	Fixing and Plumbing of sanitary fittings	1326
13.27	House Drains Connection – Construction	1327
13.28	fixing of rain water gutters & down take pipes for roof drainage	1328

DRAINAGE, SEWERAGE, WATER SUPPLY, PLUMBING ETC.

1.0 DRAINAGE, SEWERAGE, WATER SUPPLY, PLUMBING ETC.

1.01 General

- 1.01.1 All water supply, drainage and sanitary work shall be executed by a licenced or authorised plumbing supervisor or licenced or authorised plumber and shall be in accordance with the requirements of relevant bye-laws of-municipal or other authorities in whose jurisdiction the work is being carried out.
- 1.01.2 All items such as earthwork excavation, concrete, brick work, stone work, painting, etc., relevant specifications for those shall apply unless otherwise specified.
- 1.01.3 Unless otherwise specified, all exposed work such as cisterns, brackets etc., shall be painted with synthetic enamel paint of approved colour in two coats over a priming coat.
- 1.01.4 The diameter of pipes and fittings wherever mentioned shall mean the internal diameter of nominal bore unless otherwise specified.
- 1.01.5 The job shall include the cost of making necessary chases, grooves, holes etc, in walls, floors and in other places and also making good or completion of the works. ANY DAMAGE caused to floors, walls etc., during the execution of the sanitary and plumbing works shall be made good by the Contractor at his own cost to the satisfaction of the Engineer-in-charge.
- 1.01.6 All the water supply and sanitary connections are to be tested against leakage and satisfactory performance based on standard tests before they are fixed.

Codes and Standards

SCHEDULE -C

**LIST OF SPECIFICATIONS FOR THE VARIOUS ITEMS OF WORKS SUPPLEMENTING
THOSE DESCRIBED IN**

SCHEDULE 'A' BY S.S. NUMBERS

GENERAL SPECIFICATIONS

Sl.No.	Description	IS.No. and as amended from time to time
A) LIST OF INDIAN STANDARDS		
I.	PIPES & FITTINGS FOR SANITARY, PLUMBING, DRAINAGE	
1	Lead Pipe	IS 404:1993
2	Lead sheet	IS 405:1992
3	Pre-cast Concrete pipes with or without reinforcement – Specifications	IS 458:2003
4	Specification for Salt-glazed stone ware pipe and fittings	IS 651:1992
5	Method of test for concrete pipes.	IS 3597:1998
6	Specification for Caulking lead.	IS 782:1978
7	Centrifugally cast (spun) iron pressure pipes for water, gas and sewage.	IS 1536:2001
8	Vertically cast iron pressure pipes for water, gas and sewage.	IS 1537:1976
9	Cast iron fittings for pressure pipes for water, gas and sewage	IS 1538:1993
10	Specifications for Centrifugally Cast (Spun) Ductile Iron Pipes for Water, Gas and Sewage	IS 8329:2000
11	Specification for high density polyethylene pipes for potable water supplies.	IS 4984:1995
12	Mild steel tubes and tubulars.	IS 1239
13	Specification for Chemically resistant salt-glazed stone ware pipe and fittings.	IS 3006:1979
II	WATER SUPPLY FITTINGS	

Sl.No.	Description	IS.No. and as amended from time to time
1	Specification for Pillar taps for water supply purpose	IS 1795:1982
2	Specification for Plug cocks for water supply	IS 3004:1979
3	Washers for use with fittings for cold water services.	IS 4346:1982
4	Specification for Self closing taps for water supply	IS 1711:1984
5	Specification for cast copper alloy screw down bib taps and stop valves for water services.	IS 781:1984
6	Water meter boxes domestic type.	IS 2104:1981
7	Water fittings - Copper alloy float valves (horizontal plunger type) - Specification	IS 1703:2000
8	Specification for copper alloy gate, globe and check valves for water works purposes.	IS 778-1984
III	SANITARY FITTINGS	
1	Vitreous sanitary appliances (Vitreous china)	IS:2556
2	Specification for Glazed fire clay sanitary appliances.	IS 771: 1979
3	Flushing cistern for water closets and urinals.	IS 774:2004
4	Brackets and supports for wash basins and sinks	IS 775:1970
5	Wooden water closet seats and covers.	IS 776:1962
6	Plastic seats and covers for water closets	IS 2548:1996
7	Waste plug and its accessories for sinks and wash basins.	IS 3311:1979
8	Non ferrous waste fittings for wash basin and sink.	IS 2963:1979
IV	LAYING OF PIPES	
1	Code of practice for water supply in buildings.	IS 2065:1983
2	Code of practice for building drainage.	IS 1742:1983
3	Code of practice for laying of cast iron pipes.	IS 3114:1994
4	Code of practice for laying of glazed stone-ware pipes.	IS 4127:1983
5	Laying and jointing of polyethylene pipes and PVC pipes parts- I to III	IS 7634:

Sl.No.	Description	IS.No. and as amended from time to time
6	Laying of D.I pipes	IS 3114:1965
7	Code of practice for laying concrete pipes.	IS 783 :1985
V	ROOF DRAINAGE SYSTEM	
1	Cast iron rain water pipes and fittings.	IS:1230:1979
2	Specification for Asbestos cement building pipes, gutters and fittings (spigot and socket type)	IS 1626:1994
3	Cast iron/Ductile iron drainage pipes and fittings	IS 1729:2002
3	Specification for Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.	IS 3989:1984
4	Code of practice for fixing rainwater gutters and down pipes for drainage.	IS 2527:1984
5	Code of practice for building drainage.	IS 1742:1983
VI	TANKS/ MANHOLE COVERS / MISC.	
1	Rectangular pressed steel tanks.	IS 804 :1967
2	Code of practice for design and construction of septic tank	IS 2470:1985
3	Specifications for Cast iron manhole covers and frames	IS 1726:1991

Note:- The above I.S specifications mean latest over and above with amendments if any.

1.02 **Materials:** Materials, fittings and appliances for sanitary and plumbing work, used in the work shall be as specified in the Bill of quantities. The contractor shall submit to the Engineer-in-charge, samples of all materials, fittings and appliances for approval well in advance before starting the work. All materials, fittings and appliances used in the work shall confirm to the approved samples.

1.02.1 **Galvanised pipes and fittings:** -Galvanised steel pipe, fittings and accessories shall be of tested quality and shall confirm to IS: 1239 - (Part-I) 1968.

1.02.2 **Lead Pipe:-** Lead pipes shall confirm to IS:404 Weight and thickness of pipes shall be indicated in the drawings or in the Bill of quantities.

1.02.3 **Lead sheets:** Sheet lead for finishing shall weight at least 30 Kgs. per sq.m. unless specified otherwise and shall confirm IS:405.

Bottle trap shall be of approved quality heavy brass chromium plated trap and made particularly smooth on the inside and shall have minimum 50 mm water seal and cleaning screw at bottom.

- 1.02.4 **Lead trap;** Lead traps shall be of the same weight and thickness for lead pipes. Lead traps wherever provided shall have minimum 50 mm water seal and cleaning screw at bottom. Traps shall be connected to waste pipes with brass cap and lining of required sizes and wiped solder joints.
- 1.02.5 **High density polythelene pipes and fittings:** High density polythelene pipes and fittings shall be of tested quality and shall conform to IS:4984-1972 and IS: 8008
- 1.02.6 **Cast iron pipes and accessories:** Cast iron pipes with sockets spigots ends shall conform to IS:1230 and IS:1729.
- 1.02.7 IS:8008 : Specification for injection moulded HDPE (Part I to IV) fittings for potable water supplies.
- 1.02.8 **Manhole covers:** Manhole covers shall conform to IS: 1726.
- 1.02.9 **Concrete pipes:** Concrete pipes shall be non-pressure type and shall conform to IS: 458 and the type of joints shall be as indicated in the drawings.
- 1.02.10 **Salt-glazed stoneware pipe:** Salt glazed pipe shall conform to IS: 651 and IS: 4006.
- 1.02.11 **Sanitary appliances and non-ferrous fittings:** All sanitary appliances and non-ferrous fittings shall be of tested quality and shall conform to the relevant Indian Standards.

1.03 Joints

- 1.03.1 **Cast iron Pipes:** The type of jointing for CI pipes conforming to IS: 1729 shall be socket and spigot either with molten lead wool and gasket conforming to IS: 782.

If the joints used are spigot and socket types, the spigot shall be carefully centered in the socket by one or more pieces of clean white hemp/spun yarn with about 25mm overlap; sufficient yarn only shall be forced into the socket to leave a correct depth for lead caulking. The pipe shall then be examined again for line and level and the proper depth of each joint shall be tested before running the molten lead. For pouring of molten lead of ring of hemp rope shall be wrapped round the pipe at the end of the socket and the joint shall be covered with stiff damp clay. The rope shall then be removed carefully leaving V shaped large hole at the top of the joint to pour the molten lead. Lead shall be poured in one operation only. After a section of convenient length of pipe has been laid, lead shall be caulked sufficiently with caulking tools and hand hammer till the excess lead is removed and the joint shall be made neat and clean.

The type of jointing CI pipes conforming to IS: 1230 shall be socket and spigot with cement and sand. mortar (1 : 1) and gasket yarn.

The spigot shall be carefully inserted and centered in the socket by one or more pieces of thick clean hemp/spun yarn and shall be forced into the socket to leave a correct depth of 30 mm around for cement mortar. The pipe shall then be examined again for line and level and the proper depth of each

joint shall be tested before inserting the cement mortar. The joints shall then be adequately carefully filled with stiff cement and sand mortar (1: 1) and the joints shall be levelled to the edge of the socket. Each joint shall be adequately cured by covering with wet clothes and pouring water at frequent intervals.

The parking ring or washer for the flanged joints shall be rubbed for the full diameter of the flange with proper pipe hole and the holes cut out suitably. The packing shall be smeared with graphite paste or a mixture of red lead and white lead and shall be introduced between the flanges of both the pipes and nuts tight in opposite pairs keeping the longitudinal axes adjoining pipe lines in exactly the same straight line. Lead washers shall be provided along with bolt, to prevent any leakage through bolt holes.

1.03.2 **Stoneware pipes:** The type of jointing for stoneware pipes shall be socket and spigot as indicated on the drawings. The inside of the socket shall be first painted with a layer of cement mortar (1 :2) and a gasket of yarn dipped in cement slurry shall be inserted in the socket of the pipe with in wooden caulking tool and wooden mallet in such a way that the gasket shall fully encircle the spigot with a slight overlap. When the spigot end received the gasket, it shall be wrapped round with two or three turns of treated spun yarn its end before being inserted into the sockets. The rest of the joint shall be then completely filled with cement sand mortar (1 : 1) having very little water and the joint shall be leveled to form a smooth splayed; filled at the angle of 45 degree. All excess of cement mortar left inside the pipe joint shall be neatly cleaned off and the joint shall be adequately cured by covering with gunny bags and pouring water at frequent intervals. In jointing stoneware pipes, care shall be taken that the pipes and kept concentric and the socket especially on the under side, shall be completely filled with cement mortar. Where settlement of earth is envisaged, the joint shall be made with bitumenastic filler or any other materials as approved by the Engineer-in-charge.

1.03.3 **Concrete Pipes:** The type of jointing for concrete pipes shall be with loose concrete collars and the joints shall be packed from other side with spun yarn dipped in cement slurry as specified for jointing stoneware pipes; stiff cement mortar (1: 1) shall be filled from both sides and splayed at an angle of 45 degree on both side, the joints shall be adequately cured as specified for joints in stoneware pipes.

1.04 Laying of pipes :

1.04.1 **Cast iron pipes:** The laying of cast iron pipe lines shall commence only after the bottom of the trench at various points have been levelled and aligned in accordance with the drawings. The sides of the trenches shall be vertical as far as possible and the width of the bottom shall be 300 mm wider than the diameter of the pipe. Where joints are made, the trench shall be widened suitable to provide room for caulking joints. Shorting and Timbering shall not be used without prior approval of the Engineer. For pipes buried in the ground, the Contractor shall take care to maintain always the minimum cushion of earth over the pipes as indicated in the drawings. All pipes, Water mains, cables etc met within the course of excavation shall be carefully protected and supported. All pipes and fittings shall be sounded with a light hammer and checked properly to detect any crack or blow holes before laying. The excavated materials shall be thrown on one side of the trench and the pipes stacked on the other side.

The inside of the socket and the outside of spigot shall be thoroughly cleaned of all foreign matter before laying. The pipes shall be laid with their socket ends facing the directions of the flow. The pipes shall then be lowered in the trenches by a method as approved by the Engineer. After each section of the pipeline has been laid it shall be tested for water tightness before back filling the trench. On successful completion of testing, the trench shall be backfilled with the excavated earth in layer of 200 mm and shall be watered and rammed. Any subsidence accruing in the line of branches after backfilling shall be repaired by the contractor at his own cost. Where the pipe lines cross roads, the sides of the trenches shall be suitably shored.

1.04.2 **Concrete pipes:** The laying of concrete pipelines shall conform to clause 9 of IS:783. Pipes shall be laid true to line and grade. Laying of pipes shall always proceed up grade of a slope.

1.04.3 **Stoneware pipes:** The laying of stoneware pipeline shall commence only after the bottom of the trench at various points have been levelled as shown in the drawings. The centre line of the trench shall be first marked out on the ground and shall be excavated correct to depth, slope and width at all points. The pipes shall be carefully laid to the alignment, levels and gradients as shown on the drawings. The trench shall be excavated wide enough under the sockets to allow hands to pass for making joints. The pipes between manholes shall be laid truly in straight lines and without any vertical or horizontal deviations on a bed of concrete as shown in the drawings. While laying pipes, portion of concrete under each socket shall be dug and taken off so that the barrel of the pipe gets full support on the concrete bed. Pipes shall be launched with concrete tangentially upto the crown of the diameter of the pipe as shown on the drawing. When it crosses under a road, the pipes shall be fully encased in concrete as shown on drawings. The contractor shall take precautions to maintain always a minimum cushion of earth over the pipes as indicated in the drawings. All pipes shall be carefully examined with a light hammer for soundness before laying. After each section of the pipeline has been laid, the joints shall be allowed to sit properly and shall be inspected and carried out only after approval of the Engineer. After testing, the trench shall be back filled with selected earth in layers of 200 mm and shall be watered and thoroughly rammed all pipes, water mains, cables etc. met within the course of excavation shall be carefully protected and supported.

When the pipelines cross roads, the trenches shall have vertical sides with suitable shoring. Any subsidence in the line of trenches after backfilling shall be repaired by the contractor at his own cost.

1.04.4 **Cast iron rain water pipes:**

Cast iron rainwater pipes shall conform to IS:1230 and IS: 1729 and shall be installed as shown in the drawings.

Cast iron rainwater pipes fixed exposed to external walls shall conform to IS: 1230 and shall be blocked out at least 20 mm from the plastered surface by means of cast iron bobbing. The rain water pipes at the roof level shall be fitted with a cast iron band with a masonry bell mouth of suitable size fitted with a cast iron grating. The bottom of the down pipe shall be fitted with a shoe fixed 150mm above ground / apron level of the building as shown on the drawings.

Cast iron rainwater pipes embedded in concrete or masonry shall conform to IS: 1729 and shall be securely fixed to wall with wooden plugs and nails. Joints of the sockets and spigots of pipes and fittings.

1.05 Inspection pits and trap pits:

Construction of pits shall commence only after the pipes have been laid in position to true line and levels as shown on the drawings to the satisfaction of the Engineer.

Inspection Pits: Inspection pits shall be constructed as indicated in the drawings/bill of quantities. Unless otherwise specified, all inspection pits shall be constructed with rubble masonry in cement mortar (1 :4). Half round channels of size suitable for the inlet and outlet pipe diameter shall be formed on the floor of the pit with M-10. The floor on the pit shall be haunched towards the channel as shown in the drawings. Inside pits shall be finished with cement sand plaster as specified in the specification and finished smooth with cement punning. Care shall be taken to avoid invert level after finishing and shall be as shown in drawings and/or as directed by the Engineer.

Inspection/master trap pits: The pits for the glazed stoneware master trap shall be constructed as indicated in the drawings/bill of quantities. The construction and finishing of the pit shall be haunched towards the interception/master trap pits. Gully trap pits shall be constructed as indicated in the drawings/bills of quantities. The construction and finishing of the pit shall be as described in specification for inspection pit. The cast iron grating shall be set flush with the finished ground/ apron level.

1.06 Testing of Cast Iron Soil and Waste Pipelines:

On completion of laying the cast iron soil waste and ventilation pipeline shall be tested by the contractor at his own cost and to detect leakage and any other defects in the pipe line.

Test shall be conducted using proper apparatus with attachments for smoke making machine for applying smoke to the pipelines under pressure, jute cotton waste or brown paper soaked in creosote oil shall be used and fixed to obtain dense and pungent smoke. While conducting smoke test top of soil waste and ventilation pipes shall be kept open till smoke starts coming out of openings. The opening shall then be surely plugged with expanding rubber, traps and other openings for connecting sanitary fixtures shall be sealed with water or other approved plugs. The entire pipeline shall be tested in suitable sections as directed by the Engineer. The entire length of the pipelines including all joints under test shall be closely observed for any sign of smoke leakage. All leakage and defects shall be rectified by the contractor to the satisfaction of the Engineer.

1.07 Testing of underground Sewer lines:

The drainage system shall be tested in accordance with the provisions of IS: 1742. All defects and deficiencies detected during the watch shall be promptly rectified by the contractor to the satisfaction of the Engineer.

2.0 WATER SUPPLY:

2.01 Jointing and laying of galvanised steel water supply pipes:

- 2.01.1 Screwed galvanised steel pipes, conforming is IS: 1239 shall be jointed with screwed socket joints and screwed fittings of the same materials as that of the pipes. Any burrs remaining on the pipes and after the threads are cut shall be removed. An approved jointing compound together with a grumet of a few stands of fine yarn shall be used for jointing pipes and fittings. Any pipe threads exposed after jointing shall be painted with white synthetic enamel paint and in the case of underground piping, thickly coated with approved bituminous compound to prevent corrosion.
- 2.01.2 The depth at which the underground water supply pipe is to be laid shall be as shown in the drawings. The service pipe passing into or beneath the building shall be laid at least 200mm below the ground floor level and accommodate in a previously laid sleeve in the structure where it enters the building. The space between the sleeve and the pipe as its entry into the exit from the building shall be filled with bituminous materials for a minimum of 150mm at both ends. Piping shall not be buried in walls or floors as far as possible. However, when unavoidable, piping shall be buried for the shortest distance necessary and adequate protection shall be provided against damage.
- 2.01.3 Galvanised steel piping shall be secured by iron or steel clamps and hooks when fixed on walls. All pipe work shall be completely water tight and the joints shall be such that there are no projections of jointing materials or the like in the interior of pipes. Before the pipeline is commissioned, all piping and fittings shall be flushed clean.
- 2.01.4 **Testing:** After the laying and fixing of all galvanised steel water supply pipes and fittings are completed the line shall be slowly and carefully charged with water to a test pressure of 5 Kg. per Sq.cm. or the specified working pressure plus 50% as may be prescribed by the Engineer. Care shall be taken that air in pipelines is completely exhausted while filling the pipelines with water. This pressure shall be maintained for at least one hour, unless otherwise specified. The pipes and fittings shall be inspected for any leakage of water. Defects in pipes and fittings, if detected, shall be remedied by the Contractor at his own cost.

2.02 Jointing and laying of high density polythelene water supply pipes:

All higher density polythelene pipes shall have screwed ends and shall be jointed with screwed fittings of the same materials of the pipes. Any burrs remaining on the pipe ends after cutting threads shall be removed if necessary and approved jointing compound with a few strands of fine yarn may be used for jointing pipes and fittings. All exposed high density polyethelene pipes shall be installed with PVC saddles Screwed on 25mm thick wooden blocks securely fixed on walls, at suitable intervals, not exceeding 1m. Pipes wherever installed on wall, clamps shall be fixed as in the case of galvanised steel pipes.

- 2.03 **Jointing of lead pipes:** Jointing in lead pipes shall be wiped solder joints. Joints shall be wiped in a continuous circular motion in one direction so as to leave a neatly formed elliptical shaped joints free from tears, burns, dropping etc. All exposed lead pipes, exceeding 25mm in diameter shall be secured to walls by iron clips or lead ears. The spacing of the clips shall not exceed 900mm.

2.04 **Storage water tanks:** All tanks for storage of water shall be as indicated in the drawings and bill of quantities and shall be completely and properly covered with dust, light and mosquito proof cover of approved type as shown on the drawings or as described in the bill of quantities. They shall be fitted with a ball valve of approved type, securely fixed to the tank independent of the inlet pipe. A mosquito proof overflow pipe shall be fixed to the tank with the pipe invert about 25mm above the top of water line.

Approved type of stop valve shall be provided for every outlet pipe. All outlet and inlet pipes shall be fixed as shown in the drawings. Support of the tanks shall be 'as indicated in drawings. Inside surface of galvanised steel tanks shall be painted with anti-corrosive drinking water paints as indicated in bill of quantities.

2.05 **Cleaning and disinfection:** All storage tanks water supply fittings and pipes before being put into commission, shall be disinfected with liquid chlorine by the Contractor as his own cost.

3.0 **INSTALLATION OF SANITARY APPLIANCES:**

All sanitary appliances shall be fixed in position rigidly on floor and walls as indicated in the drawings/ bill of quantities or as directed by the Engineer.

3.1 **Water closet-Squatting type:** Squatting type water closet shall be fitted with specified trap and shall be jointed with gasket yarn and cement mortar. Rim of the pan shall be levelled properly and set flush with the finished floor. The pan shall be connected to flushing cistern of capacity as indicated in the bill of quantities. The flushing cistern shall be supported on pair of CI cantilever brackets firmly embedded in the wall in cement mortar (1:4) or screwed to wall suitable plugs. Heights of the bracket from the top of pan shall be as shown in the drawings. The flush pipe from the cistern shall be 32 mm of specified tested quality and connected to the pan inlet by means of hemp and putty joint.

3.2 **Water closet-pedestal type :** Pedestal type water closet shall be rigidly fixed on the finished floor by means of 75mm long brass screw with suitable plugs. The flushing cistern shall be porcelain or PVC or cast iron low level push down cistern of capacity as indicated in the bill of quantities. The cistern shall be supported on pair of cast iron or rolled steel cantilever brackets firmly fixed on wall with brass screws and suitable plugs. The flush pipe from the cistern shall be 40mm dia chromium plated. Brass bend fitted to the closet by means of rubber adopter. The closet shall be provided with double plastic seat cover conforming to IS:2548 and chromium plated hinges.

3.3 **Urinals:** Flat backtype urinals shall be firmly fitted. on finished wall by means of 50mm long brass screws and suitable plugs. Height of the lip from the standing point shall be as shown in the drawings. Urinals shall be fitted with specified type of automatic flushing cistern of capacity as described in the bill of quantities and as shown on the drawings. Flushing pipes shall be of galvanised steel pipes of required sizes and connected to the Urinal with 15mm dia. PVC connector fitted with brass cap and lining at one end. The joint to the inlet of urinal shall be neatly finished with putty joints.

SENSOR FITTED URINALS

Flat back urinals shall be fitted with sensors for automatic flushing shall be firmly fitted on finished wall by means of 50mm long brass screws and suitable plugs. height of the lip from the standing point shall be as shown in the drawings.

The arrangement of waste pipes and discharge to the floor trap shall be as shown on the drawings or as directed by Engineer. For single urinal, the discharge may be direct to the floor trap through a 40mm dia waste pipe. For range of urinals the discharge may be collected to the common discharge pipe by 40mm dia pipe shall be led to the 100mm SWG half round channel laid on the floor leading to the floor trap.

3.4 Wash hand basin

Wash hand basin shall be fitted in position to true level on a pair of cast iron brackets rigidly fixed on wall with 50mm long brass screws and suitable plugs. The type of waste pipes and their connection shall be as shown on the drawings or as directed by the Engineer.

3.5 **Porcelain sink** of size as indicated in the bill of quantities shall be levelled properly and fitted in position on a pair of cast iron cantilever brackets firmly embedded in the wall in cement mortar (1 :4) The sink shall be fitted with chromium plated brass waste fittings of standard size. The type of waste pipes and their connections shall be as shown on drawings. or as directed by the Engineer.

3.6 **Other miscellaneous fittings** (e.g. Mirror, towel rails, soap cases etc.)

All such fittings shall be of type and sizes prescribed in the bill of quantities and shall be fitted in position true to line, level, and plane as shown on the drawings or as directed by the Engineer.

3.7 The departmental Engineering officials shall ensure disposing off sewerage water in a scientific manner by taking expert opinion in order to maintain hygienic conditions of the respective premises. The contractor should take up the work as per the instructions of the Engineering staff supra in this regard.

4.0 List of the Names of the Brand / Manufacturer / Supplier of Building Materials

Sl. No	SECTION	NAMES OF THE ITEMS	NAMES OF THE APPROVED BRAND/ MANUFACTURER/ SUPPLIER
1	SECTION-A	BRICKS & BUILDING BLOCKS	Aerocon, Siporex, Nucon, NCL Aerated Blocks
2	SECTION-C	WALL & FLOOR TILES	
	SUB SECTION-I		NON-PORCELAIN CERAMIC FLOOR TILES - Somany, H & R Johnson, Naveen Ceramics, Kajaria, Nitco, Sphinx, Orient Bell, AGL, Hindware, Cera, Varmora, Vitero, Ambani, SUNHEART CERAMIK, Anjani tek, TEGRA (DR-4), RAK ceramics, Vevon (Sree Sudheer Ceramics Pvt Ltd)
	SUB SECTION-II		PORCELAIN VITRIFIED FLOOR TILES - H & R Johnson, H & R Johnson Marbonite, H & R Johnson Endura, H & R Johnson GPS, Naveen Ceramics, Kajaria, Nitco, Orient Bell, Hindware, AGL, RicasilCermaics Exxaro, Cera, Varmora, VITERO, Ambani, SUNHEART CERAMIK, Anjani tek, TEGRA (DR-4),, RAK ceramics, Vevon (Sree Sudheer Ceramics Pvt Ltd)
	SUB SECTION-III		CERAMIC WALL TILES - Somany, H & R Johnson, Kajaria, Sphinx, Orient Bell, AGL, Hindware, RicasilCermaics Exxaro, Cera, Varmora, Vitero, Ambani, SUNHEART CERAMIK, Anjani tek, TEGRA (DR-4), RAK ceramics, Vevon (Sree Sudheer Ceramics Pvt Ltd)
	SUB SECTION-IV		PORCELAIN WALL TILES - Somany, H & R Johnson, Kajaria, Sphinx, Orient Bell, Hindware, RicasilCermaics Exxaro, Cera, Varmora, VITERO, Ambani, NCL Vitristik for Ceramic vitrified tiles on floor, NCL Tilostik for fixing Granite stones and NCL Marbostik for fixing Marble stones, SUNHEART CERAMIK, Anjani tek, TEGRA (DR4), RAK ceramics, Vevon (Sree Sudheer Ceramics Pvt Ltd)
	SUB SECTION-V		GLASS MOSAIC TILES – Bisazza * Palladio * Expansive acqua reactive water barrier grouting system – NCL Tile grout, TEGRA (DR-4), RAK ceramics, Vevon (Sree Sudheer Ceramics Pvt Ltd)

Sl. No	SECTION	NAMES OF THE ITEMS	NAMES OF THE APPROVED BRAND/ MANUFACTURER/ SUPPLIER
	SUB SECTION-VI		WALL CLADDING TILES - Somany, H & R Johnson, Kajaria, Sphinx, Orient Bell, Hindware, Cera, SUNHEART CERAMIK, TEGRA (DR-4), RAK ceramics, Vevon (Sree Sudheer Ceramics Pvt Ltd)
	SUB SECTION-VII		ROOF TILES-BMI Monier
4	SECTION-D	PAVING & INTERLOCKING TILES	
	SUB SECTION-I		TERRAZZO FLOOR TILES (PLAIN & CHEQUERED) - Super Decorative, Aditya Designer, Maha Bhima, Tricon, Pheonix, Eurocon, Ultra, Sphinx, Cemtech, TEGRA (DR-4), RAK ceramics
	SUB SECTION-II		CEMENT CONCRETE FLOOR TILES (PLAIN & CHEQUERED) - Super Decorative, Aditya Designer, Maha Bhima, Tricon, Pheonix, Eurocon, Ultra, Sphinx, TEGRA (DR4), RAK ceramic
	SUB SECTION-III		PRE-CAST CONCRETE BLOCKS FOR PAVING - Super Decorative, Aditya Designer, Maha Bhima, Tricon, Pheonix, Eurocon, Ultra, Sphinx, Cemtech, DEC Industries PVT LTD, Vishaka Master Industries, BMI Monier, TEGRA (DR-4), RAK ceramics
	SUB SECTION-IV		VINYL FLOORING - Marblex, Amstrong,
			TILE ADHESIVE – MYK LATICRETE, Ambani, JK TileMaxX * Wall dado with cement based adhesive – NCL Vitristik for Ceramic vitrified tiles * Cement based adhesive – NCL Tilostik for fixing Granite stones and NCL Marbostik for fixing Marble stones * Cement based Polymer modified jointing mortar – NCL Masonry glue * Cement based Polymer modified plastering mortar – NCL Render, Berger Home sssShield, TEGRA (DR-4),, RAK ceramics
			GLASS FIBRE REINFORCED CONCRETE TILES-Vishaka Master Industries

Sl. No	SECTION	NAMES OF THE ITEMS	NAMES OF THE APPROVED BRAND/ MANUFACTURER/ SUPPLIER
5	SECTION-E	TIMBER & ROOFING MATERIALS	DEC Industries PVT LTD
6	SECTION-F	STEEL MATERIALS	DEC Industries PVT LTD
7	SECTION-G	FIXTURES FOR DOOR & WINDOWS	Hardwyn, Godrej, Dorset, Dorma, Assa Abloy, M/s DEC Industries Pvt Ltd
8	SECTION-H	CONSTRUCTION CHEMICALS AND ADMIXTURES	
	SUB SECTION-I	REPAIRING & TREATMENT WORKS	Armstrong / Fosroc ,PMCC, Asian LeakShield, Asianpaints, Myk Arment ,FAB Chemicals, Berger Home Shield ,TEGRA (DR-4),.
	SUB SECTION-II	INTEGRAL WATER PROOFING COMPOUNDS	Armstrong Chemicals Pvt Ltd Bengaluru ,Fosroc Chemicals India Pvt Ltd Bengaluru, Asianpaints ,Zoriproof No.1 of Protect More construction, PIDILITE INDUSTRIES LIMITED,SunandaSpeciality Coatings Pvt Ltd, Asian Paints, Sunanda Myk Arment, Berger,FAB Chemicals, TEGRA (DR-4),
	SUB SECTION-III	PLASTICIZERS	Armstrong Chemicals Pvt Ltd, Bengaluru, Fosroc Chemicals India Pvt Ltd, Bengaluru, Zoriplax of Protect More Construction chemicals, Hyderabad * BONDUF CONSTRUCTION CHEMICALS ,Asianpaints, Sunanda Speciality Coatings Pvt Ltd , Asian Paints, DEC Industries PVT LTD Myk Arment, FAB Chemicals, Berger Home Shield ,TEGRA (DR-4),
	SUB SECTION-IV	GROUTS	Armstrong Chemicals Pvt Ltd, Bengaluru, Fosroc Chemicals India Pvt Ltd, Bengaluru, Asianpaints, Protect More Construction Chemicals (Yield 0.5 Ltrs / 1 Kg Pack)Myk Arment , Berger Home Shield, FAB Chemicals, TEGRA (DR-4),
	SUB SECTION-V	BONDING AGENTS/ ADHESIVES	Armstrong Chemicals Pvt Ltd Bengaluru, Fosroc Chemical India Pvt Ltd Bengaluru, Protect More Construction Chemicals. Asianpaints M/S DEC Industries manufactured products Myk Arment, Berger, FAB Chemicals, TEGRA (DR-4).
	SUB SECTION-VIII	ANTI-CORROSIVE AGENTS	Armstrong Chemicals Pvt Ltd Bengaluru ,Asianpaints ,sssFosroc Chemicals India Pvt Ltd Bengaluru, Protect More Construction

Sl. No	SECTION	NAMES OF THE ITEMS	NAMES OF THE APPROVED BRAND/ MANUFACTURER/ SUPPLIER
			Chemicals.(40 SFT Per Ltr / Coat) * CLEAN TECH CORROSION , Protect More Construction Chemicals Hyderabad, DEC Industries PVT LTD Myk Arment, FAB Chemicals, Berger Home Shield TEGRA (DR-4),
9	SECTION-I	GLASS MATERIALS	Modifloat, Asahi, Saint-Gobain, Binani, HNG, Gold Plus glass industry
10	SECTION-J	PAINTS & POLISHES	Asian Paints, Berger, Nerolac, British Paints, JK Cements, Nexon paints, Indocem, ESSAR, Sheenlac, Suryacem, Neon, Wallz, Walrus – SYNTHETIC PLASTER - NCL-Cement Primer (Interior, Exterior), NCL White Cement Putty, NCL-Alltek Spray Plaster, NCL-Skimcoat, Allteck Spray Plaster, NCL Gaiety, NCL-Delight, NCL-Harmony, NCL-Alltek Dune, NCL Alltek Acrylic Coarse, NCL Grey Coarse Putty, NCL Base Coat, NCL Flora, Allteck Deco Orient, MYK LATICRETE, Multichem, Essar, JK ShieldMaxX - White Cement, JK WhiteMaxX, LevelMaxX , JK GypsoMaxX , JK BondMaxX , Wall Putty (White cement based) JK WallMaxX, JK Primaxx(White Cement Based Primer), Smoothtek, Shalimar, Snowcem, Nippon, New World Paints Pvt. Ltd, Fortune Paints Pvt. Ltd, BAKELITE COATINGS AND PAINTS, NCL Topcoat paint, Alltek Trendy, AlltekGoldline, Sunanda
11	SECTION-K	PARTICLE BOARDS	NCL Bison, Ramco-Hilux, Ramco-Hicem, Everest-board, Visaka-board, Rajshri, Innsula, Birla Aerocon, Aerolite, Novopan, Bhutan-board, Greenply, Greenpanel, Kajariaply, ECOBOARD, Action Tesa
12	SECTION-L	PLYWOOD, LAMINATES & VENEERS	Kitply, Century Ply, National Ply, Bhutan Ply, Samrat, Gurjan ply, Aamoda, Mayur, Amul Boards, Greenply, Greenpanel, Kajariaply, PRAYAG POLYMERS, Archidply/ M/S DEC Industries PVT Ltd
13	SECTION-M	CEILINGS, WALL PARTITIONS & WALL LININGS	-Ramco-Hilux, Everest-board, Visakha-board, Rajshri, Innsula, Gypsum India, Saint-Gobain, Armstrong-Knauf Ceilings, Daikin, NCL-Seccolor, NC Bison, Rock Strength, Aerolite, USG Boral, Birla Aerocon, Diamond, Aerolite,

Sl. No	SECTION	NAMES OF THE ITEMS	NAMES OF THE APPROVED BRAND/ MANUFACTURER/ SUPPLIER
			DIAMOND FRAMES, Shaurya,iqubx, Aerolite Industries Pvt Ltd, EUROBOND
14	SECTION-N	DOORS, SHUTTERS & FRAMES	NCL Buildtek, Anand, Raavila, Kutty, Standard, Shubhdwar, ITP, Rajshri, NCL-Bison, Elixir, Sintex, Elgi, Oasis, Polywood, Sintex, NCL Prelaminated ABS door shutter, NCL FPS Door Frame, , NCL-Veka, Fenesta, , Masonite, Everest, Vishaka, Ambience, Aamoda, Rehau,, Nandi PVC Doors, AparnaVenster, Ecoste, DEC Infrastructure & Projects(I) Pvt. Ltd, Ecocell, Marcolini, Greenpanel, Kajariaply, HDHMR Doors – NCL, Yashpoly , ULTIMATE SAFETY METAL DOORS, SUDHAKAR PROFILE SYSTEMS, SHREEJI WOODCRAFT PVT LTD, DEC Industries PVT LTD , Galwin Techno Fab industries Pvt.Ltd, Qute Extrusions, Action Tesa, Aparna Venster,iqubx, Plastone, SIMTA Astrix, EUROBOND
	SUB SECTION-I	UPVC DOORS AND WINDOWS	Sintex, NCL Veka, Fenesta, LG, EUREKA “Eumax”/ Window systems, Sudhakar profile systems, REHAU, Qute Extrusions, Galvin Techno Fab industries, SIMTA Astrix, Action Tesa, Aparna Venster,iqubx, Plastone, EUROBOND
15	SECTION-P	WINDOWS	NCL-Buildtek, NCL-Bison, Elixir, Sintex, Elgi, Oasis, Polywood, NCLVeka, Fenesta, , Ahlada, Rehau, , Win-Eshtas-Viswajeet Industries, Aparna Venster, ecoVUE, EcoCell, Yashpoly, Marcolini, , DEC Industries PVT LTD , Galwin Techno Fab industries Pvt.Ltd, Aparna Venster, SS Secure productions Pvt Ltd, Plastone ,iqubx, SIMTA Astrix, Qute Extrusions, EUROBOND
16	SECTION-Q	STRUCTURAL GLAZING & CURTAIN WALLING	NCL Buildtek, NCL-Bison, Elixir, Sintex, Elgi, Oasis, Polywood, Sintex, NCL-Wintech, Fenesta, LG, Rehau, Arpitha, , Galvin Techno Fab industries Pvt.Ltd, Qute Extrusions
17	SECTION-R	MISCELLANEOUS ITEMS	(a) Sintex, Aquatech, Hindpipe/Hindplast/HIPPO+ for LLDPE Roto Moulding tanks (b) Centurywells& Sudarshana for Galvalume sheets (c) Elixir for PEB structures (d) Aluminium Sections - Hindalco, Nalco, Jindal, Geetha series (e)Gypsum plaster-NKV Home

Sl. No	SECTION	NAMES OF THE ITEMS	NAMES OF THE APPROVED BRAND/ MANUFACTURER/ SUPPLIER
			Depot, Gyplite, (f) AC Sheets – Charminar Fortune (g) MPC (Mineral Polymer Composite) Grills/Jali – Esoste, Carpets – Welspun (i) Polycarbonate sheets – DPI Daylighting (h) Design, fabrication & supply of light weight pre engineered buildings - DEC Industries PVT LTD, NCL Buildtek, Kirby (i) Non asbestos sheets; Charminar fortune

Note: 1) All Building Materials conforming to ISI Standards shall be used in all CIVIL, Water Supply & Sanitary Fittings, Electrical and Electro-Mechanical Works.

2) Not only limiting to the Brand / Manufacturer / Supplier for Materials/Products mentioned above, Material / Product conforming to the Specification and Standards of ISI from any Brand / Manufacturer, shall also be allowed in all CIVIL, Water Supply & Sanitary Fittings, Electrical and Electro-Mechanical Works also.

4.1 LIST OF MAKES FOR CIVIL ITEMS TO BE USED (NOT COVERED UNDER SCHEDULE OF RATES)

Sl.No.	Item	Makes Suggested
1.	Cement	As per YSR Nirman portal or any other ISI marked or ISO accredited makes conforming to Bureau of Indian Standards (Rate for the cement shall be as per YSR Nirman Portal).
2.	Steel	Rashtriyalspat Nigam Limited, Visakhapatnam Steel Plant, Visakhapatnam / Tata Steel / SAIL or equivalent from main or secondary producers licensed to affix ISI and confirming to Bureau of Indian Standards.
3.	Aluminium Sections	Jindal / Hindalco or any other equivalent makes confirming to Bureau of Indian Standards.
4.	M S Tubes & Pipes as per IS-1161	TATA / Khandelwal / Zenith or any other equivalent makes confirming to Bureau of Indian Standards.
5.	MS /GI Sheets	Jindal / TATA or any other equivalent makes confirming to Bureau of Indian Standards.

NOTE: ALL MATERIALS TO BE USED FOR CIVIL WORKS SHOULD BE FIRST QUALITY AND AS PER THE STANDARDS OF BIS.

5.0

LIST OF MAKES FOR WATER SUPPLY AND SANITARY ITEMS TO BE USED.

Sl. No.	Section	Name of the items	Names of the approved brand / Manufacturer / Supplier
1	Section-C	S.W.G. PIPES & FITTINGS	1. SUPPLY & LAYING OF SWG PIPES - Any ISI Brand 2. S.W.G. FITTINGS - Any ISI Brand
2	Section-D	VITREOUS CHINAWARE - SANITARY APPLIANCES	1. INDIAN WATER CLOSETS - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA/Jaquar / Somany, Watertec, Kerovit by Kajaria, Asianpaints ,Prayag Polymers, UNISPACE, RAK ceramics, , JAL (Jupiter Aqua lines ltd) 2. FLOOR MOUNTED EWC - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA/Jaquar / Somany, Watertec, Kerovit by Kajaria, Asianpaints ,Prayag Polymers, UNISPACE, , JAL (Jupiter Aqua lines ltd), RAK ceramics 3. WALL MOUNTED EWC - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA /Jaquar/ Somany, Watertec, Kerovit by Kajaria, Asianpaints, Prayag Polymers,UNISPACE, RAK ceramics, , JAL (Jupiter Aqua lines ltd) 4. CISTERNS FOR WATER CLOSETS - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA /Jaquar / Somany, Watertec, Kerovit by Kajaria, Asianpaints ,Prayag Polymers, UNISPACE, RAK ceramics, , Jupiter Aqua lines ltd 5. PLASTIC SEATS FOR WATER CLOSETS - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA /Jaquar / Somany, Watertec, Asianpaints, Kerovit by Kajaria,Suki, Prayag Polymers,UNISPACE, RAK ceramics, , JAL (Jupiter Aqua lines ltd) 6. WASH HAND BASINS - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA /Jaquar / Somany, Watertec,Suki, Asianpaints, Kerovit by Kajaria/ DEC Industries PVT LTD, Prayag Polymers,UNISPACE, RAK ceramics, , JAL (Jupiter Aqua lines ltd) 7. URINALS - Hindustan Sanitary ware/ Parryware/ Neycer/ CERA /Jaquar / Somany, Naturesani, Watertec, Suki, Asianpaints, ssKerovit by Kajaria, Prayag Polymers,UNISPACE, RAK ceramics, , JAL (Jupiter Aqua lines ltd)
3	Section-E	CP FITTINGS - TAPS/ FAUCETS & ACCESSORIES	1. TAPS&FAUCETS - BIB TAPS - Seiko/ Senior/ Nice/ Senior/ Nice/ CERA/ Hindware RAK ceramics, , JAL (Jupiter Aqua lines ltd)- PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson, Karla / Essco / Somany/Kingston/Prayag Polymer/KUNCHAL (Aluminium Udyog)/M/s Sumo

Sl. No.	Section	Name of the items	Names of the approved brand / Manufacturer / Supplier
			<p>Polyplast Pvt. Ltd (Sumolex), Watertec, Ambani, Suki ,Kerovit by Kajaria, Austro,/ ESS ESS/ BATHSENSE/ ROYALE, RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd) 2. XTAPS&FAUCETS - PILLAR TAPS - Seiko/ Senior/ Nice/ Senior/ Nice/ CERA/ Hindware- RAK ceramics, , JAL (Jupiter Aqua lines ltd)ltd PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson, Karla / Essco / Somany/ Kingston/Prayag Polymer/ KUNCHAL (Aluminium Udyog)/ M/s Sumo Polyplast Pvt. Ltd (Sumolex), Watertec, Ambani, Suki, Kerovit by Kajaria, Austro/ ESS ESS/ BATHSENSE/ ROYALE RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd) 3. XTAPS&FAUCETS - OTHER TAPS & SPOUTS - Seiko/ Senior/ Nice/ Senior/ Nice/CERA/ Hindware RAK ceramics, , JAL (Jupiter Aqua lines ltd)- PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson, Karla / Essco /Somany/ Kingston/Prayag Polymer/ KUNCHAL (Aluminium Udyog)/ M/s Sumo Polyplast Pvt. Ltd (Sumolex) Watertec, Ambani, Suki, Kerovit by Kajaria, Austro/ ESS ESS / BATHSENSE/ ROYALE RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd) 4. XSTOP & ANGLE VALVES - Seiko/ Senior/ Nice/ Senior/ Nice/ CERA/ Hindware - RAK ceramics, , JAL (Jupiter Aqua lines ltd)PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson, Karla / Essco / Somany/ Kingston/Prayag Polymer/ KUNCHAL (Aluminium Udyog), Watertec, Ambani, Suki ,Kerovit by Kajaria, Austro/ ESS ESS/ BATHSENSE/ ROYALE, RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd) 5. COMBINATION FAUCETS - Seiko/ Senior/ Nice/ Senior/ Nice/ CERA/ Hindware - RAK ceramics, , JAL (Jupiter Aqua lines ltd)PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson, Karla / Essco / Somany/ Kingston/Prayag Polymer/ KUNCHAL (Aluminium Udyog) Watertec, Ambani, Kerovit by Kajaria, Austro / ESS ESS/ BATHSENSE/ ROYALE, RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd) 6. SHOWERS & FITTINGS - Seiko/ Senior/ Nice/ Senior/ Nice/ CERA/ Hindware - RAK ceramics, , JAL (Jupiter Aqua lines ltd)PREMIUM MAKE - Jaquar/ Hindware/</p>

Sl. No.	Section	Name of the items	Names of the approved brand / Manufacturer / Supplier
			Plumber/ Parryware/ H & R Johnson, Karla / Essco / Somany/ Kingston/Prayag Polymer/ KUNCHAL (Aluminium Udyog), Watertec, Ambani, Suki Kerovit by Kajaria, Austro / ESS ESS/ BATHSENSE/ ROYALE, RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd) 7. MISCELLANEOUS CP FITTINGS - Seiko/ Senior/ Nice/ Senior/ Nice/ CERA/ Hindware RAK ceramics, JAL (Jupiter Aqua lines ltd)- PREMIUM MAKE - Jaquar/ Hindware/ Plumber/ Parryware/ H & R Johnson, Karla / Essco / Somany/ Kingston/Prayag Polymer/ KUNCHAL (Aluminium Udyog), Watertec, Ambani, Suki Kerovit by Kajaria, Austro / ESS ESS/ BATHSENSE/ ROYALE, RAK ceramics,CERA, , JAL (Jupiter Aqua lines ltd)
4	Section-F	G.I. PIPES & FITTINGS	1. G.I. PIPES - Tata/ JSW/ Oswal/ Zenith, PRECISION pipes & fittings 2. G.I. FITTINGS - HB / Kirti/ R-Brand, PRECISION pipes & fittings 3. BRONZE (COPPER ALLOY) VALVES - Zoloto/ R-Brand
5	Section-G	PVC Pipes & Fittings	1. PVC PIPES - Prince/Sudhakar/Kisan/Supreme/ Astral/ Finolex/ Ajay/ Ashirvad/Birla Aerocon/Trueflow by Hindware/Prayag Polymer, Watertec, Austro, Suki ,Nandi/ APOLLO PIPES LTD / DEC Industries PVT LTD, SENTINI Flo pipes, PRECISION pipes & fittings, AKG Extrusions, Hindpipes /Hindplast , Chem fab alkalis limited, JAL (Jupiter Aqua lines ltd) 2. PVC FITTINGS-Prince/Sudhakar/Kisan/Supreme/ Astral/ Finolex/ Ajay/ Ashirvad/ Birla Aerocon/ Trueflow by Hindware/Prayag Polymer, Watertec, Austro, Suki, Nandi/ APOLLO PIPES LTD / DEC Industries PVT LTD , PRECISION pipes& fittings, Sentiniflo pipes and fittings, AKG Extrusions , Hind pipes /Hind Plast, , JAL (Jupiter Aqua lines ltd) 3. PVC PLUMBING ACCESSORIES - Prince/Sudhakar/Kisan/Supreme/ Astral/ Finolex/ Ajay/ Ashirvad/ Birla Aerocon/ Trueflow by Hindware, Watertec, Austro, Suki, Nandi/ APOLLO PIPES LTD , PRECISION pipes & fittings, Sentiniflo pipes , AKG Extrusions, Hind pipes /Hind plast, , JAL (Jupiter Aqua lines ltd).ss 4. LLDPE ROTO water Tanks - Sintex, Aquatech, Nandi, Hind pipes and Hind plast, HIPPO+, Sudhakar irrigation systems,

Sl. No.	Section	Name of the items	Names of the approved brand / Manufacturer / Supplier
			JAL (Jupiter Aqua lines ltd), Agarwal. 5. PVC - LLC Cisterns - Parryware/ Slimlines/ CERA/ Hindware/Prayag Polymer/ APOLLO PIPES LTD, , JAL (Jupiter Aqua lines ltd)
6	Section-H	Centrifugal Cast Iron Pipes & Fittings as per IS: 1729	1. SUPPLY & LAYING OF CAST IRON PIPES - BIC/NECO/ Jayaswal Neco 2. SUPPLYING & LAYING OF C.I. FITTINGS - BIC/NECO/ Jayaswal Neco
7	Section-I	Miscellaneous	1. POLYETHYLENE-ALUMINIUM-POLYETHYLENE COMPOSITE PIPES - Kitec/ Kisan/ Uniflex/M/s SumolexPolyplast Pvt. Ltd/ APOLLO PIPES LTD 2. CPVC PIPES - Supreme/ Ashirvad/ Astral/ Prince / Kisan / Ajay/Birla Aerocon/ HindwareTrueflo/Sudhakar/Prayag Polymer/ M/s SumolexPolyplast Pvt. Ltd, Watertec, Ambani, Suki, Austro, Nandi/ DEC Industries PVT LTD, Sentiniflo pipes, AKG Extrusions Pvt Ltd , Hind pipes and Hind plast HIPPO+ 3. PPR PIPES - Supreme/ Ashirvad/ Astral/ Prince/ Kisan / SFMC / KPT/ M/s SumolexPolyplast Pvt. Ltd, Hind pipes and Hind plast,HIPPO+ 4. Steel sinks: M/s Futura kitchen sinks Pvt Ltd , JAL (Jupiter Aqua lines ltd), Suki 5. KITCHEN SANITARY AND SPA ITEMS FOR VIP BUILDINGS: UNISPACE, JAL (Jupiter Aqua lines ltd)

Note: 1) All Building Materials conforming to ISI Standards shall be used in all CIVIL, Water Supply & Sanitary Fitings, Electrical and Electro-Mechanical Works. 2) Not only limiting to the Brand / Manufacturer / Supplier for Materials/Products mentioned above, Material / Product conforming to the Specification and Standards of ISI from any Brand / Manufacturer, shall also be allowed in all CIVIL, Water Supply & Sanitary Fittings, Electrical and Electro-Mechanical Works also.

NOTE: ALL MATERIALS TO BE USED FOR SANITARY WORKS SHOULD BE FIRST QUALITY AND AS PER THE STANDARDS OF BIS.

INTERNAL ELECTRIFICATION
(AS PER NUMBERS OF APSS, BIS CODE, MOST, ETC)

1.0 GENERAL SPECIFICATIONS AND INSTRUCTIONS Electrical

I.E. RULE 1956: the installation shall generally be carried out in conformity with Indian electricity rule 1956 as amended from time to time and national electrical code which contains specific regulations to be adhered to in the supply and use of electrical energy in the interest of safety.

PRESURE AND FREQUENCY OF SUPPLY: all current consuming devices shall be suitable for the pressure and frequency of supply stated in the special conditions of contract.

SYSTEM OF WIRING: the wiring shall be carried out on such a system as may be specified in the conditions of contract. Power wiring shall be kept separate and distinct from lighting wiring. All conductors shall be run as far as possible along the walls and ceiling, so as to be easily accessible for inspection. The balancing of circuits in three phase system shall be arranged before hand by the engineer.

CONDUCTORS: The material and size of the conductors shall comply with the bureau of the Indian standards and as per the provision of I.E. rules, 1956. all cables shall have the maker's name and identifications printed on the insulated surface. In case of dispute regarding make it is the responsibility of the contractor to prove that the material is original of the company.

MATERIALS: All materials, fittings, equipment and their accessories, appliances, etc, used in an electrical installation shall conform the bureau of India standard specification wherever they exist. In case the Indian standard does not exist, the materials and other items shall be those approved by the competent authority. A list of approved materials for use in the electrical works is enclosed.

2.0 TESTS TO BE COMPLIED WITH: Before the installation is permanently put in to service the following test shall be complied with.

a) INSULATION RESISTANCE: the insulation resistance shall be measured by applying between earth and the whole system of conductors or any section thereof with all fuses in place and all switches on a direct current pressure of not less than twice the working pressure shall be deemed to be that which is maintained between the phase conductors and the neutral.

b) The insulation resistance of an installation measured as in above shall not be less than 1 mega ohm. Lighting circuits shall be tested with all lamps in place except in the case of earthed concealed wiring system.

Heating and power circuits may be tested, if desired with the heating and power appliances disconnected from the supply.

3.0 EARTH RESISTANCE: It is recommended that the value of any earth system shall not be more than 1 ohm unless otherwise specified. Care should be taken select a material which is resistant to corrosion in the soil in which, it will be used. The electrode shall be kept free from paint, enamel and grease. The

size of the earth continuity conductor should not be less than 14 S.W.G.(2.8.94sqm). earth resistively test shall be carried out in accordance with Indian standard code of practice for earthing.

- 4.0 FANS AND REGULATORS:** All ceilings fans shall be wired to a ceiling rose and suspended from hook or shackle and insulated from the same. All joints in the suspension rod shall be screws and all joints or bolts in connection shall be additionally secured by means of split pins.
- 5.0 CONDUIT SYSTEM OF WIRING:** The conduit shall be electrically continuous from distribution board to outlet boxes of lighting switches and other appliances. The lengths of conduits shall be joined by means of screw sockets. Threads shall be free from grease or oil and no material of this nature shall be allowed to come in contact with the conductors. The whole system of the conduits shall be electrically continuous throughout and shall be permanently and efficiently connected to the earthing system.
- 6.0 EXCAVATION AND BACKFILL:** All excavation and backfill including tempering, shorting and strutting required from the installation of the cable shall be carried out by the contractor in the accordance with the drawing and requirements laid down elsewhere. Trenches will be filled in layers not exceeding 150mm. Each layer shall be properly rammed and consolidated before laying the next layer. The contractor shall restore all surface, road ways, sidewalks, curbs, wall or other worked out by excavation to their original condition, satisfactory to the departmental officers.

Prior to burying of cables, following tests shall be carried out

Insulation test between phases, phase and earth for each length of cable before and after jointing. On completion of cable laying work, the following test shall be conducted in the presence of the departmental engineer.

Insulation resistance test

Continuity test

Earth test

7.0 MEDIUM VOLTAGE AND LOW VOLTAGE SWITCH GEAR PANEL BOARD:

The main panel board shall be floor mounted and totally enclosed. The design shall include all provisions for safety of operating and maintenance personnel. The general construction shall conform to appropriate Indian standard specifications. Cubical type switch board shall be fabricated out of sheet steel not less than 2.00mm thick. Such sheet steel member shall be stiffened by angle iron frame work. Unless otherwise approved, incoming bus section panel or sections shall be separate and independent. The general arrangement for multiplier construction shall be such that the horizontal bar framed present a pleasant and authentic look. The general arrangement shall be got approved before fabrication. All cable entries shall be through gland plates. Cable entry plates shall be sectionalized. The construction shall include necessary cable supports for crimping the cable alloy or rear cable chamber. incoming termination shall be suitable for receiving busbar trunking. Busbar shall be firmly fixed on support constructed from a suitable insulating material which conforms to relevant Indian standards. The support shall be sufficiently robust to effectively withstand electromechanical stresses produced in the event of short circuit. The minimum clearance to be maintained for open and closed

indoor air insulated busbars/electrically iron exposed and working at system voltage up to 600volts shall be as follows:

BETWEEN	MAIN CLEARANCE
Phase to earth	26mm
Phase to phase	32mm

- 8.0 DISTRIBUTION:** Distribution boards shall be assembled, aligned and installed as per installation manual of the switch board supplier and relevant Indian standard specifications. Phase sequence for each incomer shall be tested and connections adjusted accordingly. A mechanical endurance test shall be carried out by closing and opening of the circuit breaker.
- 9.0 COMPLETION DRAWINGS (As Built Drawings) :** At the completion of the work and before issuance of virtual completion contractor shall submit to the departmental officer five sets of layout As-built drawings drawn at approved scale indicating the complete wiring system “as installed”. The drawings shall in particular give the following information.
Run and size of conduits, inspection and junction boxes.
Number and size of conductors in each circuit
Location and rating of sockets and switches controlling the light and power outlets.
Location and details of distribution boards, main switches and others particulars.
A complete wiring diagram as installed and schematic diagram showing all connections in the complete electrical system.
Instructions, maintenance and operation manuals if any for the equipments.
Contractor should obtain necessary approval, from electrical inspectorate submitting necessary drawings test certificates etc.
- 10.0 SPECIAL CONDITIONS FOR THE ELECTRICAL WORKS (GENERAL)**
- The work shall be carried out strictly in conformity with (1) code of practice for electrical wiring and fittings in Government buildings (2) the Indian standard specification (3) the departmental specification, if the work carried out does not comply with the code of practice and departmental specifications and if the workmanship is unsatisfactory it will be binding on the contractor to redo the job without any extra cost and to pay penalty as decided by the department.
 - The work shall be carried out strictly as per the specifications mentioned in the schedule of the agreement and as per approved drawings. Any deviation in the drawings/specifications of materials shall be got approved by the department competent authority before execution.
 - The contractor/the agency has to use materials out of the choice of makes specified in the BOQ, subject to prior approval of the department before procurement of materials, based on the maintenance of quality, standards and performance for different companies prevailing at the time of execution.
 - The work should be carried out under the direct supervision of persons holding a certificate of competency for the type of work involved.
 - After completion of work a plan of building should be prepared indicating the location of various main and sub-boards and all the fitting together with a circuit diagram duly numbered (in the

diagram). The final bill will not be paid till the above and the diagram submitted and approved after verification.

- f) The contractor will be responsible for any defects noticed for either improper workmanship or defective materials supplied by him for one calendar year from the date of final completion of work.
- g) Lugs should be provided for all earth connections.
- h) Ferrules should be arranged for each circuit for identification.
- i) The contractor himself should arrange for the transportation of men and material to their work spot.
- j) All civil works and patch works indicated for providing electrical installations should be well finished to the satisfaction of the civil authorities. A certificate from them should be obtained to the effect that the civil and patch work done is to the satisfaction civil authorities. It will be the responsibility of the electrical contractor to obtain such certificate from the civil engineer. Unless such certificate is produced this office will have right to with held the bill.
- k) Concerting to the pole and providing independent earthing should be done in presence of departmental staff.
- l) The distribution board with switch controls shall be separate in each floor for normal supply and essential supply. The Lighting and Power Loads shall be made separate.
- m) The lighting circuits shall be provided with separate conductor to enable to connect the normal lighting and essential lighting with linking to any of the above system to ensure to switch over to essential supply in the order to have minimum to avoid inconvenience to the staff working.
- n) The control for the luminary to be provided in the hall for both to be connected to the normal supply and essential supply shall be separate and away from the each system.
- o) For the points to be connected to essential supply a separate conduit system is to be laid as enumerated in the above conditions includes circuit a main of any system.
- p) The location for the D.B's and switch controls for essential supply will be decided during the course of execution where the circuit conduit way have to be terminated.

Conditions for Supply, Erection and Commissioning of Lift.

1) GURARANTEE:-

The equipment offered should be covered by the usual guarantee by which any part or parts which fail within 36 months from the date of handing over due to defective materials or bad work should be replaced by the firm at free of cost. The period 36 months is to be reckoned from the date of handing the lift to this department after testing and commissioning in satisfactory operating condition. No extra amount will be paid for any reasons what so ever.

2) The delivery and erection shall be completed as per the rate of progress as specified in the tender conditions under rate of progress.

3) Deputation of erector

Before the commencing the erection, the erection engineer should be deputed when ever asked from by the department. No separate charges will be paid for such deputation.

- 4) (a) The design and drawings of all civil works have to be furnished by the firm
- (b) The firm shall supply the lay out drawings of lift and its switchgear after the Completion of the work

(c) Final bill shall be paid only after the entire work is completed to the satisfaction of the department.

(d) The rate offered by the firm shall be inclusive of all charges such as packing forwarding and insurance etc. the rate also shall be inclusive of Excise duty, GST etc., including all other incidental charges, such as accommodation for erection crew journeys boarding and lodging inclusive of training to an operator concerned etc., .The price shall also include any statutory increase in excise duty, GST if any during the currency of the contract.

- 5) **Servicing :** Free servicing will have to be done by the firm for a period of thirty six months from the date of commissioning the lift i.e., during the guarantee period.
- 6) **Specification:** The supply and erection of lift should be in conformity of standards as per I.S.I and Fire specifications.
- 7) **Scaffolding:** Scaffolding to the required extent has to be erected by the firm at their cost.
- 8) **Steel :** The rate quoted should also include necessary steel required for still support angles, hitch beams, buffer supports channels and bearing plates etc., . The department will not be responsible for any mishaps during execution of equipment.
- 9) **Minor civil works :** Doing all minor works comprising of cutting holes and making good, guide rail brackets and landing batton fixtures, frames for collapsible gates and civil works, associated with the laying of the stills at each entrances and on the landing buffer supports channels and other works ancillary to the erection work in lift making groom and all other civil works will have to be carried out by the firm only to the satisfaction of the departmental officer and the company will responsible for any defects in the said works that might be noticed at later dates.
- 10) **Transport &Storage :** The materials will have to be delivered at site and stored at the cost of the firm. The safety of the material will be firms responsibility till the equipment is handed over duly commissioned. Any damage or loss of the material stored will be to the account of tenderer. Any repairs or replacement etc., needed to the materials so stored should be done at the cost of tenderer till the lift is handed over in satisfactory operation condition after testing and commissioning. All the expenses should be borne by the company. However, storage facilities will be provided free of cost.
- 11) **Earthing :** Necessary earthing is to be provided by the firm in confirmation to the relevant I.S.I specifications.
- 12) Other conditions will be as per APSS (Manual AP detailed standard specifications)

CONDITIONS Exclusively for Transformers

RATES: The rates should be basic rates and includes all other charges for packing forwarding, insurance, transportation of the material etc., to the site.

DEPUTATION OF ERECTION ENGINEER & STAFF: The erection Engineer and staff should be deputed at the time of erection. No. Separate charges will be paid for such deputation.

DELIVERY & ERECTION: The transformers should be supplied to erecting, commissioning and handing over in satisfactory working condition within (2) months from the date of agreement. All the H.T and L.T switchgear transformers etc., should be erected as per latest IE rules/BIS/BEE/Electrical Inspectorate rules and for any deviations from rules, the contractor will be held responsible.

GUARANTEE; All the equipment supplied should be guaranteed for two year from the date of handing over or from the date of charging of installation whichever is later in satisfactory working condition. Any part or parts, which fail during the guarantee period due to defective manufacturing or bad workmanship, should be replaced repaired by the firm free of cost.

TEST REPORTS: The contractor should furnish test reports for transformers, oil breather, OLTC, VCBs, ACBs, OCB's etc., issued by the competent authority.

FACTORY INSPECTION BY DEPARTMENTAL ENGINEERS: The Contractor has to arrange for factory inspection of all equipments as and when insisted by the department , for prior checking of Quality and specifications and also for Load Testing at Factory duly consulting with concerned manufacturing companies on approval of makes by the department.

The contractor should hand over all the required manuals, catalogues and anyu other relevant materials for transformers, breakers and other equipments supplied by him.

CONDITIONS FOR SUPPLY, ERRECTION AND COMMISSIONING DIESEL GENERATOR SETS

- 1) **GUARANTEE:** The Generator set and its connected switch gear, offered shall be covered by the usual guarantee period during which if any part / parts fall either due to defective materials or bad workmanship shall be repaired / replaced by the firm at free of cost. This guarantee period of 24 months will be reckoned from handing over the generator set after testing and commissioning in satisfactory working condition.
- 2) **DELIVERY & ERRECTION:** The delivery and erection shall be complete as per the rate of progress as specified in the tender conditions under rate of progress.
- 3) **A)** The design and drawings of all civil works like foundation, cables, trenches, earth pits and hume pipes etc., have to be furnished by the firm.

B) The firm shall supply the layout drawings of generator set and its switch gear after completion of the work.

C) Final bill shall be paid only after the entire work is completed to the satisfaction of the department.

D) The rate offered by the firm shall be inclusive of all charges such as packing forwarding and insurance etc., S.T etc., including all other incidental charges such as accommodation for erection crew, journeys bearing and lodging inclusive of training to an operator concerned etc. The price shall also include statutory increase in Excise Duly, S.T. if any during the currency of the contract.

SERVICING: Free monthly servicing and maintenance shall be done by the firm for a period of 24 months from the date of handing over the DG set and also the firm shall depute servicing Engineer as and when required by the Department without claiming any extra charges duly replacing the parts defective due to manufacture, free of cost and without any obligations.

- 4) The current transformers which are proposed to be used shall be resin cast shall be of fibre glass which can withstand a temperature of 130 degrees.
- 5) **CIVIL WORKS:** All the Civil works contingent to installation of generator set shall be done to the satisfaction of the Departmental officers concerned. The firm shall be responsible for any defects in the said works that might to be noticed at a later dated.
- 6) **TRANSPORT & STORAGE:** The materials should be stored at the firms cost and responsibility. The storage accommodation will be provided by the Department subjects availability of the accommodation. This department will not defray or reimburse the cost of any materials / materials lost damaged or otherwise in the transit or storage of the materials or for any reason including thefts cyclone fire burglary or any other causes.
- 7) **TESTING CERTIFICATES:** All Test Certificates for Alternator, Diesel Engine, etc., shall be furnished along with the DG set .
- 8) **EXPERIENCE:** Only previous experience in supply and erection of generator sets and commissioning only .
- 9) **EARTHING:** Necessary earthing is to be provided by the firm in confirmation to the relevant I.S.I Specifications.
- 10) Necessary exhaust piping from engine exhaust to outside the room by means of MS / GI pipe of suitable size and supporting it properly by means of clamps. Silencer should be mounted at the end of the exhaust pipe.
- 11) The D.G set should be tested on load for at least 4 hrs out of which 2 hrs shall be 100% load and remaining 2 hrs shall not be less than 75% of full load.

12) **FACTORY INSPECTION BY DEPARTMENTAL ENGINEERS:** The Contractor has to arrange for factory inspection of Diesel Generator set as and when insisted by the department, for prior checking of Quality and specifications and also for Load Testing at Factory duly consulting with concerned manufacturing companies on approval of makes by the department. The DG Test shall be tested at factory before dispatch under the presence of the department engineer concerned, necessary charges to be borne by the firm for to and fro charges including required accommodation etc.

GENERAL SPECIFICATIONS

LIST OF INDIAN STANDARDS FOR ELECTRICAL WORKS

Relevant Indian standards for the various materials to be used in electrical works as per specification condition No

S//I.No.	Description	IS.No. and as amended from time to time
A) LIST OF INDIAN STANDARDS		
I	CABLES	
1	PVC insulated cables for working Voltage up to and including 1100 V	IS 694:1990
2	PVC Insulated (heavy duty) electrical cables	IS 1554:1988
3	11 KV XLPE cables	I S 7089-part-II
4	Recommended current ratings for cables	IS 3961-1967
5	PVC insulations and sheath of electric cables	IS 5831:1984
6	Conductors for insulated electric cables & flexible cords (superseding IS 1753: 1967)	IS 8130:1984
II	CONDUITS & ACCESSORIES AND JUNCTION BOXES	
1	Flexible steel conduits for electrical wiring	IS 3480:1966
2	Conduits for electrical installation: Part 1 General requirements	IS 9537-PI-1981
3	Conduits for electrical installation: Part 2 Rigid steel conduits	IS 9537-PII-1989
4	Recommended practice for hot dip galvanizing of Iron and steel	IS 2629:1985
5	Fittings for rigid steel conduits for electrical wiring	IS 2667-1988
6	Accessories for rigid steel conduits for electrical wiring	IS 3837-1976
7	Adopters for flexible steel conduits	IS 4649:1968
8	Boxes for enclosure of electrical accessories – Steel and cast iron boxes	IS 5133:1969
III	DOMESTIC SWITCHES SOCKETS	
	Plugs and socket outlets (250V; 16A) : Specifications	IS 1293:2005

S//I.No.	Description	IS.No. and as amended from time to time
	Ceiling Roses – Specification	IS 371:1999
	Switches for domestic and similar purposes	IS 3854:1997
IV	ELECTRICAL INSTALLATION	
	code of practice for electrical wiring installation	IS 732:1989
	code of practice for earthing	IS 3043:1987
	Recommendations on safety procedures and practices in electrical work	IS 5216:1982
	Code of practice for Selection, installation and maintenance of fuses (Voltages not exceeding 650 V)	IS 3106-1996
	code for practice for interior illumination Part2	IS 3646:1966
	code of practice for lighting of public thoroughfares	IS 1944:1970
	Installation and maintenance of paper insulated power cables	IS 1155-1967
	Code of practice for use of structural steel in General building construction	IS:800
	Methods of testing uniformity of coating on zinc coated articles	IS:2633
	Code of practice for phosphate iron and steel	IS:6005
V	LT PANEL BOARDS / LIGHTING PANELS	
	Enclosed distribution fuse board and cutouts for voltage not exceeding 1000 V AC / 1200 V DC	IS 2675-1983
	Specifications for Low voltage switchgear and control gear for voltages not exceeding 1000 V. Part-1 General Rules (supersedes IS 4237 & IS 2147) Part-2 Circuit Breakers (supersedes IS 2516) Part-3 Switches, dis-connectors (supersedes IS 4064) Part-4 Contractors, starters (supersedes IS 2959)	IS 13947:1993
	Part-5 Control circuit devises & switching elements (supersedes IS 6875 switches/ push button)	IS 13947:2004
	Code of practice for climate for climate proofing of electrical equipment	IS 3202:1965

S/I.No.	Description	IS.No. and as amended from time to time
	Electrical accessories- Circuit breaker for over current protection for house hold & similar installations (Miniature Air-bread circuit breakers for voltage not exceeding 1000V)	IS 8828:1996
	Current transformers	IS 2705:1992
	Low voltage fuses (upto 1000V) Supersedes IS 2208 & IS 9224	IS 13703:1993
	Wrought aluminium and aluminiumalloy bars, rods, tubes and sections for electrical purposes	IS 5082: 1998
	Specifications for low voltage switch gear and control gear assemblies (i.e. Factory build assemblies of switchgear and control gear for voltages up to 1000 V)	IS 8623:1993
	Electrical measuring Instruments (Direct acting indicating analog instruments) & accessories	IS 1248:2003
	Danger notice plates	IS 2551:1982
	Guide for Marking insulated conductors (supersedes IS 375)	IS 5578-1984
	Guide for uniform system of marking & identification of conductors and apparatus terminals	IS 11353:1985
	Electrical relays for power systems protections	IS 3231:1986
	Voltage Transformers (part 1 to part 4)	IS 3156:1992
	Electricity meters induction type (for alternating current)	IS 722:1986
	Inter connecting Bus-bars for Voltage above 1KV	IS 8084-1976
VI	LIGHTNING	
	Code of practice for the Protection of buildings and allied structures against lightning	S 2309-1989
VII	FIRE SAFETY	
	Code of practice for Fire safety of buildings (General) Electrical Installation	IS 1646-1997
VIII	LIGHTING FIXTURES AND ACCESSORIES	
	General and safety requirements for electric Lighting fittings	IS 1913-1969
	Interior Illumination	IS 3636-1966

S//I.No.	Description	IS.No. and as amended from time to time
	tubular florescent lamps	IS: 2418:1977
	Bal lazes for use in flourscent lighting fittings (part 1)	IS: 1534
	bi-pin lamp holders for tubular fluroscent lamps	IS: 3323
	capacitors for use in fluroscent lighting fittings	IS: 1569
	starters for fluroscent lamps	IS: 1522
	holders for starters for tubular fluroscent lamps	IS: 3324:1982
	specifications for decorative lighting out fits	IS: 5077
	high-pressure mercury vapour lamps	IS: 2183
	GLS lamps	IS: 416
	Bayonet lamp holders	IS 1258:2005
	dust proof electric lighting fittings	IS :4012
	dust tight electric lighting fittings	IS:4013
	specification for floodlights	IS: 1947
	Lighting public thorough fares	IS 1944-1970
	Luminaries for street lighting	IS 2149-1970
	Water tight electric lighting fittings	IS 3553-1966
	Waterproof electric lighting fitting	IS 3528-1966
	industrial lighting fittings	IS: 1777
	industrial lighting fitting with plastic reflectors	IS:3287
IX	Ceiling fans	
	Electrical ceiling type fans & regulators	IS 374-1979
X	Transformers	IS 2026-1962
	Installation and commissioning of transformers	IS 1886-1967
XI	On load change over switches	IS 4064-1978
	Tubular steel poles for overhead power lines	IS 2713:1980
	Mild Steel wire for General Engineering purpose	IS 280:2006

11.0 Standards for Electrical Equipment

- 11.1 Unless otherwise stipulated in this specification, all equipment or material covered under this specifications shall be designed, manufactured and tested in accordance with the latest standards of Indian Standard's specifications.
- 11.2 All equipment shall conform to latest Indian electricity Rules, Indian electricity act and Indian Insurance rules as regard safety, earthing and other essential provisions specified in for installation and operation of electrical equipments.
- 11.3 Extreme care shall be taken to make enclosures for switch gears proof against rodents, lizards and other creeping vermin.
- 11.4 Continuity of power supply is to be given maximum consideration and the design of the equipment shall be such as to simplify inspection maintenance and testing at site. The design shall include all reasonable precautions and provisions for safety of operating personnel and maintenance personnel.

1.0 WIRING INSTALATION

SCOPE

The scope under this section covers wiring installation comprising of

- Lighting/Fan/Exhaust Fan/Circuit bell points.
- Power circuits and Air Condition circuits.
- Circuit wiring.

RECESSED CONDUIT WIRING SYSTEM WITH PVC/ STEELCONDUIT

- Type and size of conduit:** All rigid non-metallic conduits shall conform to accepted standards and shall be used to corresponding accessories. Conduits shall provide adequate mechanical protection for the enclosed cables and the interior of the conduit shall be free from obstructions. No non-metallic conduit less than 20 mm in dia shall be used. The number of insulated cables that can be drawn into rigid non-metallic conduits are given in the following table (Ref: Table-2)

Size of table		SIZE OF CONDUITS, MM													
Normal cross sectional area mm ²	No, &nd diameter o wires Mm	16		20		25		32		40		50		63	
		Number of Cables, Max													
		S	B	S	B	S	B	S	B	S	B	S	B	S	B
1.0	1/1.12*	5	4	7	5	13	10	20	14	-	-	-	-	-	-
1.5	1/1.40	4	3	7	5	12	10	20	14	-	-	-	-	-	-
2.5	1/1.80 3/1.06	3	2	0	5	10	8	18	12	-	-	-	-	-	-
4.0	1/ 2.24 7/0.35	3	2	4	3	7	8	12	10	-	-	-	-	-	-
6.0	1/ 2.80 7/1.06*	2	-	3	2	6	5	10	3	-	-	-	-	-	-

Size of table		SIZE OF CONDUITS, MM													
Normal cross sectional area mm ²	No, &nd diameter of wires Mm	16		20		25		32		40		50		63	
		Number of Cables, Max													
		S	B	S	B	S	B	S	B	S	B	S	B	S	B
10.0	11/3.55+	-	2	-	5	4	3	7	-	-	-	-	-	-	-
	7/1.40*	-	-	2	-	4	3	6	5	8	-	-	-	-	-
16.0	7/1.70	-	-	-	-	2	-	4	3	7	6	-	-	-	-
25.0	7/2.24	-	-	-	-	-	-	3	2	5	4	8	6	9	7
35.0	7/2.50	-	-	-	-	-	-	2	-	4	3	7	5	8	6
50.0	7/3.00+ 19/1.80	-	-	-	-	-	-	-	-	2	-	5	4	6	5

“*” for copper conductors only.

“+” for aluminum conductors only.

MS/PVC Conduits: Conduit pipe shall be finished with stove enamel surface. all conduit accessories shall be treaded type only and under no circumstances pin grip type or clamp type accessories be used. No steel conduits less than 16mm diameter shall be used. The number of insulated conductors that can be drawn into rigid steel conduits are given in separate enclosure.

(Ref.Table-2)

- b) **Bunching of cables:** Unless otherwise specified, insulated conductors of AC supply shall be bunched in separate conduits. For lighting and small power outlet circuits, phase segregation in separate conduits is recommended.
- c) **Conduit Joints:** Conduits (PVC/metallic) shall be joined by means of screwed couplers and screwed accessories only. In long distance straight runs of conduit, inspection type boxes at reasonable intervals shall be provided. Cut ends of conduit pipes shall have no sharp edges nor any burrs left to avoid damage to the insulation of conductors while pulling them through such conduits.
- d) Inspection type conduit fittings such as inspection boxes, deep boxes, bends, elbows and tees shall be so installed that they remain accessible for such purposes as withdrawal of existing cables or installation of additional cables.
- e) Metallic switch board boxes shall be fabricated from **1.6mm** thick sheet metal of 16 gauge GI sheet and wooden switch board boxes shall be of Teakwood. Modular switch boxes shall be hot dip galvanized 20/18 SWG MS modular metal switch boxes with earthing terminal of standard company as per the switches make. The switch boards should be flush mounting type. The MS

switch boards should be painted with two coats of red oxide and two coats of synthetic enamel paint of approved grade and make before fixing in position for MS Boxes.

The switch boxes should be covered with **3mm** thick Decolam /Hylam cover.

- f) The chase in the wall shall be neatly made and be of ample dimensions to permit the conduit to be fixed in the manner desired. In the case of building under construction chases shall be provided in the walls, ceiling etc., at the time of their construction and shall be filled up neatly after erection of conduit and brought to original finish of the walls.
- g) The conduits shall be fixed in chases by means of staples or saddles not more than **45cms** apart. Fixing of standard bends or elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing in of conductors. All threaded joints of rigid steel conduit shall be treated with some approved preservative compound to secure protection against rust.
- h) Suitable inspection boxes shall be provided to permit periodical inspection and to facilitate removal of wires if necessary. Minimum size of inspection boxes shall be **75 x 75 mm**.
- i) The M.S. switch board boxes, junction boxes etc., should be efficiently earthed with conduit by a suitable means of earth attachment.
- j) When crossing through expansion joints in Buildings, the conduit section across the joint may be through flexible conduits of same size as the rigid conduit.
- k) **Wires:** Wires shall comply with the following features.
 - Annealed copper conductor, multi strand, PVC insulated, **1100** volts grade cables.
 - The following colour coding shall be followed :-

Phase	-R	-	Red
Phase	-Y	-	Yellow
Phase	-B	-	Blue
Neutral		-	Black
Earth		-	Green

- l) On each (lighting/Ceiling Fan/Exhaust Fan) circuit not more than 6points or **800-1000** watts load should be connected. Example:- If on one of the switch boards there are only **4** switches to control **4** lights, other switch board another **3** switches to control lights etc, then for arriving at the circuit length, the shortest distance from circuit breaker in the MCB distribution board to the nearest switch board shall be considered. Inter connections between such switch boards shall

be allowed by providing same wires as are used for light points and no measurement in circuit wiring is allowed for such inter connections. A separate conduit pipe has to be provided for running circuit mains and the conduits for light points shall never be used for the same.

For 6 Amps **3** pin on separate board the circuit measurement to first nearest 6Amps **3** pin socket is considered. No measurement will be separately considered for looping of switch boards in circuit wiring.

- m) The mounting height of switch boards (bottom of MS Box) shall be **4'6"** from finished floor level.

The 6 Amps/**16** Amps **3** pin sockets with shutter protection shall be at 0.75 mtr. Level (or skirting/sill level of window).

Wiring for power circuits i.e., **16** Amps **3** pin and AC points shall be provided in separate conduit pipes.

- n) Neat holes shall be punched on MS Switch Board Boxes for conduit pipe entries. Rough, burred holes with chisel shall be avoided. Conduit pipes to be fixed to MS Switch Board Boxes, MCB Distribution Boards etc., by providing (double chack) check nut arrangement. Before drawing of PVC insulated cables inside the conduits, ebonite/ nylon bushes to be provided at conduit ends in order to avoid damage to cables during drawing.
- o) **3mm** thick Hylam / Decolam covers provided on Switch Boards should be fixed to switch boards by providing brass coated screws and plated cup washers.
- p) Any loose holes on Switch Board boxes and Distribution Boards shall be properly closed, so as to prevent entry of lizards etc.
- q) Whenever cables/wires of size 2.5 sq.mm and above for switch, socket or MCB, metallic plug point etc, that are connected inside the Distribution boards, proper type and size of lugs to be crimped to cable leads before making the permanent connections on either side etc.
- r) Telephone/intercom cables shall not be laid in the same conduit where electric lighting/power cables are drawn. Separate conduit pipes to be used for drawing of telephone/intercom cables.
- s) Loose joints with PVC insulation shall be avoided. Wherever possible, joints of cables shall be avoided. If found necessary proper type and size of connectors shall be used.
- t) The drop of voltage between the main switch/distant. Terminals and the farthest current consuming apparatus shall not exceed **2%** with all devices switched on.

Testing: The entire installation shall be tested for

- a) Insulation Resistance
- b) Earth continuity
- c) Polarity of single pole switches

Tests shall be conducted in the presence of Site Engineer. Test results to be tabulated and submitted to the site engineer.

2.0 MCB DISTRIBUTION BOARDS, MCB'S AND ELCB'S

Scope

The scope under this section covers installation comprising.

- a) Low voltage distribution boards

Details

- a) The Distribution Boards shall have vermin, dust, rust proof painting done by powder coating process.
- b) The cables entering the D. Board should be properly bunched and dressed before making connection in MCB's.
- c) Cable glands shall be provided wherever armoured cables are connected to switches.
- d) Cable leads shall be provided with proper type and size of lugs crimped to leads before making permanent connection inside MCB's, RCCB's etc.
- e) Permanent circuit identification shall be provided on the distribution boards.
- f) The mounting height of MCB distribution boards etc., (bottom line) shall be 6' from finished floor level.

3. CABLES

3.1 Scope : The scope under this section covers Power cables

3.2 Standards

A	Specification for conductors for insulated electric cables	IS:8130 -
B	Specification for Armoured/ unarmoured power cables	IS:1554-Part I -
C	Recommended current ratings for cables	IS:3961 -
D	Specifications for PVC insulation and sheathing of electric cables	IS:5831-1984

3.3 General requirements for cables

- a) Cables should be stranded aluminium conductors for **6mm** and above.
- b) L.V. cables shall be **1100** Volts grade.
- c) Cables shall have colour coded XLPE insulation.
- d) PVC inner and outer sheathing shall be applied by extrusion.
- e) Steel armouring between inner and outer sheathing.
- f) The PVC/XLPE insulation and sheathing shall confirm to IS:**5831-1984**.

3.4 Laying of Cables

- a. Cables if laid underground shall be at a depth of not less than **90Cms.**, in a trench. Sand filling shall be provided at the bottom of trench before laying the cable. Bricks shall be provided on either side of the laid cable. Sand filling shall be done to cover the cable laid. Bricks shall be provided on the top. Earth filling shall be done.
- b. M.S. cable identification tags, route indicators embedded in C.C. are to be provided at every 8 meters length of cable laid.
- c. Hume pipe, trenches/tunnels with proper pre-cast slabs to withstand wear and tear of vehicular traffic shall be provided at road crossings.
- d. Cables if laid in the air shall be laid on cable trays and shall be properly clamped to the trays by plated MS. saddles at proper intervals. Cables shall be properly dressed before fixing on the cable trays.
- e. Extra cable loops of minimum **2000 mm** shall be provided at each end of cables laid.
- f. Cables shall be bent to a radius of **20** times the diameter of the cable..
- g. Control/Telephone cables shall be laid away from power cables on separate cable trays.
- h. **All cables shall be unwind from the drums in a professional manner at site without chances of any twisting or bird case, duly using Jockey arrangements at site with sufficient labour as per standard practice for laying of Cables and following manufacturer's suggestions. If any twisting/bird casing is found at site during execution, the contractor has to replace the cables by new cables at his own cost.**

3.5 Testing:

Manufacturers test report shall be submitted for tests on cables in accordance with Indian standards specifications for each drum and the report shall contain the drum number and date of testing etc.

Cables shall be tested after installation before commissioning by using 1000 Volts Megger and the following readings shall be obtained and tabulated.

- 1) Continuity on all conductors,
- 2) Insulation Resistance
 - a) between conductors
 - b) all conductors and ground and also neutral

The tests shall be conducted in the presence of Site Engineer and results submitted.

4 CABLE TRAYS AND ACCESSORIES:

4.1 Scope

The scope covers MS/GI cable trays and cable tray accessories.

4.2 Standards

(IS. specifications shall be adhered to)

4.3 Specifications

Material: Hot rolled plain sheets of tested quality "O" grade as per IS **1079**.

Thickness of material: **2.0 mm**

Cable loading on tray: **50 Kg/MTR**

Span between cable tray supports: **1.5 meters to 2.0Mtrs.**

Surface finish: Hot dip galvanising iron as per IS **2629**, minimum **70** microns thickness

Length of cable trays: **2.5 Meters**

Width of Cable trays: (outside to outside width to be taken)

- a) Ladder type - Bolted/welded construction **300 mm/450mm/600mm** (depending on number of cables to be laid)
- b) Perforated cable trays (Same as above)

4.4 Sizes of Cable Trays:

a)Ladder type - Bolted/welded construction

Side rail

* Flange width **15 mm**

* Depth **70 mm**

* Two coupler holes of **10mm** diameter required on each side of side rail

* Rungs

* Channel section: **20 x 40 x 20 mm**

* Slot size on rungs: **20 x 10 mm** (oblong holes)

* Interval between rungs not more than **250mm**

b) Perforated type construction

* Flange width :**30mm**

* Slot size : **20 x 10** mm (oblong)

4.5 Sizes of Coupler Plates:

a) Ladder type - Bolted/welded construction

Size: **90 x 45** mm

Thickness of material: **2/2.5** mm

Slot size: **20 x 10**mm oblong holes - Two numbers

Round holes **10**mm diameter Two numbers

Finish: Hot dip galvanised as per IS:**2629**

b) Perforated type construction:

Size: **210**mm x **25**mm

Thickness of material: **3**mm

Slot size: Oblong holes **20 x 10** mm - **2** numbers

Round holes **10**mm diameter - Two numbers

Finish: Hot dip galvanised as per IS:**2629**

4.6 Hardware for coupler plate: (Electro galvanised)

a) Hexagonal Head Bolts - **4** Nos.

b) Plain washers - **8** Nos.

c) Hexagonal nuts - **4** Nos.

Number of coupler plates per cable tray - Two numbers.

4.7 Cable tray Accessories:

Material: Hot rolled plain sheets of tested quality “O” grade as per IS: **1079**

Finish: Hot dip galvanised as per IS:**2629**

Minimum bending Radius - **450**mm

Tees, Horizontal/vertical elbows, cross and reducers for both ladder type - welded/bolted and perforated construction shall be as per standard manufacturers drawings.

4.8 Erection

Cable trays shall be erected on walls, trenches (if necessary) by **drilling holes in the wall by power drilling machine**. Cable Tray shall be fixed to wall by providing proper size Anchor expandable type bolt and nut arrangement. Proper type of cable tray accessories shall be selected depending on the site condition.

5.0 CABLE TERMINATION:

Cable gland body shall be made of brass castings and machined to final size. The general construction of the glands should be as per standard manufacturer’s drawings. It mainly consists

- a) Compression Nut - Brass - 1 No.
- b) Gland body with Hexagonal head - Brass - 1 No.
- c) Rubber Ring - Rubber - 1 No.
- d) Brass washers - Brass - 3 Nos.
- e) Check nuts - Brass - 1 No.

Metal parts of the gland shall be free from blow holes and surface shall be machined smoothly.

All edges shall be debarred and then nickel plated wherever necessary. The cable glands shall be of single compression type.

6.0 L.T. PANEL BOARDS

6.1 Scope

The Scope covers the requirement of designs, construction, assembly, testing, Supply and installation of Panel Boards.

6.2 Standards:

IS:13947 - Specification for low-voltage switch gear and control gear

Part -1 General rules (supersedes IS 4237 & IS 2147)

Part -2 Circuit breaker (supersedes IS 2516)

Part-3 Switches, dis-connectors (supersedes IS 4064)

Part-4 Contractors, motor-starters (Supersedes IS 2959)

Part-5 Control circuit devices & switching elements (supersedes IS 6875)

IS:13703 - Low Voltage fuses (supersedes IS:9224 & IS 2208)

IS:2705 - Current Transformers

IS:1248 – Indicating Instruments

IS 5578 - Guide for Marking insulated conductors (superseding IS 375)

IS 11353 - Guide for uniform system of marking & identification of conductors and apparatus terminals

IS:3156 - Voltage Transformers

IS:3231 - Relays

IS:722 - Integrating Information

IS:8623 - Factory Built Assemblies of switch gear and control gear.

6.3 CONSTRUCTION:

The panel board shall be:

- i) of the metal enclosed, indoor, floor mounted, free standing type.
- ii) be made up of the requisite vertical sections, which, when coupled together shall form continuous dead front switchboards.
- iii) provide dust and damp protection, the degree of protection being no less than IP, **51** to IS. **2147**.
- iv) be readily extensible on both sides by the addition of vertical sections after removal of the end covers.

6.3.1 The panel boards shall be constructed only of materials capable of withstanding the mechanical, electrical and thermal stresses, as well as the effects of humidity, which are likely to be encountered in normal service.

6.3.2 Each vertical section shall comprise:

- i) A front framed structure of rolled/folded sheet steel channel section, of minimum **2 mm** thickness, rigidly bolted together. This structure shall house the components contributing on the major weight of the equipment, such as circuit breaker fuse switch units, main horizontal bus bars, vertical risers and other front mounted accessories.

The structure shall be mounted on a rigid base frame of folded sheet steel of minimum **2mm** thickness and **100mm** height. The design shall ensure that the weight of the components is adequately supported without deformation or loss of alignment during transit or during operation.

- ii) A cable chamber housing the cable and connections, and power/control cable terminations. The design shall ensure generous availability of space for ease of installation and maintenance of cabling, and adequate safety for working in one vertical section without coming into accidental contact with live parts in an adjacent section.
- iii) Front and rear doors fitted with dust excluding neoprene gaskets with fasteners designed to ensure proper compression of the gaskets. When covers are provided in place of doors, generous overlap shall be assured between sheet steel surface with closely spaced fasteners to preclude the entry of dust.

6.3.3 The height of the panel should not be more than **2400 mm**. The total depth of the panel should be adequate to cater for proper cabling space.

6.3.4 Doors and covers shall be minimum 2.0/ **1.5mm** thick sheet steel. Sheet steel shrouds and partitions shall be of minimum **1.5mm** thickness as per the specifications. All sheet steel work forming the exterior of switch boards shall be smoothly finished, levelled and free from flaws. The corners should be rounded.

6.3.5 The apparatus and circuits in the panel boards shall be so arranged as to facilitate their operation and maintenance and at the same time to ensure the necessary degree of safety.

6.3.6 Apparatus forming part of the panel boards shall have the following minimum clearances:

- i) Between phases - **25 mm**
- ii) Between phases and earth - **25 mm**
- iii) Between phases and earth - **25 mm**
- iv) Between neutral and earth - **19 mm**

When, for any reason, the above clearances are not available, suitable insulation shall be provided. Clearances shall be maintained during normal service conditions.

Creepage distances shall comply to those specified in relevant standards.

6.3.7 All insulating material used in the construction of the equipment shall be of non-hygroscopic material, duly treated to withstand the effects of high humidity, high temperature tropical ambient service conditions.

6.3.8 Functional units such as circuit breakers and fuse switches shall be arranged in multi-tier formation, except that not more than two air circuit breakers shall be housed in a single vertical section.

6.3.9 Metallic/insulated barriers shall be provided within vertical sections and between adjacent sections to ensure prevention of accidental contact with:

i) Main bus bars and vertical risers during operation, inspection or maintenance of functional units and front mounted accessories.

ii) Cable terminations of one functional unit, when working on those of adjacent unit/units.

6.3.10 All doors/covers providing access to live power equipment/circuits shall be provided with tool operated fasteners to prevent unauthorised access.

- i. Provision shall be made for permanently earthing the frames and other metal parts of the switch gears by two independent connections.
- ii. The contractor should submit the panel drawing for approval to the department. After approval of the drawing only panel should be fabricated.
- iii. Panels should be got inspected at factory and testing should be done in front of the Executive Engineer or the concerned engineer deputed by the Dept. Necessary cost for inspection and to and fro charges to be borne by the firm.

6.4 METAL TREATMENT AND FINISH:

6.4.1 All steelwork used in the construction of the switchboards, should have undergone a rigorous metal treatment process as follows: (Seven tank process.)

i) Effective cleaning by hot alkaline degreasing solution followed by cold water rinsing to remove traces of alkaline solution.

ii) Pickling in dilute sulphuric acid to remove oxide scales and rust formation, if any, followed by cold water rinsing to remove traces of acidic solution.

iii) A recognised phosphating process to facilitate durable coating of the paint on the metal surface and also to prevent the spread of rusting in the event of the paint film being mechanically damaged. This again, shall be followed by hot water rinsing to remove traces of phosphate solution.

iv) Passivating in de-oxalite solution to retain and augment the effects of phosphating.

- v) Drying with compressed air in a dust free atmosphere.
- vi) Primer coating with two coats of a highly corrosion resistant primer, applied wet on wet & stove dried under strictly controlled conditions of temperature and time.
- vii) A finishing coat of stoving synthetic enamel paint to the specified shade of IS.5. The total thickness of paint should not be less than **15 to 20** microns.

6.5 BUS BARS:

- 6.5.1** The bus bars shall be air insulated and made of high conductivity, high strength aluminium alloy complying with the requirements of grade E91 of IS 5082.
- 6.5.2** The busbars shall be suitably braced with non-hygroscopic SMC supports to provide as through fault withstand capacity of **50 KA RMS** symmetrical for one second and a peak short circuit withstand of **105 KA** minimum. The neutral as well as the earth bar should also be capable of withstanding the above fault level. Ridges shall be provided on the SMC supports to prevent trackling between adjacent bus bars.
- 6.5.3** Large clearances and creepage distance shall be provided on the busbars system to minimise the possibility of a fault.
- 6.5.4** High tensile bolts and spring washers shall be provided at all busbar joints.
- 6.5.5** The cross sections of the bus bars risers for various ratings shall have been decided on the basis of temperature raise tests carried out under conditions closely similar to actual service conditions. For a total operating temperature of **110 deg. C.** at an ambient of **40 deg.** at the standard current ratings and corresponding cross sections of the main bus bars should be such that the bus bar shall carry **1 Amp. per Sq.mm.**
- 6.5.6** The main phase busbars shall have continuous current rating throughout the length and the neutral busbars shall have a continuous rating of atleast 50% of the phase busbars.
- 6.5.7** Connections from the main bus bars to functional circuit shall be arranged and supported so as to withstand without any damage or deformation the thermal and dynamic stresses due to short circuit currents.
- 6.5.8** Bus bars shall be colour coded for easy identification of individual phases and neutral with heat shrinkable sleeves.
- 6.5.9** The busbars shall be suitably supported with epoxy resin mould insulators.

6.6 Tests:

The panel Board shall be inspected as per relevant standards in presence of the Site Engineer and shall include.

- a) High voltage test
- b) Insulation test
- c) Constructional and safety features

6.7 Name Plates:

Main name plates shall be fixed at the top centre. Name plate giving feeder detail shall be provided and are to be fixed by screws.

7.0 EARTH ELECTRODES

7.1 Scope:

The scope included both pipe earth electrodes and plate earth electrodes.

7.1.2 Standards:

IS:3043 - Code of practice for earthing.

7.3 Construction:

Pipe Earth Electrode : G.I pipe shall not be less than **38mm** diameter and **2½meter** long. The G.I pipe should be "C" / "B" class type.

Cast iron pipe Earth Electrode : Cast iron pipe shall not be less than **100mm** diameter and **2½meter** long.

Plate Earth Electrode : Copper plate of **600 x 600 x 3.15** mm. (or GI plate)shall be burried in the earth with faces vertical and top shall not be less than **1.5** meters below ground level.

The electrodes shall be surmounted by alternate layers of charcoal or coke and salt. Watering arrangement with ½" G.I pipe with a funnel shall be provided, the later being housed with chamber (masonry) of inner size **300 x 300** mm CI hinged cover with CI frame to be provided on the top.

7.4 Tests:

The resistance of earth electrode shall be less than 5 Ohms.

8.0 EXTERNAL ELECTRIFICATIONS WORKS

8.1.1 Underground Cables:

i) Medium and low pressure:

Cables should be double steel tape armoured over lead covering and paper insulated or PVC insulated as specified in the schedule of work. All repair joints of cables should be in joint boxes and filling in of the compound shall be done as per IS specifications using best quality materials. All accessories and other materials should conform to I.S. Specification. The jointing work should be carried out by a competent authorized cable jointer. The cables shall be 1100 V grade.

ii) Trench:

Trenches shall not be less than 45 cm wide and 60cm below ground level. Wherever necessary, suitable propping and storing may be done to avoid caving in of the adjoining trench walls. Where the cables cross other services lines adequate protection should be taken to prevent accidental exposure and/or damage to the cables.

iii) Spacing between cables:

Where more than one cable is laid in the same trench the actual space between the cables should normally be higher cable diameter apart leaving a clear distance of 15cm from the trench walls.

iv) Laying of cables:

Before the cables are laid, a layer of 3" sand base is to be provided for purposes of cushioning. The cables after being uncoiled and laid into the trench from the rollers should be drawn in straight length. After the cable is laid, it is to be covered with another layer of sand of about 15cm in depth, and the top surface is to be suitably levelled to received the cable covers which may be of second class bricks or tiles or shabad stones and laid in such manner as to overlap the cables on either sides by at least 5cm. Cable markers of aluminium or G.I. shall be provided at concrete blocks of 3/20cm x 20cm x 5cm and spaced at distance of about 30cm from center to center and at every change in direction. Cables may also be laid in tier formation in the same trench in this case also after the 1st 3 inches of sand cushion, the first tier of cable is laid and sand filled in the trench to form a bed of 23cm above this tier. After this the second cable is laid and the process repeated, the top most tier being at least 45cm below the Ground level. The top cable shall be suitably covered with bricks or tiles. When laying cables, care should be taken to see that the paper insulated cables are bent/straightened slowly, sharp radii being avoided. The minimum safe bending radius for single core cables is 20 diameters and for multicore cables 10 dia meters. Where the cables are required to cross roads they should be normally taken through sleeve pipes at least 10cm in diameter which may be either stone ware, steel or spun reinforced concrete. For more than one cable the diameter should not be less than 15cm. GI pipes shall be used where it is not possible to obtain sufficient depth to withstand impact from traffic.

All cables shall be unwind from the drums in a professional manner at site without chances of any twisting or bird case, duly using Jockey arrangements at site with sufficient labour as per standard practice for laying of Cables and following manufacturer's suggestions. If any twisting/bird casing is found at site during execution, the contractor has to replace the cables by new cables at his own cost

v) Cable inside building:

Cables laid inside the building should be properly protected and be carried either in ducts with suitable covers with slabs or checkered plates or fixed to walls by clamps, brackets or cable trays.

vi) Hume Pipes

Wherever cables crossing roads, passages Hume pipes of suitable diameter shall be provided across the road including Civil works of digging, laying of Hume pipes upto a depth of 1 metre and refilling the trench. This shall be properly laid to cover the entire road so as to protect the cables against damage of passing Heavy Vehicles.

vii) Testing the cables:

High voltage tests should be undertaken to ensure that no damage has occurred during the laying operation and that the joints are in order. Cables of 1.1 KV suitable for low and medium voltage should stand for 15 minutes, 300 volts D.C. current applied between the conductors and between each conductor and sheath. In absence of high pressure testing equipment it is sufficient to test for 1 minute with 1000 volts. If the test results are found to be not satisfactory the contractors shall arrange to replace without any extra cost including removal of rejected materials, Re-laying etc.

viii) Cable laying & termination shall confirm to IS 1255

ix) Earthing of cables and cable glands shall confirm to IS 3043

x) The cable length given in bill of quantities are approximate and the contractor has to measure exact length of cables to be laid before commencement of work in presence of engineer in charge and give the sizes and quantities required to the engineer in charge to take further action by the engineer in charge. The measurements after laying cables are also to be taken jointly by contractor.

8.1.2 Over head lines

This specification of over head line covers installation, testing and commissioning of over head lines distribution lines up to including 11 KV lines, service connections and street lighting works.

1) **Materials** : Supports for over head lines and for street lights shall be any of the following types or as specified by Engineer in charge and shall be of adequate strength confirming in all respects to Rule 76 of Indian electricity rules.

Steel tubular poles: This shall conform IS 2713-1964. This shall be seamless/sawaged and welded type as specified and shall be in time stepped sections. Unless other wire specified 1/6th from the base length of the pole plus 15cm be coated with black bitumen paint both internally and externally. The remaining portion of the pole shall be painted with one coat of red oxide on its external surface. The pole shall be complete with cap and base plate.

Steel poles (RSJ Joists): These shall be 1 section steel rolled poles confirming to IS standards and Medium weight. The height of the pole shall not be less than 9mts and the pole shall be fixed below

ground level not less than 1.5 mts.. The size of overhead line steel RS Joist pole shall be concreted in 1:3:6 cement concrete and painted as per steel tubular poles given above.

Prestressed Cement Concrete Poles (PSCC): PSCC poles shall be of 8.0 Mts./ 9.0 Mts. Height and shall conform to standards of APTRANSCO. / APDISCO.

‘D’ Iron Clamps: Where so specified in the contract conductors shall be spaced vertically supported on shackle which are attached to the pole by means of ‘D’ shaped clamps made of M.S. flats of size not less than 50x6mm and galvanized set the dimensions of ‘D’ shall be such as to hold 75 mm high and 90 mm dia (minimum size) shackle insulators. The ‘D’ iron clamp shall be complete with pole clamp with necessary bolts nuts and washers and bolts holes. Clamps shall also provided for pin insulators as in case of vertical formation.

G.I. Strap : Where ‘D’ iron clamps are not specified, a pair of strap plates of galvanized iron of size 40mm x 3mm and length of 23cms shall be used with shackle insulators. The pole clamp shall be treated with one coat of red oxide primer before erection and finished with two coats of approved paint after erection along with other hardware as specified. The nuts, bolts, for pole clamp shall be of G.I./Cadmium passivated/ galvanized.

Stay/Strut Set : A stay set shall consist of stay rod, anchor plate, bow tightener or turn buckle, thimble, stay wire, and strain insulator. The stay rod shall be with stay grip in case of turn buckle is used instead of bow tightener. The stay wire shall be either 7/4.00mm dia or 7.3.15mm dia. G.I. as specified in the contract confirming to IS 2141 – 1968 grade. The anchor plate shall be of M.S. galvanized and not less than 30cms x 30cms x 6.4mm thick and size of stay rod shall be not less than 1.8 m (6 feet) long and 19mm dia.

Insulator: Porcelain insulator shall conform to IS 1445 –1966 suitable for over head lines for power lines below 1000 V and IS 731-1971 for overhead power lines greater than 1000V. This shall be vitreous throughout and non absorbent. The exposed surface shall be glazed. Insulator shall have adequate mechanical strength high degree of resistance to electrical puncture and resistance to climatic and atmospheric attack. The insulator shall be of the following types as specified.

- a) Pin and shackle insulators for L.T. and MV lines.
- b) Pin and disc type for HV lines.

The minimum size of shackle insulators shall be 65mm dia 100mm high. The pin insulators shall be suitable for 12mm cordeam thread and shall be complete with GI. Pin, nuts, and washers.

Binding Materials: Binding of conductors with the insulators shall be done with 12 SWG soft/ aluminum conductor.

Guard wire: Guard wire shall be G.I. It shall have minimum breaking strength of 635 kg in accordance with Rule 38 of I.E. Rule. It shall also be sufficient current carrying capacity to ensure rendering of guard line.

Earth wire: The size of the continuous earth wire shall not be less than SSWG.G.I.

Section Stay: A stay shall be provided at all angle or terminal poles. The stay rod with the anchor plate shall be embedded in cement concrete 1:3:6(1 Cement:3 coarse:6 graded stone) and not less than 0.28 cum content in such away to prevent uprooting of the stay rod. The stay wire shall also be connected and bounded properly to the continuous earth wire. Double stays shall be provided at the all dead ends of the pole.

Jumpers: While stringing conductors as sufficient length be kept at shackle termination for making jumpers.

Guarding: All road crossing, crossings, of overhead lines, and between HV & LV lines carried on the same support guard shall be provided. The guard wires shall be bonded to earth wire Cage guard shall be provided for distribution lines of vertical configuration.

8.1.3 Lighting Arrestors

Lightening arrestors shall confirm to IS 3070 - 1965 part I and IS - 3070 - 1966 part-II as applicable. The lightening arrestors system shall confirm to Rule 92 of IE Rule.

8.1.4 Service Connection by Underground Cables:

The service cables from an overhead distribution live shall be fixed to the support with 2 No's of clamp of M.S. flat size 50mm x 6mm. This shall be protected up to a height of 3m from ground level by a G.I. pipe of adequate size clamped to the support with 2 No's of flats of size 50mm x 6mm. The cable shall be laid through pipes while crossing roads, pavements, masonry etc.

8.1.5 ACSR Conductors

Conductors shall be of the following types.

Aluminium conductor steel reinforced (ACSR) This shall comply with the requirements of I.S. 398 - 1961.

The physical and electrical properties of the above conductors shall be in accordance with the specifications as per IS. These conductors shall have a breaking strength of not less than 350kg.

Necessary precautions during storage and handling shall be taken to avoid damage to the conductors.

8.1.6 Transformers

The transformers required are intended for use in distribution of power and lighting. The 11 KV / 433 volts Transformer required for feeding lighting, pumps, Air conditioning, lifts etc.

The transformers shall be distribution type out door used complete with oil filled H.T brushing, L.T. cable end box receive suitable size confirming to IS2026

The transformers shall be designed and manufactured and tested as per IS 2026.

The transformers winding shall be of copper/aluminium winding as specified.

The transformer shall be adequately designed and effectively cooled to ensure its working on full load conditions continuously under short time over load conditions.

The design of core should ensure stability and reduce to a minimum the transformer excitation current and eddy current losses.

The core shall be provided with lugs suitable for lifting the complete core and coil assembly of the transformer.

The transformer coils shall be made of high conductivity copper and insulated with paper of dielectric strength and allow ageing characteristics. The Insulation of the coils shall be treated with suitable insulating material like varnish is to develop full electrical strength of the windings.

The tap changing arrangement shall be provided on the H.T side. The tap changer shall be ON / OFF load type. The tap changing switch shall be mechanically coupled to the external operating handle and the operating handle shall be carried through on oil tight gland on the tank side. A register plate clearly indicating the tapping in use shall be fixed to the external operating mechanism and provision shall be made for securing and padlocking the switch in any of the working position and to ensure that contacts are fully engaged before the transformer is energised. The range of ON / OFF Load tap change shall be $\pm 2 \frac{1}{2} \%$ to $\pm 5\%$.

i) Bushing

The Bushing Insulators of the transformers shall be of sufficient creepage length and shall be unaffected by atmospheric conditions due to weather, fumes, alkalies at site.

ii) Insulating oil

Sufficient oil shall be supplied for first filling. The oil shall comply in all respects with pro IS.335.

All accessories like drain valve, oil filling valve, filter valve, oil sampling valve, pressure relief device, oil level indicator, indicating thermometer (dial type) earthing terminal, bi-directional rollers . Exhaust vent, eye bolts, lugs, Diagram and rating plate.

9.0 Testing

All panel boards, switch boards, transformers, over head lines, cables, switches, main switch boards, shall be properly tested with meggar, test lamps for voltage, Insulation, and values shall be submitted to site electrical Engineer before commissioning pressure test of approximate standard shall be carried out on equipment, on overhead lines, cable panel boards etc.

The H.T. side of transformers shall be tested with 1000V meggar and L.T. side of equipment, overhead lines, cables with 500V meggar. The earth pits shall be tested with earth meggar. All results shall be carried out at site in presence of electrical Engineer and report shall be submitted to him in triplicate and also to the consultant.

All test certificates Transformers, main panel boards, main switch boards, cables, overhead lines, sub distribution boards shall be supplied in triplicate to the site electrical Engineer as well as to consultant. All meters shall be properly working without damages/strucking.

10.0 Commissioning

All the equipment, transformers, cables, panel boards, overhead lines can be commissioned only after the pressure/meggar tests are found satisfactory. The equipment, cables, overhead lines, panel boards, transformer etc shall be energised in presence of Engineer and consultant after satisfactory presence/meggar tests.

1.0 Contractor:

The contractor for electrical works executing substations, earthing, transformers, lighting shall hold valid class 'A' licence issued by Andhra Pradesh electrical licensing board and he should submit his license copy and his previous experiences along with the tenders and also before commencement of work The contractor shall quote and employ the number of electrical engineers, supervisors, wiremen in his position for such type of works, who are possessing necessary permits/certificates/licences.

Liquidated damages will be levied in case of failure to complete the job in time as per standard clauses.

The contractor should prepare the drawings as per site conditions and modifications required as suggested by the Department to submit the Chief Electrical Inspector to Government/Electrical Inspector to Government. for approval.

The contractor shall have liaison with APSEB officials and electrical inspectors, get the drawings and installations approved and also getting power supply released from APTRANSCO.

It is complete responsibility of the contractor to get the electrical inspector's approval, including and getting power supply. He should have good liaison with APTRANSCO.

The contractor can strictly follow the drawings and specifications for carrying out the works and he can get clarifications from site Engineer.

The contractor shall submit three copies of drawings for conduit routing inside the building, which he is going to carry out to client/Executive Engineer. This also includes the point wiring, telephone point conduit and power plug wiring conduit for each building before starting of the civil works atleast one month in advance for verification by Executive Engineer. The contractor shall also give the total quantity of various conduit to be used in each building before starting work as well the quantity of various wires to be used for each building.

The contractor should plan properly for all electrical material and works entrusted to him 15 days in advance and in form the Engineer in charge and consultant about his work progress. He should coordinate with civil persons for recessed conduit laying and also switch boards recessed fixing and any other electrical work associated with civil works as well as electrical Engineer at site and electrical consultant for his works.

LIST OF APPROVED MAKES /MATERIALS TO BE USED FOR
ELECTRICAL WORKS

SI No	ITEM/ MATERIAL	MAKES
1	P.V.C. pipes and accessories as per IS:9537 part 3	Precision/Universal&Marudhar/VIP /GoldMedal /Million plast / GM / Sudhakar /Anchor/ Polycab
2	M.S. conduit pipes (Screw type) black enameled with all accessories as per IS-9537 Part - II or latest revision	NAI / Bharath / GB / AKG/ Precision.
3	Annealed copper conductor, PVC insulated, 1100 volts grade flexible copper cables manufactured to as per IS : 694 / 1990 (with FRLS / FRLSH / HFFR / ZHFR & ISI marking)	Finolex/RR kabel/ Havells/ KEI/Polycab
4	PVC insulated aluminium conductor, PVC sheathed, Armored Underground cables / HT cables to IS:7098 (Part-I)/1554-I or latest revision	Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard
5	Ceiling roses, junction boxes and E.I.shades, Pendent holders and batten holders and brackets	Anchor/ Million/ Gold Medal
6	All types of 6A , 16A switches, sockets, Fan Regulators etc.,	Legrand / Schneider / Crabtree /L&T /GM / Goldmedal
7	M.S. Switch Boxes	Hot Dip galvanized 20/18 SWG Module box with earthing terminal of reputed brands
8	Distribution boards of single phase and 3phase from 4way to 12way	Legrand / Schneider /Hager / Seimens/L&T
9	ACBs,MCB, MCCBs, MCB Isolators, MCB distribution Boards, Isolators, ELCBs, RCCBs	L&T / Schneider /Legrand / Siemens
10	Panel Mounted Meters (Ammeter and Volt meter etc)	Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec
11	Cable Glands	Dowels/Comet/SMI
12	Cable Lugs	Dowels/Comet/SMI

SI No	ITEM/ MATERIAL	MAKES
13	Cable Terminating Kits	Raychem /M seal/ Denson/ Multy/ Transeal- Hongshang
14	All types of LED luminaires	Phillips / GE-Venture / Crompton / Wipro / Bajaj / Havells
15	Ceiling fans	Crompton / Havells /Orient / Crompton
16	Ceiling fans - BLDC (Brush less Direct Current)	Atomberg/ Halonix /Havells
17	Exhaust fans	Crompton / Bajaj / Havells / Orient / Almonard.
18	Bell pushes	GM / Gold Medal / Million / Vimal / Anchor
19	Screws or nails of all sizes	Bharat, sharp,Nettle fold (Brass, GI, M.S) only
20	Wooden accessories (including fillets gutties, nd boards & blocks including, double boards)	Make of well seasoned high quality teak wood without knots and well polished.
21	PVC Casing & Capping and accessories	Precision/VIP / Modi/ GoldMedal / Million plast / GM / Sudhakar / Anchor
22	Energy Meters	ECE/ HAVELL'S/BHEL/HPL
23	Pump sets	Kirloskar / Crompton / Texmo / CRI / KSB
24	VCB panel	ABB/Schneider/Seimens/Kirloskar
25	Load Break Switch (LBS)	ABB/ Megawin/L&T/Siemens/Kirloskar
26	TRANSFORMERS	Schneider/Kirloskar/Voltamp/ Esennar/ Toshiba
27	Any other Materials	As specified in the BOQ

Note : The contractor shall be invariable to use the materials specified in BOQ subject to prior approval from the department before procurement.

SPECIAL CONDITIONS FOR FIRE PROTECTION & FIRE FIGHTING SYSTEM

1. It is the complete responsibility of the agency to obtain the approval to drawings pertaining to the fire fitting and protection system from the concerned fire services authorities as per section 13(1) of A.P Services Act 1999
2. The agency should be aware of the rules and regulations of A.P Services Act 1999
3. It is the complete responsibility of the agency to comply with the Municipal corporation Building Bye Laws 1981 provision No 12 in pursuance of Sub section (1) of section 455 of the act and to should intimate the DG Fire Services on completion of the building and before Occupation and arrange for inspection for issue of No-Objection certificate.
4. It is the complete responsibility of the agency to comply with the clause 13.1 of part-II of National Building Code under which the agency has to carry out the work based on the approved Drawings and specifications of the work.
5. It is the complete responsibility of the agency to comply with the provisions under clause 9.3 of part-II of NBC and to engage Licenses fire Engineer/Sub agency for supervision of the work right from commencement to till completion of the work.
6. It is the complete responsibility of the agency to comply with regulation No 06 of Multi Storied Regulations 1981 and to maintain the specifications standard and code of Practice recommended in the NBC
7. It is the complete responsibility of the agency to comply with regulation No 5(2) of Multi Storied Building Regulations 1981 and to arrange the inspection of CE/HUDA and DFO/HYD to ensure that the construction of multi Storied Building is undertaken as per approved plans and fire precautionary and fire protection measures as suggested by the authorities are implemented.
8. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain open space at least 13mts around the complex.
9. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain means of Escape as NBC in the complex.
10. It is the complete responsibility of the agency to provide basement ventilations as per 12.9 of part-III and C.1.6 of NBC part-IV of India
11. It is the complete responsibility of the agency to comply with regulations of NBC and to provide smoking venting facilities for space use of exists as per clause 3.4.12 of NBC

12. It is the complete responsibility of the agency to comply with regulations of NBC and to provide illumination of means of exit in stair case and corridors as per C.4 of NBC part IV
13. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain compartmentation in cellar as per C.9 of NBC Part-IV.
14. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain compartmentation to the building so that fire/smoke remain confined to the area where fire accident has occurred and does not spread to the remaining part of the building as per clause 9 of the NBC 2005 Part-IV, Annexure-C
15. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain openings in separating walls and floors attention to limit the fire spreading with fire resisting assemble as per clause 3.4.8 of NBC 2005 part-IV.
16. It is the complete responsibility of the agency to comply with regulations of NBC and to provide a passage/escape path of the occupants
17. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain the limitations of the damaged to the buildings and its contents as per (Clause 3.4.11.1)
18. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain pressurization of stair cases as per clause 4.10 Part-IV of NBC
19. It is the complete responsibility of the agency to comply with regulations of NBC and to provide fire doors with 2 hours resistance at appropriate places along with escape route and particularly at the entrance to the lift lobby and stair case to prevent spread of fire and smoke (Clause 4.29) part-IV of NBC 2005
20. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain smoke venting facilities for safe use of exists as per clause 4.29 of NBC Part-IV of 2005
21. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain flame retardant materials for all interior decoration and upholstery to prevent generation of toxic smoke/flames and the surface shall comply clause 3.4.15 Part-IV of NBC 2005.
22. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain 2 Nos fire lift complying clause C1.5Q of annexure-IV of NBC 2005.
23. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain basement ventilation as per clause C1.6 of annexure-C of NBC 2005.
24. It is the complete responsibility of the agency to comply with regulations of NBC and to maintain illumination means of exit in stair case and corridors as per clause C.1.4 of Annexure –C of part-IV of NBC 2005.

LIST OF APPROVED MAKES OF THE MATERIALS TO BE USED FOR FIRE PROTECTION SYSTEM

S.No.	Materials	I.S. No	Brand
1	M.S.Pipes	1239/3589	TATA, JINDAL, HISSAR
2	Gunmetal Valves (Full way check and globe Valves)	778	LEADER ZOLOTO
3	C.I. double flanged sluice valves & Check Valves	780	UPADIAYA KARTAR KIRLOSKAR AUDCO AJANTA
4	Slim Seal Butterfly	ISI	KARTAR KIRLOSKAR AUDCO INTERVALVE ADVANCE
5	Slim Seal flap type Non Return Valves	5312	AUDCO KIRLOSKAR KARTAR INTERVALVE
6	Fire Hydrant Valves with GM / SS Coupling	5290	WINCO NEWAGE PADMINI ESSEL
7	Fire Hose Pipes C.P. Hose GM / SS Coupling R.R.L Hose GM / SS Coupling	8423 636(Type A)	WINCO NEWAGE PADMINI ESSEL CRC
8	Fire Aid Fire Hose Reels (Drum & bracket)	884	EVER SAFE FCE NEWAGE SRI
9	Sprinkler Heads		Viking/H.D/Tyco/Newage
10	Horizontal Centrifugal Pumps	1520	Kirloskar, Mather Platt
11	Electrical Motors	325	KIRLOSKAR, CROMPTION.ABB
12	Electrical Switch Gear & Starter M CCB		Siemens/ L & T / schnedier

S.No.	Materials	I.S. No	Brand
13	Cables for fire fighting		Polycab /Gloster / Universal / Nicco/Havells/KEI
14	Flow meter		SWITZER / SYSTEM SENSOR
15	Suction Strainer		ADCO DURGA SANT ZOLOTO
16	Vibration Eliminator Connectors		Resistoflex / Kanwal / D. Wren
17	Single Phasing Preventor (Pipe protection)		Minilec
18	Pipe Coat material(Protection)		PYPKOTE
19	Flow Switches		Switzer / System Sensor
20	Diesel Engine	10000/ TAC Approved	Kirloskar/ Ashok Leyland / Cummins
21	Main Control Panel (Powder Coated)		ENRON / SR ELECTRICAL / SRI INDUSTRIES
22	Fire Bridge Inlet	904	PADMINI / NEWAGE
23	Rubber Hose Inlet	5132	PADMINI / NEWAGE
24	Hose Coupling branch Pipe and nozzle GM / SS	903	NEWAGE / ESSEL / WINCO
25	Pressure Switches	TAC	INDFOSS DANFOSS SWITZER
26	Pressure Gauge	3624(CL-I)	H.GURU/FIEBIG
27	Battery		EXIDE/ AMARON PRESTOLITE
28	Fire Extinguishers		SAFEX / KANEX / NITHIN / FIREFITE
29	Paint		J & N / ASIAN / NEROLAC / BERGER
30	Annunciater Panel for Sprinkler system	2189	PCD/SAFEWAY/AGNI(INDIA) PINNACLE / RAVEL
31	Alarm Valve & Hydraulic Alarm motor with covering		HD / NEWAGE / TYCO
32	Contactora		L&T/ SIEMENS/ MG Schinder
33	Thimbles/Ferrules		Dowel &

S.No.	Materials	I.S. No	Brand
	(tinned Copper)		
34	Cable Glands		Commex / Power / Gripwell / Dowel
35	Power Capacitor		L&T/ NEPTUNE
36	Measuring Meter(Digital)		L&T/ MG Schinder/ ICON / SELECTORN
37	M.S.Conduit		Steel Craft / GUPTA
38	Dash Fastner		Hilti/ Fisher
39	Paint Primer		Asian/ Jenson Nicholson
40	Weld Electrodes		Advani/ Esab/ Weldex / Mangalam
41	Pipe Supports		Chilly/ GMGR / APPROVED MAKES
42	Indication Lamps(LED)		L.T./ SIEMENS / MG Schinder / Ideal / Raas Controls

SPECIFIC REQUIREMENTS / INSTRUCTION TO BIDDERS (FOR STP)

1. All equipment supplied shall have capacities not less than those specified in the data sheets and necessary test certificates shall be furnished in this regard. Approved makes and type of equipment/ components shall be supplied. The make, type reference of the equipment is subject to Engineers approval.
2. Grouting of all equipment and supports, supply of grounding material such as cement, sand, necessary form work etc. is Bidders responsibility.
3. No Separate payment will be made for necessary structural supports of piping.
4. The quantities of piping & valves, specialties etc. indicated in Schedule of quantities are indicative for the purpose of Bidders guidance and shall not be binding to limit the scope of Contractors work. In case there is any variation (plus or minus) in the quantities actually supplied and installed from the quoted quantities, the price of the same shall be adjusted based on the unit rates furnished by the bidder.
5. Bidder shall note that for piping, quantities of fittings like elbows, reducers, fabricated reducers / miters, compression fittings, flanges, nipples etc. are not defined. The price for supply, fabrication and erection of necessary fittings shall be included in the unit rates for respective pipe sizes. The rates for flanges, and hardware like bolts, nuts, washers and gaskets shall be included in prices quoted for pipes, equipment, valves and specialties as applicable.
6. No separate prices are called for painting. Price for supply and application of painting shall be included in the unit prices for piping, valves and equipment, structural steel work as applicable.
7. For pipes, measurement shall be corner to corner after deducting length of valves, specialties, in-line instruments.
8. All charges for inspection, testing, radiography, dye penetrate testing, flushing, cleaning, hydro/air testing, purging with inert gases, commissioning, including consumables required for same shall be included in the unit rate for erection of piping/valves/equipment.
9. Minor civil works like wall opening, chipping of foundation, grouting of foundations shall be carried out at no extra cost.
10. The contractor shall supply and erect all required temporary pipes, fittings, flanges, valves and specialties and hangers and supports for testing and cleaning operations, as a part of the erection scope of contract for each of the systems listed above. The BIDDER shall consider this requirement while quoting unit prices for erection.
11. The construction of the fire protection system requires all contractors to adhere to good daily housekeeping practices. During construction the contractor shall every day, keep all work and storage areas used by them free from accumulation of waste materials. Scrap/ rubbish shall be removed from the site to the satisfaction of the client. The contractor shall maintain a crew to carry out this function without any additional payment.
12. The contractor shall prepare and submit to the Employer for approval, final piping bill of materials as actually erected for purpose of reconciliation.
13. The surplus material with the contractor for all materials brought by him shall be taken back by the contractor except surplus from those materials for which the Employer has given, in writing, clearance for procurement.
14. The Vendor shall ensure that other utilities/items and aesthetics are not damaged or disturbed due to the installation activities.
15. Caps over concealed sprinklers shall be fitted only after painting of ceiling (by others) is completed.

16. Sprinklers shall be masked off prior to painting. Any painted sprinkler or sprinkler coated with plaster of Paris is to be replaced by contractor at no cost to the Employer.
17. Method of Testing System: The following tests shall be carried out for ensuring that the system and various components meet the system specifications
18. To withstand min. hydro-test at the pressure 1.5 times Hydrant piping the max. working pressure i.e. $8.8 \times 1.5 = 13.2 \text{ kg/cm}^2 \text{ g}$ for two hours (as per clause no. 7.5.6 of TAC manual) Leak test: system to be tested at maximum operating pressure for functional test at operating pressure for 2 hours after fixing all components. Fire water pump Shall be capable of delivering not less than 150 % of rated capacity at a head of not less than 65 % of the rated head Diesel Engine Shall be capable of operating continuously on full load at the site elevation for a period of six hours. Wrapper coating on underground pipes Holiday testing Other components As per data sheet / requirements specified.

CODES AND STANDARDS;-

19. All equipment, systems and works covered under this specification shall comply with all currently applicable statutes, regulations, standards and safety codes in the locality where the equipment will be installed. All equipment and systems shall comply in all respects with requirements of codes and standards as indicated in data sheets of this specification.

20. Other national standards established to be equivalent or superior to the codes and standards specified are also acceptable. The bidder shall furnish English translation of all standards specified in this specification

21. In the event of any conflict between the codes and standards referred to in the specification and the requirements of this specification, the more stringent of this requirement shall govern.

22. All codes and standards referred to in this specification are latest editions of respective codes and standards.

MAINTENANCE REQUIREMENTS:-

23. In order to carry out preventive maintenance, it should be possible to readily disassemble, repair, and reassemble the equipment system in the shortest period and to attend to any defect by a minimum disassembly.

24. The bidder shall confirm that space shown for the equipment is adequate from point of view of access, easy maintenance and for day to day operation. a) All system must have convenient maintenance characteristics including b) Minimum disturbance to production during preventive maintenance. c) Easy access to replacement part which can be installed by personnel with minimum skill.

GUARANTEES AND PERFORMANCE REQUIREMENTS

25. The fire protection system shall perform satisfactorily to meet the guarantee requirements specified to the entire satisfaction of the Client / Engineer and statutory requirements.

26. NOISE AND VIBRATION

Amplitude of vibration at bearing of rotating equipment shall conform to ISO: 10816-1. b) Vibration isolators of proven design shall be furnished by the BIDDER for preventing the transmission of vibration from the equipment (fire water pumps, etc.) to the other neighboring equipment and structure.

PAINTING:-

27. Painting in the immediate vicinity of any electrical and rotating equipment and / or pipe in service shall not be performed without the prior written approval of the Employer for the specific structure, equipment, or pipe to be painted.

The contractors scaffolding shall be erected, maintained and dismantled without damage to structures, machinery, equipment or obstruction to work of other contractors.

28. All surfaces such as light gauge / glasses, required for clear visual observation shall be cleaned after paint application.

29. Special care shall be taken to avoid any paints from dropping on the machined moving parts of equipment, name plates or indicator dials of instruments and control valves. Prior to paint application or spraying paint removable adhesive tape shall be used to cover these.

30. On final completion of all work, the contractor shall leave the entire premises within the site of his operation clean and free from all rubbish resulting from his painting operation and shall remove any paint or other blemishes caused by him on adjacent walls, windows, equipment and finished surface.

31. All piping shall be painted after hydro test only

32. The iron and steel surfaces shall be thoroughly cleaned of all rust, scale, grease or oil by manual or power tools and then primer coat shall be applied.

33. The Employer reserves the right to inspect the cleaning down and painting operations at any stage and if required by Employer / Engineer unsatisfactory surface preparation or paint application shall be emended at contractors' expense.

34. On job site, no painting shall be carried out in a dust laden atmosphere or under unsuitable weather conditions viz. when raining or when metal surfaces are damp or when condensation is likely to affect the paint film before it is dry.

35. All the exposed surfaces of equipment and piping shall be painted with 1 coat of zinc chromate primer and 2 coats of synthetic enamel paint. Shade of finish paint shall be as per IS:5 shade 538. Minimum thickness (DFT) of paint shall be as under:- a. Primer - 1 coat of Zinc Chromate primer with minimum dry film thickness (DFT) 25 microns per coat. Finish - 2 coat of synthetic enamel paint with minimum dry film thickness (DFT) 25 microns per coat. Total DFT 50 microns minimum.

SYSTEM DESCRIPTION :-

Hydrant System The system shall be designed to operate automatically on operation of any of the hydrant valve(s). The system shall be always pressurized and will operate by a set of pumps and related instrumentation and controls. The operation of pumps shall be sequential. The jockey pump shall start and stop to maintain header pressure. In case of operation of hydrant(s), the jockey pump would be unable to maintain the pressure and the pressure drops further. At a lower predetermined pressure the motor driven pump starts. In case motor driven pump fails to start, the pressure continues falling. At a further lower predetermined pressure, the diesel engine driven standby pump shall operate. Stopping of hydrant system pumps shall be manual.

Sprinkler System :- The system shall be designed to operate automatically on breaking of any of the sprinkler bulbs. The operation of sprinklers in a particular zone would be indicated on the panel through instruments/appurtenance provided on the alarm valve. The system shall be always pressurised and will operate by a set of pumps and related instrumentation and controls. The operation of pumps shall be sequential. The jockey pump shall start and stop to maintain header pressure. In case of operation of sprinklers, the jockey pump would be unable to maintain the pressure and the pressure drops further. At a lower predetermined pressure the motor driven sprinkler system pump starts. In case motor driven pump fails to start, the pressure continues falling. At a further lower predetermined pressure, the diesel engine driven standby pump shall operate. Stopping of pump shall be manual.

Portable Fire Extinguishers Portable fire extinguishers for the proposed facilities are included in this package. Portable fire extinguishers shall be provided as per TAC. All the extinguishers should have ISI mark. Certificates to this effect shall be furnished by Contractor. Spare quantity of 10% of all types shall be provided.

Pumps shall be capable of furnishing not less than 150% of rated capacity at a head of not less than 65% of the rated head. The shut-off head shall not exceed 120% of rated head.

CODES AND STANDARDS

ANSI B16.1 : Cast Iron Valve Ratings

ASME B16.34 : Ratings of Valves-Flanged, Threaded and Welding Ends

API 594 : Wafer and Wafer - Lug Check Valves

API 600 : Steel Flanged and Butt Welding End Gate Valves

API 602 : Steel Gate Valves, Threaded and Socket Welding Ends

API 609 : Butterfly Valves

BS 1414 : Steel Gate Valves, Flanged and Butt Welding Ends

BS 1868 : Steel Check Valves, Flanged and Butt Welding Ends

BS 1873 : Steel Globe Valves, Flanged and Butt Welding Ends

BS 5156 : Diaphragm Valves

BS 5351 : Steel Ball Valves

BS 5352 : Steel Gate, Globe and Check Valves, 50 mm and Smaller

IS 778 : Bronze Valves

OTHER VALVES

Plug and ball - 150 mm and larger

Butterfly - 200 mm and larger

SPECIAL CONDITIONS FOR THE MAINTENANCE OF ALL MEP SYSTEMS:

Comprehensive Annual Maintenance of MEP Systems like Fire Fighting System/ Transformers/ Substations/ Generators/HT & LT Breakers & Panels/Lifts and HV AC and all ELV Systems for a period of 7 Years after completion of work including 2 Years Defects Liability Period (all New and Existing Facilities)

- 1) The period of contract is 7 years after completion of main work including Defect Liability Period of 2 Years.
- 2) The contractor has to implement the instructions issued by the Department officials from time to time and has to execute any specified work pertaining to keeping the Fire Fighting System/ Transformers/ Substations/ Generators/HT & LT Breakers & Panels/Lifts and HV AC Systems etc., in good working condition as required at site as per the instructions of the departmental authorities/user department.
- 3) The Comprehensive Annual Maintenance of the above MEP equipments and systems for 7 years, cover the following items of work:
 - a) **Fire Fighting Systems:** The job involves Maintenance of all Fire Fighting Systems including all internal and external hydrant systems, sprinkler and alarm systems, extinguishers in all buildings including maintenance of all fire pumps etc., including cost of all consumables, and periodical servicing and testing of all fire pumps and motors, strictly as per the service schedule/ program given by OEM and any other consumables including cost of replacement of all spares whatever required for all the equipments for effective and proper functioning of Fire Fighting Systems including refilling and reconditioning of all fire extinguishers, replacement of sprinkler quartz bulbs, all types of damaged valves, hose pipes etc., that are required at site as per site condition for 7 years as specified in the BOQ.
 - b) **Sub-station & Equipments and Electrical Installations:** The job involves maintenance all 33 KV or 11 KV HT & LT Panels, APFC and AMF Panels, DG synchronous Panels, 33 KV/433V or 11 KV/433V Transformers, all Diesel-Generator sets, Sub-station yard, earthing systems etc., in the Electrical Sub-Station for Hospital (ESS-1), Electrical Sub-Station for Medical College (ESS-2) and for Nursing College area like ESS-3, if existing separately as per site layout, including replacement of all spares and periodical cleaning, servicing and testing of all HT and LT breakers, transformers, generators etc., through manufacturer's authorised service personnel, strictly as per the service schedule/program given by the OEM and all repairs/ spares required for effective and proper functioning of the power system in the Building. The job also includes the cost of consumables required during servicing like transformer oil, generator engine oil, coolant oil, replacement of engine oil filters, distilled water etc., along with attending all internal electrical complaints and breakdowns inside the buildings for 7 years as specified in the BOQ.
 - c) **Diesel Generator Sets:** The job involves maintenance of all capacities of Diesel Generator sets, 625 KVA/500 KVA, 250 KVA, 125 KVA and 62.5 KVA, total number of Diesel Generator sets as existing at site, by authorised service personnel of the OEM including servicing, cleaning and testing of engine & alternator, AMF Panels and incidental repairs and attending all complaints/ service requests for 12 visits per each year for each DG set complete, including cost of all consumables like Engine Oil, Coolant Oil, Engine Oil Filters etc., as per manufacturers specifications and standards as

required at site during servicing and for ensuring uninterrupted functioning of the Generators for 7 years as specified in the BOQ.

- d) HVAC Systems:-** The job involves maintenance of all HV AC systems like Split Air-conditioners, VRV/VRF systems, Ductible AC systems, HV Ac in modular type Operation Theatres etc., in all Hospital buildings including IPD and OPD blocks, Medical College, Nursing College, all Hostels and all associated buildings in the campus including cost and supply of all type of spares including compressors/ electronic parts and all incidental repairs and gas fillings and all repairs and replacement of all spares whatever required in routine and periodical servicing of all HVAC systems like Split Air-conditioners, VRV/VRF systems, Ductible AC systems, HV Ac in modular type Operation Theatres etc., strictly as per the service schedule/ program given by the OEM, cleaning of all filters, equipments etc., for effective and proper functioning of the HVAC systems and attending all complaints for uninterrupted air-conditioning services for 7 years as specified in the BOQ.
- e) Lifts:-** The job involves maintenance of all Passenger/ Stretcher/ Bed Lifts in all Hospital buildings including IPD and OPD blocks, Medical College, Nursing College, all Hostels , Residential Quarter Blocks and all associated buildings in the campus covering cost and replacement of all spare parts including all batteries, all electronic components, any other spares etc., whatever required for maintaining the Lifts in running condition, attending all breakdowns, repairs and rectifications and periodical servicing of all the Lifts, strictly as per the service schedule/ program given by the Lift erector, for effective and proper functioning of the Lifts, including cost and conveyance of all materials and all labour charges etc., complete and attending all complaints for uninterrupted Lift services in the campus for 7 years as specified in the BOQ.

- 4) The contractor shall also be responsible for the safety of the tools and plants and all other equipments items and other property of the corporation/user department within the contract area.
- 5) All the tools, materials etc., required to carry out the above works are to be brought and minor repairs if any are to be attended by the contractor himself immediately.
- 6) If the contractor's maintenance is not satisfactory the Officer-in-charge will take action in getting the work done by the department and the cost incurred will be recovered from the maintenance payment or from the security deposit, as the case may be.
- 7) The contractor is liable for any obligation arising out of this contract in respect of labour engaged by him.
- 8) Any violation breach of terms and conditions of the contract including unsatisfactory maintenance of contract area shall render the contract liable to be terminated duly forfeiting the security deposit.
- 9) In the event of any statutory authority imposes any penalties like fines etc, and if the corporation is made a party in such penal action, the corporation has got the authority to keep such amount due to contractor like remuneration/security deposit .etc., with it until it is proved to the satisfaction of the corporation that such penal actions are ceased. Such actions may also be reason for termination of contract.

- 10) All the above terms and conditions will form part of the agreement of the contract and the contractor will be bound by the conditions in addition to any other conditions prescribed by the corporation.
- 11) The tenderer should visit the site and equip themselves to the conditions existing, restrictions in movement, working hours/security aspects, conditions of equipment to be maintained/operated before quoting for the job. No complaints of loss of labour, item of work not included in scope of work, variation etc., will be entertained at later date. The prospective tenderer should have adequate past experience in handling similar works (bidders should attach copies of works handled by them along with performance certificate).
- 12) The successful bidder has to undertake the job of maintenance and upkeep of Fire Fighting System as specified in the document.

General Conditions for Maintenance

- 1) The contractor shall strictly provide the qualified and experienced staff for maintaining the above equipments/services as per the site requirement as and when the complaint arises with sufficient materials/tools as per necessity.
- 2) The maintenance is to be carried out with least down time of the equipments. The user department/APMSIDC shall have the right to get the equipment maintained by other agencies/departmentally if in his opinion the same has not been/is not being carried out by the contractor on any day/during any time.
- 3) The work being urgent nature no notice is possible to be given before undertaking such maintenance through other agencies. Intimation will be given to the contractor as an alternative when alternative arrangements are made during emergency. The decision of user department/APMSIDC whether any situation warrants such an action and to be considered as emergency is final and binding on the contractor.
- 4) a) The work shall include maintenance and checks as per the standard maintenance practice or as specified in the schedule and the test shall be conducted in the presence of authorized department persons/user department/representatives of Concerned Executive Engineer and a certificate shall be obtained with relevant records. The following registers/records to be maintained in proforma approved by the dept. and preventive maintenance tests are to be conducted periodically as mentioned against each of them.
 - i. Register of Complaints throughout the period of 7 years.
 - ii. Register of cleaning/maintenance throughout the period of 7 years.
 - iii. Transformer/Generator/Lifts log book throughout period of 7 years.

All maintenance complaints are to be attended as immediately as possible within a maximum period of 12 hours of reporting.

- 4) The Agency has to attend any emergency break down or repairs with additional man power as and when required.
- 5) Authorized Representatives from Department: Concerned Executive Engineer / Dy. Executive Engineer (Electrical) is the authorized representative of APMSIDC.
- 6) Though the minimum number of persons is engaged as per conditions, the responsibility will rest with the contractor for effective maintenance of installations by engaging more number of persons if required, depending on the situation and emergency and type of complaint/breakdown/problem arrived at site.
- 7) The contractor shall employ qualified/trained persons for maintenance of the equipment.
- 8) In case of any accident during the maintenance of the equipment leading to injuries/damages to human bodies/equipment and or loss of life, the contractor shall be fully responsible for settling all claims arising out of such accidents and the contractor shall recoup the loss caused to the corporation to identify the corporation the loss if as due to such claims.
- 9) All the materials required for day to day maintenance are to be arranged by the contractor himself and a buffer quantity of spares of atleast 20% of the routine monthly requirement shall be maintained at site.
- 10) All general maintenance works are to be carried out on the Generator sets/transformers/HT & LT breakers/Lifts/HV AC systems etc., as per maintenance schedule by competent and authorized service engineer as per the manufacturers recommendations and standard practice.
- 11) In addition to the above necessary care and checks are to be carried out during maintenance of the Generator sets/transformers/HT & LT breakers/Lifts/HV AC systems etc., as per the instructions of representative of the Dept.
- 12) Safety- Necessary safety measures should be taken by the contractor for the safety of the staff working under him. The department will not take any responsibility for any unwanted incidents.
- 13) Laws covering the contract- the contract shall be in accordance to and subject to the laws of India and jurisdiction.
- 14) Penalty - Any damage caused to the equipment/fixtures/fittings due to negligence in maintenance by the contractor the representative of the department will have the right to recover such damages and further penalty will be levied.
- 15) On the expiry of the period of contract or its termination as the case may be, the contractor shall handover all the equipments supplied by the department if any to the unit officer concerned duly handing over the contract.
- 16) In the event of any statutory authority imposes any punishment like fine etc. and if the corporation is made a party in such panel actions the corporation has got the authority to keep such amount due to contractor like remuneration/security deposits

etc, with it until it is provided to the satisfaction of the Corporation that such penal action are ceased. Such action may also be reason for termination of contract.

- 17) The contractor should bring to the notice of concerned officer/ Authority before replacing any spares.
- 18) The contractor should repair or replace the items with in the Annual Maintenance amount and if the amount exceeds, the contractor shall take the permission from the concerned officers/ Authorities in case of Major work for obtaining Sanction and arranging payment to the agencies

NOTE: The spares required for above all installations for maintenance shall be supplied by the agency during defects liability period also.

SPECIFICATIONS FOR EQUIPMENT

ALFABED

Specifications:

1. System for active pressure relieving mattress for defense against pressure ulcers
2. Should have End flaps for secure fixing
3. Mattress should have minimum dimension of 185x75x7cm to fit almost any standard hospital bed
4. Mattress should be made of PU (Polyurethane) materials for durable and long lasting
5. Mattress should have Bubbled construction.
6. Mattress should be light weight and washable
7. Pump should be compact, and unobtrusive
8. Pump air flow shall be 4LPM
9. Cycle time of inflation & deflation should be 3/5 minutes
10. Pump should have visual low pressure indicator/alarm
11. Pump should have Manual pressure control
12. Mattress should support patients up to 100Kg
13. Pump should have Fold away hanging hooks or built in brackets for mounting easily to bed

Certificates: Notified CE/BIS/FDA and ISO 13485

ALGOMETER

Specification

To identify the pressure and/or force eliciting a pressure-pain threshold

1. Capacity 20Kg
2. Units Load Division Value Kg,N
3. Accuracy 200gm $\pm 0.5\%$ (or) lbs 0.01Kg $\pm 0.5\%$
4. Power requirement 220/230V AC 50Hz 110/120V AC 50-60Hz

Features

1. Should have High precision and resolution
2. Algometry PC Connectivity and software for analysis in case of digital models
3. Digital Timer: 999Min
4. Supplied with tip of 1cm sq. diameter
5. Set zero key
6. In built rechargeable battery for digital model

Accessories

1. Probe should be around 1.5 cm² with
2. Different level of pain threshold/pressure
3. Digital type sensor with 1 tip of 1cm sq.,
4. Carrying case RS232 Cord, CD for software RS232 to USB Converter

Certificates: Notified CE/BIS/FDA and ISO 13485

Desktop Computer	
1	Intel i-5 4th Gen or Higher or equivalent
2	Intel 8 Series (H81 Express) Chipset or Higher or equivalent
3	8GB DDR3 1333 MHZ or higher Memory expandable to 16 GB
4	Integrated HD Graphics Card
5	Gigabit 1TB SATA II HDD 7200 RPM or Higher with minimum 2 SATA connectors on Motherboard.
6	Min 2X USB 2.0, 1XVGA, 1X Head phone-out +Microphone in combo Jack, 1*RJ 45 Connector, Bluetooth 3.0, IEEE 802. 11b/g/n, Integrated Gigabit Ethernet LAN 10/100/1000.
7	21” all in one/ LED Screen, Pre-loaded original Windows 10 pro with MS Office (latest) and Antivirus
8	Equipment should be compile with RoHS/WEEWE requirements
9	or Higher version of above specifications
10	Warranty 3 years

AMBULATORY BLOOD PRESSURE MACHINE

Specifications

1. Measurement Method Oscillometric
2. Pressurization Internal Micro Pump
3. Display Range 0 - 320 mmHg
4. Measurement

Systolic 60 - 280 mmHg (min. division: 1 mmHg) Diastolic
40 - 160 mmHg (min. division: 1 mmHg) Pulse 30-200 bpm
(min. division: 1 bpm)

Pressure ± 3 mmHg or $\pm 2\%$ measurement, whichever is greater Accuracy
Pulse Rate $\pm 5\%$

5. Clock Display 24 hour (1997-2096 and auto leap year setting)
6. Memory Capacity 300 measurement maximum
7. Power Source Three AA Alkaline or NiCad (Batteries not included)

Temperature Operation & Humidity Range

Storage & Transportation 50°F to 104°F (10°C to 40°C), less than 85% RH
-4°F to 131°F (-20°C to 55°C), less than 95% RH Dimensions 2.8" W x
1.1" H x 3.9" D 72mm W x 27mm H x 100mm D Weight 0.5 lbs (215g)

Data Output RS-232C (direct)

Adult Cuffs, Left Arm (7.9" - 12.2" (20-31cm)) included

Large Cuffs, Left Arm (11" - 14.2" (28-36cm)) Optional

Cuffs Small Cuffs, Left Arm (5.9" - 8.7" (15-22cm)) Optional

Adult Cuffs, Right Arm (7.9" - 12.2" (20-31cm)) optional Large

Cuffs, Right Arm (11" - 14.2" (28-36cm)) Optional **Doctor Pro™**

Software

HARDWARE REQUIREMENTS CPU Intel 80486DX/ equivalent or higher

RAM 16MB Min.

Operating System Windows® 95, 98, 2000, ME, XP

SVGA (800 x 600 dots), 256 color or
Monitormore

Peripherals3.5"/1.44MB floppy disk drive

Hard Disk1.5MB Min

Serial PortStandard RS -232C port

Supported by Microsoft® Windows

Printer Operating System

Certificates: Notified CE/BIS/FDA and ISO 13485

ANAEROBIC APPARATUS

Specifications

Capacity: 12 liters total volume

Material of Construction: Transparent, unbreakable polycarbonate jars.

Unit: Jar should be provided with pressure -cum -vacuum gauge attached to the lid. Jar should be ideal for all strict anaerobic test conditions.

Lid should consist of O- ring gasket.

It should be provided with Petri dish (100mm diameter) holder/SS rack.

Certificates: Notified CE/BIS/FDA and ISO 13485

ANALYTICAL BALANCE UP TO200G

Specifications

1. Two Pan Laboratory Balance must be in Compliance to ISO GLP Standards
2. Pan shall be as per Standard of Weights and Measures General Rules, 1987
3. Performance Parameters
4. Type of Laboratory Balance Analytical
5. Sensitivity (mg) 0.1 mg
6. Type of Calibration Internal
7. Maximum Capacity of weighing (grams) 220g
8. Response Time in seconds 3 second
9. Shape of PAN Circular
10. Power Supply Single Phase

Dimensional Parameters

1. Case
2. Minimum Overall Diameter of Pan (mm) 75 millimeters
3. Material of Pointer, Leveling Arrangement, Yes
4. Pointer Scale, Rider Arrangement, Pointer Adjusting Screws and Stirrups must be as per Indian Standards 9440 latest

Additional Parameters

1. Availability of Permanent Shock Absorption facility Yes
2. Overload Protection Yes
3. Marking of Left and Right to PAN Yes
4. Packing of Balance should be inconvenient Yes
5. wooden case suitably padded and fitted with proper supports at various points
6. Printer and PC Connectivity Yes
7. Piece counting Features Yes
8. Totaling Yes
9. Check weighing yes
10. Operating temperature Range (-10 Degree to 50 Degree Celsius)

Certificates: Notified CE/BIS/FDA and ISO 13485

Anthropometric set

1. Anthropometric set including one folding metal rod up to 7ft,
2. Tosteometric boards-2
3. Craniometer-2
4. Mandibulometers-2
5. Two goniometers-2
6. Vernier calipers -1
7. Weighing Machine Dial Tye Human-1
8. Height measurement Scale-1

ANTIBIOTIC ZONESCALE

Specifications

Antibiotic Zone scale Antibiotic zone scale convenient means of accurate zone reading. It should measure zones in the range of 10 - 40 mm.

Should be able to measure accurate measurement of growth inhibition zone sizes of antimicrobial susceptibility test discs

Certificates: Notified CE/BIS/FDA and ISO 13485

APPARATICE FOE PASSIVEMOUMENT

Specification

1. Should provide anatomically correct alignment
2. Should give normal anatomical range of motion
3. Units should switch to the opposite direction when patient resistance increases the target set value
4. Should have storage card for storing programmed values
5. Facility to use right or left extremity with ease
6. Provision for elbow and hand CPM

Certificates: Notified CE/BIS/FDA and ISO 13485

ARTICULATED SKELETON SET

Description of Function

1.1 Mounted skeleton, one with the various parts connected in such a way as to demonstrate normal relationships and allow motion between components as in the living body.

2 Technical Specifications

The articulated skeleton should be ideal for teaching the basics of human anatomy.

i. Adult Male & Female - 10 sets each

ii. Old age Male & Female - 1 set each

iii. Adolescent Male & Female - 1 set each

iv. Child Male & Female - 1 set each

v. Paediatric Male & Female - 1 set each

It should be a real skeleton of a life-size human skeleton and should show all skeleton parts in high detail. All of the joints, sutures, fissures, foramina and processes should be portrayed with the most accuracy/intact.

Should be supplied with a castor roller stand per skeleton.

2.5. It should be neat and clean.

Should submit license for sale of human bones.

AUTOCLAVE Vertical Single Bin

Specification

1. Type Vertical, Top loading cylindrical Autoclave machine for steam and pressure sterilization
2. Sterilizer chamber capacity in L(usable volume) : 20 - 25 liter
3. Sterilizer Chamber Type : Circular
4. Sterilizer chamber material : double walled SS 304 or higher grade steel
5. Working Pressure of Chamber : 20 pound per square inch
6. Type of Sterilizer Chamber Door Heavy duty SS 304, hinged door
7. Sterilizer Chamber door Locking facility Foot operated locking and unlocking radial system
8. Sterilizer Chamber door Operation: Manual
9. Door sealing: By elastomeric rubber gasket suitable to withstand temperature up to 140 degree C & pressure up to 20-30psi
10. Type of control system available for Sterilizer cycle operation Microprocessor based temperature controller with control accuracy $\pm 1.0^{\circ}\text{C}$
11. Power supply: 230 ± 10 volt, 50Hz
12. Audio-visual Alarm facility available for notifying: Temperature sensor with range 100°C to 300°C , unit should be provided with a low water alarm system as well as steam release valves and safety valves
13. Working Temperature 125 degree Celsius
14. Resolution 0.1°C

Overall Size

1. Overall Height: 762 millimeter
2. Overall Diameter 610 millimeters

Accessories, Consumables

1. Water level indicator, Water inlet & outlet valves, Automatic pressure control switch, Mechanical timer, Manual Water Filling &
2. Removal, The unit having a wet heater fitted at the bottom and with capacity more than 4500 W with water capacity in liters more

Certificates: Notified CE/BIS/FDA and ISO 13485

AUTOMATED BLOOD CULTURE SYSTEM

Specification

1. The system should be a fully automated, walk away system capable of culture and detection of bacteria, fungi and mycobacterium from blood and sterile body fluids and mycobacterium from Sputum
2. Should have capacity to hold at least 120 bottles at a time – 60 for blood and (30-60) for mycobacterium. The capacity should be upgradable.
3. The system should continuously monitor the samples for growth and report it as and when it occurs.
4. The culture media provided should have sufficient mechanism to neutralize the inhibitory effect of antibiotics and other substances in blood.
 - a) Culture media should be available for detecting bacteria and fungi, including fastidious organisms.
5. The culture bottles should be unbreakable in normal conditions.
6. The culture system should be suitable for processing blood and sterile body fluids.
7. Should be capable of processing both adult and the pediatric samples
8. The system should be maintenance free without any need for regular calibrations, controls or standards run by the user.
9. The system should use leak proof and non-invasive system to avoid contamination of equipment and environment.
10. The culture bottles should have high stability and (4-6) month's shelf life.
11. The system should have all the facilities for data management and storage and quality control.
12. The system should be supplied in a complete system with all accessories, hardware like computer, printer etc and required software.
13. Any software or database updates should be done free of cost by the firm, during the life of equipment, as and when it is released by the manufacturer.
14. Required training, technical literature and support should be provided by the firm.

15. Any calibration, routine maintenance and replacement of the parts like sensors, lampsetcrequiredduringthewarrantyandAMCandwhichisnotcoveredbythe same, should be declared and the respective costsquoted.

Mycobacterium Culture System

1. The mycobacterial culture system may be part of blood culture system or a standalone equipment, fully automate orsemi-automated.
2. Shouldhavetheabilitytoprocessatleast50samplespermonthusingthe standardprotocols
3. Culturemediaforspecificdetectionofmycobacteriumfromvariousspecimens like sputum, csf, urine etc should beavailable.
4. Thesystemshoulduseleakproofandnoninvasivesystemtoavoid contamination of equipment andenvironment.
5. The culture bottles should have high stability and (4-6) months shelflife.
6. Anysoftwareordatabaseupdateshouldbedonefreeofcostbythefirm,during the life of the equipment, as and when it is released by themanufacturer.
7. Required training and technical literature and the support should be provided by thefirm.
8. Any calibration, routine ,maintenance and replacement of parts like sensor, lampsetc,requiredduringtheperiodofwarrantyandAMC,andwhichisnot covered by the same, should be declared by the respective costquoted.

Microbial Identification and Susceptibility Testing System

1. The system should be fully automated, walk away system for identification and antibiotic susceptibility testing for bacterial isolates. Including automated filling of cards/ test system/dispensing.
2. The system should be capable of simultaneous testing of minimum of 50 samples, (25 identification and 25 antibiotic susceptibilitytesting).
3. ShouldabletoidentifyGrampositivebacteria,Gramnegativebacteriaandyeast likeorganisms.
4. The system should be capable of identifying and testing antimicrobial susceptibilityforfastidiousorganismslikeH.influenza,N.meningitidisetc.

5. The system should be able to detect antibiotic resistant organism like MRSA, VRE, HLAR, VRSA, B-lactamase and ESBL production.
6. It should be an intelligent system and should give alert for any unusual antimicrobial resistance.
7. The system should have barcode scanning system for Easy management of samples and which capable of testing for antimicrobial susceptibility of yeast and yeast like organisms
8. The system should be maintenance free without any need for regular calibrations, controls or standards run by the user.
9. The system should use leak proof and non-invasive system to avoid contamination of equipment and the environment.
10. The identification system should complete in itself without the need of an additional test done manually.
11. The system should have panels for identification alone or antibiotic susceptibility alone.
12. The Reagents/Strips should have high stability and (4-6) months shelf life
13. The system should have facilities for data management and storage and quality control.
14. The system should be supplied in a complete system with all accessories, hardware's like computer, printer etc and the required software.
15. The system should have expert software for analyzing the raw data and provide detailed interpretive results.
16. Any software or database updates should be done free of cost by the firm, during the life of the equipment, as and when it is released by the manufacturer
17. Certificates: Notified CE/BIS/FDA and ISO13485

AUTOMATED ROTARY MICROTOME

Specifications

1. A state-of-the-art fully motorized heavy-duty automated microtome: Single stroke, continuous stroke, rocking stroke and programmed mode for the sectioning of soft, hard, paraffin and resin embedded blocks.
2. Section thickness ranges should be between 0.25 to 100 μm with increments in the range of 0.5 μm , 1 μm , 5 μm with LED display.
3. Trim thickness ranges should be 1-600 μm with 1 μm , 2 μm , 5 μm and 10 μm increments, respectively with LED display.
4. Vertical stroke 70-80mm. Specimen advance 30-35mm.
5. Section counter, knife angle position locator and specimen orientation light facility should be there.
6. Emergency stopping facility and lockable hand wheel should be present.
7. It should have option of foot pedal operation and emergency stop button in automated mode.
8. Automatic object return to starting point and connection for backlighting with cold light source.
9. Directional specimen holder fixture with quick clamping system, standard clamp and universal cassette clamp.
10. Round specimen holder with all accessories.
11. Should have spacious, removable section waste tray with integrated arm rest.
12. Universal knife holder base, disposable blade holder, disposable blades, stereo zoom microscope attachment for glass knife sectioning with cold light source using gooseneck. Glass knife maker, Glass knife holder. Glass knife box, high quality glass strips for making glass knife (~30 pcs). Glass knife maker and its accessories should complete the whole system from breaking to making of glass knife ready to use. The vendor should make sure that the glass knife holder of microtome accepts this glass for sectioning. The specimen holder of microtome should be capable of holding resin blocks for sectioning.
13. Instruments should be capable of making semi-thin section of resin embedded sections with the help of glass knife.
14. Instrument should have an operating voltage suitable for Indian plugs.
15. High profile disposable blade pack as well as low profile disposable blade pack, each.
16. Five years of warranty and validation of instrument should be done every six months.
17. One branded vacuum pump; Gast Vacuum/pressure diaphragm pump with gauges, regulators, and relief valve, single head, 1.0 cfm, 220/240 VAC.

18. Desiccator SCHOTT DURAN DN300, Outlet in Lid with Stopcock, flat flanges, NOVUS junction and porcelain plate should be quoted with the system.
19. One UVP make hybridization oven HB-1000 with orbital tray and rocker tray with stacking kit for UVP HB-2000.
20. Standard flat embedding mold made up of silicone at least twenty, with 21 numbered cavities measures: 14mm(L)x5mm(W)x3mm(D). Should be reusable and must withstand 65°C temperature.
21. Slide warmer hot plate with digital temperature display and control.
22. A vibration free table to accommodate the instrument.
23. Dumont precision tweezers made of titanium, Type 5, six in numbers, (thickness of tip 0.01mm, width of tip 0.05mm and length 110mm), Type 3, six in numbers, (thickness of tip 0.1mm, width of tip 0.17mm and length 120mm).
24. Price of individual components should clearly be specified in the standard and optional format in the quote. The bidder should justify each specification point by point in their order of requirement and should provide the evidence for the same in the technical brochures of the instrument with page number. Photocopied catalogues will not be considered for technical specification evaluation. Quotation not done in the proper form may invite technical rejection and will be technically disqualified.
- 25.** The microtome system has to be quoted with all other accessories, such as stabilizer if required, power chords, 4 extra lamps for stereozoom microscope, since these accessories are required for effective use of this system. Quotation missing any of the above mentioned items or their parts would be disqualified straightway. **Certificates: Notified CE/BIS/FDA and ISO13485**

AUTOPSYTABLE

Specifications

1. Electro Hydraulic AutopsyTable
2. Constructiontype304Stainlesssteelwithlargeradiusinsidecornersforeasy clean-up
3. Mounted on central supportcolumn
4. Remote controlled 2 button height adjustable system from 750 mm to 1000mm
5. Double bowlsink
6. Regulated sprinkler system for table surface, ensures continuousself-cleaning.
7. “Reverse-flow” Hydro aspirator with build in vacuumbreaker.
8. Splash roof electrical outletsprovided.
9. 4 piece perforated body support gridplates.
10. Handshower.
11. Down-draft ventilation cone system incorporated for minimization of odors if attached to external ventilationsource.
12. Access door for centralcolumn.
13. Wooden headrest.
14. Wrist operated stainless steel faucet with hot and cold flow controlvalves.
15. Optional hands free flow device can be attached to thefaucet.
16. Plumbing provision for usage of the hot &coldwater.
17. Table length 104” width 30” approx. Engraved management scale on one side for easy measurement ofcadaver.
18. Manufacturedwithoutrivets,boltsorotherdevicesontheworksurfacesothatit remains smooth and prevents cumulation ofbacteria.

ORGAN WEIGHING SCALE

Specifications :

1. Capacity: 0-15kg,
2. Resolution: 10Grams,
3. ABS Bowl (as per Weights & Measures Rule).
4. Model approval certificate from Director (Legal Metrology),
5. Department of Consumer Affairs,
6. ISI marked duly certified and stamped by Weight and Measures Department and conforming to IS: 9281(pt-1&2)/1979, IS:9281 (pt-3) / 1981 and IS:9281 (pt 4)/1983 (reaffirmed 2006) and
7. suitable for operation on 230(Volts, 50Hz single phase AC with min. 1.5mtr mains cord. Operating temp. 0-50 deg. Centigrade. ISO Certified. In case of distributor, they must have dealership & repairing license issued by Legal Metrology Department, Government. of Andhra Pradesh.
8. Accuracy (+/-2gm)
9. Should have digital display with rechargeable battery
10. Plat form size is made ss304 grade which is easy to clean

Certificates: Notified CE/BIS/FDA and ISO 13485

BALANCE ELECTRICALDIGITAL

Specifications

1. Two Pan Laboratory Balance must be in Compliance to ISO GLP Standards
2. Pan shall be as per Standard of Weights and Measures General Rules, 1987
3. Type of Laboratory Balance Analytical
4. Sensitivity (mg) 0.1 mg
5. Type of Calibration Internal
6. Maximum Capacity of weighing (grams) 220g
7. Response Time in seconds 2 second
8. Shape of PAN Circular
9. Power Supply Single Phase
10. Dimensional Parameters
11. Material for Case GLASS
12. Minimum Overall Diameter of Pan (mm) 90 millimeters
13. Material of Pointer, Leveling Arrangement,
14. Pointer Scale, Rider Arrangement, Pointer
15. Adjusting Screws and Stirrups must be as per
16. Indian Standards 9440 latest
17. Additional Parameters
 1. Tare Facility
 2. Availability of Permanent Shock Absorption Facility
 3. Overload Protection
 4. Marking of Left and Right to PAN
 5. Packing of Balance should be in convenient wooden case suitably padded and fitted with Proper supports at various points
 6. Printer and PC Connectivity
 7. If Printer and PC connectivity is YES mode of
 8. Piece counting Features
 9. Totaling
 10. Check Weighing
 11. Operating temperature Range (-10 Degree to 50 Degree Celsius)

Certificates: Notified CE/BIS/FDA and ISO 13485

BALANCE FOR WEIGHT FOER FOODSTUFF

Specifications

1. Type of Electronic Weighing Machine	electronic weighingscale
2. Rated Load/Capacity(kg)	2 kg
3. Resolution(gms)	200mg
4. Classtype	Class-III
5. Display	led
6. NumberofDisplay	Double
7. Speedofmeasurement	5 second
8. Internalcalibration	
9. Number ofscaledivision	0.2 g
10. Tareprovision	Manual
11. PowerRequirement	mains operated batteryoperated
12. PowerSupply	Single Phase
13. DC Operating voltageinVolts	6Volt
14. BatteryBackup	Yes
15. Backuptime(hour)	10
16. Batterytype	rechargeable
17. Batteryrating	6 Volts
18. Type ofSensingElement	Load Cell
19. Number of loadcell/EMFC	1
20. ClassofProtection	IP 65

DIMENSIONAL & MATERIAL PARAMETERS

1. Materialofplatform	Stainless Steel	
2. Pan/PlatformShape	rectangular	
3. Pan/PlatformSize	170 x 220 mm	
4. Dimensions ofweighingmachine	305 x 235x110	in mm x mm xmm
5. Weight ofWeighingMachine	10 kilogram	

ADDITIONAL FEATURES

1. Overchargingprotection	
2. OperatingTemperatureRange	25 Celsius
3. RelativeHumidity	50%
4. Dust ProofCover	

Certificates: Notified CE/BIS/FDA and ISO 13485

Chemical Single Pan DigitalBalance

Specification:

Range: 0.1mg to 220 gm Repeatability:

0.1 mg Display: colored touchscreen

Calibration: Iso cal-fully automatic

Voltage: 100-240 V, 50-60 Hz Weighing pan diameter: 90 mm Housing protection:

Chemically cleanable housing cover.

Certificates: Notified CE/BIS/FDA and ISO 13485

BALANCE CHEMICALWEIGHT

Specification

1. TwoPanLaboratoryBalancemustbeinCompliancetoISOGLPStandards
2. PanshallbeasperStandardofWeightsandMeasuresGeneralRules,1987
3. PerformanceParameters
4. Type ofLaboratoryBalance Physical
5. Sensitivity(mg) 0.1 mg
6. TypeofCalibration External
7. Maximum Capacity ofweighing(grams) 100g
8. Response Timeinseconds 3 second
9. ShapeofPAN Circular
10. PowerSupply Single Phase

Dimensional Parameters

1. MaterialforCase Material for Case
2. Minimum Overall Diameter of Pan (mm) 75millimeter
3. Material of Pointer, Leveling Arrangement,Pointer Scale , Rider Arrangement , Pointer
Adjusting Screws and Stirrups must be as per Indian Standards 9440 latest

Additional Parameters

1. TareFacility No
2. Availability of Permanent Shock Absorption FacilityYes
3. OverloadProtection Yes
4. Marking of Left and RighttoPAN Yes
5. Packing of Balance should beinconvenient Yes
6. wooden case suitably padded and fitted with proper supports at variouspoints
7. Printer andPCConnectivity No
8. if Printer and PC connectivity is Yesmodeof N/A
9. Connectivity (USB or RS232)otherwiseput NA
10. PiececountingFeatures No
11. Totaling No
12. CheckWeighing No
13. Operating temperature Range (-10 Degree to 50 DegreeCelsius)

Certificates: Notified CE/BIS/FDA and ISO 13485

BALANCE CHEMICALWEIGHT

Specification

1. TwoPanLaboratoryBalancemustbeinCompliancetoISOGLPStandards
2. PanshallbeasperStandardofWeightsandMeasuresGeneralRules,1987
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9. Connectivity (USB or RS232)otherwiseput NA
10. PiececountingFeatures No
11. Totaling No
12. CheckWeighing No
13. Operating temperature Range (-10 Degree to 50 DegreeCelsius)

Certificates: Notified CE/BIS/FDA and ISO 13485

Basal Metabolism Apparatus

1. Spirometer has a 4 speed electrical recording unit with gravity writing ink.
2. Valves are easily accessible, soda lime chamber with screw connection in the centre chamber, drain to all the tubes and container.
3. Sampling cock for connecting the patient to spirometer or atmosphere.
4. The unit is fitted on portable frame, complete with valves, tube, mouthpiece, nose clip, ink writing well and 50 charts

Unit designed to dispense a mixture of gases and vapors and vary the proportions to control a patient's level of consciousness during surgical procedures.

B1. Technical Requirements

Anesthesia machine with vaporizer and circle absorber as follows:

A. Basic Machine

1. Compact and modular, three gas (Oxygen, Nitrous oxide and Air) anaesthesia machine for both adults and infants.
2. Machine should be suitable for low and minimum flow anaesthesia application with compliance compensation of breathing circuit, fresh gas flow compensation/decoupling
3. Separate provisions for connecting central pipeline supply and cylinders, each provision with pressure indicating gauges for all gas inlets (Oxygen, Nitrous oxide and Air) on the front panel
4. Pin index yokes for connecting Oxygen and Nitrous oxide cylinders with sliding stainless steel clamping bars.
5. Regulators each for Oxygen and Nitrous oxide with output pressure 4.22 kg/sq.cm
6. Diaphragm in the regulator should be made of Teflon or steel.
7. Nitrous oxide regulator should be activated only when minimum oxygen on flow i.e. 25% oxygen delivery at all times to avoid delivery of hypoxic mixture by mechanically or pneumatically linking Oxygen and Nitrous oxide.
8. Should have anti-hypoxic guard i.e. Nitrous oxide supply should cut off if Oxygen supply fails
9. Should have precisely calibrated 5 tube cascade flow meters for Oxygen, N₂O and air
10. Should have guarded colour coated flow control knob to prevent accidental operation
11. Should be provided with separate auxiliary Oxygen flow meter for delivery of oxygen up to 12 liter/minute
12. Should have provision to mount any two user selectable vaporizer with interlocking facility for allowing the user to use only one vaporizer at a time

13. Should have Emergency Oxygen flush
14. Should have audible alarm for warning Oxygen failure
15. Should have pressure relief valve, with auto-reset feature, non-return valves and oxygen flush switch
16. Should have single system control switch for convenience
17. Machines should be supplied with one oxygen cylinder and one nitrous oxide cylinder each 5 liter capacity with pin index valves.

B. Vaporizer

1. Should have one Selecta Tect type temperature and Back-pressure compensated vaporizers
2. Machine should be supplied with maintenance free Sevoflurane vaporizer
3. Should have agent capacity of more than 225ml
4. Vaporizer should be of light weight design
5. Should be suitable for calibration facility for low flow applications

C. Absorber

1. Quick release soda lime canisters should be double chambered with capacity of more than 1.5 kilogram
2. Should have change over from open circuit to closed circuit and vice versa
3. Should be fully Autoclavable
4. Should have manometer for measuring circuit pressure
5. Should have inbuilt bag vent switch and Adjustable Pressure Limiting Valve (APL valve)

D. Gas Cylinders

1. Medical grade Oxygen gas cylinder of 5 liters water capacity with pin index valve should be provided
2. Medical grade Nitrous Oxide cylinder of 5 liters water capacity with pin index valve should be provided

B2. Physical Requirements

1. Should be made of 304 grade stainless steel framework with shelf and drawer.
2. Portable with large antistatic sturdy castor wheels fitted with brakes.

B3. Utility Requirements

Unit should have provisions for working through both central gas pipe line and cylinders

B4.Environment conditions

1. Equipments should be suitable for operation in temperature from 10°C to 45°C with a relative humidity of 100%

2. Equipment offered shall be adequately protected against and be able to withstand prevailing climate of Andhra Pradesh during storage and transportation

C. Safety & Standards (Relevant copies should be submitted with the technical bid)

1. ISO certification for medical devices- quality management systems for the manufacturer and bidder.

2. ISO certification for medical devices-good manufacturing practices for the manufacturer

3. Should meet IEC/ BIS or equivalent standard for General Requirements of safety of the product

4. Should conform to BIS/EUMDD/European CE or USFDA with necessary marking on the product.

D. Scope of supply for each consignee

1. Anaesthesia Machine

2. Vaporizer

3. Absorber

4. Standard breathing circuit-2

5. Reservoir bag of 2 liter capacity-2

6. Connector for breathing circuit-5

7. Ambu bag-1

8. Oxygen cylinder-1

9. Nitrous oxide cylinder-1

10. Pressure regulated valve with 5 meter hose and connector (conversion kit) for oxygen- 1 set

11. Driver gas hoses with necessary attachments (colour coded) – 1 set

12. User manual with basic troubleshooting guide and first line maintenance

instructions, English

13. Checklist with procedure for routine maintenance
14. List of important spare and accessories
15. List of important spare and accessories
16. Copy of Quality Check clearance report for the product
17. Contact details of service agency authorized by the supplier for the product
18. Installation, Safety and operation checks before handover by the supplier, completion to be affirmed by the end user.
19. Back to back warranty to be taken by the supplier from the principle to supply spares for a minimum period 7 years.

BICYCLE ERGOMETER

Specifications

1. Be capable of the online measurement of VO_2 , VCO_2 , RER, VEO_2 , $VECO_2$, $PETO_2$, $PETCO_2$, VE, VT, BF, BR, SpO_2 etc.
2. Accompany Polar belt for determination of HR, HRR, O_2 Pulse.
3. Be capable of Real-time telemetric monitoring and data storage to internal SD memory card which can be used for offline analysis.
4. Be able to determine dynamic Flow-Volume loop at rest and during exercise including superimposition, modification and determination of EELV and/or IC.
5. Be able to Calculate of Cardiac Output and
6. Be able to measure SpO_2
7. Accompany Automatic or semi-automatic Interpretation program based on the decision tree system according to Wasserman.
8. Give Breath-by-Breath measurement
9. Have Automatic volume and gas calibration
10. have Ambient module for temperature and pressure
11. have Intra-breath measurement for dynamic Flow-Volume Loop
12. determine the Basal Metabolic Rate and exercise-dependent Energy Expenditure (EE) including a differentiation between carbohydrates, fats and proteins for perfect training control and effective weight loss analysis.
13. have Pulse oximeter with finger and earclip
14. have provision for External data entry of blood gases/lactate and $AaDO_2$ calculation
15. be able to provide Training and nutrition reports
16. Be equipped with the Interpretation program IntelliSupport
17. Have Automatic ergometer control
18. Have analysis software with facility to generate report
19. Provide digital output of data recorded to be used to synchronize with other recorded physiological parameters on other acquisition systems

20. Incorporate Precision Triple V Digital Volume Transducer with very low Resistance to air flow and should be insensitive both to water vapor and breathing gas concentrations.

a. Volume Range : 0-10 L b. Volume Resolution : 3mL c. Flow Range : 0 to 15 L/Sec d.

Accuracy : +/- 2% e. Dead space : 30mL f. Ventilation Range 0-300 Liters/min g. Resistance: f. Range : 0-25% g. T90 Time : 80 ms h.

21. Accuracy :0.05%

22. Be supplied with Handy trolley for transportation

23. be compact and lightweight design, the unit which is comprised of a belt, a mask and batteries not weighing more than 950g.

24. Be able to safely store acquired data to a tiny memory card and transmit the data to a Personal Computer or a Notebook Computer up to 1000 meters away.

25. Have Automated program sequences can be controlled by a single key, allowing you to concentrate on your patient rather than on the computer monitors.

26. have Extensive program for comments and interpretation with template manager

27. have Comprehensive Protocol Editor program for creating individual ramp, step and weight dependent protocols

28. Have Report Designer program for customized reports including export to excel format

29. Accompany Software should support Windows 7/8/10, using smart tools to automate pretest and in-test technical functions and allows more focus to be placed on the patient and not on using the product. The CPT software to show the most important CPET curves and parameters with their reference values all on one screen.

30. be supplied with standard accessories and additional accessories (CPET mask all sizes, tube sample line, disposable electrodes), battery Pack and memory Card, Telemetry Unit, computer interface, Software and Manual.

31. The Mobile CPX System should be supplied with Programmable Cycle Ergometer a. Load Range 20-999 Watts, Load adjustable in Steps as well b. as RAMP Fashion (Speed Independent), c. Speed Range : 30 – 130rpm. d. Handle & Seat height adjustable, e. User definable as well as pre programmed Protocols. f. Facility for manual Workload adjustment.

32. Be supplied with COMPUTER, PRINTER & GAS MIXTURE FOR Mobile CARDIO PULMONARY EXERCISE TEST SYSTEM : a. Branded Computer for online transfer and evaluation of test data. b. Core i7 Processor, 4 GB RAM, 15.5" TFT, USB Ports, 1 TBHardDiskDrive.c.HPDeskjetPrinter.CalibrationGasMixtureCylinder(15%O2, +/- 5% CO2 + Bal. N2) - 1 No.

Certificates: Notified CE/BIS/FDA and ISO 13485

BINOCULAR MICROSCOPE

SPECIFICATIONS

1. Body-Inter changeable, inclined Binocular body, 360° rotatable head
2. Eyepieces-Highest quality 10 X wide angle anti fungus field eyepiece.
3. Objectives-Par focal, antifungals coated 4x, 10x, 40x and 100x (oil immersion) with plan achromatic correction
4. Optical system-Infinity corrected
5. Stage --Horizontal mechanical stage preferably 100 x 140 mm with fine Vernier graduations designed with convenient coaxial adjustment for slide manipulation preferably through 30 x 70mm
6. Sub stage-Abbe condenser focusable, continuously variable iris diaphragm
7. Illuminator-Built-in LED light source with white light.
8. Finish-A durable textured acid resistant finish.
9. Other Features
 - Should provide with wooden storage box, dust cover, immersion oil.
 - Electrical safety certification
 - Should work with input 200 to 240Vac 50 Hz supply.

Certificates: Notified CE/BIS/FDA and ISO 13485

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Certificates: Notified CE/BIS/FDA and ISO 13485

BIPAP

Specifications

1. Should be a handy and portable, lightweight device for providing NIV for patients
2. Should essentially have the following modes - BIPAP, Auto CPAP & CPAP (Spontaneous) should incorporate latest algorithms for leak compensation and synchronization.
3. Should have a display for real time monitoring of tidal volume, respiratory rate, I: E ratio, Delivered

IPAP and EPAP

4. Should include user adjustable alarms and essential non adjustable fixed alarms for patients safety
5. Should include alarms for leak, apnea, patient circuit disconnection, low internal battery etc.
6. Should be able to provide adequate pressure ranges for IPAP, EPAP for patients (kindly mention the pressure ranges for IPAP, EPAP that can be delivered by the machine)
7. Should have provision for inspiratory and expiratory trigger sensitivity adjustment
8. Should have provision for inspiratory and expiratory slope adjustments
9. Should have built in internal battery for 8 hrs of back up at a minimum 10 mbar pressure

Accessories to be supplied

Patient Circuit – 3 Nos, NIV mask (Adult and Paediatrics sizes) – 3 Nos each

10. Warranty and Cost of Spares and Consumable
11. The Rates for AMC (which includes labor) per unit per year from 4th year to 8th year has to
12. Mentioned along with quotation and the AMC proposal should be submitted at least 6 months before

Certificates: Notified CE/BIS/FDA and ISO 13485

Miscellaneous Parameters

1. User/Technical/Maintenance manuals to be supplied in English in hard and soft copy
2. Installation, Demonstration and training to be provided at consignee end
3. The Principal Manufacturer Must Have **Certificates: Notified CE/BIS/FDA and ISO13485**

BODINCUBATOR

SPECIFICATION

1. Capacity: 170 liters or higher
2. Temp setting range: -10°C to +60°C
3. Microprocessor control with digital display
4. No of shelves-4
5. Insulation should be CFC –free, foamed polyurethane
6. Voltage 230 to 240V
7. Temperature Uniformity ± 0.6 to 1.0°C , Homogenous temperature control
8. Door key lock protection
9. Air exchange rates and air flap position electronically controllable
10. Controls for temperature set point selection
11. Forced –air circulation to attain temperature stability and temperature uniformity
12. Safety thermostat backups
13. High precision and frost-free system
14. Good ergonomic design with space saving features
15. Safety relay and alarm LED alert to over/under temperature conditions
16. High–quality, corrosion-resistant and easily cleanable stainless steel (SS.304) for the working chamber and housing.

Certificates: Notified CE/BIS/FDA and ISO 13485

BOILING WATERBATH

Specification

Water Bath Chamber Dimensions, Capacity And Construction

1. Chamber Length of offered product: 355 inch
2. Chamber Width of offered product: 300 millimeter
3. Chamber Depth of offered product: 165 millimeter
4. Water bath Chamber Capacity: 2 to 4 liter
5. Chamber Construction: Double walled rectangular chamber with mineral wool/solid insulation material lining in between
6. Material of inner Chamber and lid: Stainless Steel (SS304)

Construction:

1. Material of Outer Chamber Construction: Epoxy coated/Powder coated mild steel
2. Weight(kg): 8
3. Number of racks provided with Water bath Unit: 0
4. Number of 75 mm diameter Holes provided: 0

Heating Arrangement Parameters

1. Heat source: Heating shall be done by a immersion heater.
2. Heating Capacity(>=): 800 Watt

Control Panel And Display Unit

1. Control Panel has: ON/Off Switch, Temperature controller
2. Type of Temperature controller: Digital controller cum Indicator PID Based control
3. Water bath Display type: LED
4. Integrated circulation pump for temperature Homogeneity: Yes

Water Bath Temperature

- Temperature range of bath chamber: 5°C above ambient to 95°C
- Temperature control sensitivity: ±0.1°C or better
- Least temperature increment Step available: 1 degree C
- Temperature Accuracy: ±1°C or better

Safety Features:

Over temperature Alarm & cut

Power Requirement,

Power requirement:

220 V 50 Hz Single Phase AC

Government/NABL/ILAC accredited lab to prove

conformity to specification

Cover

Lid/cover provided

yes

Shape of Cover

Gable

Timer Unit

Timer Provided

Yes

Timer setting (minimum increment step)

0 second

Miscellaneous Features

Drain plug in Chamber provided

Yes

Data Logging facility through (RS-232/USB/HDMI/Bluetooth etc) to computer Available:

Steel holder for tubes and flasks provided:

Yes

Drain screw for emptying of water bath

Yes

Seamless and waterproof keypad

Yes

Certificates: Notified CE/BIS/FDA and ISO 13485

BonesDisarticulatedSet

Dis-articulated Bone Set:

Original individual disarticulated human bone Sets

BP APPARATUS(ANERIOD)

Specifications:

1. Corrosion resistant shock proofbody
2. Dial with contrast colors for easyreading
3. Range up to 300 mm ofHg
4. Should be supplied with Adult and pediatriccuffs
5. BPcuff:
 - a. Smalladult
 - b. Adult
 - c. Pediatriccuff
 - d. Thigh
 - e. Velcro bag for thebladder
 - f. Chrome plated metal/ stainless steel pressure controlvalve
 - g. Bulb, tubing's and bladder made ofrubber

Certificates: Notified CE/BIS/FDA and ISO 13485

BP Apparatus Digital

Specification:

1. Digital Blood Pressure recording unit
2. Automated measuring device
3. Oscillometric measurement Method
4. LCD Display (Liquid Crystal Digital)
5. Range: Pressure measurement (mmHg) 0 to 300
6. Range: Pulse measurement for digital with accuracy & plums; 5%. (per minute) 40 to 200
7. Accuracy: Pressure measurement (mmHg) +/- 3
8. Pressure Detection Capacitive Pressure sensor
9. Inflation Automatic Pressure Application by pump
10. Deflation and rapid Air Release Automatic Pressure Release Valve
11. Cuff Range Small (18-22) cm
12. Dimensions of the Equipment (mm X mm) 107 x 79
13. Dimensions of the Display screen (mm X mm) 79 x 85
14. Operating Temperature range 0 to 55 degree Celsius
15. Storage Temperature range (-10) to 55 degree Celsius
16. Automatic power off if system is idle for 3 minutes.
17. Test Report covering complete test parameters as per IS 3390 latest for Mercurial and IS 7652 latest for Aneroid type, from any ILAC/NABL accredited/Central Gov LAB For digital type including Environmental test from any ILAC/NABL accredited/Central Gov LAB

Certificates: Notified CE/BIS/FDA and ISO 13485

BubbleCPAP

Specification:

1. Non invasive resp. support (CPAP) for Newborn infant
2. CPAP units deliver air or a mixture of air and oxygen (O₂) at high flow rates
through tubing to an nasal or oral-nasal mask which is affixed to the patient's face
3. Type of delivery system: Under water bubble system
4. CPAP volume 1 to 10 cmH₂O
5. Increments of variations in CPAP 1 cm
6. Air oxygen blender Inbuilt
7. FiO₂ with tolerance (+/- 2 %) 21% to 100% (+/- 2 %)
8. Flow range 0 -15L/min
9. Humidifier Heated wire servo controlled humidifier
10. Display of temperature Near patient end of the circuit
11. Reusable water chamber
12. Heated wire silicone tubing circuit for infant/Newborn
13. Machines should be able to deliver CPAP using available patient interfaces nasal prongs
/nasopharyngeal prongs
14. Pressure release valve 15 cmH₂O to 17 cmH₂O
15. Weight in kg 6
16. Noise level in dB 50
17. Audio alarm
18. Alarm sound level in dB 65
19. Patient Interface Nasal Prongs
20. Air and O₂ hose length > 3m

Certificates: Notified CE/BIS/FDA and ISO 13485

CENTRIFUGE

Specifications

1. Speed Range 500 to 4500 rpm on load with variable speedregulator.
2. Itshouldbefittedwithdigitaltimer0-59minutesanddigitalspeedindicator;
LED/LCDdisplay
3. The machine should be supplied with swing/angle rotor head having 16 tubes of 5to10mlcapacity.Itshouldbesuppliedwithstainlesssteeltubecarrier,rubber cushions.
4. The lid should be double walled, made of steel sheet/ABS plastic moulding for extrasafety.
5. tshouldalsobefittedwithelectroniclidlockwhichshouldnotopenwhen machine is in runningcondition.
6. The Motor of machine should be fitted with anti vibrationpads.
7. Can accommodate 16/24 tubes at a time.
8. Noise factor should not exceed 60decibels.
9. input voltage 220/240V 50Hz, 1/8 HP Motor of 220VAC
10. Capable of operating continuously in ambient temperature of 10 to 40 deg C and relative humidity of 15 to90%
11. Unit should be BIS/US FDA/ Notified CEcertified.
12. Manufacture should be ISO 13485certified.

Chemical Single Pan DigitalBalance

Specification:

Range: 0.1mg to 220 gm Repeatability:

0.1 mg Display: colored touchscreen

Calibration: Iso cal-fully automatic

Voltage: 100-240 V, 50-60 Hz Weighing pan diameter: 90 mm Housing protection:

Chemically cleanable housing cover.

Certificates: Notified CE/BIS/FDA and ISO 13485

Chloroscope

Should be suitable for checking chlorine contents in water at Public Health Depts, Water Testing Labs, swimming pools, Industrial Labs etc.

Should be efficient and effective in use.

Should have a measuring range of chlorine in drinking water from 0.25 p.p.m. to 2.0 p.p.m.

It should consist of:

- i) Chloro-scope 1No.
- ii) Square unbreakable test tube 2Nos.
- iii) Glass Dropper with rubber teat 1No.
- iv) O-Toludine reagent 125ml.
- v) Packed in thermocolbox.
- vi) Certificates: Notified CE/BIS/FDA and ISO13485

Thermometer

Specification:

1. Sleekdesign
2. Washable
3. Centigrade and Fahrenheit Measurement option
4. Temperature range must include 32 to42°C
5. Should include a storagecase

CO2 INCUBATOR

Specifications

1. A CO2 incubator is used to culture cells to provide it with the optimum temperature, moisture (sterile environment) and to maintain optimum pH
2. Capacity in liters 156
3. Temperature management range in degree Celsius 5 to 50
4. Incremental increase provided for temperature management 0.1 degrees
5. Temperature accuracy + 0.4 °C at 37°C
6. Temperature stability + 0.2°C at 37°C
7. CO2 gas range in percentage (%) 0.1 – 20
8. Incremental variation in CO2 gas range 0.10%
9. Gas uniformity 0.2 % at 37°C
10. CO2 recovery rate At least of 6 min after door opening and closing event to attain 5% CO2
11. Operational gas pressure range in psi 8 to 20
12. Dry Heat Sterilization temperature in degree Celsius 140
13. Maximum Dry Heat Sterilization time in 1 hour
14. Provision of display for temperature and alarm control Yes
15. Inner chamber material Stainless Steel
16. Inner chamber formation design Single Sheet with no corner for higher capacity
17. Inner chamber should be easily cleanable Yes
18. Standard Perforated shelves provided yes
19. Number of shelves provided 3
20. Shelves material Stainless Steel
21. Shelves thickness in mm 1 or more
22. Separate inner glass door provided 1
23. Minimum Time taken for CO2 recovery rate after door opening 6
24. Removable humidity tray should be provided yes
25. Availability of Fanless design to reduce chance of contamination, reduce noise No
26. Sensor used Infra-Red (IR) and NDIR type CO2 Sensor
27. Maximum temperature for Sensor functionality 140 °C or more during dry heat sterilizations
28. Uniform temperature verifications should be according to DIN Norms Yes
29. CO2 cylinder provided with incubator Yes
30. Size of CO2 incubator (L x W x H) in mm x mm x mm 400 X 560 X 700

Certificates: Notified CE/BIS/FDA and ISO 13485

COLONY COUNTERDIGITAL

Specifications

Digital Colony Counter should have glare-free illumination with 100 mm diameter-magnifying lens the position of which should be adjustable.

The counting plate should have standard wolf hugle ruling. Should provide automatic digital display (minimum 3 digits), with facility to manually reset.

Should be complete with ON / OFF switch, probe for counting, power cable with plug.

Suitable to work on 220 ± 10 volts / $50 \pm$ Hz AC power supply

Certificates: Notified CE/BIS/FDA and ISO 13485

Color perception lantern Edridgegreen

Description:

1. This lanternable test to be made under conditions very closely allied to those found in everyday practice, while the colours chosen are those which rapidly and definitely disclose any defects in colour perception. It is used by in screening of all personnel where colour perception is of paramount importance.

Specification:

Instrument for testing colour vision, metal finished in black crackle.

comprising a bowl containing an incandescent electric lamp with 5 rotating discs in front of the bowl, each with a short handle.

The discs hold colour filters, apertures of different size and frosted and ribbed glasses to simulate fog and rain etc.

The patient views the colours displayed in the single aperture in the upper half of the front circular plate

Certificates: Notified CE/BIS/FDA and ISO 13485

COLORIMETER PhotoElectric

Specifications

1. Should have 8 no of filters / LED Source wave length from 400 nm to 630nm
2. Should have a 3 digit display calibrated directly in optical density
3. Detector should be encased spill proof photocell
4. Should provide standard accessories a. turret-mounted filters b. 10 cuvettes, 2 test tubestand
5. Should have facilities for concentration, calculation, percentage transmission and optical density
6. Should work on 200-240Vac 50Hz power supply

Certificates: Notified CE/BIS/FDA and ISO 13485

Compass Aesthesiometer

Specification:

Made of stainless steel, with well –f formed points and adjusting scre giving movement of app:
01mm per half turn.

Specification:

1. Paper Chromatography Cabinet: It is made of single piece bakelite moulding. The inner size of cabinet is 6 x 8 x 9" with front sliding glass door. The lid of cabinet is also made of bakelite.
2. Stainless Steel Solvent Pot: It is made of 316 Quality S.S. It is having the volume capacity of 150 ml. It is required to hold the solvent mixture. 4 Stainless Steel Hanger: It is a stainless Steel rod of size 6" and dia 2mm. It is used as hanger of Chromatography paper. It fits inside the grooves of the cabinet.
3. Chromatography Paper "1-Chro": It is the world standard Chromatography paper. A smooth surface, 0.18mm thick with linear flow rate (water) of 130 mm/30 min. Good resolution for general analytical Separation and having following special features:
 4. Simultaneous development of multiple samples on the same sheet under identical conditions.
 5. Sequential development of the same sample with solvent or different concentrations of the same solvent.
 6. Suitability for two-dimensional chromatography (change in direction of the solvent front) with possible
 7. improved resolution.
8. Drying Stand: One stand is supplied to accommodate processed (wet) Chromatography paper and to put it in oven to dry the same.
9. Glass Sprayer with Rubber Balloon: The sprayer is made of Borosilicate Glass, specially designed for spraying the indicators on Chromatography Paper. A rubber balloon is connected to it.
10. Glass Syringe: Glass syringe capacity 20ml. is provided to draw the solvent from S.S. Pot after practical is over.
11. TLC Capillary: Pkt. of 25 high quality fine capillaries are supplied with cabinet.
12. Size 27 x 27 x 29mm

Complete Electrophoresis apparatus with power supply (Paper, PAGE, agarose)

Specification:

A. Electrophoresis Unit with Compatible Power supply Unit

1. Capacity to run up to 4 mini-gels
2. Supplied with tank, lid, companion module, buffer dam and power cable
3. 1 box each of combs, spacer plates and short plates
4. 2 gel-casting stands and 4 frames

B. Basic Power supply Unit:

1. Output: 10-300 V (Adjustable by 1V); 4-400 mA (Adjustable by 1mA); 75W max with constant voltage or constant current (interchangeable)
2. 4 pair of banana jacks in parallel
3. Time setting (adjustable): 1 min - 99 h 59 min with pause/resume function
4. LED display
5. Can operate at 0-40 °C; 0-95 % humidity in absence of condensation
6. All safety features including detection of no-load, rapid resistance change, ground leak, over-load, short-circuit
7. Over-voltage protection and over-temperature protection
8. Compatible with Bio-Rad electrophoresis unit

Certificates: Notified CE/BIS/FDA and ISO 13485

Constant temperature waterbath

1. **Specification:**
2. Rectangular double walled in construction.
3. Inner chamber made of stainless steel & outer body made of mild steel duly powder coated.
4. Temperature range 5°C above ambient to 95°C.
5. Fitted with immersion type heater, digital temperature controller cum indicator accuracy $\pm 0.5^\circ\text{C}$. Operating on 230 VAC.
6. Fitted with circular pump with stirrer to re-circulate water at constant temperature.
7. Temperature Range 5 deg C to 95 deg C
8. Accuracy $\pm 0.5^\circ\text{C}$
9. Rating 1500 to 2500W

Certificates: Notified CE/BIS/FDA and ISO 13485

CTG MACHINE

Specifications:

1. Fetal Heart Rate recording with dual version external twin monitoring facility with two probes (transducers).
2. Toco-recording.
3. Maternally sensed fetal movement recording.
4. Colour coded transducers, plugs & sockets.
5. Detachable/ Inbuilt printer.
6. 1 to 1.5 MHz multi crystal directional pulse Doppler.
7. Optimize fully screened & water proof FHR transducer & belt clip.
8. Built in transducer storage.
9. Manual or automatic Toco-zero light weight, flat faced with guarding type.
10. 6-8 hr. memory with fast print facility.
11. Actogram-automatic movement signal can be printed on the chart record as a graph.
12. Purpose designed trolley.
13. Display waveform.
14. Re-Chargeable Battery. Battery Backup of 2 hours.

COMMON POINTS:-

15. Over current circuit breaker/any other protection device.
16. The manufacturer should provide training for the Equipment to two persons at the institute.
17. The company should provide at least 3 preventive maintenance visits/year.
18. Uptime guarantee of minimum 95%. In case downtime >5%, double the time will be extended to warranty.
19. Should have US FDA and/or European CE or BIS certification.
20. On-site demonstration is essential.
21. The unit should be able to run on mains with power supply of 220/240 V, 50- 60Hz fitted with Indian power plug.
22. The electronic voltage corrector/stabilizer of appropriate ratings meeting BIS standards/specifications (Input 160-260 V & output 220-240 V, 50Hz.)

23. ISO 9001 certified manufacturer & supplier. (Certificate to be submitted).
24. IEC-60101-1 medical electrical equipment, general requirements of safety.
25. Smooth surface/finishing allows for easy cleaning/disinfection.
26. All vital parts made of rust proof materials.
27. Should have local service facility with the necessary equipment to carry out preventive maintenance test recommended by the manufacturer as per guidelines provided in the service/maintenance manual.
28. Availability of spares for at least 10 years after date of installation.
29. Items covered under warranty / CMC, prices of consumables and accessories should be quoted separately and the prices should be frozen for the period including warranty and CMC period.
30. The unit shall be capable of being stored continuously in ambient temperature of 0-50 deg C and relative humidity of 15-90%.
31. The unit shall be capable of operating in ambient temperature of 10-40 deg C and relative humidity of 15-90%.
32. User/Technical/Maintenance manuals to be supplied in English.
33. List with name and address of technical service providers in India.
34. List of spare parts and accessories with their cat no. and costing.

Certificates: Notified CE/BIS/FDA and ISO 13485

Dark Ground Microscope

Specifications:

1. Microscope Type : Research Trinocular - Non-Hinged type -with built-in light and with light intensity regulator
2. Eye piece Type :Compensating
3. Eye Piece with magnification : Set of Two For Binocular 10x
4. Objective Type :achromatic
5. Objective Magnification : 20x
6. Binocular Eye pieces Confirming to the requirements of IS: 8275/1976 (latest)
7. Numerical Aperture of Objective :0.5
8. amp for Illumination LED
9. Plano Concave mirror attachment
10. Stage Rectangular
11. Size of Stage 125x135
12. Coarse and Fine Movement of stage
13. Achromat 100X with iris diaphragm N.A.0.52-1.25, W.D0.23mm spring loaded for Dark field purposes.

CERTIFICATION: Notified CE/BIS/USFDA

DEEP FREEZER (-20 DEGREE CELSIUS)

Specifications

1. Internationally reputed foreign made deep freezer (upright) upto -20°C is required with capacity 350 liters or above.
2. The instrument must be designed to be exceptionally energy efficient and eco-friendly. Freezers are totally free of CFCs (Chlorofluorocarbons) and HCFCs (Hydrochlorofluorocarbons)
3. The system must have a set-point keypad and digital temperature readout are provided on a control panel, located on the door of the upright freezers and on the console on the right side of chest freezers
4. Controls for setting the freezer temperature and alarm warning setpoints enabled by an electronic lock with a unique coding system
5. Indicator lamps on the programmable control panel must provide warnings of power loss, system failure, exceeding High/ Low temperature set points, low battery voltage, and filter blockage etc.
6. A heated port with ice-clearing plunger must be present in the system to prevent vacuum formation enabling the outer door to be easily opened at any time
7. All interior panels and shelves are made of high grade corrosion resistant stainless steel, making them durable and easy to keep clean and sterilize.
8. In instrument must have heavy duty castors for easy installation and relocation?
9. The instrument preferably fitted with an automatic reset to restart freezers at random 15 second intervals to protect the microprocessor controller from damage by electrical spikes caused by multiple freezer turning on at once
10. Good quality Lockable freezer handles on outer door to provide added security against unauthorized users.
11. The system must include the external voltage stabilizer

Certificates: Notified CE/BIS/FDA and ISO 13485

DEFIBRILATOR

Specifications

1. It should be a latest technology, advanced biphasic waveform defibrillator
2. It should have integrated Automated External Defibrillator (AED)
3. It should be light weight, compact, easy to carry and easy to operate
4. It should have device status indicator for readiness of use
5. It should have facility of manual defibrillation
6. It should have at least 6 inch, high resolution colour monitor for ECG (3 to 5 leads) with three waveform capability; upgradable to SpO₂, NIBP and EtCO₂
7. It should have in-built 3 channel ECG recorder
8. It should be capable of storing trends and patient data
9. Should have Arrhythmia alarms
10. Should have synchronous cardioversion
11. It should have both adult and pediatric external paddles
12. It should have biphasic mode, with range of 1 to 200 joules, charge time less than 5 seconds.
13. Rechargeable in-built battery backup with provision for 20 shocks of 200 joules with 3 hours monitoring OR at least 150 shocks of 200 joules without monitoring.
14. Should have battery capacity indicator on battery
15. It should meet international safety standards, US-FDA and CE certification.
16. It should be capable of transferring data to PC through USB flash memory.
17. System configuration, accessories, spares and consumables: Adult paddles -
Pediatric paddles - 01 Patient cables - 01
18. It should be capable of operating continuously in Indian conditions.
19. It should be capable of operating on mains power input of 120-240 V, 50/60 Hz.
20. Should be European CE / USFDA
21. 3 Years warranty and 4 years CMC with spares excluding consumable accessories
22. The Hospital Authority has to pay the CMC Amount year wise after completion of the warranty period after end of each year

Demonstration eyepiece

Specification:

We hold expertise in offering high quality Double Demonstration Eye Piece,
This demonstration eye piece should be able to fit easily any standard 23 mm dia. eye piece,
which further make it easy for two persons to easily see the same object simultaneously.

The double demonstration eye should have a 10 x magnification.

With a beam splitting prism of special optical glass, with two eye pieces, pointer covers the
entire field in velvet lined case.

Sturdiness

Fine finish

Certificates: Notified CE/BIS/FDA and ISO 13485

Densitometer

FEATURES:

Automatic density and dot gain (3-levels)
Gray balance and trapping rotation Pantone
and Spot Colour matching.

Automatically switches modes, eliminating the need for the operator to memorize menus
or button sequences.

Unique "Traffic Light" system shows the operator if they are in or out of tolerance, and
the correction needed

High efficiency LED illumination eliminates

SPECIFICATIONS:

Light Source: RGB LED's, 45/0° geometry

Aperture: 3mm standard, 2mm or 1mm optional

Range: 0.00 - 2.50D

Dot Area - 1% to 100%

Measuring Speed: 0.5 seconds, Linearity $\pm 1\%$ Target

Recognition: Automatic Infrared Detection Graphical

Display: 160x80 pixels, 4 gray levels Batteries: (2) AA
alkaline >500,000 measurements Serial Interface:USB

Polarization:Optional

Dimensions: 6.9x3x1.9 inches (175x76x47mm)

Certificates: Notified CE/BIS/FDA and ISO 13485

DentalChair

Specification:

1. Dental Chair design: Should enable the operator to be in close proximity of the patient to provide optimum vision of the operating field and safe control of all component devices.
2. Ergonomics The chair should be designed to provide good ergonomics for both operator and assistant. Chair should have adjustable ergonomic headrest.
3. Power drive for Chair movements: Dental Chair shall be fully motorized, pneumatically/electrically driven, which gives smooth movement and non-jerky start and stop
4. Power Input: 220 – 240 V AC, 50Hz
5. Power Supply: Should have integrated power supply for fiber optic handpieces, piezo electric motor etc.
6. Type of Motor: Noiseless DC Motor for enabling chair movements.
7. Dental Chair Base: Cast-metal/alloy base with five casters.
8. Corrosion resistance: Base and other structure of the Chair should have a corrosion resistant coating.
9. Concealed inlet & outlet: All the outlet & inlet for the services to the chair shall be concealed in the box. The Box as an infection control measure shall be located at the foot area of the chair or within the unit.
10. Valves: Provision of Built-in anti-retraction valves and flush valve system for infection control.
11. Usable storable height (minimum) 840 mm
12. Width 450 mm to 500mm
13. Length (minimum) 1830 mm (6 feet)
14. Dental Chair height adjustment: By electronically controlled electric motor
15. Lowest height of Dental Chair: between 300 – 450mm
16. Height adjustment range: between 400 – 700mm.
17. Height range: between 500 – 800mm
18. Lumber Support: The Chair shall have two way adjustable lumbar support.
19. Backrest of Chair: The backrest of the dental chair shall be ultra thin, flexible, highly comfortable, seamless long life upholstery and should be disinfectible.
20. Torso support: Height adjustable torso support with Height adjustable footrest
21. Chair movement control: By Finger tip panel and also by user friendly foot control, with all the functions. It should at least have two patient entry programs, 1- rinse, 2-exit
22. Toe movement facility: Facility of Toe movement. Toe should move up while backrest moves down

23. Safety brake: Safety brake provision while going down for patient exit position.
24. Overhead Delivery System The over head delivery system shall have balanced flax arms with pneumatic bracket. It shall have at least Five (5) delivery ports for various hand pieces, scalar and 3-way syringe(with autoclavable tip), (with 6 spare tips).
25. Air Rotor terminals The Dental Chair shall have minimum two high Speed Air Rotor terminals with water control on coupling with at least one fiber optic terminal. Should have one Air motor terminal with speed control preferably fibre optic, with speed range of 300 – 40000 RPM in standard mode with cutting power in the range between 50–70 watt. Should be provided with the Brushless
26. Ultrasonic Scaler: one unit of fin-built Piezo LED Ultrasonic Scaler (frequency 28-36 KHz) with 4 scaler tips and one set of perio-curette tips
27. Handpiece control block: Handpiece control block with flow through water design to eliminate stagnant water
28. Water Syringe: Autoclavable quick disconnect water syringe
29. Vacuum Suction: Provision of high vacuum suction unit on the assistant side of the dental chair, Medium vacuum suction and 3 way syringe.
30. Hand pieces to be supplied with Dental Chair unit: Hand pieces (all European CE/ US FAD Certified Genuine instruments): Fibre Optic Air Rotor (scratch resistant, Titanium Body) - 1 No., Fibre Optic Micro-motor straight (scratch resistant, Titanium Body) - 1 No., Fibre Optic Miniature Air Motor hand piece - 1 No
31. Dental Camera System: Hi resolution LED Dental Camera system with digital signal processor along with ≥ 15 " LCD Monitor mounted on the Dental chair
32. Movable cuspidor box and Movable assistant control system shall have: "(i) Saliva ejector (ii) Autoclavable High volume evacuator (iii) Autoclavable 3-way syringe (iv) High quality stain proof vitreous Chinabowl with adjustable cup full and bowl rinse timers (v) Clean water bottle system.
33. Light Source: Latest sensor operated Non touch (On/Off) LED Light, with luminosity of minimum 30000 to 40000 lux with maximum degree of rotation of light arm movements. With three position intensity with high, medium and composite settings.
34. LED type: LED light 5000 K cool light or similar high quality light.
35. Light Head with Axial movements: Horizontal, Vertical, Axial & Diagonal adjustment.
36. Air Compressor Unit: Dental Chair shall be supplied with suitable oil free, noise free Air Compressor, with capacity to run single dental chair unit
37. Storage Conditions: Dental Chair unit is capable of being stored continuously in ambient temperatures of 0 – 50 degree centigrade and relative humidity of 15 – 90%

38. Operating Temperature & Relative Humidity: Dental Chair unit is capable of operating continuously in ambient temperatures of 10-45 degree centigrade and relative humidity of 15-90%

39. Electrical safety conforms standards for electrical safety IEC60601-1

Certificates: Notified CE/BIS/FDA and ISO 13485

Digital Analytical Balance

Specification:

1. Usage: This digital electronic balance is an intelligent balance composed of high stability sensors and a single chip microcomputer, solves the problems of creep and linearity caused by a resistance strain sensor.
2. Precision: Measure up to 300g with the precision of 1mg
3. Feature: LCD Digital Display Sustainable weighing, high precision Automatic zero point tracking system function Advanced and unique starting up self inspection function High integrated IC circuit board, high tech level
4. Function: Skin removal zero function, Self-calibration function, Fault display function, Unit conversions: gram(g), carat(ct), ounce(oz), pound(lb)
5. Advantage: Accurate weighing, fast stability, simple operation and complete function, and is suitable for rapidly determining the quality and quantity of objects in industry, agriculture, commerce, school, scientific research and other units
6. This analytical electronic balance should measure up to 300g with a 0.001g accuracy resolution.
7. It should have functions of peeling weight, self-correcting, memory, counting, fault display and the like.
8. Should have features automatic fault detection, over-load alarm, a large easy-to-read digital display, and fast accurate readings.

1. Maximum Capacity: 300g
2. Reading Precision: 1mg
3. Pan Size: $\varnothing 90$ mm
4. Shape Size: 30*33*32.5cm
5. N.W.: 3.7KG G.W.: 5KG

Certificates: Notified CE/BIS/FDA and ISO 13485

Digital Automatic Camera

Specification:

1. 5.0-Megapixel Resolution, up to 2592x1456 JPEG stills, 640x480 at 10fps AVI
Motion JPEG with WAVE Monaural Audio or better
2. 2GB SD, SD-HC, or Multimedia Card should be supplied.
3. 2.0 low-temperature polycrystalline silicon TFT color LCD Monitor or better
4. Real-image optical zoom viewfinder
5. Should be provided with 2x AA Alkaline Battery, Multimedia Card MMC-16M,
WristStrap WS-800, Digital Camera Solution CD-ROM, USB Interface Cable IFC-400PCU,
and AV Cable AVC-DC300
6. Camera should be BIS/US FDA/Notified CE certified.

COLORIMETER PhotoElectric

Specifications

1. Should have 8 no of filters / LED Source wave length from 400 nm to 630nm
2. Should have a 3 digit display calibrated directly in optical density
3. Detector should be encased spill proof photocell
4. Should provide standard accessories a. turret-mounted filters b. 10 cuvettes, 2 test tubestand
5. Should have facilities for concentration, calculation, percentage transmission and optical density
6. Should work on 200-240Vac 50Hz power supply

Certificates: Notified CE/BIS/FDA and ISO 13485

PH METER ELECTRICAL

Specifications:

1. Digital Electronic (Table/ hand held model)
2. Should be made up using best quality parts and equipments
3. PH Range: 0-14 PH.
4. Mill Volt range : 0 to 1999 mV.
5. Resolution: 0.01 pH, 1 mV
6. Repeatability: ± 0.01 PH ± 1 mV
7. Accuracy: 0.01 PH ± 1 digit, 1 mV ± 1 digit.
8. Temperature compensation: 0 to 100 deg C.
9. operating temperature: 10 Deg C to 50 Deg C
10. display: 3.5 digit LED display
11. Supplied accessories: Electrode, Stand, dust cover and instruction manual
12. should be Approved by US FDA/BIS/CE from notified body.

PHYSIOGRAPH (3 CHANNEL) Digital

Specifications:

1. The system should have ready-to-use experiments with step-by-step instructions for a wide range of experiments including human & animal experiments
2. It should have report pages which include study questions as well as students' recorded data, analysis tables and graphs from their completed experiments
3. It should allow students to type their answers and the reports can be saved for easy review or printing
4. It should allow students and educators to access experiment material as well as the recorded data anywhere from outside the lab through internet.
5. The software should allow users to customise experiments as per their lab requirement
6. The software should be provided with free experiments and software updates for at least 5 years
7. Recorder with high sampling rate 100 KHz and at least two channels for bio-potential & isolated stimulator with software controlled filtering, Voltage Range: 0-10 V & Current Range: 0-20 mA with software selectable pulse duration (50-200 μ sec).
8. Simulated Experiments/Preconfigured Experiments with sample data for Frog Heart
9. Should have clinical pharmacology/Medical case laboratories live videos & Patient data to provide student an interactive solution for learning.
10. Human ECG, EOG, HRV, EMG, BVP, Grip Strength transducer, spirometer. Reflective Drop Counter
11. Transducers & accessories: animal nerve & bar stimulating electrode, nerve chamber, bio-amp cable, shielded wires, alligator clips, muscle holder, manipulator with stand, needle electrode and other related accessories
12. Desktop Computer with 17" TFT Monitor, 4GB RAM, 380GB HDD, DVDR/W, Laser Printer & UPS
13. should be Approved by US FDA/BIS/CE from notified body

DIGITAL SLR ATLEAST 20 MEGAPIXEL

Specification

1. Should be with screen size 3.2 inch or better
2. Continuous shooting speed 6 or better
3. Optical Sensor resolution 36.3 MP or better
4. Optical Zoom 1X or better
5. Max. Resolution 36.3 or better
6. Photo sensor size should be full frame(35mm)
7. Focus type manual/Auto
8. Video Capture resolution 1080P
9. View finder type—optical.
10. Unit should be BIS/US FDA / Notified CE.

Digital Medical Thermometer

Specifications

1. Product type Electronic medical thermometer or Clinical digital thermometer
2. Usage Kids, infants, children and adults
3. Clinical Purpose For oral, rectal and armpit/maxilla temperature measurement
4. PRODUCT INFORMATION
5. Type of display with minimum 3 digits LCD
6. Material Plastic
7. Type of tip Fixed
8. Temperature measuring unit Degree Fahrenheit
9. Temperature measurement range 89.60F to 107.60F
10. Accuracy of measurement +/- 0.2 degF
11. No glass and no mercury present yes
12. Safe to use and easy to read Yes
13. Water proof for ease of cleaning yes
14. Should have clear instructions to use or preventive maintenance Yes
15. Pre-calibrated Yes
16. Display "Lo" if temperature is less than 32 degC (89.6 degF) Yes
17. Display "Hi" if temperature is more than 42 degC (107.6 degF) Yes
18. Rapid measurement of temperature for infants, children and adult kids, yes
19. Beep sound when normal steady temperature arrived during test Yes
20. Auto saving of last reading before next test is performed yes
21. Time for measurement of temperature, (Sec) 62.1 second
22. Battery powered with low battery indicator Yes
23. Press type power button with beep for indication of start Yes
24. Auto off when not in use for more than 1 minute
25. Weight (gm) 10

Certificates: Notified CE/BIS/FDA and ISO 13485

Dissection Microscope

Specifications

1. Microscope Type pathological monocular hinged type without built in light and without light intensity regulator
2. Eyepiece Type Huygenian
3. Binocular Eye pieces Conforming to the 'NA' for Monocular
4. Eye Piece with magnification monocular 10x
5. Objective Type achromatic
6. Objective Magnification 20 x
7. Numerical Aperture of Objective 0.5
8. Type of lamp for Illumination 'NA' for Hinged type

GENERIC

1. Plano Concave mirror attachment Stage Rectangular
2. Size of Stage 120x115
3. Coarse and Fine Movement of stage

Certificates: Notified CE/BIS/FDA and ISO 13485

DISTILLATION PLANT

Specification

1. Type of purifier With storage
2. Number of filtration stages – Single or more
3. Type of main filtering cartridge - Ceramic Filter or better
4. Filtering Technology - Squeeze
5. Minimum Size of filtering particles (Microns) - 0.3 micrometer
6. Maximum filtration rate – 4 (Ltrs/min)
7. Life of Filtering cartridge – 1000 (Ltrs)
8. Body material of purifier - Stainless steel, food grade or better
9. Warranty period – 1 year

Certificates: Notified CE/BIS/FDA and ISO 9001

DISTILLED WATERPLANT

Specification

1. Type of purifier With storage
2. Number of filtration stages – Single or more
3. Type of main filtering cartridge - Ceramic Filter or better
4. Filtering Technology - Squeeze
5. Minimum Size of filtering particles (Microns) - 0.3 micrometer
6. Maximum filtration rate – 4(Ltrs/min)
7. Life of Filtering cartridge – 1000(Ltrs)
8. Body material of purifier - Stainless steel, food grade or better
9. Warranty period – 1 year

Certificates: Notified CE/BIS/FDA and ISO 9001

Demonstration eyepiece

Specification:

We hold expertise in offering high quality Double Demonstration Eye Piece,

This demonstration eye piece should be able to fit easily any standard 23 mm dia. eye piece, which further make it easy for two persons to easily see the same object simultaneously.

The double demonstration eye should have a 10 x magnification.

With a beam splitting prism of special optical glass, with two eye pieces, pointer covers the entire field in velvet lined case.

Sturdiness

Fine finish

Certificates: Notified CE/BIS/FDA and ISO 13485

Douglas Bag

Made up of impervious flexible sheet Which can be placed on back of person

A pack of 60 Douglas Bags (120 liters), designed to hold expired air for respiratory studies.

Drill Machines

1. The hand drill machines with premium grade cast iron frames with double gears or double bi-union to offer smooth operation also with three jaws for firm grip along with detachable wooden or plastic handle.; 10MM and or 3/8/08 Inches
2. Universal Hand Drill : comprise sagittal saw headpiece, mini hand drill, transverse saw, triple drill guide 130 angle as well as open gear hand machine drill with stainless steel check and key. These are precision designed in line with defined safety standards and for cadaver use.

DYNAMOMETER

Specifications

1. DisplayType	Analog
2. Width	2.75inches
3. Length	10inches
4. HeadDiameter	2.5inches
5. Height	5.5inches
6. Weight	1kilogram
7. AdjustableHandle	Yes
8. GripAdjustRange	2.35inches
9. Capacity	90kilogram
10. AmbientTemperature	20 degreeCelsius

Certificates: Notified CE/BIS/FDA and ISO 13485

ECG Machine (12 Channel with Trolley)

Specifications

1. Simultaneous 12 Channel ECG recording with 12 lead simultaneous acquisitions
2. Should have visual alarm for open lead
3. Should have a digital display of 12 channels ECG
4. QWERTY alphanumeric keyboard
5. Built-in ECG Parameters measurements and Interpretation
6. Minimum 40 ECG Storage in built memory
7. 3 Operating modes: Automatic, Manual and Rhythm
8. Should have maintenance free digital thermal array printer
9. Printers should work with standard thermal paper (should be available in Local Market)
10. Should have 12 lead ECG preview display before taking printouts and should have printer on/off selection.
11. Should have ECG lead annotation facility
12. Machine should have sufficient battery backup for taking at least 25 nos ECG on a fully charged battery
13. Should be supplied with 2 patient cable sets, 8 clip on electrodes, 12 chest electrode with silicon rubber bulb, 12 packets of recording paper, 1 bottle of jelly and 12 nos. reusable button type electrode
14. Should operate on mains (220v-50Hz) and rechargeable battery
15. Recording speed should be 25 mm/ sec and 50 mm/sec.
16. Should have defibrillation protection
17. CMRR should be >90 dB or ECG machines should have digital processing with at least 7000 samples per second from each lead wire.
18. Frequency response 0.05 Hz to 150 Hz
19. Should have a digital filter for AC and EMG
20. Should be supplied with suitable stabilizer
21. Should have safety certificate from a competent authority CE issued by a notified body registered in the European Commission/FDA(US)/STQC/CBC Certificate/

STQC S Certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate/ test report shall be produced along with the technical bid.

Should supplied with a suitable Trolley with following specifications

Trolley should made of Stainless Steel / Powder coated frame with SS 304 grade Top

Should be a 3-shelf (including the top) cart, one with a drawer for storing the accessories and consumables.

Should have four superior castors (two with brakes)

Trolley should have at least 30" height and the shelves should have sufficient space for storing the accessories

Top shelves shall be surrounded by railing.

Trolley should have a suitable cable arm firmly affixed having holder for ECG cables while not in use

ElectricwarmingBlanket(PatientWarmerWithDisposableBlanket)

SPECIFICATIONS

1. Patient Warmer Should have basic warming unit and disposable blankets
Shouldhavefastwarmingunit–temperatureshouldreach38degreeCelsius with in 30sec
2. Thetemperature(warming)unitshouldhave3operatingtemperaturelevelshigh
- 42-46 degree Celsius (+)2 degree Celsius, Medium 36-40 degree Celsius(+2 degree Celsius,
low - 30-35 degree Celsius(+2 degree Celsius
3. The basic warming unit should have automatic step downfacility.
4. After 45 min temperature to come down from high mode to medium mode
should have high efficiency <.4 Micron AirFilter
5. should have multiple mounting options (cart , bed rail iv pole andfloor)
6. should have auto power cut facility to control settemperature
7. should have hose end sensor for effective delivery of set temperature to the
patientandtopreventburnsshouldbesmall,lightweight,andeasytouse
8. should be CE/FDA/ICMED/ISICertified

Electromagnetic Timemarker

- tuning fork (100 or 256 Hz); Spring time marker; Electromagnetic Time marker

Electronic Stimulator

Specification of Nerve Stimulator

1. Should be hand held type, lightweight
2. Should work on alkaline battery
3. Low battery indicator
4. LCD/LED display
5. Should have features of both nerve locator during regional anesthesia and neuromuscular monitoring during anesthesia.
6. Should be programmable
7. For Nerve Stimulation :Current output: 10 to 150-160mA
8. Stimulation pattern: TW, TOF, TET, PTC DBS Nerve locator For Nerve Location
9. Current output: beginning from 0.1/0.2 mA till 10mA
10. Stimulation pattern: Twitch
11. CE/FDA/BIS approved
12. Accessories: electrodes

ELISA READER & WASHER

Specification

- | | |
|------------------|--------------------|
| 1. DetectorType | Photodetector |
| 2. LightSource | Quartz-halogenlamp |
| 3. Read-outRange | 0 to 6Abs |
| 4. PlateType | 96-wellplates |

Wavelength Selection Filters

- | | |
|-----------------------|--|
| 1. WavelengthRange | 340 to 850nm |
| 2. Filters | 8-position filterwheel; |
| 3. filters installed: | 405nm, 450nm, and 620nm |
| 4. Linearity | 0–3 Abs, $\pm 2\%$ at 405nm, 96-wellplate |
| 5. Resolution | 0.001Abs |
| 6. Accuracy | $\pm 1\%$ (0–3Abs) or ± 0.003 Abs, whichever is greater at 405nm |
| 7. Precision | $CV \leq 0.2\%$ (0.3–3 Abs) at 405nm |
| 8. Shaking | Linear |

Measurement Speed

- | |
|--|
| 1. 7 seconds, 96-well plate, fast mode; |
| 2. 13 seconds, 96-well plate, normal mode |
| 3. Interface User: On-board or PC control |
-
- | | |
|---------------------|---------|
| 4. Depth (Metric) | 40cm |
| 5. Depth (English) | 15.7 in |
| 6. Width (Metric) | 29cm |
| 7. Width (English) | 11.4 in |
| 8. Height (Metric) | 22cm |
| 9. Height (English) | 8.7 in |
| 10. Unit Size | Each |
11. A broad wavelength range of 340–850nm for a wide variety of research and routine applications such as ELISA immunoassays, protein quantification, endotoxin, cytotoxicity and proliferation assays, enzyme assays and growth curves
12. Equipped with an eight-position filterwheel with three standard filters, 405nm, 450nm and 620nm, preinstalled

13. A comprehensive range of easy-to-install additional filters available for order
14. Fast and accurate measurement of both 96- and 384-well plates for various throughput requirements
15. Shaking and incubation up to 50°C for temperature critical assays
16. Ease of use through the large colour screen and a variety of language versions
17. Visual and logical scan software for comprehensive instrument control and data handling
18. Robot compatibility for high-throughput environments

Certificates: Notified CE/BIS/FDA and ISO 13485

ELISAWASHER

Specification

1. PlateType 96-WellPlates
2. Bottles 2L wash bottle, 2L wastebottle
3. Wash/Waste BottleCapacity
4. WashHeads 1x8
5. WashVolume 50 to1000 μ L
6. ResidualVolume <2 μ L
7. DispenseVolume 50 to400 μ L
8. Accuracy < 5% @300 μ L
9. Precision < 3% (CV) @ 300 μ L (96-wellplate)
10. Cell WashingNo
11. PrimeVolume 5 to100mL
12. Display LCD
13. USBConnections Yes
14. AutomationInterface No

15. Width (Metric) 385mm
16. Width (English) 15.2 in
17. Depth (Metric) 240mm
18. Depth (English) 9.4 in
19. Height (Metric) 345cm
20. Height (English) 13.6 in
21. Weight (Metric) 8kg
22. Weight(English) 17.6lb.
23. Includes
24. 1x2L washbottle,
25. 1x2L wastebottle,
26. 1x8L washhead,
27. Aerosolcover
28. Hertz 50/60Hz
29. Voltage 100-240V
30. For Usewith(Application) ELISA-BasedAssays
31. ElectricalRequirements 100-240V 50/60Hz
32. UnitSize Each
33. Large colour clear display and keypad for easy, convenientuse
34. Userinterfaceislogicandintuitiveforquickprotocolsdevelopment
35. Easy-to-use software requires minimal training for fast startup
36. Unpressurized bottles are safe and secure touse
37. Liquidlevelsensorsarepresentinbothwashandwastebottleforsecurity
38. Automatic prime feature assure safeperformance
39. Aerosol cover prevents aerosolization of infectiousdiseases

40. Plate sensor recognizes if plate is present

Certificates: Notified CE/BIS/FDA and ISO 13485

ELISA READER & WASHER

Specification

- | | |
|------------------|--------------------|
| 1. DetectorType | Photodetector |
| 2. LightSource | Quartz-halogenlamp |
| 3. Read-outRange | 0 to 6Abs |
| 4. PlateType | 96-wellplates |

Wavelength Selection Filters

- | | |
|-----------------------|---|
| 1. WavelengthRange | 340 to 850nm |
| 2. Filters | 8-position filterwheel; |
| 3. filters installed: | 405nm, 450nm, and 620nm |
| 4. Linearity | 0–3 Abs, $\pm 2\%$ at 405nm, 96-wellplate |
| 5. Resolution | 0.001Abs |
| 6. Accuracy | $\pm 1\%$ (0–3Abs) or ± 0.003 Abs, whichever is greater
at 405nm |
| 7. Precision | $CV \leq 0.2\%$ (0.3–3 Abs) at 405nm |
| 8. Shaking | Linear |

Measurement Speed

- | |
|--|
| 1. 7 seconds, 96-well plate, fast mode; |
| 2. 13 seconds, 96-well plate, normal mode |
| 3. Interface User: On-board or PC control |
-
- | | |
|---------------------|---------|
| 4. Depth (Metric) | 40cm |
| 5. Depth (English) | 15.7 in |
| 6. Width (Metric) | 29cm |
| 7. Width (English) | 11.4 in |
| 8. Height (Metric) | 22cm |
| 9. Height (English) | 8.7 in |
| 10. Unit Size | Each |
11. A broad wavelength range of 340–850nm for a wide variety of research and routine applications such as ELISA immunoassays, protein quantification, endotoxin, cytotoxicity and proliferation assays, enzyme assays and growth curves
12. Equipped with an eight-position filterwheel with three standard filters, 405nm, 450nm and 620nm, preinstalled

13. A comprehensive range of easy-to-install additional filters available for order
14. Fast and accurate measurement of both 96- and 384-well plates for various throughput requirements
15. Shaking and incubation up to 50°C for temperature critical assays
16. Ease of use through the large colour screen and a variety of language versions
17. Visual and logical scan software for comprehensive instrument control and data handling
18. Robot compatibility for high-throughput environments

Certificates: Notified CE/BIS/FDA and ISO 13485

ELISAWASHER

Specification

1. PlateType 96-WellPlates
2. Bottles 2L wash bottle, 2L wastebottle
3. Wash/Waste BottleCapacity
4. WashHeads 1x8
5. WashVolume 50 to1000 μ L
6. ResidualVolume <2 μ L
7. DispenseVolume 50 to400 μ L
8. Accuracy < 5% @300 μ L
9. Precision < 3% (CV) @ 300 μ L (96-wellplate)
10. Cell WashingNo
11. PrimeVolume 5 to100mL
12. Display LCD
13. USBConnections Yes
14. AutomationInterface No
15. Width (Metric) 385mm
16. Width (English) 15.2 in
17. Depth (Metric) 240mm
18. Depth (English) 9.4 in
19. Height (Metric) 345cm
20. Height (English) 13.6 in
21. Weight (Metric) 8kg
22. Weight(English) 17.6lb.
23. Includes
24. 1x2L washbottle,
25. 1x2L wastebottle,
26. 1x8L washhead,
27. Aerosolcover
28. Hertz 50/60Hz
29. Voltage 100-240V
30. For Usewith(Application) ELISA-BasedAssays
31. ElectricalRequirements 100-240V 50/60Hz
32. UnitSize Each
33. Large colour clear display and keypad for easy, convenientuse
34. Userinterfaceislogicandintuitiveforquickprotocolsdevelopment
35. Easy-to-use software requires minimal training for fast startup
36. Unpressurized bottles are safe and secure touse
37. Liquidlevelsensorsarepresentinbothwashandwastebottleforsecurity
38. Automatic prime feature assure safeperformance
39. Aerosol cover prevents aerosolization of infectiousdiseases
40. Plate sensor recognizes if plate ispresent

Certificates: Notified CE/BIS/FDA and ISO 13485

ELISA READER & WASHER

Specification

- | | |
|------------------|--------------------|
| 1. DetectorType | Photodetector |
| 2. LightSource | Quartz-halogenlamp |
| 3. Read-outRange | 0 to 6Abs |
| 4. PlateType | 96-wellplates |

Wavelength Selection Filters

- | | |
|-----------------------|--|
| 1. WavelengthRange | 340 to 850nm |
| 2. Filters | 8-position filterwheel; |
| 3. filters installed: | 405nm, 450nm, and 620nm |
| 4. Linearity | 0–3 Abs, $\pm 2\%$ at 405nm, 96-wellplate |
| 5. Resolution | 0.001Abs |
| 6. Accuracy | $\pm 1\%$ (0–3Abs) or ± 0.003 Abs, whichever is greater at 405nm |
| 7. Precision | $CV \leq 0.2\%$ (0.3–3 Abs) at 405nm |
| 8. Shaking | Linear |

Measurement Speed

- | |
|--|
| 1. 7 seconds, 96-well plate, fast mode; |
| 2. 13 seconds, 96-well plate, normal mode |
| 3. Interface User: On-board or PC control |
-
- | | |
|---------------------|---------|
| 4. Depth (Metric) | 40cm |
| 5. Depth (English) | 15.7 in |
| 6. Width (Metric) | 29cm |
| 7. Width (English) | 11.4 in |
| 8. Height (Metric) | 22cm |
| 9. Height (English) | 8.7 in |
| 10. Unit Size | Each |
11. A broad wavelength range of 340–850nm for a wide variety of research and routine applications such as ELISA immunoassays, protein quantification, endotoxin, cytotoxicity and proliferation assays, enzyme assays and growth curves
12. Equipped with an eight-position filterwheel with three standard filters, 405nm, 450nm and 620nm, preinstalled

13. A comprehensive range of easy-to-install additional filters available for order
14. Fast and accurate measurement of both 96- and 384-well plates for various throughput requirements
15. Shaking and incubation up to 50°C for temperature critical assays
16. Ease of use through the large colour screen and a variety of language versions
17. Visual and logical scan software for comprehensive instrument control and data handling
18. Robot compatibility for high-throughput environments

Certificates: Notified CE/BIS/FDA and ISO 13485

ELISAWASHER

Specification

1. PlateType 96-WellPlates
2. Bottles 2L wash bottle, 2L wastebottle
3. Wash/Waste BottleCapacity
4. WashHeads 1x8
5. WashVolume 50 to1000 μ L
6. ResidualVolume <2 μ L
7. DispenseVolume 50 to400 μ L
8. Accuracy < 5% @300 μ L
9. Precision < 3% (CV) @ 300 μ L (96-wellplate)
10. Cell WashingNo
11. PrimeVolume 5 to100mL
12. Display LCD
13. USBConnections Yes
14. AutomationInterface No

15. Width (Metric) 385mm
16. Width (English) 15.2 in
17. Depth (Metric) 240mm
18. Depth (English) 9.4 in
19. Height (Metric) 345cm
20. Height (English) 13.6 in
21. Weight (Metric) 8kg
22. Weight(English) 17.6lb.
23. Includes
24. 1x2L washbottle,
25. 1x2L wastebottle,
26. 1x8L washhead,
27. Aerosolcover
28. Hertz 50/60Hz
29. Voltage 100-240V
30. For Usewith(Application) ELISA-BasedAssays
31. ElectricalRequirements 100-240V 50/60Hz
32. UnitSize Each
33. Large colour clear display and keypad for easy, convenientuse
34. Userinterfaceislogicandintuitiveforquickprotocolsdevelopment
35. Easy-to-use software requires minimal training for fast startup
36. Unpressurized bottles are safe and secure touse

37. Liquid level sensors are present in both wash and waste bottle for security
38. Automatic prime feature assure safe performance
39. Aerosol cover prevents aerosolization of infectious diseases
40. Plate sensor recognizes if plate is present

Certificates: Notified CE/BIS/FDA and ISO 13485

Embalming Machine with Table

Specifications Embalm

ing Machine

1. Should have all stainless steel construction with heliarc welded seams and joints, ground and polished to a smooth finish.
2. Should have vent system for connection to embalming tables.
3. Should have exhaust duct for connection to existing building ventilation system for exterior connection at top of the station.
4. Should have quick connect plumbing and electrical for connection to embalming tables.
5. Should have full length specimen shelf of 12 inch/30 cm wide x length of the unit.
6. Should have large radii on all inside corners for easy cleaning and required sanitation.
7. Should have large single-compartment sink with rapid and positive drainage.
8. Should have Cart-to-sink locking mechanism with side latch which can be accessed from either side of the carrier.
9. Should have large instrument drawer.
10. Should have GFCI duplex receptacles with waterproof cover.
11. Plumbing and electrical lines should be factory installed and require only minimum installation.
12. Should have light fixture over the work area.
13. Should be either Left Sink or Right sink sided.
14. Should have deluxe aspirator with reverse flow for additional waste removal "reverse flow" feature which instantly relieves suction clogging by providing a reverse pressure of water.
15. Should have Hot and Cold water fixture with convenient goose-neck faucet and wrist handles.
16. Should have Spray Hose assembly with cold water control valve, nozzle and 10 feet/3 meter of flexible hose.
17. Should have the facility of complete back siphon protection provided by reduced pressure principle assembly.
18. Should have heavy duty commercial disposal.
19. Should have Dissecting area rinse assembly.
20. Should have Dissecting board, photo blue color of dimension: Width: 20 - 22 in./50-55cm Length: 15-18 in./38-45cm Thickness: 0.5-1 in./1-2.5cm
21. Should have Magnetic Instrument holder.
22. Should be supplied with USFDA/ European CE certificate. 23. Dimension: Length: ----- 84 - 86 in./210 - 215cm Width: ----- 29 - 30 in./73 - 75 cm Working Height ----- 34 - 36 in./85 - 90cm

Table:

1. The embalming table should be constructed of stainless steel and equipped with rollers and should be designed as an integral part of the embalming process and for cadaver handling.
2. Should be slopped for drainage and uses rollers that allows for easy loading and unloading of cadavers from Mortuary Refrigerators.
3. Should have tray rinse facility for easy cleaning, sanitation and rapid disposal of waste materials.
4. Should have fabricated frame 1.5 in. / 3 cm square, .12 tubing thickness, 304 stainless steel tubing.
5. Stainless steel should have a grained finish and all welds should match adjoining surfaces.
6. Should have Four (4) 8 in./ 20 cm casters, all with brake mechanism.
7. Should be designed with a permanent slope of 2- 3 in./ 5 – 7.5cm
8. Should have flip latch to hold tray in position.
9. Should have easy quick connections for electrical and water rinse assembly.
10. Should have GFCI duplex receptacles with waterproof cover.
11. Should have Two (2) Flip Tray rinse assemblies.
12. Should have Two (2) side perforated exhaust down draft ventilation for connecting to Ventilated Embalming Station.
13. Should be supplied with appropriate Tray which fits on the table top.
14. Should be supplied with USFDA/ European CE certificate.
15. Dimension: Length: 80 - 82 in./200 - 205 cm Width 32 - 34 in./80 - 85 cm Height (Tray working) 4 - 36 in./85 - 90 cm Height (Overall) - 38 - 40 in./95 – 100cm

Mobile Examination Light

Specification

1. Mobile examination light, mounted on heavy base with 5 swivel castors and brakes
2. Low centre of gravity, sturdy construction
3. Single cupola, with handle
4. LED light source, multiple LEDs
5. Average LED lifetime > 40,000h
6. Colour temperature 4,000 – 4,400 K (depending on the available model)
7. Colour Rendering Index (CRI) >95
8. Spot field of view, 0.1 – 0.15 m diameter (depending on the available model)
9. Homogeneous light 35,000–50,000 lux at 0.5m (depending on the available model)
10. Light head mounted on adjustable flexible arm and pole stand
11. Vertical (0.70 – 1.80 m) and horizontal (0 – 0.4 m) adjustment (range could be
12. slightly different depending on the available model)
13. On/Off switch and electronic transformer incorporated
14. Power requirements 220 V / 50Hz
15. Power consumption 7 – 15 W (depending on the available model)
16. Unit should be CE from Notified body/ US FDA/BIS Certified.
17. Manufacture should be ISO 13485 certified.

HOT AIR OVEN 200LITERS

Specifications

1. Fully Automatic with automatic inbuilt digital timer (LED / LCD) Corrosive resistant material throughout the body
2. Double Walled made with stainless steel inner and outer chamber with stainless steel wire mesh shelves (min 2 shelves) Uniform temperature throughout the chamber
3. Secured lock system
4. Sufficient ventilation
5. 45-55 lit volume
6. Minimal heating time
7. Temperature range: Ambient +5°C to 220°C
8. Accuracy: $\pm 1^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$ (under ideal conditions)
9. Readability: 0.5°C
10. Power Supply: 220V, Single phase, 50 Hz, AC supply
11. Digital Temperature Controller with auto start upon reaching set temperature
12. Indicators of Auto-mode, Sensor failure, Alarm & Heating
13. Alarms and indicators during overshoot or undershoot and in case the door is not properly shut

Certificates: Notified CE/BIS/FDA and ISO 13485

FIRST AIDKIT

Specifications

List of items

1. Clinical Thermometer
2. Bandage
3. Material of bandage Cotton
4. Size of the bandage (L x W) 3 meter x 10cm
5. Adhesive plaster
6. Size of Adhesive plasters Square
7. Material of Adhesive plasters Woven fabric
8. Sterile gauzeswab
9. Size of Sterile gauzeswab 5 x 5 cm
10. Sterile Wipes
11. Number of sterile wipes 5
12. Dressing
13. Type of dressing Foam
14. Number of dressing 1 each
15. Scissor
16. Material of the scissor Stainless steel
17. Size of scissor Small
18. Absorbent cotton rolls
19. Quantity of absorbent cotton in gm 250
20. Triangular bandage
21. Number of triangular bandage 2
22. Antiseptic Liquid
23. Type of Antiseptic Liquid Dettol
24. Size of antiseptic liquid in ml 50
25. Type of Antiseptic cream Butadiene
26. Quantity of Antiseptic cream in gms 5
27. Micro porous Tape

28. Material of Microporous Tape	non-extensible non-woven fabric
29. Size of Microporous Tape	1.25 x 5 meter
30. Examination Gloves	
31. Material of Examination Gloves	Nitrile
32. Number of Examination Gloves	10
33. Tourniquet	
34. Number of Tourniquet	1
35. Antiseptic Soap	Dettol
36. Number of soap	1
37. Weight of the soapingms	45
38. Pain relief spray provided	
39. Pain relief spray	Volini
40. Tablet provided in kit (1 strip of 12 numbers)	Crocin
41. Tweezers	
42. Additional Accessories provided in kit	Polythene bags
43. All the components of the kit should be with proper packing and sterile packing shall be used for components where sterility to be maintained	

Miscellaneous Parameters

1. Suitable carry case to be provided with the kit
2. Material of carry case Plastic
3. Locking mechanism in carry case
4. First aid guide
5. Marking on First Aid Kit Words "FIRST AID KIT", letters not less than 20 mm in height and First aid symbol
6. The expiry of antiseptic liquid and antiseptic cream should be more than 1 year
7. In case buyer required having emblem on the kit or name of the organization, remarks Such as "Government supply not for sale" same shall be provided
8. Manufacturers of all components of the kit which are covered under drug license to be holding valid Drug license
9. Manufacturer of all the components in kit Yes which comes under Drug license
10. Conformation regarding having at least 5/6th shelf life for product available a time of supply for various components of kit

Certificates: Notified CE/BIS/FDA and ISO 13485

Fixed volume micro auto pipettesSet

Specifications

1. Micropipetteshouldbeadjustablewithultra-lightweightandfullyautoclavable.

PistonSystem:

2. Ultra-lightssystemmadeofforton. Itshouldbehighlyresistanttoheat,acids and alkalis, mildew, bleaches, aging, sunlight and abrasion.
3. It should have Button to control very low operatingforce,
4. Color indicates pipette volume, Positioned for perfect Ergonomics.
5. Volume Display: Four digit display and 2 Button operations.
6. Volumeadjustment:Onlyfewturntoeachfrommaximumtominimumvolume.
7. Spring loadedtip
8. Quick connection clip: Remove lower part easily.
9. Viable calibration seal to indicate factory calibration not changed.
10. Each Micropipette upto1 ml volume should have autoclavable tip box with 96tips
·1000nos suitable tips should be provided with pipettes. ·
11. Tipsshouldbeoptimizedwettingproperties,hightransparency,andhighest accuracy.

Fixed volumes

1. Volume Pipette 5 μ l
2. Volume Pipette 10 μ l
3. Volume Pipette 20 μ l
4. Volume Pipette 25 μ l
5. Volume Pipette 50 μ l
6. Volume Pipette 100 μ l
7. Volume Pipette 200 μ l
8. Volume Pipette 250 μ l
9. Volume Pipette 500 μ l
10. Volume Pipette 1000 μ l
11. Volume Pipette 2000 μ l
12. Volume Pipette 5000 μ l
13. Volume Pipette 10000 μ l

Certificates: Notified CE/BIS/FDA and ISO 13485

FumeHood

Item Specification:-

1. Breadth - 4 feet (inside to inside)
2. Depth - 2 feet 4 inch
3. Height 9 feet (floor to roof)
4. Power coated SS steel exterior. white in color
5. Corrosion free interior (white color) with shelves to keep 1 liter bottles working base made up of black granite 2 feet leg space, under the working base 2 x 1 feet width storage cabinet under the work base, besides leg space. sky blue color doors.
6. SS sink, dimension 1 feet width, 6 inch depth, 6 inch bottom depth. water tap, gas vents and suction vents with controller.
7. Adequate lights. Tube lights on the top inside and one at the back wall, inside. Air exhaust pump with controller.
8. Sliding glass door as basic drawing as attached (color of the door is red but we need torques blue)

1. Gas Analysis Apparatus, Haldane's StudentsType
2. The computerized metabolic system provides all vital parameters such as ECG, heart rate, pulmonary volumes and capacities, respiratory gases and metabolic
3. The system should calculate VE Expired minute volume, VO_2 measurements.
4. oxygen consumption, VCO_2 carbon dioxide production, RER respiratory exchange ratio, ECG, HRV, Body Temperature and Pressure Saturate BTPS, Standard Temperature and Pressure Dry STPD, (VE / VO_2) , (VE/VCO_2) etc. and should generate a number of graphs like Metabolic Log Window, VE (BTPS) vs. VO_2 , VE (BTPS) vs. VCO_2 , VCO_2 vs. VO_2 , RER vs. time, VO_2 vs. time, VCO_2 vs. time, VE (BTPS) vs. time. It should plot real time flow & volume loops.
5. ECG switch box (lead I, II, III, aVL, aVF, aVR and V1 to V6) for real time cardiac axis & vector analysis etc.
6. The Oxygen sensor should have minimum range of 5-100% oxygen and resolution of at least 0.02% & the carbon dioxide sensor with minimum range 0-8% of carbon dioxide and resolution of at least 0.1% and variable flow range of 0-185 ml/min for best performance and results.
7. The bio-potentials signal conditioners, supplied must be approved to IEC, CE & ISO.

GLUCOMETER WITH STRIPS

Specifications

1. Small, portable and user friendly device is required. Blood should not go into the Glucometer while measurement.
2. It should be able to measure whole blood in capillary mode
3. Measurement range: 30 to 600 in mg/dl.
4. Accuracy should be as per International Standard ISO 15197: 2013
(Requirements for Blood-glucose monitoring systems for self-testing in managing diabetes mellitus). Supporting certificate or test reports from the National Institutes of Biologicals (NIB) must be furnished of last 2 years with the technical bid.
5. Reproducibility/Precision: $\pm 5\%$
6. Display should be 40mm \pm 5 mm or better measured diagonally.
7. It should be battery operated electronics system and the battery life should be for at least 500 tests.
8. Self-life of strips: Minimum 6 months at the time of delivery to consignee.
9. Packing of strips should not be more than 50 strips in a pack.
10. Strips should work for minimum 3 months after opening of strip pack.
11. Operating temperature for both device and test strip should be 10°C to 40°C.
12. Should have strip ejection button facility to avoid cross contamination to the operator.
13. Control solution for checking reliability of strips will be supplied free of cost as & when required.
14. The device and test strips should be certified by the National Institutes of Biologicals (NIB), Government of India

Scope of supply

- Glucometer: 1 no.
- Standard batteries: 1 Set
- Carrying case: 1 no.
- Control solution/Control Strips
- Glucose test strips: As per Order
- Auto disables lancets: As per order

Certificates: Notified CE/BIS/FDA and ISO 13485

Handset HeatSealer

Type	12 Inch Hand Held HeatSealer
Material	Aluminium
MaterialSuitableFor	Seal most small bags, including those made with Polyethylene, Polypropylene, Polyvinyl Chloride, Cellophane, Polyolefin, and Laminations (even those with a metalized layer). These machines are used to seal: Sachets, Pillow-type bags, Pouches, Toy bags, Gussetedbags...etc
Operation	Manual
Sealing Features	
SealerLength	300mm
SealThickness	5
mm PowerFeatures	
PowerSource	AC 220
V PowerConsumption	340W

HARPENDEN SKINFOLD CALIPERS

Application : To measure the skin thickness for determination of body fat levels.

Specifications :

Dial Graduation : 0, 20mm Measuring Range : 0mm to 80mm

Measuring Pressure : 10gms/mm² (constant over range) Accuracy :

99.00%

Repeatability : 0, 20mm

HEIGHT MEASURING STAND

Specifications Description

of Function

1. Astadiometer/Height scale is a piece of medical equipment used for measuring height
2. Portable counter recording instrument
3. It should give an accurate and direct reading, to the nearest millimeter over a range of 600mm to 2100mm
4. It should be extremely easy to set up; its only component parts being two uprights and a base
5. When assembled it should be a robust free standing unit
6. When dismantled, the uprights should fit inside the base, which serves as a carrying case

Certificates: Notified CE/BIS/FDA and ISO 13485

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Specifications Description

of Function

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Certificates: Notified CE/BIS/FDA and ISO 13485

HEMOCYTOMETER

Specifications Performance

Parameters

1. Purpose: Counting Chamber used to count number of cells
2. Material of slide: Thick crystal
3. Size of slide: 30 mm x 70 mm
4. Thickness of slide: 4 mm
5. Size of counting grid: 3 x 3
6. Number of square subdivisions in counting grid
7. Slide should have a central area where cell counts are performed within built marker
8. Lines dividing the central square into 25

Small squares

1. 25 squares should be subdivided into 16 smaller squares adding up to a total of 400 small squares in the central area
2. Provision to fit a glass cover of a square glass
3. Distance between bottom of the chamber and cover 0.1 mm

Packaging

1. Material of the case of Neubauer Chamber Padded wooden

Accessories

2. Should be supplied with glass coverslips
3. Number of cover slips supplied with Neubauer Chamber 50

Certificates: Notified CE/BIS/FDA and ISO 13485

Hemocytometer with White and Redpipettes

Hemocytometer inclusive of Neubauer counting chamber, RBC, WBC pipettes contained in a box.

With heavy cover slip; improved Neubauer counting chamber specialized microscopic slide.

Inside cell of chamber: an area of 9sq.mm (3X3 Sq.mm) divided in to 9 squares of 01mm side by means of triple lines.

The central small square is further divided by triple lines into $5 \times 5 = 25$ smaller squares each with side $1/5$ of a mm. each of the square is further divided in to $4 \times 4 = 16$ smallest squares with side equal to one twentieth of a mm.

Dimension of individual cell of $0.05 \times 0.05 \times 0.0025$ mm

Gap between cover: 0.1mm, Slip Grid area.

Pipettes: RBC and WBC pipettes Accessories:

Rubber suckers for RBC & WBC pipettes

Cover Slips: 22×25 mm

one box Wooden box: inside dimensions Approx. $100 \times 175 \times 30$ mm

Accessories: additional two RBC & WBC pipettes each with every Neubauer chamber
Essential: ISO certified/BIS Marked

Hemoglobinmeter

Specifications

1. Point of care hemoglobinmeter Yes
2. Purpose A hemoglobin meter is an instrument used to determine the hemoglobin content of the blood by spectrophotometric measurement. Portable hemoglobin meters provide easy and convenient measurement
3. Type of Display Available LCD
4. Measurement Range gm/dl 0 to 25
5. Measurement Method Optical reflectance
6. Sample Mode Capillary
7. Accuracy in percentage 99
8. Detector type Photo-metric
9. Sample Volume in range μ L 0.2-0.8
10. Storage capacity in number of samples 1000
11. Zero Setting Automatic
12. Calibration Factory Calibrated according to ICSH
13. Self-checking Facility available between every measurement Yes
14. Shutdown system Automatic
15. Wavelength in nm 330

Additional Accessories

1. Lancets supplied with item 50
2. Test Strips supplied with item 50
3. Working temp and humidity Temp 5 - 50 degree Celsius, Humidity 5% to 95%
4. Testing time in seconds 15

Power Requirements

1. Battery Internal
2. Type of battery Disposal
3. Number of tests performed by the battery with full charging 200 or more

Miscellaneous Parameters

1. User/Technical/Maintenance manuals to be supplied in English in hard and soft copy
2. Demonstration and training to be provided at consignee end
3. The Principal Manufacturer Must Have Direct Presence/ approved service center In India

Certificates: Notified CE/BIS/FDA and ISO 13485

HOT AIR OVEN 200LITERS

Specifications

1. Fully Automatic with automatic inbuilt digital timer (LED / LCD) Corrosive resistant material throughout the body
2. Double Walled made with stainless steel inner and outer chamber with stainless steel wire mesh shelves (min 2 shelves) Uniform temperature throughout the chamber
3. Secured lock system
4. Sufficient ventilation
5. 45-55 lit volume
6. Minimal heating time
7. Temperature range: Ambient +5°C to 220°C
8. Accuracy: $\pm 1^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$ (under ideal conditions)
9. Readability: 0.5°C
10. Power Supply: 220V, Single phase, 50 Hz, AC supply
11. Digital Temperature Controller with auto start upon reaching set temperature
12. Indicators of Auto-mode, Sensor failure, Alarm & Heating
13. Alarms and indicators during overshoot or undershoot and in case the door is not properly shut

Certificates: Notified CE/BIS/FDA and ISO 13485

HOTPLATE

Specifications

1. Glass ceramic heating top
2. Ideal for heating samples and concentrated acids
3. Max. Heating plate temperature up to 400°C
4. Should include a separate Temperature Control Unit with PTFE or any acid resistant cord connection
5. Heating area approx. 200x200mm
6. Heating plate dimension approx. 300x300mm
7. Accessories to be included if any
8. With manufacturer's warranty

Certificates: Notified CE/BIS/FDA and ISO 13485

HOTPLATE

Specifications

1. Glass ceramic heating top
2. Ideal for heating samples and concentrated acids
3. Max. Heating plate temperature up to 400°C
4. Should include a separate Temperature Control Unit with PTFE or any acid resistant cord connection
5. Heating area approx. 200x200mm
6. Heating plate dimension approx. 300x300mm
7. Accessories to be included if any
8. With manufacturer's warranty

Certificates: Notified CE/BIS/FDA and ISO 13485

MilkHydrometer

Specification:

1. Measuring Range: 0-25Quevenne
2. Product Size:170mm
3. Packing: Plastictube

ICE LINE REFRIGIRATOR

Specifications Description of

Function:

Ice lined Refrigerators maintain temperatures of +2 deg C to +8 deg C. Not more than 8 hrs continuous or intermittent power should be sufficient per 24 hrs. to maintain vaccine temperature below 8 deg C. Ice- lined refrigerators are required at district and regional levels. Since electricity supplies are rarely perfect and standby electricity supplies may not be available.

Operational Requirements:

Vaccine storage is required for Routine Immunization, Campaign and new vaccine introduction.

Designed for tropical climates.

Target hold over time should be at a minimum of 23 hrs or more in a continuous external temperature of 43 deg C.

Hot and cold compressor starting at 172 volts (22% below rated voltage).

2.5 Manufacturing process of the product should not use or produce hazardous chemical-gases.

Provision for drainage for the wastewater.

Should have legs in the base with rotating screw type height adjustments to balance the weight on uneven floor.

The unit should have ground clearance of minimum 100mm.

Technical Specifications:

Gross Storage Capacity: 240 liters

Net Vaccine Storage Capacity: 135 to 160 liters within basket in place.

Construction:

3.3.1. Internal: Stainless 304 grade steel

3.3.2. An additional special ice lining consisting of ice packs covered by strong plastic shell.

External: Corrosion Resistance

Chest type with CFC – free insulation

Should have horizontal water cool pack covering the top of the basket.

Solid door with lock and handle.

Type: Compression Cycled, CFC – Free (both for refrigeration and insulation) All system tubing (suction tube, freezer tube and condensing tube) should be of minimum 99.97% of pure copper coil.

Temperature of full vaccines to remain +2 deg C to +8 Deg C during continuous availability of energy at ambient temperature +5 to +45 deg C with intermittent/ continuous electricity supplies 8 hrs in a 24 hrs cycle. The temperature difference between any two points in the cabinet should not be more than +2 deg. C once stabilized.

Inlet of Capillary should be outside the PUFBODY.

ON/OFF switch and power indicator should be available.

A micro-processor based control unit should be provided for setting of temperature and display following features:

3.12.1.3 digit digital display (to one decimal point) of cabinet temperature. The sensor should be placed 25 to 50 above base of storage chamber.

Power on LED/LCD indicator.

Audio (minimum 65 db) and visual alarm against the violation of temperature range (less than +2 and more than +8 degree C)

Min & Max. Cabinet temperature digital display of last 24 hrs, and breaches during last 24 hrs

The unit should be sealed/protected from dust, moisture or condensed water falling over it.

Accuracy for digital controller ± 0.5 degree centigrade.

4. System Configuration

Programmable Micro- processor control unit with child lock facility.

4.2 Should have provision to set minimum and maximum temperature at 0.1 degree Centigrade to programmed the unit for continuous operation.

4.3. Should have provision for defrosting program.

5. Accessories, Spares

VaccineStorageBasketallowingfreecirculationofair,havingthesizetobeableto accommodate 4 to 6 of them in the unit and suitable to match the net volume requirement. It should be minimum 5 wirebasket.

Stem Alcohol thermometer (specifications and standard as per MOHFW mentioned in para no. II of this specification) – one piece
per unit range of – 30 to + 50 degree centigrade.

6. **Environmental factors:**

The unit shall be capable of being stored continuously in Ambient temperature of 0 to 50 deg C and relative humidity of 95% 6.2 The unit shall be capable of operating continuously in ambient temperature of 5 to 45 deg C and relative humidity of 90%

6.3. The plug should be flexible and unbreakable sealed rubber type.

7. **PowerSupply:**

Power input to be 220-240 VAC, 50 Hz as appropriate fitted with Indian plug. Voltage stabilizer as per the MOHFW approved specifications and standard mentioned in para no. III of this specification

Certificates: Notified CE/BIS/FDA and ISO 13485

INCUBATOR

Specifications

1. Should be operated on 230V, 50Hz single phase AC supply, and having temperature ranging from ambient to 60°C
2. Should be double walled with stainless steel inner chamber having a minimum of two inner stainless steel shelves with holes and powder coated outer surface.
3. Inner chamber should be fabricated with ribs for adjusting shelves to convenient height. Should have a minimum of chamber size of (L*B*H) of 450*450*450mm.
4. Should be provided with three side heating elements.
5. Should have air circulating fan (Which can be turn ON/OFF on demand) for uniform temperature on all shelves.
6. Should have double door with acrylic transparent door
7. Should provide with a microprocessor based digital temperature controller with digital display.
8. Should have synthetic rubber gasket at the door.

Certificates: Notified CE/BIS/FDA and ISO 13485

INFANT RADIANT WARMER

Specifications:

1. It should be a microprocessor-based servo-controlled warmer with the service adjustable height for user comfort.
2. It should have visually coded control panel and color-coded safety alarms for simple understanding.
3. The heating elements should have a lifetime warranty and should be of quartz or calrod type.
4. The size of heating elements should be precisely matched to the bed size for even heat distribution.
5. The system should be made of fire grade materials to dampen the fire and retard continuous burning.
6. The system should not have any access to the heater element to protect the user from accidental contact during operation.
7. The unit should have medical grade power inlet in case of any short circuit happens the fuse will blow off and protect the care given and equipments.
8. Warm up time should be less than 15 minutes.
9. The heater output should be less than 600 watts and adjustable in twenty steps of 5% increment.
10. All the parts that could come in potential contact with the patients should be made of bio-compatible materials.
11. It should use a probe guard to prevent damage of the skin in probe to enhance the life of the probe.
12. The unit should stop heating if the temperature exceeds the desired value by 1 degree Celsius and restart only when the temperature falls back into the 1 degree Celsius.
13. It should have +/- 15 degree continuous bed tilting mechanism with self-locking facility and should be operable from both sides.
14. The overhead heater head should 90 degrees swivel to either side for easier access and enable taking x-rays.

15. It should have an integrated slide out x-ray tray below the x-ray transparent mattress, which can be pulled in and out without moving the infant.
16. It should have a siderails system to fit accessories and allow flexibility on positioning of accessories.
17. It should have a timer with audible tones on one, five and ten minutes.
18. Its mattress size should be 450- 460 x 600-640 x 25-30mm.
19. It should use thermister base probes with probe interchange ability ± 0.1 degree c at 30-40 degree c
20. It should have independent observation light (independent of warmer mains on/off) with intensity of minimum 500 lux at centre of mattress with high lamp life.
21. Unit surfaces should be accessible and smooth to support quick and thorough cleaning to allow infection control.
22. The unit should be supplied with superior quality completely sealed breathing mattress to provide maximum patient safety and comfort.
23. It should have a self test function performed at power on and continuously during operation.
24. It should be supplied with one iv pole, 2 nos cylinder holders.
25. Should be supplied with a suitable bassinet with radiotranslucent
26. It should comply
 - * iec 60601-1 for electrical safety,
 - * iec class 1 for continuous operation,
 - * iso 10993-1 for bio-compatible materials.
27. Complete unit should conform to internationally accepted quality standards and should carry the certification of the applicable product quality standard us fda/Europeans/bis.

Warranty: one year

28. Accessories:

- * reusable temperature probe-2 nos.
- * disposable temperature probes-10 nos.
- * mattress
- * x-ray tray
- * instrument shelf.

Certificates: Notified CE/BIS/FDA and ISO 13485

INFUSION PUMP

Specifications

1. Should be operated on drip rate Peristaltic finger pump method
2. Should be compatible with most of the IV set (macro/micro drip sets)
3. Should have the following flow rates
4. IV Set ml/hr. drops/min 15 drops/ml 3~450ml/hr. 1~100drops/min 20drops/ml
3~450ml/hr. 1~100drops/min 60drops/ml 1~100ml/hr. 1~100drops/min
5. mL/hr to 99.99 mL/hr - 0.01 mL/hr increments 100 mL/hr and above - 0.1 mL/hr increments
6. Keep vein Open option (adjustable default flow rate)
7. Should have a flow rate accuracy of $\pm 10\%$ and drip rate accuracy of $\pm 2\%$.
8. Should have a volume infused display from 0 to 999.9ml.
9. Should have a purge and KVO facility
Minimum flow rate - not more than 0.1 mL/hr
Maximum flow rate - not less than 1L/hr
10. Adjustable (time and volume) Bolus dose
11. Accuracy rate: 5.1 within $\pm 5\%$
12. Audio and Visual alarms to indicate Air in line, infusion complete, Occlusion (Up/Down), empty container, low battery, door open, tubing misleading, other device malfunctions
13. Automatic storage of previous infusion parameters when unit is switched off
14. Accepts IV sets of all brands and calibrated for major Indian brands and also for the imported range.
15. Wall/stand mountable; the mount should be supplied with the gadget
16. Rechargeable battery (preferable Lithium ion)
17. Minimum 4 hours operating time
18. Minimum 24 hours standby
19. Should work on AC (100 to 240 V; 50-60Hz) as well as DC 12V
20. Should have an audible and visual alarm for occlusion pressure, air alarm, door open, empty, low battery

21. Should have a LCD display with backlight and graphical display of infusion
should have a minimum 2hr battery back up at highest delivery rate

22. Should work with input 200 to 240Vac 50 Hz supply

23. Weight not more than 2.5Kg

Certificates: Notified CE/BIS/FDA and ISO 13485

INSTRUMENT STERILIZER(BIG)

Specifications

Specifications

1. Made from heavy gauge stainless steel, these sterilizer with seamless construction, which avoids accumulation of residual bacteria and dust in sterilizer chamber.
2. The automated tray lifting arrangement makes the process more efficient and time saving.
3. Construction of stainless steel
4. For steam sterilization/disinfection of surgical materials/instruments
5. Electrically operated with immersion heater,
6. Power source 220v/50Hz

Certificates: Notified CE/BIS/FDA and ISO 13485/13485

INSTRUMENT STERILIZERSMALL

Specifications

1. Made from heavy gauge stainless steel, these sterilizers are power packed with features like seamless construction, which avoids accumulation of residual bacteria and dust in sterilizer chamber.
2. The automated tray lifting arrangement makes the process more efficient and time saving.
3. Construction of stainless steel
4. For steam sterilization/disinfection of surgical materials/instruments
5. Electrically operated with immersion heater,
6. Power source 220v/50Hz

Certificates: Notified CE/BIS/FDA and ISO 13485

LABREFRIGERATOR

Specifications

1. Temperature range:2-8°C
2. Style type:Vertical
3. Capacity: 400Liters
4. Dimensions (in Inches): 22-28(W) x20-24(D) x70-80(H)
5. Digitalcontroller
6. Locking system:Yes
7. Type of doors: Single transparent glassdoor
8. No. of selves: Minimum4
9. Temperature display screen: Easy toread
10. Inside lamp:Yes
11. Refrigerant: CFCFree
12. Suitable stabilizer to beprovided
13. Power Supply:210-240V
14. Item should be supplied with a NABL compliant calibrated digitalthermometer

Certificates: Notified CE/BIS/FDA and ISO 13485

LAMINAR AIR FLOWCHAMBER

Specifications

1. Operational Requirements: The basic equipment shall consist of a HEPA filter, pre filter, suitable blower assembly, necessary lighting, indicators and controls for the cabinet.
2. Type of Flow: Vertical –Re-circulatory
3. Face dimensions: 4ft (L) X 2ft (W) X 6 ft The HEPA filter should have rated efficiency of 99.97% (or better)
4. microns to provide product protection of Class 100 or exceeding Class 100 requirements of Federal Standards 209E or equivalent ISO within the work.
5. Prefilter with Synthetic, non-woven polyester fibers having casing of enamel painted CRCA frame with Retention of 10 - 15 Micron and 90 % Efficiency. Washable with an arrestance of 90% or better
6. Dimensions: 32" (w) x 30" (D) x 33" (H)
7. With Airborne particulate controller and UV microprocessor controller
8. Should qualify ISO 5 vertical laminar flow air standards
9. Must have 360-degree visibility
10. Integral polypropylene base for easy cleaning with thermoplastic construction
11. Built-in fluorescent light and Slip hatch access port
12. HEPA filter monitor automatically indicates when filter change is required
13. Sturdy cart for mobility - Metal-free polypropylene construction available
14. Ultra-Low Particulate Air filter IV bar,
15. HEPA filter monitoring with audible/visible filter change alarms

16. Variable speed blower control and Lab event timer One-touch feature control

Switches and indicators:

17. Individual switches and indicator lamps for blower motor, florescent lamp and UV lamp. Low noise level

18. Should be suitable for Media plate pouring, Non-hazardous cell culture and Sterile compounding

System Configuration Accessories, spares and consumables.

System as specified Spare HEPA Filters and PRE Filters- 2 SETS EACH, 2 Germicidal UV lamps - Other fitting required for attaching auxiliary services are

1. Electrical outlet socket (5 ampere rating) qty: (2no's)
2. Valves for gas service-one each for gas andvacuum.
3. Standards: Should be CE or FDA or BIS approvedproduct
3. Electrical connection: 230V, AC, 15 Amp
4. Separate lighted power ON/OFF indicator switches for blower andlighting.
5. Height-adjustable lab chair, Ergonomic footrest

LARYNGOSCOPE

Specifications

LARYNGOSCOPE ADULT AND PEDIATRIC

1. Should supply 4 different size standard blades and one handle for adult and pediatric separately and one short stubby handle
2. Should be stainless Steel mattfinished.
3. Should provide with 1,2,3,4 sizes
4. Should provide curved blades for both adult and pediatric.
5. An extra-large blade should be supplied along with each scope.
6. Should be provided with battery
7. Should provide spare bulb – 6 no's

LARYNGOSCOPE NEONATAL

1. Should supply 2 different size standard blades and one handle.
2. Should be stainless steel mattfinished.
3. Should provide 0,00,1 size blades
4. Should provide straight blades - 2 Nose each
5. Should be provided with battery
6. Should provide spare bulb – 6 no'

Certificates: Notified CE/BIS/FDA and ISO 13485

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5. Should be provided withbattery
6. Should provide spare bulb – 6no'

Certificates: Notified CE/BIS/FDA and ISO 13485

LED AAPRONS with ThyroidShield

Specifications

1. Radiation Protective Lead Apron with ThyroidShield
2. The Apron should be approved by AERB. (Atomic Energy Regulatory Board)/
BARC (Bhabhi Atomic Research Centre)
3. Complete frontal protection
4. Padded shoulders for reduced shoulder stress and equitable distribution of weight.
5. Wide stretchable insert with Velcro fastening for a snug fit.
6. Also available with snap lock instead of Velcro.
7. Easy to wear and remove.
8. Lead equivalence: - 0.25mm Pb, 0.35mm Pb, and 0.50 mm Pb adhesive backing.
9. Manufacture/ Supplier should provide 01 Year guarantee.
10. The Lead Apron should be 30-40% lighter than conventional PB Apron. The same
will be verified at the time of Technical Evaluation.

Certificates: Notified CE/BIS/FDA and ISO 13485

BINOCULAR MICROSCOPE

SPECIFICATIONS

1. Body-Inter changeable, inclined Binocular body, 360° rotatable head
2. Eyepieces-Highest quality 10 X wide angle anti fungus field eyepiece.
3. Objectives-Par focal, antifungals coated 4x, 10x, 40x and 100x (oil immersion) with plan achromatic correction
4. Optical system-Infinity corrected
5. Stage --Horizontal mechanical stage preferably 100 x 140 mm with fine Vernier graduations designed with convenient coaxial adjustment for slide manipulation preferably through 30 x 70mm
6. Sub stage-Abbe condenser focusable, continuously variable iris diaphragm
7. Illuminator-Built-in LED light source with white light.
8. Finish-A durable textured acid resistant finish.
9. Other Features
 - Should provide with wooden storage box, dust cover, immersion oil.
 - Electrical safety certification
 - Should work with input 200 to 240Vac 50 Hz supply.

Certificates: Notified CE/BIS/FDA and ISO 13485

MADDOXROD

Specification

Subjective test

1. Can easily be performed
2. Simple and fast technique
3. Can be used on children, if they can respond reliably
4. Can be used to test eye muscle balance (light source at near (33cm) and at distance (6m))
5. Base in, base out, base up, base down prisms
6. Trial frames Small to moderate (i.e. <25pd) vertical deviations where there is simultaneous perception and normal retinal correspondence (NRC)
7. Decompensate phoria's.
8. Acquired strabismus (rather than congenital or early onset)

Certificates: Notified CE/BIS/FDA and ISO 13485

MAGNIFYING LENS

Specification

1. Material Glass
2. Size/Diameter 100mm
3. Lens Diameter 100mm
4. Handle Color Black

Certificates: ISO 9001

ORTHO DRILSYSTEM

Specifications

1. Drilling unit includes motor, stand, foot control, flexible shaft-1, nos. toolkit, oil bottle and special container
2. Cannulated drill hand piece max speed 1200 RPM & with fixed jacob's SS chuck(0-1/4)
3. Reaming hand piece max speed 400RPM
4. Sagittal saw hand piece (set of blades)
5. Flexible reamer shaft 8mm dia hands up to 12mm
6. Flexible reamer shaft detachable heads up to 12mm
7. Reamer heads, from 8.5 mm to 12.00 mm (set of 8)
8. Reamer heads, from 12.5 mm to 15.00 mm (set of 6)
9. Flexible reamer shaft detachable heads up to 15mm
10. Flexible shaft extra
11. Wire driver handpiece

Certificates: Notified CE/BIS/FDA and ISO 13485

MANUAL ROTARY MICROTOME

Specifications

1. Performance Parameters
2. Purpose : Sectioning of organic tissue into thin sections for microscopic examination of specimens
3. Type of Microtome Semi automatic rotary microtome
4. Section thickness in μm 1-100 μm
5. Section thickness increment range in μm 0.5 to 100 micron,
 - Increments 0.5 μm from 0.5 μm – 2.0 μm ,
 - Increment 1.0 μm from 2.0 μm – 10 μm ,
 - Increment 2.0 μm from 10 μm – 50 μm ,
 - Increment 5.0 μm from 50 μm – 100 μm
6. Mechanism Motorized fed mechanism with manual cutting options
7. No of electronic cutting option NA for semi automatic
8. Integrated lockable hand wheel capable of being locked in any desired position Yes
9. Rotation of wheel can be both clockwise and anti-clockwise Yes
10. Type of blocks which can be cut Both Para n and epoxy resin blocks
11. Length of vertical stroke in mm 60mm for small standard clamp
12. Horizontal specimen feed in mm 25
13. Specimen orientation facility in degree (through X and Y axis) 8
14. Specimen holder design standard specimen clamp
15. Availability of Specimen retraction with provision of On/Off switching yes
16. Type of blade holder Disposable blade holder with integrated with Knife angle position locking & Lateral Displacement facility & safety angle protection guard
17. Material of blade SS
18. Type of disposable blade both high profile and low profile
19. Number of packet of disposable blades (502 pkt blades in 1 packet)
20. Knife holder to be supplied Yes
21. Weight of the machine in kg 20

22. Lubricant machine oil bottle to be supplied Yes
23. Hand wheel Lock/Break 1 Mechanical Locks, 1 Electronic Brake
24. Emergency brake for users safety NA for semiautomatic
25. Display Soft touch Screen display
26. Functions of display Complete function of automatic sectioning, Fast trimming and Slice counting, section thickness, trimming thickness, sum remaining travel of specimen feed and date information
27. Trimming Thickness range
- "1 micron - 600 micron,
 - Increments 1 μm from 1 μm – 20.0 μm ,
 - Increment 2.0 μm from 20.0 μm – 50 μm ,
 - Increment 5.0 μm from 50 μm – 100 μm ,
 - Increment 10.0 μm from 100 μm – 600 μm "
28. Motorized Coarse feed in two speeds : 300 mm/sec & 900 mm/sec
29. Cutting speed manual sectioning in case of Semi automatic microtome
30. Specimen Retraction "In Manual Sectioning Mode: 5 - 100 μm (in 5 μm increments); can be turned off, In Motorized Sectioning Mode: Speed-Dependent; can be turned off"
31. Relative Humidity during Operation 20% to Max. 80% Non-Condensing
32. Ambient operating Temperature range in Degree centigrade Celsius and humidity Range 10 to +30C
33. Section waste tray, dust cover, brush cleaning yes
34. Cloth Instruction manual to be supplied with the item Yes
35. Power supply 220 V, 50 Hz AC, Single phase
36. Power cord, fuse and Allen key set to be Supplied with the item Yes

Certificates: Notified CE/BIS/FDA and ISO 13485

Marey's Tambour 28mmdiameter

Stainless Steel Capillary Lever

Meat cutting machine for thin bodysections

Specification:

1. Made from SS 304Grade
2. Simple design, reliable and simple touse
3. Made of anodizedaluminum
4. Shining, hygienic andrustproof
5. Motor Power1Hp
6. Cutting speed 18m/s
7. Blade length 2020mm
8. Pulley 250 mm
9. Gross weight less than 63kg
10. Complete with pressing arm, portion measuring device, 24 Volt switch relay and micro-switch on bladecoverage
11. Easy and precise regulation of thepulley
12. Adjustable in height, inclination up-down or left-right to assume the best contact of theblade
13. Easy forecleaning
14. All electric parts are housed in the back side of themachine
15. Byunscrewingtwohandlesispossibletotakeoffblade,pulleyandpulley support, so that there is a flat surface to becleaned

Certificates: Notified CE/BIS/FDA and ISO 9001

MICROCENTRIFUGE

Specifications

1. Unit should be brush freemotor
2. Maximum Speed, RPM6000
3. Capacity 8 x 1.5/2.0 mltubes
4. Permissible Relative Humidity Greater than80%
5. Noise Level should be Less than 55dB
6. Permissible ambient temperature 5 to 40 degC
7. Dimensions (WDH) in cm 16.2 x 15.7 X11.5
8. Weight 2kilogram
9. Power supply 100-240V,50/60Hz
10. Warranty 3Years

Certificate: Notified CE/BIS/USFDA andISO13485

Micrometer Eye Piece Eyepiece: Magnification 15x

Eyepiece Protractor: Graduation 1° . Protractor range 360° with least count of $6'$.

Micrometer Stage

Specimen Stage: 6" x 6" (152mm x 152mm) stage with XY travel of 2" x 2" (50mm x 50mm).

Effective area of glass stage is 3.78" x 3.78" (96mm x 96mm). Maximum workpiece load is 11lbs (5kg).

Bright Field Microscope

Specification:

1. Microscope Type Research Trinocular - Non-Hinged type -with built-in light and with light intensity regulator
2. Eye piece Type Huygenian
3. Eye Piece with magnification Set of Two For Binocular 10x
4. Objective Type achromatic
5. Objective Magnification 100X
6. Numerical Aperture of Objective 1.25
7. Lamp for Illumination LED
8. Plano Concave mirror attachment
9. Stage Rectangular
10. Size of Stage 75x50mm
11. Coarse and Fine Movement of stage
12. Co-axial focusing

Certificates: Notified CE/BIS/FDA and ISO 13485

ITEM SPECIFICATION

1. Microscope stand: High quality, microscope stand to provide long life and good mechanical strength. Coaxial focusing control. Stand should be equipped for transmitted light as well as reflected light. Stabilized electronic power supply for reflected light.
2. Motorized focus drive Inbuilt motorized Z focus drive with a minimum step resolution of 10 nm or better
3. Nose piece Sextuple revolving Nose piece should have strain free objectives. It should be possible to attach objectives suitable for brightfield, darkfield also in the same nose piece.
4. Reflector Turret 6 position reflector turret to accommodate reflector modules for bright field, dark field, DIC and polarizer.
5. Stage Mechanical motorized scanning stage capable to accommodate different metal inserts as well multiple sample holder, travel range of 130x85mm or better having resolution of 0.1µm
6. Eyepiece High quality anti fungus widefield 10X eyepiece pair with adjusting mechanism, eye guards . Field of View of 23 and above. Interpupillary distance adjustment (55-75mm), dioptric adjustment ring on the left having adjustable dioptric scale of +/-5.
7. Illumination Micro LED illumination system for the reflected light studies which can have usable working hours of minimum 60000 hours. Suitable for 230V 50Hz power supply
8. Shutter Motorized shutter for multi dimensional imaging in brightfield

9. Objectives Enhanced contrast objectives suitable for reflected light. Magnifications of 5X, 10X, 20X, 50X, 100X, 200X with free and sufficient working distances between tip of the objective and sample stage for housing and viewing thick polished sections and moulds. Should be capable to work in bright field and darkfield.
10. Internal Optics The internal optics should be free of any distortions and should give clear and aberration free images made of Infinity Colour Corrected System Optics (ICS)
11. Focus Drive Co-axial knob provided based on a four stage gear reduction and fine focusing for silk smooth operation. There should be sufficient working distance for movement along Y direction i.e. between tip of the objective and the sample stage for housing and viewing thick polished sections and moulds. Rack and pinion gears for focus movement, height adjustable relative to top of stage, adjustable screw-stop to limit coarse range to protect specimens.
12. Motorized Magnification Changer Provision to have components for increased magnification -motorized.
13. Image Viewing options Should have 3 switching positions (100% Vis: 0% L/0% vis: 100% R / 50% vis: 50% R)
14. Beam Path switch over Provision for beam path switching motor between visual observation or front port or base port
15. Filters All suitable filters like, normal (daylight), grey, yellow, blue & conversion filters to be provided.

16. Photomicrography system with computer and software High resolution and high speed digital cooled CCD camera having minimum of 20 fps or better at full frame,6.0 mega pixel or better, USB 3.0 interface, 14 bit/pixel orbetter.
17. Workstation/ComputerSuitablehighendcomputer/workstationcapableof handling the above imaging system should beprovided.
18. Software To be provided as additionalaccessory
19. AccessoriesObjectivecentringtools,specializedcondenserslens,instruction manual, dust cover and lens cleaningcloth.
20. WarrantyStandardwarrantytobeprovidedfromthedataofinstallationof microscope.Installation
21. Installationofcompletemicroscopeunitanddemonstrationofphotomicrographic systemanditsapplicationsoftwareshouldbeprovidedfreeofcostattheusersite.
22. Camera High resolution, Monochrome scientific grade, peltier cooled CCD camera for fluorescence Imaging Resolution: 6.0 Mega Pixel Spectral range of 400 to 720 nm or better Dynamic range > 1: 2500 or better FWC 15Ke or better Read out noise: < 6.5 e or better Read out speed 39.0 MHz or better Frame Rate: 20 fps at full resolution Digitization: 14 Bit or better Interface: Firewire interface with option for Triggering: For Exposure time, for acquisition System Control Automatic and interactive Microscope control Image Acquisition Image capture MovieAcquisition
23. System Control Automatic and interactive Microscopecontrol
24. ImageAcquisitionImagecaptureMovieAcquisitionAutomaticMultichannelImage Acquisition ROIImaging
25. Image Processing Basic adjustment of Brightness, contrast and gamma Adjustment of colour in BF images Correction of bleaching effect in Z stack images Pixel shift correction Image smoothening basic Image Sharpeningbasic
26. Image Analysis Interactive and basic measurement such as Length, Angle, diameter,Area,PerimeterGrayvaluemeasumentalongalineStatisticalAnalysisand evaluation ofData
27. Image Documentation Creation of User definedreports
28. Image Viewing Orthogonal View of Z stack Images Simultaneous Imageobservation forcomparison
29. Utilities Provision of retaining AcquisitionParameters
30. MetalInserts:ThestageshallhavemetalInsertswithOpeningofmin.3different diameters in the range of 10 to 30mm
31. Should be notifiedCE/USFDA/BIS

Phase Contrast Microscope

Specification:

1. Microscope Type research binocular non hinged type with built in light and with light intensity regulator
2. Conformity to Indian Standard Pathological IS:4381 latest
3. Eye piece Type Huygenian
4. Binocular Eye pieces Confirming to the requirements of IS: 8275/1976 (latest)
5. Eye Piece with magnification Set of Two For Binocular 10x
6. Objective Type achromatic
7. Objective Magnification 100X
8. Numerical Aperture of Objective 1.25
9. Type of lamp for illumination led
10. Stage Rectangular
11. Size of Stage 110x110
12. Coarse and Fine Movement of stage
13. Co-axial focussing
14. Micrometer Arrangement

Certificates: Notified CE/BIS/FDA and ISO 13485

Oil-immersionlens

Specification:

1. Oil Immersion Objectives for NIR and VisibleLight
2. Infinity-Corrected Plan Fluorite or Plan AchromatDesigns
3. RMS (0.800"-36)Threading
4. Designed for a Tube Lens Focal Length of 180mm
5. 45.06 mm ParfocalLength

Certificates: Notified CE/BIS/FDA and ISO 13485

Microtomes, Sledge, largecutting

1. These cuts sections in the thickness that ranges from 3 to 30microns
2. These are not suitable for cutting very hard resins like araldite due to their risk of vibration
3. The sledge microtome is ideal for cutting different material like bone, plastics, resins, wood and large area softtissues
4. Hard material such as wood, bone and leather require a sledgemicrotome
5. These microtomes have heavy blades and cannot cut as thin as a regularmicrotome
6. Special knife for cutting extra hardsections
7. Heavy construction for stability and not usually subjected tovibration
8. Glide way for convenientmovements
9. Calibrated veneer type scale for section settingadjustments

MOBILE LED OTLIGHT

Specifications

1. The OT Light should be mobile single dome with following features:
2. A Light should be ultra-compact, lightweight, made up of non-corrosive metal & with light intensity of maximum 1, 20,000 lux. The no. of reflectors in dome should be 4-6.
3. The outer dome diameter should be around 18-24" Inch
4. The Lamp heads should be Lightweight, made up of non-corrosive metallic substance, having LED bulbs which produce homogeneous pattern of white light, can be replaced, if possible, while operating. The light pattern shall be highly consistent
5. The Light should produce a constant intensity of cool light with focal pattern of 9 inch to 13 inch at distance of one meter.
6. The color temperature should be 3500-4800K and Color Rendering Index should be 90-95.
7. It should be provided with drip free spring arms for easy maneuverability, total lateral viewing of the patient as well as 360° rotation in main arm, and light head.
8. It should have facility to focus and control the pattern size of the Light with the help of a double sided touch screen Intensity control panel.
9. The control panel should be user friendly and should be used to control the following:
 - Light Intensity adjustment from at-least 5000 lux to maximum 1,20,000 lux.
 - Field of view size
 - On/Off Switch
 - Color temperature
10. The Life of the LED should be at-least 25000 Hrs.
11. The Lens of the dome should be interchangeable and removable. The glass should be scratch proof to optimize light penetration.
12. The depth of illumination of the light should be around 36- 48 inches.
13. The lamp head should have serializable handle at the center of the lamp head.

Certificates: Notified CE/BIS/FDA and ISO 13485

Mobile X Ray Machine

specifications

1. Features: 100mA-100KV, ultra high frequency 200 KHz diagnostic mobile unit.
2. Output Power: 4kW
3. System frequency: 200kHz
4. kV range 40 to 100
5. mA range 10 to 100
6. mAs range 0.1 to 250
7. Exposure time range 10ms to 5sec @230 VAC
8. Max Current: <16Amps
9. Tube type- Stationary anode
10. Duty Cycle Time 1:30sec
11. Kv Step: Jump Step of 2 KV for 40-70Kv, then step of 5 Kv till 100KV
12. Tube focal spot 1.8mm x 1.8mm
13. Technique selection 2-point technique (kV, mAs)
14. Cassette holder Up to 4 cassettes
15. Mains cable length Up to 5 meter
16. Handle for collimator rotation: +9 to 90 degrees
17. Unit should be AERB/Notified CE/US FDA/BIS certified.
18. Manufacture should be ISO 13485 Certified.

MONOCULAR MICROSCOPE

Specifications

1. Should have sturdy stand with convenient location of focus controls
2. The monocular tube should be 45 degrees inclined, and 360 degrees rotatable
3. Should be an integrated wide field eyepiece- 10x, 18mm with foldable eyeguard,
4. Should have an anti-fungus coating.
5. Should have quadruple nose piece with ball bearings with rubber grip.
6. Objectives should be semi-plan, achromatic, 4x, 10x, 40x, 100x spring loaded, oil immersion with anti-fungus coating.
7. Should have a mechanical stage of dimension: 135x125 mm, with low dry coaxial control, ball bearing slides with graduated scale
8. Should have an SS holder for slide 75x50mm movement
9. Should have coaxial coarse and fine focusing system with ball bearing guide ways
10. Should have an Abbe condenser
11. Should have NA 1.25 with aspheric lens
12. Should have an iris diaphragm with removable blue filter
13. LED illumination with variable intensity control
14. Input 220v – 240V, AC

Certificates: Notified CE/BIS/FDA and ISO 13485

Storage tank to holdcadavers

Description:

1. Strong Stainless Steel frame work construction. All structure polished finishing. Tray constructed with heavy duty stainless steel material for heavy drainage of the chemical. Provision of upside open cover. Tank Made from Thick Stainless Steel, with a high boarder. Provision of both side manual lifting handles. Provision of lock tray at the bottom.

Specification:

1. Material StainlessSteel
2. Mounted With 125 mm swivel castors, 2 withbreaks 3.

Size 240(L) x 600(W) x 850(H)cm

MosquitocatchingKit Specification:

1. Power 8.5 WBlueLED
2. Dimensions 170 x 250 x 360mm
3. Frequency 50Hz
4. Voltage 110 - 256V
5. Support 1.5 W0.015A
6. Net 2.23kg
7. Effectivearea 100 - 150 m
8. LiftingColumn 550mm
9. Chassis Diameter 250mm
10. InnerBoxSize 310 x 310 x560mm
11. CartonSize 645 x 328 x 578mm

Certificates: Notified CE/BIS/FDA and ISO 9001

Moss's Ergograph

Specification:

1. Mosso's ergograph with metronome and weights.
2. Ergograph containing the advantageous features of both bubios and mossos ergograph with weight set and recorder with writing device.
3. Material Bronze - cast iron
4. Dimensions 20×23×48cm
5. Weight 10kg

Certificates: Notified CE/BIS/FDA and ISO 9001

Multimedia Projector

Specifications:

1. Technology One Chip DLP
2. Projection Method Front and Rear both
3. Native Resolution 1280 x 800 (WXGA)
4. Brightness (Lumens) 4000
5. Contrast Ratio (Minimum) (pixels) (X : 1) 22000
6. If Yes, Type of Projector Short Throw (0.41 to 0.9)
7. Aspect Ratio 16:9
8. Keystone Correction Manual
9. Type of Light Source UHP / UHE / UHM
10. Minimum Life of Light Source (In Normal Mode) (Hours) 5000
11. Lamp Hour Counter (In Built)
12. Inbuilt 2W Speaker
13. Power Consumption in Sleep Mode (Watts) 1
14. Power Consumption in Normal Mode (Watt) 240
15. Noise Level in Echo Mode (dB) 2
16. Noise Level in Normal Mode (dB) 28
17. Power Supply 210V-240V, 50Hz
18. Dimensions (Length x Breadth x Height) (mm x mm x mm) 362 x 103.7 x 228
19. Weight (Kg) 2.7
20. Minimum Operating Temperature (Degree C) 5
21. Maximum Operating Temperature (Degree C) 40
22. Minimum Operating Humidity (% RH) 10
23. Maximum Operating Humidity (% RH) 80

Certification: BIS/US FDA/ Notified CE.

Multipara Monitor 3channel

Specification:

1. **Monitoring Parameters** ECG, SPO₂,NIBP.
2. Number of leads of ECG 5
3. **Arrhythmia detection and analysis**
4. **Heart rate measurement range in BPM** 30 -350BPM
5. **Accuracy in BPM** ± 1 BPM
6. **Respiration Method** Thoracic Impedance
7. Display waveform of respiration
8. **Threshold control for respiration**
9. **Respiration rate measurement range in BPM** 5-120bpm
10. **Accuracy rate in BPM** ± 1 bpm
11. Saturation Range (in percentage) 0 to 100
12. **Saturation Accuracy (in percentage)** 70 to 100
13. **Pulse rate Range in BPM** 0 to 254
14. **Pulse Rate Accuracy in BPM** ± 2 bpm
15. **Measurement technique for NIBP** Automatic oscillometric
16. **Operation Mode** Manual
17. **Pressure Range (in mm/Hg)** 0 to 300
18. **Accuracy of NIBP** ± 3 mm/Hg
19. **Operating conditions** capable of operating continuously in ambient temperature of 0 to 50 de c and relative humidity of 15 to 90% in ideal circumstances
20. Time of trending in hr ≥ 24
21. **Alarms**
22. **Systolic BP - low and high**
23. **Diastolic BP - low and high**
24. **Mean BP - low and high**
25. **Heart rate - low and high**
26. **SPO₂ - low and high**

- 27. Respiratory rate - low and high**
- 28. Alarm Volume should be adjustable**
- 29. Low battery indication**
- 30. Sensor/ wire/probe disconnection alarm**
- 31. Type of display TFT/LCD/LED**
32. Display Size Should be greater than or equal to 12 inches
- 33. Display must allow easy viewing at all ambient light levels**
- 34. power supply in V AC, Hz 220-240 V AC, 50Hz Single phase**
35. Mains cable to be at least 3m length Indian type 3 pin
- 36. Type of battery backup Lithium-ion ,rechargeable**
37. Backup time in minutes 45
- 38. Recharging time of battery in hr \leq 6**
- 39. Noise level in dB 14**
- 40. Unit should be BIS/US FDA/ Notified CE Certified.**
- 41. Manufacture should have ISO 13485.**

Multipara monitor 5channel

Specifications

1. Parameters monitored: ECG ,HR. Respiration rate, SPO2,NIBP, Temperature.
2. Display: Color TFT, approx. at least 10.4 inch, with wide viewing angle, facility for display of at least 5 waveforms
3. Soft touch keys, durable and easy to clean
4. ECG : 5lead
5. HR: approx. 30 to 250bpm; accuracy 3bpm
6. NIBP: approx. 0 to 300 mmHg (systolic) 10 to 180 mmHg(Diastolic) accuracy ± 3 mmHg,
7. NIBP hose should be at least 6feet.
8. SpO2: approx. 10 to 100%, accuracy $\pm 1\%$
9. RR (Tran thoracic Impedance) ECG div. respiration : approx. 0 to 155bpm
,accuracy ± 1 bpm
10. NIBP oscillometric step deflation, manual/automatic, initial inflation pressure user selectable
11. Sweep , adjustable : 12.5, 25 or 50mm/s
12. Sensitivity (amplitude) of all signals user adjustable
13. Standardizing voltage maker , 1mV
14. User preset if high/low alarms on all monitored parameters
15. Audio visual alarm in case measurements are outside preset range
16. Silencing feature for audio alarms
17. Trend display (numerical and graphic) from 360 hrs. facility for zooming in up to 1 min.
The trends data should not be lost on switching off the monitor.
18. RS232 serial data output provision (peripheral printer or network), analogue output for ECG
19. Display reports system error, leads and sensor failure and built in battery status.
20. Power requirements : 220V / 50 Hz (with adapter) and internal rechargeable batteries (autonomy at least 3hrs. , automatic recharge)
21. Should be provided with appropriate accessories for wall mounting.

22. Should be European CE/ US FDA/BIS approved product.

Supplies with each unit

12 reusable NIBP cuffs each for all age groups (neonates, children, adolescents) (No.1 (3.1 - 5.7 cm) No.2 (4.3 - 8cm), No 3(5.8 - 10.9 cm),

No 4 (7.1 - 12.1 cm) No. 5 (9.96 - 14.3 cm)

23. Reusable SpO2 sensors with cables for Adult (Finger type), Pediatric (Finger type) and neonate (wrap type) - 3 no's each

Myograph Machine with Stand

Specification:

1. Number of channels 4
2. PC connection USB
3. Amplifier working band (at the level of -3 dB) 0-10kHz
4. Sampling frequency for each channel 40kHz
5. RMS-noise at the input less than 5mV
6. Measured signal amplitude range 0,1 mV – 200mV
7. AD Converter working range 100dB
8. AD Converter capacity 24
9. Bandwidth lower limit 0 Hz - 1000 Hz
10. Bandwidth upper limit 1 Hz – 10000Hz
11. Power supply +5 B (using USB-port)

Electrical stimulation

1. Impulse amplitude 0-100mA
2. Impulse amplitude control step 1mA
3. Impulse length 10 μ s – 1ms
4. Impulse length changing step 10 μ s
5. Impulse frequency 0-50Hz

Stand Specification:

Base Iron

Myograph stand Stainless steel

Frogboard

Muscle lever

x- block

Certificates: Notified CE/BIS/FDA and ISO 13485

NEBULIZER

Specifications

1. Should be lightweight, portable and compact
2. Should have a dust filter
3. Should be able to deliver a flow rate $>7\text{ lpm}$
4. Should have air pressure $> 35\text{ psi}$
5. Should have a check valve to protect the device against contamination due to backward inhalation
6. Should be compatible for continuous use
7. Operating Voltage should be $230\text{ v } 50\text{ Hz}$.
8. Should Have High & Low Speed Jet Nebulizing Facility with $6\sim 8\text{ lit / Min Fluid Displacement}$
9. Should be supplied with Nebulization
10. Accessory kit with mask for adult and pediatric 10 nos. each

Certificates: Notified CE/BIS/FDA and ISO 13485

NEEDLE DESTROYER

Specifications

1. The needle should be completely incinerated without visible sparking and arcing
2. Machine should be capable of developing 1300 degree C to 1400 deg C
Temperature in a fraction of second
3. Built in SS sharp blade cutter to cut the nozzle of the syringe
4. Needle destruction rate shall be maximum of 2 seconds per needle
5. Provision of removable and reusable collection receptacle for syringe nozzle and needle debris
of approximately 500 syringes
6. Collection receptacle to have a see-through panel to view the waste
7. During operation and removal of refuses the container shall be designed for safe
handling against any injury or spill over / contact with debris.
8. Provision of on/off switch and pilot lamp
9. Unit shall be made of SS or powder coated metal.
10. Minimum 2 meters of power chord with suitable plug of appropriate BIS
standards or equivalent
11. The unit shall be capable of being stored continuously in ambient temperature of 0 -50 degree
C and relative humidity of 15-90%
12. Power input to be 220-240 VAC, 50Hz fitted with Indian plug
13. Manufacturer/Supplier should have ISO certification for quality standards
14. User/Technical/Maintenance manuals to be supplied in English

Certificates: Notified CE/BIS/FDA and ISO 13485

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Certificates: Notified CE/BIS/FDA and ISO 13485

Newton's Colour Wheel

Newton's Colour Disc Comprising a multi-coloured disc 200mm diameter mounted on a metal stand & driven by hand

Oil-immersionlens

Specification:

1. Oil Immersion Objectives for NIR and VisibleLight
2. Infinity-Corrected Plan Fluorite or Plan AchromatDesigns
3. RMS (0.800"-36)Threading
4. Designed for a Tube Lens Focal Length of 180mm
5. 45.06 mm ParfocalLength

Certificates: Notified CE/BIS/FDA and ISO 13485

OLFACTOMETER

Specifications:

1. Detection Technique: HumanNose
2. DiscreteDilutionRatios:2,4,7,15,30,60D/T's(StandardDilution-to-Threshold Ratios)
3. Response Time: As fast as 10-seconds or better(2inhalations)
4. Accuracy: +/- 10% ofD/T
5. Repeatability: +/-2%
6. Inhalation Rate: 16-20 liters perminute
7. Operating Temperature Range: 32° to 104°F, 0° to40°C
8. Odor Filter Cartridge - of suitable size
9. Nasal Mask – of suitable size Provision for 9 inlet and outletport.
10. Power supply -220V,50Hz
11. The product should be Notified CE or FDA or BIS Certified.

OPHTHALMOSCOPE

Specifications:

- Halogen light for true tissue color and consistent, long-lasting illumination
- 6 apertures for general and specialist use and 28 lenses with -25 or +40 diopters for better resolution
- Rubber brow rest prevents scratching of eyeglasses
- Red free and cobalt blue filter
- Dust free sealed optics
- Universal convertible handle
- Nickel-Cadmium rechargeable battery

Certifications: US FDA or CE approved, ISO 13845 compliant

OTTABLE

Specifications

1. Should be Electro hydraulic Operated Remote control Table
 - Up & Down Min 29", Max 44"
 - Trendelenberg & Reverse Trendelenberg (30° on either side)
 - Right Lateral & Left Lateral (21° on either side)
 - Back Rest (+ 90° to -90°)
 - Power Brakes (for Braking & Unbraking the Table)
2. The Table should be provided with an external charging circuit, which should have a colour LED indication for no charge, charging and full charge.
3. The remote cord should come from the head end of the Table i.e. from the base to facilitate the anaesthetist
4. The Table should have six polyurethane castors for longitudinal and lateral movements.
5. The power brakes should be four and located on the head side and leg side of the Table base for better stability.
6. The backrest should have electrohydraulic movement and should be detachable, to fix the other attachments.
7. The table should have an Override panel on the column of the table.
8. The Table should have a zero position. Trendelenburg, Lateral, Backrest all should have leveling sensors.

The Zero position should be operated from the remote hand set as well as the Override panel.
9. The Table should have a provision to screen the patient from neck to toe at a single shot without any hindrance.
10. The Table should have a provision to memorise any two positions. It should be erasable and reprogrammable. The provision should be available on both the remote handset and as well as the override panel.

11. The up & down movements should be jerk free and should have high precision glides to avoid wig-wag movement of the column.
12. The table should have an emergency stop, in case of any malfunction. The provision should be available on both the remote handset as well as the override panel.
13. The Table should have battery level indicators, both on the remote hand set and the override panel.
14. The Table should have a sealed bottom to prevent water and dust from entering inside.
15. The Table should have more leg space for the surgeons for lower end surgeries.

16. There should not be any cross bars throughout the length of the Table. The table should be able to stretch to 6 feet without any floor support.
17. Leg bed should be two pieces right and left ends should be detachable and abduct table
18. Tendlen berg and lateral mechanism should be concealed with bellows; column should be straight without any projection on right or left.
19. Table column size should be 280mm X 280mm.

20. Polyurethane detachable cushion top should be provided on the Table top.

21. Base covers should be covered with impact, shock resistant, Fire resistant, and disinfectant free material. Base should be broader in the head end.
22. The column casing, table top frame, traction bars and all accessories made of non-corrosive stainless steel. The main column should be covered with non-corrosive stainless steel.
23. Inbuilt Battery backup should be provided.

24. The Table Top should be reversible, the head rest attachments, the head rest attachments should fix to the tail side and the tail side attachments should fix to the head side.

25. The Table should be capable of taking off centered load. The load carrying capacity should be 380Kgs.
26. The entire vertebral column should be viewed without any hindrance.
27. Patient sitting position, with Tendlenberg maximum should be possible.
28. Minimum height 27" preferred.
29. Kidney Bridge should be provided
30. Unit should be BIS/Notified CE/ US FDA certified.
31. Manufacture should be ISO 13485 certified.

OTTABLEMANUAL

Specifications

1. The table should have minimum 4 sections
2. The table should have easily detachable split leg and easily detachable head section
3. The table top should have a minimum height of 765mm or lesser.
4. The table top should have a minimum vertical stroke of 250mm
5. Should have sealed hydraulic mechanism to avoid oil spillage.
6. Should have at least 25° Trendelenburg and reverse Trendelenburg
7. Should have at least 20° lateral tilt movement
8. Should have at least 80° backup movement with gas spring mechanism.
9. The head section should have up and down movement.
10. The leg sections should have 90° down movement and should move side wards to a minimum of 90 degree.
11. The table should have a heavy and sturdy base and compact top to provide adequate foot room for the operating team.
12. The table should be mounted on heavy duty casters which offers enhanced weight bearing capacity and freemobility
13. The table should have a single lever foot operated brake pedal
14. Should have a minimum patient weight bearing capacity of 250Kgs.
15. Base should be made of cast iron and all other parts and accessories should be completely made of Stainless Steel 304 grade except the cushion, gas spring and hydraulic system which should be made of any non-resting metals like brass etc.

The table should be supplied with the following accessories.

- Mattress for the complete table top in sections- 1 set
- A pair of arm boards with pad and fixing clamp
- A pair of padded shoulder support with clamps
- A pair of padded lateral support with clamps
- A pair of leg crutches with clamps
- Anesthetic screen frame with clamp

Certificates: Notified CE/BIS/FDA and ISO 13485

OTOSCOPE

Specifications:

1. Battery(3.5v)operatedhigh efficiencyFiberopticLEDotoscopewithdetachable head and handle with high qualityoptics.
2. The viewing window with 3xmagnification.
3. Shouldhaveon/offbuttononthehandleforillumination,thehandleshouldbemade of Solid metal-chrome slip type shockproof.
4. The light should have minimum colour temperature of 4000k with CRI >90 for Bright and homogeneous illumination with excellent colourrendering.
5. Should have rotating knob to control the intensity of theotoscope.
6. The LED lamp life should be more than 10,000hrs.

Certifications: US FDA or CE approved, ISO 13845 compliant

OXYGEN CYLINDER (BTYPE)

Specifications:

1. Shell : B-type - Chrome Molybdenum Alloy 34 Cr (or) Manganese steel.
2. Capacity: 10 Lt Water Capacity
3. Working Pressure (Minimum): 150kg/cm² at 15oc
4. Test Pressure (Minimum): 250kg/cm² at 15oc
5. Wall thickness (minimum): 4.2mm
6. Gas (O₂): 1500 Liters of O₂
7. Standard: IS 7825 part II
8. Valve: IS 3224
9. Matching key cum Spanner to release oxygen
10. Hoses used from cylinder to the regulator if at all any

Certifications: ISI Standards, BMP Certification WHO &
Certified by Dept. Explosives – GOI

Paraffin Embedding Bath

Specification:

1. Automatic controlling procedure, time of power on/off can be reset in any time of each day of a week
2. Adopted with new-type heating element, heated quickly and evenly, and energy- saving
3. Temperature-measuring chip, high precision, stable performance, display as icon in the state of working.
4. Paraffin tank, dispenser nozzle, left preservation box, right preservation box, embedding workstation can be separately controlled, work itself. Five different modes of controlling temperature and multiply over-heating protection, safe, reliable, and energy-saving.
5. Automatic memorization, and self-recovery, reserving resetting temperature when starting up.
6. Embedding center, cooling system, and heating table can be combined randomly
7. Cooling system adopted with new-type inverter compressor, cooling temperature should be adjusted freely.
8. Range of setting temperature of cooling system is $-35^{\circ}\text{C} \sim -50^{\circ}\text{C}$
9. Small cooling plate makes embedding medium solidified quickly
10. High capacity (approx. 5 liter) paraffin dispenser.
11. Low-voltage lighting system, safe and reliable, manual drive and foot-drive power on/off mode.
12. Workstation, forceps table can be heated, easy for embedding.
13. High-precision time indication, easy to reset adopted into advanced heating theory.
14. Volume of paraffin dispenser: 5 liters
15. range of temperature-control of forceps table: ambient $\sim 99^{\circ}\text{C}$
16. range of temperature in paraffin dispenser: ambient $\sim 99^{\circ}\text{C}$.
17. range of temperature in storing box: ambient $\sim 99^{\circ}\text{C}$
18. range of temperature at workstation: ambient $\sim 99^{\circ}\text{C}$
19. precision error : $\pm 1\%$
20. mode of wax-flow: automatic soft-touching switch on/off, foot-operated control
21. time reset: time of power on/off can be set freely in a week.
22. temperature of cryo-plate: ambient $\leq -20^{\circ}\text{C}$, protection requirement of time delay
23. Enjoy the function of power-off protection self-check and automatic correction
24. Auto prompting to preparing next sample and sample reaction time
25. Power supply $220\text{V} \pm 22\text{V}$ $50\text{Hz} \pm 1\text{H}$
26. Servo stabilizer of suitable rating should be supplied with the machine.
27. Minimal lot-to-lot variance (no lot-specific calibration necessary)
28. should be Approved by US FDA/BIS/CE from notified body

PCRMachine

Specification:

1. Purpose PCR is a laboratory technique used to amplify segments of DNA via the Polymerase ChainReaction
2. Compatibility of ReagentOpen
3. Display InterfaceLCD
4. Block FormatFixed
5. Capacity of Blocks 0.2ml x2x48well
6. Maximum Heating Ramp rate in degree cycle per second 4C/S
7. Maximum Cooling Ramp rate in degree cycle per second 3C/S
8. Adjustable heating/cooling RampRate
9. Operating Temperature range C 10 to 100C
10. Temperature setting accuracy in C $\pm 0.2C$
11. Well to well temperature uniformity in C $\pm 0.3C$
12. Gradient Range in C 30 -100C
13. Gradient Spread in C 1-25C
14. Hot Lid Temperature37-110C
15. Input supply Single phase (230 V, 50Hz)
16. Max No of Programmable steps20
17. Max No of Programmable Cycles Upto100
18. Memory to store programs1000-5000
19. Pause/Startfunction
20. Built-in TmCalculator
21. Compatible to be used withPC
22. Touch Screen of display should be responsive for both gloved andungloved fingers
23. Auto restart after power outages

Certificates: Notified CE/BIS/FDA and ISO 13485

Perimeter (Pristely Smithmodel)

Specification:

1. Should have a calibrated arc, revolving chartholder.
2. Should be able to rotate in any direction and fix at any position with a tightening screw. The arc should be graduated from 0° to 90° with a movable test object.
3. At the back of the arc arrangements should be provided for fixing of chart which has concentric circles corresponding to the degrees of arc. 18
4. Adjustable chin rest.
5. The above mentioned should be fitted over a sturdy base with a receptacle for keeping charts.
6. Should be supplied with 20 packets each containing consist of 100 charts
7. Accessories—Objects should be of minimum 2 sizes, round and square shaped and of 5 different colors.
8. The product should be CE or FDA or BIS Certified.

PH METERELECTRICAL

Specifications:

1. Digital Electronic (Table/ hand heldmodel)
2. Should made up using best quality parts andequipments
3. PH Range:0-14PH.
4. Mill Volt range : 0 to1999mv.
5. Resolution: 0.01ph,1mv
6. Repeatability: +/- 0.01PH +/-1mV
7. Accuracy: 0.01 PH+/- 1 digit, 1mV +/- 1digit.
8. Temperature compensation: 0 to 100degC.
9. operating temperature: 10 Deg C to 50 DegC
10. display: 3.5 digit LEDdisplay
11. Supplied accessories: Electrode, Stand, dust cover and instructionmanual
12. should be Approved by US FDA/BIS/CE from notifiedbody.

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4. Mill Volt range : 0 to1999mv.
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8. Temperature compensation: 0 to 100degC.
9. operating temperature: 10 Deg C to 50 DegC
10. display: 3.5 digit LEDdisplay
11. Supplied accessories: Electrode, Stand, dust cover and instructionmanual
12. should be Approved by US FDA/BIS/CE from notifiedbody.

Phakoscope(Helmholtz)

1. Consist of triangular box the base of which is about 35cm long and othertwo sides of 18cmeach
2. Height of the box is about10cm
3. Painted black inside Mounted onstand
4. Three angles of box are truncated and provided with holes of adequatesize
5. The truncation leave a distance of about 10cm between the apex and the centre of thebase
6. At one of truncated angle two prism areplaced

Phototherapy Unit

Specification

1. It should be LED based only
2. LED's should last for at least 30,000 hours
3. Light unit should have white LED's for examination purpose
4. Light unit should be made of easily cleanable plastic material
5. Spectral Irradiance of minimum $30 \mu\text{W}\cdot\text{cm}^{-2}\cdot\text{nm}^{-1}$ at 45 cm distance between bed and light unit. (for effective PT through closed incubator)
6. Should have multi level intensity control to a minimum intensity adjustment of $30 \mu\text{W}\cdot\text{cm}^{-2}\cdot\text{nm}^{-1}$
7. At the tilted position, the irradiance should be at least $30 \mu\text{W}\cdot\text{cm}^{-2}\cdot\text{nm}^{-1}$ at 45 cm distance between bed and light unit.
8. Wavelength should be of 450–460 nm, and should be free from UV and IR radiation.
9. Effective surface area should be at least 175 * 3750 mm
10. Digital (LCD) Timer for monitoring therapy hours & lamp usage hours
11. Should have visual and audible alarms for the following,
 - a. If internal temperature exceeds
 - b. If cooling fan fails
12. Cooling Fan to be provided to dissipate the heat created by LED's
13. Light head should be compact to use along with the Radiant warmer & should be provided with tilting facility so that the unit is not coming directly under warmer.
14. Smooth Height adjustment mechanism & Adjustable height.

15. Minimum height should be at least 1200±20mm from the floor to use near the mother bed
16. Maximum height should be at least 1700±20mm from the floor to use with the incubator
17. Coating: Epoxy/powder coated body for scratch and rust prevention and
18. PU (Poly Urethane) coating for plastic
19. Mobility: Three castors; two rear castors provided with brakes
20. The base of the unit should be such that it will go beneath any Incubator/bed/trolley, with minimum of 100mm floor clearance
21. The manufacturer should be ISO9001:2008 and ISO13485:2003 certified
22. Product should be USFDA or European CE certified and certificates should be submitted
23. The specification for bottom unit should confirm to the following
 - a) Irradiance : >30µW/cm²/nm
 - b) Lamp Type : LED's
 - c) Power rating : Maximum – 60W
 - d) Time totaliser : Digital, Compact and noise free
 - e) Bassinet dimensions : Approximately 75 cm x 50 cm x 15cm
 - f) Weight of lamp unit : Less than 25kg
 - g) Bassinet : Transparent acrylic bassinet
 - h) Coating: Epoxy/powder coated body for scratch and rust presentation
 - i) The unit should be mobile with 4 swivel castors and at least 2 castors with brake
24. Power supply - Power input to be 220-240VAC, 50Hz
25. Environmental factors
 - a) The unit shall be capable of being stored continuously in ambient temperature of 0-50 deg C and relative humidity of 15-90%
 - b) The unit shall be capable of operating continuously in ambient temperature of 10- 40 deg C and relative humidity of 15-90%

Certificates: Notified CE/BIS/FDA and ISO 13485

MICROPIPETTES

Specifications

1. Micropipettes should be adjustable with ultra-light weight and fully autoclavable.
·Piston System:
2. Ultra-light system made of fort on. ·It should be highly resistant to heat, acids and alkalis, mildew, bleaches, aging, sunlight and abrasion·
3. It should have Button to control very low operating force,
4. Color indicates pipette volume, Positioned for perfect Ergonomics·
5. Volume Display: Four digit display and 2 Button operations·
6. Volume adjustment: Only few turn to reach from maximum to minimum volume·
7. Spring loaded tip
8. Quick connection clip: Remove lower part easily.·
9. Viable calibration seal to indicate factory calibration not changed·
10. Each Micropipette upto 1 ml volume should have autoclavable tip box with 96 tips ·1000nos suitable tips should be provided with pipettes.·
11. Tips should be optimized wetting properties, high transparency, and highest accuracy.

Variable volumes

1. Variable Volume Pipette 0.5-10 μ l
2. Variable Volume Pipette 2-20 μ l
3. Variable Volume Pipette 5-50 μ l
4. Variable Volume Pipette 10-100 μ l
5. Variable Volume Pipette 20-200 μ l
6. Variable Volume Pipette 100-1000 μ l
7. Variable Volume Pipette 500-5000 μ l

Fixed volumes

1. Volume Pipette 5 μ l
2. Volume Pipette 10 μ l
3. Volume Pipette 20 μ l
4. Volume Pipette 25 μ l
5. Volume Pipette 50 μ l
6. Volume Pipette 100 μ l
7. Volume Pipette 200 μ l
8. Volume Pipette 250 μ l
9. Volume Pipette 500 μ l
10. Volume Pipette 1000 μ l
11. Volume Pipette 2000 μ l
12. Volume Pipette 5000 μ l
13. Volume Pipette 10000 μ l

Certificates: Notified CE/BIS/FDA and ISO 13485

POPCUTTER

Specification

1. Should have a fiberbody.
2. Should be able to cut fibergauzes.
3. Blades should be corrosion resistant and highlydurable.
4. Blades should have hexagonal mountinghole.
5. Should be supplied with 84mm, 74mm, and 64mm diameterblades.
6. Shouldbesuppliedwithrequiredtoolsforreplacingtheblades,brushandduster.
7. Shouldbesuppliedwithcarryingcasetoaccommodatetheplastercutterand
otheraccessories.
8. Should have a protectiveguard
9. Should be oscillatingtype
10. Should work with input 200 to 240Vac 50 Hzsupply.

Additional Accessories

1. Blades (84mm) - 6Nos

Certificates: Notified CE/BIS/FDA and ISO 13485

SUCTION APPARATUS(PORTABLE)

Specifications:

1. Rating of Motor –continuous
2. SuctionBottleCapacity-2x2000mlminimum(withsafetyvalve)
3. Gauge - 0 to 760 mmHg
4. Vacuum Maximum - 660 mmHg.
5. Pump - Oil lubricates rotary pump
6. Suction Tunings - ID 7 mm, 5m long and non-collapsible.
7. Should have air tight lids interconnected with both jars.
8. Should have a noiseless Operation
9. Should provide filter to absorb moisture and water particles entering into the rotor.
10. Should have a safety valve to prevent entry of fluids into machine in case the suction jar fills up.
11. Should be well-designed, cabinet made of Stainless Steel 304 Grade.
12. Should have facility to adjust suction pressure.
13. Should bear ISI / CE mark
14. Should operate from 200 to 240Vac, 50 Hz input supply

Certifications: Notified CE/BIS/FDA and ISO 13485

Portable X-ray Machine

1. State of Art High frequency microprocessor controlled Portable X-Ray system with integrated Computed Radiography system having following features:
2. Compact, lightweight, easily transportable mobile High Frequency X-Ray unit for bedside x-Ray rays, trauma, Intensive care units, Operation theatres and Radiology department.
3. The unit should be fully counter balanced and can be positioned to suit different bed heights. The unit should have facility of vertical swing and horizontal rotation of the tube head to ensure X-Ray of any anatomy even with in limited space.
4. The unit must have an effective braking system for parking and transport.

5. The exposure release switch should be detachable with a cord of sufficient length (at least 3m)
6. The Generator:
 - a. Microprocessor controlled high frequency/inverter type of high frequency (80KHz or more) for constant output.
 - b. It should have power rating of at least 4kW or more

 - c. It should have a digital display of mAs and kV.

 - d. KV range: 40 kv to 100kV or more

 - e. mA range: 10 mA to 100mA or more

 - f. KV selection: 40 kV to 100 kv, selectable in 1 kV steps

 - g. mAS selection: 0.1 to 250mAS

 - h. It should have over loading protection.

 - i. It should have APR feature

7. X-Ray Tube and Collimator: a. Stationary / Rotating anode having focal spot size less than 2mm b. Output of tube should match with that of generator. c. Light Beam diaphragm/ Double layer Collimator with auto cutoff switch. The light intensity shall be at least 160 lux at 1mtr distance from focal spot.
8. The unit should operate on single phase power supply and should have plug in facility to any standard

wall outlet with automatic adaptation to line voltage 200 to 240volts, 15Ampplug.

9. The Leakage radiation level at 1 meter from the focus should be less than 70mR. Products having minimal leakage radiation level will be preferred. (Please attached relevant testreport)

10. The Systems should be fully safe with respect to a. Overcurrent b. Overvoltage c. Maximum loading oftube

11. Power input to be220-240VAC, 50Hz fitted with Indianplug.

12. The product should be CE or USFDAapproved.

13. Should bean AERB approved product

Printer cumscanner

Specification:

Sl. No	Component	Specification
1	Printing Method	Monochrome Laser Beam Printing
2	Print Speed (A4)	27ppm
3	Print Resolution	600 x 600dpi
4	Print Quality with Image Refinement Technology	1200 x 1 200dpi (equivalent)
5	Warm-Up Time (From Power On)	13.5s or less
6	First Print Out Time (FPOT) A4	6.0s
7	Recovery Time (From Sleep Mode)	2.0s or less
8	Print Language	UFR II LT, PCL 6
9	Available Paper Size for Auto Duplex Print	A4, Letter, Legal (*1), Indian Legal, Foolscap
10	Print Margin	5mm-top, bottom, left and right (Other sizes than Envelope)
		10mm-top, bottom, left and right (Envelope)
COPY		
11	Copy Speed (A4)	27ppm
12	Copy Resolution	600 x 600dpi
13	First Copy Time (FCOT) A4	9.0s
14	Maximum Number of Copies	999 copies
15	Reduce / Enlargement	25 - 400% in 1% increments
16	Copy Features	Memory Sort, 2 on 1, 4 on 1, ID Card Copy
SCAN		
17	Scan Type	Colour Contact Image Sensor

Sl. No	Component	Specification	
18	Scan Resolution	Optical	600 x 600dpi
		Driver Enhanced	9 600 x 9 600dpi
19	Maximum Scan Size	Platen Glass	216 x 297mm
20	Scan Speed (*2)	Platen Glass	3.0s per sheet (mono)
			4.0s per sheet (colour)
		ADF (A4)	20ipm / 15ipm (mono / colour)
21	Colour Depth	24bit	
22	Pull Scan	Yes, USB and Network	
23	Push Scan (Scan To PC) with MF Scan Utility	Yes, USB and Network	
24	Scan To Cloud	Yes, MF Scan Utility	
25	Scan Driver Compatibility	TWAIN, WIA, ICA	
PAPER HANDLING			
26	Auto Document Feeder (ADF)	35 sheets (80g/m2)	
27	Available Paper Size for ADF	A4, B5, A5, B6, Letter, Legal (Minimum 105 x 148mm to Maximum 216 x 356mm)	
28	Paper Input	Standard Cassette	250 sheets
		Multi-Purpose Tray	1 sheet
29	Paper Output (Based on 68g/m2)	100 sheets (face down)	
30	Paper Size	Standard Cassette	A4, B5, A5, Legal, Letter, Statement, Executive, Government Letter,
			Government Legal, Foolscap, Indian Legal
			Custom (Minimum 76.2 x 210mm to Maximum 216 x 356mm)

Sl. No	Component	Specification	
		Multi-Purpose Tray	A4, B5, A5, Legal, Letter, Statement, Executive, Government Letter, Government Legal, Foolscap, Indian Legal
			Custom (Minimum 76.2 x 127mm to Maximum 216 x 356mm)
31	Paper Weight	Standard Cassette	60 to 163g/m ²
		Multi-Purpose Tray	60 to 163g/m ²
32	Paper Type	Plain, Heavy, Recycled, Color, Bond, Label, Index Card, Envelope	
CONNECTIVITY & SOFTWARE			
33	Standard Interface	Wired	High-Speed USB 2.0
			10 / 100 Base-T Ethernet
		Wireless	Wi-Fi 802.11b/g/n (Infrastructure mode, WPS Easy Setup, Direct Connection)
34	Network Interface	Print	LPD, RAW, IPP / IPSP, WSD-Print (IPv4, IPv6)
		Scan	WSD-Scan (IPv4, IPv6)
		TCP / IP Application Services:	Bonjour(mDNS), DHCP, BOOTP, RARP, AutoIP (IPv4), DHCPv6 (IPv6)
		Management	SNMPv1/v3 (IPv4, IPv6), HTTP / HTTPS, SNT

Sl. No	Component	Specification	
35	Network security	Wired	IP / Mac address filtering, SNMPv3, SSL (HTTPS / IPPS), IEEE802.1x
		Wireless	WEP 64 / 128bit, WPA- PSK (TKIP / AES), WPA2-PSK (AES)
36	Mobile Printing Capability	Canon PRINT Business, Canon Print Service, Google Cloud Print™, Apple AirPrint™, Mopria® Print Service	
37	Compatible Operating Systems	Microsoft® Windows® 10 (32/64bit), Windows® 8.1 (32 / 64bit), Windows® 8 (32 / 64bit), Windows® 7 (32 / 64bit), Windows Vista® (32 / 64bit), Windows® Server 2012 R2 (64bit), Windows® Server 2012 (64bit), Windows® Server 2008 R2 (64bit), Windows® Server 2008 (32 / 64bit), Windows® Server 2003 R2 (32 / 64bit), Windows® Server 2003 (32 / 64bit), Mac OS X (*4) 10.6.8~, Linux(*3)	
38	Software Included	Printer driver, Scanner driver, MF Scan Utility, SSID Tool, Toner Status	
GENERAL			
39	Device Memory	512Mb	
40	Operational Panel	6.9cm BW LCD	
41	Power Consumption	Maximum	1 150W or less
		During Operation (Average)	490W
		During Standby (Average)	4.1W
		During Sleep (Average)	1.3W (USB connection)
			1.4W (Wired LAN connection)
			2.1W (Wireless LAN connection)

Sl. No	Component	Specification	
42	Noise level (*4)	During Operation	Sound Pressure Level: 52.0dB
			Sound Power Level: 6.6dB
		During Standby	Sound Pressure Level: Inaudible (*5)
			Sound Power Level: 43dB
43	Operating Environment	Temperature: 10 - 30°C	
		Humidity: 20 - 80% RH (no condensation)	
44	Power Requirement	AC 220 - 240V (±10%), 50 / 60Hz (±2Hz)	
45	Consumables	Toner (Standard)	Cartridge 337: 2 400 pages
			(bundled: 1 700 pages)
46	Monthly Duty Cycle	15000 pages	
47	Warranty	1 Year On-Site	

PUBLIC ADDRESS SYSTEM

Specification

1. Frequency response: 40Hz to 16KHz ± 2 dB at rated output.
2. Distortion: Less than 1% (at rated output $F = 1$ KHz).
3. Input: 2 program and 2 priority inputs with program input muting during priority operation.
4. Power source: Operate on both AC mains and 24 VDC.
5. The power amplifier shall be rack mounted type.
6. Remote controls: 12 individual controls and 1 all call control.
7. Distortion: Less than 1%.
8. Signal to noise (S/N): 56dB.
9. Microphone: Unidirectional dynamic microphone with sensitivity -76 dB ± 3 dB.
10. Program function: 2 user programmable function (first in first served) priority dia cascade priority.

INDICATORS.

1. Busy: red LED.
2. Speech: green LED.
3. Chime: red LED.

Certificates: Notified CE/BIS/FDA and ISO 9001

PULSEOXIMETER

Specifications:

1. Should have plethismographic wave form with numeric display for SPO₂ and Heart rate on LCD/TFT display.
2. Should have a SPO₂ range of 0 to 100%.
3. Should have SPO₂ accuracy of $\pm 2\%$.
4. Should provide bar graph for pulse strength.
5. Audio and visual alarm for both upper and lower SPO₂, Heart rate.
6. Should provide with a durable reusable finger probe with technology from standard reputed companies.
7. Beep sound and alarm sound should have separate volume control.
8. Should have a minimum of 2 hours back-up time.
9. Should be portable, lightweight and desktop model.
10. Should work within input 200 to 240 Vac 50 Hz supply.
10. Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid.

RAPID AUTOCLAVE MACHINE

Specification

1. Should be a table top autoclave for Dental and ophthalmic applications.
2. Two automatic programs approx. at 2.2 bar at 134 degrees C and 1.1 bar at 121 degree C.
3. The equipment should have automatic pressure control switch / automatic water control device to ensure that the equipment does not run dry.
4. Should have flash cycle for rapid sterilization and should have an option for liquid cycle.
5. Should have Air Pump for closed door drying.
6. Should have rapid warm up facility. Built in reservoir to store water required to produce steam, and used water separately, for easy decantation.
7. The system should be equipped with required safety features.
8. The door should have double locking safety feature and should open only with atmospheric pressure in the chamber.
9. Should have automatic cut-off to prevent overheating and cut-off for insufficient water, the machine should not start without sufficient water.
10. Should have a minimum chamber capacity of 19 liters or above.
11. Should have pressure display and temperature display.
12. Unit should function with 200-240 Vac, 50/60 Hz input power supply.
13. The system should comply with National quality certification or International standards for sterilization safety.
14. Following accessories should be supplied along with the equipment.
 - 1 set of 3 removable shelves – stainless steel.
 - 1 instrument basket – stainless steel.
 - 1 set of 2 Drum for sterilization – stainless steel.
 - 1 Roll of sterilization indicator.
 - 1 box paper sheet 100 no's crepe for sterilization packs.
 - 2 spare silicone gaskets.

- 1 sets of sparefuses.
- 15. Equipment should be provided with a line cord (power cord) of acceptable durability, quality, length and current carrying capacity and should be compatible with Indian standard powersocket.
- 16. Controls should be visible and clearlydefined.
- 17. Labels and markings should be clear andvisible.
- 18. Should have airfilters.
- 19. Gasketsshouldbereplacedatfreeofcostwheneverrequired in the comprehensive 3 WarrantyPeriod.

Certificates: Notified CE/BIS/FDA and ISO 13485

Thermometer

Specification:

1. Sleekdesign
2. Washable
3. Centigrade and Fahrenheit Measurement option
4. Temperature range must include 32 to42°C
5. Should include a storagecase

REFRIGERATED CENTRIFUGE

Specifications

1. Centrifuge can attain Max speed of at least 16,000 rpm with Brushless maintenance free drive
2. Temperature range should be of -11°C to 40°C
3. CFC free refrigeration and fast cooling option
4. Corrosion resistant stainless steel chamber
5. Machine should turn OFF automatically after certain hours of non-use to reduce energy consumption & extend compressor life
6. Must be able to maintain at 4°C at max. Speed
7. Run time: up to 99 minutes or continuous mode
8. Must be able to store 50 routine procedures with 5 programmable buttons for frequently used programs in the first level
9. Able to switch display between rcf and rpm speed setting
10. Separate short spin key
11. Low noise levels ≤ 65 db at max speed
12. Low noise levels ≤ 65 db at max speed
13. LED/LCD display depicting all possible run conditions
14. Automatic motorized lid locking when lid almost closed
15. 2-point lid screwing for maximum security even at high speed centrifugation
16. Must follow safety standards set by IEC 1010-2-020
17. Rotor should be made of anodized aluminum to ensure chemical resistance
18. Build-in condensation drain should be available to eliminate water accumulation
19. Rotor must be autoclavable at 121°C for 20 min to completely eliminate any contaminating material
20. Aerosol tightness should be certified by external body
21. Centrifuge should be IVD (In-vitro diagnostic) certified
22. Automatic rotor recognition & imbalance detection
23. Fixed angle rotor accommodating 30x1.5/2 ml tubes for speed about 15000 \square fixed angle rotor accommodating rpm
24. Fixed angle rotor accommodating 15/50 ml conical tubes
25. Power supply up to 230V/50Hz

Certificates: Notified CE/BIS/FDA and ISO 13485

REFRIGERATOR

Specifications

1. Temperature range:2-8°C
2. Style type:Vertical
3. Capacity: 360-400Liters
4. Dimensions (in Inches): 22-28(W) x20-24(D) x70-80(H)
5. Digitalcontroller
6. Locking system:Yes
7. No. & type of doors: singleglass
8. No. of selves: Minimum4
9. Temperature display screen: Easy toread
10. Inside lamp:Yes
11. Refrigerant: CFCFree
12. Stabilizer
13. Power Supply:210-240V
14. Item should be supplied with a NABL compliant calibrated digitalthermometer

Certificates: Notified CE/BIS/FDA and ISO9001

REFRIGIRATOR 9CU.FT.

Specifications

1. Type of refrigerator – topmount
2. Technology type –invertercompensor
3. Total capacity – 9ft
4. Inner light should beinbuilt
5. Cooling system should be biosheild, multi air flow, no frost andCrisper.
6. Dimensions (WxHxD mm) -555 x 1665 x620
7. Weight (kg)-52kg
8. Refrigerator should certified from Notified CE/BIS/USFDA

RO PLANT 500LITER

Specifications

and Filter

1. Capacity – 1000 lph, Media – Sand / Pebbles, MOC – FRP /Composite, Backwash:Automatic,Multiportvalve:Timerbasedwith3cyclebackwash sequence, Pressure gauge and fittings – 1set.

Activated Carbon Filter

2. Capacity: 1000 lph, Media: Carbon ID 900, MOC: FRP / Composite, Make: Pentair / equal, Backwash: Automatic, Multiport valve: Timer based with 3cycle backwash sequence, Pressure gauge and settings: 1set

Water softener

3. Capacity: 1000 lph, Media: Ion exchange resins (ionexchange / Thermax or equivalent), Regeneration: Automatic, Multiport valve: Timer based With 3 cycle backwash/regeneration sequence, Pressure gauge and settings: 1 set

Membrane element

4. Sufficientquantityandarraystosatisfytheoutputconditionof500LPHat50-75% rejection for the given waterquality.

Antiscalent dosing system:

5. Capacity: 3 lph, MOC: PP, Dosing tank: 50 liters,Level switch and fittings – 1set.

UV Lamp

6. with SS 304 Housing with quartz reflectors Flow rate 500LPH

Water storage tank

7. Raw water storage tank syntax capacity 1000Liters
8. Softened water tank syntax or equivalent, capacity 500Liters
9. RO Water storage tank double coated syntax– 1000Liters

Pump

1. Raw water pump – 1 HP (1+1) – Crompton / Granados or equivalent.
2. Softened water booster pump – 1 HP (1+1) – Crompton / Granados or equivalent.
3. SS RO Distribution Pump – 1 HP (1+1) – Crompton / Granados or equivalent

Others

1. Should have 1 Micron pre-filter, 20 inch height and 4" diameter
2. Should have automatic inlet shut-off valve
3. Should have Permeate and Concentrate flowmeters.
4. Should have Digital display of critical parameters through range of sensors
5. Should have User friendly RO controller and ensure automatic trouble free operations.
6. RO controller should have automatic and manual mode.
7. Should have automated pretreatment for RO
8. Should have Salt rejection around 96 – 98%
9. RO recovery range shall be 50-75%
10. Permeate Rate: 500 LPH, Concentrate Rate: 500-700 LPH
11. Should have P.E flexible tubing used to collect permeate into RO tank.
12. Should have Thermal motor protection
13. Should have Pre-filter; post filter, primary and final pressure gauges
14. Should have Flow control center including concentrate and recycle valves
15. Should have Auto flush valve in reject line
16. Should have Low inlet pressure switch before HPP
17. 3 way Solenoid valve in feed before HPP
18. Inlet shut off solenoid valve in smaller system 250 to 1000 lph
19. Glycerin filled SS pressure gauges at feed/high pressure/reject lines.
20. Panel mounted Rotameter in reject/re-circulate and permeate lines.
21. Ball check valve in recirculation line, spring check valve in permeate line & Conductivity meter in permeate line & Globe / needle valves in re-circulate and reject lines.
22. Should have 5 micron cartridge filters big blue in feed line.
23. Should have Digital conductivity meter with programmable relay
24. Should have Alarms for Low Inlet pressure & Motor starter overload.
25. Frame shall be made of stainless steel – 304 grades
26. Membrane housing shall be made of stainless steel 304 grades or FRP

27. Inlet plumbing shall be Sch 80PVC.
28. High pressure plumbing shall be Reinforced rubberhose
29. Permeate / concentrate tubing shall be Polyethylene / NSF approved wetparts.
30. PEX Piping with SS push pullconnectors.
31. Should operate on mains 400-420Vac, 50 Hz three phase powersupply.
32. All wetted parts should be INERT, SS or compatible to Hemodialysisprocedure.
33. Control enclosures should be NEMA 1 & Motor starters should be NEMA 4X
34. The outlet of the RO system must conform to AAMI standards both in terms of chemical contamination and bacterial contamination. The endotoxin limit for the RO water is 1 Eu/ml and the limit of bacterial growth shall be not more than 200 CFU/ml. Copy of Certificate/test reports should be produced when installation.
35. Should supply Test kit for checking hardness of water / portable TDS Meter
36. Replacement of all necessary filters including 1 micron & 5 micron, Replacement of Sand / Pebbles / Carbon, UV Lamps, Antiscalent chemical, and Acetic acid cleaning whenever requires should be done free of cost during the warranty period and also in the CMC period.
37. RO Membrane shall be replaced at free of cost during the warranty period whenever required.

Certificates: Notified CE/BIS/FDA and ISO 9001

ORGAN WEIGHINGS SCALE

Specifications :

1. Capacity: 0-15kg,
2. Resolution: 10Grams,
3. ABS Bowl (as per Weights & Measures Rule).
4. Model approval certificate from Director (Legal Metrology),
5. Department of Consumer Affairs,
6. ISI marked duly certified and stamped by Weight and Measures Department and conforming to IS: 9281(pt-1&2)/1979, IS:9281 (pt-3) / 1981 and IS:9281 (pt 4)/1983 (reaffirmed 2006) and
7. suitable for operation on 230(Volts, 50Hz single phase AC with min. 1.5mtr mains cord. Operating temp. 0-50 deg. Centigrade. ISO Certified. In case of distributor, they must have dealership & repairing license issued by Legal Metrology Department, Government. of Andhra Pradesh.
8. Accuracy (+/-2gm)
9. Should have digital display with rechargeable battery
10. Plat form size is made ss304 grade which is easy to clean

Certificates: Notified CE/BIS/FDA and ISO 13485

SchematicEye

- Human eye model, enlarged 5 times with parts dissectible eye ball 7anatomical
- The white colour makes the other colours and features stand out perfectly for better observation
- Dissects to show central retina artery, vein and the optic nerve is also featured. The cornea, iris, lens and vitreous body are alsoshown
- Handpaintedandextremelydetailedtoshowalltheanatomicalfeatures
- Thenumberedmodelcomeswithadetailedkeycardforexcellentstudy
- Should beCE/USFDA/BIS

SEMI -AUTOMATED BIOCHEMISTRYANALYZER

Specifications:

Clinical purpose:

1. The Semi -automated Biochemistry Analyzer measures biochemical indexes by analyzing blood and other body fluid, then combines with other clinical information, to help diagnose disease, evaluate organsfunction.

Technical characteristics

2. Analyzer should use wet chemistryreagent.
3. Analyzer should have ability to use external currettes and integrated flowcell.
4. Analyzer should have more than 200 programmablechannels.
5. Key board should betouch/mechanical.
6. Analyzer should have 5 assay types: End point, Fixed time,Kinetic,
7. Absorbance and 1-point calibration with option for extendedkeyboard.
8. Analyzermusthavecalibrationtypes:Linearfactor,multipoint,pinttopointand Log-Legit.
9. In kinetic essay measurement interval should be 1second.
10. 3 levels control with day to dayleveyjennings chart stored anddisplayed.
11. Flow cell must bequartz.
12. Flow cell must have optical path of10mm.
13. Flow cell volume should be less than 20 μ L.
14. Measurementrangesshouldbe25,30,37degreecelsiuswith1degree Increment.
15. Standard wave lengths in the range of340-700nm.
16. Analyzer must store 1000results.
17. Analyzer resolution must be 0.0001 absorbance unit andabsorption
18. Range from 0.00-3.00unit.
19. Heatdissipation:HeatDissipation:ShouldmaintainnominalTempandtheheat should be disbursed through an coolingmechanis
20. Power Requirements: Recharging unit: Input voltage- 220V-240V AC,50Hz

21. Tolerance (to variations, shutdowns): $\pm 10\%$

Accessories:.

22. Light source/Lamp-1no.

23. Analyser should be Open SourceSystem

24. Micro pipettes(5 No.) - 2 variable(5-50),(100-1000)

25. Tips 500 - small and 500-big.

26. Operating condition: Capable of operating continuously in ambient temperature of 10 to 40 deg C and relative humidity of 15 to 90% in idealcircumstances.

27. Storage condition: Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to90%.

28. Disinfection: Parts of the Device that are designed to come into contact with the patient or the operator should either be capable of easy disinfection or be protected by a single use/disposablecover.

29. Online UPS with Minimum 45 Minutes backup should beprovided.

30. One set of complete reagent kit should provide along with theInstrument.

31. Certificate of calibration and inspection from themanufacturer/Supplier.

32. Training of users on operation and basicmaintenance.

33. Advanced maintenance tasks required shall bedocumented.

34. Calibration should be done as per the NABL/NABHstandards.

35. Copy of the certificate/ test report shall be produced along with the technicalbid

36. POWER SUPPLY 230 Vac, Single phase, 50/60 Hz- IndianPlug

37. Analyzer should be BIS/US FDA/NotifiedCE.

38. Manufacture should be ISO 13485certified.

Serum Inspissators

Specifications:

1. A shallow polished stainless steel tray should be rested inside a tank containing water.
2. The whole undersurface of the tray must be in contact with water at a constant temperature which ensures that the temperature of the McCartney bottles with media is also constant.
3. The surface of the tray should be a series of sloping steps (at 9 degree angle above the horizontal) and should hold 160 universal containers.
4. The temperature of the water under the tray must be controlled by a digital immersion thermostat.
5. The temperature controller should be microprocessor based with LED/LCD display of actual and set temperature & time with a display resolution of 0.10C.
6. Should be provided with the timer which is user set-able from 0-24 hours and should have an audio alarm to indicate when time is up.
7. Accuracy and reproducibility of set temperature should be ensured with the digital display of actual and set temperature.
8. The control unit should be mounted on a bridge plate over one end of the bath, from which heater, stirrer and temperature sensors project down into the bath.
9. All moving parts should be incorporated in the control unit which is removable for servicing.
10. The tray and tank should be made of stainless steel and should be rust free.
11. A constant level device should be fitted to maintain the water level despite evaporation losses.
12. Standard temperature must be 85°C;
13. Operating temperature range should be: ambient + 5 to 90°C.;
14. Temperature stability should be +/- 0.20C
15. Heat up time to standard temperature should not be > 3.5 hours

16. Voltage regulators of appropriate rating should be included for each item to cope with 160-260V.
17. Uniformity: tray surface +/- 0.70c;
18. Heater power should be (approx.) 1.4Kw,230V;
19. Tank capacity (nominal) should be (approx.) 45lit.
20. Working area should be approximately 820/594 mm(length/width)
21. Overall dimensions should be approximately 1040/600/380mm(l/w/h)
22. Over temperature protection should be provided with fixed cut-out;
23. Electrical power: 220-240V 50/60 Hz, 1.5kW(approx.)

Certificates: Notified CE/BIS/FDA and ISO 13485

Sherrington Starling kymograph(Digital)

Specifications:

1. It should be a Micro controller based unit
2. LCD display 16x2 or better
3. Digital speed selection should be 7 or better
4. Highly accurate speeds 0.12, 0.25, 0.50, 0.75, 1.00, 1.25, 2.50 mm/sec
5. Digital timer & time multiplier with audio & visual alarm
6. Easy height adjustment of drum
7. Auto concentration response curve (CRC) mode & normal mode
8. Study corrosion resistant body
9. Length of the rod should be 375mm or better
10. Should be provided with battery backup

Certificates: Notified CE/BIS/FDA and ISO 13485

Slide Warming Table

Description:

1. The provided table is extensively used in hospitals, clinics and nursing homes laboratories to heat the slide at constant temperature. With the aid of latest techniques, our dexterous professionals use optimum quality components to manufacture this table. Additionally, the offered Slide Warming Table can be bought from us in various specifications at cost-effective prices.

Specification:

1. Uniform heat transfer
2. Adjustable thermostat
3. Accurate plate size
4. Slide Warming Table is very useful for heating slides to a uniform constant temperature below the melting point of wax.
5. Top surface made of Stainless Steel (SS-304 grade).
6. The surface temperature is controlled from ambient to 70°C .
7. Supplied complete with pilot lamp, cord and plug but without thermometer.

Certificates: Notified CE/BIS/FDA and ISO 13485

SMARTTV

Specification:

1. Resolution : Full HD (1920x1080) | Refresh Rate: 60hertz
2. Connectivity:3HDMIportstoconnectsettopbox,BluRayplayers,gaming console | 3
USB ports to connect hard drives and other USBdevices
3. Sound: 20 Watts Output | DTS-HDsound
4. Smart TV Features :Built-In Wi-Fi | PatchWall | Netflix | Prime Video |
Disney+Hotstarandmore|AndroidTV9.0|GoogleAssistant|DataSaver
5. Display : LED Panel | Vivid Pictureengine
6. Warranty Information: 1 year warranty on product and 1 year extra onPanel
7. Installation/Wall mounting/demo will be arranged by Amazon Home Services or
Xiaomi service partner. For more information, please call Mi support on 1800- 103-
6286 | Wall Mount is not included in the box and will be charged extra at the time
ofinstallation
8. Easyreturns:Thisproductiseligiblereplacementwithin10daysofdeliveryin case of any
product defects, damage or features not matching the description provided
9. Weight 2.2kg
10. Size 43inches

Certificates: Notified CE/BIS/FDA and ISO 13485

Spectroscope lens with adjustable lens

Hand spectroscope with adjustable slit, comparison prism, mirror, 5 glass cuvettes and wavelength scale 400 - 700 nm with 589 nm indication. Divisions 10 nm.

1. direct vision type 2.
adjustable eyelens
3. adjustable slit 0 - 1 mm 4.
angle dispersion C - F 7° 5.
linear dispersion 60 mm 6.
comparison prism
7. mirror
8. 5 glass cuvettes
9. wavelength scale 400 - 700nm

Spiro meter (PFTMachine)

Specification:

1. Pulmonary function test is equipped should be with PC based equipment capable of giving data in tabular form for 33 parameters (FVC, SVC, and MVV).
2. pre and post medication option available for comparison Features
3. complete digital processing
4. user friendly alpha numeric LCD display
5. easy to operate
6. soft touch keypad
7. audio indication with each function
8. elaborate prediction equations
9. optional interpretation facility
 - i. fast and noise free printing
 - ii. well formatted report
 - iii. 14 measurement Parameters

Unit should be BIS/US FDA/Notified CE certified

Splints

1. Made of Aluminum or any durable flexible material
2. Should be supplied in Bag

Sizes

1. Half Arm 25 inches
2. Full Arm 32 inches
3. Half Leg 25 inches
4. Full Leg 32 inches
5. Should be notified CE/USFDA/BIS

STAGEINCUBATOR

Specification:

Target holder: Petri-dish, 35 mm in diameter, with cover slip bottom Outer dimensions of the Plexiglas base plate: 127.8 x 85.5 mm Mass: 430 gram

The controlled temperature range: room temperature to 50 Centigrade, in 1 Centigrade steps

The resolution of the measurement: 0.1 Centigrade

Hysteresis: 0.2 - 0.3 Centigrade. The actual hysteresis depends on the thermal capacity and the volume of the solution in the Petri-dish.

To use the Stage Incubator you should buy a Physiological - Biological Temperature Controller assembled with 12V FINE DC power end-stage.

Certificates: Notified CE/BIS/FDA and ISO 13485

BPAPARATUS(SPHYGMOMANOMETRE)–STANDMODEL

Specifications

1. Should be portable mercurial type, standmodel
2. Should have ISI mark
3. Should have ON and OFF provision for mercury reservoir
4. Should have a measuring range from 0 to 300mmHg
5. Should be provided with adult arm cuffs of size medium & large and pediatric cuff
6. The control valve should have a knurled thumb control device. The leak rate should not exceed 10 mm of mercury per minute
7. The manometer scale markings and graduations should be engraved or etched and filled with pigments and it should meet the requirements of boil test
8. The internal diameter of the manometer glass tube should be 4.1 ± 0.1 mm and the thickness not less than 2mm
9. Plastic parts, if any used should not crack, flake, peel or disintegrate in normal use
10. The inflating rubber bag should be capable of withstanding an internal pressure of 450 mmHg without leaking
11. The inflating bulb should be soft and should not have any joints or ridges
12. The mercury used should be clean, double distilled and of 99.9% purity
13. The fastening arrangement of the cuff should be of hook and loop type (Velcro)
14. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum conditions.
15. The rubber tubes used should have an internal diameter of 3 ± 0.5 mm and the external diameter should not be less than 8mm.

16. The housing case should be of robust design. It should have press to release lock. It should have metal hinges. The tube should be secured with metal screws and clamps. It should have mechanism to hold the lid in right angles and should prevent accidental dropping. All parts should be replicable in case of breakage
17. A cleaning brush to clean the manometer tube and a set of spare washers may be provided with each unit.
18. Should be mounted on good quality wheels
19. The stand body shall be made of mild steel and powder coated.

Certificates: Notified CE/BIS/FDA and ISO 13485

Stand-alone coldplate

Description:

1. Cold Plate holding more than 50/60 cassettes on its large working surface.
2. coldplate to be designed with an environment adaptive control module to make sure the operating temperature is always stabilized at -10°C .
3. Cold plate to be used as a stand-alone unit for re-cooling blocks prior to sectioning or as part of an embedding center to cool molds after paraffin dispensing.

Specification:

1. Temperature Range 15 Degree C to -15 Degree C

Certificates: Notified CE/BIS/FDA and ISO 13485

Stethograph

Specification:

1. Corrugated rubber tube with side clips, open linkchain.
2. Suitable for use with any tambour.
3. MicroTechnologies
4. Material MildSteel
5. Grade EN8
6. Finish Polished

STETHOSCOPE

Specifications

Should have high quality soundtransmission

Length 27 “inch to 29 inch“

Weight 6 ounce to 7.6 ounce (Approx.) Chest

piece Ø45mm (adult), - Ø35mm (pediatric)

Preferablecolor–black

Should have tight and soft sealing ear tips

Certificates: Notified CE/BIS/FDA and ISO 13485

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Stopwatch

Description:

Specification:

1. Square design, plastic construction and LCD display
 2. Professional sports chronograph digital timer stopwatch show hour, minute, second, AM / PM indicator, month, date, and day of the week
 3. 12 or 24 hour 1/100 second chronograph up to 23 hours, 59 minutes, 59 seconds
- Timer stopwatches alarm with snooze
4. SPLIT / RESET, MODE and START / STOP buttons for convenient operation
 5. Dial Display: Digital

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 5. Dial Display: Digital

Storage tank to holdcadavers

Description:

1. Strong Stainless Steel frame work construction. All structure polished finishing. Tray constructed with heavy duty stainless steel material for heavy drainage of the chemical. Provision of upside open cover. Tank Made from Thick Stainless Steel, with a high boarder. Provision of both side manual lifting handles. Provision of lock tray at the bottom.

Specification:

1. Material StainlessSteel
 2. Mounted With 125 mm swivel castors, 2 withbreaks 3.
- Size 240(L) x 600(W) x 850(H)cm

AUTOPSY SAW WITH ACCESSORIES

Specification:

1. Should be a well balanced, lightweight, efficient and durable autopsy saw.
2. Strong motor with at least 13000rpm
3. Should have high speed oscillation, 12000 – 21000opm
4. Should be provided with screw wrench for exchange of sawblade
5. Should have cool operation for greater user comfort.
6. Should have integrated motor and handpiece
7. Should have reduced noise level.
8. Should have Teflon housing for easy cleaning
9. Should have Ten (10) foot cord for greater mobility.
10. Suction performance: 1.380 watts Air flow rate: 57l/min Vacuum: 235 mbar Main supply: 230 volts, 50 Hz Noise level: less than 65db
11. Should be able to connect directly to bone vacuum dust collector.
12. Should be supplied with following: (i) Round Blade without arbour: 15 Nos. (ii) Section Blade without arbour: 15 Nos. (iii) Saw Arbor: 3 Nos. **BONE VACUUM DUST**

COLLECTOR SPECIFICATION:

1. Should be powerful enough for even the smallest particles.
2. Should have reduced noise level.
3. Should have disposable filter cartridge which traps more dust particles without clogging and is easy and safe to replace.
4. Should have 10 foot power cord.
5. Width: 15 inc./ 38 cm Length: 23 inc./ 58 cm Height: 23.5 inc./ 59cm
6. Should be supplied with total FIVE (05) filter cartridges.
7. Should have European CE certificate

Certificates: Notified CE/BIS/FDA

MONOCULAR MICROSCOPE

Specifications

1. Should have sturdy stand with convenient location of focus controls
2. The monocular tube should be 45 degrees inclined, and 360 degrees rotatable
3. Should be an integrated wide field eyepiece- 10x, 18mm with foldable eyeguard,
4. Should have an anti-fungus coating.
5. Should have quadruple nose piece with ball bearings with rubber grip.
6. Objectives should be semi-plan, achromatic, 4x, 10x, 40x, 100x spring loaded, oil immersion with anti-fungus coating.
7. Should have a mechanical stage of dimension: 135x125 mm, with low dry coaxial control, ball bearing slides with graduated scale
8. Should have an SS holder for slide 75x50mm movement
9. Should have coaxial coarse and fine focusing system with ball bearing guide ways
10. Should have an Abbe condenser
11. Should have NA 1.25 with aspheric lens
12. Should have an iris diaphragm with removable blue filter
13. LED illumination with variable intensity control
14. Input 220v – 240V, AC

Certificates: Notified CE/BIS/FDA and ISO 13485

SUCTION APPARATUS(PORTABLE)

Specifications:

1. Rating of Motor –continuous
2. SuctionBottleCapacity-2x2000mlminimum(withsafetyvalve)
3. Gauge - 0 to 760 mmHg
4. Vacuum Maximum - 660 mmHg.
5. Pump - Oil lubricates rotary pump
6. Suction Tunings - ID 7 mm, 5m long and non-collapsible.
7. Should have air tight lids interconnected with both jars.
8. Should have a noiseless Operation
9. Should provide filter to absorb moisture and water particles entering into the rotor.
10. Should have a safety valve to prevent entry of fluids into machine in case the suction jar fills up.
11. Should be well-designed, cabinet made of Stainless Steel 304 Grade.
12. Should have facility to adjust suction pressure.
13. Should bear ISI / CE mark
14. Should operate from 200 to 240Vac, 50 Hz input supply

Certifications: Notified CE/BIS/FDA and ISO 13485

Surgical diathermy

Specifications

1. Clinical purpose
2. Diathermy uses an electric current to produce heat deep inside a targeted tissue. It can reach areas as deep as two inches from the skin's surface.
3. The diathermy machine does not apply heat directly to the body. Instead, the current from the machine allows the body to generate heat from within the targeted tissue.
4. Used by clinical department/ward Operation theatre

TECHNICAL CHARACTERISTICS

1. Facility for Monopole, Bipolar and underwater cutting.
2. Monopole cutting and coagulation
3. Micro-processor based technology
4. Monopole cut in minimum 3 modes
5. Bipolar-coagulation in 3 or more modes (forced coagulation, spray coagulation and soft coagulation)
6. Blending of cutting and coagulation -in minimum 2 levels
7. Automatic cut-off technology with self check on every start.
8. Foot and hand switch
9. Auto monitoring and display of set parameters
10. Touch-controlled interface to set parameters
11. 4 or more programmable memory
12. Simultaneous use of Monopole and Bipolar Coagulation.
13. Output Power of 300 Watt (Minimum).
14. Monopole Cutting and Coagulation power adjustable from 0-300 Watt.
15. Bipolar Coagulation power adjustable from 0-50 W, Micro Power Range- 0.1 to 9.9 Watt increment of 0.1 Watt, Macro Power range from 1-50 Watt increment of 1 Watt.
16. Audio-Visual Alarm for disconnection of Neutral Plate

Software and/or standard of communication (where ever required) In-built

PHYSICAL CHARACTERISTICS

- 1. Dimensions (metric)NA
- 2. Weight (lbs, kg) Max:10kg
- 3. ConfigurationNA
- 4. Noise (in dBA)NA
- 5. Heat dissipation Heat Dissipation: Should maintain nominal Temp and the heat should be disbursed through an coolingmechanism
- 6. Mobility, portabilityPortable

ENERGY SOURCE (electricity, UP S, solar, gas, water,CO2)

- 1. Power Requirements Recharging unit 220V Input voltage 240V AC,50Hz
- 2. Battery operatedNo
- 3. Tolerance (to variations, shutdowns)±10%
- 4. Protection should have over charging cut off with visualsymbol.
- 5. Power consumption60W

ACCESSORIES, SPARE PARTS, CONSUMABLES

- 7. (Mandatory, standard, optional); Spare parts (mainones);
- 8. Consumables / reagents (open, closedsystem)
- 9. Power cord:1pc
- 10. Electrodelever:1pc
- 11. Electrode:2sets
- 12. Collective electric bulb: 2pcswitch
- 13. Trolley; Footswitch
- 14. Reusable electrode handle with cutting/coagulationswitch
- 15. Disposable REMplate
- 16. Cable for electrodehandle
- 17. Neutral plate for adults andpediatric.

BIDDING / PROCUREMENT TERMS / DONATION REQUIREMENTS BIDDING /

ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS

- 1. Atmosphere / Ambiance (air-conditioning, humidity, dust)

Operating condition: Capable of operating continuously in ambient

Temperature of 10 to 40 deg C and relative humidity of 15 to 90% in ideal circumstances

Storage condition: Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%.

User's care, Cleaning, Disinfection & Sterility issues

1. Disinfection: Parts of the Device that are designed to come into contact with the patient or the operator should either be capable of easy disinfection or be protected by a single use/disposable cover.
2. Sterilization not required.

STANDARDS AND SAFETY

1. Certificates (premarket, sanitary, ..); Performance and safety standards
2. (Specific to the device type); Local and/or international
 1. Shall meet internationally recognized IEC 60601-1-1 standard (General Requirements)
 2. Shall meet internationally recognized IEC 60601-2-2 standard (Medical electrical equipment - Part 2-2: Particular requirements for the basic safety and essential performance of high frequency surgical Equipment and high frequency surgical accessories)
 3. Shall meet internationally recognized IEC 60601-1-6 standard (MEDICAL ELECTRICAL EQUIPMENT - PART 1-6: GENERAL REQUIREMENTS FOR SAFETY - COLLATERAL STANDARD: USABILITY)
 4. Shall meet internationally recognized IEC 60601-1-8 standard (MEDICAL ELECTRICAL EQUIPMENT - PART 1-: GENERAL REQUIREMENTS FOR SAFETY - COLLATERAL STANDARD: GENERAL REQUIREMENTS, TESTS AND GUIDANCE FOR ALARM SYSTEMS IN MEDICAL ELECTRICAL EQUIPMENT AND MEDICAL ELECTRICAL SYSTEMS)
 5. Shall meet internationally recognized IEC 60601-1-2 standard (MEDICAL ELECTRICAL EQUIPMENT - PART 1: GENERAL REQUIREMENTS FOR SAFETY
 2. COLLATERAL STANDARD: ELECTROMAGNETIC COMPATIBILITY - REQUIREMENTS AND TESTS)

6. Shall meet internationally recognized IEC 62304 standard (Medical device software – Software life cycle processes)
7. Local and/or international Manufacturer/supplier should have ISO 13485 certificate for quality standard.

TRAINING AND INSTALLATION

1. Pre-installation requirements: nature, values, quality, tolerance
2. Availability of 5 amp socket;
3. Safety and operation check before handover;
4. Requirements for signoff Certificate of calibration and inspection from the manufacturer
5. Training of staff (medical, paramedical, technicians)
6. Training of users on operation and basic maintenance;
7. Advanced maintenance tasks required shall be documented

WARRANTY AND MAINTENANCE

1. Warranty 1 year
2. Maintenance tasks
3. Maintenance manual detailing;
4. Complete maintenance schedule;
5. 9.3 Service contract clauses, including prices
6. The spare price list of all spares and accessories (including minor) required for maintenance and repairs in future after guarantee / warranty period should be attached;

DOCUMENTATION

1. Operating manuals, service manuals, other manuals should provide 2 sets (hardcopy and soft-copy) of:-
2. User, technical and maintenance manuals to be supplied in English/Telugu language along with machine diagrams;
3. List of equipment and procedures required for local calibration and routine maintenance;
4. Service and operation manuals (original and copy) to be provided;
5. Advanced maintenance tasks documentation;

6. Certificate of calibration and inspection
7. Other accompanying documents
8. List of important spares and accessories, with their part numbers and cost;
9. Any warning signs would be adequately displayed

NOTES

Service Support Contact details (Hierarchy Wise; including a toll free/landline number)

Contact details of manufacturer, supplier and local service agent to be provided;

Recommendations or warnings

Syringepump

Specification:

1. Should be easy to use and nursefriendly.
2. Should have automatic syringe size and model detection
3. Should have large format LCD/TFT display.
4. Should have a minimum flow rate range from 0.1 – 1200 ml/hr for 50ml syringe, 0.1 – 100 ml/hr for 20ml syringe and 0.1 – 60 ml/hr for 10ml syringe.
5. Syringe range from 20-50/60ml.
6. Should have a flow rate accuracy of $\pm 2\%$
7. Should have a bolus rate up to 1000ml/hr for 50 mlsyringe.
8. Should have automatic and manual bolus.
9. Should have at least 3 levels of programmable occlusion pressure
10. Should have automatic bolus reduction system to avoid accidental bolus delivery after occlusion incident.
11. Should have a rechargeable battery with back up time of minimum 3 hours.
12. Pump must trigger following alarms with visual indication:-
 - i. Occlusion Pressure Alarm
 - ii. KVO or 3 min pre-alarm
 - iii. Syringe empty and volume infused alarm
 - iv. Internal malfunction and Battery Charge Low Alarm
 - v. Syringe disengaged and incorrectly placed alarm
 - vi. Alarm loudness control.
 - vii. No mains
 - viii. Line disconnected (rapid pressure drop).
13. Should work with input 200 to 240Vac 50 Hz supply.
14. Should have safety certificate from a competent authority CE / FDA (US) / STQC
CB certificate/STQC certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid

Back to back warranty to be taken by the supplier from the principle to supply spares for a minimum period 7 years.

Warranty for 1 year.

Should be US FDA or CE or BIS Approved

THERMOAESTHESIOMETER

Specification:

1. Temperature range 5°C to 55°C
2. Sampling rate 18 samples per second
3. Averaging method sample mean
4. Starting temperature 25°C to 40°C
5. Temperature increment rate 0.2°C/s to 2.5°C/s
6. Temperature decrement rate 0.2°C/s to 2.5°C/s
7. Number of repeats 1 to 15 Delay between repeats 3 to 30 seconds
8. Random element of delay 10%
9. Computer interface board Advantech PCL-812, 12 bit ADC and DAC
10. Power requirements 220 to 250V a.c. 100VA (110 to 120V a.c. option)
11. Weight of control unit 5kg
12. Control unit dimensions Height 100mm, depth 260mm, Width 430mm
13. Weight of applicator 0.8kg
14. Applicator dimensions height 160mm, diameter 100mm (base) 55mm (top)

Certificates: Notified CE/BIS/FDA and ISO 13485

Thermometer 0-250degreeCelsius

Specification:

1. Type Thermometer
2. Material BorosilicateGlass
3. Operationtype Analog
4. Measuringrange 0 to 250degrees
5. Width 1cm
6. Length 30cm
7. Should be mercurial thermometer with high sensitivity 30 mmlong

Certificates: Notified CE/BIS/FDA and ISO 13485

Thermometer

Specification:

1. Sleekdesign
2. Washable
3. Centigrade and Fahrenheit Measurement option
4. Temperature range must include 32 to42°C
5. Should include a storagecase

Cell counter3-part

Clinical Purpose:

1. Hematology Analyzers are used to count and characterize blood cells for disease detection and monitoring. Basic analyzers return a complete blood count (CBC) with a three-part differential white blood cell (WBC) count.

Specification:

1. Type of Automation Fully AutomaticAutomatic
2. Start Up, shut down and sampleanalysis
3. Analysis principle Based on principle of counting and sizing
4. Multi channel analysis for better resolution
5. Type of cell counting 3 part WBC differential
6. Testing mode selection available CBC Mode Analysis available

WBC, Lymph#, Lymph%, Granulocytes #, Granulocytes% Mixed #, Mixed

%, RBC, HGB, HCT, MCV, PCV, MCH, MCHC, RDWSD, RDWCV, PLT, MPV, PDW- SD, PDW-
CV, PCT, PLCR, P-LCC

7. Should have three histograms of WBC, RBC, PLT
8. MID% analysis
9. MtD # analysis
10. Gran% analysis
11. Gran# analysis
12. Analysis method for WBC electrical Impedance
13. Method for platelet measurement electrical Impedance
14. RBC Measurement method electrical Impedance
15. Hb measurement photometric/direct cellular measurement
16. Types of modes of running sample Open vial, capillary, Closed, Predilute
17. Maximum sample aspiration volume needed in any of modes should be less than 50 µl
18. Minimum sample volume required should be 20 µl or less

19. Throughput capacity of analyzer in (samples/ hour)50-60
20. Linearity of Platelet " 0 to 300 * 10³ cells/ microliters"
21. RBC Linearity 0 to 8 x 10⁶ per microliter
22. more Hemoglobin linearity 0 to 25 gm perliter
23. WBC linearity " 0 to 3000 * 10³ cells/ microliters
24. " Analyses time for cytopenicsamples
25. Directly measuresMCV
26. Time taken by the analyzer to produce the test results(Analysis time) inseconds 40-60
27. Availability of Autodilution
28. Types of reagents 1 hemolyzing reagent,1 diluent,1 cleansingsolution
29. Quality assurance system with calibration andcontrols
30. At least 3 quality controlprograms
31. Type of Calibrationautomatic
32. Direct aspiration for capillary blood from angerprick
33. FloatingdiscriminatorforplateletsandRBCcountingforreliableRBCandPLT data
34. Automatic probewipe
35. Separate diluting nozzles for RBC andWBC
36. Double bathingmechanism
37. Automatic electric clogremoval
38. Type of data management Inbuiltsystem
39. DisplayLED
40. Inbuilt monitor size in inches More than5
41. RAM capacity of PC System 4GB
42. HIS/LIS InterfaceRS232
43. Type of external storageUSB
44. No of USB Port3
45. Data management systems Provide histograms in display andprint
46. Facility for user dennedagging
47. Type of user Interface or data entry all three (touch screen, handheld barcode reader facility andmanual)
48. Database capability of storing sets of results and graphics" >= 2000 to5000
49. Facility for workloadrecording
50. "Auto stop function in event of unacceptable controldata
51. Ability to transmit results to hostcomputer
52. Have auto cleaning function in the analyzer'ssoftware

Certificates: Notified CE/BIS/FDA and ISO 13485

TMTMachine

Specification:

1. Length of Treadmill Floor (mm)1990millimeter
2. Width of Treadmill Floor (mm)720millimeter
3. Length of walking area on treadmill (mm)1550millimeter
4. Width of walking area on treadmill (mm)550millimeter
5. Patient Load Capacity of Treadmill (Kg)190kilogram
6. Communication/ConnectivityRS232 ,USB ,Wifi,Bluetooth
7. Size of Monitor (inch)24inch
8. RAM size 4GB
9. Hard disk space 500GB
10. Number of serialport2
11. Number of USBPorts4
12. Connectivity / interface of Laser printerUSB ,WiFi Direct ,Bluetooth ,Network printing(Ethernet)
13. Transmission of data available through Network ,USB ,PDF,XML
14. Parameters Displayed by the system 12 Lead raw ECG, 12 lead ST level & Slops, Enlarged QRS complex with maximum ST level, Exercise time, Target and Max Heart Rate with % of target achievement, Heart Rate & METS trends, NIBPTrends,Speedoftredmill,ProtocolName,Protocolstage,Patientinfo
15. Advancedsignalprocessingalgorithmstomprovideexceptionalaccuracyinbeat detection and noise rejection resulting in superior identification ofevents
16. Unique source consistency filter, reducing noise and baseline artifactwhile preserving a diagnostic quality ECGsignal
17. Provision to eliminate artifacts due to respiration, muscle rub and AC interference,baselinewanderingwithoutcompromisinganddistortioninST segmentchanges
18. Provision to record resting ECG & ExerciseECG

19. Resting ECG software with detailed automatic interpretation statement for all 12 or 16 lead resting ECG should be present
20. ECG data management software for storage and review
21. Facility to review, edit and add ECG from full discloser storage postexam
22. 50mm sweep speed selection for ECG display in the system
23. Enlarged QRS complexes with superimposition technique
24. Automatic BP Measurement System integrated with the stress test system
25. Provision of real time average complexes
26. Provision of real time ST Analysis in bar graphs
27. Provision of Re analysis of final summary report
28. System should be able to present ST levels for 12 average complexes, slope for 12 average complexes and ST Profile
29. Provision of online ST measurement adjustment
30. Provision of reanalyzing the possibility of complete exercise test with ST/HR and NIBP trend graphically
31. SCD predictive tools like T-wave alternans, ST/HR hysteresis analysis
32. The system should have a Borg scale, symptom and point criteria table
33. Full disclosure review/playback/scroll back and addition of past ECG events
34. ST level and slope data for lead and worst case average beat update should be available continuously during the test
35. Beat by beat review mode to allow full disclosure review during and postexam
36. QRS signal averaging software, QT dispersion software, XYZ vector-cardiography software provided as standard part of the unit
37. Facility to do reanalysis of scored ECG by changing line measurement point title ST and J
38. The system should present comprehensive final report on minute by minute record of ST segment trend
39. Facility of automatic arrhythmia detection
40. Auto calibration with digital micro process control in the system and should also be manually operable
41. Facility of pacemaker rhythm detection
42. System should be able to view comprehensive ST segment and morphology analysis in an anatomically intelligent format
43. ST profile, ST elevation, ST depression, heart rate, Mets, NIBP, ST index should be able to be clearly analyzed
44. The unit should be able to quickly identify anomalies with the dynamic zoom ST display
45. The system should be able to view ST maps, patented visual anatomical representations of ST deviations in-frontal planes
46. Monitoring of ST changes with auto comparison of current and reference beats
47. The system should be able to display the traces incrementally
48. Provision of updating ECG and ST segment changes and compare them on a pre-exercise and during exercise basis on a high resolution display
49. Compact digital acquisition module that virtually eliminates non-cardiac electrical noises
50. Provision of alarm on HR, BP & ST level
51. Facility to mark the ECG strip to enter comments at any stage
52. Data Acquisition 12 Leads ECG Simultaneously and Display 3x4, 4x6, 6x12, 12 lead data indicate significant changes
53. A/D 12 bits or more

54. Sampling Rate 300/Sec/channel or more
55. Input impedance should be more than 90MΩ
56. CMRR Should be more than 100dB
57. Frequency response 0.05Hz to 100Hz
58. Digital filters 50Hz, 20Hz, 35Hz
59. Facility to get system generated autoreport
60. Analysis should work on total of at least 5 protocols
61. No startup delay in the system i.e. instant ECG Reports at the push of a button should be available
62. Final report with configurable lead groups
63. Patient report include protocol, Indications, medications, target heart rate reasons for end, symptoms, diagnosis, notes and conclusions with space for personnel and physician electronic signature
64. Examination summary include heart rate/BP/Workload trends page, ST level trends/ST slope trends, Average QRS by stage or by minute, Mets, Maximum predicted heart rate, THR formula selection
65. Ability to select final report segments including patient information, exam summary, rate, BP, work trends, ST level trends, ST slope trends, average QRS and events should be provided in the system
66. Events should include 12 lead ECG analysis for arrhythmias and user added ECGs
67. Provision of customizable system generated summary report to determine the contents of report with data storage facility
68. Provision of Password protection
69. Option to create network review workstations for viewing, editing and report printing of the stress test examinations should be there
70. Standard Accessories, consumables provided 2 sets of 12 lead ECG patient cables, 100 Electrodes, 10 rim A4 Reporting papers
71. Detachable/replaceable cables and leads
72. Minimum warranty (months) on accessories i.e. lead set
73. Appropriate sized cuffs of small, medium and large should be provided with the system
74. Storage of at least 100 patients records
75. Certifications for Treadmill System ISO 13485, EU-CE
76. Certifications for BP Measurement System ISO 13485, EU-CE

Certificates: Notified CE/BIS/FDA and ISO 13485

1. Transport Ventilator

2. Specification:

3. Should be microprocessor controlled, portable, lightweight.
4. Should operate with main electric supply as well as with battery.
5. Should be able to work both with cylinders and pipeline, connectors and high pressure tubing of appropriate length to be supplied.
6. Should have turbine/piston-technology for supplying air-oxygen mixture.
7. Should have built-in air source through Internal compressor/micro piston gas/ Turbine delivery system. With battery back up to 3 hours.
8. Should have facility to work on both low flow oxygen supply and high flow oxygen supply source.
9. Should have following modes of ventilation CMV, Assist –control, SIMV, PS-PEEP, CPAP, NIV
10. Should have tidal volume setting from 35 to 2000 ml in VCV modes & flow from 3 to 100L/min.
11. Should have the pressure support ranges from 0 to 50cmH₂O.
12. Should have built in Oxygen Monitoring with alarms.
13. Should be US FDA or CE or BIS Approved.
14. Audio–visual alarms for
 - (i) Low supply pressure
 - (ii) High/Low airway pressure
 - (iii) Leakage/disconnection
 - (iv) Power failure
 - (v) Apnea
 - (vi) Low battery
 - (vii) High Pressure 4 to 99cmH₂O
15. Should have following settings
 - (i) TV 50-1500ml
 - (ii) PEEP/CPAP & Pressure Support
 - (iii) RR up to 40bpm

(iv) I:E ratio 1:3 to 2:1

(v) FiO₂ 40-100%

16. Rechargeable batteries

17. Should fix, on rails of transport trolley and on stand with wheels. Two set of reusable silicon ventilator circuits.

18. Should have menu for easy operation as well as setting up the patients

19. Accessories:

(i) Adult circuits – 2 Nos

(ii) Pediatric Circuits – 2 Nos

20. Warranty and Maintenance

21. Back to back warranty to be taken by the supplier from the principle to supply spares for a minimum period 10 years.

DISTILLED WATERPLANT

115 Specification

1. Type of purifier With storage
2. Number of filtration stages – Single or more
3. Type of main filtering cartridge - Ceramic Filter or better
4. Filtering Technology - Squeeze
5. Minimum Size of filtering particles (Microns) - 0.3 micrometer
6. Maximum filtration rate – 4(Ltrs/min)
7. Life of Filtering cartridge – 1000(Ltrs)
8. Body material of purifier - Stainless steel, food grade or better
9. Warranty period – 1 year

Certificates: Notified CE/BIS/FDA and ISO 9001

Ultrasonic nebulizers

Specification:

- a. Should be light weight, portable, Compact and easy to use.
- b. Frequency of ultrasonic generator should be greater than 2.5MHz
- c. Should have 3 speed nebulization rate control (minimum, medium, maximum)
- d. Should have a nebulisation capacity of 0.3ml/min.
- e. Transducer element should have life of at least 5000hours
- f. Medication cup capacity should have capacity of maximum 8ml.
- g. Should use water as ultrasonic conduction medium, no gel is required.
- h. Should provide silent operation.
- i. Should have a built-in timer.
- j. Should work on 200-240 VAC / 50Hz.
- k. Should be provided with a complete nebulisation kit of 10 Nos. including adult and child mask and medication cup – 5 Nos.
- l. Certificates: Notified CE/BIS/FDA and ISO13485

Urinometer

Description:

1. A urinometer is a medical hydrometer designed for urinalysis. As urine's specific gravity is dictated by its ratio of solutes (wastes) to water, a urinometer makes it possible to quickly assess a patient's overall level of hydration

Specification:

1. Parameters Specific gravity of urine
2. Automation Manual
3. Display Analog
4. Material Glass

Vaccine carrier

Specification:

1. Vaccine storage Capacity, for Short range (Ltrs) 1.6
2. Vaccine storage Capacity, for Long range (Ltrs) 1.6
3. External Dimensions of Vaccine Carrier, (LxWxH), (mmxmmxmm) 280x280x310
4. Internal Dimensions of Vaccine Carrier, (LxWxH), (mmxmmxmm) 170x100x120
5. Vaccine Storage Dimension (LxWxH), (mmxmmxmm) 170x100x53
6. Type of Water-Pack Ice Pack
7. Number of Ice Packs Supplied along with Vaccine carrier (No's) 4
8. External Surface Material of Vaccine Carrier HDPE
9. Internal Surface Material of Vaccine Carrier HIPS
10. Insulation Material of Vaccine Carrier CFC free Polyurethane
11. Insulation Material Thickness of Vaccine Carrier (mm) 40-50
12. Maximum Loaded weight, inclusive of recommended number of water filled packs, for
Short range 7Kg and for Long range 8 Kg 5-7
13. Weight (Empty) without water packs (Kg) 2.4
14. Dimensional compatibility with water packs
15. Dimensional compatibility with vaccine packaging
16. Dimensional compatibility with distribution vehicles Easily strapped, upright to the luggage
rack of a bicycle or light motorcycle
17. Protection of the container with lid closed and latched as per IEC 60529: IP55
18. Ambient Temperature range during Transport, Storage and Use -30 deg C to +55 deg C
19. Ambient Humidity range during Transport, Storage and Use 5% to 95%
20. Vaccine carrier Conforms to WHO/PQS/E004/VC01 decimal 2 specification
21. Water-Pack Conforms to PQS/E005/IP01 specification
22. Submission of Test Report from Central Government/NABL/ILAC accredited lab to
prove conformity to all declared specification on demand
23. Product Certification ISO 13485

Van Slyke's apparatusmanometric

Specifications

complete with connecting tubing, 500 ml. beaker for water bath, adjustable pointer and three jets of different sizes, ends ground and polished.

Micro pipettes-Variable

Specifications

- 1 10 -100 μ l variableVolume
- 2 20 – 200 μ l variableVolume
- 3 100- 1000 μ l variableVolume
4. Pipettes should be CE from Notified /US FDA/ BIScertified.
5. Manufacture should be ISO13485certified.

VDRLSHAKER

Specification

1. For rotating slides for VDRLtests
2. Should have rotation in horizontalplane
3. Platform size 12" X 12" for keeping reactiontrays
4. Platform size 300 x 300 mm spring holders which can accommodateconcave slidesetc.
5. 180 rpm continuously adjustable withregulation
6. 0 to 30 minutes for control of shaking duration with 1 minuteinterval.
7. Required for rotating slides for VDRLtests
8. Timer with 0 to 30 minutes for control of shaking duration with 1 minuteinterval
9. Should have built in speed regulator with maximum speed of 150-180rpm
10. Theunitshallbecapableofbeingstoredcontinuouslyinambienttemperatureof 0 -50deg C and relative humidity of15-90%
11. The unit shall be capable of operating continuously in ambient temperature of10 -40deg C and relative humidity of 15-90%
12. Power input to be 220-240VAC, 50Hz fitted with Indianplug
13. Voltagecorrector/stabilizerofappropriateratingsmeetingISISpecifications.(Input 160-260 V and output 220-240 V and 50Hz)

Certificates: Notified CE/BIS/FDA and ISO 13485

Venous pressure apparatus

Description:

venous pressure is used in the diagnoses and assessment of congestive heart failure.

Vortexmixers

Specification:

1. Type of Drive Motor Brushless DCMotor
2. Display Option/Output Read out OptionAnalog
3. Material of Mixing Head/vortex cupPlastic
4. Type of Controller MicroprocessorControlled
5. Timer Setting (Increment step) 1 minute
6. Base material Die castaluminum
7. Number of Sample tubes testable simultaneouslyMulti-Tube
8. Finish of Body material Powdercoated
9. Maximum Load capacity 50kilogram
10. Speed increment step, if variable speed (RPM)100
11. IP rating or Ingress protection rating21
12. Activation mode Press Activated and Continuousrun
13. Speed mode VariableSpeed
14. Type of Data Logging optionVGA
15. Maximum Speed (RPM)2500
16. Minimum Speed (RPM)1
17. Pulsemode
18. Suction Cup in thebase
19. Maximum Diameter of the tube testable (mm)75
20. Accessories and spares included in standard pack With topcup
21. Orbital Diameter 4millimeter
22. External Dimension Height 130millimeter
23. External Dimension: Width 127millimeter
24. External Dimension: Depth 160millimeter

Certificates: Notified CE/BIS/FDA and ISO 13485

WaterBath

Specification:

1. Body should have stainless steel working chamber and lid
2. Microprocessor intelligent temperature controller with PID parameters control
3. Digital display of set and actual temperatures
4. Should have six holes with concentric rings
5. Chamber Size (L X D X H): 415x370x345
6. Temperature Control Range: RT+10 ~250°C
7. Temperature Fluctuation : $\pm 1^{\circ}\text{C}$
8. Vacuum Degree: <133pa
9. Chamber Material : Stainless Steel
10. Power (W) : 1400
11. Holes: 06

Water bath (Tissue Floatation)

Specification:

1. Range of Working Temperature (in degree Celsius Up to 90 degreec)
2. Working temperature adjustability
3. Set temperature tolerance $\pm 2^{\circ}\text{C}$
4. Temperature control By capillary thermostat
5. Type of Basin Removable for easy cleaning
6. Illumination provided for excellent viewing of tissue sections
7. Capacity of water bath in liters 4
8. Double walled construction
9. Glass wool insulation
10. Construction outer body Aluminum with powder coating
11. Display parameters Set temperature and actual temperature
12. Should have wide enough rim for vetting the dry slides
13. Glass tray provided
14. Heating o/p in watts 500
15. Diameter of flotation bath 200
16. Depth of flotation bath 110
17. Conformity to quality management standards ISO 9001 & ISO 13485

Certificates: Notified CE/BIS/FDA and ISO 13485

Water bath (Tissue Floatation)

Specification:

1. Range of Working Temperature (in degree Celsius Up to 90 degreec)
2. Working temperature adjustability
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11. Display parameters Set temperature and actual temperature
12. Should have wide enough rim for vetting the dry slides
13. Glass tray provided
14. Heating o/p in watts 500
15. Diameter of flotation bath 200
16. Depth of flotation bath 110
17. Conformity to quality management standards ISO 9001 & ISO 13485

Certificates: Notified CE/BIS/FDA and ISO 13485

Weighing ScaleAdult

Specification:

1. 0 - 130kg, min.
2. Graduation 0.5kg
3. One-yearwarranty
4. ModelapprovalbyLegalMeteorologyDepartment
5. MachinesverifiedandstampedbyLegalMeteorologyDepartment.) with ISOcertification.
6. Portable,min.size:30cmx 30cmor30cmdiameter
7. Incaseofdistributor,theymusthavedealership&repairinglicenseissuedby LegalMetrologyDepartment,Government.ofAndhraPradesh

WEIGHING SCALE FOR DEADBODIES

Specifications :

1. Capacity: 0-160kg,
2. Plat form size 350*350mm (Tolerance+/-10%),
3. ABS Bowl (as per Weights & Measures Rule).
4. Model approval certificate from Director (Legal Metrology),
5. It should have battery low indication.,
6. ISI marked duly certified and stamped by Weight and Measures Department and conforming to IS: 9281(pt-1&2)/1979, IS:9281 (pt-3) / 1981 and IS:9281 (pt 4)/1983 (reaffirmed 2006) and
7. suitable for operation on 230(Volts, 50Hz single phase AC with min. 1.5mtr mains cord. Operating temp. 0-50 deg. Centigrade. ISO Certified. In case of distributor, they must have dealership & repairing license issued by Legal Metrology Department, Government. of Andhra Pradesh.
8. Accuracy (+/-2gm)
9. Should have digital LCD display with 4 digits Size display should be minimum height 24mm for clear visibility.
10. The scale should have AUTO OFF Feature for reducing the power consumption and to extend battery back up period.

Certificates: Notified CE/BIS/FDA and ISO 13485

ORGAN WEIGHINGSCALE

Specifications :

1. Capacity: 0-15kg,
2. Resolution: 10Grams,
3. ABS Bowl (as per Weights & MeasuresRule).
4. Model approval certificate from Director (LegalMetrology),
5. Department of ConsumerAffairs,
6. ISI marked duly certified and stamped by Weight and Measures Departmentand conforming to IS: 9281(pt-1&2)/1979,IS:9281 (pt-3) / 1981 and IS:9281 (pt 4)/1983 (reaffirmed 2006)and
7. suitableforoperationon230()Volts,50HzsinglephaseACwithmin.1.5mtr mains cord. Operating temp. 0-50 deg.Centigrade. ISO Certified. In case of distributor, they must have dealership & repairing license issued by Legal Metrology Department, Government. of AndhraPradesh.
8. Accuracy (+/-2gm)
9. Should have digital display with rechargeablebattery
10. Plat form size is made ss304 grade which is easy toclean

Certificates: Notified CE/BIS/FDA and ISO 13485

ORGAN WEIGHINGSCALE

Specifications :

1. Capacity: 0-15kg,
2. Resolution: 10Grams,
3. ABS Bowl (as per Weights & MeasuresRule).
4. Model approval certificate from Director (LegalMetrology),
5. Department of ConsumerAffairs,
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8. Accuracy (+/-2gm)
9. Should have digital display with rechargeablebattery
10. Plat form size is made ss304 grade which is easy toclean

Certificates: Notified CE/BIS/FDA and ISO 13485

Weighing machines for dialysis wheel compatible

Specification:

1. Capacity:300kg
2. Accuracy:III
3. Size:1m*1m*1.2m
4. Interface:RS232
5. LCDdisplay
6. Worktemperature:-10~40°C
7. Safeoverload:150%
8. Power:AC110~220V 50HZ~60HZ
9. U-beam type and elbowpipe
10. All stainless plat form andsensor

Certificates: Notified CE/BIS/FDA and ISO 13485

Weighing ScaleAdult

Specification:

1. 0 - 130kg, min.
2. Graduation 0.5kg
3. One-yearwarranty
4. ModelapprovalbyLegalMeteorologyDepartment
5. MachinesverifiedandstampedbyLegalMeteorologyDepartment.) with ISOcertification.
6. Portable,min.size:30cmx 30cmor30cmdiameter
7. Incaseofdistributor,theymusthavedealership&repairinglicenseissuedby LegalMetrologyDepartment,Government.ofAndhraPradesh

PIPPETTES FORESR

Specification

- | | |
|----------------------|--------------------|
| 1. Capacity | 90ml |
| 2. Usage/Application | ChemicalLaboratory |
| 3. Material | BorosilicateGlass |
| 4. Color | Transparent |
| 5. PackagingSize | 100 pcs perpack |
| 6. Features | LeakProof |

Certificates: Notified CE/BIS/FDA and ISO 13485

WINTROBES PIPPETTES FORESR

Specification

- 1 Size of Tube of 110 mm long and with an internal bore diameter of 3mm
- 2 The tube is closed at one end.
- 3 This tube is graduated on both sides from 0-10 in ascending and descending order
- 4 The tube holds approximately 1 ml of blood

Certificates: Notified CE/BIS/FDA and ISO 13485

LED X-RAY LOBBY, DOUBLEFILM

Specifications

1. Ultra-Thin X-ray Film illuminator using LEDLamps
2. The Thickness should be 25mm –30mm.
3. It should be suitable for viewing all size films (especially 14” x 17”films).
4. It should have LED lamps having life-span of more than 100,000hours.
5. It should have easy insertion & removal of thefilms.
6. Itshouldhavehomogeneousillumination&havingluminanceofmorethan1200 cd/m².
7. ItshouldhaveseparateOn-Offfunction&separaterotarycontinuousadjustable brightness control for eachpanel.
8. It should have auto on/off function with insertion and removal offilms.
9. It should be directly connectable to power supply without any externaladaptor.
10. It should have external fuses for protection against powersurge

Certificates: Notified CE/BIS/FDA and ISO 13485

COMPREHENSIVE ANNUAL MAINTENANCE FOR ALL EQUIPMENTS:

Comprehensive Annual Maintenance: for all Equipments provided at the site as per the specifications shall be 7 years (which includes the Manufacturer's Warranty period of (2) years) executed under the scope of the work in this agreement.

1. The (7) years period of Comprehensive Annual Maintenance will start from the last date of completion of procurement, commissioning, testing and putting to use to the satisfaction of the User Department of all the Equipments.
2. The Contractor should bring to the notice of the concerned Officer / Authority before replacing any spares during this (7) years period of maintenance.
3. Comprehensive Annual Maintenance includes
 - 3.1 The Contractor shall appoint competent technical persons for looking after all the Medical Equipments. One of those competent technical person shall be readily available for ensuring an uninterrupted running condition of the Equipment at site at all times.
 - 3.2 The Contractor shall keep stock of all the spares as per the necessity and requirement for attending emergency repairs. A log book / stock register shall be maintained at site.
 - 3.3 The Contractor shall maintain a register for recording the history of repairs taken up for each equipment.
 - 3.4 Covering routine / regular servicing for (7) years period as per the service schedule / program given by OEM including cost and conveyance of all required materials viz., oils, spares etc., and all labour charges.
 - 3.5 All spares required for above all installations for maintenance shall be supplied by the Contractor during the above (7) years period.
 - 3.6 Cost and conveyance of all new / extra parts required and replacement of all spare parts whatever required for maintaining all the Equipments in an uninterrupted running condition throughout the maintenance period of (7) years.
 - 3.7 The Agency shall attend all repairs and rectifications including labour charges etc., complete at site during the maintenance period of (7) years.

Technical Specifications First Aid, Bandaging & Splinting Training Manikin

- It should have physiologically correct design allowing practicing identification of anatomical landmarks
- It should be a realistic full-body anatomy and landmarks provide the essential features necessary to learn realistic victim handling and adult First Aid , bandaging , splinting and immobilizationskills
- It should be high-quality, durable construction enable training in a variety ofenvironments
- It should have modular design allows various limbs to be attached to produce a more realistic trainingexperience.
- It should have natural obstruction of the airway allows students to learn theimportant technique of opening the airway
- It should demonstrate Headtilt/chinliftandjawthrustallowsstudentstocorrectlypractice airwaymaneuvers
- It should have occluded airway with hyperextension stresses proper headposition
- It should have realistic resistance for chestcompressions
- It should have articulating arms, legs, and head allow realistic weight and handling of anadult during obstructed airwaymaneuvers.
- It should have Carotid pulse simulation to realistically check forpulse.
- It should have disposable non-rebreathing airways are suitable for use by more than one student during class and are quick and easy to change after each trainingsession.
- It should have removable/reusable faces allow each student to have their own mouth-to-mouth face and offers easy after class cleaning andsanitation
- ISO/CE Qualitystandards

Technical Specifications INFANT BLS/CPR Mannequin

- The manikin should be realistic in appearance with full body infant.
- The manikin should have a soft nose which can be occluded using the nose pinch technique.
- Quality Cardiopulmonary resuscitation feedback on compression rate, depth, recoil, chest compression fraction, hand placement, and ventilations
- The infant should be able to provide crying as feedback for a successful choking procedure.
- The manikin should be able to facilitate a head tilt/chin lift technique to open the airway and have an articulating jaw to facilitate a modified jaw thrust maneuver.
- The manikin should have visible chest raise and wireless feedback during ventilation to define hypoventilation, normal ventilation and hyperventilation
- The manikin should have a disposable airway with an integral one-way valve.
- It should allow learner to practice the foreign body removal procedure with back thrust actions to remove airway obstructions.
- It should guide the students with Correct hand placement feedback while it should be able to spot incorrect hand placement with built-in sensors to instantly adjust learner's performance.

Feedback

The full body infant manikin should come with three types of feedback and be able to connect with wireless tablets, smart phones and/or LCD wired feedback providing both student and trainer feedback.

Wireless Trainer/Faculty Feedback Application

- Connects to 1-6 manikin(s)
- Shows live and summative feedback of CPR performance
- Provides suggestions for improvement, post-session
- Results are saved
- gamification of feedback to boost engagement

Wireless Learner Feedback Application

- Should connect to only 1 manikin
- Should show live and summative feedback of CPR performance
- Should provide suggestions for improvement, post-session for students
- Should allow results to be saved in the application

Wired Feedback system Skill Guide

- Should have "plug and play" option with three modes Response, and no feedback and Debriefing
- Could be used standalone or as a supplement to either of the apps
- It should allow students to monitor their own performance with following feedbacks

Real	Ventilation volume	Ventilation score xx%
Time Feedback	Compression and	Most severe errors on
Compression	Ventilation counter	ventilations &
Depth	Summative Feedback:	compressions
Compression	Compression score xx%	CPR duration mm.ss. Flow
Rate		fraction xx%
Incomplete Release		

TECHNICAL SPECIFICATION FOR PEDIATRIC CPR TRAINING MANIKIN WITH FEEDBACK

- It should be a Pediatric manikin modelled after a 5-6-year old child.
- It should be able to provide effective and quality child CPR training without compromising realism.
- It should have oral and nasal passages to allow mouth-to-nose ventilation and realistic nose pinch for mouth-to-mouth ventilation.
- It should have natural obstruction of airway so that learner understands the importance of opening the airway and abdominal thrust can also be practiced
- It should facilitate head tilt/chin lift and jaw thrust for realistic airway without head tilt/chin lift or jaw thrust the airway remains obstructed.
- Anatomically correct landmarks & sternal notch Realistic resistance for chest compressions and Audible feedback confirms correct compression depth,
- It should have Non-rebreathing airway Disposable airway to maintain adequate hygiene level.
- It should have accurate sensor to measure compression and ventilation.
- It should be able to provide virtual real time wireless feedback for faculty/ instructor and learner students reinforced with a tethered plug and play physical feedback device.
- The tethered plug and play device should provide Real Time Feedback:
 - i. Compression Depth
 - ii. Compression Rate
 - iii. Incomplete Release
 - iv. Ventilation volume
 - v. Compression and Ventilation counter
- It should provide objective feedback and scoring to the learners to not only motivate but also to compete with one another with a CPR Race to improve CPR skill acquisition and performance.
- It should be able to allow a trainer / instructor to assess and monitor more than 5 learners at the same time with the help of a software app simultaneously.
- The quality cardiopulmonary resuscitation measurement and feedback should provide:
 - a) Real-time feedback on compressions and ventilations
 - b) Post-training debriefs, including scores and suggestion for improvement
 - c) Details on compression release, depth and rate, ventilation volume, and number of compressions, ventilations and cycles.
- It should be CE and ISO Certified quality system

TECHNICAL SPECIFICATION FOR ADULT CPR TRAINING MANIKIN WITH FEEDBACK

- The manikin should be realistic in appearance with modeled hair adult half body torso.
- The manikin should have a soft nose which can be occluded using the nose pinch technique.
- The manikin should be able to facilitate a head tilt/chin lift technique to open the airway and have an articulating jaw to facilitate a modified jaw thrust maneuver.
- The manikin should have visible chest raise and wireless feedback during ventilation.
- The manikin should have a disposable lower airway with an integral one-way valve.
- The manikin should have a compression clicker which provides audible feedback.

Feedback

The BLS Torso should be able to connect with wireless tablets, smart phones and/or LCD wired feedback providing both student and instructor feedback.

Wireless Instructor Feedback –

- Software shall be available for free downloads as many time as required providing real-time wireless feedback on compressions and ventilations
- It shall be able to monitor and connect to get the live feedback from more than 5 individual BLS Torso mannequins simultaneously for group training.
- It shall help provide improvement tips based on CPR performance
- Compression depth, rate release, time and chest compression fraction
- Indication of too little, OK or excessive ventilation volumes

Wireless Student Feedback –

- Wireless Student Feedback Software shall also be available for free downloads as many time as required providing real-time wireless feedback on compressions and ventilations, students can view and monitor their own performance for the following points

- Compression Depth and Rate
- Incomplete Release
- Ventilation volume

It also provides with a summative feedback on the:

- Overall CPR score
- Improvement suggestions
- CPR duration
- The tethered plug and play feedback device shall also be able to provide detailed live feedback on compression and ventilation along with assessment and Summative Feedback Mode.
- Manikin should be supplied with Training Mat, 2 Manikin Faces, 2 Airways, 6 manikin wipes, LCD compressions and ventilations Feedback device and User Guide.

TECHNICAL SPECIFICATION IM/SC INJECTION TRAINING

- The soft tissue injection pad should be designed for practicing intradermal, subcutaneous and intramuscular tissue injection techniques.
- The Tissues should feel soft and warm to the touch

- The Injection Trainer should have multiple tissue layers representing the epidermis, dermis, fat and muscle layer, and can easily attach to an arm or thigh to help teach professional-to-patient communication
 - The epidermis layer peels back to quickly release subcuticular liquid.
 - It should be latex free
 - It should also have straps for hybrid simulation on standardized patient to reach communication, hygiene and assessment skills.
 - It should cover the nursing curriculum clinical procedures for subcutaneous and intramuscular injection • Maintains aseptic technique, the proper angle and depth of needle insertion

TECHNICAL SPECIFICATIONS MULTIVENOUS/ IM/SC INJECTION TRAINING KIT

1. **The Male IV Training** Arm Kit should include a full-size right arm with replaceable skin and veins designed for peripheral intravenous therapy.

- i. Anatomically accurate full male adult arm model
- ii. Rotation at deltoid for easier anterior and posterior vein access
- iii. Multiple injection sites for IV insertion
- iv. Dorsal veins of hand (3), Median, Basilic & Cephalic Vein
- v. Realism of the human arm in appearance, feel and resistance at puncture sites
- vi. Palpable veins enable site selection and preparation
- vii. Subcutaneous and intramuscular injections may be performed in the deltoid
- viii. Infusible veins allow peripheral therapy with IV bolus or push injection
- ix. Will articulate to other adult manikins

2. **The Pediatric Multi-Venous IV Training** Arm Kit should be a complete IV therapy training kit which includes a full-size right arm with replaceable skin and veins designed for peripheral intravenous therapy.

- i. Anatomically accurate full pediatric arm model
- ii. Multiple injection sites for IV insertion
- iii. Dorsal veins of hand (3), Median, Basilic & Cephalic Vein
- iv. Realism of the human arm in appearance, feel and resistance at puncture sites
- v. Venipuncture possible in the antecubital fossa or dorsum of the hand
- vi. Palpable veins enable site selection and preparation
- vii. Infusible veins allow peripheral therapy with IV bolus or push injection method

3. **The Female IV Training** Arm Kit should include a full-size right arm with replaceable skin and veins designed for peripheral intravenous therapy.

- i. Anatomically accurate full Female arm model
- ii. Rotation at deltoid for easier anterior and posterior vein access
- iii. Multiple injection sites for IV insertion
- iv. Dorsal veins of hand (3), Median, Basilic & Cephalic Vein
- v. Realism of the human female arm in appearance, feel and resistance at puncture sites
- vi. Palpable veins enable site selection and preparation
- vii. Subcutaneous and intramuscular injections may be performed in the deltoid
- viii. Infusible veins allow peripheral therapy with IV bolus or push injection
- ix. Will articulate to other adult female manikins

Each Kit should be provided with:
01 Replacement skin and multi-vein system, 01 Blood concentrate, 01 Blood Bag with Tubing and Connector, 01 Clamp and Hook in the carry case, 5 Syringes, 01 Lubricant, 01 storage box

Training checklist and OSCE as per the curriculum.

4. **Arterial puncture training** arm It should be a lifelike adult male arm designed for training the proper arterial puncture procedure for blood gas analysis.

- Anatomically accurate full adult arm model
- Simulation of hand placement during performance of Allen's Test is possible
- Flexible wrist enables proper positioning
- Arterial pressure may be generated manually
- Artery palpation is possible
- Percutaneous puncture sites in both brachial and radial artery
- Infusible arteries, with ability to pressurize system, enable blood backflow in syringe
- Drain plug in deltoid of arm
- Standard Supplies includes: Adult Male Arm, Manikin Lubricant and Artificial Blood

Technical Specifications Catheterization and Enema Trainer

The Catheterization and Enema Trainer should be a life-size, female pelvis with interchangeable genitalia designed for practicing urologic and rectal access gastrointestinal care procedures.

Features:

- Realistic articulation enables proper positioning for procedures
- Interchangeable genitalia, with connectors and colon reservoir, facilitate enema administration using fluid for realistic return
- Genitalia, with leak proof connectors and urinary reservoir, facilitate urologic care procedures
- Perineal care
- Insertion of vaginal medications
- Indwelling catheter insertion, care, irrigation and removal
- Abdomen with interchangeable stoma sites allow simulation of cystostomy tube care and urinary diversion stoma care
- Dorsogluteal, ventrogluteal and vastus lateralis Intramuscular injections possible
- Abdomen with interchangeable stomas serves as urinary reservoir
- Anal connectors which include a valve simulating the internal anal sphincter

Catheterization and Enema Trainer should be supplied with:

Adult Model with Enema and catheterization training Guidance/ training on the procedure

Male and female genitalia Carry Case/ Bag

Technical Specification SURGICAL TRAINING KIT

A. Basic Surgical Skills Training Set

1. It should be useful for learning basic surgical skills with a range of tissue handling techniques.
2. It should help learn following skills
 - Knot-tying: one-handed reef knot, instrument tie, surgeon's knot, tying at depth
 - Suturing techniques: holding/manipulation of needles, interrupted, simple and mattress, continuous, subcuticular
 - Skin lesions and LA techniques: excising a skin lesion, excising a sebaceous cyst
 - Hemostasis: clip tie, continuity tie, pedicle transfixion
 - Tissue handling - bowel – end-to-end interrupted sutures
 - Fine tissue handling: tendon repair
 - Abdominal closure and drain insertion: open abdominal wall, insert drain and secure, close abdominal wall with Aberdeen knot
 - Fine tissue handling: vein patch exercise
 - Wound management: abscess drainage, traumatic wound debridement

B. Skin Care Trainer

1. It should be latex free set of a realistic anatomical model or representation of different types of skin lesions like tags, nevi, seborrheic keratoses for teaching and practicing superficial dermatological lesion removal techniques and a 3 layer skin pad for demonstrating and practicing a variety of incisions and a wide range of suturing techniques
2. It should allow seborrheic keratoses to be removed using curettage technique.
3. The student should be able to learn –
 - i. Snip & Shave excision
 - ii. Curettage
 - iii. Incisions: linear, ellipse, flaps, shaped
 - iv. Subcuticular undermining
 - v. Simple and advanced interrupted suturing
 - vi. Subcuticular & Continuous suturing
 - vii. Stapling
 - viii. Use of adhesive strip

C. Bowel Anastomosis Trainer

- i. It should be realistic two-layer bowel model for training in anastomosis techniques. Approximately 200mm in length.
- ii. It should be able to behave like a real tissue and withstand a fluid flush test to demonstrate integrity of the anastomosis
- iii. It should be Latex free and made of non-biological material without any hygiene issues
- iv. It should allow learning and practicing following skills
 - Tissue handling
 - Single layer extra mucosal suturing
 - Continuous suturing technique
 - Stapling

- End-to-end extra mucosal anastomosis
- End-to-side anastomosis

D. Knot Tying Trainer

1. It should be a latex free comprehensive trainer for teaching all surgical knot tying techniques.
2. It should have a realistic perioperative opening
3. Small, shallow for tying in a small opening
4. Large, deep, reversible for angled abdominal and gynecological depth tying
5. It should be light and compact with transparent structures to allow the trainer to observe and assess trainee competence

It should allow the students to learn and practice following skills

- One-handed reef knot technique
- Instrument tie
- Surgeon's knot
- Slip knot
- Tying in a small opening
- Tying at depth vertically in a large opening
- Tying at depth, at an angle, in a large opening

It should have a mechanism or system to represent tissue strength

E. Skin Lesion Lipoma Care Trainer

1. It should be practical model of skin tissue for learning full lipoma removal procedure with 3-layer skin: epidermis, dermis and subdermal layer
2. It should be realistic model of human skin showing unidirectional stretch mimicking directional collagen as in human skin
3. It should have the thickness of dermis & epidermis layers based on human skin averages
4. It should have distinct layers with correct coloring: pink epidermis, white dermis and yellow subcutaneous fat.
5. The Lipoma detected should be consistent as found in a real human patient located within the fat layer with precise replication of in-vivo adhesion

The students shall be able to learn the following skills

- Designing the incision
- Marking out the lipoma
- Incising the skin
- Blunt dissection
- Removal
- Closure Latex free

F. Surgical Skin Care Trainer

1. It should be a set of 04 pads suitable for training in all aspects of suturing and minor skin procedures.
2. It should be able to help teach and use for following skills
 - Incisions- linear, ellipse, flaps, shaped
 - Subcuticular undermining
 - Simple and advanced interrupted suturing
 - Subcuticular & Continuous suturing
 - Stapling
 - Use of adhesive strips
 - Snip & Shave excision
 - Curettage
 - Planning and marking out, Incising the skin
 - Sharp & Blunt dissection
 - Removal & Closure

G. Abdominal Incision Trainer

1. It should be an advanced abdominal wall model consisting of epidermis, dermis, fat and linea alba.
2. It should have a separate peritoneal layer mounted on a base for teaching all surgical access and closure techniques to the abdomen.
3. It should have realistic anatomical structures in the form of 5 layered system representing the abdominal wall anatomy: epidermis, dermis, fat, linea alba, peritoneum.
4. It should be able to help teach and practice following skills and procedure—
 - Insertion of a Veress needle to obtain pneumoperitoneum
 - Insertion of a trocar
 - Hassen technique
 - DPL techniques
 - Incisions: linear, ellipse, flaps, shaped
 - Subcuticular undermining
 - Simple and advanced interrupted suturing techniques
 - Subcuticular suturing
 - Continuous suturing
 - Stapling
 - Use of adhesive strips

H. Sebaceous Cyst Care Trainer

1. It should be a model of skin pad for practicing the full sebaceous cyst removal procedure.
2. It should have a 3-layer skin with epidermis, dermis and subdermal layer containing 2 cysts.
3. It should be supplied with a holding pad to adhere the cyst skin to a body part for realistic experience
4. It should help learn and practice following skills and procedure
 - Marking out the cyst
 - Planning and marking the ellipse
 - Incising the skin
 - Sharp dissection
 - Blunt dissection
 - Management of a burst cyst
 - Removal
 - Closure

I. Surgical Dissection Trainer

1. It should be a multi-layered model of Skin with more than 10 fluid filled vessels for training in the basic surgical techniques used in open and laparoscopic surgery.
2. Should be able to provide a realistic response and feel with steel blade laparoscopic instruments or a harmonic scalpel.
3. It should look realistic when seen through a laparoscope
4. It should be made from tissue like material which provides for realistic suturing and stapling
5. It should help learn and practice following procedures—
 - Incision
 - Mobilization
 - Stapling
 - Dissection
 - Ligation
 - Division
 - Suturing

J. Surgical Toenail Incision Trainer

- It should be a toenail model closely resembling an inflamed toe end with an ingrowing toenail.
- It should help learn and practice following procedures
 - i. Ring block techniques
 - ii. Application of a tourniquet
 - iii. Total nail avulsion
 - iv. Phenolization techniques
 - v. Ablation of the nail bed
 - vi. Wedge excision - partial nail avulsion

TECHNICAL SPECIFICATION ADVANCED BREAST EXAMINATION TRAINER

The Latex free Breast Examination Trainer should provide a highly realistic learning platform for acquiring the skills required to Perform Clinical Breast Examination.

It should have 6 readily interchangeable and multi-positional pathologies, providing healthcare professionals with the tools to identify various complications and pathologies, including carcinomas, cysts, fibrocystic disease and fibroadenoma.

Both Simulated Patient and benchtop training can be used for any undergraduate programs running OSCEs or healthcare professionals promoting best practice techniques to trainees and patients.

It should help learn following skills

- Clinical breast examination
- Self breast examination
- Identification of anatomical landmarks
- Identification of lymph nodes (axillary, supra & infraclavicular)
- Location and diagnosis of pathologies
- Professional-to-patient communication

It should have realistic soft tissue breast anatomy

The student should be able to palpate following pathologies abnormalities: carcinomas: 2cm (0.78 inch), 3cm (1.18 inch), 5cm (1.96 inch), cyst, fibrocystic disease, fibroadenoma

It should be made of soft breast tissue like material having realistic look and feel. Clavicular and axilla palpation should feel accurate lymph node like lumps

Pathologies can be placed in various predetermined location points and are easily changeable It should be a dual-purpose training aid both for bench top and hybrid simulation.

It should be comfortable to wear for long periods of time during OSCEs and assessments It should be Latex free

Skin surface can be washed using soap and water

TECHNICAL SPECIFICATION
POSTPARTUM INTERVAL AND POST ABORTION IUD TRAINER

1. It should consist of uterus training models with accompanying essential instruments for IUD insertion. The trainer helps provide comprehensive IUD training at all the three mainstages.

2. The trainer consistsof:

i. A simplified human anatomical model of a **Postpartum Uterus** afterbirth:

It supports training in postpartum intrauterine device insertion, uterine balloon tamponade insertions and other postpartum uterus interventions.

ii. A simplified human anatomical model with both an **interval uterus and a post-abortion uterus**: It supports training for a variety of sexual and reproductive health interventions such as vaginal examinations, IUD insertion and removal, and for inspecting anteverted and retroverted position of theuterus

3. Post-Partum Training-

i. It should represent a simplified human anatomical model of a postpartum uterus afterbirth.

ii. It should support training in postpartum intrauterine device insertion, uterine balloon tamponade insertions and other postpartum uterusinterventions.

iii. It should be ultra-portable and can be used as a tabletop model for task training, or inside the birthing Simulator for a complete birthsimulation.

iv. It should be supplied with carrying case, instructional materials printed onto the carryingcase.

v. The product is intended to be compatible with a variety of obstetrics and gynecological examination tools including Kelley placental forceps, Sims speculum, Ring sponge Forceps, and a condom balloontamponade.

4. Interval & Post Abortion IUD Training.

i. It should be multi-uterus trainer with realistic anatomy representing the uterus between pregnancies and immediatelypost-abortion.

ii. It can be used for a variety of interventions such as vaginal examinations, IUD insertion, and removal, and for inspecting anteverted and retroverted positions of the uterus, as well as family planning and menstrual hygienecounseling.

iii. It should be supplied with small and large uterus model, abdominal skin, Table Clamp, Carry Bag, Usermanual.

iv. The product is intended to be used for family planning trainings and act as a counselling aid for healthcareworkers.

v. It should be packed in a useful way to hold the extra uteruses and the clamp and accessories; it should have space to accommodate the IUCD toolkit.

5. It should be able to work in an operating temperature of +15°C to +40°C and can be stored in a +20°C environment for three years"

6. The manufacturer should comply with ISOStandards

7. Materials it should be made from: Neoprene, PVC, PP, Silicone, PUR Polyether, Polyester, Nylon andLycra

8. The color of the simulator should be skin tone neutral keeping in view of gender sensitivities so that the student focus only on thetraining.

9. The entire product should be cleanable by wiping with a damp soft cloth. It could also be hand ormachine-washed

TECHNICAL SPECIFICATIONS BIRTHING STAGE TRAINING

- The birthing simulator should be ideal for demonstrating the mechanics of various birthing positions and train skills including abdominal
- It can be used both as a hybrid instructor wearable model and as well as a tabletop model for demonstration and skill training.
- It should also have parts made of durable water repellent fabrics, should require no lubrication during use, and should have passed durability test for 3000 deliveries.
- It should have realistically modelled pelvis bone structure to make it possible to identify the important landmarks in breech and shoulder presentations.
- able to teach management of malpresentations including breech and shoulder dystocia.
- It should have realistic fetal head, birth canal and pelvic floor facilitating natural rotation of the head as it descends.
- It should be supplied with cervix inserts of 4, 6, and 8cm dilatation and effacement for skill training on vaginal examination.

Birthing simulator should have the facilities to train the following types of delivery

- Fetal heart rate monitoring
- Vaginal delivery
- Breech delivery
- Vacuum delivery
- Incomplete placenta

It should be supplied with the following

- Placenta w/umbilical cord and membranes
- 2 Ties for umbilical cord
- 2 pairs of gloves
- Fetoscope
- Urine catheter
- 20 ml syringe
- Fetal skull with fontanelles
- Cervix opening (4, 6 & 8 cm dilations)
- Newborn Baby
- Baby hat
- Two sheets to simulate towels
- Table clamp
- Carrying bag
- Directions for use

The newborn baby should be realistic and articulated manikin with fontanelles and anatomical landmarks.

It should have a soft head allows for realistic attachment of vacuum for vaginal assisted delivery and creating a chignon effect.

TECHNICAL SPECIFICATIONS AMTSL TRAINING MANIKIN

1. It should be a birthing simulator designed for training both normal delivery and postpartum complications, including severe bleeding, uterine atony, and retained placenta.
2. It should be simple, non-electrical and highly realistic for training control of postpartum hemorrhage.
3. The system should be wearable for instructor to strap onto her/himself and shall manually control the amount of bleeding and the conditions of uterus.
4. It should be a birthing simulator used for practicing realistic and interactive scenario for normal and complicated births.
5. Together with Birthing model and a newborn simulator can demonstrate:
 - A. -Birth of single and multiple fetuses
 - B. -Complications of normal delivery
 - C. -Prevention, recognition, and management of postpartum hemorrhage, early postpartum management incl. uterine massage
 - D. -Progress of labor, including fetal descent, rotation, and cervical effacement and dilatation
 - E. -Abdominal palpation (Leopold's manoeuvre) for fetal position
 - F. -Fetal malpresentation, breech (complete, frank, footling) birth
 - G. -Prolonged second stage of labor, shoulder dystocia and cephalopelvic disproportion
 - H. -Ritgen's manoeuvre
 - I. -Umbilical cord prolapse and umbilical cord wrapped around the fetus' neck
 - J. -Placenta previa, partial and complete placenta and retention of parts of placenta
 - K. -Active management of the third stage of labor, incl. -controlled cord traction and inspection of placenta
 - L. -Immediate or delayed postpartum hemorrhage (1.5 L bleeding capacity in varying intensities)
- Bimanual compression of the uterus
 - M. -Atonic uterus
 - N. -Catheterization and rectal delivery of medication
 - O. -Cutting and clamping of umbilical cord
 - P. -Palpation of fetal fontanelles, suction of nose and mouth, bag-mask ventilation of newborn, newborn chest compressions, newborn vital signs, auscultation of newborn heart, and palpation of umbilical cord
The Instructor shall control dilation of the placenta and fetal heart sounds.
Simulator should comprise the following,

- Birthing simulator
- Placenta w/umbilical cord
- Blood concentrate
- Newborn Suction
- Fetal stethoscope
- Fluid collection tray
- Fluid drain
- Urine catheter
- 20 ml syringe
- Newborn skull w/fontanelles
- Newborn Simulator
- Backpack
- simulation of birth cries, spontaneous breathing, palpable umbilical pulse and auscultation of heart sounds
- External umbilical cord and 2 umbilical tie
- Sheets to simulate towel Headcap
- Storage/carrying pouch

ISO 9001:2008; ISO 13485:2003; ISO 14001

Environmental requirements

Operating temperature: +15°C to +40°C, operating humidity: 5 to 100% RH

Technical Specification Practical Obstetrics Multi-Professional Training

1. It should have a modular design allowing for numerous training scenarios with traction pull force monitoring fetus during shoulder dystocia and instrumental deliveries.
 2. It should be an ideal training solution for all skills relating to routine and difficult deliveries and can be used for both hybrid simulation and stand-alone bench top training.
 3. It should be able to teach and train on following Skills:
 - Training and practice in the following types of birth:
 - o Normal
 - o Vaginal breech
 - o Shoulder dystocia
 - o Vaginal assisted (forceps and vacuum devices)
 - o Third stage of labor
 - Cord prolapses
 - Urinary catheter placement
 - IM injection
 - Communication and teamwork skills
 4. It should have realistic anatomy with following landmarks and training module-
 - a. Birth canal and cervix
 - b. Ischial spines and pubic bone
 - c. Gynaecoid pelvis
 - d. Articulating thighs
 - e. Fully articulated baby with clavicles, fontanelles, flexible head and detachable umbilical cord and placenta, realistic pelvic floor
 - f. Articulating thighs for McRobert's procedure
 - g. Stretchable perineum
 - h. Soft, flexible birthing canal
- **Caesarean Section training Module**
- The abdominal skin should have realistic appearance and soft feel of at-term abdomen
 - Realistic feel of uterus interior during delivery.
 - The head should present at realistic level once incision is made
 - The uterus should be able to hold baby firmly in position for normal and transverse lies, breech and cephalic presentations
 - The uterus should support positions of baby and direct it towards the pelvis/abdominal incision when fundal pressure is applied
 - It should also have pre-incised skin to allow easy repeat delivery practice
 - The surgical pad should allow realistic dissection and closure and is reversible—
Single/double in situ uterine wall closure.

- It should permit suturing of rectus sheath, fat and subcuticular or cutaneous skin closure.
- Should help train and practice the following skills and procedures–
 - Abdominal and uterine wall opening and closure
 - Cephalic and breech delivery
 - C-section at full dilation:
 - Head disimpacting using vaginal push methods
 - Use of balloon disimpacting device
 - Reverse breech extraction
 - Transverse lie
 - Instrument assisted C-section delivery
 - Delivery of the placenta
 - Teamwork and human factors training in emergency
 - C-section

II. Cervical Dilatation & Effacement

– This should allow for training in assessment of both the latent and active first stages of labour.

– It should have realistic representation of cervixes, including anterior lip, and presenting parts in soft birth canal, with palpable ischial spines.

– Should help train and practice the following skills and procedures

- a) Assessment and Bishop’s scoring of:
- b) Cervical dilation (1-10cm)
- c) Cervical effacement (0-100%)
- d) Cervical ripeness/consistency (soft, medium, hard)
- e) Cervical position (anterior, mid, posterior)
- f) Fetal station (-3 to +3)
- g) Assessment of and artificial rupture of membranes
- h) Assessment of presenting part - flexed, deflexed, brow face, breech, caput and moulding and caput formation
- i) Module is washable with soap and water

III. Shoulder dystocia with force feedback training module

It is provided with 6 PRE-PROGRAMMED DELIVERY SCENARIOS with force monitoring capability

1. Normal Birth	4. Forceps
2. Shoulder Dystocia	5. Vacuum-assisted Birth
3. Vaginal Breech Birth	6. Third Stage of Labour

It allows time, Force & Interventions to be recorded

– records the amount of FORCE in Newtons being applied to the baby’s head during delivery

– It gives a reading and plots on a bar graph

The module should allow the newborn baby to communicate with the software installed tablet that works in conjunction with Simulator Software.

The software program should allow for the running of scenarios with the ability to record actions and interventions made and time to deliver the baby.

The feedback software should have a meter mode allowing student trainees to practice in applying force to the baby outside of the context of a scenario - enabling them to become familiar with the feel of both safe and excessive force before encountering a real obstetric emergency.

IV. Cervical stitch training Module-

- It should allow practicing the necessary skills required for performing cervical cerclage.
- It should provide sufficient exposure to students to performing both elective and emergency cervical cerclage procedures.
- It should have realistic anatomy of a dilating cervix & bulging membranes with soft parting labia & accurately sized vaginal vault mimicking the confined space available when performing the procedure
- It should be supplied with five each emergency and elective cerclage OS.

It should help the student to learn the following skills

Management of cervical incompetence Elective cerclage

Emergency (or rescue) cerclage McDonald cerclage technique

V. EPISIOTOMY TRAINING MODULE

It should be a staged training system for teaching episiotomy, repair of episiotomy and repair of second-degree tears with a simplified model for teaching safe methods of episiotomy.

115.1 Stage 01 episiotomy-

Faculty should be able to teach following

- Identification of fontanelles"
- Handling of a stretched perineum
- Infiltration of perineum prior to episiotomy
- Performance of medio-lateral (or midline) episiotomy
- Use of instruments
- There should be realistic representation of tissues to represent a stretched perineum"

- There should be a baby head provided with the model to have a realistic look and feel of landmarks and appropriate tactile responses when inserting fingers to guard the baby's head" **Stage 02**

Perineal Repairs-

- the model should provide realistic tissue layers of epidermis, dermal and subdermal layer of an average adult female to suture on 2 planes, one of which has the spatial challenges which exist when suturing within the vagina.
- Suturing should be possible in 2 planes: inside vagina and on perineum

- Practice of all suture techniques including continuous, subcuticular, knot tying methods should be able to practice
- It should have soft skin to have the similar drag and strength as of a human skin
- Epidermis and dermis should have a realistic retention of suture
- It should have a representation of the anus in the model
- There should be the facility for the practice of second-degree tear repair.
- There should be the facility for the practice of tissue layer recognition and handling
- There should be the facility for the practice of vaginal mucosal suturing
- There should be the facility for the practice of deep muscle suturing
- There should be the facility for the practice of subcuticular suturing
- There should be the facility for the practice of identification and management of perineal tears
- There should be the facility for the practice of digital rectal examination before & after repair

VI. **Uterine compression sutures** training module should be used to teach the method for the treatment of PPH, avoiding hysterectomy and preserving potential fertility.

- It should represent a postpartum uterus including uterine arteries, uterine veins and broad ligament
- It should allow practicing all common types of Compression Suture
 - a. It should provide a realistic vaginal bleeding situation for the student to practice suturing
 - b. It should be designed to be used with a pre-cut Caesarean section skin
 - c. It should allow the faculty to teach the skills for the compression suturing of–
 - i. B-Lynch
 - ii. Hayman
 - iii. Pereira
 - iv. Dissection of the broad ligament
 - v. Ligation of the uterine arteries

TECHNICAL SPECIFICATION NEWBORN RESUSCITATION

- The Newborn simulator should be realistic in size and appearance and also natural weight, feel and touch when filled with lukewarmwater.
- Should be designed for the training of after birth care and standard resuscitationmeasures.

- The Simulator kit should include thefollowing
 - Newbornsimulator
 - Squeeze bulbs forsimulation
 - External umbilical cord and 2 umbilicalties
 - 2 sheets to simulatetowels
 - Head cap
 - Carrying pouch
 - Neonatal Resuscitator(Reusable)
 - Neonatal Suction(Reusable)
 - TrainingStethoscope
 - Directions ofuse.

- Newborn simulator should facilitate practice in effective bag mask ventilation. Chest rise should be seen only with correcttechnique.
- Should have manually generated umbilicalpulse

Birth cries and spontaneous breathing to be simulated using squeezing bulb.

Technical Specification
Basic Trauma Training Mannequin

Mannequin should be durable, rugged training mannequin with an intubation head for advanced airway management training and realistic articulation allowing the mannequin to be placed in various settings for extrication or rescue, with realistic patient handling – full range of motion and should have the following features-

115.2 Airway Features

- Intubation
- Oral/nasal airway insertion
- Endotracheal tubes – insertion, securing and care
- Oropharyngeal and nasopharyngeal airways – insertion and suctioning
- Right mainstem intubation
- Sellick manoeuvre
- Oxygen delivery procedures
- Suctioning techniques

115.3 Drug administration

- IM Injections

115.4 CPR

- Anatomical landmarks
- Ventilation with bag-valve-mask

115.5 Extrication / Immobilization

- Extrication
- Immobilization
- Victim handling

Trauma Scenarios and Training Models

- First aid
- Bleeding and Haemorrhage Control
- Bleed Control Modules
- Should be designed to teach the rapid identification and effective management of bleeding control, per ATLS guidelines or military procedure, to prevent possible potential loss of life, with following–
 - Bleeding trauma amputation arm and thigh modules
 - Tourniquet application
 - Training of proximal artery compression
 - Bleeding trauma arm and thigh modules
 - Application of compressive dressing
 - Training of proximal artery compression
 - Deep gauze pack placement
 - Thigh module also features palpable chipped and broken bone

Basic Trauma Training Set

A set of wounds, blood splats and simulated blood designed to simulate injuries required in the following scenarios.

- Dilated pupil
- Contusions, lacerations and abrasions
- Distended jugular vein
- Flail chest segment
- Fractures – open and closed
- Burns – 1st, 2nd and 3rd degree
- Impaled object
- Abdominal evisceration
- Stab wound
- Projectile entry/exit
- Blood splats

Bleeding Module to teach the rapid identification and effective management of hemorrhage control as per ATLS guidelines or military procedure, to prevent possible potential loss of life.

Bleeding trauma amputation arm and thigh modules

Tourniquet application

Training of proximal artery compression

Bleeding trauma arm and thigh modules

Application of compressive dressing Training of proximal artery compression Deep gauze pack placement

Thigh module also features palpable chipped and broken bone

Should be supplied with Bleeding Amputation Arm – Upper, 1 Bleeding Trauma Arm, 1 Bleeding Amputation Thigh, 1 Bleeding Trauma Thigh, 4 blood Reservoir Bags, 1 Bottle of Red Simulated Blood, 1 Carry Case and instruction for Use manual.

Technical Specification Advance Trauma Module Training

Advanced Trauma Modules shall be able to create the realistic trauma situations for the students and faculty to train the first aid, trauma care and hemorrhage control skills.

These modules can be applied while training adult extrication manikins for realism in trauma life support and lifesaving first aid scenarios.

Trauma intubation head should be able to demonstrate Impaled object in the cheek, avulsed ear, unequal pupils, nasal bleeding, facial contusions, broken teeth and multiple lacerations

It should have manually generated carotid pulse

It should be able to present seat belt contusion with compound fracture clavicle from seat belt injury.

It should be able to show burn arm with 1st, 2nd and 3rd degree burn illustrated with blistering in progressive sequence.

It should be able to show compound fracture radius with exposed proximal portion of radius.

- a. It should be able to demonstrate the various injuries that could result in Industrial hand injuries like severe laceration to the dorsum of the hand with exposed bone and soft tissue.
- b. open and closed fracture of index finger and severe tear of the fingernail with contusion.

The manikin shall be able to demonstrate the exposed viscera with protruding abdominal wounds and abdominal contents.

The module shall be able to reveal large and small caliber entry and exit wounds.

The trauma training module can be able to show the Impaled Object as imbedded stick in thigh.

The trauma training module should be able to show compound femur fracture with exposed fractured femur protruding from mid-thigh.

The trauma training module should be able to show closed fracture tibia and fibula which can be determined with palpation.

It can also demonstrate contused ankle and foot.

The crushed foot can also be created with severe lacerations, exposed bone, tendon and soft tissue.

- Complete amputation of the lesser toe.
- Right foot may be articulated to the manikin at the ankle.

TECHNICAL SPECIFICATION ADVANCE CARDIAC LIFE SUPPORT TRAINING

1. It should have anatomically realistic airway including cricoid cartilage allows training in basic to intermediate airway management with various adjuncts including:

- Oropharyngeal and nasopharyngeal airway insertion
- Bag-Valve-Mask
- LMA
- Combitube®
- Laryngeal Tube Airway

2. It should be supplied with:

Full-body Adult Manikin with clothes

- Airway Management head
- IV Arm

Wireless Control with Accessories. Simulated Blood and Airway Lubricant Manual defibrillation plates

Hard carry case Manual

Patient Monitor

3. The software should allow comprehensive instructor-to-student debriefing and documentation of key events.

4. It should also allow training of first aid and extrication practices with the help of optional first aid and rescue limbs.

5. It should have an IV arm provides proficiency in venipuncture and IV administration

6. It should allow live defibrillation and allows users to incorporate live AED or manual defibrillators during the learning experience

7. It should have 4 connector 3-lead feature allows students to monitor ECG readings during training

8. Dynamic 12 LEAD ECG Monitoring

9. It should have automatically generated carotid pulses are synchronized with ECG and allow realistic pulse check during training

10. It should have wireless (Wi-Fi Bluetooth) AHA instructor control and intervention during training

11. It should give feedback on detailed information about CPR performance during training and debriefing

12. It should be able to give comprehensive performance report for after action instructor-to-student debriefing.

13. Patient Monitor–

should provide concise clinical feedback and simulates physiological parameters including wave form and value display for HR, ECG, SpO₂, BP, RR, Temperature, etCO₂, as in a real patient monitor.

14. CPR compressions should generate a blood pressure wave form & ECG artifact

15. It should have eyes for pupil assessment

- Normal – Dilated – Constricted

- It should have automatically generated Carotid pulses both sides

16. It should have Defibrillation capabilities(25-360j)
 - Synchronized variable rate, rhythm abnormalities and duration
 - Pacing – threshold 20 to 200mA
17. The model must simulate the following cardiac rhythms in the manikin:
 - Normal Sinus Rhythm(NSR)
 - Ventricular fibrillation
 - Ventricular Tachycardia, pulseless
 - Ventricular Tachycardia, with pulse
 - Asystole
 - PEA/EMD (pulseless electrical activity / electromechanical dissociation)
- 18. CPR Feedback**
 - It should have live feedback when performing CPR in both automatic and manual modes
 - Detailed information about chest compression, compression rate, ventilation volume, hand positioning, hands-off time shown in a combined graphical display
 - Performance Summary
 - Debriefing Screen
19. It should have a communication system so that faculty can be able to teach and evaluate the students with AETCOM and Patient assessment
20. It should be CE and ISO Certified quality system

TECHNICAL SPECIFICATION PEDAITRIC ADVANCE LIFE SUPPORT TRAINING

The manikin should be a realistic six-year-old child manikin including all of the features you would expect for teaching ALS skills, including an Intraosseous leg.

Airway Management

- Realistic life-size intubation trainer with a flexible tongue, arytenoid cartilage, epiglottis, vallecula, vocal cords, trachea, esophagus, and simulated lungs
- Head can be tilted forward, backward, or rotated 90 degrees to either side
- The following skills can be practiced:
 - Endotracheal Intubation
 - Nasotracheal Intubation
 - Digital Intubation
 - Oropharyngeal airway insertion and suctioning
 - Nasopharyngeal airway insertion and suctioning
 - Bag-Valve Mask Ventilation

Circulatory Skills and IV Drug Administration

- Manually generated carotid pulse
- Articulating IV Arm with replaceable skin and infusible vein system allows peripheral intravenous therapy and site care
- Venipuncture possible in the antecubital fossa and dorsum of the hand
- Accessible veins include median, basilic and cephalic

Intraosseous infusion leg with tibial tuberosity and medial malleolus landmarks

- Fluid can be infused
- Aspiration can be realistically simulated
- Drain in heel connects to reservoir bag

Touch Screen Wireless Control Unit Capabilities: Cardiac Related Skills

- Manual chest compressions
- Synchronized variable rate, rhythm, abnormalities and duration
- Programmable waiting rhythms
- Programmable scenario base algorithms for instructor control
- 3- or 4- lead ECG, pacing and defibrillation capabilities (25 – 360j)

Sounds

- Heart sounds synchronized with programmable ECG
- Auscultated lung sounds synchronized with breathing rate, 0 - 60BPM
- Individual lung or bilateral sound selection
- Normal or abnormal bowel sounds
- Vocal sounds – computer-generated sounds, mixed with voice input from faculty

Heart Sounds

- Synchronized with programmable ECG
- Aortic Stenosis
- Friction Rub
- Austin FlintMurmur
- Diastolic Murmur
- MiStenosis
- Systolic Murmur
- Mitral ValveProlapse
- Normal Heart Sounds – Apex
- Opening SnapMsec
- Ventricular SeptalDefect
- Atrial SeptalDefect
- Pulmonary Stenosis
- Stills Murmur
- Normal Heart Sounds

Vocal Sounds

- Computer-generated sounds, mixed with voice input (via microphone sold separately)
- Cough
- Vomit
- Moan
- Scream
- SOBBreathing
- Yes
- No

Lung Sounds

- Synchronized with breathing rate, 0 – 60 bpm
- Individual lung or bilateral sound selection
- CoarseCrackles
- FineCrackles
- Normal BreathSounds
- Pneumonia
- Stridor
- Wheeze
- PleuralRub
- Rhonchi

Bowel Sounds

- Normal and abnormal bowelsounds
- Borborygmus
- FetalTones
- HyperactiveBowel
- Hypoactive Bowel
- NormalBowel
- Hiccup(infant)
- Cry (infant)

Logging / Scenario Function

- Control unit can be connected to the simulator wirelessly for controlling the featuresand functions
- Running of physiological programmed scenarios where vitals areinterconnected.
- It will log the participant actions as noted by instructor and present them later for review/debriefing.
 - It Should be able to reflect the clinical scenario related vital signs on a simulated patient monitor providing multiple parameters, each presenting multi-levelalarms.
 - The parameters include dynamic values of HR, ECG, SpO2, BP, RR, Temperature, andetCO2
 - It should be CE and ISO Certified qualitysystem

TECHNICAL SPECIFICATIONS FOR CLINICAL EMERGENCY TRAINING SYSTEM

- The simulator should have rugged and reliable for use in multiple environments, from pre-hospital, on scene assessment and management to definitive care in a hospital, It can fulfil the unique training requirements of emergency Medicine trainings for healthcare providers as per the UG Curriculum.
- The simulator should be completely wireless and self-contained.
- It should be running on internal electrical and pneumatic power
- It should also be provided as supplemental wired connectivity and power.
- It should be connected wirelessly integrates with existing computer networks
- It has to be possibility to attach an additional battery on the side to extend the use.

115.6 Multiple Airway Skills/Features:

- Controllable open/closed airway; automatically or manually controlled
- Head tilt/Chinlift
- Jaw thrust w/articulated jaw
- Suctioning (Oral & Nasopharyngeal)
- Bag-mask ventilation
- Orotracheal intubation
- Nasotracheal intubation
- Combitube, LMA, I-gel and another airway placement
- Endotracheal tube intubation
- Retrograde intubation
- Fiberoptic intubation
- Transtracheal jet ventilation
- Needle cricothyrotomy
- Surgical cricothyrotomy
- Airway resistance - 3 settings (Open/Medium/Closed)
- Right /left main stem intubation
- Stomach distention

115.7 Airway Complications:

- Tongue fallback
- Tongue edema

115.8 Breathing Features:

- Simulated spontaneous breathing
- Bilateral and unilateral chest rise and fall
- Normal and abnormal breath sounds

- Lung auscultation sites: posterior and anterior sites
 - Oxygen saturation and waveform
 - 115.9 Breathing Complications:
 - Cyanosis
 - Needle thoracentesis –bi-lateral
 - Unilateral & Bilateral chest movement
 - Chest tube insertion –bilateral
 - 115.10 Cardiac Features:
 - Extensive ECG library
 - Heart sounds (normal and abnormal)
 - ECG rhythm monitoring (4 wire)
 - Dynamic 12 lead ECG display
 - Defibrillation and cardioversion with live shock with the help of optional shock link
 - Pacing
 - 115.11 Circulation Features:
 - BP measured manually by auscultation of Korotkoff sounds
 - Carotid, femoral, radial pulses synchronized with ECG
 - Pulse strength variable with BP
 - Pulse Palpation is detected & logged
 - 115.12 Vascular Access:
 - Pre-ported IV access (right arm)
 - Intraosseous access (tibia)
 - 115.13 CPR:
 - Compliant with latest AHA 2020 Guidelines
 - CPR compressions generate palpable pulses, blood pressure wave form, and ECG artifacts
 - Realistic compression depth and resistance
 - Detection of real time depth, release and frequency of compressions
 - 115.14 Eyes:
 - Open, closed and partially open for neurological assessment
 - Interchangeable pupils' neurological assessment
 - 115.15 Other Features:
 - Foley catheterization procedure
- Should have capability of adding diagnostic ultrasound training module as optional with the training system with eFAST and RUSH Protocol evaluation and assessment
- Pre-recorded sounds

- It should have a communication system so that faculty can be able to teach and evaluate the students with AETCOM and Patient assessment
- Fully articulating pelvis
- Leg rotation in all-natural directions to train immobilization and spine care in trauma training
- Tension Pneumothorax Decompression Tension pneumothorax with needle decompression can be performed at bilateral mid clavicle line, 2nd intercostal space with a 22 (or smaller) gauge needle for decompression of the chest.

115.16 System Features:

- It should be provided with handheld wireless instructor system and Patient Monitor to control and run the simulation remotely.
- Control simulations from anywhere on your network
- It should have Manual Mode operation
- Precise control on the manual mode for the beginner students
- Automatic Mode
- Run pre-packaged scenarios automatic physiologically modeled scenarios.
- Unique, simple controls increase/decrease difficulty & pace
- It should allow an external integrated video debriefing system to be connected
- Data logging
- Instructor comments
- The system shall be available with hundreds of clinical scenarios to expand our curriculum with a selection of high-quality, expert-validated scenarios from leading organizations like AHA and AAP.
- The faculty controlling the training can pick and choose the topic and content and can also edit the scenarios to suit the training needs.

It should be supplied with the highly configurable wireless patient monitor Features:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Parameters included: • ECG (2 traces) • SpO2 • CO2 • ABP • CVP • ICP • Anaesthetic Agent • PH • PTC • PAP • PCWP • NIBP • TOF | <ul style="list-style-type: none"> • Cardiac Output • Temperature (core & peripheral) • Additional and programmable parameters • 12 Lead ECG Display • X-Ray Display • Custom Image Display • Custom Video Display • Parameters included with wireless tablet • ECG • etCO2 • HR • SpO2 • BP • RR |
|--|---|
- Quality Certifications - • **UL, FDA/CE, FCC, CSA, HMR**

TECHNICAL SPECIFICATIONS FOR UG-PG ANESTHESIA/CRITICAL CARE TRAINING SYSTEM

It should be an integrated advance critical care training system for teaching

ventilation management from basic to advanced levels and point of care ultrasound training for a spontaneously breathing simulated patient supported with a learning management software with formative and summative assessment capability required for the PG and UG medical curriculum

The training system shall be supplied with a connected and comprehensive learning system conforming completely with the latest guidelines of competency based medical education fulfilling the need to plan the format for Internal assessment as per the new UG and PG curriculum,

The system shall be able to comply with Internal assessment method by complementing, synchronizing with the learning management system while using multiple methods, multiple teachers, multiple tier items, and multiple venues for authentic internal formative assessment.

The Learning and Training system would help deploy and implement the logistics, teaching content (AV, Text, Pretest Post Test, reflections), calendaring planning the training and evaluation.

The faculty, student, administrators, tutors and skills/simulation coordinators and all the personnel links can be brought together for a connected and well-coordinated implementation of training system.

The student shall be able to Learn, Assess patient recovery and the parameters for transfer from the PACU to the ward, ICU, home. Score the patient's condition according to the Aldrete system, including fast tracking after out-patient surgery

1. The system shall be completely wireless and tether-less, control device should be able to run the system from a distance of up to 300feet,
2. The manikin shall be self-contained with internal electrical and pneumatic power, all the components shall be built into the manikin body or placed below it.
3. The Electrical and moving components should not interfere with the auscultation of manikin sounds
And cause unwanted manikin body movement.
4. The simulation engines shall reside in the manikin to assure continued correct response to inputs and continued operation in the event of communication loss.
5. The system shall provide supplemental wired connectivity and power capability.
6. Swappable, rechargeable batteries (while in use) shall be optionally available.
7. Battery charging can occur while the manikin is operating (within access to AC power)
8. The ultrasound manikin shall be able to operate for 4 hours continuously in the wireless mode.
9. The system shall permit multi-media images to be inserted into simulations.
10. The system shall permit lab values to be inserted into simulations.
11. The system shall permit X-Rays to be inserted into simulations.
12. The system shall permit image display to be inserted into simulations.

13. There shall be separate neck skins for cricothyrotomy procedures. Neck skins shall allow multiple cricothyrotomy procedures without the need for replacement after each procedure.

14. An automatic drug recognition system shall detect drug type and dosage amount without the use of external, electrical devices.

15. Drug recognition shall be built inside the manikin which automatically detects the drugs without scanning in the proximity of the IV site and mouth.

16. A drug formulary of 108 drugs and different concentration shall be provided including RF ID tags for ET tubes and BVM devices.

17. A flow meter shall measure the amount of simulated medication infused in the IV arm.

18. The simulator shall include minimum 1 Auto Mode Patient Case which shall cause the simulator to react physiologically correct and incorrect amounts of medication infused.

19. Multiple simulations/manikins can be controlled from a single workstation.

20. The system shall include a profile editor which allows each instructor to specifically configure the simulator and interface to meet their preference and needs.

21. The system shall include a display of past, present and future scenario trending providing instructors with situational awareness during a scenario.

a. The OS should be single and intuitive interface – shall be able to control and manage all simulators from one universal platform. It should help in finding scenarios, conduct simulation training, and develop new scenarios to help meet learning objectives with greater ease.

b. It should have dual operating mode- User control mode for total control over all parameters and auto-mode/physiological which will help run pre-programmed scenarios in a simple and effective way. Logged events, as well as events detected by the patient simulator, should automatically drive the scenario forward.

c. User friendly Operation – operating system should control parameters with drop-down menus and slider bars. Operating system should be capable of transferring radiographic images and procedural videos to the student screen.

d. Patient Monitoring – Operating system should have patient monitoring capabilities to provide concise clinical feedback for physiological parameters including, SpO₂, CO₂, ABP, CVP, PAP, NIBP, TOF, and many more.

e. Record and Review – Operating system should log time stamped comments to the data log, bookmark important events and capture notes throughout the simulation. Operating system should have straightforward logging capabilities and should allow integrated event log for more effective review, for improved learning outcomes.

f. Scenario drafting tool – Operating system should have tool to create or convert scenarios which can be run with all simulators/manikins.

22. The solution not only help to record, debrief and track simulation learning but also helps the need to manage, assess and report on departments, learners and events.

23. The integrated system should be capable of providing debriefing solution which captures and records audio and video of simulation and other learning activities.

24. The system should be capable to record, replay and log the simulation event to give learners every opportunity to evaluate and assess each learning experience completely.
25. The System shall offer: High quality performance feedback for effective learning, easy-to-use audio and video set-up and control, Time stamped and searchable event log, Annotation and assessments.
26. Features- Audio & Video Capture
- a. AVS must be able to integrate with manikin data to form a single, fully annotated debrief log.
 - b. The system shall have facility to integrate Four (4) HD Camera (digital, IP and USB cameras) inputs.
 - c. The system shall have software to control Pan-tilt Zoom camera.
 - d. The system should have one digital audio input.
 - e. The System Shall offer Camera and microphone with base system, multiple camera options shall be available, Additional hardware offered to expand system as needed, Software control of IP (Internet Protocol) cameras.
27. **It should optimize** simulation center capacity with the helpful room overview and allow instructors to schedule their own sessions, rooms, and simulators.
28. It should capture and stream multiple camera angles and simulator data in one or several simulation rooms at the same time. Track team dynamics, patient care, and simulator use.
29. **It should be easily upgradable and scalable** with additional functionalities or expand to more rooms without any interruption to usage or activities.
30. **It should allow to share and collaborate** scenarios, sessions, and reports with our colleagues and administrators.
31. It should extend the reach of our simulation program with the mobile app. Run in-situ sessions from your mobile device and allow students and faculty members immediate access to the entire training session.
32. It should be able to Turn data into insights with Assessment tool, generate reports and statistics on performance, trends and ROI, automatically tracks usage and outcomes by department, facility, participant and external organization.
33. Enable learners to debrief and evaluate their own sessions with mobile access to a dashboard and detailed reports.
34. It should enhance patient safety using video capture, debriefing, and Procedure checklists.
35. Capture video from medical devices with VGA, DVI or HDMI output to get the full overview of simulation activities safely debrief simulations from anywhere in the world.
36. The manikin shall be optionally controlled by multiple operators at the same or different locations, when each is equipped with an additional optional PC which has Manikin controlling software installed.
37. The operating system shall be able to synchronize with online content to import scenarios and scenario aids.
38. The instructor shall have the ability to communicate with the learners wirelessly via built-in microphones in the manikin's head utilizing wireless technology.

115.17 Airway

39. Airway skills/features shall include:

- a. Controllable open/closed airway, automatically or manually controlled
- b. Head tilt/Chin lift (sensed)
- c. Jaw thrust w/articulated jaw(sensed)
- d. Retrograde intubation
- e. First grade fiberoptic intubation
- f. Transtracheal jet ventilation
- g. Light Wand intubation
- h. Needle cricothyrotomy
- i. Surgical cricothyrotomy

j. Mechanical Ventilation

- The system should be able to connect to any ventilator and should be able to breathe spontaneously and hold PEEP at any level. Resistance and compliance should be minutely adjustable, allowing to simulate a vast number of patient disease states – with realistic chest rise. And should be able to provide platform for hands-on training on the following-

- a. Initiating mechanical ventilation for an ARDS, trauma, or post- op patient
- b. Adjusting the ventilator after a change in patient conditions
- c. Patient-ventilator dysynchrony
- d. Lung protective ventilation
- e. Weaning protocols

- System should be able to simulate a wide, minutely adjustable range of basic lung mechanics

- Compliance - 0.5 to 250mL/cmH₂O

- Resistance – 8 to 150cmH₂O/L/s

- System should be able to simulate scenarios with a spontaneously breathing patient supported on a ventilator

- Set spontaneous effort (0 to -100 cmH₂O) and rate (passive to 150bpm)

- Simulate spontaneous control of breath timing (I:E) ratio

- Conduct advanced ventilator management scenarios such as patient-ventilator dysynchrony, weaning trials, and waveform analysis

- Works with all modes of ventilation including Pressure/Volume Control, Pressure Support, APRV, PAV, HFOV, NIV

The system should be able to connect to any ventilator and should be able to breathe spontaneously and hold PEEP at any level. Resistance and compliance should be minutely adjustable, allowing to simulate a vast number of patient disease states – with realistic chest rise. And should be able to provide platform for hands-on training on the following -

- a) Initiating mechanical ventilation for an ARDS, trauma, or post- op patient
- b) Adjusting the ventilator after a change in patient conditions
- c) Patient-ventilator dysynchrony
- d) Lung protective ventilation

- e) Weaning protocols
- f) Technical specifications

Tidal volumes	2 mL to 2.5 L
Functional Residual Capacity	200 – 1500 mL
Spontaneous breath rate	3 to 150 breaths/min
Peak flow	280 L/min ± 10% (t90Flow < 50 ms)
Resistance settings	3 to 500 cmH2O/L/s (linear and parabolic resistor types)
Compliance settings	0.5 to 250 mL/cmH2O
Breath profiles	user-defined pressure data files (breath profiles), or parameter-selected standard patterns
Airway pressure	uncertainty < than 1%
Accuracy	Resistance +/- 10%, Compliance +/- 5%, Flow +/- 2%

- The system should be able to demonstrate the treatment effects of PEEP at any clinically relevant setting including values > 20cmH2O
 - System should easily activate pre-programmed respiratory conditions with variable levels of severity including Normal, Asthma, ARDS, Interstitial Lung Disease (ILD), and COPD
 - Create and save an unlimited number of user-defined respiratory conditions including pneumothorax, bronchospasm, pneumonia, cough, cystic fibrosis, flash pulmonary edema, and more
 - System should also work as a stand-alone device for mechanical ventilation training
 - System can be programmed for training on neonatal to adult ventilation training modes.
 - System should also be compatible with Causality Preparedness Training System
40. Variable lung compliance shall be available in 4 Independent steps.
 41. Variable airway resistance shall be available in 4 Independent steps.
 42. Right main stem intubation shall be possible.
 43. Stomach distention shall be possible.
 44. The system shall detect proper head position.
 45. Cannot intubate/Can ventilate shall be possible.
 46. Cannot intubate/Cannot ventilate shall be possible.
 47. Tongue edema shall be possible in 2 levels.
 48. Pharyngeal swelling shall be possible.
 49. Laryngospasms shall be possible.
 50. Decreased cervical range of motion shall be possible.
 51. Trismus shall be possible

115.18 Breathing

52. Simulated spontaneous breathing shall be possible.
53. Bilateral and unilateral chest rise and fall shall be possible.
54. CO2 exhalation shall be possible.
55. Normal and abnormal breath sounds shall be present
56. There shall be 5 anterior auscultation sites

57. There shall be 6 posterior auscultation sites
58. There shall be 9 independently controllable breath sound channels
59. Oxygen saturation and Plethysmogram shall be displayed on the patient monitor
60. A computer screen icon shall display the amount of air being provided during Bag Valve Mask ventilations.
61. Bilateral Needle thoracentesis shall be possible
62. Unilateral and Bilateral chest movement shall exist
63. Unilateral and lobar breath sounds shall be present
64. Bilateral chest tube insertion shall be possible

115.19 Cardiac

65. An extensive ECG library shall be present with rates ranging from 0 to 220.
66. Heart sounds shall occur in four anterior locations to auscultate aortic, pulmonic, mitral and tricuspid sounds
67. Pacing and capture shall be possible.

115.20 Circulation

68. Blood pressure shall be measurable manually by auscultation of Korotkoff's sound (left arm).
69. Return to flow blood pressure measurement shall be possible.
70. Carotid, femoral, brachial, radial, dorsalis pedis, popliteal and posterior tibial pulses shall be synchronized with ECG.
71. Pulse strength shall be related to blood pressure.
72. Palpation shall be detected and logged.

115.21 CPR

73. CPR compressions shall generate palpable pulses.
74. Blood pressure waveform artifacts on ECG
75. Realistic depth of CPR compressions shall be possible, per AHA 2010 Guidelines.
76. Detection of depth, rate, and hands-off time of CPR compressions shall be displayed, per AHA 2015 Guidelines.
77. Detection of CPR release shall be displayed, per AHA 2010 Guidelines.
78. Real time feedback on quality of CPR shall be provided, per AHA 2015 Guidelines.

115.22 Other Features

79. The simulator shall display convulsions and capable of seizures, tonic and clonic.
80. The manikin can produce urine. Short term catheterization and Foley catheterization shall be possible.
81. Cyanosis in the mouth shall be displayed.
82. Bowel Sounds shall be available via 4 speakers.
83. Simulations shall be controllable remotely throughout a network.
84. The system shall be capable of operating in the instructor mode via scenarios or "on the fly".
85. The system shall be capable of operating in the auto mode which permits the simulation to proceed without operator interaction, once the scenario has started.

86. The bidder shall make training arrangements to teach the basics of simulator system including startup and shut down procedures, running basic scenarios, patient monitor and instructor device operations, operating modes, and other useful system features.

87. End user training to understand scenario support materials and resources, define learner roles, teaching to prepare for a simulation, practice facilitating a simulation, and share best practices for debriefing

88. Simulated Patient Monitor Parameters should include

- a. ECG (2 traces)
- b. SpO2
- c. CO2
- d. ABP
- e. CVP
- f. PAP
- g. PCWP
- h. NIBP
- i. TOF
- j. Cardiac Output
- k. Temperature (core and peripheral)
- l. AGT (labeled)
- m. a-wRR
- n. N2O
- o. ICP
- p. O2
- q. pH
- r. X-Ray Display
- s. 12 Lead ECG Display

▪ The system should be able to connect to an actual/simulated patient monitor.

a. The system presents the following vital signs from your simulation system on your clinical monitor:

- b. Heart rate
- c. Respiration via ECG impedance
- d. Plethysmograph waveform
- e. Capnograph waveform
- f. SpO2 via fingerclip
- g. End-tidal CO2 via Side Stream Measurement Technology
- h. Non-invasive blood pressure
- i. Invasive blood pressure (arterial, central venous, pulmonary artery)
- j. Temperatures

▪ The system certifications shall include:

- a. UL
- b. CE/FDA
- c. FCC
- d. CSA

- e. Hazardous, Materials Regulation(HMR)
- f. Proposition 65(California)

89. System should be capable of Ultrasound training; the bidder shall quote RUSH and FASTModule.

a. The Ultrasound teaching system should have following modules each with 10 cases and 10 scenarios

- Sonography for trauma care(eFAST),
 1. Pediatric Trauma (BluntTrauma)
 2. False-Positive Hemoperitoneum (BluntTrauma)
 3. Hemoperitoneum & Coagulopathy (BluntTrauma)
 4. Hemopericardium (PenetratingTrauma)
 5. Tension Pneumothorax (PenetratingTrauma)
 6. Hemoperitoneum (BluntTrauma)
 7. Tension Pneumothorax (BluntTrauma)
 8. Hemothorax & Hemoperitoneum (BluntTrauma)
 9. Abnormal Mental Status (BluntTrauma)
 10. Hemothorax (PenetratingTrauma)
 - Critical Care Bundle that contains rapid ultrasound for critical care(RUSH)
 1. Acute inhalational injury (BluntTrauma)
 2. Pneumonia-Related Severe Sepsis
 3. Hemorrhagic Shock (BluntTrauma)
 4. Moderate Hypothermia (Hypovolemic Shock)
 5. Severe Sepsis complicated by PericardialEffusion
 6. Severe Sepsis (Deep VenousThrombosis)
 7. Severe Sepsis (Distributive HypovolemicShock)
 8. Ruptured Abdominal Aortic Aneurysm (HemorrhagicShock)
 9. Severe Sepsis complicated by Pneumonia, Cardiomyopathy,IUP
 10. Severe Gastroenteritis (Hypovolemic Shock)
 - Cardiac Resuscitation Bundle that contains transthoracic echo(e-FATE)
 1. Acute CoronarySyndrome
 2. Severe Sepsis with Pulmonary Source ofInfection
 3. Hypotension; Dehydration (ElectrolyteImbalance)
 4. Pulseless Electrical Activity(Hyperkalemia)
 5. Anaphylaxis
 6. Massive Pulmonary Embolus
 7. Tension Pneumothorax
 8. Cardiac Syncope (Hypertrophic Cardiomyopathy)
 9. Acute Ascending Aortic Dissection (Thoracic AorticAneurysm)
 10. CardiacTamponade
- b. It should have access to real-ultrasound patient caseson-demand.

- c. It should have sonography case Library containing over several patient cases covering a broad spectrum of normal and pathologic conditions.
- d. It should have suitable Probe to scan and receive immediate expert instruction and probe-positioning guidance in a risk-free and stress-free setting.
- e. It should be able to train on real cases and learn to recognize key anatomical landmarks, image artifacts, and pathologies
- f. It should have knowledge assessment questions to reinforce student learning and test their knowledge and scanning skills. The students should be able to receive real-time performance assessment and feedback.

90. Automatic case scenarios for simulator

a. Trauma Care Scenarios, eFAST Protocol inbuilt in the system

- I. False-Positive Hemoperitoneum, Blunt Trauma
- II. Hemoperitoneum and Coagulopathy, Blunt Trauma
- III. Hemoperitoneum, Blunt Trauma
- IV. Hemothorax, Penetrating Trauma
- V. Hemoperitoneum and Hemothorax, Blunt Trauma
- VI. Abnormal Mental Status, Blunt Trauma
- VII. Hemoperitoneum, Blunt Trauma
- VIII. Tension Pneumothorax, Penetrating Trauma
- IX. Hemopericardium, Penetrating Trauma
- X. Tension Pneumothorax, Blunt Trauma

b. Critical Care Bundle, RUSH Protocol inbuilt in the system

- I. Hemorrhagic Shock, Blunt Trauma
- II. Moderate Hypothermia, Hypovolemic Shock
- III. Severe Gastroenteritis, Hypovolemic Shock
- IV. Severe Sepsis, Deep Venous Thrombosis
- V. Severe Sepsis, Distributive, Hypovolemic Shock
- VI. Acute Inhalational Injury, Blunt Trauma
- VII. Ruptured AAA, Hemorrhagic Shock
- VIII. Severe Sepsis Complicated By Pericardial Effusion
- IX. Severe Sepsis, Pneumonia, Cardiomyopathy, IUP

X. Pneumonia-Related Severe Sepsis

c. Cardiac Resuscitation Bundle inbuilt in the system

- I. Pulseless Electrical Activity, Hyperkalemia
- II. Acute Ascending Aortic Dissection, Thoracic Aortic Aneurysm
- III. Massive Pulmonary Embolism
- IV. Severe Sepsis with Pulmonary Source of Infection
- V. Anaphylaxis
- VI. Cardiac Syncope, Hypertrophic Cardiomyopathy
- VII. Cardiac Tamponade
- VIII. Hypertension, Dehydration, Electrolyte Imbalance
- IX. Tension Pneumothorax
- X. Acute Coronary Syndrome

d. ACLS Scenarios

- a. 05 scenarios allow hands-on practice of rhythm recognition and use of a defibrillator.
- b. 23 core scenarios designed to train assessment and management of patients following the 2015 AHA algorithms
 - i. The scenarios should also include log comments, resulting in an annotated log file being generated during simulation.
 - ii. Together with a debriefing guide with suggested debriefing questions and a section with case considerations, the annotated log file will support the instructor in conducting an effective debriefing session.
- c. 6 test scenarios with 12 case presentations designed for Megacode testing. The 6 Megacode test scenarios each includes from 1 to 3 case presentations arranged after ECG development themes. The totaling 12 case presentations are based on the 12 ACLS Megacode Testing Cases in the Advanced Cardiovascular Life Support Instructor Manual based on the 2015 AHA Guidelines Update for CPR and ECC. These scenarios should include testing.

TECHNICAL SPECIFICATIONS ADULT AIRWAY MANAGEMENT TRAINER

- It should be an Adult upper torso with Tongue and teeth
- It should be able to teach following Intubation Procedures, Tracheal (oral and nasal), Pharyngeal (oral and nasal), Esophageal
- The Airway Management Trainer shall be an airway training manikin mounted on practice board.
- It must be able to provide realistic and complete training in all intubation procedures tracheal-oral and nasal and the use of the Laryngeal Mask Airway and Combitube.
- It should provide realistic anatomy, nostrils. Lips, teeth, tongue, pharynx-oral and nasal, larynx with glottis opening, vallecula, arytenoids, vocal cords, sub glottis cricoid ring, trachea, including carina lungs, esophagus and stomach.
- It must provide realistic head positioning. Neck flexion, extension and rotation, head lift and jaw movability.
- It should be able to provide realistic complications as, laryngospasm, vomiting, and with excessive laryngoscope pressure on teeth will produce an audio signal.
- It should be able to provide realistic checking for proper tube placement with visual inspection of lung expansion during ventilation, and auscultation of breathing sounds.
- It should be able to establish and maintain an open airway by head tilt, chin lift, neck lift and jaw thrust.
- It should permit realistic practice in lung ventilation, also with the use of Bag Mask Ventilation.

115.23 B. It should be supplied with separate model for demonstration airway anatomy.

- It must be able to provide the possibilities for practical training in clearing the obstructed airway by suctioning liquid foreign matter from, oral cavity, oro- or naso pharynx, oro- or naso trachea, via endotracheal tube. Gastric drainage may also be practiced.
- It should be supplied with a sturdy carrying case, directions for use, sanitation kit, lubrication spray and a container of simulated stomach contents.

115.24 C. It should be supplied with Bronchial tree bronchoscopy training

- Demonstration at Office.
- Manufacturer must conform to the International Quality Certification i.e. ISO /CE must be provided.

TECHNICAL SPECIFICATIONS CHEST TUBE & PNEUMOTHORAX TRAINER

It should be used for training in surgical or guidewire assisted thoracostomy, and thoracentesis. It should be complete with interchangeable modules, allows for a variety of chest drain insertion techniques to be performed including ultrasound-guided techniques.

Skills

- Needle decompression of tension pneumothorax
- Ultrasound-guided chest drain insertion (Seldinger-type), including insertion of needle under direct vision, and ultrasonic recognition of chest structures
- Open, or cut-down chest drain insertion: recognition of correct position, surgical incision, blunt dissection through chest wall, perforation of pleura, and fingersweep
- Suture of tube to chest wall
- Representation of adult male thorax with arms raised
- Suitable for supine, sitting, or leaning forward positions
- Bony and soft tissue landmarks: manubriosternal joint, clavicles, ribs, pectoralis major and latissimus dorsi

- Bilateral chest drains and needle decompression pads
- Internal ultrasound anatomy: diaphragmatic structures and collapsed lung
- Can give the impression of breathing under ultrasound when using the Advanced Pad
- Works with thoracic seals when using the Standard Pad
- Reservoirs can be filled with fluid or mock blood to represent pleural effusion
- Affordable replaceable pads:

115.25 Advanced Chest Drain Pads

- Ultrasoundable
- For use with liquids – e.g. effusion, or haemothorax
- Needle, guidewire, dilator, and drain-tube can all be realistically inserted
- Guidewire insertions will self-seal allowing multiple uses
- For open/surgical techniques where effusion or haemothorax are required
- Open/surgical incisions will not self-seal
- Can be sutured
- Pleural layer, providing realistic give, or “pop”, on puncture with forceps or finger
- Improved respiratory swing
- Recommend usage of 12 FG catheter

TECHNICAL SPECIFICATIONS ULTRASOUND-GUIDED PROCEDURES FOR CENTRAL LINE PLACEMENT

A. This training system gives users the opportunity to develop the critical psychomotor skills that will serve as a foundation for future ultrasound-guided interventions in a safe, simulated, and highly realistic ultrasound environment using only a laptop, transducer, needle and a specialist torso.

- It should be able to provide realistic, high quality training utilizing real ultrasound images by reducing infection rates, number of needles passes, and iatrogenic injury.
- It should allow training for skills in performing central line access procedures in six locations of the body and interpreting the results of an ultrasound examination used during the procedure.
- It should also train the learner to use power, color-flow, and pulsed-wave Doppler to identify and confirm vessel identity, prior to vessel cannulation
- It should provide cannulation / catheter insertion at the following sites bilaterally.
 - Bilateral IJV (Int Jugular Vein)
 - Bilateral Femoral Vein
 - Bilateral Subclavian Vein
- It should be designed using real ultrasound data for an accurate representation of actual cases from 20 unique patient cases with Real anatomy and Anatomical variation.
- It should have following features as in a real ultrasound equipment's-
 - Gain controls
 - Depth controls
 - Calipers
 - Doppler adjuncts
 - Color Flow Doppler
 - Pulsed-Wave Doppler
 - Power Doppler

It should allow realistic transducer probe handling and movements –

- Translation in longitudinal and transverse - Rock, Fan, Rotate
- Compression for vessel identification
- Accurate needle insertion

The system should be providing realistic needle visualization with accurate Needle tip tracking, Haptic feedback and learner should experience a realistic aspiration mechanism.

B. It should be supplied with manual central line training system as well

- The central line training manikin should allow students practicing of intravenous access techniques for both advanced cardiac life support and trauma situation.
- It should enable students to experience realistic procedures.

- The puncture areas for IV access should be simulated by soft pads which should be covered by a realistic skin and should simulate the feel of human skin as closely as possible
- Manikins veins inside the pad should provide a natural resistance during puncture and a natural flashback of blood.
- Manikins veins and skin will self-seal so that the site of puncture is not visible to student.
- The Manikins pads must be pre-filled with simulated blood
- It should enable the practice of IV access to the:
 - External jugular vein
 - Internal jugular vein via the anterior, central and posterior approach
 - Subclavian vein
 - Femoral vein
- It should have a pulse bulb to enable the trainer to create a palpable pulse in the manikin's arteries
- It should allow long catheters can be placed into the manikin.
- It should have realistic tissue feel.
- The neck pad and femoral pad should be replaceable without use of any tool
- It should be supplied with 01 neck pad, 01 femoral pad, 250ml bottle of simulated blood, User manual and carrying case

The bidder should ensure satisfactory operations training for the faculty

Warranty: 5 years, A necessary three visit per year of company engineer is mandatory in warranty period apart from repair call for calibration. The visit must be registered in institute Logbook, verified by in charge

Bidder must quote cost of CMC for further 5 years. Bidder will be responsible to inform the institute at least 6 months earlier for CMC.

Any software upgradation on any of simulators has to be done free of cost during the warranty period. An undertaking must be given by supplier that the quoted solution should be of latest technology.

TECHNICAL SPECIFICATIONS HIGH FIDELITY PATIENT SIMULATORS FOR OB/GY

- A. It should be a wireless advanced full body birthing training system having accurate anatomy and functionality to facilitate obstetric skills and simulation training of birth management for nurses, medical undergraduates, and PGstudents.
- B. The system should allow integration with the implementation of competency based UG/PG medical & nursing curriculum for formative assessment and training.
- C. The bidder should provide the digital educational content for training and evaluation as per the new competency-based curriculum guidelines on obstetrics for medical students, which could be then used to keep track of students formative assessment during the tenure of course.
- D. The training evaluation and learning system should be able to help the faculty to calendar and schedule the training with customized sharing of notifications to each enrolled student.
- E. The system should be able to create, share and record the checklist, scenarios, training session with pre and post evaluations.
- F. The system should also be able to provide the students adequate and significant exposure regarding pregnant patients who present with a variety of medical conditions to normal and pathologic RUQ, LUQ, suprasternal, IVC, and USG images while challenging them to develop an appropriate differential diagnosis, initiate timely resuscitative interventions, prioritize diagnostic interventions, order appropriate basic laboratory tests, and correctly acquire, interpret, and apply point-of-care ultrasound findings towards medical decision.
1. The system shall consist of an adult pregnant full body obstetrics simulator, obstetrics skills training module for demonstrating of mechanics fetal movements manually with realistically modelled pelvis bone structure making it possible to identify, palpate and appreciate the important land marks while baby is moving from station breech and shoulder presentations for students.
 2. The system should also be supplied with dynamic and fixed cervix of 4, 6, and 8cm dilatation and effacement.
 3. The newborn babies should be realistic and articulated with fontanels and palpable anatomical landmarks like (sutures /fontanelles/scapula) and shall allow teaching on newborn care and neonatal resuscitation & should have soft head allows for realistic attachment of vacuum for vaginal assisted delivery and creating a caput chignon effect.
 4. The system should allow the faculty to teach characteristics like station, effacement and dilatation of per vaginal examination during labor.
 5. The system shall permit multi-media images to be inserted into simulations via the touchscreen patient monitor.

6. The system shall permit pre-recorded multi-media video to be inserted into simulations via the touch screen patient monitor.
7. The system shall permit lab values to be inserted into simulations via the touch screen patient monitor.
8. The system shall permit X-Ray to be inserted into simulations via the touch screen patient monitor.
9. The system software shall include a scenario creation and editing tool which allows each instructor to specifically configure the simulator and interface to meet their preference and needs.
10. The system shall include a display of past, present, and future events related to patient vitals providing faculty and instructors with situational awareness during a scenario.
11. The system shall be able to record and track students' performances and help implement obstetrics curriculum by creating training and evaluation of contents while giving the pre and post training performance reports.

115.26 Features- Debriefing

- It should be able to integrate debrief & assess simulation session with audio, video, annotations, the patient monitor, and simulator data in a single web-based interface. The system shall have facility to integrate 4 HD Camera inputs.
- The system shall have in software to control Pan-tilt Zoom camera.
- The System Shall offer Camera and microphone with base system, multiple camera options shall be available, Additional hardware offered to expand system as needed, Software control of IP (Internet Protocol) cameras.
- The system should raise the value of debriefing by allowing the Instructors to evaluate or score during and after the simulations for individual and group actions.
- The software should have the feature for Instructor to add comments and annotations.
- The system shall be able to identify actions associated with individual learners.
- The system should enable streaming of live video to multiple locations and View performance data on network from anywhere with web-based tools.

115.27 Minimum Hardware Requirements

Intel Core i5-7300U CPU with vPro (2.67 > 3.5 GHz Turbo, Dual-Core, 3MB Cache) 19V 65W AC-

DC power adapter

8GB PC4-19200 2400MHz DDR4 SODIMM

480GB Intel SSD D3-S4510 Series 2.5" SATA 6.0Gb/s Solid State Drive Intel Dual Band Wireless-AC 8265 with Dual Mode Bluetooth 4.2 Onboard Intel i219-LM 10/100/1000 Mbps (RJ45) Ethernet NIC Port Intel HD Graphics 620; (2) HDMI 2.0a ports supporting 4k at 60Hz

Microsoft Windows 10 IOT 2015 OS

12. The system shall be able to provide feedback to learners with annotation, by the faculty to students and cohort evaluations during or after the simulation.
13. The system shall allow to track students' progress and usage of resources through evaluations and filterable reports

116 Airway Features

The Simulators airway skills/features shall include:

1. Tongue edema
2. Right lung, left lung and both lungblockage
3. Head tilt/Chin lift, Jawthrust
4. Suctioning techniques (oral and nasopharyngeal)
5. Oropharyngeal and nasopharyngeal intubation
6. Combitube, LMA and other airway device placement
7. Endotracheal intubation (ET)
8. Retrograde intubation
9. Nasal and oral fiberoptic intubation
10. Trans-tracheal jet ventilation
11. Right mainstem intubation
12. Surgical and needle cricothyrotomy
13. Chest tube insertion

117 Breathing Features

1. Variable respiratory rates
2. Multiple upper airway sounds synchronized with breathing
3. BVM capable
4. Normal and abnormal breath sounds (4 auscultation sites)
5. Oxygen saturation and waveform
6. Breathing Complication
 - I. Bilateral chest movement with spontaneous breathing
 - II. Unilateral chest rise with right mainstem intubation
 - III. Unilateral & Bilateral, normal and abnormal breath sounds

118 Cardiac Features

7. Extensive ECG library
8. Heart sounds synchronized with ECG
9. ECG rhythm monitoring
10. 12 lead ECG display
11. Defibrillation and cardioversion
12. Pacing

119 Circulation Feature

- I. BP measured manually by auscultation of Korotkoff sounds
- II. Bilateral Carotid and Brachial pulse, radial (right side only) pulses synchronized with ECG
- III. Pulse strength variable with BP
- IV. Pulse Palpation is detected & logged
- V. CPR compressions generate palpable pulses, blood pressure wave form, and ECG artifacts
- VI. Detection and logging of a series of compression

119.1 Vascular Features

33. Preported IV access (both arms).
34. Subcutaneous and intramuscular injection site

119.2 Pelvic Feature

35. Uterus modules (for PPH, uterine inversion and retained placenta)
36. Fluids (e.g. blood, stained amniotic fluid and urine)
37. Foley catheterization
38. Instillation
39. Atonic uterus can be palpated recognized and managed.
40. Should have pressurized fluid reservoirs which allow simulated blood and urine to be used during a PPH simulation.
41. Should be provided with a separate placenta that has retained lobe and which can also be placed inside the uterus and manually removed.
42. Should be provided with uterine inversion model. Uterus inverts when traction is applied to the umbilical cord. This module allows for recognition of inversion as well as manual replacement.
43. Ischial spines
44. Well-formed and realistic Labia minora and majora helping with pelvic examination.
45. Fixed and dynamic dilating cervix
46. Anus for post-delivery assessment

119.3 Delivers Drills-

47. The obstetrics simulator should have a separate amniotic bag for demonstrating amniotic rupture with flow and secretions of blood and amniotic fluid for creating realistic scenarios
48. Should allow to teach below delivery drills
 - i. Normal delivery
 - ii. Breech presentation
 - iii. Assisted deliveries
 - a. Forceps
 - b. Vacuum
 - iv. Shoulder dystocia
 - v. Cord prolapses
 - vi. Eclampsia & pre-eclampsia
 - vii. Maternal collapse
 - viii. Post-Partum Hemorrhage
 - ix. Sepsis
 - x. Uterine inversion
 - xi. Ruptured uterus
 - xii. Hybrid simulation
 - xiii. Detachable placenta with cord
 - xiv. Palpable landmarks
 - xv. Vacuum
 - xvi. Forceps
 - xvii. Bakri Balloon Tamponade

120 Movement

49. Seizure
50. Able to position at all fours:
 - I. Realistic rotation of the shoulder and hip joints
 - II. Legs bend at the knees
 - III. Arms bend at the elbow
 - IV. Supine

- V. Semi-recumbent
- VI. Leftlateral
- VII. Legs in stirrups
- VIII. McRobertsposition
- IX. Pinard maneuver
- X. Reverse wood's screw manuveuer
- XI. Wood's screw maneuver
- XII. Supra pubicpressure
- XIII. RubinII
- XIV. Mauriceau-Smellie-VeitManeuver
- XV. Lovset'smaneuver

121 Physiological Sounds

Heart	fetal heart rate
Lung	Patient voice & Pre-recorded sounds
Bowel	Wireless microphone

- The System shall be able use ultrasound training on the life like breathing obstetrics simulator with gravid and non-gravid abdomen without loss of any simulatorfunctionality
- It should be able to integrate critical care obstetrics training cases and scenarios to increaserealism,

51. Should allow teaching on how to use sonography to evaluate first trimester pregnancies and basic gynecologicconditions.

52. Ultrasoundsimulatoremodelshouldbecompactablewiththebirthingsimulatorincreating various scenarios and should also act as standalone unit for ultrasoundtraining.

53. The simulated ultrasound probe should be like a realistic ultrasound probe and userfriendly without any alternation on the simulator andprograming.

54. Should be provided with various ultrasoundcases

55. Should provide comprehensive didactic instruction, knowledge assessment, andhands-on training.

56. First & Second TrimesterTraining

I. The module should focus on training of student's/caregiver's ability to care for pregnant patients who present with a variety of medical conditions. Student's/caregiver's shall have the opportunity to perform a point-of-care ultrasound examination, with 6 imaging windows from real-patient cases for eachScenario.

- Ovarian Torsion, Pregnancy of UnknownLocation
- Acute Calculous Cholecystitis, Threatened Miscarriage, Viable First-TrimesterPregnancy
- Ectopic Pregnancy, Complex Left-Adnexal Mass,Dehydration
- Threatened Miscarriage, Viable First-Trimester Twin Gestation,Dehydration
- Obstructive Uroopathy from Ureteral Calculus, Intrauterine Pregnancy of UncertainViability
- Ruptured EctopicPregnancy

- Acute Pericarditis, Viable Second-Trimester Intrauterine Pregnancy
- Hemoperitoneum, Hemorrhagic Shock
- Uremic Pericarditis with Cardiac Tamponade, Threatened Miscarriage First-Trimester Pregnancy
- Septic Miscarriage causing Severe Sepsis

57. Third Trimester Training

I. Students/ Caregivers shall have the opportunity to perform a point-of-care ultrasound examination, with 15 imaging windows from real-patient cases for each Scenario providing with exposure to a multitude of normal and pathologic ultrasound images. It should help students/ Caregivers to develop an appropriate differential diagnosis, initiate timely resuscitative interventions, prioritize diagnostic interventions, order appropriate basic laboratory tests, and correctly acquire, interpret, and apply point-of care ultrasound findings towards medical decision-making.

II. The module should help teach student's/caregivers to use ultrasound to visualize a variety of second- and third-trimester pregnancies with cephalic, funic, and breech presentations.

III. Should also focus on training for the ability to

- quantify amniotic fluid amounts
- obtain biparietal diameter (BPD), head circumference (HC), abdominal circumference (AC) and femur length (FL) measurements, calculating 4 different fetal gestational ages.

• Other significant ultrasound training should include

1. pericardial effusion,
2. poor cardiac contractility,
3. a dilated right ventricle,
4. a narrow-diameter IVC with major respirophasic change,
5. hydronephrosis, renal cysts and calcifications,
6. gallstones and a thickened gallbladder wall,
7. free fluid in the hepatorenal and splenorenal spaces

Following Scenarios should be present

- Eclampsia at 35-Week Pregnancy
- Hemorrhagic Shock, Placental Abruption, at 31-Week Pregnancy
- Vaginal Fluid Leakage, at 21-Week Pregnancy, Breech Presentation
- Acute Calculous Cholecystitis, at 31-Week Pregnancy
- Syncope, Abdominal Trauma, at 32-Week Pregnancy
- Peripartum Cardiomyopathy, at 38-Week Pregnancy
- Vaginal Bleeding, at 22-Week Pregnancy
- Pyelonephritis, Severe Sepsis, at 32-Week Pregnancy
- Tension Pneumothorax
- Pyelonephritis with Obstructive Uropathy, at 21-Week Pregnancy, Breech Presentation

122 Newborn Baby

I. Fully articulated birthing baby for Basic newborn care/assessment

- a) Extremity range of motion examination
- b) Sponge bathing and swaddling techniques
- c) Realistically modeled head with all landmarks present (fontanelles and sutures)
- d) Head can be used for forceps deliveries (including rotational) and suction delivery (kiwi and ventouse)

- e) Head can be easily manipulated by the trainer and flexes naturally as it is pushed through the birth canal
- f) Mouth for suction and Smellie-Veit (if required)
- g) The birthing baby's body is designed to allow it to be easily pushed through the birth canal
- h) Bony prominences of the hips to support Lovset's maneuvers
- i) Realistically positioned landmarks - scapulae and clavicles
- j) Arms and legs fully moveable to allow for maneuvers required during deliveries - particularly breech and shoulder dystocia
- k) Umbilicus and placenta (normal and retained)
- l) Fetal heart rate: normal, bradycardia and tachycardia can be simulated
- m) Skills training in neonatal resuscitation to focus on the critical resuscitation skills required in the first ten (10) minutes of a newborn's life,
 - a) Should allow bilateral and unilateral (with mainstem intubation) chest rise and fall with mechanical ventilation
 - b) Pneumothorax – needle thoracentesis left mid-axillary
 - c) Manual chest compression at appropriate depth (1/3 AP) and force
 - d) Umbilical pulse
- II. The system shall be able to help train on resuscitating a newborn with a congenital anomaly like Cleft Lip, Cystic Hygroma, Polycystic Kidney, Myelomeningocele and 1 Omphalocele

122.1 Airway Management

- i. Should have a realistic life-size intubation head with a flexible tongue, arytenoid cartilage, epiglottis, vallecula, vocal cords, trachea, esophagus, and simulated lungs
- ii. Should allow head tilt, chin lift or jaw thrust
- iii. Positive pressure ventilation (Self-inflating bag, Flow-inflating bag (anesthesia bag), or T-Piece Resuscitator)
- iv. ET tube insertion
- v. LMA insertion
- vi. Orogastric tube insertion
- vii. Stomach distension (when ET is misplaced)
- viii. Suctioning (of the nares, nasopharynx, esophagus and lungs via an ET tube)
- ix. Meconium module for suction removal
- x. Realistic rise and fall of the chest The following skills can be practiced:
- xi. Right mainstem intubation
- xii. Nose and mouth suctioning
- xiii. Oropharyngeal and nasopharyngeal airway insertion
- xiv. Bag-Valve Mask Ventilation
- xv. Chest compressions
- xvi. UVC -Umbilical vein / artery access via patent umbilicus
- xvii. IO access in left and right lower leg, tibial tuberosity, and medial malleolus
- xviii. NG Tube Insertion

123 Other

- 58. Interchangeable eye inserts with normal, dilated, and constricted pupils
- 59. Electronic Fetal Monitoring pattern for fetal heart rate, variability and uterine contractions can be preset for various combinations
- 60. The Simulator shall have configurable Touch Screen Patient Monitor with parameters that include (not limited to):

HR	ETCO2	PAP
NIBP	Respiratory Rate	Wedge Pressure
ECG and 12 Lead ECG	Peripheral Temperature	CVP
SPO2	Core/Blood Temp	PTC /Train of Four
pH	ABP	Cardiac Output CO
FHR	CTG	Anesthetic Gases

61. The system certifications shall include:
47.1. UL/CE/FCC

TECHNICAL SPECIFICATIONS PICU TRAINING SYSTEM

It should represent a 6-year-old boy of Indian ethnicity that simulates a wide range of conditions from a healthy, talking child to an unresponsive, critical patient without any vital signs.

1. The Standards system shall consist of a child simulator, wireless touch screen remote control, connection Box, PC/ Laptop installed with operating software and patient monitor.
2. The manikin shall be able to run with both PC laptop and touch screen Wi-Fi enabled handheld color LCD remote control.
3. The system shall have inbuilt compressor which will not interfere with the auscultation of manikin sound and cause unwanted manikin body movement.
4. The system shall provide supplemental wired power capability.
5. The system shall permit multi-media images to be inserted into simulations via the touch screen patient monitor.
6. The system shall permit pre-recorded multi-media clinical procedural training videos to be inserted into simulations via the touch screen patient monitor.
7. The system shall also permit lab values to be inserted into simulations via the touch screen patient monitor.
8. The system shall permit X-Rays to be inserted into simulations via the touch screen patient monitor.
9. The system shall include a profile editor which allows each instructor to specifically configure the simulator and interface to meet their preference and needs.
10. The system shall include control of past, present and future scenario trending providing instructors with situational awareness during a scenario.
11. The system shall include webcam and debriefing software which combines synchronized student log, patient monitor display, live audio and video feed in a single debriefing file.
12. The integrated debriefing solution that captures and records audio and video of clinical training event and other learning activities and compiles them into one comprehensive debrief file. Each clinical training event can be recorded, studied, replayed, and logged to give teacher and learners every opportunity to evaluate each learning experience completely.
13. The System shall offer: High quality performance feedback for effective learning, easy-to-use audio and video set-up and control, Time stamped and searchable event log, Annotation and assessments.

14. Airway Features

The Simulators airway skills/features shall include:

- I. Realistic airway with physical landmarks
- II. Oral and nasal intubation
- III. LMA or ET insertion
- IV. Tongue edema
- V. NG tube
- VI. Cricoid cartilage
- VII. Head Tilt & Jaw Thrust
- VIII. Nasopharyngeal and Oropharyngeal airways

15. Breathing Features

The Simulators breathing features shall include:

- a) Spontaneous breathing
- b) Observable chest rise
- c) Variable respiratory rates (0-60 breaths per minute)
- d) Multiple upper airway sounds synchronized with breathing
- e) Detect & quantify the volume of mechanical ventilations (including no ventilations)
- f) BVM capable
- g) Normal and abnormal breath sounds (4 auscultation sites)
- h) Oxygen saturation and waveform (Advanced version)
- i) Left and right lungs can be either closed or opened to allow ventilations
- j) Breathing Complication
 - I. Unilateral chest rise with right mainstem intubation
 - II. Unilateral & Bilateral breath sounds

16. Cardiac Features

The Simulators cardiac features shall include:

- I. Defibrillation and cardioversion (manikin will report in log)
- II. Pacing
- III. Extensive ECG library
- IV. Multiple heart sounds synchronized with ECG
- V. ECG rhythm monitoring (3 leads)
- VI. 12 lead ECG display

17. Circulation Features

The Simulators circulation features shall include:

- i. BP measured manually by auscultation of Korotkoff sounds
- ii. Bilateral carotid and unilateral brachial and radial (left side) pulses synchronized with ECG
- iii. Pulse strength variable with BP
- iv. Pulse palpation is detected & logged
- v. Compliant with latest AHA Guidelines
- vi. CPR compressions generate palpable pulses, blood pressure wave form, and ECG artifacts.
- vii. Detection and logging of a series of compression in the data log

18. Vascular Features

The Simulators vascular features shall include:

- a) IV access (right arm and hand)
- b) Intraosseous access (right tibia)

19. Should be able to train for childhood traumatic injuries, signs of abuse and scenarios to enhance training and simulations.

I. Zygomatic tears

- Head skin with zygomatic lacerations, nasal bleeding
- Head skin fits over manikin's head

II. Chest -1st, 2nd and 3rd degree burns

- Burns illustrated with blistering in progressive sequence
- Chest skin replaces manikin's chest skin and attaches at the shoulders
- Burns illustrated with blistering in progressive sequence
- Left arm with plain forearm, articulates to manikin at the shoulder
- Right leg with cigarette burns

III. Road Traffic Accident

- Left arm with road rash and fractured radius
- Arm articulates to manikin at the shoulder

IV. Fractured radius / abnormal healing

- Lower right arm with abnormal healing of fractured radius
- Right arm with plain upper arm, articulates to manikin at the shoulder

V. Canine Bite

- Right hand with dog bite
- Lower right arm, articulates to manikin at the elbow

VI. Electrical burn

- Right hand with electrical wire burn entry
- Lower right arm, articulates to manikin at the elbow

VII. Leg Injury

- Exposed fractured tibia protruding from lower leg
- Lower right leg articulates to manikin at the knee

VIII. Femur fracture

- Left leg with closed femur fracture sleeve
- Sleeve fits over manikin's left thigh

IX. Crush Injury

- Left foot with crushed toes
- Left lower leg articulates to manikin at the knee

20. Operating System

I. **The OS should be single and Intuitive interface** – shall be able to control and manage all simulators from one universal platform. It should help in finding scenarios, conduct simulation training, and develop new scenarios to help meet learning objectives with greater ease.

II. **It should have dual operating mode-** User control mode for total control over all parameters and auto-mode/physiological which will help run pre-programmed scenarios in a simple and effective way. Logged events, as well as events detected by the patient simulator, should automatically drive the scenario forward.

III. **User friendly Operation** – operating system should control parameters with drop-down menus and slider bars. Operating system should be capable of transferring radiographic images and procedural videos to the student screen.

IV. **Patient Monitoring** – Operating system should have patient monitoring capabilities to provide concise clinical feedback for physiological parameters including: ECG, SpO2, CO2, ABP, CVP, PAP, NIBP, TOF, and many more.

V. **Record and Review** – Operating system should log time stamped comments to the data log, bookmark important events and capture notes throughout the simulation. Operating system should have straightforward logging capabilities and should allow integrated event log for more effective review, for improved learning outcomes.

VI. **Scenario drafting tool** – Operating system should have tool to create or convert scenarios which can be run with all simulators/manikins.

21. Other

The pediatric simulator shall be able to demonstrate the following clinical signs

- I. Convulsions (2 levels)
- II. normal, dilated, and constricted pupils
- III. Sounds
 - a. Heart
 - b. Lung
 - c. Bowel
 - d. Patient voice
 - i. Pre-recorded sounds
 - ii. Wireless microphone

22. The Simulator shall have a configurable Touch Screen Patient Monitor with parameters that include

ECG (2 traces) <ul style="list-style-type: none">- SpO2- CO2- ABP- CVP- PAP- PCWP- NIBP- TOF- Cardiac Output- Temperature (core and peripheral)	AGT (labeled) <ul style="list-style-type: none">- aWRR- N2O- ICP- O2- pH- Patient Information Display- X-Ray Display- Blood Gases Display- 12 Lead ECG Display
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The system certifications shall include:

- a) UL and CE
- c) FCC, HMR and CSA

Comply with the essential requirements of Council Directive 2004/108/EC on electromagnetic compatibility (EMC) and Council Directive 2011/65/EU on restriction of the use of certain hazardous substances (RoHS).

Learning Management and Debriefing System

- A. The solution not only help to record, debrief and track simulation learning but also helps the need to manage, assess and report on departments, learners and events.
- B. The integrated System should be capable of providing debriefing solution which captures and records audio and video of simulation and other learning activities.
- C. The system should be capable to record, replay and log the simulation event to give learners every opportunity to evaluate and assess each learning experience completely.
- D. The System shall offer: High quality performance feedback for effective learning, easy-to-use audio and video set-up and control, Time stamped and searchable event log, Annotation and assessments.
- E. Features- Audio & Video Capture
 - a. AVS must be able to integrate with manikin data to form a single, fully annotatable debrief log.
 - b. The system shall have facility to integrate Four (4) HD Camera (digital, IP and USB cameras) inputs.
 - c. The system shall have software to control Pan-tilt Zoom camera.
 - d. The system should have one digital audio input.
 - e. The System Shall offer Camera and microphone with base system, multiple camera options shall be available, Additional hardware offered to expand system as needed, Software control of IP (Internet Protocol) cameras.
- F. It should optimize simulation center capacity with the helpful room overview and allow instructors to schedule their own sessions, rooms, and simulators.
- G. It should capture and stream multiple camera angles and simulator data in one or several simulation rooms at the same time. Track team dynamics, patient care, and simulator use.
- H. It should be easily upgradable and scalable with additional functionalities or expand to more rooms without any interruption to usage or activities.
- I. It should allow to share and collaborate scenarios, sessions, and reports with our colleagues and administrators.
- J. It should extend the reach of our simulation program with the mobile app. Run in-situ sessions from your mobile device and allow students and faculty members immediate access to the entire training session.
- K. It should be able to Turn data into insights with Assessment tool, generate reports and statistics on performance, trends and ROI, automatically tracks usage and outcomes by department, facility, participant and external organization.
- L. Enable learners to debrief and evaluate their own sessions with mobile access to a dashboard and detailed reports.
- M. It should enhance patient safety using video capture, debriefing, and Procedure checklists.
- N. Capture video from medical devices with VGA, DVI or HDMI output to get the full overview of simulation activities safely debrief simulations from anywhere in the world.
- O. The manikin shall be optionally controlled by multiple operators at the same or different locations, when each is equipped with an additional optional PC which has Manikin controlling software installed.
- P. The instructor shall have the ability to communicate with the learners wirelessly via built-in microphones in the manikin's head utilizing wireless technology.
- 23. The bidder shall offer a New Equipment End User Training. This shall provide training in the concepts, skills, & aptitude to operate & maintain the simulator.
- 24. The bidder shall be able to provide introductory, teaching with scenario and simulation

methodology training at the customer site.

25. Educational support

- a) The scenarios provided can be used for teaching advanced pediatric life support.
- b) It should offer emergency physicians, pediatricians, nurses and allied health professionals an opportunity for training realistic, case-based emergency situations.
- c) Should be provided with following training scenarios from American Paediatric Academy
 1. Supraventricular Tachycardia
 2. Severe Asthma Leading to Respiratory Failure
 3. Seizure
 4. Missed Pelvic Crush Injury
 5. Medication Anaphylaxis
 6. Altered Mental Status due to Accidental Ingestion of Medicine

123.1 Technical features - Equipment Power

External power: Input voltage 9VDC, 1.5A Internal battery: 7.4V, 4.4Ah, Lithium-Ion External power supply and batteries.

Air Pressure

Internal air tank: Max 6 psi External air connection: Max 16psi

Temperature Limits

Operating temperatures: +4 °C to 40 °C (39 °F to 104 °F)

Storage temperatures: -15 °C to 50 °C (5 °F to 122 °F) Environment - Simulator only

Relative humidity: 20% -90% (non-condensing)

Minimum Computer Requirements

- Intel i-core generation 3 or newer
- Score over 3000 Pass Mark - CPU Mark
- 4 GB RAM
- 120GB hard disk space
- 1366x768 or better
- Headset/microphone
- USB ports –2

Minimum Software Requirements

- Windows 7 or Windows 8
- 100% DPI

TECHNICAL SPECIFICATIONS ADVANCE INFANT CARE TRAINING SYSTEM

It should be a cordless simulator designed to help mbbs undergraduate care providers effectively recognize and respond to critically ill pediatric patients. It should represent a 9-month-old pediatric patient.

123.2 Airway

Airway opening acquired by head tilt, chin lift and jaw thrust Oropharyngeal and nasopharyngeal airways

Bag-Valve-Mask ventilation

Orotracheal and nasotracheal intubation Sellick Maneuver

LMAinsertion

Endotracheal tube insertion Fiberoptic intubation Gastric tube insertion Variable lung compliance Variable airway resistance Tongue edema Laryngospasm

Pharyngeal swelling Decreased lung compliance Right mainstem intubation Gastric distention

123.3 Intuitive PatientMonitor

reflects several parameters including: ECG, SpO₂, CO₂, ABP, CVP, PAP, NIBP, TOF, and others depending upon the clinicalsituation

The system shall permit multi-media images to be inserted into simulations.

- The system shall permit lab values to be inserted into simulations.
- The system shall permit X-Rays to be inserted into simulations.
- The system shall permit image display to be inserted into simulations
- Touch screen operation
- Multi-level alarm

123.4 Pulmonary System

Spontaneous breathing with variable rate, depth and regularity Bilateral and unilateral chest rise and fall

Normal and abnormal breath sounds – bilateral

Lung Sounds: Normal, course crackles, fine crackles, stridor, wheezes and rhonchi Oxygen saturation

See-saw respiration Retractions Pneumothorax

Unilateral chest movement Unilateral breath sounds

Unilateral needle thoracentesis mid-clavicular Unilateral chest tube insertion

123.5 Cardiovascular System

Extensive ECG library with rate from 20-360

CPR compressions generate palpable pulses, blood pressure waveform, and generate artifacts on ECG The system can also demonstrate Capillary refill for circulation Assessment – Left hand and sternum **Heart Sounds:**

Normal, systolic murmur, holosystolic murmur, diastolic murmur, continuous murmur and gallop
Blood pressure (BP) simulated on patient monitor

Pulses: Unilateral brachial pulse and bilateral femoral pulses synchronized with ECG Pulse strength variable with BP

Display of cardiac rhythms via 3-lead ECG monitoring 12-lead dynamic ECG display

Defibrillation and cardioversion using live shock with training pads –

123.6 Vascular Access

Venous access antecubital fossae, dorsum of the hand and long saphenous vein Bilateral IO/IV insertion legs

blood flashback upon venous cannulation IV bolus and infusion

123.7 Software Features

Programmable Scenarios facility, Faculty can use the pre-programmed scenarios or make their own clinical situations

Web-camera recording possible

Vocal sounds: Crying, content, coughing, and hiccup

Review event log together with synchronized recording of patient monitor and in-room video

Eyes Reactive eyes with pupillary response, normal, dilated, constricted **Fontanel**s the Infant manikin should have Fontanel as normal, or bulging The system should also be able to demonstrate Torso motion

11.The operating system shall be Windows based.

-The manikin weight shall not exceed 9 pounds (4 kg), thus permitting easy repositioning by average sized rescuers and learners.

-The manikin height shall not exceed 25 inches (64 cm)

-The internal inbuilt compressor operational sounds shall not interfere with the auscultation of manikin sounds and shall not cause unwanted manikin body movement.

.The system shall include following Quality Certificates

-CE , CSA, ISO / FDA

123.8 16. Qualitative support

The system shall be available with hundreds of clinical scenarios to expand our curriculum with a selection of high-quality, expert-validated scenarios from leading organizations like AHA and AAP.

The faculty controlling the training can pick and choose the topic and content and can also edit the scenarios to suit the training needs

A. The system should have 25 AHA PALSS scenarios to address key learning objectives for critical pediatric care.

B. The scenarios shall help educators with the ability to provide realistic and challenging scenario-based simulation to assess students' critical thinking and decision-making skills in accordance with the latest American Heart Association (AHA) Guidelines for CPR and ECC.

C. The bidder shall be able to provide operational training to the end user.

D. The bidder shall be able to provide introductory, teaching with scenario and simulation methodology training at the customer site.

E. The scenarios shall focus on the following aspects of education
Pediatric assessment and management

Critical thinking skills

Team interaction and communication
Adherence to algorithms

Debriefing, student reflection, and remediation

F. The scenarios in the set include the following:

I. Skills Teaching

TEACH 1- and 2-Rescuer CPR; TEACH Management of Respiratory Emergencies; TEACH Rhythm Disturbances, Defibrillation; TEACH Rhythm Disturbances, Synchronized Cardioversion; TEACH Vascular Access

II. Respiratory

Upper Airway Obstruction, Croup; Lower Airway Obstruction, Bronchiolitis; Lower Airway Obstruction, Moderate Asthma; Lung Tissue Disease, Pneumonia; Lung Tissue Disease, Aspiration Pneumonia; Disordered Control of Breathing, ICP; Disordered Control of Breathing, Narcotic Overdose

III. Shock

Hypovolemic Shock, Non hemorrhagic (Dehydration); Hypovolemic Shock, Hemorrhagic, Abdominal Trauma; Obstructive Shock, Tension Pneumothorax; Obstructive Shock, Pericardial Tamponade; Distributive Shock, Septic Shock; Distributive Shock, Anaphylactic Shock; Cardiogenic Shock, Viral Myocarditis

IV. Cardiac

Pulseless Ventricular Tachycardia (VT); Ventricular Fibrillation (VF); Pulseless Electrical Activity (PEA); Asystole; Supraventricular Tachycardia (SVT); Ventricular Tachycardia (VT) With Pulses; Sinus Bradycardia

123.9 Learning Management and Debriefing System

- I. The solution not only help to record, debrief and track simulation learning but also helps the need to manage, assess and report on departments, learners and events.
- II. The integrated System should be capable of providing debriefing solution which captures and records audio and video of simulation and other learning activities.
- III. The system should be capable to record, replay and log the simulation event to give learners every opportunity to evaluate and assess each learning experience completely.
- IV. The System shall offer: High quality performance feedback for effective learning, easy-to-use audio and video set-up and control, Time stamped and searchable event log, Annotation and assessments.
- V. Features- Audio & Video Capture
 - a. AVS must be able to integrate with manikin data to form a single, fully annotatable debrief log.
 - b. The system shall have facility to integrate Four (4) HD Camera (digital, IP and USB cameras) inputs.
 - c. The system shall have software to control Pan-tilt Zoom camera.
 - d. The system should have one digital audio input.
 - e. The System Shall offer Camera and microphone with base system, multiple camera options shall be available, Additional hardware offered to expand system as needed, Software control of IP (Internet Protocol) cameras.
- VI. **It should** optimize simulation center capacity with the helpful room overview and allow instructors to schedule their own sessions, rooms, and simulators.
- VII. It should capture and stream multiple camera angles and simulator data in one or several simulation rooms at the same time. Track team dynamics, patient care, and simulator use.
- VIII. **It should be easily upgradable and scalable** with additional functionalities or expand to more rooms without any interruption to usage or activities.
- IX. **It should allow to share and collaborate** scenarios, sessions, and reports with our colleagues and administrators.
- X. It should extend the reach of our simulation program with the mobile app. Run in-situ sessions from your mobile device and allow students and faculty members immediate access to the entire training session.
- XI. It should be able to Turn data into insights with Assessment tool, generate reports and statistics on performance, trends and ROI, automatically tracks usage and outcomes by department, facility, participant and external organization.
- XII. Enable learner to debrief and evaluate their own sessions with mobile access to dashboard and detailed reports.
- XIII. It should enhance patient safety using video capture, debriefing, and Procedure checklists.
- XIV. Capture video from medical devices with VGA, DVI or HDMI output to get the full overview of simulation activities safely debrief simulations from anywhere in the world.
- XV. The manikin shall be optionally controlled by multiple operators at the same or different locations, when each is equipped with an additional optional PC which has Manikin controlling software installed.
- XVI. The operating system shall be able to synchronize with online content to import scenarios and scenario aids.
- XVII. The instructor shall have the ability to communicate with the learners wirelessly via built-in microphones in the manikin's head utilizing wireless technology.

TECHNICAL SPECIFICATIONS NICU TRAINING SYSTEM

- The patient simulator should facilitate multidisciplinary simulation-based training for improved care of a critically ill newborn baby specifically focusing on the first 10 minutes of life, training for critical interventions such as lung recruitment maneuvers and advanced airway management.
- The manikin weight, unpacked and ready for use, thus permitting easy repositioning by average sized rescuers and learners.
- The operational sounds shall not interfere with the auscultation of manikin sounds and not cause unwanted manikin body movement.
- The system shall permit multi-media images to be inserted into simulations via the touchscreen patient monitor.
- The system shall permit pre-recorded multi-media video to be inserted into simulations via the touchscreen patient monitor.
- The system shall permit lab values to be inserted into simulations via the touchscreen patient monitor.
- The system shall permit X-Rays to be inserted into simulations via the patient monitor.
- The system shall include a profile editor which allow each instructor to specifically configure the simulator and interface to meet their preference and needs.
- The system shall include a display of past, present and future scenario trending providing instructors with situational awareness during a scenario.
- The bidder shall also quote an optional debriefing system including camera and debriefing software which combines synchronized student log, patient monitor display, live audio and video feed in a single debriefing file.
- The bidder shall also offer following scenarios validated by the American Academy of Pediatrics.
 - ✓ Orientation to Simulation and the SimNewBSimulator
 - ✓ An Uncomplicated Birth
 - ✓ Newborn Requiring Initial Steps of Newborn Care
 - ✓ Resuscitation with Positive-Pressure Ventilation
 - ✓ Resuscitation with Positive-Pressure Ventilation and CPAP
 - ✓ Resuscitation with Positive-Pressure Ventilation and Endotracheal Intubation
 - ✓ Resuscitation with Positive-Pressure Ventilation, Endotracheal Intubation, and Chest Compressions
 - ✓ Resuscitation with Positive-Pressure Ventilation, Endotracheal Intubation, Chest Compressions, Epinephrine, and Volume
 - ✓ Resuscitation of a Newborn with Obstructed Airway
 - ✓ Resuscitation of Late Preterm Newborn with Initial Steps of Newborn Care and CPAP
 - ✓ Resuscitation Outside the Delivery Room with Positive-Pressure Ventilation
 - ✓ Ethics and Care at the End of Life
 - ✓ Learning Objectives
- The Standard system shall be capable of operating via Automatic and Manual Mode
- The system shall be available with many clinical scenarios to expand our curriculum with a selection of high-quality, expert-validated scenarios from leading organizations like AHA and AAP.
- The faculty controlling the training can pick and choose the topic and content and can also edit the scenarios to suit the training needs

123.10 Airway Features

- An icon shall display if air is being provided during Bag Valve Mask ventilations and intubation on the Graphical Users Interface on the PC.
- The simulator chest will generate breath sounds which shows assisted breathing when ventilated with abag-mask.
- The simulator chest shall generate breath sounds that shows spontaneous breathing when auscultated with astethoscope
- The simulator chest should rise and fall in response to positive pressureventilation.
- Airway skills/features shallinclude:
 - a. Intubation
 - b. Oral/nasal airwayinsertion
 - c. Endotracheal tubes - insertion, securing andcare
 - d. Oropharyngeal and nasopharyngeal airways - insertion andsuctioning
 - e. Right mainstemintubation
 - f. Sellickmaneuver
 - g. Oxygen deliveryprocedures
 - h. Suctioningtechniques
 - i. Auscultation of lungsounds
 - j. Auscultation of lung sounds duringventilation
 - k. Lung sounds, synchronized with breathingrate
 - l. Individual lung or bilateral soundselection
 - m. Needle chestdecompression
 - n. Stomachdecompression
 - o. Laryngeal maskairway
 - p. Meconium AspirationModule
 - q. Co2exhalation no
 - r. Positive pressureventilation
 - s. Airway complications (instructorcontrolled
 - t. Realistic chest rise andfall
- Simulator should feature Pneumothorax complicationsincluding:
 - u. Unilateral chest movement with mechanicalventilation
 - v. Unilateral breath sounds
 - w. Unilateral needle thoracentesis,mid-axillary
- It should allow spontaneous breathing with variable rate shall bepossible.
- Bilateral and unilateral chest rise and fall shall bepossible.
- Normal and abnormal breath sounds such as Coarse Crackles, Fine Crackles, Pneumonia,Wheeze, Rhonchi, Stridor and Wheezes shall bepresent.

123.11 Cardiac Features

- Should have Heart sounds such as normal, systolic murmur, Aortic Stenosis, Austin Flint Murmur, StillsMurmur,AtrialSeptalDefect(ASD),VentricularSeptalDefect(VSD)andPulmonaryStenosis.
- Realistic depth of CPR compressions shall bepossible
- Detection of CPR compressions shall be displayed on the datalog

123.12 Circulation

- Simulator shall allow the practice of the following skills: cannulation, phlebotomy, drug administration and infusion.
- An extensive ECG library shall be present with rates ranging from 0 to 250.
- Blood pressure shall be measurable automatically or manually by auscultation of Korotkoff sound (right arm).
- Umbilical and Brachial pulses shall be synchronized with ECG.
- Manikin shall allow umbilical cord to be assessed, cut and catheterized.
- Umbilical catheterization with blood return shall be possible
- Pulse can be turned “on” and “off”.
- Brachial pulse palpation shall be detected and logged via laptop computer
- IV access shall be available through the umbilical cord.
- IO access shall be possible via tibias (both legs).
- Circumoral Cyanosis shall be displayed.

123.13 Others

- Shall be able to demonstrate various pupils’ size, representing normal, constricted and dilated pupils.
- The manikin shall display movement in all four limbs: Limp, Tone, Spontaneous Motion and Seizure
- The manikin shall be able to transmit voice sounds via prerecorded files and/or files created by end user.
- The manikin shall present vocal sounds such as Content, Hiccups, Grunting, Strong Cry, Weak Cry, Cough, and Scream.
- Configurable Touch Screen Patient Monitor Parameters include (not limited to):
 - x. HR
 - y. NIBP
 - z. ECG aa. SPO2 bb. ETCO2
 - cc. Respiratory Rate dd. Temperature
- The system certifications shall include:
 - UL, CE, FCC, CSA, ISO
- The vendor shall provide New Equipment End user training and shall provide details on the concepts, skills, & aptitude to operate & maintain the simulator.

123.14 Learning Management and Debriefing System

- a) The solution not only help to record, debrief and track simulation learning but also helps the need to manage, assess and report on departments, learners and events.
- b) The integrated system should be capable of providing debriefing solution which captures and records audio and video of simulation and other learning activities.
- c) The system should be capable to record, replay and log the simulation event to give learners every opportunity to evaluate and assess each learning experience completely.

- d) The System shall offer: High quality performance feedback for effective learning, easy-to-use audio and video set-up and control, Time stamped and searchable event log, Annotation and assessments.
- e) Features- Audio & VideoCapture
- a. AVS must be able to integrate with manikin data to form a single, fullyannotatable debrieflog.
 - b. The system shall have facility to integrate Four (4) HD Camera (digital, IP and USB cameras)inputs.
 - c. The system shall have software to control Pan-tilt Zoomcamera.
 - d. The system should have one digital audioinput.
 - e. The System Shall offer Camera and microphone with base system, multiple camera options shall be available, Additional hardware offered to expand system as needed, Software control of IP (Internet Protocol)cameras.
 - f) **It should** optimize simulation center capacity with the helpful room overview andallow instructors to schedule their own sessions, rooms, andsimulators.
 - g) It should capture and stream multiple camera angles and simulator data in one or several simulationroomsatthesametime.Trackteamdynamics,patientcare,andsimulatoruse.
 - h) **It should be easily upgradable and scalable** with additional functionalities or expand to more rooms without any interruption to usage oractivities.
 - i) **It should allow to share and collaborate** scenarios, sessions, and reports with our colleagues and administrators.
 - j) It should extend the reach of our simulation program with the mobile app. Run in-situ sessions from your mobile device and allow students and faculty members immediate access to the entire trainingsession.
 - k) It should be able to Turn data into insights with Assessment tool, generate reports and statistics on performance, trends and ROI, automatically tracks usage and outcomes by department, facility, participant and externalorganization.
 - l) Enablelearnerstodebriefandevaluatetheirownsessionswithmobileaccesstodashboardand detailedreports.
 - m) It should enhance patient safety using video capture, debriefing, and Procedurechecklists.
 - n) Capture video from medical devices with VGA, DVI or HDMI output to get the full overviewof simulation activities safely debrief simulations from anywhere in theworld.
 - o) The manikin shall be optionally controlled by multiple operators at the same or different locations, when each is equipped with an additional optional PC which has Manikin controlling softwareinstalled.
 - p) The instructor shall have the ability to communicate with the learners wirelessly via built-in microphones in the manikin's head utilizing wireless technology

TECHNICAL SPECIFICATIONS PEDIATRIC INTUBATION TRAINER

The Pediatric Intubation Trainer should be a life-like reproduction of a six-year-old child's torso designed to teach pediatric airway management skills.

- Realistic life-size intubation trainer with a flexible tongue, arytenoid cartilage, epiglottis, vallecula, vocal cords, trachea, esophagus, and simulated lungs
- Head can be tilted forward, backward, or rotated 90 degrees to either side
- Anatomically accurate airway allows sizing and insertion of various airway adjuncts
- The following skills can be practiced:
 - Oral Intubation
 - Nasal Intubation
 - Digital Intubation
 - Oropharyngeal Airway
 - Nasopharyngeal Airway
 - Basic Airway Management
 - Suctioning Techniques
 - Bag-Valve Mask Ventilation
 - Realistic rise and fall of the chest
 - Closed chest compressions

Pediatric Intubation Trainer Includes: Lubricant
Clothing Carry Case

TECHNICAL SPECIFICATIONS SUTURING TRAINING

It should be a latex free hands-on training Kit containing the essentials for practicing suturing, knot tying, instrument handling and incision of skin.

It can be used as a stand-alone teaching and practice tool or in conjunction with online learning course.

It should offer realistic training opportunities with skin pad on a curved life-like skin surface allowing incisions to 'gape', as in real life

It should have advanced 3-layer skin pad giving realistic tissue response and is suitable for practicing a wide range of suturing techniques.

Realistic tissue response and soft skin with a similar drag and strength to human skin All layers have realistic retention of sutures

Allows for repeated practice of techniques

The sucker feet on the skin pad jig should provide a stable, non-slip environment for practice when used on smooth work surfaces

It should be able to focus on following skills training

- i. Instrumenthandling
- ii. Planning and performing a skinincision
- iii. Tying safe and secureknots
- iv. Suturing techniques - interrupted, continuous, subcuticular, vertical and horizontalmattress
- v. Sutureremoval

TECHNICAL SPECIFICATIONS CARDIO PULOMNARY ASSESSMENT TRAINING

1. It should be a cardiopulmonary Patient Simulator to train assess, identify, and diagnose 50 different cardiac conditions
2. It should have pulses, varying blood pressure, heart sounds, murmurs and breath sounds. Includes 50 condition scenarios, 10 comprehensive standardized patient cases, enhanced physical exam findings, free subscription to live webinars for ongoing instructor training
3. The Cardiopulmonary Patient Simulator should realistically simulate nearly any cardiac disease at the touch of a button by varying blood pressure, pulses, heart sounds, murmurs and breath sounds.
4. It should provide cardiopulmonary training for all healthcare providers.
5. The manikin should have Arterial and venous pulses such as Carotid, Jugular, Brachial, Radial, femoral
6. It should have Precordial movements- Pulmonary, right ventricular, left ventricular, displaced left ventricular
7. Cardiac findings of carotids, Aortic radiation, Pulmonary radiation, Mitral radiation. Pulmonary findings of Right & left upper, Right & Left inferoposterior, Right & left inferoanterior, abdominal breathing
8. The manikin should realistically simulate cardiac disease by varying blood pressure, pulses, heart sounds, murmurs and breath sounds
9. Presence of heart and lung sounds at pulmonary area and presence of heart and lung sounds at aortic area.
10. The manikin should allow for Patient cases at various heart rates such as Cardiomyopathy, Severe aortic stenosis, Mild tricuspid regurgitation etc.
11. The manikin should have 50 plus patient scenarios with numerous bedside findings

Cardiac Disease Cases (total 50) Standardized Patient Curriculum (total 10) Breath Sound Areas (total 6)

Cardiac Auscultation Areas (total 9) Digitally Driven Impulses (total 14) Bilateral jugular venous impulses (2)

Bilateral carotid, brachial, radial and femoral arterial pulses (8)

Chest wall/precordial impulses (pulmonary artery, right ventricle, left ventricle, and displaced left ventricle) (4)

It should have modifiable amplitudes and Intensities It should have a speaker for History-taking

Clinical conditions -

Normal

Innocent Murmur Hypertension

Mild Mitral Regurgitation

Mitral Valve Prolapse, Combined Click and Murmur Acute Pericarditis

Mild Tricuspid Regurgitation Chronic Severe Aortic Regurgitation
Cardiomyopathy

Severe Aortic Stenosis Addition of 10 New Harvey cases at rate of 90 BPM

Mild Systolic Heart Failure Mild Diastolic Heart Failure

Mild Mitral Regurgitation (variant) Moderate Mitral Regurgitation Mild Aortic
Regurgitation

Coronary Disease with Heart Failure Moderate Aortic Stenosis Pulmonary
Embolism

Cor Pulmonale

Aortic Stenosis and Regurgitation

Standardized Patient Library – 10 cases, Printed Notebook & digital files)

123.15 Core Curriculum Features

It should provide a comprehensive curriculum by realistically simulating 50
conditions. It is structured to start with common, less complex conditions and
progress to more rare and complex diseases.

Introductory Program Normal (60 and 90 BPM)

Innocent Murmur (60 and 90 BPM) Aortic Valve Sclerosis Hypertension (60
and 90 BPM) Angina Pectoris

Acute Inferior Myocardial Infarction Acute Anterior Myocardial Infarction
Ventricular Aneurysm

Mitral Valve Prolapse (MVP) (60 and 90 BPM) MVP, Isolated Click and
Murmur

Mitral Regurgitation, chronic

Mitral Regurgitation, mild (60 and 90 BPM) Mitral Regurgitation, mild
(variant)

Mitral Regurgitation, acute

Mitral Stenosis (MS) with severe Tricuspid Regurgitation (TR)

MS with mild TR (60 and 90 BPM) Mitral Stenosis & Regurgitation

Aortic Regurgitation, chronic (60 and 90 BPM) Aortic Regurgitation, acute

Aortic Stenosis (60 and 90 BPM) Hypertrophic Obstructive Cardiomyopathy
Cardiomyopathy (60 and 90 BPM)

Acute Pericarditis (60 and 90 BPM) Primary Pulmonary Hypertension Atrial
Septal Defect

Ventricular Septal Defect Patent Ductus Arteriosus Pulmonary Stenosis
Coarctation of the Aorta Tetralogy of Fallot

Coronary Disease with Heart Failure Mild Systolic Heart Failure

Mild Diastolic Heart Failure Moderate Mitral Regurgitation Moderate
Aortic Stenosis

Mild Aortic Regurgitation

Aortic Stenosis and Regurgitation Pulmonary Embolism

Cor Pulmonale

Hospital Facility Management Software System

The following modules to be incorporated in the hospital management system

▪ Super Admin cum Director Role.
▪ Administration Role.
▪ Accounts & HR Role.
▪ Doctor OPD Prescription & IPD Note.
▪ Doctor Work Station.
▪ Inventory Management
▪ Diet Management
▪ Nursing & Indoor Filing Systems.(OT Note, Doctor Note, Patient Summary, ICD-10 wise Discharge Summary, Patient Documents).
▪ Reception Management.
▪ OPD Billing Counter
▪ IPD Billing Counter.
▪ Patient Waiting Area Management.
▪ Laboratory.
▪ Radiology.
▪ Multispecialty.
▪ Central Pharmacy Store.
▪ OPD & IPD Medicine Issue Counter.
▪ Reference Doctor Share.
▪ In-house Laundry & Inventory Management.
▪ Ambulance Log - book Management.
▪ Patient EMR Systems.
▪ HR & Payroll.
▪ TPA & Insurance Billing & Policy Management.
▪ SMS-API; Camera; Bar-Code; Attendance; Thumb-Impression; Systems Etc.
▪ Layer-wise Role (Non-admin, Sub-admin, Admin, Super Admin etc.)
▪ Multi-System Support with (LAN/Wi-Fi/WAN etc.)
▪ Multi Branches System operation with separate & INTEGRATED A/c.
▪ Auto Email- Function for DSR Report Admin & A/c Dept., Lab-Reports to patient, Radiology Reports, Prescription, Medicine Advises, Discharge Summary

SOFTWARE ADDITIONAL SEGMENT NAME	CATEGORY
WEB APPLICATION (TABS SUPPORT)	APPLICATIONS & DASHBOARDS
MOBILE APPS	DOCTORS & PATIENTS
BACK UP MANAGEMENT (INTERNAL SERVER)	SERVER
PHARMACY AUDIT SUPPORT	AUDIT
MACHINE INTERFACING	ALL LAB MACHINES
IT ADJUSTMENTS	FINANCIAL PURPOSE

TENDERER

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CHIEF ENGINEER

SOFTWARE ADDITIONAL SEGMENT NAME	CATEGORY
THIRD PARTY DEVICE INTEGRATION SUPPORTED	HEALTH CARE DEVICE INTEGRATION
IMPLEMENTATION & TRAINING SUPPORT	SUPPORT
UNLIMITED CUSTAMIZATIONS	NEW MODIFICATIONS
UNLIMITED SYSTEMS	END USER SYSTEMS
CLOUD SUPPORT	Cloud support for hosting information

DRAWINGS

TENDERER

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CHIEF ENGINEER

1.0 DRAWINGS:

- 1.1 The plans enclosed with the tender are liable to be altered during execution of work as per necessity of site conditions. The premium quoted by the contractor for various items shall hold good for execution of work even with altered plans.
- 1.2 One set of drawings, on the basis of which actual execution of the work is to proceed shall be furnished free of cost to the contractor by the Superintending Engineer / Executive Engineer progressively according to the work program submitted by the contractor and accepted by the Superintending Engineer / Executive Engineer. Drawings for any particular activity shall be issued to the contractor at least 30 days in advance of the scheduled date of the start of the activity. However, no extra claims by the contractor toward any delay in issue of drawing or issue of any revision / change to the drawings issued earlier shall be admissible. The Superintending Engineer shall intimate the contractor 7 days in advance regarding any delay to issue of drawings, for any particular stage of works. If work gets effected due to delay to issue of drawings, for any particular stage of work the contractor shall be granted extension of time.
- 1.3 Signed drawings above shall not be deemed to be an order for work unless they entered in the agreement or schedule of drawings under proper alterations of the contractor and Executive Engineer or unless they have been sent of the contractor by the Executive Engineer with a covering letter confirming that the drawing in and authority for work in contract.

2.0 DISCREPANCIES:

- 2.1 In case of discrepancies between documents the following order of procedure shall apply:-
 - 2.1.1 Between the written description of written dimensions in the drawings and the corresponding one in the specifications, the latter shall apply.
 - 2.1.2 Figured dimensions shall supersede scaled dimensions. The drawings on a larger scale shall take precedence over those on a smaller scale.
 - 2.1.3 Drawings issued as construction drawings from time to time shall supersede tender drawings and also the correspondence drawings previously issued.

Note: The contractor should not execute any component of work without obtaining the working drawings. Any work done without drawings shall be at the contractors' responsibility only. Acceptance for such work will be at the discretion of the Executive Engineer.

3.0 SECRECY CLAUSE:

The drawings and specifications made available to the tenderer shall exclusively be used on the work and they are retained from passing on each plan to any unauthorised hand either in parts or in full under the provisions of Section-3 and 5 of the official secrets Act 1923. Any violation in this regard will entail suitable action under appropriate clause or official secret Act 1923.

BILL OF QUANTITIES AND PRICE BID

TENDERER

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CHIEF ENGINEER

Name of work : **Establishment of Government Medical College at Parvathipuram in Parvathipuram Manyam District.**

BILL OF QUANTITIES

PREAMBLE

1. The Bill of Quantities shall be read in conjunction with the instructions to Tenderers, General and Special conditions of Contract Technical Specifications and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional and are given to provide common basis for tendering. *The quantities given here are those upon which the lump-sum tender cost of the work is based but they are subject to alterations, omissions, deductions or additions as provided for in the conditions of this contract and do not necessarily show the actual quantities of work to be done.* The basis of payment will be actual quantities of work ordered and carried out as measured by the Contractor and verified by the Engineer and valued at the estimate rate plus or minus tender percentage quoted in the Bill of Quantities where applicable, and otherwise at such rates and prices as the Engineer-in-Charge may fix within the terms of Contract.
3. The estimate rates in the Bill of Quantities shall, except in so-far as it is otherwise provided under the Contract include cost of all constructional material, labour, machinery, transportation, erection, maintenance, profit, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract.
4. The plans enclosed with the tender are liable to be altered during execution of work as per necessity of site conditions. The Tender percentage quoted by the tenderer shall hold good for execution of work even with altered plans.
5. The whole cost of complying with the provisions of the Contract shall be included in the estimated rates for items provided in the Bill of Quantities and where no items are provided in the Bill of Quantities, their cost shall be deemed to be distributed among the estimate rates entered for the related items of work.
6. General directions and descriptions of work and materials are not necessarily repeated nor summarised in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering estimate rate against each item in the Bill of Quantities.
7. The method of measurements of completed work for payment shall be in accordance with the relevant B.I.S. Codes & A. P. S. Specifications.
8. All items of work are to be executed as per the drawings / specifications supplied with the contract documents. If there is any contradiction between the drawings and the text of the specifications, the later shall prevail.

9. The Tenderer should inspect and select the quarries of his choice before he quotes the tender percentage in the Schedule of Bill of Quantities and satisfy himself about the availability of required quantum of materials.
10. Diversion drains should be excavated before completion of the embankments and the useful soils should be used in the nearby embankments.
11. The actual mix proportion by weight to be adopted during execution will be got designed in the laboratories to suit the grade of concrete and mortar to be used. It will be the responsibility of the contractor to manufacture concrete and mortar of required strength.
12. The quantum of measurement for all items of earthwork involving conveyance manually or by machinery shall be as assessed by level measurement. The measurements for the embankment will be for the consolidated banks only.
13. Wherever bailing out of water is involved either for excavation or for foundations or for constructions, the percentage quoted shall take into account the de-watering charges necessary. No separate payment will be made for de-watering.
14. Wherever embankment work is involved, useful soils approved by the Engineer-in-Charge from the cutting reaches and diversion drains shall be taken and used for forming nearby embankments soils used for constructions will be at free of cost.
15. The quoted tender percentage shall also include the work of any kind necessary for the due and satisfactory construction, completion and maintenance of the works according to the drawings and these specifications and further drawings and orders that may be issued by the Engineer-in-Charge from time to time. The quoted tender percentage shall include compliance by the Contractor with all the general conditions of contract, whether specifically mentioned or not in the various clauses of these specifications, all materials, machinery, plant, equipment, tools, fuel, water, strutting, timbering, transport, offices, stores, workshop staff, labour and the provision of proper and sufficient protective works, diversions, temporary fencing and lighting. It shall also include safety of workers, first aid equipment suitable accommodation for the staff and workmen, with adequate sanitary arrangements, the effecting and maintenance of all insurance, the payment of all wages, salaries, fees, royalties / Taxes, duties or other charges arising out of the execution of works and the regular clearance of rubbish, reinstatement and clearing-up of the site as may be required on completion of works safety of the public and protection of the works and adjoining land. The work of Building in quality control / assurance shall be deemed to be covered in the quoted percentage.
16. The Contractor shall ensure that, the quoted tender percentage shall cover all stages of work such as setting out, selection of materials, selection of construction methods, selection of equipment and plant, deployment of personnel and supervisory staff, quality control testing etc. The work quality assurance shall be deemed to be covered in the tender percentage.

17. The special attention of the tenderer is drawn to the conditions in the tender notices wherein reference has been made to the Andhra Pradesh Standard Specifications [APSS] and the Standard preliminary specifications containing therein. These preliminary specifications shall apply to the agreement to be entered into between the contractor and the Government of Andhra Pradesh and shall form an in-separable condition of the contract along with the estimate. All these documents taken together shall be deemed to form one contract and shall be complimentary to another.
18. The tenderer shall examine, closely the A.P.S.S. / MOST and also the standard preliminary specifications contained therein and sign the Superintending Engineer's office copy of the APSS / MOST and its addenda volume in token of such study before submitting his overall tender percentage which shall be for finished work in-situ. He shall also carefully study the drawings and additional specifications and all the documents, which form part of the agreement to be entered into by the successful tenderer. The APSS / MOST and other documents connected with contract such as estimate plans, specifications, can be seen on all working days in the office of the Chief Engineer, APMSIDC, Mangalagiri.
19. The tenderers attention is directed to requirements for materials under the clause 'materials and workmanship' in the preliminary specifications of APSS. Materials conforming to the Bureau of Indian Standards specifications, APSS etc., shall be used on the work and the tenderers shall quote his overall tender percentage accordingly.
20. The tenderer has to do his own testing of materials and satisfy himself that they conform to the specifications of respective I.S.I. Codes before tendering.
21. The contractor shall himself procure the required construction materials of approved quality including the earth for formation of embankment and water from quarries / sources of his choice. All such quarries / sources of materials required for the work shall be got approved by the Engineer-in-Charge in writing well before their use of the work.
22. The contractor shall himself procure the steel, cement, Bitumen, Blasting materials, sand, metal, soils, etc., and such other materials required for the work well in advance. The contractor has to bear the cost of materials for conveyance. The department will not take any responsibility for fluctuations in market in cost of the materials, transportation and for loss of materials etc.
23. Inspection of site and quarries by the tenderer: Every tenderer is expected before quoting his overall tender percentage, to inspect the site of proposed work. He should also inspect the quarries and satisfy himself about the quality, and availability of materials. The best class of materials to be obtained from quarries, or other sources shall be used on the work. In every case the materials must comply with the relevant standard specifications. Samples of materials as called for in the standard specifications or in this tender notice, or as required by the Executive Engineer, in any case, shall be submitted for the Executive Engineer's approval before the supply to site of work is begun.

24. The tenderer's particular attention is drawn to the sections and clauses in the A.P. standard specification dealing with

- a) Test, inspection and rejection of defective materials and work.
- b) Carriage
- c) Construction plant
- d) Water and lighting
- e) Cleaning up during the progress and for delivery.
- f) Accidents
- g) Delays
- h) Particulars of payments.

The contractor should closely peruse all the specification clauses, which govern the overall tender percentage he is tendering.

25. The defect liability period of contract in terms of GO Ms.No.8, T,R&B Dept., dt:8.1.2003 is twenty four months.

26. The estimate rates for items shown in the Schedule "A" include all construction materials. No escalation in rates will be paid unless specified in the tender document. The tenderer has to quote an overall tender percentage considering all the aspects of the tender to complete the finished item of work as per the APSS / MOST / B.I.S. specifications, the special specifications appended, Drawings etc.

27. If there is any contradiction between APSS / MOST and B.I.S. specifications, listed and detailed technical specifications, the latter shall prevail.

28. In case of a job for which specifications are not available with the Schedule or in APSS / MORT&H or B.I.S. code and are required to be prescribed, such work shall be carried out in accordance with the written instructions of the Engineer-in-charge.

29. The contractor should use the excavated useful soils and stone for construction purpose. Soils used for construction either for homogeneous section in hearting or in casing zone based on the suitability will be at free of cost and the cost of stone used for construction purpose will be recovered from the contractor's bill. The contractor should quote his tender percentage keeping in view of the above aspects.

30. Additions and alternations by the Tenderer in the Schedule of quantities will disqualify the tender.

31. In the case of discrepancies between the written description of the item in the Schedule "A" and the detailed description in the specification of the same item, the latter shall be adopted.

32. The Unit rates noted below are those governing payment of extras or deductions for omissions according to the conditions or the contract as set-forth in the preliminary specifications of the A.P. standard specifications and other conditions of specification of this contract.

33. It is to be expressly understood that the measured work is to be taken according to the actual quantities when in place and finished according to the drawings or as may be ordered from time to time by the Executive Engineer and the cost calculated by measurement or weight at their respective rates without any additional charge for any necessary or contingent works connected works connected herewith. The Percentage Excess or less on ECV quoted are for works in situ and complete in every respect.
34. For all items of work in excess of the quantities indicated the rates payable for such excess quantities will be tendered rates i.e., estimate rates plus or minus tender percentage.
35. For all items of work, intermediate payment will be made provisionally as per relevant clause. Full-accepted agreement rates will be paid only after all the items of works are completed.
36. The contractor is bound to execute all supplemental works that are found essential incidental and inevitable during execution of main work.
37. The payment of rates for supplement items of work will be regulated as under.

Supplemental items directly deductible from similar items in the original agreement.

The rates shall be derived by adding to or subtracting from the agreement rate of such similar item the cost of the difference in the quantity of materials labour between the new items and similar items in the agreement worked out with reference to the schedule of rates adopted in the sanctioned estimate with which the tenders are compared.

- a) Similar items but the rates of which cannot be directly deducted from the original agreement.
- b) Purely new items which do not correspond to any item in the agreement.

The rate of all such items shall be estimated rates plus or minus overall tender percentage.

38. Entrustment of additional items:

- a) Where ever additional items not contingent on the main work and outside the scope of original agreement are to be entrusted to the original contractor dispensing with tenders and if the value of such items exceeds the limits up to which the officer is empowered to entrust works initially to contractor without calling for tenders approval of next higher authority shall be obtained. Entrustment of all such items on nomination shall be rates not exceeding the estimate rates.
- b) Entrustment of supplement items contingent on the main work will be authorised by the officers up to the monetary limits up to which they themselves are competent to accept items in the original agreement so long as the total amounts up to which they are competent to accept in an original agreement rates for such items shall be worked in accordance with the procedure prescribed in GO Ms.No.1493 PWD, dated: 25-10-1971 and as amended in Government. Memo number 544 cod 72-22 dated: 06-07-1973.
- c) Entrustment of either the additional supplemental items shall be further subject to the provisions under para 176(b) of APWD Code Viz., the items shall not be ordered by an

officer on his own responsibility if the revised estimate or deviation statement providing for the same requires the sanction of higher authority.

Note: It may be noted that the term estimate rate used above means the rate in the sanctioned estimate with which the tender's compared or if no such rate is available in the estimate the rate derived will be with reference to the schedule of rates adopted in the sanctioned estimate with which tenders are compared.

BILL OF QUANTITIES

[Part-I]

Name of the Work: Establishment of Government Medical College Parvathipuram in Parvathipuram Manyam District.

S. No	Approximate Quantity In figures/ words	Description of work	Specification No. / APSS / BIS / MOST	Unit In figures / words	Estimate Rate In figures / words	Amount in Rs.
		Schedule A Enclosed				

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BILL OF QUANTITIES

(PART- II)

“The rates mentioned in “BOQ” (Schedule – “A”) are including overhead charges and contractors profit but excluding GST charges.”

Seigniorage will be as per Clause 105 of the Conditions of Contract.

GST will be as per Clause 106 of the Conditions of Contract.

The contract price is inclusive of all overhead charges and include the following elements:

- i. Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.
- ii. Office furniture, equipment and communications.
- iii. Expenditure on:
 - a) Corporate office of contractor.
 - b) Technical agents for site supervision. (Reimbursement to the technical agents provision is dispensed with where ‘over heads and contractor’s profit’ provision is included in the data rates)
 - c) Documentation and “as built” drawings.
 - d) Mobilization/ de-mobilization of resources.
 - e) Labour camps with minimum amenities and transportation to work sites.
 - f) Light vehicles for site supervision including administrative and managerial requirements.
 - g) Laboratory equipment and quality control including field and laboratory testing. (For all the works costing more than Rs. 2.00 Crores contractor have to establish Quality Control laboratory)
 - h) Minor T & P and survey instruments and setting outworks, including verification of line, dimensions, etc.
 - i) Watch and ward.
 - j) Traffic management/ Safety management during construction.
 - k) Expenditure on safeguarding environment.
 - l) Procurement of furnitures and equipment including installation, commissioning
 - m) Maintaining office at Site and during operation and maintenance period of Building
- iv. Sundries.
- v. Financing Expenditure.
- vi. GST (GST at the prescribed rates as indicated by the Government shall be added in the estimates) It is subject to what is stated on GST at para 106 supra.
- vii. Work Insurance/ compensation - Works insurance is dispensed with vide G.O. Ms.No: 61 Irrigation & CAD (PW:Reforms) Department Dt. 25-06-2013. Further, It is decided not to insist upon insuring all the building works as provision for this component is already deleted from the ‘Overheads & Contractor’s Profit’ in building works.

Note 1: The contractor as per the breakup of overheads shall provide the light vehicles and other contingencies to be meet the total breakup of all components together.

Note 2: Any provision provided in the estimate and facility not provided by the contractor, suitable recovery shall be made so that the contractor shall not have any undue benefit. The field engineer shall bestow of this regard in bringing timely to the notice of TIA/Agreement concluding authority for necessary action/recourse including recovery/deduction in respective bills.

FOOT NOTE TO SCHEDULE “A”

1. All the items of work will have to be executed as per standard specifications laid down in APSS and the special specifications and general features of design attached herewith. The quoted offer shall include all operations described in the specifications and general features.
2. All the rates quoted in the Schedule ‘A’ shall be through rates in rupees and paise for completed item of work as per APDSS inclusive of all charges such as leads, lifts, classifications and incidental charges, all taxes and royalties etc.
3. The quantities given here are those upon which the lump sum cost of the work is based, but they are subjected to alternation, omission, deduction, or addition as provided for in the condition of the contract and not necessarily shown the actual quantities of work to be done.
4. It is to be expressly understood that the measured work is to be taken net (not withstanding any custom or practice to the contrary) according to the actual quantities placed and finished according to the drawing or as may be ordered from time to time by the Engineer-In-Charge and the cost calculated by measurement or weight at the respective prices without any additional charge for any necessary or contingent works, connected therewith. The rate shown is for the works in situ and complete in every respect.
5. All items of work will have to be executed as per standard specification laid down in A.P.S.S. the special specification and general features of design attached herewith. The quoted offer shall include all operation described in the said specification and general features and shall be inclusive of all charges such as leads, lifts, classification, incidental charges, all taxes, royalties, hire and operational charges of all T & P, security measures etc., complete.
6. Vernacular signature should be translated into English.
7. Addition and alternation in schedule or condition will disqualify the tender.
8. Steel centering should be used for all members involving the use of centering.
9. The tenderer should inspect the site & checkup the possible water source for carrying out work though out the year, monsoons or non monsoons irrespective of the quantum of rainfall and quote their offer accordingly. No subsequent claims for extra water leads will be entertained under any circumstances.
10. The contractor will not be entitled to claim any interest on arrears which he may be get on the final settlement of accounts.
11. The contractor shall make his own arrangement for the acquisition of stone and other quarries etc.
12. Metal and chips of the specified gauges will have to be stacked separately in the standard size after screening as per specifications before using on work.

ARTICLES OF AGREEMENT

Articles of Agreement made this _____ day of _____ 2023 between the **Chief Engineer**, APMSIDC, Mangalagiri on behalf of Managing Director, Andhra Pradesh Medical Services Infrastructure Development Corporation (here-in-after called the **Chief Engineer** which expression shall, where the context so admits include his successors in Office and assignees) of one part and _____ (here-in-after called the Contractor which expression shall where the context so admits include his heirs, executors, administrators and legal representatives) of the other part.

WHEREAS the APMSIDC, Mangalagiri, (herein after called the **Corporation**) are desirous of _____ and have caused an estimate of probable quantities contained in **Schedule A**, drawings and specifications describing the work to be done.

AND whereas the said Schedule A, drawings numbered serially from _____ (**Schedule B**) and the specifications (**Schedule C**) have been signed by the parties hereto.

And whereas the contractor has agreed to the Retention by the Corporation, the Earnest Money of Rs. _____ (Rupees _____ only) vide DD No : _____ paid by him as security for the due fulfillment of the contract to the satisfaction of the Chief Engineer, APMSIDC.

AND whereas the contractor has also signed the copy of the **AP Standard Specifications** and addenda Volume thereto maintained by the authority who registered him/them in the appropriate class in acknowledgement of being bound by all conditions of the clauses of the **Standard Preliminary Specifications** for items of work described by a **Standard Specification Number** in Schedule-A in addition to having signed the "Tenderers" and Contractor certificate in acknowledgement of being bound by all the conditions of the Standard Preliminary Specifications and all the Standard Specifications for item of work, described by the Standard Specification Number in **Schedule A**.

AND whereas the contractor has agreed to execute upon and subject to the conditions set forth in the preliminary specification of the **Andhra Pradesh Detailed Standard Specifications** and such other conditions as are contained in all the specifications forming part of this contract (herein after referred to as the said conditions) the works shown upon the drawings and described in the said specifications and set forth in **Schedule A** as the "Probable quantities" and comply with the rate of progress noted at the end of this Articles of Agreement for a sum of Rs _____ (Rupees _____ only) or such other sum as may be arrived at under the Clauses of the Standard Preliminary Specifications relating to payment on lump sum basis or by final measurement at unit prices.

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NOW IT IS HEREBY AGREED AS FOLLOWS

In consideration of the payment of the said sum of Rs _____ or such other sum as may be arrived at under the clauses of the Standard Preliminary Specifications relating to payment on lump sum basis or by final measurement at unit price, the contractor will upon and subject to the said conditions execute and complete the works shown upon the said drawings and described in the said specifications and to the extent of probable quantities shown in the **Schedule 'A'** with such variations by way of alterations additions to, or deductions from the said works and method of payment there for as are provided for the said conditions.

The term **Executive Engineer** in the said conditions shall mean the officer of the Corporation in charge of the **Division** having jurisdiction for the time being over the work, who shall be competent to exercise all the powers and privileges reserved herein in favour of the Corporation with the previous sanction of or subject to ratification by the **Chief Engineer** of the Corporation in cases where such sanctions or ratification may be necessary.

The plans, agreement and documents above mentioned shall form the basis of this contract and the decision of the said Executive Engineer as to the materials, workmanship and to the intended interpretation of clauses of the Agreement or any other document attached here to shall be final and binding on both parties.

The said contract comprises of the building work above mentioned and all subsidiary works connected there with within the same site as may be ordered to be done from time to time by the said Executive Engineer, even though such works may not be shown on the drawing or described in the said specifications of the priced schedule of quantities.

The Chief Engineer through the Executive Engineer reserves to himself the right of altering the drawings and nature of the work and adding or omitting any items of work or of having portions of the same carried out departmentally or otherwise and such alterations or variations shall be carried out without prejudice to this contract.

If at any time after the commencement of the work, the Chief Engineer for any reason whatsoever does not require part thereof as specified in the tender to be carried out the Executive Engineer / Chief Engineer shall give notice in writing of the fact of the Contractor who shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not derive in consequences of the full amount of the work not having been carried out, neither shall he have any claim for compensation by reason of any alterations having been made in the original specifications, drawings designs and instructions which shall involve any curtailment of the work as originally contemplated.

Time shall be considered as essence of the Agreement and the contractor hereby agrees to commence the work as soon as his Agreement is accepted by the Chief Engineer and the site (or premises) is handed over to him as provided for in the said conditions and agrees to

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complete the work within the period of 30 months from the date of concluding agreement and to show progress as defined in the tabular statement Rate of progress, subject nevertheless to the provisions for extension of time contained in Clause 59 of the Standard Preliminary Specifications.

The Arbitrator for fulfilling the duties set forth in the arbitration clauses of the standard preliminary specifications shall be as defined with tender conditions vide item No.24 of conditions of contract (A.General) enclosed to the contract.

The said conditions shall be read and construed as forming part of the agreement and the parties have to respectively abide by and submit themselves to the conditions and stipulations and perform the agreement in their parties respectively.

Upon the terms and conditions of this agreement being fulfilled and performed to the satisfaction of the Corporation, the balance amount including any deposit of the contractor shall be returned after the expiry of liability period i.e. 24 months + defects correction period whichever is later after virtual completion of work as per drawings and tender conditions.

Payment will be made to the contractor under the certificate to be issued at reasonably frequent intervals by the Executive Engineer. Intermediate payment will be made by the Executive Engineer of a sum equal to 92½% of the value of work done as so certified and balance of 7½% will be withheld and retained as security for the due fulfillment of the contract under the certificate to be issued by the Engineer-in-Charge. On completion of the entire construction works in the Project the contractor will receive the 95% of the total payment of all the money due or payable to him under or by virtue of the Contract, i.e. 5% of the 7.5% retained from each bill will be released on Completion of all Works in the Project. The 2.5% retained from each bill and 2.5% of Contract Value submitted as Performance Security shall be released later as explained below. The amount withheld from each bill amounting to 2.5% of the Contract value (work done value) will be released after completion of the 24 months Defects Liability Period (DLP) or rectification of any defects identified during the DLP. The balance 2.5% submitted as the Performance Security shall be retained as security till the completion of Maintenance Period (84 months from the time of Construction / 60 months from the completion of DLP, whichever is later). This 2.5% of the Contract Value shall be released only after the successful completion of Maintenance Period as certified by the Medical Superintendent.

Under provisions of sections 194 (c) in the Income Tax Act under the Finance Bill, Income Tax as prescribed by the Government from time to time, on each and every payment made to the contractor will be deducted at source and will be credited to the Income Tax Department and necessary certificates will be issued to the contractor.

All disputes arising out or in any way connected with this agreement shall be deemed to have arisen in Amaravathi, Andhra Pradesh and only the court in Amaravathi, Andhra Pradesh shall have jurisdiction to determine the same.

In witness whereof the Contractor _____ has here into set his hands and Chief Engineer, APMSIDC on behalf of and by the order and direction of the Corporation has here up to set his hand the day and year first above written.

Signature of the Contractor _____

Address:

PRICE BID

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Name of the Work: **Establishment of New Government Medical College at Parvathipuram in Parvathipuram Manyam District.**

ESTIMATE CONTRACT VALUE (in figures & words): **Rs.419,47,43,179/-**

(Rupees Fourhundred nineteen crores fortysevenlakhsforty threethousandone hundred andseventynineonly)

I/We Sri / Smt. / M/s. do hereby express my / our willingness to execute the aforesaid work as per the conditions, standards, specifications, rules, regulations, etc., stipulated in the tender documents.

- a) At an overall tender percentage of
(In figures)
.....
(In words) **Less** over estimated value.

OR

- b) At Estimate Value.

SIGNATURE, NAME OF THE TENDERER / AUTHORISED SIGNATORY

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FORMATS OF SECURITIES

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PROFORMA
BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

(At the time of submission of tender)

WHEREAS (Name of the Contractor)
(here in after called "the Tenderer") has submitted his tender response to NIT
No..... dated-..... for the work "
....."
(Name of work) (hereinafter called "the tender").

KNOWN ALL MEN by these present that we
..... (Name and Address of Bank)
..... (here in after called "the Bank" are bound unto the Managing
Director, APMSIDC, Mangalagiri) in the sum of for which
payment will and truly to be made to the said Department, the Bank binds itself, his successors
and assigns by these presents.

SEALED with the Common Seal of the Bank this day of200....
THE CONDITIONS of this obligation are--

- (1) If after Tender opening the tenderer withdraws or modifies his Bid during the period of bid validity specified in the Form of Tender.
- (2) If the Tenderer having been notified of the acceptance of his bid by the Department during the period of validity.
 - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Tenderers, if required; or
 - (b) fails or refuses to furnish the balance EMD and additional performance Security in accordance with the instructions of Tenderers.

We undertake to pay to the Department up to the above amount upon receipt of his first written demand, without the Department having to substantiate his demand, provided that in his demand the Department will note the amount claimed by him is due to him owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date after the dead line for submission of Tenders as such deadline is stated in the Instructions to Tenders or as it may be extended by the Department, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE..... SIGNATURE OF THE BANK

WITNESS..... SEAL.....

(Signature, Name and Address)

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CHIEF ENGINEER

SOLVENCY CERTIFICATES BY MANDAL REVENUE OFFICER

Annexure – I (a)

I, _____ Mandal Revenue Officer, of
_____ do hereby certify, on being satisfied by the
Examination of Revenue and other records and local enquiries that _____
_____ *[here the name and address of the contractor should
be mentioned]* is solvent to the extent of Rs. _____ [Rupees _____
_____].

Date -

Place-

MANDAL REVENUE OFFICER

SEAL OF THE OFFICE

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CHIEF ENGINEER

Annexure – I (b)

FORM OF SOLVENCY CERTIFICATE BY BANKS

I, _____ Managing Director /
Manager / General Manager / Agent of _____
Bank Limited do hereby certify that a _____
_____ *[here the Names and addresses of the contractor]* to be solvent
to the extent of Rs. _____ [Rupees _____
_____] as disclosed by the information and record which are
available with the aforesaid bank.

For the _____ Bank

Date-

Place-

Signature of Bank Manager

[Authorised to Sign]

Note: The Solvency Certificate issued by the Bank in their proforma as per the Guidelines of RBI also be accepted

**FORMAT FOR EVIDENCE OF ACCESS TO OR
AVAILABILITY OF CREDIT FACILITIES
(CLAUSE 8 (iii) OF TENDER NOTICE)**

(From Nationalised Banks / Scheduled Banks)

BANK CERTIFICATE

This is to certify that M/s. is a reputed company with a good financial standing. If the contract for the work namely is awarded to the above firm, we shall be able to provide over draft/credit facilities to the extent of Rs..... to meet their working capital requirements for executing the above contract.

Signature of Sr. Bank Manager

Name of Bank

Address of Bank

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PROFORMA
BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

(At the time of Agreement)

_____ (name & address of Department)

WHEREAS _____

_____ (name and address of Contractor) (hereinafter called
“the Contractor”) has undertaken, in pursuance of Contract No. _____ dated-
_____ to execute the work of _____ [name of work];

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a Schedule bank for the sum specified therein as EMD for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ [amount of guarantee] _____ [in words], such sum being payable and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to..... i.e., until 28 days from the date of expiry of the Defects Liability period.

Signature & seal of the Guarantor _____

Name of Bank _____

Address _____

Date _____

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CHIEF ENGINEER

PROFORMA

BANK GUARANTEE FOR ADDITIONAL SECURITY DEPOSIT

_____ (name and address of Department)

WHEREAS _____ (name and address of Contractor)
(hereinafter called “the Contractor”) has undertaken, in pursuance of Contract No. _____
dated- _____ to execute _____ [name of Contract and brief
description of works] (hereinafter called “the Contractor”);

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a Schedule bank for the sum specified therein as Additional further security bank guarantee for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs. _____ [amount of guarantee] _____ [in words], such sum being payable and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to and until 28 days from the date completion.

Signature & seal of the Guarantor _____
Name of Bank _____
Address _____
Date _____

SELF DECLARATION FOR SELECTED PRE-QUALIFICATION CRITERIA (TECHNICAL)

(To be scanned 1) Self Declaration & 2) copy of EMD (DD/BG) with notarized affidavit for Genuinity of EMD)

Note: This document does **NOT** provide an exhaustive list of all the eligibility, technical and commercial requirements for this tender and is to be read in conjunction with the eligibility, technical and commercial requirements as specified in the SBD. Providing proof for the parameters specified only in this Form shall **NOT** guarantee qualification of the bidder. Supporting documents shall be provided for **ALL** the eligibility, technical and commercial requirements specified in this Form as well as the Standard Bid Document.

Instructions to the Bidder:

- (i) This Form provides selected minimum technical and commercial requirements for each bidder to be awarded the tendered works.
- (ii) The bidder is expected to declare values against each of the identified criteria and to sign the declaration provided at the end of this Form.
- (iii) The declared values (by bidders) should meet the minimum requirements mentioned.
- (iv) All self-declarations are to be supported with relevant validating documents, some of which may have been identified in the SBD.
- (v) The bidder is advised to provide clear proof for all eligibility, technical and commercial requirements and to provide Letters of Explanation where he deems that further justification is required.

The Technical and Commercial Criteria defined below are subject to additional terms and conditions specified in the SBD and should not be construed to be standalone representatives of determination of qualification.

Technical Pre-Qualification Criteria

S.No	Description	Required	Units
1	Experience Certificates in support of satisfactory execution of similar nature of Building works during financial years from 2018-19 to 2022-23 :	Rs.76.09 crores(updated to 2023-24 level)	Rupees
2	Liquid assets or credit facilities or Solvency Certificate from Indian Nationalized or Scheduled Banks in their Proforma as per the Guidelense of the RBI (or) the Net Worth Certificate issued by the Chartered Accountant of value not less than	Rs.41.95 crores	Rupees
3	Minimum Quantities of works		
	A)Earth Work Excavation	19120	Cum

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S.No	Description	Required	Units
	B)PCC/ VRCC	13500	Cum
	C)Stone/Brick Masonry	5900	Cum
	D)Plastering	80000	Sqm
4	<p>Amount of EMD in the shape of Bank Guarantee/ Net banking/RTGS/NEFT / Credit Card / Debit Card (All bidders shall upload the scan copy of the DD/BG for EMD/proof of paying EMD as per G.O.Ms.No.12 of Information Technology, Electronics & Communications Department dated 01.06.2016 along with notarized affidavit for Genuinity of EMD, failing which their Initial Price Offer shall not be opened and they will not be taken forward into the reverse auction)*</p> <p>As per GO.Ms.No.50 of Water Resources (Reforms) Dept., dt.15-10-2020 the bidder has to ensure that the Bank Guarantee issuing Bank shall confirm the genuineness of the Bank Guarantee and the same shall be sent to the mail id ce.aphmhidc@gmail.com on or before 5.00 PM on -12-2023</p>	Rs.419.50 lakhs	Rupees
5	Validity of EMD	6	Months
6	Bid Capacity (2AN-B)		Rupees
7	Civil Contractors/Contracting firms/lead partner of JV having registration in appropriate class registered with Government of Andhra Pradesh or in terms of CPWD or PWD codes in anywhere in the Country.	Special Class(Civil) in AP or equivalent Class	Class
8	Joint Venture	Copy of MoU to be submitted	MoU

Declaration and Undertaking:

In any one year in the same name and style during last 5 (five) years (2018-19 to 2022-23) up dated by giving 10% simple weightage per year to bring them to 2023-24 price level.

Similar works means, construction of building work.

* Submission of Hard Copies of uploaded Scan copies of Demand Draft /Bank Guarantee towards EMD by participating bidders to the tender Inviting authority before opening of Price Bid is dispensed with as per Government. GO MS. No. 50 (WR(R) Dept) dated 15.10.2020, it cannot be insisted to produce original hard copy of BG with tender submission, so that the

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intending bidders identity to others may not be revealed by physical presence and for all transparency. It is the duty of the bidder to coordinate with the employer and the banker to give response by banker to the letter of employer to bank on genuineness of bank guarantee. The banker shall be intimated that without letter of employer, the bank guarantee cannot be revoked during its validity period. The bidders shall also furnish a declaration online stating that the soft copies of documents etc., uploaded by them are all genuine and the originals are available with him/them/it and the same being produced as and when required. Any incorrectness/ deviation if noticed that can be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action can be initiated including suspension from participating in the tenders / blacklisting and the like. Only those bids will be evaluated and considered for comparison to arrive at L1 value and allowed to participate in reverse bidding in whose favour an authorised communication or a letter or a scanned and uploaded copy of that letter on e-procurement Website or an e-mail from the issuing bank or any authorised communication from the bank with regard to issue of the Bank Guarantees/ Demand Draft is sent to the Tender Inviting authority within the stipulated time. All Bank Guarantees uploaded by all Bidders would be verified with the issuing Bank, subsequently and if any uploaded Bank Guarantee is found to be forged or tampered with or fake, then it would be considered as fraud and would be liable for criminal action invariably. All the bidders shall invariably upload the scanned copies of Demand Draft /Bank Guarantee in e- Procurement system and this will be the primary requirement to consider the bid as responsive. The Department shall carry out the technical bid evaluation solely based on the uploaded certificates / documents, DD / BG towards EMD/ affidavit, in the e-Procurement system and open the price bids of the responsive bidders and proceed further for reverse auctioning. The Department will notify the successful bidder for submission of original hard copies of all uploaded documents, DD / BG towards EMD prior to entering into agreement within the stipulated date shall be the responsibility of the successful bidder. If any successful bidder fails to submit the original Hard Copies of uploaded certificates / Documents, DD / BG towards EMD within the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on eProcurement platform for a period of 3 years. The e-Procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger / recommendation by the Tender Inviting Authority in the system. Besides this, the Department shall invoke all Processes of Law including criminal prosecution of such defaulting bidder as an act of extreme deterrence to deter frivolous bidders and to avoid delays in the tender process for execution of the development schemes taken up by the Government. The information to this extent may be displayed in the e- Procurement platform website and all Government. Dept./Public Sector Units/ Local Bodies/Autonomous Bodies in AP would prevent such bidders from participating in the bidding process. The bidder shall file scanned copy of an affidavit duly notarized to the effect that the information in the documents submitted is genuine and true with undertaking for criminal prosecution if anything found in the information is untrue besides right of the employer to terminate the contract and for other legal recourse. Where the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if anything found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse..

I hereby declare that all the above furnished information is true to the best of my knowledge and is validated by relevant supporting documents provided with this Form. I am also aware that in case of any variations between the supporting documents or field visits and the above furnished information, the firm I represent is liable to be disqualified from the current tender and EMD can be forfeited.

Signed:

Name and Designation:

Date:

Place:

`Rs.100/- Non judicial Stamp Paper*

JOINT VENTURE AGREEMENT

This Agreement is made and entered into on this _____ of _____, 2021 by and between

Between

M/s. _____, a Contractor /Firm /Company having its registered office at _____ (address) Andhra Pradesh, India (here in after referred to as “_____ the first part”), represented by its Managing Director, Sri _____, who is authorized to execute any document on behalf of the Company.

AND

M/s. _____ having its registered office _____, Andhra Pradesh, India (hereinafter referred to as second party, represented by its Managing Director, Sri. _____, who is authorized to execute any document on behalf of the company.

Whereas _____ is a private Limited Company registered under Indian companies Act., 1956 and the said company has undertaken _____ etc., thereby gained vast experience in execution of big of prestigious projects all over India.

_____ is a limited company registered under Companies Act., 1956 and the said company has undertaken several _____ etc., and successfully completed the same and thus gained rich experience in the field of Civil Engineering.

Whereas the Managing Director, APMSIDC, (An Enterprises of Government., of Andhra Pradesh) (MD / Employer) has invited tenders vide **Tender Notice No./APMSIDC/TECHNICAL/2023-24 dated..11.2023 Name of Work: Establishment of New Government Medical Colleges at Parvathipuram in Parvathipuram Manyam District.**

(Hereafter referred to as the “projects”).

*** (duly registered with the registrar of firm by the time of letter of acceptance subjected to giving undertaking to comply before entering into contract/agreement)**

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Whereas the Parties desire to co-operate in the preparation and submission of the qualification criteria to qualify and if qualified and if awarded the contract(s) to execute the project(s).

NOW, THEREFORE, and in consideration of the foregoing premises and the covenant set forth under, the parties have agreed to establish and constitute by and between themselves a joint venture for the exclusive purpose of participating in the tenders for projects and actually undertaking execution thereof, should the parties be successful in being awarded the project(s) by the employer'.

NOW THE AGREEMENT WITNESSETH AS FOLLOWS.

The parties hereby agree to form a joint venture (not incorporated) under the name of _____ JV specifically for the project(s). The Head office of the Joint venture shall unless otherwise decided later be situated at _____.

The purpose of the Joint Venture are:-

- A. To Jointly prepare and submit the qualification criteria for the projects.
- B. To Jointly prepare and submit the tender for the project(s) in the name of the joint venture.
- C. To execute the Project(s) in accordance with the terms and conditions of the Contract to be made between Chief Engineer APMSIDC (on behalf of the Employer) and the Joint Venture, if the Contract is awarded to the Joint Venture.

No party shall directly or indirectly, alone or together with a third party, prepare or submit the qualification criteria and / or the tender for the project(s) for the duration of this agreement i.e we will not enter into Joint venture partnership with another bidder / firms for any other bid during execution of the contract if awarded.

Nothing contained herein is intended to create a partnership or any separate legal or corporate entity. No Party has the right to represent the other Party or to enter into any commitment on behalf of the other Party without prior written consent of the other party.

We the joint venture shall be responsible, liable jointly and severally for the execution of contract in accordance with contract terms and a relevant statement to this effect shall be included in the MOU / Joint venture partnership deed.

2. Partner Incharge (Leading partner):

_____ shall act as partner incharge (leading partner) representing the Joint venture and shall have the authority to receive instructions for and incur liabilities on behalf of this joint venture during the entire execution of the contract. Payments shall be made in favour of joint venture only.

3. Participation Ratios:

Participation Ratio of each party shall be as follows:

Leading partner	-	Not less than 51%
Other partner	-	_____

Any and all profit or loss of the project shall be shared between the parties in proportion to Participation Ratio.

4. Authorized Representative for the Joint Venture:

Sri. _____, _____ of _____ is hereby severally appointed as authorized representative of the JV for submitting bids and to make any correspondence on behalf of the JV with the employer in regard to the above referred works.

5. Roles / Obligations:-

- 5.1 The Parties agree that for the execution of the whole of the work, the parties shall work in full integration in arrangement to bring the required finance (both Fund Based and Non-Fund Based), Plants and equipment, materials, man power and other resources in such manner as may be mutually agreed to for the successful completion of the project, with full commitments and responsibility.
- 5.2 It is agreed that the partner incharge(leading partner) after obtaining the written consent of the other J.V.partner is authorized to raise the required funds, resources for augmenting working capital and the JV is liable to liquidate the said liability of the extent that the same is brought into the regular books of accounts.

6. Joint and Several Liability:

The parties shall be jointly and severally liable towards the Employer, for any and all obligations which the Joint venture may incur in relation to the Contract which the joint venture may enter into with employer with liability unlimited.

7. Management Committee:-

For the purpose of the Joint venture policy and expediting decisions and approvals, requiring the action of the Joint Venture, it is hereby agreed to establish a Management Committee consisting of one representative from each constituent of joint venture with full power and authority from the Board of Directors of the concerned company, under the chairmanship of the representative of the partner incharge. The entire work of the contract shall be executed under the control and guidance of the Management Committee.

8. Operation of Bank Accounts and Payments:-

The Joint venture shall open and operate a bank account throughout the contract period into which all payments in respect of the project, in particular, all payments from the employer under the contract, shall be received. The Bank Account shall be operated by the person nominated by the Joint venture partners, to execute necessary power of attorney in favour of the nominated representatives as may be decided by the Management Committee.

9. Equipment:-

The Management Committee shall be entitled to own, hire or acquire such equipments, which may not be available with the joint venture partners.

10. Non – Performance of Responsibility by any of Joint Venture:-

- A. As between themselves, each party shall be fully responsible for the fulfillment of all obligations arising out of its scope of the work for the project subject to the

agreement between the parties and shall hold harmless and indemnified against any damage arising out from its default or non-fulfillment of such obligations.

- B. If any party fails to perform its obligations described in the agreement during the execution of the project and to cure such breach within the period designated by non-defaulting party, then the other parties shall have the right to take up work, the interest and responsibilities of the defaulting party at the cost of the defaulting party.

12. Governing Laws:-

The agreement shall be constructed and interpreted in accordance with the laws of India.

13. Confidentiality:-

All information acquired by any party from the other party shall be treated as confidential by the recipient and shall not be used other than for the purpose contemplated by this joint venture without the consent from the party providing the information.

14. Dispute and Settlement:-

Any dispute or difference between the parties arising out of, or in connection with this joint venture agreement which cannot be resolved amicably between the parties at the level at which it arose within 15 days thereof shall, in the first instance, be referred to the Management of each party for resolution within the next 30 days.

If the said dispute can't be settled within the said 30 days, then all disputes arising out of or in connection with this joint venture agreement shall be finally settled by arbitration as provided under the arbitration & conciliation Act., 1996, and any amendment thereto or re-enactment thereof. The venue of the arbitration shall be at Mangalagiri. The courts in Amaravathi, Andhra Pradesh shall have exclusive jurisdiction to try any matter arising out of agreement.

15. Termination:-

This Agreement shall terminate upon any of the following:

- a. Employer reject the technical bid for not satisfying the qualification criteria (to accept application for pre-qualification)
- b. Employer cancels the project(s).
- c. The Parties fail to reach an agreement on the important terms and conditions of the Bid, including but not limited to Tender Price.
- d. Any Party commits material breach of this Agreement and fails to cure such defects within a reasonable period.

16. Assignment:-

No member firms shall assign, encumber or transfer its interests in, or any assets or revenue of the joint venture, or any of its rights or obligation under this agreement without obtaining the prior written consent of the other party.

17. Any of the terms of this agreement may be amended, modified or otherwise be dealt with provided that the same shall be in writing and which shall have the same effect as if embodied in this agreement and shall form part of this agreement.

18. On witness where of both the parties have executed this joint venture agreement on the day month and year first above mentioned.

For and on behalf of
1.

For and on behalf of
2.

Witness

Witness

for Joint venture

Authorized signatory

PHOTO GRAPHS AND FINGER PRINTS AS PER 32A OF REGISTRATION ACT, 1908

Sl:No	Finger Print in Black (Left Thumb)	Passport Photograph (Black and White)	size (Black)	Name & Permanent Postal Address of the Firms/Bidders/Joint ventures .
1				
2				

SIGNATURE OF THE WITNESS

- 1)
- 2)

SIGNATURE

- 1)
- 2)

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Affidavit to be submitted at the time of submission of tendering

In case the bidder submits that there are no existing commitments and ongoing works anywhere in the country, he shall file an affidavit to that effect duly notarized with undertaking for criminal prosecution if any thing found in the affidavit information is untrue besides right of the employer to terminate the contract and for other legal recourse.

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Lease Agreement for critical equipment to be submitted at the time of submission of tendering:

To furnish the written lease agreement in case own equipment is not available as per the requirement, the lease period shall be for a period not less than 33 months. Proof of holding the critical equipment by the lease holder shall be uploaded.

BILL OF QUANTITIES

**Establishment of New Government
Medical College at Parvathipuram in
Manyam District**

**Name of the Work: Establishment of Government Medical College at Parvathipuram
in Parvathipuram Manyam District.**

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
1	35004.00 Sqm	Clearing light Jungle / Scrub Jungle from Prposed site for construction of Medical College a ias per the approval of the Engineer-in-charge	ONE Sqm	3.00	105012
2	100.00 Hour	Dismantling of existing dilapidated buildings including items like un-reinforced concrete, reinforced concrete, brick masonry, stone masonry etc., using Dozer (D 50) including all hire, operational, incidental, labour charges and overheads & contractors profit etc. complete finished item of work	ONE Hour	2167.00	216700
3	82387.10 CUM	Earth work excavation for foundations (Manual Means) of buildings, septic tank, sump, compound wall in ordinary soils and depositing on bank with an initial lead of 10m and depth up to 3m including all operational, incidental, labour charges such as shoring, sheeting, planking, strutting etc., and overheads & contractors profit complete for finished item of work excluding dewatering charges etc., as per SS 20 B(APSS 308)	ONE CUM	278.00	22903614
4	5240.00 CUM	Earth work excavation for foundations (Mechanical Means) for buildings in ordinary soils and depositing on bank for all lifts and with an initial lead of 10m and 3m to 6m depth including all operational, incidental, labour charges such as shoring, sheeting, planking, strutting etc., and overheads & contractors profit complete for finished item of work excluding dewatering charges etc., as per SS 20 B(APSS 308)	ONE CUM	130.00	681200
5	7977.50 CUM	Earth work excavation for foundations (Manual Means) of buildings in ordinary rock (not requiring blasting) and depositing on bank with an initial lead of 10m and depth up to 3m including all operational, incidental, labour charges such as shoring, sheeting, planking, strutting etc., and overheads & contractors profit complete for finished item of work excluding dewatering charges etc., as per SS 20 B(APSS 308)	ONE CUM	397.00	3167068
6	57308.00 CUM	Conveyance of un-useful dismantling debris to a distance of 5 KM for disposal including hire charges of T & P, labour charges etc., and overheads & contractors profit complete for finished item of work.	ONE CUM	113.00	6475804

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
7	31890.72 SQM	Pre construction Anti termite treatment is a process in which chemical toxic to subterrean tremites is apply/ inject into soil during early stage of building Construction 2. Treatment of soil Beneath the building and around the foundations conduct and chemical use as per BIS - IS 6313 (Part -2) 2013 code specification & CIB RC registered termiticide which creates a continuous chemical barrier beneath the building which kills or repels terminates & impervious to tremite entry 3. Imidacloprid 30.5% SC (IS 63131) dissolve 2.1 MI/1 liter of water and apply emulsion/solution @ 7.5 Litres/Square meter (Sqm) of internal, external vertical surface of the columns, plinth beams (Back filling) walls and floor junction, external perimeters, along reatining wall @ 5.0 Liters/Sqm of the horizontal surface of basement top surface of the basement filling below flooring bed (Plinth) & @ 2.0 Litres/ Line meter at expansion joints. The substructure of a depth of 500mm around coulms & 300mm deep around plinth beams, basements & floor filling area including excavation channel along the wall & rodding etc. cost & Conveyance of all materials to the site, cost of labour for sparying, rodding, overheads and contractor profit etc. complete for furnished item of work as per the approval of the Engineer-in-charge	ONE SQM	195.00	6218691
8	2738.50 CUM	Supply and placing of Plain Cement Concrete M 7.5 grade for foundations using coarse aggregate 40mm size hard, machine crushed granite from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete for finished item of work (APSS No. 402)	ONE CUM	3176.00	8697476
9	3582.25 CUM	Supply and placing of Plain Cement Concrete M 5 grade for foundations using coarse aggregate 40mm size hard, machine crushed granite from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete for finished item of work (APSS No. 402)	ONE CUM	3015.00	10800484
10	2314.35 CUM	Supply and placing of Vibrated Plain Cement Concrete M 10 grade for foundations using 40mm, 20mm and 10mm size machine crushed hard granite metal (coarse aggregate) in (2:2:1) ratio from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site including all operational, incidental and labour charges, transporting concrete in transit mixer, vibrating, curing etc., and overheads & contractors profit complete for finished item of work (APSS No. 402)	ONE CUM	3760.00	8701956
11	69843.75 CUM	Filling with useful available excavated earth (excluding rock) with a lead of 50 m in trenches, sides of foundations and basement with initial lead in layers not exceeding 15cm thick, watering and ramming including cost and conveyance of water to work site and all operaitonal, incidental, labour charges, hire charges of T&P etc., and overheads & contractors profit complete for finished item of work (APSS NO.309&310)	ONE CUM	40.00	2793750

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
12	49164.94 CUM	Filling with carted gravel in trenches,sides of foundations and basement with initial lead in layers not exceeding 15cm thick,watering and ramming including cost and conveyance of water to work site and all operaitonal,incidental, labour charges,hire charges of T&P etc., and overheads & contractors profit complete for finished item of work(APSS NO.309&310)	ONE CUM	289.00	14208668
13	953.00 CUM	Filling with carted coarse sand in trenches, sides of foundations and basement with initial lead in layers not exceeding 15cm thick,watering and ramming including cost and conveyance of water to work site and all peraitonal,incidental ,labour charges,hire charges of T&P etc., and overheads & contractors profit complete for finished item of work(APSS NO.309&310)	ONE CUM	895.00	852935
14		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard trap metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand) coarse aggregate, water etc., to site, centering using Steel scaffolding pipes , jack props , wallers , Foot plates , brackets , steel centering plates etc. , including all operational, incidental and labour charges, transporting concrete in transit mixer, lifting and laying concrete using concrete pump, curing etc., and overheads & contractors profit complete but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402)			
	a) 3151.67 CUM	Footings	ONE CUM	7498.00	23631222
	b) 311.28 CUM	Column Pedastals	ONE CUM	8087.00	2517321
	c) 2082.41 CUM	Plinth Beams	ONE CUM	8169.00	17011207
	c) 6339.24 CUM	Raft Slab	ONE CUM	6811.00	43176564
	d) 2445.00 CUM	Base slab for Sump:	ONE CUM	6811.00	16652895
	e) 18.40 CUM	Haunch	ONE CUM	6240.00	114816
15		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard trap metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand) coarse aggregate, water etc., to site, centering using Steel scaffolding pipes , jack props , wallers , Foot plates , brackets , steel centering plates etc. , including all operational, incidental and labour charges, transporting concrete in transit mixer, lifting and laying concrete using concrete pump, curing etc., and overheads & contractors profit complete but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402)			
	a)	Columns			
	i)	un supported height up to 4.27 m			
	81.33 CUM	Celalr Floor :	ONE CUM	12818.00	1042488
	1012.31 CUM	First Floor :	ONE CUM	12818.00	12975790
	827.00 CUM	Second Floor	ONE CUM	13203.00	10918881

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	789.60 CUM	Third Floor :	ONE CUM	13586.00	10727506
	693.80 CUM	Fourth Floor :	ONE CUM	13971.00	9693080
	493.80 CUM	Fifth Floor :	ONE CUM	14354.00	7088005
	427.80 CUM	Sixth Floor	ONE CUM	14739.00	6305344
	408.80 CUM	Seventh Floor	ONE CUM	15123.00	6182282
	148.40 CUM	Eigth Floor	ONE CUM	15508.00	2301387
ii)		un supported height up to 4.88 m			
	38.70 CUM	First Floor :	ONE CUM	13437.00	520012
iii)		un supported height up to 5.49 m			
	59.40 CUM	First Floor :	ONE CUM	14056.00	834926
iv)		un supported height up to 6.10 m			
	150.00 CUM	First Floor :	ONE CUM	14675.00	2201250
v)		un supported height up to 7.32 m			
	138.30 CUM	First Floor :	ONE CUM	15876.00	2195651
v)		un supported height up to 8.54 m			
	290.00 CUM	First Floor :	ONE CUM	17108.00	4961320
vi)		un supported height up to 11.59 m			
	465.00 CUM	First Floor :	ONE CUM	20188.00	9387420
b)		Roof Beams			
i)		un supported height up to 4.27 m			
	249.35 CUM	Basement Floor :	ONE CUM	11343.00	2828377
	1141.55 CUM	First Floor :	ONE CUM	11343.00	12948602
	1225.05 CUM	Second Floor	ONE CUM	11666.00	14291433
	1048.65 CUM	Third Floor :	ONE CUM	11987.00	12570168
	958.65 CUM	Fourth Floor :	ONE CUM	12310.00	11800982
	592.35 CUM	Fifth Floor :	ONE CUM	12633.00	7483158
	570.35 CUM	Sixth Floor :	ONE CUM	12956.00	7389455
	464.35 CUM	Seventh Floor :	ONE CUM	13277.00	6165175
	94.40 CUM	Eigth Floor :	ONE CUM	13600.00	1283840
ii)		un supported height up to 4.88 m			
	38.70 CUM	First Floor :	ONE CUM	12216.00	472759
iii)		un supported height up to 5.49 m			
	59.00 CUM	First Floor :	ONE CUM	13090.00	772310
iv)		un supported height up to 6.10 m			
	99.00 CUM	First Floor :	ONE CUM	13963.00	1382337
v)		un supported height up to 7.32 m			
	314.80 CUM	First Floor :	ONE CUM	15709.00	4945193

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
v)		un supported height up to 8.54 m			
	56.00 CUM	First Floor :	ONE CUM	17455.00	977480
vi)		un supported height up to 11.59 m			
	18.00 CUM	First Floor :	ONE CUM	22694.00	408492
vii)		un supported height up to 12.20 m			
	382.00 CUM	First Floor :	ONE CUM	23568.00	9002976
c)		Roof Slab 125mm thick			
i)		un supported height up to 4.27 m			
	1813.00 SQM	First Floor :	ONE SQM	1365.00	2474745
	1403.00 SQM	Second Floor :	ONE SQM	1403.00	1968409
	1403.00 SQM	Third Floor :	ONE SQM	1441.00	2021723
	34.00 SQM	Fourth Floor :	ONE SQM	1479.00	50286
ii)		un supported height up to 4.88 m			
	273.00 SQM	First Floor :	ONE SQM	1466.00	400218
iii)		un supported height up to 5.49 m			
	137.00 SQM	First Floor :	ONE SQM	1568.00	214816
iv)		un supported height up to 6.10 m			
	540.00 SQM	First Floor :	ONE SQM	1669.00	901260
iv)		un supported height up to 7.32 m			
	1120.00 SQM	First Floor :	ONE SQM	1872.00	2096640
d)		Roof Slab 150mm thick			
i)		un supported height up to 4.27 m			
	8691.40 SQM	First Floor :	ONE SQM	1495.00	12993643
	7668.40 SQM	Second Floor :	ONE SQM	1534.00	11763326
	5823.40 SQM	Third Floor :	ONE SQM	1572.00	9154385
	4301.40 SQM	Fourth Floor :	ONE SQM	1610.00	6925254
	3782.40 SQM	Fifth Floor :	ONE SQM	1648.00	6233395
	4630.40 SQM	Sixth Floor :	ONE SQM	1688.00	7816115
	3855.40 SQM	Seventh Floor :	ONE SQM	1704.00	6569602
	634.00 SQM	Eigth Floor :	ONE SQM	1743.00	1105062
ii)		un supported height up to 4.88 m			
	508.00 SQM	First Floor :	ONE SQM	1597.00	811276
iii)		un supported height up to 6.10 m			
	700.00 SQM	Second Floor :	ONE SQM	1800.00	1260000
e)		Roof Slab 175mm thick			
i)		un supported height up to 4.27m			
	360.00 SQM	First Floor :	ONE SQM	1647.00	592920
	495.00 SQM	Second Floor :	ONE SQM	1686.00	834570

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	865.00 SQM	Third Floor :	ONE SQM	1726.00	1492990
	652.00 SQM	Fourth Floor :	ONE SQM	1764.00	1150128
ii)		un supported height up to 4.88 m			
	166.00 SQM	First Floor :	ONE SQM	1751.00	290666
f)		Roof Slab 200mm thick un supported height up to 4.27m			
	414.00 SQM	First Floor :	ONE SQM	1777.00	735678
	604.00 SQM	Second Floor :	ONE SQM	1817.00	1097468
	1478.00 SQM	Third Floor :	ONE SQM	1857.00	2744646
	1410.00 SQM	Fourth Floor :	ONE SQM	1895.00	2671950
	636.00 SQM	Fifth Floor :	ONE SQM	1935.00	1230660
	437.00 SQM	Sixth Floor :	ONE SQM	1975.00	863075
	290.00 SQM	Seventh Floor :	ONE SQM	2014.00	584060
f)		Roof Slab 250mm thick un supported height up to 4.27m			
	180.00 SQM	Basement Floor :	ONE SQM	2039.00	367020
	195.00 SQM	First Floor :	ONE SQM	2039.00	397605
	195.00 SQM	Second Floor :	ONE SQM	2079.00	405405
	195.00 SQM	Third Floor :	ONE SQM	2118.00	413010
	195.00 SQM	Fourth Floor :	ONE SQM	2157.00	420615
	45.00 SQM	Fifth Floor :	ONE SQM	2196.00	98820
16		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard trap metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand) coarse aggregate, water etc., to site,centering using Steel scaffolding pipes , jack props , wallers , Foot plates , brackets , steel centering plates etc. including all operational, incidental and labour charges ,transporting concrete using transit mixer, lifting and laying concrete using concrete pump, vibrating, curing , overheads & contractors profit etc., complete but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402)			
i)		Side walls 100 mm thick			
	28.50 Sqm	Third Floor :	ONE Sqm	2219.00	63242
ii)		Side walls 150 mm thick			
	380.50 Sqm	First Floor :	ONE Sqm	2504.00	952772
	9.50 Sqm	Second Floor :	ONE Sqm	2574.00	24453
	9.50 Sqm	Third Floor :	ONE Sqm	2643.00	25109
	65.00 Sqm	Seventh Floor :	ONE Sqm	2922.00	189930
l)		Side walls 200 mm thick			

S. No.	Quantity	Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
	9.50 Sqm	Fourth Floor	ONE	Sqm	3137.00	29802
	99.50 Sqm	Seventh Floor	ONE	Sqm	3346.00	332927
m)		225mm thick side walls				
	730.00 SQM	Cellar Floor :	ONE	SQM	3141.00	2292930
	354.00 Sqm	First Floor :	ONE	Sqm	3141.00	1111914
	136.60 Sqm	Second Floor	ONE	Sqm	3210.00	438486
	92.60 Sqm	Fourth Floor:	ONE	Sqm	3349.00	310117
	131.00 SQM	Sixth Floor :	ONE	SQM	3488.00	456928
	65.40 SQM	Seventh Floor :	ONE	SQM	3558.00	232693
	1.50 SQM	Eighth Floor :	ONE	SQM	3627.00	5441
n)		300mm thick side walls				
	1070.00 SQM	First Floor :	ONE	SQM	3777.00	4041390
n)		350mm thick side walls				
	319.00 SQM	First Floor :	ONE	SQM	4201.00	1340119
o)		375mm thick side walls				
	330.00 SQM	First Floor :	ONE	SQM	4413.00	1456290
n)		450mm thick side walls				
	851.00 SQM	First Floor :	ONE	SQM	5050.00	4297550
r)		600mm thick tank side walls				
	106.00 SQM	First Floor :	ONE	SQM	6322.00	670132
s)		Retaining Wall 300mm thick				
	150.00 SQM	First Floor :	ONE	SQM	3777.00	566550
17		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard trap metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand) coarse aggregate, water etc., to site, centering using Steel scaffolding pipes , jack props , wallers , Foot plates , brackets , steel centering plates etc., including all operational, incidental and labour charges ,transporting concrete using transit mixer, lifting and laying concrete using concrete pump, vibrating, curing , overheads & contractors profit etc., complete but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402)				
a)		Columns: un supported height up to 3.66 m				
	541.00 CUM	Cellar Floor :	ONE	CUM	12199.00	6599659
	1017.80 CUM	First Floor :	ONE	CUM	12199.00	12416142
	465.70 CUM	Second Floor	ONE	CUM	12529.00	5834755
	404.50 CUM	Third Floor :	ONE	CUM	12857.00	5200657
	365.10 CUM	Fourth Floor :	ONE	CUM	13187.00	4814574

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	354.00 CUM	Fifth Floor :	ONE CUM	13516.00	4784664
	219.20 CUM	Sixth Floor :	ONE CUM	13846.00	3035043
	170.10 CUM	Seventh Floor :	ONE CUM	14174.00	2410997
	110.65 CUM	Eight Floor :	ONE CUM	14504.00	1604868
	55.00 CUM	Ninth Floor :	ONE CUM	14833.00	815815
	28.00 CUM	Tenth Floor :	ONE CUM	15163.00	424564
	9.00 CUM	Eleventh Floor :	ONE CUM	15491.00	139419
b)		Roof beams: un supported height up to 3.66 m			
	915.00 CUM	Cellar Floor :	ONE CUM	10470.00	9580050
	801.10 CUM	First Floor :	ONE CUM	10470.00	8387517
	587.90 CUM	Second Floor	ONE CUM	10747.00	6318161
	536.32 CUM	Third Floor :	ONE CUM	11022.00	5911319
	489.62 CUM	Fourth Floor :	ONE CUM	11299.00	5532216
	354.80 CUM	Fifth Floor :	ONE CUM	11576.00	4107165
	331.50 CUM	Sixth Floor :	ONE CUM	11852.00	3928938
	259.50 CUM	Seventh Floor :	ONE CUM	12128.00	3147216
	103.20 CUM	Eighth Floor :	ONE CUM	12405.00	1280196
	61.00 CUM	Ninth Floor :	ONE CUM	12681.00	773541
	46.00 CUM	Tenth Floor :	ONE CUM	12957.00	596022
	8.00 CUM	Eleventh Floor :	ONE CUM	13234.00	105872
c)		Roof slabs 125mm thick: un supported height up to 3.66 m			
	4451.50 SQM	First Floor :	ONE SQM	1263.00	5622245
	2131.00 SQM	Second Floor	ONE SQM	1296.00	2761776
	696.00 SQM	Third Floor :	ONE SQM	1328.00	924288
	195.00 SQM	Fourth Floor:	ONE SQM	1361.00	265395
	117.00 SQM	Fifth Floor :	ONE SQM	1394.00	163098
	479.00 SQM	Sixth Floor :	ONE SQM	1428.00	684012
	26.00 SQM	Seventh Floor :	ONE SQM	1461.00	37986
d)		Roof slabs 150mm thick: un supported height up to 3.66 m			
	6989.00 SQM	Cellar Floor :	ONE SQM	1394.00	9742666
	7521.72 SQM	First Floor :	ONE SQM	1394.00	10485278
	5772.00 SQM	Second Floor	ONE SQM	1427.00	8236644
	4619.00 SQM	Third Floor :	ONE SQM	1459.00	6739121
	4416.00 SQM	Fourth Floor:	ONE SQM	1492.00	6588672
	4090.00 SQM	Fifth Floor :	ONE SQM	1525.00	6237250

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	2683.00	SQM Sixth Floor :	ONE SQM	1559.00	4182797
	2367.00	SQM Seventh Floor :	ONE SQM	1592.00	3768264
	1110.00	SQM Eight Floor :	ONE SQM	1624.00	1802640
	510.00	SQM Ninth Floor :	ONE SQM	1657.00	845070
	410.00	SQM Tenth Floor :	ONE SQM	1690.00	692900
	30.00	SQM Eleventh Floor :	ONE SQM	1722.00	51660
e)		Roof slabs 160mm thick: un supported height up to 3.66 m			
	10.00	SQM First Floor :	ONE SQM	1464.00	14640
f)		Roof slabs 175mm thick: un supported height up to 3.66 m			
	598.00	SQM Cellar Floor :	ONE SQM	1542.00	922116
	311.00	SQM First Floor :	ONE SQM	1542.00	479562
	314.20	SQM Second Floor	ONE SQM	1576.00	495179
	234.60	SQM Third Floor :	ONE SQM	1610.00	377706
	242.60	SQM Fourth Floor:	ONE SQM	1643.00	398592
	169.60	SQM Fifth Floor :	ONE SQM	1677.00	284419
	91.60	SQM Sixth Floor :	ONE SQM	1711.00	156728
	45.00	SQM Seventh Floor :	ONE SQM	1745.00	78525
g)		Roof slabs 200mm thick: un supported height up to 3.66 m			
	760.00	SQM First Floor :	ONE SQM	1673.00	1271480
	326.00	SQM Second Floor	ONE SQM	1707.00	556482
	276.00	SQM Third Floor :	ONE SQM	1741.00	480516
	276.00	SQM Fourth Floor:	ONE SQM	1774.00	489624
	236.00	SQM Fifth Floor :	ONE SQM	1808.00	426688
	236.00	SQM Sixth Floor :	ONE SQM	1842.00	434712
	317.00	SQM Seventh Floor :	ONE SQM	1876.00	594692
	222.00	SQM Eight Floor :	ONE SQM	1910.00	424020
	107.00	SQM Ninth Floor :	ONE SQM	1943.00	207901
	26.00	SQM Tenth Floor :	ONE SQM	1971.00	51246
f)		Roof slabs 225mm thick: un supported height up to 3.66 m			
	130.00	SQM First Floor :	ONE SQM	1804.00	234520
	67.00	SQM Second Floor	ONE SQM	1838.00	123146
	67.00	SQM Third Floor :	ONE SQM	1872.00	125424
	67.00	SQM Fourth Floor:	ONE SQM	1905.00	127635
	67.00	SQM Fifth Floor :	ONE SQM	1939.00	129913
f)		Roof slabs 250mm thick: un supported height up to 3.66 m			

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	32.00	SQM First Floor :	ONE SQM	1934.00	61888
18		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard trap metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand) coarse aggregate, water etc., to site, centering using Steel scaffolding pipes , jack props , wallers , Foot plates , brackets , steel centering plates etc. including all operational, incidental and labour charges ,transporting concrete using transit mixer, lifting and laying concrete using concrete pump, vibrating, curing , overheads & contractors profit etc., complete but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402)			
		Lintels			
	22.28	CUM Cellar Floor :	ONE CUM	12231.00	272507
	278.86	CUM First Floor :	ONE CUM	12231.00	3410737
	226.36	CUM Second Floor	ONE CUM	12465.00	2821577
	197.46	CUM Third Floor :	ONE CUM	12700.00	2507742
	157.76	CUM Fourth Floor	ONE CUM	12934.00	2040468
	99.36	CUM Fifth Floor :	ONE CUM	13169.00	1308472
	65.36	CUM Sixth Floor :	ONE CUM	13403.00	876020
	38.36	CUM Seventh Floor :	ONE CUM	13638.00	523154
	6.36	CUM Eighth Floor :	ONE CUM	13872.00	88226
	2.86	CUM Ninth Floor :	ONE CUM	14107.00	40346
	2.36	CUM Tenth Floor :	ONE CUM	14341.00	33845
	2.36	CUM Eleventh Floor :	ONE CUM	14576.00	34399
19		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand), coarse aggregate, water etc., to site, centering using casurina ballies , bamboos , wooden reapers , runners , wood posts , wall plates etc., for 45cm wide sunshades 7.5cm thick at fixed end and 5cm thick at free end with an average thickness of 6.25cm including all operational, incidental and labour charges such as weigh batching, machine mixing, lifting of concrete mechanically laying concrete, curing, overheads & contractors profit complete etc., but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402, 403 & 903)			
	502.00	RM First Floor :	ONE RM	432.00	216864
	290.00	RM Second Floor	ONE RM	448.00	129920
	155.10	RM Third Floor :	ONE RM	464.00	71966

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	110.90 RM	Fourth Floor	ONE RM	480.00	53232
	91.50 RM	Fifth Floor :	ONE RM	497.00	45476
	64.50 RM	Sixth Floor :	ONE RM	513.00	33089
	6.00 RM	Seventh Floor :	ONE RM	529.00	3174
20		Supply and placing of the Design Mix Concrete M 25 grade corresponding to IS 456 with cement content of 380 kgs per 1 cum of concrete using batching and mixing plant of 15 cum per hour capacity with 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry including cost and conveyance of all materials like cement, fine aggregate (sand), coarse aggregate, water etc., to site, centering using casurina ballies , bamboos , wooden reapers , runners , wood posts , wall plates etc., for 60cm wide sunshades 7.5cm thick at fixed end and 5cm thick at free end with an average thickness of 6.25cm including all operational, incidental and labour charges such as weigh batching, machine mixing, lifting of concrete mechanically laying concrete, curing, overheads & contractors profit complete etc., but excluding cost of steel and its fabrication charges for finished item of work (APSS No. 402, 403 & 903)			
	8.00 RM	Cellar Floor :	ONE RM	576.00	4608
	925.70 RM	First Floor :	ONE RM	576.00	533203
	989.00 RM	Second Floor	ONE RM	597.00	590433
	991.00 RM	Third Floor :	ONE RM	619.00	613429
	829.00 RM	Fourth Floor :	ONE RM	641.00	531389
	793.00 RM	Fifth Floor :	ONE RM	663.00	525759
	907.00 RM	Sixth Floor :	ONE RM	684.00	620388
	560.00 RM	Seventh Floor :	ONE RM	705.00	394800
	123.00 RM	Eighth Floor :	ONE RM	727.00	89421
	55.00 RM	Ninth Floor :	ONE RM	749.00	41195
	50.00 RM	Tenth Floor :	ONE RM	771.00	38550
	10.00 RM	Eleventh Floor :	ONE RM	792.00	7920
21		Masonry work in CM(1:6) prop (Cement : Sand) in superstructure with fly ash cement / lime solid blocks of size 290mm x 225mm x 140mm from approved source having minimum crushing strength of 50 Kg/Sqcm. including cost and conveyance of all materials like cement, sand, bricks, water etc., to site, labour charges, like mixing cement mortar, scaffolding charges, constructing masonry, lift charges, curing, overheads and contractor profit etc., complete for finished item of work. (APSS No. 501 & 504).			
		un supported height up to 3.66 m			
	1663.80 CUM	Basement	ONE CUM	6716.00	11174101
	3940.30 CUM	First Floor :	ONE CUM	7284.00	28701145
	3461.62 CUM	Second Floor	ONE CUM	7718.00	26716768
	3302.50 CUM	Third Floor :	ONE CUM	8151.00	26918678
	2934.40 CUM	Fourth Floor:	ONE CUM	8585.00	25191824

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	2131.30 CUM	Fifth Floor :	ONE CUM	9019.00	19222195
	2073.30 CUM	Sixth Floor :	ONE CUM	9453.00	19598905
	1719.60 CUM	Seventh Floor :	ONE CUM	9887.00	17001685
	806.56 CUM	Eighth Floor :	ONE CUM	10321.00	8324506
	166.50 CUM	Ninth Floor :	ONE CUM	10755.00	1790708
	93.00 CUM	Tenth Floor :	ONE CUM	11188.00	1040484
		un supported height up to 4.27 m			
	333.10 CUM	First Floor :	ONE CUM	7378.00	2457612
	333.43 CUM	Second Floor :	ONE CUM	7849.00	2617092
		un supported height up to 4.88 m			
	211.82 CUM	First Floor :	ONE CUM	7473.00	1582931
22		Reinforced Masonry for partition walls (100 mm thick) in CM (1:4) prop. (Cement : Sand) using fly ash cement / lime solid blocks of size 290mm x 100mm x 140mm having minimum compressive strength of 50 Kg/Sq.cm and placing 2 Nos. of 6mm M.S plain rods in every third layer with free ends of the reinforcement pegged into mortar joints of main brick walls where applicable including cost and conveyance of all materials like cement, steel, sand, bricks, water etc., to site, all operational, incidental charges such as labour charges for mixing cement mortar, scaffolding charges, constructing masonry, lift charges, curing, etc., and overheads & contractors profit but excluding cost of steel and its fabrication charges complete for finished item of work. (APSS No. of 509)			
	80.00 SQM	Cellar Floor :	ONE SQM	917.00	73360
	5510.80 SQM	First Floor :	ONE SQM	917.00	5053404
	6986.40 SQM	Second Floor	ONE SQM	998.00	6972427
	5991.50 SQM	Third Floor :	ONE SQM	1079.00	6464829
	5810.30 SQM	Fourth Floor:	ONE SQM	1161.00	6745758
	19596.30 SQM	Fifth Floor :	ONE SQM	1242.00	24338605
	5285.50 SQM	Sixth Floor :	ONE SQM	1323.00	6992717
	4421.50 SQM	Seventh Floor :	ONE SQM	1404.00	6207786
	1300.25 SQM	Eight Floor :	ONE SQM	1485.00	1930871
	468.50 SQM	Ninth Floor :	ONE SQM	1567.00	734140
	388.00 SQM	Tenth Floor :	ONE SQM	1648.00	639424
		un supported height up to 4.27 m			
	1338.20 SQM	First Floor :	ONE SQM	938.00	1255232
	637.40 SQM	Second Floor	ONE SQM	1028.00	655247
	1939.00 SQM	Third Floor :	ONE SQM	1117.00	2165863
	2103.00 SQM	Fourth Floor:	ONE SQM	1207.00	2538321
	1241.00 SQM	Fifth Floor :	ONE SQM	1296.00	1608336
	50.00 SQM	Sixth Floor :	ONE SQM	1386.00	69300

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
23		Supply and placing of Plain Cement Concrete M 10 grade using 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete for finished item of work for bed blocks and hold fasts (APSS No. 402)			
	5.10	CUM Cellar Floor :	ONE CUM	4570.00	23307
	105.30	CUM First Floor :	ONE CUM	4570.00	481221
	118.90	CUM Second Floor	ONE CUM	4620.00	549318
	98.80	CUM Third Floor :	ONE CUM	4669.00	461297
	92.40	CUM Fourth Floor:	ONE CUM	4719.00	436036
	83.20	CUM Fifth Floor :	ONE CUM	4768.00	396698
	68.46	CUM Sixth Floor :	ONE CUM	4818.00	329840
	58.16	CUM Seventh Floor :	ONE CUM	4867.00	283065
	20.55	CUM Eighth Floor :	ONE CUM	4917.00	101044
	6.00	CUM Ninth Floor :	ONE CUM	4966.00	29796
	5.00	CUM Tenth Floor :	ONE CUM	5016.00	25080
	0.40	CUM Eleventh Floor :	ONE CUM	5065.00	2026
24		Supply and placing of Plain Cement Concrete M 20 grade using 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site, hire and labour charges for centering and scaffolding including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete for steps (APSS No. 402)			
	15.30	CUM Cellar Floor :	ONE CUM	5118.00	78305
	476.75	CUM First Floor :	ONE CUM	5118.00	2440007
	370.30	CUM Second Floor	ONE CUM	5167.00	1913340
	40.60	CUM Third Floor :	ONE CUM	5217.00	211810
	38.60	CUM Fourth Floor	ONE CUM	5266.00	203268
	24.20	CUM Fifth Floor :	ONE CUM	5316.00	128647
	26.20	CUM Sixth Floor :	ONE CUM	5365.00	140563
	18.20	CUM Seventh Floor :	ONE CUM	5414.00	98535
	4.60	CUM Eight Floor :	ONE CUM	5464.00	25134
	2.20	CUM Ninth Floor :	ONE CUM	5513.00	12129
	2.20	CUM Tenth Floor :	ONE CUM	5563.00	12239

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
25		Supply and placing of Reinforced Cement Concrete M 20 grade using 12mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site, hire and labour charges for centering and scaffolding including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete but excluding cost of steel and its fabrication charges for sill slabs (APSS No. 402 & 403)			
	35.00	CUM Cellar Floor :	ONE CUM	5385.00	188475
	87.87	CUM First Floor :	ONE CUM	5385.00	473180
	87.49	CUM Second Floor	ONE CUM	5435.00	475508
	91.01	CUM Third Floor :	ONE CUM	5484.00	499099
	85.92	CUM Fourth Floor:	ONE CUM	5534.00	475481
	57.00	CUM Fifth Floor :	ONE CUM	5583.00	318231
	16.42	CUM Sixth Floor :	ONE CUM	5633.00	92494
	13.42	CUM Seventh Floor :	ONE CUM	5682.00	76252
	5.50	CUM Eighth Floor :	ONE CUM	5732.00	31526
	2.00	CUM Ninth Floor :	ONE CUM	5781.00	11562
	2.00	CUM TenthFloor :	ONE CUM	5831.00	11662
26		Supply and placing of Reinforced Cement Concrete M 20 grade using 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site, hire and labour charges for centering and scaffolding including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete but excluding cost of steel and its fabrication charges for platforms, lofts and shelves. (APSS No. 402 & 403)			
	a)	50mm thick platforms / lofts:			
	278.00	SQM First Floor :	ONE SQM	461.00	128158
	402.90	SQM Second Floor	ONE SQM	474.00	190975
	352.10	SQM Third Floor :	ONE SQM	486.00	171121
	353.00	SQM Fourth Floor:	ONE SQM	499.00	176147
	292.00	SQM Fifth Floor :	ONE SQM	512.00	149504
	321.70	SQM Sixth Floor :	ONE SQM	525.00	168893
	321.70	SQM Seventh Floor :	ONE SQM	538.00	173075
	51.50	SQM Eight Floor :	ONE SQM	550.00	28325
	38.00	SQM Ninth Floor :	ONE SQM	563.00	21394
	38.00	SQM Tenth Floor :	ONE SQM	575.00	21850
	b)	25mm thick shelves :			

S. No.	Quantity	Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
	411.50	SQM	First Floor :	ONE SQM	231.00	95057
	692.50	SQM	Second Floor	ONE SQM	237.00	164123
	634.00	SQM	Third Floor :	ONE SQM	243.00	154062
	579.00	SQM	Fourth Floor	ONE SQM	250.00	144750
	374.00	SQM	Fifth Floor :	ONE SQM	256.00	95744
	328.00	SQM	Sixth Floor :	ONE SQM	262.00	85936
	297.00	SQM	Seventh Floor :	ONE SQM	269.00	79893
	58.50	SQM	Eight Floor :	ONE SQM	275.00	16088
	41.00	SQM	Ninth Floor :	ONE SQM	281.00	11521
	41.00	SQM	Tenth Floor :	ONE SQM	288.00	11808
27			Supply and placing of Reinforced Cement Concrete M 20 grade using 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry using batching and mixing plant of 15 cum per hour capacity including cost and conveyance of all materials like cement, sand, coarse aggregate, water etc. to site, hire and labour charges for centering and scaffolding including all operational, incidental and labour charges, transporting concrete in transit mixer, curing etc., and overheads & contractors profit complete but excluding cost of steel and its fabrication charges for pre-cast slabs for cover over drain (APSS No. 402 & 403)			
	1844.85	SQM	100 mm thick pre cast slabs	ONE SQM	702.00	1295084
	10.00	SQM	125 mm thick pre cast slabs	ONE SQM	822.00	8220
	10.00	SQM	150 mm thick pre cast slabs	ONE SQM	943.00	9430
28			Providing Thermo Mechanically Treated (TMT) (Fe 500 / Fe 500 D grade as per IS 1786-1979) of different diameters for RCC works including labour charges for straightening, cutting, bending to required sizes and shapes, placing in position with cover blocks of approved materials and size and tying and lap-splicing with binding wire of 18 SWG, forming grills for reinforcement work as per approved designs and drawings, including cost and conveyance of steel bars, including all wastages such as overlaps, couplings, chairs, spacer bars including cost and conveyance of binding wire, cover blocks and all incidental, operational, labour charges such as cutting, bending, placing in position, tying etc., and overheads & contractors profit complete for finished item of work.(APSS No.126)			
	1075.23	MT	Cellar Floor :	ONE MT	90167.00	96950263
	2621.63	MT	First Floor :	ONE MT	90167.00	236384214
	1257.90	MT	Second Floor	ONE MT	91859.00	115548985
	1253.11	MT	Third Floor :	ONE MT	93551.00	117229478
	827.06	MT	Fourth Floor	ONE MT	95243.00	78771333
	701.59	MT	Fifth Floor :	ONE MT	96935.00	68008530
	618.09	MT	Sixth Floor :	ONE MT	98627.00	60959978
	533.48	MT	Seventh Floor	ONE MT	100319.00	53518321

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	168.71 MT	Eighth Floor	ONE MT	102011.00	17210684
	40.95 MT	Ninth Floor	ONE MT	103703.00	4246638
	40.95 MT	Tenth Floor	ONE MT	105395.00	4315925
	12.87 MT	Eleventh Floor	ONE MT	107087.00	1378210
29		Providing Mild steel (MS) steel bars (Fe 250 grade as per IS 432) of different diameters including labour charges for straightening, cutting, bending to required sizes and shapes, placing in position with cover blocks of approved materials and size and tying and lap-splicing with binding wire of 18 SWG, forming grills for reinforcement work as per approved designs and drawings, including cost and conveyance of steel bars, including all wastages such as overlaps, couplings, chairs, spacer bars including cost and conveyance of binding wire, cover blocks and all incidental, operational, labour charges such as cutting, bending, placing in position, tying etc., and overheads & contractors profit complete for finished item of work.(APSS No.126)			
	7.57 MT	Cellar Floor :	ONE MT	86588.00	655471
	29.50 MT	First Floor :	ONE MT	86588.00	2554346
	21.99 MT	Second Floor	ONE MT	88280.00	1941277
	20.36 MT	Third Floor :	ONE MT	89972.00	1831830
	18.82 MT	Fourth Floor	ONE MT	91664.00	1725116
	17.63 MT	Fifth Floor :	ONE MT	93356.00	1645866
	21.19 MT	Sixth Floor :	ONE MT	95048.00	2014067
	19.19 MT	Seventh Floor :	ONE MT	96740.00	1856441
	4.54 MT	Eighth Floor :	ONE MT	98432.00	446881
	2.04 MT	Ninth Floor :	ONE MT	100124.00	204253
	2.04 MT	Tenth Floor :	ONE MT	101816.00	207705
30		Ornamental ceiling plastering 12mm thick single coat in CM (1:5) using screened sand including cost and conveyance of all materials like cement, sand, water etc., to site and all operational, incidental charges on materials and including cost of all labour charges for mixing mortar, finishing, curing as directed by Engineer-in-charge etc., and overheads & contractors profit complete for finished item of work.(SS 901,903 & 904)			
		un supported height up to 3.66m			
	6648.00 SQM	Cellar Floor :	ONE SQM	410.00	2725680
	13267.70 SQM	First Floor :	ONE SQM	410.00	5439757
	8730.80 SQM	Second Floor	ONE SQM	454.00	3963784
	7197.60 SQM	Third Floor :	ONE SQM	498.00	3584405
	9098.60 SQM	Fourth Floor:	ONE SQM	541.00	4922343
	5782.90 SQM	Fifth Floor :	ONE SQM	585.00	3382997
	7753.00 SQM	Sixth Floor :	ONE SQM	629.00	4876637
	6464.00 SQM	Seventh Floor :	ONE SQM	673.00	4350272
	1380.00 SQM	Eight Floor :	ONE SQM	717.00	989460

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	447.00	SQM Ninth Floor :	ONE SQM	761.00	340167
	395.00	SQM Tenth Floor :	ONE SQM	804.00	317580
	29.00	SQM Eleventh Floor :	ONE SQM	848.00	24592
		un supported height up to 4.27 m			
	6650.80	SQM First Floor :	ONE SQM	414.00	2753431
	6149.40	SQM Second Floor :	ONE SQM	460.00	2828724
	6222.40	SQM Third Floor :	ONE SQM	505.00	3142312
	2824.20	SQM Fourth Floor :	ONE SQM	551.00	1556134
	928.00	SQM Fifth Floor :	ONE SQM	596.00	553088
	253.00	SQM Sixth Floor :	ONE SQM	641.00	162173
		un supported height up to 4.88 m			
	2222.90	SQM First Floor :	ONE SQM	419.00	931395
	508.50	SQM Seventh Floor :	ONE SQM	701.00	356459
31		Plastering 12mm thick in two coats using screened sand with base coat of 8mm thick in CM (1:6) and top coat of 4mm thick in CM (1:4) with dubara sponge finishing including cost and conveyance of all materials like cement, sand, water etc., to site and all operational, incidental charges on materials and including cost of all labour charges for mixing mortar, finishing, scaffolding, lift charges, curing, including cutting grooves as directed by Engineer - in - charge etc., and overheads & contractors profit complete for finished item of work for Internal walls. (SS 901,903 & 904)			
		un supported height up to 3.66m			
	9998.00	SQM Cellar Floor :	ONE SQM	532.00	5318936
	15446.30	SQM First Floor :	ONE SQM	532.00	8217432
	11336.30	SQM Second Floor	ONE SQM	585.00	6631736
	9728.20	SQM Third Floor :	ONE SQM	637.00	6196863
	7952.10	SQM Fourth Floor:	ONE SQM	690.00	5486949
	5723.90	SQM Fifth Floor :	ONE SQM	742.00	4247134
	10294.50	SQM Sixth Floor :	ONE SQM	795.00	8184128
	9730.50	SQM Seventh Floor :	ONE SQM	848.00	8251464
	1791.50	SQM Eight Floor :	ONE SQM	900.00	1612350
	580.25	SQM Ninth Floor :	ONE SQM	953.00	552978
	395.00	SQM Tenth Floor :	ONE SQM	1006.00	397370
	35.00	SQM Eleventh Floor :	ONE SQM	1058.00	37030
		un supported height up to 4.27 m			
	20741.10	SQM First Floor :	ONE SQM	534.00	11075747
	23110.20	SQM Second Floor :	ONE SQM	588.00	13588798
	22565.30	SQM Third Floor :	ONE SQM	641.00	14464357
	17639.50	SQM Fourth Floor :	ONE SQM	694.00	12241813
	16705.70	SQM Fifth Floor :	ONE SQM	748.00	12495864
	6657.00	SQM Sixth Floor :	ONE SQM	801.00	5332257

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	3730.00	SQM Seventh Floor :	ONE SQM	855.00	3189150
	584.00	SQM Eigth Floor :	ONE SQM	908.00	530272
		un supported height up to 4.88 m			
	2110.50	SQM First Floor :	ONE SQM	536.00	1131228
32		Plastering 12mm thick in two coats using screened sand with base coat of 8mm thick in CM (1:6) and top coat of 4mm thick in CM (1:4) with dubara sponge finishing including cost and conveyance of all materials like cement, sand, water etc., to site and all operational, incidental charges on materials and including cost of all labour charges for mixing mortar, finishing, scaffolding, lift charges, curing, including cutting grooves as directed by Engineer - in - charge etc., and overheads & contractors profit complete for finished item of work for external walls. (SS 901,903 & 904)			
		un supported height up to 3.66m			
	15041.01	SQM First Floor :	ONE SQM	532.00	8001815
	7484.00	SQM Second Floor	ONE SQM	585.00	4378140
	5860.20	SQM Third Floor :	ONE SQM	637.00	3732947
	5033.40	SQM Fourth Floor:	ONE SQM	690.00	3473046
	5103.90	SQM Fifth Floor :	ONE SQM	742.00	3787094
	5317.20	SQM Sixth Floor :	ONE SQM	795.00	4227174
	5377.20	SQM Seventh Floor :	ONE SQM	848.00	4559866
	3990.55	SQM Eighth Floor :	ONE SQM	900.00	3591495
	943.50	SQM Ninth Floor :	ONE SQM	953.00	899156
	450.00	SQM Tenth Floor :	ONE SQM	1006.00	452700
	480.00	SQM Eleventh Floor :	ONE SQM	1058.00	507840
		un supported height up to 4.27 m			
	6484.60	SQM Basement Floor :	ONE SQM	534.00	3462776
	5394.30	SQM First Floor :	ONE SQM	534.00	2880556
	6016.80	SQM Second Floor :	ONE SQM	588.00	3537878
	4727.90	SQM Third Floor :	ONE SQM	641.00	3030584
	4622.40	SQM Fourth Floor :	ONE SQM	694.00	3207946
	2709.70	SQM Fifth Floor :	ONE SQM	748.00	2026856
	2257.00	SQM Sixth Floor :	ONE SQM	801.00	1807857
	2571.00	SQM Seventh Floor :	ONE SQM	855.00	2198205
	1787.00	SQM Eighth Floor :	ONE SQM	908.00	1622596
		un supported height up to 4.88 m			
	1270.80	SQM First Floor :	ONE SQM	536.00	681149
33		Plastering 12mm thick single coat in CM(1:5) using screened sand including cost and conveyance of all materials like cement, sand, water etc., to site and all operational, incidental charges on materials and including cost of all labour charges for mixing mortar, finishing, curing as directed by Engineer-in-charge etc., and overheads & contractors profit complete for finished item of work. (SS 901,903 & 904)			
		for Basement			
	2967.40	SQM	ONE SQM	384.00	1139482

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	2875.00	SQM First Floor :	ONE SQM	397.00	1141375
	2230.00	SQM Second Floor :	ONE SQM	449.00	1001270
	3591.00	SQM Third Floor :	ONE SQM	502.00	1802682
	3755.00	SQM Fourth Floor :	ONE SQM	555.00	2084025
	1323.00	SQM Fifth Floor :	ONE SQM	607.00	803061
34		Providing impervious coat to exposed RCC roof slab surfaces to required slopes with CM (1:3) prop. using screened sand 20mm thick (average) mixed with integral cement water proofing liquid confirming to IS: 2645-2003 manufactured by reputed manufacturers as approved by Engineer-in-charge at 200ml per one bag of cement, laid over roof slab when it is green, finished smooth with a floating coat of neat cement and thread lining at regular intervals of 45cmx45cm including cost and conveyance of all materials like cement, sand, water proofing compound, water etc., to site, operational, incidental, and labour charges for mixing mortar, laying, lift charges, rendering smooth and thread lining, curing including rounding off junctions of wall and slab etc., and overheads & contractors profit complete for finished item of work. (APSS No. 901 & 903).			
	5465.00	SQM Over First Floor roof slab:	ONE SQM	601.00	3284465
	5801.00	SQM Over Second Floor roof slab:	ONE SQM	648.00	3759048
	4771.00	SQM Over third Floor roof slab:	ONE SQM	695.00	3315845
	2930.00	SQM Over fourth Floor roof slab:	ONE SQM	742.00	2174060
	2567.00	SQM Over Fifth Floor roof slab:	ONE SQM	789.00	2025363
	1996.00	SQM Over Sixth Floor roof slab:	ONE SQM	836.00	1668656
	6079.25	SQM Over seventh Floor roof slab:	ONE SQM	883.00	5367978
	630.00	SQM Over eighth Floor roof slab:	ONE SQM	930.00	585900
	448.00	SQM Over Tenth Floor roof slab:	ONE SQM	1024.00	458752
35		Providing impervious coat to exposed RCC roof slab surfaces of sump , sump side wall, sump bottom slab, in side of septic tank , in sunken slabs etc. to required slopes with CM (1:3) prop. using screened sand 12mm thick mixed with integral cement water proofing liquid confirming to IS: 2645-2003 manufactured by reputed manufacturers as approved by Engineer-in-charge at 200ml per one bag of cement, laid over roof slab when it is green, finished smooth with a floating coat of neat cement and thread lining at regular intervals of 45cmx45cm where ever necessary including cost and conveyance of all materials like cement, sand, water proofing compound, water etc., to site, operational, incidental, and labour charges for mixing mortar, laying, lift charges, rendering smooth and thread lining, curing including rounding off junctions of wall and slab etc., and overheads & contractors profit complete for finished item of work. (APSS No. 901 & 903).			
	3843.00	SQM First Floor	ONE SQM	402.00	1544886
	1652.50	SQM Second Floor	ONE SQM	436.00	720490
	1611.50	SQM Third Floor :	ONE SQM	470.00	757405
	1315.50	SQM Fourth Floor:	ONE SQM	504.00	663012

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	925.50	SQM Fifth Floor :	ONE SQM	539.00	498845
	819.50	SQM Sixth Floor :	ONE SQM	573.00	469574
	845.50	SQM Seventh Floor :	ONE SQM	607.00	513219
	267.00	SQM Eighth Floor :	ONE SQM	641.00	171147
	185.00	SQM Ninth Floor :	ONE SQM	675.00	124875
	185.00	SQM Tenth Floor :	ONE SQM	709.00	131165
36		Flooring with non-skid red or white full body Ceramic floor tiles of size 300 mm x 300 mm and thickness between 7-8 mm 1st quality conforming to IS:13711, IS:13712, IS:13630 (Parts 1 to 15) of any colour and finish in all shades and designs as approved by Engineer-in-charge, set over base coat of cement mortar (1:8), 12mm thick using screened sand over CC bed already laid or RCC roof slab, including neat cement slurry of honey like consistency spread @ 3.3 Kgs per sqm & jointed neatly with white cement paste to full depth mixed with pigment of matching shade, including cost of all materials like cement, screened sand , water and tiles etc., and overheads & contractors profit complete for finished item of work. (APSS No.701 & 707)			
	2135.50	SQM First Floor	ONE SQM	1056.00	2255088
	2421.00	SQM Second Floor	ONE SQM	1108.00	2682468
	1708.00	SQM Third Floor :	ONE SQM	1161.00	1982988
	1641.00	SQM Fourth Floor	ONE SQM	1213.00	1990533
	1279.00	SQM Fifth Floor	ONE SQM	1265.00	1617935
	877.00	SQM Sixth Floor	ONE SQM	1318.00	1155886
	760.00	SQM Seventh Floor	ONE SQM	1370.00	1041200
	223.00	SQM Eight Floor	ONE SQM	1423.00	317329
	127.00	SQM Ninth Floor	ONE SQM	1475.00	187325
	127.00	SQM Tenth Floor	ONE SQM	1528.00	194056
37		Flooring with Double charged / multi charged stain free full body porcelain vitrified tiles with double layer pigment of Size 600 x 600 mm and thickness between 8-10 mm 1st quality conforming to IS:13711, IS:13712, IS:13630 (Parts 1 to 15) of any colour and finish in all shades and designs with borders and design as per the approved flooring pattern as directed by the Engineer-In - Charge, laying tiles using spacers of 2mm thick, set over a base coat of CM (1:8) prop. 12mm thick using screened sand over CC bed already laid or RCC roof slab , including neat cement slurry of honey like consistency spread @ 3.3 kgs per sqm. and jointed neatly with white cement paste to full depth mixed with pigment of matching shade including cost and conveyance of all materials like cement, sand, water, tiles, white cement etc., to site (excluding cost of C.C. bed) including cost of base coat and all labour charges for mixing of cement mortar, laying tiles to required slope as directed by the Engineer- in-charge etc.,and overheads & contractors profit complete for finished item of work. (APSS No.701 & 707)			
	1454.00	SQM Cellar Floor :	ONE SQM	1345.00	1955630
	9285.80	SQM First Floor :	ONE SQM	1345.00	12489401

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	10096.00	SQM Second Floor	ONE SQM	1398.00	14114208
	8845.00	SQM Third Floor :	ONE SQM	1450.00	12825250
	7340.00	SQM Fourth Floor	ONE SQM	1503.00	11032020
	4558.00	SQM Fifth Floor :	ONE SQM	1555.00	7087690
	4371.00	SQM Sixth Floor :	ONE SQM	1608.00	7028568
	3987.00	SQM Seventh Floor :	ONE SQM	1660.00	6618420
	1429.00	SQM Eight Floor :	ONE SQM	1712.00	2446448
	250.00	SQM Ninth Floor :	ONE SQM	1765.00	441250
	250.00	SQM Tenth Floor :	ONE SQM	1817.00	454250
38		Flooring with soluble salt porcelain vitrified tiles screen printed and polished of size 600 x 600 mm and thickness between 8-10 mm 1st quality conforming to IS:13711, IS:13712, IS:13630 (Parts 1 to 15) of any colour and finish in all shades and designs with borders and design as per the approved flooring pattern as directed by the Engineer-In -Charge, laying tiles using spacers of 2mm thick, set over a base coat of CM (1:8) prop. 12mm thick using screened sand over CC bed already laid or RCC roof slab , including neat cement slurry of honey like consistency spread @ 3.3 kgs per sqm. and jointed neatly with white cement paste to full depth mixed with pigment of matching shade including cost and conveyance of all materials like cement, sand, water, tiles, white cement etc., to site (excluding cost of C.C. bed) including cost of base coat and all labour charges for mixing of cement mortar, laying tiles to required slope as directed by the Engineer- in-charge etc.,and overheads & contractors profit complete for finished item of work. (APSS No.701 & 707)			
	4416.50	SQM First Floor :	ONE SQM	1104.00	4875816
	2039.50	SQM Second Floor	ONE SQM	1157.00	2359702
	970.50	SQM Third Floor :	ONE SQM	1209.00	1173335
	667.50	SQM Fourth Floor	ONE SQM	1262.00	842385
	667.50	SQM Fifth Floor :	ONE SQM	1314.00	877095
	222.50	SQM Sixth Floor :	ONE SQM	1367.00	304158
39		Flooring with 16 mm to 18 mm thick high polished granite stone slabs other than black and regular colours (i.e. of shades like paradiso / bala flower / copper silk / laka red / lavender blue) with borders and design as per the pattern approved by the Engineer-in-Charge of length not less than 2.43 mts set over base coat of cement mortar (1:8) , 20mm thick using screened sand over CC bed already laid or RCC roof slab including neat grey cement slurry of honey like consistency spread @ 3.3 Kg per sqm and jointed neatly with white cement paste mixed with pigment of matching shade to full depth including cost and conveyance of all materials like cement , sand , water , granite slabs etc., to work site and all operational, incidental labour & lift charges, polishing charges, cost of base coat and overheads & contractors profit complete for finished item of work (S.S.701 & special)			
	259.00	SQM Cellar Floor :	ONE SQM	4068.00	1053612

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	5729.30	SQM First Floor :	ONE SQM	4068.00	23306792
	5282.10	SQM Second Floor	ONE SQM	4165.00	21999947
	5235.90	SQM Third Floor :	ONE SQM	4262.00	22315406
	2501.40	SQM Fourth Floor:	ONE SQM	4359.00	10903603
	1403.80	SQM Fifth Floor :	ONE SQM	4455.00	6253929
	1371.60	SQM Sixth Floor :	ONE SQM	4552.00	6243523
	1098.40	SQM Seventh Floor :	ONE SQM	4649.00	5106462
	98.55	SQM Eight Floor :	ONE SQM	4745.00	467620
40		Flooring with 16 mm to 18 mm thick high polished granite stone slabs black colour as approved by the Engineer-in-Charge of length not less than 2.43 mts set over base coat of cement mortar (1:8) , 20mm thick using screened sand over CC bed already laid or RCC roof slab including neat grey cement slurry of honey like consistency spread @ 3.3 Kg per sqm and jointed neatly with white cement paste mixed with pigment of matching shade to full depth including cost and conveyance of all materials like cement , sand , water , granite slabs etc., to work site and all operational, incidental labour & lift charges, half rounding the edge , polishing charges, cost of base coat and overheads & contractors profit complete for finished item of work for platforms (S.S.701 & special)			
	256.10	SQM First Floor :	ONE SQM	4425.00	1133243
	296.00	SQM Second Floor	ONE SQM	4522.00	1338512
	271.00	SQM Third Floor :	ONE SQM	4619.00	1251749
	218.00	SQM Fourth Floor:	ONE SQM	4715.00	1027870
	124.00	SQM Fifth Floor :	ONE SQM	4812.00	596688
	140.00	SQM Sixth Floor :	ONE SQM	4909.00	687260
	117.00	SQM Seventh Floor :	ONE SQM	5006.00	585702
	39.00	SQM Eight Floor :	ONE SQM	5102.00	198978
	24.00	SQM Ninth Floor :	ONE SQM	5199.00	124776
	24.00	SQM Tenth Floor :	ONE SQM	5296.00	127104
41		Providing window sills with 16 mm to 18 mm thick high polished granite stone slabs black colour as approved by the Engineer-in-Charge set over base coat of cement mortar (1:8), 20mm thick using screened sand over CC bed already laid including neat grey cement slurry of honey like consistency spread @ 3.3 Kg per sqm and jointed neatly with white cement paste mixed with pigment of matching shade to full depth including cost and conveyance of all materials like cement , sand , water , granite slabs etc., to work site and all operational, incidental labour & lift charges, half rounding the edge , polishing charges, cost of base coat and overheads & contractors profit complete for finished item of work (S.S.701 & special)			
	59.00	SQM Cellar Floor :	ONE SQM	5774.00	340666
	458.36	SQM First Floor :	ONE SQM	5774.00	2646571
	275.80	SQM Second Floor	ONE SQM	5871.00	1619222

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	403.90 SQM	Third Floor :	ONE SQM	5968.00	2410475
	370.60 SQM	Fourth Floor	ONE SQM	6064.00	2247318
	207.70 SQM	Fifth Floor :	ONE SQM	6161.00	1279640
	117.50 SQM	Sixth Floor :	ONE SQM	6258.00	735315
	98.10 SQM	Seventh Floor :	ONE SQM	6355.00	623426
	23.30 SQM	Eighth Floor :	ONE SQM	6451.00	150308
	10.80 SQM	Ninth Floor :	ONE SQM	6548.00	70718
	10.80 SQM	Tenth Floor :	ONE SQM	6645.00	71766
42		Granolithic Concrete flooring 20 mm thick with (1:1:2), using 6mm to 12 mm size hard trap machine crushed metal and screened sand laid over CC bed already laid or RCC roof slab, in alternate panels of size not exceeding 1.50 m x 1.50 m, using glass strips and finishing the top surface to required smoothness and slopes and thread lining including cost of all materials like cement, metal sand and water and overheads & contractors profit complete for finished item of work. (APSS No.701 & 710)			
	4514.00 SQM	First Floor :	ONE SQM	447.00	2017758
	349.50 SQM	Second Floor	ONE SQM	482.00	168459
	129.50 SQM	Third Floor :	ONE SQM	517.00	66952
	112.50 SQM	Fourth Floor	ONE SQM	551.00	61988
	105.50 SQM	Fifth Floor :	ONE SQM	586.00	61823
	631.50 SQM	Sixth Floor :	ONE SQM	621.00	392162
	65.50 SQM	Seventh Floor :	ONE SQM	656.00	42968
	8.50 SQM	Eighth Floor :	ONE SQM	691.00	5874
43		Flooring with chequered Cement Concrete heavy duty tiles conforming to IS: 13801 using aggregates, cement, pigments of size 300mm x 300 mm and thickness 25 mm of any shades as approved by Engineer - In - Charge set over base coat of cement mortar (1:6), 12 mm thick using screened sand over CC bed already laid or RCC roof slab including neat cement slurry of honey like consistency spread @ 3.3 kgs per sqm and jointed with neat white cement to full depth mixed with pigment of matching shade including cost and conveyance of all materials like cement, sand, water and tiles etc.,and overheads & contractors profit complete for finished item of work.			
	803.00 SQM	Cellar Floor :	ONE SQM	1015.00	815045
	6157.00 SQM	First Floor :	ONE SQM	1015.00	6249355
	145.00 SQM	Second Floor	ONE SQM	1067.00	154715
	145.00 SQM	Third Floor :	ONE SQM	1120.00	162400
	145.00 SQM	Fourth Floor	ONE SQM	1172.00	169940
	145.00 SQM	Fifth Floor	ONE SQM	1225.00	177625
	345.00 SQM	Sixth Floor	ONE SQM	1277.00	440565

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)	
44		Providing & Fixing of pitched roof cladding with Terracotta Tiles size 125mm x 200mm with 12-15mm thick using set over base coat of CM(1:3) 12mm thick screened sand with cement slurry of honey like consistency spread at the rate of 5.76 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc., and overheads & contractors profit complete for finished item of work.				
	7637.00	SQM	First Floor :	ONE SQM	758.00	5788846
45	6512.50	SQM	Providing and Fixing Structural Glazing fabricated from Roll formed sections made of Pre-painted Steel / Powder coated (Base steel as per IS 513 of 'D' quality, galvanized as per IS 277 with Zinc of 120 Gm/sqm) with total coated thickness of 0.72mm. The glass holding section made of 304 grade stainless steel of 0.6mm thick as per the design requirement & calculations as given in IS: 875. Primer coat with epoxy primer of 5 – 7 microns thick, finish painted with a polyester paint of 12-16 microns thick and back coated with Alkyd backer of 5-7 microns or powder coated with pure polyester powder up to 50-60 microns thick. The vertical section should be of 50mm x100mm x 0.72mm, 33mm x 58mm x 0.72mm for frame horizontal section, stiffener section should be 48mm x 98mm x 1mm, cover profiles sections should be of 20mm x 58mm x 0.58mm, Glass holding section should be of 37mm x 37mm & 37mm x 18mm. Including 5mm thick Ocean Blue reflective glass. Brackets made of CRCA powder coated/Electroplated should be used to connect vertical to horizontal, vertical to slab, to fix verticals at top & bottom as per site requirement. Gasket made of Ethyl Propylene Diamine Monomer. Natural cure, with Good U.V. Resistance Silicon to be used. Wall fixing of sections to concrete/masonry wall should be with self-expanding cap & screws. The rate is inclusive of cost and conveyance of all materials to site, all labour charges, incidental charges, cost of all consumables etc. and scaffolding charges, form work , overheads & contractors profit etc., complete for finished item of work in all floors.	ONE SQM	8529.00	55545113
46		Providing 16 mm to 18 mm thick high polished leather finish granite stone slabs (steel grey or pearl black) with borders and design as per the pattern approved by the Engineer-in-Charge of length not less than 2.43 mts set over base coat of cement mortar (1:5) , 12mm thick using screened sand over CC bed already laid or RCC roof slab including neat grey cement slurry of honey like consistency spread @ 3.3 Kg per sqm and jointed neatly with white cement paste mixed with pigment of matching shade to full depth including cost and conveyance of all materials like cement , sand , water , granite slabs etc., to work site and all operational, incidental labour & lift charges, full rounding the edges of treads , providing 3 grooves for the full length of treads , polishing charges, cost of base coat and overheads & contractors profit complete for finished item of work for treads and risers (S.S.701 & special)				
	a)		Treads of 0.30m wide :			
	314.00	SQM	Cellar Floor :	ONE SQM	6206.00	1948684
	1535.50	SQM	First Floor :	ONE SQM	6206.00	9529313
	1470.10	SQM	Second Floor	ONE SQM	6303.00	9266040
	414.50	SQM	Third Floor :	ONE SQM	6400.00	2652800
	390.50	SQM	Fourth Floor	ONE SQM	6496.00	2536688

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	362.50 SQM	Fifth Floor :	ONE SQM	6593.00	2389963
	391.50 SQM	Sixth Floor :	ONE SQM	6690.00	2619135
	341.50 SQM	Seventh Floor :	ONE SQM	6787.00	2317761
	31.75 SQM	Eight Floor :	ONE SQM	6883.00	218535
	14.00 SQM	Ninth Floor :	ONE SQM	6980.00	97720
	14.00 SQM	Tenth Floor :	ONE SQM	7077.00	99078
b)		Risers of 0.15m height :			
	153.00 SQM	Cellar Floor :	ONE SQM	4470.00	683910
	933.50 SQM	First Floor :	ONE SQM	4470.00	4172745
	862.00 SQM	Second Floor	ONE SQM	4591.00	3957442
	176.40 SQM	Third Floor :	ONE SQM	4712.00	831197
	157.40 SQM	Fourth Floor	ONE SQM	4832.00	760557
	139.40 SQM	Fifth Floor :	ONE SQM	4953.00	690448
	99.40 SQM	Sixth Floor :	ONE SQM	5074.00	504356
	85.40 SQM	Seventh Floor :	ONE SQM	5194.00	443568
	10.70 SQM	Eight Floor :	ONE SQM	5315.00	56871
	5.00 SQM	Ninth Floor :	ONE SQM	5436.00	27180
	5.00 SQM	Tenth Floor :	ONE SQM	5556.00	27780
47		Providing skirting 10 cm height with Double charged / multi charged stain free full body porcelain vitrified tiles with double layer pigment of Size 600 x 600 mm and thickness between 8-10 mm of any colour and finish in all shades and designs, length equal to flooring tiles, flushed to wall surface to set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc.,and overheads & contractors profit complete for finished item of work.(APSS No.701 &707)			
	3223.00 RM	Cellar Floor :	ONE RM	134.00	431882
	6322.00 RM	First Floor :	ONE RM	134.00	847148
	7481.00 RM	Second Floor	ONE RM	139.00	1039859
	7148.00 RM	Third Floor :	ONE RM	144.00	1029312
	6990.00 RM	Fourth Floor	ONE RM	149.00	1041510
	4108.00 RM	Fifth Floor :	ONE RM	155.00	636740
	3920.00 RM	Sixth Floor :	ONE RM	160.00	627200
	3440.00 RM	Seventh Floor :	ONE RM	165.00	567600
	469.50 RM	Eight Floor :	ONE RM	170.00	79815
	270.00 RM	Ninth Floor :	ONE RM	176.00	47520
	270.00 RM	Tenth Floor :	ONE RM	181.00	48870

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
48			Providing skirting to internal walls to 10 cm height with Soluble salt porcelain vitrified tiles screen printed and polished of 8 to 10mm thick of any colour and finish in all shades and designs, length equal to flooring tiles, flushed to wall surface set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc.,and overheads & contractors profit complete for finished item of work.(APSS No.701 &707)				
	2235.00	RM	First Floor :	ONE	RM	110.00	245850
	1760.00	RM	Second Floor	ONE	RM	115.00	202400
	714.00	RM	Third Floor :	ONE	RM	120.00	85680
	359.00	RM	Fourth Floor	ONE	RM	125.00	44875
	359.00	RM	Fifth Floor :	ONE	RM	131.00	47029
49			Providing skirting to internal walls 10 cm height with High Polished Granite 16 mm to 18 mm thick up to 8'-00 (2.43 M) other than black and regular colours, length equal to flooring slabs set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc., and overheads & contractors profit complete for finished item of work.				
	20.00	RM	Cellar Floor :	ONE	RM	447.00	8940
	1841.50	RM	First Floor :	ONE	RM	447.00	823151
	1652.50	RM	Second Floor	ONE	RM	459.00	758498
	1346.50	RM	Third Floor :	ONE	RM	471.00	634202
	1197.50	RM	Fourth Floor	ONE	RM	483.00	578393
	1108.50	RM	Fifth Floor :	ONE	RM	495.00	548708
	1044.50	RM	Sixth Floor :	ONE	RM	507.00	529562
	905.50	RM	Seventh Floor :	ONE	RM	519.00	469955
	7.00	RM	Eight Floor :	ONE	RM	531.00	3717
50			Providing cladding to walls with High Polished Granite 16 mm to 18 mm thick up to 8'-00 (2.43 M) other than black and regular colours, length equal to flooring slabs set over base coat of CM(1:3) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc., and overheads & contractors profit complete for finished item of work.				
	106.50	SQM	Cellar Floor :	ONE	SQM	4308.00	458802
	624.50	SQM	First Floor :	ONE	SQM	4308.00	2690346
	155.50	SQM	Second Floor	ONE	SQM	4429.00	688710
	135.50	SQM	Third Floor :	ONE	SQM	4550.00	616525
	135.50	SQM	Fourth Floor:	ONE	SQM	4670.00	632785
	135.50	SQM	Fifth Floor :	ONE	SQM	4791.00	649181

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
	114.50	SQM	Sixth Floor :	ONE	SQM	4912.00	562424
	114.50	SQM	Seventh Floor :	ONE	SQM	5032.00	576164
	24.00	SQM	Eight Floor :	ONE	SQM	5153.00	123672
	8.00	SQM	Ninth Floor :	ONE	SQM	5274.00	42192
	8.00	SQM	Tenth Floor :	ONE	SQM	5394.00	43152
51			Providing cladding with edge cut terracota elevation tiles of size 230mm x 7.5mm (9" x 3") and of 12mm thickness as approved by Engineer-in-Charge set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost and conveyance of all materials like tiles, cement, sand and water etc., and overheads & contractors profit complete for finished item of work.				
	1470.00	SQM	Basement floor	ONE	SQM	747.00	1098090
	1558.00	SQM	First Floor :	ONE	SQM	747.00	1163826
	3050.00	SQM	Second Floor	ONE	SQM	782.00	2385100
	3050.00	SQM	Third Floor :	ONE	SQM	817.00	2491850
	3050.00	SQM	Fourth Floor:	ONE	SQM	852.00	2598600
	1470.00	SQM	Fifth Floor :	ONE	SQM	888.00	1305360
	1470.00	SQM	Sixth Floor :	ONE	SQM	923.00	1356810
	1470.00	SQM	Seventh Floor :	ONE	SQM	958.00	1408260
52	947.00	SQM	Supply and fixing of Vinyl Flooring Sheets/ tiles having a nominal total thickness of 2 mm with a wearing surface impregnated polyurethane homogeneous mixture of PVC, Plasticizers, Urethane, color pigments with wearing resistance and Fire Resistance as per standards including cost and conveyance of all materials, adhesives for fixing, all labour charges, overheads & contractors profit etc., complete for finished item of work in all floors	ONE	SQM	1278.00	1210266
53	2152.00	SQM	Providing and fixing 2nd class teak wood plain lining and cladding 40mm thick including wooden plugs complete with necessary screws and priming coat on unexposed surface including cost and conveyance of all materials , labour charges, scaffolding charges,overheads and contractors profit etc., complete for finished item of work in all floors as per direction of the Engineer-in-charge.	ONE	SQM	8805.00	18948360

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
54	1003.60	SQM Wall-Absorptive wall panelling Supply and installation of 17mm thick micro perforated wood having 2mm perforation and 8mm pitch backed with polyester wool of density 1000GSM x 50mm thick with Laminared finish Construction of Frame work Frame work consists of 25mm thick GI wall channels with fully knurled surface of 0.55mm thick 80mm width, having two equal flanges of 26mm. A GI wall channel is fixed to the walls in horizontal direction with the help of suitable fastners at 600mm c/c then an another 25mm thick GI wall channel is fixed vertically over the horizontally laid wall channel at 600mm c/c Cavity Filling The frame work shall be back lined by using polyester wool having a density of 1000 GSM and 50mm thick Boarding 17mm thick micro perforated wood having 2mm perforation and 8mm pitch is fixed on the frame work. Finishing Ensure board is in plumb level and screw heads to be covered with compound and sand the surface. The screws are painted with manufacturer supplied paint matching the colour of the board/panel. The finishing of board is of veneer finish. Note 1. Vendors to submit all test certificates (Acoustics and fire) 2. Refer drawings for over all depth of the system	ONE SQM	5567.00	5587041
55	1003.60	SQM Wall-Reflective wall panelling Supply and installation of 12 mm thick B.W.P ply finished with 1 mm thick laminate on all visible sides backed with 50mm thick 1000 GSM polyester wool insulation Construction of Frame work Frame work consists of minimum 50mm GI stud with fully knurled surface of 0.55 mm thick, 50mm width and two equal flanges of 34mm is fixed on to the GI support made of required height, First the wall plate is fixed on to the wall using suitable fastners at every 1200mm C/C in both the directions and an MS hallow box section of 40mmX40mm with 5mm thick is welded to the wall plate, this is used to give the support to the MS gride of 600mmX600mm which is placed at a distance of 480mm from the wall. Cavity Filling The frame work shall be back lined by using polyester fiber having a density of 1000 GSM and 50mm thick held in position by using GI weld mesh Boarding 12mm thickLaminared plywood (8mm plywood and 1mm laminate) of approved finish is then fixed to GI frame work by using suitable fasteners and ensure proper level of the panel surface. Finishing Ensure plywood is in plumb level and finish by using laminate of approved shade and colour	ONE SQM	1069.00	1072848

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
56	1174.40 SQM	<p>Absorptive false ceiling Supply and installation of 12.5mm thick micro perforated gypsum plaster board of 3mm square perforations (minimum 13% of perforated area) backed with 50mm thick 1000GSM polyester wool</p> <p>Construction of Frame work Frame work shall consists of GI perimeter channels of size 0.55mm thick (having one flange of 20mm and another flange of 30mm) fixed along with perimeter of the beam or walls with the help of nylon sleeves and screws at 600mm c/c. Then suspend GI main channels of size 45 mm (0.9mm thick with 2 flanges of 15mm each) from the soffit at 1200mm c/c by using soffit angle of size 25mm x 10mm x 0.55mm thick fixed to true ceiling by using suitable fasteners. Cross channels of size 0.55mm thickness having knurled web of 51.5mm and two flanges of 26mm each with lips of 10.5mm are then fixed to the main channel with the help of connecting clips and in a direction perpendicular to the main channel at 300mm c/c</p> <p>Cavity Filling Ceiling frame work shall be back lined by using polyester wool having density of 1000 GSM and 50mm thick</p> <p>Boarding A layer of 12.5mm thickness fiber reinforced micro perforated gypsum plaster board of size 1200 x 2400 mm having perforations of minimum of 13% is fixed on to frame work. Micro perforated gypsum boards used shall have RH 90% and fire rating A2-s1, d0</p> <p>Finishing Ensure that board is fixed in plumb level, screw fix gypsum plaster board to channel, cover screw with compound and sand the surface. Joints of gypsum plaster board to be</p>	ONE SQM	2735.00	3211984
57	1174.40 SQM	<p>Reflective false ceiling Supply and installation of 12.5mm thick plain gypsum plaster board</p> <p>Construction of Frame work Frame work shall consists of GI perimeter channels of size 0.55mm thick (having one flange of 20mm and another flange of 30mm) fixed along with perimeter of the beam or walls with the help of nylon sleeves and screws at 600mm c/c. Then suspend GI main channels of size 45 mm (0.9mm thick with 2 flanges of 15mm each) from the soffit at 1200mm c/c by using soffit angle of size 25mm x 10mm x 0.55mm thick fixed to true ceiling by using suitable fasteners. Cross channels of size 0.55mm thickness having knurled web of 51.5mm and two flanges of 26mm each with lips of 10.5mm are then fixed to the main channel with the help of connecting clips and in a direction perpendicular to the main channel at 300mm c/c .</p> <p>Boarding A layer of 12.5mm thickness Plain gypsum plaster board of size 1200 x 2400mm having minimum density 550kg/m³ is fixed on to frame work.</p> <p>Finishing Ensure board is in plumb level, screw fix gypsum plaster board to channel, cover screw with compound and sand the surface. Joints of gypsum plaster board to be finished by using jointing tapes and compound. Final finishing is done with two coats of acrylic emulsion paint of approved colour as directed by engineer in charge.</p> <p>Note- 1.Vendors to submit all test certificates 2. Refer drawings for suspension heights 3. Vendors to consider the cut outs for services</p>	ONE SQM	3853.00	4524963

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
58			Providing dadoing with glazed red or white full body ceramic wall tiles of size 300 x 450 mm / 320 mm x 400 mm and thickness 6 mm 1st quality conforming to IS:13711, IS:13712, IS:13630 (Parts 1 to 15) of any colour and finish in all shades and designs with borders as approved by Engineer-in-Charge flushed to wall surface set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc., and overheads & contractors profit complete for finished item of work.				
	4253.00	SQM	First Floor :	ONE	SQM	715.00	3040895
	3988.00	SQM	Second Floor	ONE	SQM	728.00	2903264
	3126.00	SQM	Third Floor :	ONE	SQM	741.00	2316366
	2974.00	SQM	Fourth Floor	ONE	SQM	755.00	2245370
	2286.00	SQM	Fifth Floor :	ONE	SQM	768.00	1755648
	2618.00	SQM	Sixth Floor :	ONE	SQM	781.00	2044658
	2176.00	SQM	Seventh Floor :	ONE	SQM	794.00	1727744
	600.00	SQM	Eight Floor :	ONE	SQM	807.00	484200
	320.00	SQM	Ninth Floor :	ONE	SQM	820.00	262400
	320.00	SQM	Tenth Floor :	ONE	SQM	833.00	266560
59			Providing dadoing with glazed full body porcelain wall tiles of size 300mm x 600 mm with any type of design texture such as marble finish, wooden, bamboo, stone finishes etc., scratch less, stain free and thickness between 6-8 mm 1st quality conforming to IS:13711, IS:13712, IS:13630 (Parts 1 to 15) of any colour and finish in all shades and designs with borders and design as per the approved pattern as approved by Engineer-in-Charge flushed to wall surface set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc., and overheads & contractors profit complete for finished item of work.				
	3054.00	SQM	First Floor :	ONE	SQM	1304.00	3982416
	2901.00	SQM	Second Floor	ONE	SQM	1356.00	3933756
	2787.00	SQM	Third Floor :	ONE	SQM	1409.00	3926883
	2513.00	SQM	Fourth Floor	ONE	SQM	1461.00	3671493
	2381.00	SQM	Fifth Floor :	ONE	SQM	1514.00	3604834
	1538.00	SQM	Sixth Floor :	ONE	SQM	1566.00	2408508
	1649.00	SQM	Seventh Floor :	ONE	SQM	1619.00	2669731
	132.00	SQM	Eight Floor :	ONE	SQM	1671.00	220572

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
60	2714.50 SQM	Supplying and fixing of stainless steel (grade 304) hand railing as per approved drawing with top rail of 50mm dia pipe and 2mm thick medium class and vertical posts of 25mm dia and 1.6mm thick medium class 1 No for each step fixed with base plate of 25mm dia using bonding agent and anchor fastner and welding, drilling of 25mm dia holes with pneumatic compressor for fixing railing, buffing, polishing all members of the railing thouroughly , lacquer finishing to present seamless finish including cost and conveyance of all materials, electrodes, welding charges, cost of all consumables, labour charges , overheads & contractors profit etc., complete for finished item of work.	ONE SQM	3874.00	10515973
61	2186.50 RM	Supplying and fixing of stainless steel (grade 304) railing for ramp as per approved drawing with top rail of 50mm dia pipe and 2mm thick medium class fixed in to wall with 25mm dia pipe of 0.30m length @ 1m centre to centre and welding, buffing, polishing all members of the railing thouroughly , lacquer finishing to present seamless finish including cost and conveyance of all materials, electrodes, welding charges, cost of all consumables, labour charges , overheads & contractors profit etc., complete for finished item of work.	ONE RM	1853.00	4051585
62	1392.00 Nos	Supplying and fixing of stainless steel (grade 304) grab bars 200mm length grab bars in toilets as per approved drawing with 25mm dia pipe with base plates 2 Nos., buffing, polishing thouroughly , lacquer finishing to present seamless finish including cost and conveyance of all materials, labour charges , overheads & contractors profit etc., complete for finished item of work.	EACH	353.00	491376
63	36.10 SQM	Supply and fixing of two shutter main door cum fixed window as per approved drawing with best teak wood frame of section 150mm x 100 mm with fixed fan light of 500mm at top and fixed panels of 600mm width at sides fixed with 12mm thick Tinted - Bronze/Green glass using 12mm x 12mm teak wood beading and fixing ornamental grill made of 25mm x 5mm MS flats as per the approved drawing in fan light portion and fixed panels and 1st class teak wood top and middle rails & styles of section 120mm x 35mm, bottom rail of size 150mm x 35mm and 12mm thick plain float glass for shutter with ornamental etching including cost and	ONE SQM	15545.00	561175

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
64		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with fixed /split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick double shutters with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides			
	46.80 SQM	including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldrop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 in all floors (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (2000mm x 2600mm)	ONE SQM	6183.00	289364
65		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with fixed /split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick double shutters with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides			
	440.62 SQM	including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldrop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 in all floors (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1800mm x 2600mm)	ONE SQM	4771.00	2102198

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
66		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with fixed /split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick double shutters with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides			
	424.90	SQM including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldrop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 in all floors (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1500mm x 2600mm)	ONE SQM	5116.00	2173788
67		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with fixed /split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick double shutters with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides			
	1151.48	SQM including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldrop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 in all floors (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1200mm x 2600mm)	ONE SQM	5547.00	6387260

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
68		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with fixed / split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick double shutters with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides			
	206.50	SQM including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldrop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 in all floors (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1350mm x 2600mm)	ONE SQM	5141.00	1061617
69		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick single shutter with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing			
	2072.56	SQM 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 3 Nos. butt hinges (IS:205) 150mm long , 1 No. aldrop (IS:2681) 300mm long, 1 No. tower bolt (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 1 No. door stopper and 1 No. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1000mm x 2600mm)	ONE SQM	5525.00	11450894

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)	
70		Supply and fixing of doors as per approved drawings with medium teak wood frame of section 100mm x 65 mm with fixed / split type fan light of 500mm at the top fixed with 4mm thick pin headed glass using 12mm x 12mm Teak Wood beading and 2 Nos. of 10mm MS Square bars and ISI marked flush door shutter of 30mm thick single shutter with bond wood solid block board type core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and fixing				
	845.06	SQM	6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 3 Nos. butt hinges (IS:205) 150mm long , 1 No. aldrop (IS:2681) 300mm long, 1 No. tower bolt (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150mm long handles (IS:208), 1 No. door stopper and 1 No. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame, fixing glass in fan light portion etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (900mm x 2600mm)	ONE SQM	5765.00	4871771
71		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick double shutters with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including				
	55.00	SQM	supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldrop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150 mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (2400mm x 2100mm)	ONE SQM	4727.00	259985

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
72		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick double shutters with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including			
	14.00 SQM	supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150 mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (2000mm x 2100mm)	ONE SQM	4762.00	66668
73		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick double shutters with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including			
	16.00 SQM	supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205)150mm long, 1 No. aldop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150 mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1800mm x 2100mm)	ONE SQM	4907.00	78512
74		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick double shutters with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including			

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	102.40	SQM supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150 mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc., including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1500mm x 2100mm)	ONE SQM	5194.00	531866
75		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick double shutters with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including			
	160.10	SQM supply and fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 6 Nos. butt hinges (IS:205) 150mm long, 1 No. aldop (IS:2681) 300mm long, 2 Nos. tower bolts (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150 mm long handles (IS:208), 2 Nos. door stoppers and 2 Nos. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc., including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1200mm x 2100mm)	ONE SQM	5625.00	900563
76		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick single shutter with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminated sheet including supply and			
	978.70	SQM fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 3 Nos. butt hinges (IS:205) 150mm long, 1 No. aldop (IS:2681) 300mm long, 1 No. tower bolt (IS:204) of 200 mm x 10 mm dia at top , 2 Nos. 150 mm long handles (IS:208), 1 No. door stopper and 1 No. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc., including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (1000mm x 2100mm)	ONE SQM	5719.00	5597185

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
77		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65 mm and ISI marked flush door shutters of 30 mm thick single shutter with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides, fixing 1mm thick mat finish laminated sheet to full width and height of the flush shutter both sides including cost and conveyance to site of teak wood frame, flush shutter, laminate sheet including supply and			
	549.93	SQM fixing 6 Nos. MS Z hold fasts of size 300 mm x 40 mm x 5mm including cost of ISI marked Aluminium fixtures of 3 Nos. butt hinges (IS:205) 150mm long, 1 No. aldorp (IS:2681) 300mm long, 1 No. tower bolt (IS:204) of 200 mm x 10 mm dia at top, 2 Nos. 150 mm long handles (IS:208), 1 No. door stopper and 1 No. Rubber / Nylon door stop bushes including fixing the fixtures to door with required number of screws, bolt and nuts including labour charges for fixing the frame in position, fixing the shutter to the frame etc, including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002 (The vertical frame of door shall be embedded in flooring for a depth of not less than 10 mm) (900mm x 2100mm)	ONE SQM	5969.00	3282502
78		Supply and fixing doors as per drawings with medium teak wood frame of section 100mm x 65mm and ISI marked flush door shutter of 30mm thick single shutter with bond wood solid block board type Core having cross bands and face veneers, hot pressed bonded with water proof phenol formaldehyde synthetic resin factory made conforming to IS 2202-1991 (Part-I) both sides commercial ply with internal lipping on all sides including cost and conveyance to site of medium teak wood door frame, flush shutter, including supply and fixing 6 Nos. MS Z hold fasts of size 300mm x 40mm x 5mm including ISI marked Aluminium fixtures 3 Nos. butt hinges (IS:205) of 150mm long, 1 No. aldorp (IS:2681) 250 mm long,			
	1332.56	SQM 1 No. tower bolt (IS:204) of 150 mm x 10mm dia, 2 Nos. 125mm long handles (IS:208), 1 No. Rubber / Nylon door stop bushes including PVC door cladding 1.50mm thick to the flush doors shutters pasted with Fevicol complete as per direction of Engineer –in – charge, manufacturers specification and drawing to full height of the shutter inside including labour charges for fixing the frame in position, fixing the shutter to the frame etc., including overheads & contractors profit complete for finished item of work as per APSS 1001 & 1002. (The vertical frame of door shall be embedded in flooring for deth of not less than 10mm) (800mm x 2100mm)	ONE SQM	5646.00	7523634

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
79	576.42 SQM	Supply & Fixing of Stainless steel Fire Rated doors, frames & shutters made of Stainless steel of 304 grade hairline finish, frame with 1.2mm thick Stainless steel of 304 grade hairline finish sheet formed to double rebate profile of ize 143 mm X 58 mm with maximum bending radius of 1.4 mm and filled with in-fill Polyurethane foam, the Door Shutters are with 0.80 mm thick Stainless steel of 304 grade hairline finish Sheet formed to provide a 46 mm thick fully flush, double skin door shell with Lock Seam joints at stile edges, fitted with in-fill of Honeycomb Kraft Paper and coated with polyester powders of Pure polyester/ epoxy polyester or polyurethane powder for powder coating of thickness 60 – 65 microns and are coated with Zinc Phosphate Primer to receive any paint on site or finished with Thermosetting Polyurethane paint of Aliphatic Grade providing high levels of scratch resistance and durability, the Shutter provided with 6 MM clear float vision glass in Circular, Square or Rectangular shapes, Stainless Steel Ball Bearing Butt Hinges 3 mm thick fixed flush to the frame and shutter (Profile 102x76x3mm thick).Mortise Sash Lock with Lever Handles, Mortise Dead Bolt, etc for 60 minutes Fire Rated door conforming to IS:3614 (Part2) 1992 etc., complete including conveyance of all materials, labour charges for fixing, overheads & contractors profit complete for finished item of work in all floors.	ONE SQM	21246.00	12246619
80	46.80 SQM	Providing & Fixing of Scientific Doors with metal door frames and door shutters made of galvanize steel (base steel as per IS 513 of 0.58 mm thick D quality, galvanized as per IS 277 with Zinc of 120 GSM). coated with Zinc Phosphate Primer to receive any paint on site or finished with Thermosetting Polyurethane paint of Aliphatic Grade providing high levels of scratch resistance and durability/Epoxy polyester powder for powder coating paint thickness 50-60 microns (Dry film thickness) outer frame section of 100 x 58 mm x 1.2 mm thick, shutter section of 0.80 mm thick galvanized steel sheet pressed (roll formed) for 46mm thick fully flush, double skin door shell seam joints at stile edges, in-fill of honeycomb Kraft paper used to give the required rigidity and effective acoustic insulation with 6" Tower bolt – 2 Nos., 6" D handles – 2 Nos., 10" Aldrops – 1 No., Butt Hinges – 6 Nos, Mortise Lock of approved quality – 1 No, frames fixed to the concrete/masonry wall by means of self expanding screws including overheads and contractor profit etc., complete for finished item of work in all floors for Double leaf Door	ONE SQM	12498.00	584906
81	39.78 SQM	Supply & Fixing of Lead Lined Stainless steel Clean room door frames and shutters made of Stainless steel grade of 304 hairline finish, frame with 1.60mm (16SWG) thick hairline finish Stainless steel grade of 304 formed to Single/double rebate profile of size 100 mm x 58mm/ 143 x 58 mm, door frames with a single / multi Layer of Lead sheet varying thickness from 3mm /1mm to 2mm depends on radiation level, the shutter with 1.2 mm thick hairline finish Stainless steel grade of 304 formed to provide a 46mm thick fully flush, double skin door shell with Lock Seam joints at stile edges with a single / multi Layer of Lead sheet varying thickness from 3mm /1mm to 2mm depends on radiation level. The lead sheets extend the full width and height of the door. Lead thickness is to be equal to the shielding in the adjacent wall. Hardware can be provided with Stainless Steel Ball Bearing Butt Hinges 3 mm thick fixed flush to the frame and shutter etc., including overheads and contractor profit etc., complete for finished item of work in all floors	ONE SQM	27495.00	1093751

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
82	4817.20	RM	Supplying and fixing single side prelam solid panel PVC door frame (Choukhat): Providing and fixing factory made Pac single side Prelam door frame of the size 50x47 mm with a wall thickness of 5mm, made out of extruded 5mm rigid Pac single side prelam sheet, meter cut at two corners and joined with 2 Nos. of 150mm long brackets of 15 x 15mm MS Square tube. The two vertical door profiles are to be reinforced with 19 x 19mm MS. square tube of 19 gauge. The door frame shall be fixed to the wall using 65/100mm long MS. Screws through the frame by using Pac fasteners. a minimum of 4 Nos. of screws to be provided for each vertical member and minimum 2nos. for horizontal member etc. complete as per manufacture specification and direction of Engineer-incharge including conveyance of all materials, labour charges for fixing, overheads & contractors profit complete for finished item of work in all floors for door of size 800mm x 2100mm.	ONE RM	500.00	2408600
83	1597.36	SQM	Providing and fixing 30mm thick factory made moulded door shutter- wood free consisting of frame made out of MS. tubes 19gauge thickness and size of 25mmX25mm for styles, top and bottom rails. MS. Frame shall have a coat of steel primers. The inner panel shall consist of 25mm thick high density EPS conforming to IS 4671-1984 bounded with 2mm thick termite proof, water proof and fire resistant moulded Pac sheet with 2,4,6 raised panel design in different plain and / or pre-lam colours after routing to the moulded design on one side and 2mm plain and / or pre-lam Pac sheet on other side of the EPS. The edge of panel to be sealed with lipping of 10mm wide PVC sheet bottom (made by sticking 2 rigid foam sheet of 5mm thickness using Pac solvent cement) and stiles sides 25mm(5mmX5) thick and 30mm width Pac sheet fitted along MS tube for lock provision for lock height 5mm thick Pac sheet of size 150mmX100mm fixed with upper and lower face of inner side of EPS panel etc., complete as per direction of Engineer – in-Charge, manufacture specification and drawing including ISI marked Aluminium fixtures 3 Nos. butt hinges (IS:205) of 150mm long, 1 No. aldrop (IS:2681) 250 mm long, 1 No. tower bolt (IS:204) of 150 mm x 10mm dia, 2 Nos. 125mm long handles (IS:208),1 No. Rubber / Nylon door stop bushes including labour charges for fixing the shutter to frame etc., including overheads & contractors profit complete for finished item of work for door of size 750mm x 2100mm	ONE SQM	3805.00	6077955
84			Supply and fixing powder coated aluminium fully glazed swing door as per the approved drawing with fixed fan light of 500mm height at top door using aluminium sections of 101.60 mmm x 44.45mm , 3.18 mm thick for frame and door shutter made of styles , top and middle rail of 47.62mm x 44.45mm , 3.18 mm thick and bottom rail of 114.30mm x 44.45 mm , 3.18mm thick,powder coating of alluminium sections 25mm microns thick, 5 mm thick plain float glass fitted with suitable aluminium glazing clips and rubber beading in fan light portion, double shutters fitted with 5mm thick frosted / ground glass in the top half and MDF Board: interior-Both Side Laminated -12 mm thick in the bottom half fitted with suitable aluminium glazing clips and rubber beading,shutters mounted on double action hydraulic floor spring of approved brand manufacture IS : 6315 marked , Hardwyn make M-3000 for doors including cost of cutting floors as required , embedding in floors			

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	134.00 SQM	and SS cover plates with brass pivot and sigle piece MS Sheet outer box with slide plate etc.complete (Weight Capacity up to 130 Kgs) as approved by Engineer-in-Charge including supply and fixing ISI marked powder coated aluminium fixtures of 3 Nos. of butt hinges (IS:205) of 150mm long(for each shutter), 4 Nos.tower bolts 10mm bolt (IS:204) 300mm long , 4 Nos.alluminium handles (IS:208) 150mm dia and 2 Nos. aldrops (IS:2681) 300mm long including labour charges for manufacturing door , fixing the door with required No. of screws etc., including overheads & contractors profit complete for finished item of work in all floors. (The Aluminium section used shall be standard make confirming to IS 1948 – 1961) and as approved by the Engineer) (2000mm x 2600mm)	ONE SQM	8069.00	1081246
85		Supply and fixing powder coated aluminium fully glazed swing door as per the approved drawing with fixed fan light of 500mm height at top door using aluminium sections of 101.60 mmm x 44.45mm , 3.18 mm thick for frame and door shutter made of styles , top and middle rail of 47.62mm x 44.45mm , 3.18 mm thick and bottom rail of 114.30mm x 44.45 mm , 3.18mm thick,powder coating of alluminium sections 25mm microns thick, 5 mm thick plain float glass fitted with suitable aluminium glazing clips and rubber beading in fan light portion, double shutters fitted with 5mm thick frosted / ground glass in the top half and MDF Board: interior-Both Side Laminated -12 mm thick in the bottom half fitted with suitable aluminium glazing clips and rubber beading,shutters mounted on double action hydraulic floor spring of approved brand manufacture IS : 6315 marked , Hardwyn make M-3000 for doors including cost of cutting floors as required , embedding in floors			
	163.80 SQM	and SS cover plates with brass pivot and sigle piece MS Sheet outer box with slide plate etc.complete(Weight Capacity up to 130 Kgs) as approved by Engineer-in-Charge including supply and fixing ISI marked powder coated aluminium fixtures of 3 Nos. of butt hinges (IS:205) of 150mm long(for each shutter), 4 Nos.tower bolts 10mm bolt (IS:204) 300mm long , 4 Nos.alluminium handles (IS:208) 150mm dia and 2 Nos. aldrops (IS:2681) 300mm long including labour charges for manufacturing door , fixing the door with required No. of screws etc., including overheads & contractors profit complete for finished item of work. (The Aluminium section used shall be standard make confirming to IS 1948 – 1961) and as approved by the Engineer) (1800mm x 2600mm)	ONE SQM	8568.00	1403438
86	227.40 SQM	Supply & fixing of Rolling shutter made of 80 x 1.25 mm machine rolled CRCA laths, interlocked together through their entire length and jointed together at the ends by end-locks, mounted on specially designed pipe shaft of 50mm dia nominal bore MS B class pipe with brackets, plates, guide channels, stoppers, bottom locking plates and arrangements for inside & outside locking with push-pull operations including cost of hood cover and springs complete, painted with one coat of approved steel primer, locks, ball bearings, all accessories etc., overheads & contractors profit complete for finished item of work as per special spn: 1108	ONE SQM	4901.00	1114487

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)	
87		Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly reinforced with 1.60 ± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), appropriate dimension of uPVC extruded glazing beads and uPVC extruded interlocks, EPDM gasket, wool pile, zinc alloy (white powder coated) touch locks with hook, zinc alloy body with single nylon rollers (weight bearing capacity to be 40 kg), G.I fasteners 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screws etc. Profile of frame & sash shall be mitred cut and fusion				
		welded at all corners, including drilling of holes for fixing hardware's 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 required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge inclusive of cost of Single / double glass panes of 4mm thick pin headed glass, wire mesh and silicon sealant . Note: For uPVC frame and sash extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable. Variation in profile dimension in higher side shall be accepted. But no extra payment on this account shall be made. (The rate is inclusive of overheads and contractor profit and in all floors)				
a)	362.10	SQM	Two track two panels sliding window made of (big series) frame 67 x 50 mm & sash 46 x 62 mm both having wall thickness of 2.3 ± 0.2 mm and single glazing bead / double glazing bead of appropriate dimension .	ONE SQM	7608.00	2754857
b)	553.48	SQM	Two track two panels sliding window made of frame 52 x 44 mm & sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension	ONE SQM	7310.00	4045939
c)	5009.36	SQM	Three track three panels sliding window with fly proof SS wire mesh (Two nos. glazed & one no. wire mesh panels) made of frame 92 x 44 mm & sash 32 x 60 mm both having wall thickness of 1.9 ± 0.2 mm and single glazing bead of appropriate dimension	ONE SQM	9925.00	49717898
88		Providing and fixing factory made uPVC white colour fixed glazed windows / Ventilators comprising of uPVC multi chambered frame and mullion (where ever required) extruded profiles duly reinforced with 1.60± 0.2 mm thick galvanized mild steel section made from roll forming process of required length (shape & size according to uPVC profile), uPVC extruded glazing beads of appropriate dimension, EPDM gasket, G.I fasteners 100 x 8 mm size for fixing frame to finished wall, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame shall be mitred cut and fusion welded at all corners, mullion (if required) shall be also fusion welded including drilling of holes for fixing hardware and drainage of water etc.				

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
		After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of required size and of approved quality, all complete as per approved drawing & direction of Engineer-in-Charge inclusive of cost of Single / double glass panes and silicon sealant. Note: For uPVC frame, sash and mullion extruded profiles minus 5% tolerance in dimension i.e. in depth & width of profile shall be acceptable. Variation in profile dimension in higher side shall be accepted. But, no extra payment on this account shall be made.			
	775.00	SQM Fixed windows / Ventilators made of (small series) frame 47 x 50mm & mullion 47 x 68 mm both having wall thickness of 1.9 ±0.2 mm and single glazing bead of appropriate dimension.	ONE SQM	7335.00	5684625
89		Providing and fixing 3 Track 3 Shutter Pre painted Steel sliding Window fabricated from roll formed sections made of Galvanized steel colour coated /powder coated (Base Steel as per IS 513 „D“ quality galvanized as per IS 277 with Zinc of 120 Gms./ Sq.mtr) with total coated thickness of 0.58mm. Primer Coat with epoxy primer of 5-7 microns thick, finished paint with a polyester paint of 12-16 microns thick and back coated with Alkyd backer of 5-7 microns or powder coated with pure polyester powder up to 50-60 microns thick. The External Section for Three Track Three Sliding Shutter should be of 44 x 107mm with a provision for bottom track insert profile of 10x9 mm made of aluminium. Section for Window glass shutter should be of 35x49mm , Section for Window Euro groove should be of 25x24mm made of plastic to accommodate standard accessories, and section for window lap strip should be of 21x4mm made of plastic. Section for Mesh Shutter should be of 35x49mm. The Window to be panelled with 4mm thick pin headed glass. The gaskets are to be made of Ethyl Propylene Diamine Manomer [EPDM]. Corner Brackets for internal and external frame to be made of glass filled nylon. Touch lock to be provided for Window Shutter. Sections are to be cut to length,			
	2222.57	SQM joined and assembled by means of corner brackets. The above frame to be fixed to Brick/Concrete masonry by using Nylon self expanding caps and driving MS electroplated 80mm screws into the caps through frames. The Grill for safety for windows to be made of 10mm thick square rod bars with 152mm pitch including cost and conveyance of all materials, accessories, labour charges for transportation, erection at site, overheads and contractor profit etc., complete for finished item of work.for complete item of work in all floors.	ONE SQM	9077.00	20174268

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
90			Supply and fixing of pre-painted steel windows & top hung and fixed louvered ventilators made of pre - painted steel (base steel as per IS 513 of -0.58 mm thick 'D' quality, galvanized as per IS 277 with zinc of 120 GSM) primer coated with epoxy primer of 5-7 microns thick, finish painted with a polyester paint of 12-16 microns thick and back coated with 5-7 microns thick alkyd backer, section for outer frame of 46 x 52 mm section and for shutter of 46 x 46 mm section for mullion 46 x 70 mm, and section for beading should be 18 x 25 mm and section for louvered ventilation of 33 x 56 mm Box section and the windows panelled with 4 mm thick pin headed glass & 4 mm pinhead glass for ventilators with Ethyl propylene Diamine monomer Gasket (EPDM) and the sections cut to length mitre joined with corner bracket centre mullions fixed using mullion cap and with handle made of high grade aluminium powder coated and nylon receiver, corner brackets made of CRCA with Zinc Phosphate, Mullion caps made of glass filled nylon, frames fixed to the concrete /masonry wall by means of self expanding screws including 10 mm square guard bars with 6" pitch including overheads & contractors profit etc., complete for finished item of work.				
	125.10	SQM	Centre fixed both side openable shutter window 1800mmx1800mm :	ONE	SQM	6297.00	787755
	4.00	SQM	Double shutter window 1500mmx1800mm :	ONE	SQM	6297.00	25188
91			Supplying and fixing of Fixed Louvered Ventilators made of pre - painted steel (base steel as per IS 513 of -0.58 mm thick 'D' quality, galvanized as per IS 277 with zinc of 120 GSM) primer coated with epoxy primer of 5-7 microns thick, finish painted with a polyester paint of 12-16 microns thick and back coated with 5-7 microns thick alkyd backer, The section for louvered ventilators should be of of 33 x 56 mm Box section paneled with 4 mm pinhead glass with Ethyl propylene Diamine monomer Gasket (EPDM) and the sections cut to length mitre joined with corner bracket . corner brackets made of CRCA with Zinc Phosphate. The frames to be fixed to the concrete /masonry wall by means of self expanding screws including 10 mm square guard bars with 6" pitch including cost cost and conveyance of all materials, labour charges for fixing, overheads and contractors profit etc., complete for finished item of work in all floors.				
	430.15	SQM	Fixed louvered ventilators of any size	ONE	SQM	5811.00	2499602
92	130763.90	Kg's	Supplying and fixing of MS doors, grill to windows, ventilators using MS angles, flat, square bars including cost and conveyance of all materials, cutting, bending, welding, all operational charges, labour charges, overheads and contractor profit etc., complete for finished item of work.	ONE	KG	120.00	15691668
93	205.00	SQM	Supply and fixing of cement bonded pre-laminated particle boards aluminum glazed partitions using 10mm cement bonded pre-laminated particle boards and 5.00 mm thick plain glass to full height. Using with LAM to a height of 0.91 meter at bottom panel and remaining height with glass and aluminum sections anodized to 12 to 15 microns and of sections of size 37mm x 62mm and 1.5mm thickness with one meter centre to centre duly fixed with clip beading on both sides including fixing the frame to pillars by M.S. flats, bolts and nuts including cost and conveyance of all materials etc., complete as directed during execution and overheads & contractors profit etc., complete for finished item of work	ONE	SQM	3886.00	796630

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
94	170.00	RM	Supplying and fixing 50mm dia nominal bore Medium Grade properties & weight as per IS 1239 ISI mark MS Tube for fixing of GI Sheet including cost and conveyance of all materials to work site and all operational, incidental, labour charges etc., complete for finished item of work in all floors for stair case head room roof.	ONE RM	735.00	124950
95			Supply and fixing jallies (cement concrete) of 50mm thick as per the design approved by the Engineer-in-Charge including cost and conveyance of materials to site and labour charges etc., overheads & contractors profit complete for finished item of work.			
	137.00	SQM	First Floor :	ONE SQM	883.00	120971
	191.00	SQM	Second Floor	ONE SQM	964.00	184124
	191.00	SQM	Third Floor :	ONE SQM	1045.00	199595
	152.00	SQM	Fourth Floor	ONE SQM	1126.00	171152
	253.00	SQM	Fifth Floor :	ONE SQM	1208.00	305624
	445.00	SQM	Sixth Floor :	ONE SQM	1289.00	573605
	377.00	SQM	Seventh Floor :	ONE SQM	1370.00	516490
	9.00	SQM	Eight Floor :	ONE SQM	1451.00	13059
96	2076.00	Sqm	Supplying and fixing of two shutter cupboards as per drawing with medium teak wood frames of size 75mm x 40mm and MDF Board Interior grade both sides laminated 18mm thick for shutters with 18mm x 12mm teak wood beading alround and supplying and fixing powder coated MS fixtures 3 Nos. butt hinges of size 100mm long(for each shutter), tower bolt 2 Nos. of 100mm x 10mm, 2 Nos of handles 100mm long and standard locking arrangements for shutters including cost and conveyance of all materials to site, labour charges, over heads and contractor profit etc., complete for finished item of work.	ONE Sqm	3258.00	6763608
97	3747.00	Sqm	Providing plinth protection using plain Cement Concrete general purpose tiles conforming to IS: 13801 using aggregates, cement, pigments of size 300 x 300 mm and thickness 20 mm of any shade for a width of 1200mm set over base coat of cement mortar (1:6), 12 mm thick using screened sand over PCC(1:5:10) bed 100mm thick along with drain constructed with 225 mm thick walls using fly ash cement / lime solid blocks of size 290mm x 225mm x 140mm from approved source having minimum crushing strength of 50 Kg/Sqcm. and plastering 2mm thick two coats with base coat of 8mm thick in CM (1:6) and top coat of 4mm thick in CM (1:4) for brick masonry drain, laying of tiles in between basement of the building and brick wall and as directed by the Engineer - in - charge including cost and conveyance of all materials to site, all labour charges like mixing of cement concrete, laying, curing, overheads & contractor profit etc., complete for finished item of work.	ONE Sqm	3326.00	12462522
98	79088.22	SQM	White washing two coats with white cement to ceiling to give an even shade after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials including cost of all materials , labour charges and incidental such as scaffolding , lift charges etc., and overheads & contractors profit complete for finished item of work in all floors.	ONE SQM	51.00	4033499

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
99	161001.50 SQM	Providing and applying Wall putty of White Cement or Polymer or Cement based of average 1 to 2 mm thickness over plastered surface to prepare the surface even and smooth after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials, applying emery paper, Sand the surface, clean & wipe off loose dust, applying knifing paste filler by putty knife / muslin pad, air dry for 2 - 3 hrs, sand with 180 and 320 No., emery paper for the surface preparation including cost and conveyance of all materials to work site and all operational, incidental, labour charges, over heads and contractors profit etc., complete for finished item of work in all floors for internal walls	ONE SQM	231.00	37191347
100	2688.00 SQM	Providing and applying water proof wall putty of white cement or polymer or cement based of average 1 to 2 mm thickness over plastered surface to prepare the surface even and smooth after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials, applying emery paper, Sand the surface, clean & wipe off loose dust, applying knifing paste filler by putty knife / muslin pad, air dry for 2 - 3 hrs, sand with 180 and 320 No., emery paper for the surface preparation, applying one coat of cement primer of interior grade-1 and two coats of poy-urethane paint (MRF) of light green or light blue colour with 1mm thickness with anti fungal and anti bacterial chemical resistance durable and non particle shedding including cost and conveyance of all materials to work site and all operational, incidental, labour charges, over heads and contractors profit etc., complete for finished item of work in all floors for internal walls and ceiling of Operation Theatre and labour rooms.	ONE SQM	502.00	1349376
101	218701.50 SQM	Supply & application of one coat water based cement primer of interior grade I and two coats of synthetic polymer luxury plastic emulsion paint of superior grade having VOC (Volatile Organic Compound) content less than 50 grams/litre for internal walls including cost and conveyance of all materials to site, incidental, operational and all labour charges etc., and overheads & contractors profit complete for finished item of work in all floors.	ONE SQM	235.00	51394853
102	83068.98 SQM	Supply & application of one coat water based cement primer of exterior grade II and two coats of synthetic polymer luxury plastic emulsion paint of superior grade having VOC (Volatile Organic Compound) content less than 50 grams/litre for exterior walls including cost and conveyance of all materials to site, incidental, operational and all labour charges etc., and overheads & contractors profit complete for finished item of work in all floors.	ONE SQM	285.00	23674658
103	31953.00 SQM	Providing and applying exterior Texture of average 2 to 3 mm thickness over plastered surface to prepare the surface even and smooth after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials, applying emery paper, Sand the surface, clean & wipe off loose dust, applying putty/ texture paint filler by putty knife / muslin pad, air dry for 2 - 3 hrs for the surface preparation including cost and conveyance of all materials to work site and all operational, incidental, labour charges, scaffolding charges, overheads and contractors profit etc., complete for finished item of work in all floors for external walls	ONE SQM	297.00	9490041

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
104	141.00 SQM	Supply & applying Melamine Polish Glossy/ Matt finish to the wood works duly cleaning the surface and applying emery paper, sand the wood with 180 No., emery paper and then with 320 No., emery paper, clean & wipe off loose dust, applying suitable knifing paste filler / wood filler by putty knife / muslin pad, air dry for 2 - 3 hrs, sand with 180 and 320 No., emery paper, apply two component wood sealer, air dry for 24 hrs, sand with 320 No emery paper, applying one coat of approved spraying thinner (for spraying)/ applying one coat of approved brushing thinner or general purpose thinner (for brushing) and apply (either with spray or brush) two coats of approved brand melamine including cost & labour charges, emery papers, cost of thinner & melamine polish, over heads and contractors profit etc., complete for finished item of work	ONE SQM	1362.00	192042
105	8481.95 SQM	Painting to new wood work and flush shutters with lappam finish , over a primary coat and painting two coats of synthetic enamel paint Grade-I VOC (Volatile Organic Compound) content less than 50 grams/litre of approved shade including cost and conveyance of all materials to site cost of primer coat and all labour charges etc. complete including applying sand paper on lappam coats for neat finish and overheads & contractors profit complete in all floors (APSS No.1200, 1207 & 1211).	ONE SQM	239.00	2027186
106	9967.65 SQM	Painting two coats with synthetic enamel paint Grade-II VOC (Volatile Organic Compound) content less than 50 grams/litre over primer coat of red oxide to new iron work including cost and conveyance of all materials to site, incidental, operational and all labour charges etc., and overheads & contractors profit complete for finished item of work in all floors. (SS No. 1201, 1212 & 1207).	ONE SQM	209.00	2083239
107	1111.00 Rmt	Supply and placing in position water stopper 8 - 10 mm thick 310 mm wide including cost and conveyance of all materials to site and sales and other taxes on all materials to site etc., complete for finished item of work	ONE Rmt	495.00	549945
108	14633.98 SQM	Providing and fixing in true horizontal level 15 mm - Mineral Fiber Ceiling tile of 595 x 595 (Square edge Fissura fine model) using hot dipped Galvanized Steel section exposed surface with pre-coated capping, main Tee of size 24 x 32 mm at every 1200 mm c/c maximum and rotary stitched cross tee of size 24 x 27 mm at every 600 mm c/c and sub-cross tee of size 24 mm x 25 mm at 1200 mm c/c and wall angle of size 19 x 19 mm fixed to periphery of the wall and the above grid is suspended at every 1200 mm c/c in both directions using 2.0 mm thick pre-straightened GI Wire including cost and conveyance of all materials and labour charges such as cutting , fixing of standing of frame work exposing roof making, overheads & contractor profit etc., complete for finished item of work in all floor in all floors.	ONE SQM	1228.00	17970527

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
109	1047.19	RM	Providing specialized polysulphide sealant treatment to the expansion joints on terrace (Size : 25mm x 12mm): Application of one coat of-High performance specially designed SBR latex polymer based bonding agent- ROOFBOND SBR (Armstrong) / POWER n BOND SBR (EBT) / NITOBOND SBR (Fosroc) ZORIBOND SBR (PMCC)/ SIKA LATEX (Sika) WATERSHIELD BOND SBRSTM - C 920 -95 /DIN 18549 TT -S-00227E or equivalent mixing with cement as per manufacturers c] Providing and application of Acrylic Polymer modified reinstatement concrete/mortar admixture with - OOFCRETE AR (Armstrong) / ZORIGROUT CMG (PMCC) / POWER n GUARD ARM (EBT) / WATERSHIELD AR / Fosroc to finish the damaged edges of joint and making the groove. d]. Providing and fixing of masking tape on top of the joint both sides. e]. Providing and fixing of Back up support material of Polyethelene foam to leave the depth of 12mm on the joint. f]. Providing and application of one coat of polysulphide primer with – Polysulphide primer on inner edge on joints. g]. Providing and application of Two part Polysulphide sealant to a width of 25mm and 12mm depth with - ROOFSEAL PS (Armstrong) / POWER n SEAL PS (EBT) /NITOSEAL PS 200 (Fosroc)/ ZORISEAL PS (PMCC) / SIKA POLYSULPHIDE (Sika) / WATERSHIELD PSComplies with BS 4254 - 83 or equavalent with putty knife and neat finish. h]. Removing of masking tape and providing and application of two coats of Acrylic elastomeric cementitious coating with – ROOFSEAL PS (Armstrong) / POWER n SEAL PS (EBT) /NITOSEAL PS 200 (Fosroc)/ ZORISEAL PS (PMCC) / SIKA POLYSULPHIDE (Sika) / WATERSHIELD PS including cost and conveyance of all	ONE RM	826.00	864979
110	1117.67	SQM	Providing and fixing of Expansion joint filler board for buildings, columns, beams and slabs 25 mm thick including cost and conveyance of all materials to site, all incidental, operational, labour charges etc.overheads & contractors profit complete for finished item of work as per approved drawing for all floors	ONE SQM	450.00	502952
111	2504.00	RM	Providing and fixing of 24 gauge aluminium sheet over expansion joint groove of width 15cm fixed to walls / columns at one edge and resting over the other block walls/columns concealing expansion joint with slotted holes for free edge of aluminium sheet to facilitate free movement of aluminium sheet over the finished surface of expansion joint and wall face using sheet metal screws with nylon receiver complete including cost and conveyance of all materials to site, all incidental, operational, labour charges , overheads & contractors profit etc., complete for finished item of work as per approved drawing (for all floors for vertical joints and bottom of slab)	ONE RM	77.00	192808
112	5008.00	SQM	Providing specialized high performance acrylic polymer modified elastomeric cementitious water proof coating to the bottom and sides of sunken slabs of toilets duly cleaning of the surface from dirt, dust and other contaminations, providing and application of two coats of high performance Acrylic polymer modified Elastomeric cementitious waterproof coating (1.8 Sq. Mtr. / Kg /Each Coat) including cost and conveyance of all materials to site, operationals & incidental charges, lift charges etc., and overheads & contractors profit complete for finished item of work in all floors	ONE SQM	593.00	2969744
113			Filling with well burnt cinder aggregate as per IS:2686-1977 in sunken slabs including cost and conveyance of cinder, labour charges for filling, ramming, overheads and contractor profit etc., complete for finished item of work			

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
	274.90	CUM	First Floor	ONE CUM	852.00	234215
	295.88	CUM	Second Floor	ONE CUM	856.00	253273
	217.88	CUM	Third Floor	ONE CUM	860.00	187377
	243.88	CUM	Fourth floor	ONE CUM	864.00	210712
	131.88	CUM	Fifth Floor	ONE CUM	868.00	114472
	158.88	CUM	Sixth Floor	ONE CUM	872.00	138543
	134.00	CUM	Seventh Floor	ONE CUM	875.00	117250
	9.00	CUM	Eight Floor	ONE CUM	879.00	7911
	9.00	CUM	Ninth Floor	ONE CUM	883.00	7947
	9.00	CUM	Tenth Floor	ONE CUM	887.00	7983
114			Reinforced cement concrete M 5 mix using 40mm size (SS5) hard granite metal (coarse aggregate) from approved quarry using batching and mixing plant of 15 cum - 20 cum per hour capacity including cost and conveyance of all materials like cement, fine aggregate (sand), coarse aggregate, water etc., to site including centering using Casurina Ballies , Bamboos , Wooden Reapers , Runners , Wood Posts , Wall Plates etc., shuttering, machine mixing, laying concrete, lifting concrete mechanically , vibrating, curing, etc., and overheads & contractors profit complete as per drawings but excluding cost of steel and it's fabrication charges for finished item of work (APSS NO. 402 & 403) for dummy columns.			
	66.00	CUM	Second Floor	ONE CUM	7347.00	484902
	33.00	CUM	Third Floor	ONE CUM	7726.00	254958
	67.50	CUM	Fourth Floor	ONE CUM	8105.00	547088
	6.00	CUM	Fifth Floor	ONE CUM	8484.00	50904
	4.00	CUM	Sixth Floor	ONE CUM	8865.00	35460
	23.00	CUM	Seventh Floor	ONE CUM	9244.00	212612
115	8357.50	RM	Providing 110 mm Dia ISI marked PVC down water take pipes with socket , 2.5mm thick 4.0 kg/sq.cm pressure of ISI marked including cost of necessary PVC Bends, shoes, iron / PVC clamps and all other accessories and fixing in position including cost and conveyance of all materials, operational & incidental charges including all labour charges for fixing at site etc., and overheads & contractors profit complete for finished item of work. (APSS No. 1328)	ONE RM	304.00	2540680
116			RCM facia 50mm thick in CM(1:3) using screened sand for drop walls, fins with rabbit wire mesh & nominal reinforcement as directed by Engineer - In - Charge with dubara sponge finishing,including cost and conveyance of all materials to site, operationals & incidental, cost and conveyance of cement, wire mesh water to work site, centering, scaffolding and form work, lift charges etc., and overheads & contractors profit complete for finished item of work but excluding cost of steel and its fabrication charges for finished item of work (APSS NO.403&903)			
	388.00	SQM	Basement Floor :	ONE SQM	2002.00	776776
	407.50	SQM	First Floor :	ONE SQM	2002.00	815815
	77.00	SQM	Second Floor	ONE SQM	2166.00	166782
	77.00	SQM	Third Floor	ONE SQM	2329.00	179333

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
	27.00	SQM	Fourth floor	ONE	SQM	2492.00	67284
	23.00	SQM	Fifth Floor	ONE	SQM	2656.00	61088
	94.00	SQM	Sixth Floor	ONE	SQM	2819.00	264986
	71.00	SQM	Seventh Floor	ONE	SQM	2982.00	211722
117	6413.50	SQM	Providing and laying of precast concrete blocks for paving of M-40 grade and thickness not less than 80 mm for medium traffic areas conforming to IS 15658:2006 in all shapes and designs as per the manufacturer's specification including cost and conveyance cost of all materials like cement, sand water and Pavers etc., Complete per drawings and technical specification clause 1504 MORD including cost and conveyance of all materials and all labour charges, overheads and contractor profit etc., complete for finished item of work.	ONE	SQM	761.00	4880674
118	6000.00	CUM	Construction of Granular sub-base by providing HBG material conforming to Grading - III of MORT & H Table 400-2 including cost and conveyance of all material to work site and spreading in uniform layers with motor grader or by approved means, on prepared surface mixing by mix place method with Rotavator/ approved means, at OMC and compacting with vibratory roller to achieve the desired density etc., complete for finished item of work as per MoRT& H specification 401 (4th revision) and as directed by the Engineer- in - charge (Payment will be made based on levels for finished item of work)	ONE	CUM	1374.00	8244000
119	4500.00	CUM	Construction of un-reinforced, dowel jointed at expansion and construction joint only, plain cement concrete pavement, thickness as per design, over a prepared sub base, with cement content of 400 kgs/cum for M 30 (Grade), coarse and fine aggregates conforming to IS : 383, using batching and mixing plant of 15 cum per hour capacity using approved mix design, laid in approved fixed side formwork (steel channel, laying and fixing of 125 micron thick polythene film, wedges, steel plates including levelling the formwork as per drawing), spreading the concrete with shovels, rakes, compacted using needle, screed and plate vibrators and finished in continuous operation including provision of contraction and expansion, construction joints, applying debonding strips, primer, sealant, dowel bars, near approaches to bridge / culvert and construction joints, admixtures as approved, curing of concrete slabs for 14- days, curing compound (where specified) and water finishing to lines and grade as per drawing and Technical Specification Clause 1501 MORD including cost and conveyance of all materials , labour charges , overheads and contractors profit etc., complete for finished item of work.	ONE	CUM	6760.00	30420000
120	5223.00	RM	Providing M20 Kerb Stone of Size 125 x 300mm Reinforced Cement Concrete M20 conforming to IS: 13801 using aggregates, cement, including Earthwork Excavation 0.275x0.15 over PCC(1:5:10) bed 75mm thick and plastering 12mm thick Single Coat CM (1:5) for Exposed faces , and as directed by the Engineer - in - charge including cost and conveyance of all materials to site, all labour charges like mixing of cement concrete, laying, curing, Centring Cahrges overheads & contractor profit etc., complete for finished item of work.	ONE	RM	493.00	2574939

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
121	24.00	RM	Providing M20 Saucer drain with Hunch of Size 300 x 100mm Reinforced Cement Concrete M20 conforming to IS: 13801 using aggregates, cement, including Earthwork Excavation 0.425 x 0.15 over PCC(1:5:10) bed 0.45m x 0.075mm and plastering 12mm thick Single Coat CM (1:5) for Exposed faces , and as directed by the Engineer - in - charge including cost and conveyance of all materials to site, all labour charges like mixing of cement concrete, laying, curing, Centring Cahrges overheads & contractor profit etc., complete for finished item of work.	ONE RM	386.00	9264
122	232.00	SQM	Roofing with UV resistant multi-wall polycarbonate sheets of any colour 10mm thick fixed with Aluminium Universal glazing set 40mm wide and as per drawing etc., complete including cost and conveyance of all materials, labour charges, overheads and contractors profit etc., but excluding the cost of purlins,rafters,trusses,aluminium universal glazing set complete for finished item of work	ONE SQM	2004.00	464928
123	69.00	RM	Supplying and fixing Aluminium Universal glazing set 40mm wide for jointing and fixing Polycarbonate sheets including cost and conveyance of all materials, labour charges, overheads and contractors profit etc., complete for finished item of work	ONE RM	150.00	10350
124	14119.66	KGS	Suplying and fabricating, erecting and fixing in position tubular trusses of approved design with M.S tube conforming to I.S specifications including roof frame work consisting of rafters,ties struts and purlins including cost of foundations bolts, cleats, bearings plates,etc.,complete as per the approved drawing including cost and conveyance of all materials, labour charges for fabrication and fixing, hire charges of all tools and plants, all incidental charges, overheads and contractor profit etc., complete for finished item of work in all floors as directed by the Engineer-in-Charge	ONE KG	144.00	2033231
125	258.00	SQM	Supplying and fixing of Pre-painted Galvalume Trapezoidal Profile Roofing sheets with 0.50mm thickness, Coating: Alu-Zinc coating AZ150 GSM. Tensile Strength: 550 MPA. Paint coating: Regular Modified Polyester painting. Painting Thickness (Top): 18 to 20 Microns, (Bottom): 5 to 7 Microns. Sheet Width: 1.020, Length: Maximum 12 Meters with Regular Range Colours fixed with G.I 'J' bolts & nuts 8 mm dia with bitumen & G.I limpet washers filled with white lead & including a coat of approved steel primer and two coats of approved paint on over lapping of sheets complete (up to a pitch of 600) etc., complete, excluding the cost of purlins, rafters, trusses including cost and conveyance of all materials , labour charges , overheads and contractors profit etc., complete for finished item of work i	ONE SQM	754.00	194532

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
126	14000.98	SQM	Supplying and fixing Gyp Board Suspended regular single layer false ceiling (GS-MFSC-4.1) using 12.5 mm thick Gyp Board conforming to IS 2095 - 1993 fixing to Gyp steel GI perimeter channels of size 20 mm x 27 mm x 30 mm(web) of 0.55 mm thick along the perimeter of ceiling screw fixed to brick work/ partition at 610 mm c/c and suspending the frame work using Intermediate channels (45 mm x 15mm x 15mm x 0.9 mm) from soffit at 1220 mm c/c with ceiling angle (25 mm x 10 mm x 0.55 mm) fixed with GI Cleat and steel expansion fasteners & connecting clip to the ceiling channels (with knurled web of 51.5 mm x 26 mm x 10.5 mm x 0.55 mm) fixed in direction perpendicular to the intermediate channel at 457 mm c/c and fixing the 12.5 mm tapered edge Gypboard with 25 mm drywall screws at 230 mm c/c & jointing and finishing using joint compound and paper tape to have a flush look including filling the tapered & square edges with jointing compound, two coats of drywall topcoat including overheads and contractor profit etc., complete for finished item of work in all floors	ONE SQM	1221.00	17095197
127	2465.00	SQM	Supplying and fixing Gyp board Fine line Grid false ceiling (GS-FLC-4.6) using 12.5mm thick Gyp Board sheet tiles of size 595mm x 595mm conforming to IS 2095 - 1992 fixing to Gyp steel pre-coated GI wall angle of size 25mm x 25mm x 0.70mm thick along the perimeter of ceiling screw fixed to brick work / partition at 610mm center to center and suspending the frame work using pre-coated GI Tee section (24mm x 38mm x 0.7mm) from soffit at 1220mm center to center fixed with GI Soffit Cleat, rawl plugs and steel expansion fasteners & connecting clip to the GI Tee section with 4mm dia GI rod with galvanised spring steel level clip of PVC universal holding clips system at 1200mm center to center and fixing the 12.5mm Gypboard sheet tiles of size 595mm x 595mm and finishing two coats of drywall top coat, overheads and contractor profit complete for finished item of work in all floors.	ONE SQM	1118.00	2755870
128	122.00	SQM	Supplying and fixing Hot dipped Galvanised Iron Chain link mesh 8 gauge - (4.0mm) as per IS: 2721-1979: 2"x2" (50 mm x 50 mm) including cost and conveyance of all materials, binding wire, labour charges for fixing, overheads and contractor profit etc., complete for finished item of work	ONE SQM	574.00	70028
129	9.00	CUM	Filling with 40mm HBG metal including cost and conveyance charges, labour charges and overheads & contractors profit complete for finished item of work(APSS NO.309&310)	ONE CUM	1358.00	12222

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
130			Providing and fixing of expansion joint system related with floor location as per drawings and direction of Engineer-In-Charge. The joints system will be of extruded aluminum base members, self aligning / self centering arrangement and support plates etc. as per ASTM B221-02. The system shall be such that it provides floor to floor /floor to wall expansion control system for various vertical location in load application areas that accommodates multi directional seismic movement without stress to it's components. System shall consist of metal profiles with a universal aluminum base member designed to accommodate various project conditions and finish floor treatments. The cover plate shall be designed of width and thickness required to satisfy projects movement and loading requirements and secured to base members by utilizing manufacturer's pre-engineered self-centering arrangement that freely rotates / moves in all directions. The Self – centering arrangement shall exhibit circular sphere ends that lock and slide inside the corresponding aluminum extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement. Provision of Moisture Barrier Membrane in the Joint System to have watertight joint is mandatory requirement all as per the manufactures design and as approved by Engineer -in- Charge . (Material shall confirm to ASTM 6063.)				
	601.50	RM	Floor Joint of 200 mm gap	ONE	RM	7917.00	4762076
131			Providing and fixing of expansion joint system related with wall joint (internal/ external) location as per drawings and direction of Engineer-In- Charge. The joints shall be of extruded aluminum base members, self aligning / centering arrangement and support plates as per ASTM B221- 02. The material shall be such that it provides an Expansion Joints System suitable for vertical wall to wall/ wall to corner application, both new and existing construction in office Buildings & complexes with no slipping down tendency amongst the components of the Joint System. The Joint System shall utilize light weight aluminum profiles exhibiting minimal exposed aluminum surfaces mechanically snap locking the multicellular to facilitate movement. (Material shall confirm to ASTM 6063.)				
	1496.00	RM	Wall Joint of 200 mm gap	ONE	RM	5485.00	8205560

S. No.	Quantity		Description of Work	Unit (in words)		Rate In Rs.	Amount (Rs.)
132			Providing and fixing of expansion joint system of approved make and manufactures for various roof locations as per approved drawings and direction of Engineer-In-Charge. The joints shall be of extruded aluminum base members with, self aligning and self centering arrangement support plates asper ASTM B221-02. The system shall be such that it provides watertight roof to roof/roof to corner joint cover expansion control system that is capable of accommodating multidirectional seismic movement without stress to its components. System shall consist of metal profile that incorporates a universal aluminum base member designed to accommodate various project conditions and roof treatments. The cover plate shall be designed of width and thickness required to satisfy movement and loading requirements and secured to base members by utilizing manufacturer's pre-engineered self-centering arrangement that freely rotates / moves in all directions. The Self centering arrangement shall exhibit circular sphere ends that lock and slide inside the corresponding aluminum extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement. The Joint System shall resists damage or deterioration from the impact of falling ice, exposure to UV, airborne contaminants and occasional foot traffic from maintenance personnel. Provision of Moisture Barrier Membrane in the Joint System to have water tight joint is mandatory requirement. Material shall confirm to ASTM 6063.				
	1228.00	RM	Roof Joint of 200 mm gap	ONE	RM	6323.00	7764644
133	4865.00	SQM	Providing and fixing Glass Reinforced Concrete (GRC / GFRC) JALI / SCREEN / GRILL OF - 40mm thick as per the design of Architects / Consultants including fixing to wall openings at locations as specified with GI steel inserts in the panel , so as to avoid face fixing, with bolts and L / flat GI steel cleats fixed to the wall with fasteners . where the individual panels should be self supported, also the panels should have grooves between each other of 3,5,8 mm as per the panel size, building height and design of the panels & these grooves can be left open or PU sealant with a backer rod - backing be put inbetween the grooves, finished & fixed to the wall / GI steel metal framework all in perfect line and level, complete and finishing with water repellent coating as specified by manufacturer - M/S - PRECON GFRC LLP - PUNE, MAHARASHTRA.	ONE	SQM	3753.00	18258345
134	60.00	NOS	Supply and delivery and fixing of encapsulated plastic steps for man holes manufactured as per companies standard specification including cost of materials packing as per companies standards, loading, transportation, unloading and stacking at site of work including labour charges for fixing, overheads and contractor profit etc., complete for finished item of work.		EACH	189.00	11340
135	10.00	NOS	Supplying & fixing 602 x 602 mm CI man hole frame and cover (light weight) 30 Kgs including cost and conveyance of all materials to work site and all operational, incidental, labour charges etc., complete for finished item of work in all floors for Overhead tank.		EACH	3262.00	32620

S. No.	Quantity	Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
136	950.00 SQM	Supply and application of epoxy flooring of light green or light blue colour in Operation Theatres and labour rooms - SIKA Epoxy seamless joint free finish with 3mm thickness and anti slip & water washable chemical resistance durable and non particle shedding with attractive finishing including cost and conveyance of all materials and all labour charges, overheads and contractor profit etc., complete for finished item of work in all floors.	ONE SQM	1341.00	1273950
137	500.00 RM	Supply and application of epoxy coving with SIKA brand with 50mmx50mm width at the corners of the all walls in Operation Theatres, labour rooms including cost and conveyance of all materials and labour charges, overheads and contractor profit etc., complete for finished item of work .	ONE RM	585.00	292500
138	5178.00 SQM	Vaccum dewatering cement concrete flooring 50mm thick using M 30 grade design mix corresponding to IS 456 with minimum cement content of 400 kgs per 1 cum of concrete and required quantity of Chemical Admixtures per 1 cum of concrete using batching and mixing plant of 15 cum to 20 cum per hour capacity with 20mm size graded machine crushed hard granite metal (coarse aggregate - as per IS 383 - 1970 and IS 2386 Part 1 to Part 8) from approved quarry in panels as per drawing / design, laid to proper level and slope including consolidating with power driven mechanical vibrators (both needle & screed vibrators), dewatering by vacuum process "Tremix" method, floated with neat cement and power troweled to achieve smooth finishing, including MS Shuttering, finishing, rounding of the edges, curing including cost and conveyance of all materials like cement, coarse aggregate, sand etc., to site, centering, shuttering, machine mixing, laying concrete, vibrating, curing, hire charges of all tools and plants, all other incidental and operational charges, labour charges and all taxes etc., complete for finished item of work but excluding cost of steel and its fabrication charges for finished item of work.	ONE SQM	481.00	2490618
Sub Total ::(Civil Works)					3031323598

PART-II WATER SUPPLY & SANITARY ARRANGEMENTS

S. No.	Quantity		Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
1			Supplying and laying, filling, jointing and testing SWG SP-1 pipe conforming to ISI 651 & 4127 with air tight Cement joints in CM (1.5:1) prop. including excavation of trenches and socket pits in any soil (except rock requiring blasting) and refilling with watering and tamping to the required slope including cost and conveyance of all materials to site and all labour charges , overheads & contractor profit etc., complete for finished item of work (APSS NO 1301 & 1318)				
	4990.00	RM	152.40mm dia upto 1524.0mm (5') depth	ONE	RM	704.00	35,12,960
	250.00	RM	203.20mm dia upto 1524mm (5') depth	ONE	RM	949.00	2,37,250
	250.00	RM	254mm dia upto 1524mm (5') depth	ONE	RM	1,373.00	3,43,250
	250.00	RM	300mm dia upto 1524mm (5') depth	ONE	RM	1,784.00	4,46,000
2			Manufacture,Supply, delivery, laying, jointing and testing of RCC NP3 Pipes conforming to B.I.S. 458/2003 in standard lengths with socket and spigot ends with suitable rubber rings including cost of all materials, rubber rings, unloading, hoisting, carefully lowering in the ready made trenches, laying true to alignment and gradient by using cranes, jointing with rubber rings and testing as per the specifications including cost and conveyance of all materials to site, labour charges, all other incidental and operational charges etc., complete for finished item of work				
	1000.00	RM	300mm dia	ONE	RM	1,546.00	15,46,000
	190.00	RM	450mm dia	ONE	RM	2,322.00	4,41,180
	133.00	RM	600mm dia	ONE	RM	3,646.00	4,84,918
3	368	NOS.	Supplying and fixing of SWG Gully traps 150mm x 100mm of ISI make confirming to IS 651 & 4127 with C.I grating & constructing cement brick masonry in CM (1:6) prop., intermediate chamber and fitted with 304.8 mm X 288.6 mm (12"x9") C.I Frame with hinged cover of standard make as approved including cost and conveyance of all materials to site, labour charges, overheads & contractors profit etc., complete for finished item of work.		EACH	606.00	2,23,008
4	321	NOS.	Constructing 904.0 mm (3'0") dia brick masonry inspection chamber as per IS - 4111: Part-1:1986 with cement mortar (1:6) prop using 2nd Class Clay Bricks of 225 mm thick from approved source having a minimum crushing strength of 5 N/sq.mm including plastering with cement mortar 1:3 prop; ½" thick both inside and outside fitted with 20" dia RCC manhole covers and frames including excavating pits up to a depth of 904 mm (3'-0") in all sorts of soils (exculding rock) and laying cement concrete (1:4:8) 150 mm thick using 40 mm HBG Metal and P.C.C. 1:2:4 benching and channel 100 mm thick as per Standard specification and including cost and conveyance of all materials like cement, sand, bricks, water etc., to site and all incidental and operational, labour charges like mixing cement mortar, constructing masonry, lift charges, curing , overheads & contractors profit etc., complete for finished item of work as per Standard specification.		EACH	6,951.00	22,31,271

S. No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
5	200 NOS.	Constructing 904.0 mm (3'0") dia brick masonry inspection chamber as per IS - 4111: Part-1:1986 with cement mortar (1:6) prop using 2nd Class Clay Bricks of 225 mm thick from approved source having a minimum crushing strength of 5 N/sq.mm including plastering with cement mortar 1:3 prop; ½" thick both inside and outside fitted with 20" dia RCC manhole covers and frames including excavating pits up to a depth of 1524 mm (5'-0") in all sorts of soils (excluding rock) and laying cement concrete (1:4:8) 150 mm thick using 40 mm HBG Metal and P.C.C. 1:2:4 benching and channel 100 mm thick as per Standard specification and including cost and conveyance of all materials like cement, sand, bricks, water etc., to site and all incidental and operational, labour charges like mixing cement mortar, constructing masonry, lift charges, curing , overheads & contractors profit etc., complete for finished item of work as per Standard specification.	EACH	10,858.00	21,71,600
6	991 NOS.	Constructing 457.2 mm x 457.2 mm (1'6"x1'6") brick in CM 1:6 prop. Masonry. Inspection chamber upto 914.4 mm (3'0") and fitted with light weight 457.2 mm x 457.2 mm (1'6"x1'6") C.I frame and cover of 20 Kg including cost and conveyance of all materials like cement, sand, bricks, water etc., to site and all incidental and operational, labour charges like mixing cement mortar, constructing masonry, lift charges, curing , overheads & contractors profit etc., complete for finished item of work as per Standard specification.	EACH	4,079.00	40,42,289
7	18 NOS.	Construction of sewer conical manhole 1200mm dia for 300mm dia pipe (up to an average depth of 1.60m) as per details of type design with standard cement bricks made with CM(1:2) prop. Inclusive of CC(1:2:4) Prop. Using 6mm to 20mm HG metal for benching, haunches and channels with inside plastering one coat of CM(1:1) prop. 20mm thick, outside ,inside plastering in CM(1:3) prop. the foundation concrete in CC(1:4:8) prop. using 40mm nominal size hard broken granite stone and supporting incoming pipes with concrete block/masonry wherever necessary including finishing the gap with CM(1:1) prop. on the sides excluding supply and fixing of manhole frame and cover and fiber encapsulated steps including fixing of safety grills, cost and conveyance of all other incidental and operation charges etc., complete	EACH	30,827.00	5,54,886
8	15 NOS.	Construction of sewer conical manhole 1500mm dia for 450mm dia pipe (up to an average depth of 1.60m) as per details of type design with standard cement bricks made with CM(1:2) prop. Inclusive of CC(1:2:4) Prop. Using 6mm to 20mm HG metal for benching, haunches and channels with inside plastering one coat of CM(1:1) prop. 20mm thick, outside ,inside plastering in CM(1:3) prop. the foundation concrete in CC(1:4:8) prop. using 40mm nominal size hard broken granite stone and supporting incoming pipes with concrete block/masonry wherever necessary including finishing the gap with CM(1:1) prop. on the sides excluding supply and fixing of manhole frame and cover and fiber encapsulated steps including fixing of safety grills, cost and conveyance of all other incidental and operation charges etc., complete	EACH	51,374.00	7,70,610
9	10 NOS.	Construction of sewer conical manhole 1500mm dia for 600mm dia pipe (up to an average depth of 1.60m) as per details of type design with standard cement bricks made with CM(1:2) prop. Inclusive of CC(1:2:4) Prop. Using 6mm to 20mm HG metal for benching, haunches and channels with inside plastering one coat of CM(1:1) prop. 20mm thick, outside ,inside plastering in CM(1:3) prop. the foundation concrete in CC(1:4:8) prop. using 40mm nominal size hard broken granite stone and supporting incoming pipes with concrete block/masonry wherever necessary including finishing the gap with CM(1:1) prop. on the sides excluding supply and fixing of manhole frame and cover and fiber encapsulated steps including fixing of safety grills, cost and conveyance of all other incidental and operation charges etc., complete	EACH	50,122.00	5,01,220

S. No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
10	2254 NOS.	Supplying and fixing of 4" (101.6mm) multi floor trap with jali - UPVC/SWR pipe fittings as per site requirements with standard practice for all floors including cost and conveyance of all materials to site, labour charges , overheads & contractors profit etc., complete for finished item of work.	EACH	151.00	3,40,354
11	989 NOS.	Supplying and fixing European Water Closet of 1st quality conforming to IS:2556-Part-2-1973 of white glazed with 'S' trap, supplying and fixing best Indian make plastic seat and lid for European water closets with rubber or plastic Buffers as per IS 2548-1996 and 10 litres capacity single flush PVC low level cistern with internal components and fixed using required size of nails and screws, angle stop cock 12.70mm dia. first quality Indian make heavy duty, 12mm PVC connections with brass union nuts CP coated including cost and conveyance of all materials to site, overheads & contractors profit etc., complete for finished item of work for all floors.	EACH	5,550.00	54,88,950
12	204 NOS.	Supplying and fixing 580mm x 440mm long Orissa pan white glazed Water Closet 1st quality ISI marked confirming to IS:2556-Part-3-1981 with "P" or "S" trap, ISI marked and providing masonry seat, CC squatting plate and 10 litres capacity single flush PVC low level cistern with internal components fixed on 2 Nos. of teak wood blocks of size 76.20mm x 101.60mm using required size of nails, screws as approved by Engineer-in-charge, angle stop cock 12.70mm dia. first quality Indian make heavy duty, 12.70mm PVC connection with brass union nuts CP coated , 31.75mm brass plumber union, P trap or S trap of Indian W.C. shall be encased on CC (1:2:4) 150mm around well above the joint to stop leakage at the joint etc., complete including cost and conveyance of all materials to site, cost of CC bed, labour charges, overheads & contractors profit etc., complete for finished item of work.	EACH	4,737.00	9,66,348
13	1113 NOS.	Supplying and fixing Indian make Flat Back Wash Hand Basin 1st quality conforming to IS:2556-Part-4:1972 of size 550mm x 400mm with 32 mm nominal size C.P. Fitting with parallel pipe thread conforming to IS:2963-1979 and fitted with 15 mm nominal bore Chromium Plated Pillar Tap of 1st quality Indian make heavy duty complete with standard CI brackets including wooden blocks , 1 No.12.70mm PVC connection with brass union nuts CP coated , angle stop cock 12.70mm dia. first quality Indian make heavy duty, 31.75mm dia. PVC flexible waste pipe 914.4mm length of 1st quality including cost and conveyance of all materials to site, labour charges , overheads & contractors profit for finished item of work	EACH	2,673.00	29,75,049
14	335 NOS.	Supplying and fixing of stainless steel sink of size 914.4 mm x457.2mm, 1mm thick of Indian make fixed on cantilever brackets including supply and fixing 31.75mm C.P. waste coupling, 31.75 mm dia PVC flexible waste pipe of 914.4 mm length of 1st quality ncluding chiselling brick masonry wall and making good & restoring to original surfaces overheads & contractors profit complete.for finished item of work in all floors.	EACH	8,344.00	27,95,240
15	2 NOS.	Supplying and fixing of stainless steel sink of size 508.00mm x 457.2mm x 203.20mm, 1mm thick of Indian make fixed on cantilever brackets including supply and fixing 31.75mm C.P. waste coupling, 31.75 mm dia PVC flexible waste pipe of 914.4 mm length of 1st quality ncluding chiselling brick masonry wall and making good & restoring to original surfaces , overheads & contractors profit complete for finished item of work in all floors	EACH	6,019.00	12,038

S. No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
16	297 NOS.	Supplying and fixing white glazed flat back Bowl urinals of size 440 mm x 265 mm x 315 mm with integral flushing rim fixed with screws complete Indian make (HSW/Parry/Neycer) conforming to IS:2556-1995 as approved by Engineer-in-charge, including supply and fixing 12.7mm PVC connection with brass plumber union nuts CP coated, 12.70mm push cock 1st quality of approved make , 31.75 mm dia PVC flexible waste pipe of 914.4 mm length of 1st quality including cost and conveyance of all materials to site, labour charges , overheads & contractors profit complete for finished item of work for all floors.	EACH	3,801.00	11,28,897
17	179 NOS.	Supplying and fixing of 16mm to 20 mm thick polished marble slab partitionis of size 4' 0" x 2' 0" for urinals including full rounding the edges , fixing in position, polishing, including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work for all floors.	EACH	2,386.00	4,27,094
18	1166 NOS.	Supplying and fixing NP soap dish heavy type of approved make ISI quality with NP screws etc., complete including cost and conveyance of all materials, labour charges for fixing , overheads & contractors profit for finished item of work in all floors	EACH	266.00	3,10,156
19	1143 NOS.	Supplying and fixing TV shape mirror with plastic frame of size 609.6mm x 457.2mm , plywood back with NP screws 1st quality including cost and conveyance of all materials, labour charges , overheads & contractors profit for finished item of work in all floors.	EACH	600.00	6,85,800
20	615 NOS.	Supplying and fixing of Towel rail 24 " Jaquar make Cintinental series Chrome finish with 7 years warranty including cost and conveyance of all materials, labour charges , overheads & contractors profit for finished item of work.	EACH	1,760.00	10,82,400
21	397 NOS.	Supplying and fixing NP bib taps of size 12.70mm dia of Indian make heavy duty (short body) as approved by the Engineer-In-Charge including cost and conveyance of all materials, labour charges , overheads & contractors profit complete for finished item of work in all floors.	EACH	289.00	1,14,733
22	1328 NOS.	Supplying and fixing Bib cock Jaquar Continental series Chrome finish as approved by the Engineer-In-Charge including cost and conveyance of all materials, labour charges , overheads & contractors profit complete for finished item of work in all floors.	EACH	1,025.00	13,61,200
23	1239 NOS.	Supplying and fixing NP coat hook Jaquar make Queen series with 7 years warranty:Chrome plated including cost and conveyance of all materials, labour charges, overheads & contractors profit for finished item of work in all floors.	EACH	1,025.00	12,69,975
24	883 NOS.	Supply & fixing bib cock cum health faucet with 1 m long flexible tube and wall hook of Jaquar make queen series Chrome plated with 7 years warranty including cost and conveyance of all materials, labour charges , overheads & contractors profit for finished item of work.	EACH	4,733.00	41,79,239
25	251 NOS.	Supply & fixing F12.7x 152.0 mm NP shower rose heavy including cost and conveyance of all materials and all labour charges, overheads & contractors profit complete for finished item of work for all floors.	EACH	208.00	52,208
26	259 NOS.	Supply & fixing Wall Mixer with provision for overhead shower and 115mm long bend pipe with wall flange Jaquar make Continental series, Chrome finish with 7 years warranty including cost and conveyance of all materials, labour charges , overheads & contractors profit for finished item of work.	EACH	4,480.00	11,60,320

S. No.	Quantity		Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
27			Supply and fixing of Ashirvad/ Ajay/ Astral Flowguard or equivalent CPVC Pipes and Fittings SDR 11 to meet the requirement of ASTM-D 2846 and are produced in CTS (Copper Tube Sizes 1/2" to 2") for hot and cold water (IS 15778:2007) including cost and conveyance of all materials to site, labour charges for fixing, overheads & contractors profit complete for finished item of work at all floor levels.				
	3926.00	RM	15.90mm OD pipe	ONE	RM	77.00	3,02,302
	4060.00	RM	22.20mm OD pipe	ONE	RM	117.00	4,75,020
	5084.00	RM	28.60mm OD pipe	ONE	RM	182.00	9,25,288
	4177.00	RM	34.90mm OD pipe	ONE	RM	289.00	12,07,153
	2148.00	RM	41.30mm OD pipe	ONE	RM	395.00	8,48,460
	5325.00	RM	54.00mm OD pipe	ONE	RM	608.00	32,37,600
28			Supply, Delivery & Fixing of HDPE Pipes (PE - 100 grade) 8 Kgs/Sq.cm conforming to IS 14333 -2000 for using underground drainage and sewerage systems including cost and conveyance of all materials, labour chrges, cost of all consumables, incidental chrges, overheads & contractors profit complete for finished item of work.				
	588.00	RM	125mm diameter	ONE	RM	680.00	3,99,840
	4963.00	RM	110mm diameter	ONE	RM	529.00	26,25,427
	121.00	RM	90mm diameter	ONE	RM	358.00	43,318
	4144.28	RM	75mm diameter	ONE	RM	259.00	10,73,369
29			Supply and delivery of "Resilient Seated Soft Sealing" Gate Valves (Sluice Valves) (PN 1.0 MPa with out By - Pass) with Body and Bonnet of Ductile Iron GGG-40/SG-400/15 or GGG-50/SG-500/7 or Equivalent as per IS1865, IS:3896-2 and Wedge fully Rubber Lined with food grade quality grade W270 grade EPDM, Replaceable Spindle Nut without gland packing with 3-O ring protection system on the Shaft and Seals of NBR. The Valves should be Vacuum tight and 100% leak proof with face to face dimensions as BS:5163 Type A/IS:14846. All the valves should be with fusion bonded Electrostatic Powder coating both inside and outside (Min 250 Microns) - RAL 5005 with Pocket Less Straight through body Passage conforming to Design standards of DIN-3202F4/BS:5163 Type A Flange drilling as per IS - 1538 including cost and conveyance of all materials, labour charges for fixing, overheads and contractors profit etc., complete for finished item of work				
	83	Nos	80mm diameter		EACH	12,964.00	10,76,012
	10	Nos	100mm diameter		EACH	15,522.00	1,55,220
	15	Nos	150mm diameter		EACH	24,145.00	3,62,175
30			Supply, Delivery, fixing and testing of D.I Double Flanged Swing Check type Reflux valves (Non Return Valves) (PN 1.0 Mpa) conforming to IS- 5312 (Pts-1&2) (with amendments up to date, if any) having Body, Cover, Door, Bearing holder with D.I.; Hinge pin, Door pin, Door suspension pin with Stainless Steel (IS 6603); Body seat ring , Door face ring, Bearing bushes, Plugs for hinge pin with Leadred Tin Bronze (IS 318); Bolts, Nuts with Carbon steel; Gaskets with Rubber; Hinges with Cast steel including cost and conveyance of all materials, labour charges for fixing, overheads and contractors profit etc., complete for finished item of work.				
	10	Nos	100mm diameter		EACH	19,834.00	1,98,340
	10	Nos	150mm diameter		EACH	28,457.00	2,84,570

S. No.	Quantity		Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
31			Manufacture, Supply and delivery, fixing and testing of CI Wafer Lug type Butterfly Valves conforming to IS 13095/1991 (Reaffirmed 1998) Operation done with worm actuator ISI marked including cost and conveyance of all materials, labour charges for fixing, overheads and contractors profit etc., complete for finished item of work.				
	10	Nos	Makes: Audco / Kirloskar / BDK / H.Shankar / Leader/ Zolotto 100mm diameter		EACH	7,994.00	79,940
	10	Nos	150mm diameter		EACH	11,907.00	1,19,070
32			Supplying & fixing GI pipe Medium Grade properties & weight as per IS 1239 ISI mark in ground or on wall including cost of tees, elbows, bends, reducers, couplings, running joints, union flanges, unions etc. with necessary excavation in all types of soils except rock requiring blasting, refilling, chiselling masonry walls and making good the walls & floors to the original surface and fixing MS clamps on TW blocks on walls including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work at all floor levels.				
	240.00	RM	32mm Nominal bore	ONE	RM	463.00	1,11,120
	280.00	RM	40mm Nominal bore	ONE	RM	516.00	1,44,480
	1485.00	RM	50mm Nominal bore	ONE	RM	567.00	8,41,995
33			Supplying and fixing 65 mm Nominal Bore GI pipe Medium Grade properties & weight as per IS 1239 in ground or on wall with GI fittings such as elbows tees couplings, nipples, plugs including excavation for trenches and refilling the trenches ,chiselling masonry walls and making good the walls & floors to the original surface and fixing MS clamps on TW blocks on walls including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work except for GI bends union and GI connectors with checkout and socket Tata or Zenith make or equivalent				
	1652.43	RM	65 mm dia	ONE	RM	951.00	15,71,463
34			Supplying and fixing Gunmetal Gate (GM peet) valve as per IS-778 Class - I , Indian make heavy type including cost and conveyance of all materials , labour charges , overheads & contractors profit complete for finished item of work.				
	316	NOS.	20mm Nominal bore		EACH	934.00	2,95,144
	397	NOS.	25mm Nominal bore		EACH	1,335.00	5,29,995
	581	NOS.	32mm Nominal bore		EACH	2,018.00	11,72,458
	206	NOS.	40mm Nominal bore		EACH	2,731.00	5,62,586
	171	NOS.	50mm Nominal bore		EACH	3,997.00	6,83,487
	159	NOS.	65mm Nominal bore		EACH	6,160.00	9,79,440
	175	NOS.	80mm Nominal bore		EACH	9,117.00	15,95,475
35			Supplying and fixing of SWR PVC pipes (Prince/Sudhakar/ Kisan/Supreme or any ISI brand) 4 Kg/Sq.cm. and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges, overheads & contractors profit complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)				
	9476.00	RM	75mm dia	ONE	RM	188.00	17,81,488
	6876.00	RM	110mm dia	ONE	RM	269.00	18,49,644

S. No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
36	693	NOS.	Construction of brick masonry support for GI pipe of size 304.80mm x 228.60mm x 228.60 mm in CM (1:8) prop including plastering and finishing with 12mm thick in CM (1:5) including cost and conveyance of all materials and all labour charges, overheads & contractors profit complete for finished item of work for all floors.	EACH	92.00	63,756
37			Supply and fixing of Gunmetal (GM) Ball valve with SS Ball and SS Spindle as per IS - Class - I, Indian make heavy type - 15 mm NB Size including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work.			
	125	NOS.	Ball valve 15mm	EACH	479.00	59,875
38	592500.00	LTRS	Providing and placing on terrace (at all floor levels)polyethylene water storage tank with double layer approved brand and manufacture with cover and suitable locking arrangement and making necessary holes for inlet and outlets and over flow pipes but without fittings and base support for tanks including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work.	LITER	9.88	58,53,900
39	2465.00	RM	Supplying and fixing of 101.60mm x 609.60mm white glazed porcelain channels 1st quality fixed in brick masonry to the required slopes , white cement pointing including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work for all floors.	RM	973.00	23,98,445
40	450.00	RM	Providing, laying Reinforced cement concrete Hume pipes of 300mm dia. NP-3 class for cross ducts including cost and conveyance of Pipes etc., complete and Labour charges for laying, jointing of 300mm dia. R.C.C Hume pipes in position including lifting, aligning, lowering and hoisting etc., as per drawing and as per MoRT&H Specification 2900, 2905 and 2906 (5th revision) and IRC Special Publication No: 13 and as directed by the Engineer-in-Charge for finished item of work	RM	1,261.00	5,67,450
41			Supplying & fixing Gunmetal (GM) Vertical Check (Non return) Valve as per IS-778 I-class heavy duty - including cost and conveyance of all materials and all labour charges, overheads & contractors profit complete for finished item of work			
	15	NOS.	40 mm NB Size	EACH	1,653.00	24,795
	15	NOS.	50 mm NB Size	EACH	2,524.00	37,860
42			Drilling of Bore well by the down the hole hammer drilling finished dia of 150/175 mm in all formations suitable for down the hole hammer drilling such as medium hard rock formation, all consolidated formations etc and reaming the bore to sub insertion of 180 mm UPVC casing pipe etc. confirming to IS specifications of 6 Kg/ cm2 including insertion of UPVC casing pipe with couplings sand any other relevent materials upto required depth as directed by the department, transportation of drilling rigs and supporting vehicle and including bore development and flushing bore at an average pressure of 150 PSI and conducting the yield test and crew charges required in fixation of pipe assembly completely done to the satisfaction of the department as stipulated in the technical specifications but excluding cost of casing pipe, couplings ,cap etc as per IS 2800 part 1 & 2 1979 and amendements time to time..Drilling of Bore Well of finished dia of 180 mm with Rotary Rig Plain Mandals Bore well Depth of (150 mm dia)			
	1000.00	RM	up to 90m depth	ONE RM	533	5,33,000
	800.00	RM	90m to 150m depth	ONE RM	570	4,56,000
43	750.00	RM	Supply and fixing of 180mm dia 6 kgs/sqm PVC casing pipe including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work	ONE RM	869.00	6,51,750

S. No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
44	10 No's	Supply and fixing of 180mm dia PVC bore cap including cost and conveyance of all materials and labour charges , overheads & contractors profit complete for finished item of work	EACH	358.00	3,580
45	10 No's	Geological survey charges for finalisation of location of bore well including cost, transportation of all equipment, incidental charges, labour charges, overheads and contractor profit etc., complete for finished item of work.	EACH	1,432.00	14,320
46		Supplying and fixing of SWR PVC pipes (Prince/Sudhakar/Kisan/Supreme or any ISI brand) 4 Kg/Sq.cm. and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges, overheads & contractors profit complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)			
	9478.00 RM	90mm dia	RM	241.00	22,84,198
47		Supplying and fixing of SWR PVC pipes (Prince/Sudhakar/Kisan/Supreme or any ISI brand) 4 Kg/Sq.cm. and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges, overheads & contractors profit complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)			
	2889.00 RM	160 mm dia	RM	512.00	14,79,168
48		Supplying and fixing of SWR PVC pipes (Prince/Sudhakar/Kisan/Supreme or any ISI brand) 4 Kg/Sq.cm. and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges, overheads & contractors profit complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)			
	2639.00 RM	200 mm dia	RM	452.00	11,92,828
49		Supplying and fixing of SWR PVC pipes (Prince/Sudhakar/Kisan/Supreme or any ISI brand) 4 Kg/Sq.cm. and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges, overheads & contractors profit complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)			
	3987.00 RM	250 mm dia	RM	674.00	26,87,238
Sub Total ::(WS & SA Works)					8,56,96,485

ELECTRIFICATION

S. No.	Quantity		Description of Work	Unit (in words)	Rate In Rs.	Amount (Rs.)
			PVC CONDUIT PIPE			
1	82366.00	RM	Supply and fixing of ISI 25mm outer dia (2.00 to 2.20)mm thickness, heavy grade with IS:9537 part 3 FRLS rigid PVC pipe (ISI marked) concealed in Roof Slabs with all required PVC deep junction boxes and all accessories including and labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	112.20	9241465
2	23978.00	RM	Supply and Fixing of 25mm outer dia (1.60 to 1.80)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required MS junction boxes and all accessories including masonry work for light, bell, fan, and separate plug point with hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	131.40	3150709
3	1800.00	RM	Supply and Fixing of 32mm outer dia (1.90 to 2.10)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC junction boxes and all accessories including masonry work for light, bell, fan, and separate plug point with hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	159.00	286200
4	4585.00	RM	Supply and Fixing of 20mm outer dia (1.40 to 1.55)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC junction boxes and all accessories including masonry work for run of mains including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	112.60	516271
5	83775.00	RM	Supply and Fixing of 25mm outer dia (1.60 to 1.80)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC junction boxes and all accessories including masonry work for run of mains including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	124.50	10429988
6	3690.00	RM	Supply and Fixing of 32mm outer dia (1.90 to 2.10)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC Deep Boxes and all accessories including masonry work for run of mains including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	153.00	564570
7	2538.00	RM	Supply and Fixing of 25mm outer dia (1.60 to 1.80)mm thicknes medium grade with IS:9537 part 3 FRLS rigid Surface P.V.C. pipe (ISI marked) on wall with all required PVC Junction Boxes conforms to IS : 3419 and all accessories fixing on chromium plated metallic base saddles/on trays for run of mains including all labour charges etc., complete. including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/BeljIn/Vasavi/DEC	ONE RM	111.10	281972
8	1296	NOS	Supply and fixing of fan hook in RCC slab of 12/15mm dia MS Rod while laying the slab.	EACH	86.30	111845
9	1738	NOS	Supply and erecting MS Galvanised fan hook box with hook in RCC slab including all Labour charges etc., complete.	EACH	45.70	79427
			LIGHT POINT WITH MODULAR SWITCH			
			Non - Residential Buildings			
10	13408	POINT	Wiring with 2 runs of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 6A Modular switch (ISI marked) with cover plate, Ceiling rose/BH/ SBH, including all labour charges etc., complete for Light, Bell, Fan and Exhaust Fan points etc., complete. (for Non Residential Building). Makes of wires:- Finolex / RR kabel / Havells KEI/Polycab Makes of switches:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)	EACH POINT	839.50	11256016

11		304	POINT	<p>Wiring with 2 runs of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 6A Modular switch (ISI marked) with cover plate, Ceiling rose/BH/ SBH, including all labour charges etc., complete for Light, Bell, Fan and Exhaust Fan points etc., complete. (for Non Residential Building) [with premium decorative coloured switches] Makes of wires:- Finolex / RR kabel / Havells KEI/Polycab Makes of switches:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>	EACH	POINT	819.00	248976
				BLANKING PLATE				
12		1268	NOS	<p>Supply and Fixing of one module PVC blanking plate (safety dummy plate for empty module) for closing the dummy blank modules in the modular switch board for ensuring safety etc., complete. Makes: Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>		EACH	23.90	30305
				MODULAR SOCKET ON COMMON BOARD				
13		2711	POINT	<p>Supply and Fixing of 6 Amps modular type (ISI marked) switch, and 6 A 3/2 pin Modular type socket with cover plate on a common switch board including giving all connections and all labour charges etc., complete. Makes of switches/sockets:-Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>	EACH	POINT	440.30	1193653
				6A MODULAR SOCKET ON SEPARATE BOARD WITH WIRING				
14		804	POINT	<p>Wiring with 2 of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 6A (ISI marked) modular type switches and 6A, 3/2 pin modular type socket with cover plate fixing on existing, separate modular switch box including all labour charges etc., complete. Makes of wires:- Finolex / RR kabel / Havells KEI/Polycab/Gloster/Goldmedal/GM/ Finecab/ Fortune Arrt/Anchor/Million Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>	EACH	POINT	718.70	577835
				2 No 6A SEPARATE SOCKETS with 1.5 Sq.mm WIRING				
15		1117	POINT	<p>Wiring with 2 of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 2 No of 6A (ISI marked) modular type switches and 2 No of 6A, 3/2 pin modular type socket with cover plate fixing on existing, separate modular switch box including all labour charges etc., complete. Makes of wires:-Finolex / RR kabel / Havells KEI/Polycab Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>	EACH	POINT	1010.30	1128505
				(4 No switches and 4 No sockets) for LABs & Computer Use				
16		1305	POINT	<p>Supply and fixing of 4 No of 6A (ISI marked) modular type switches with 4 No of 6A, 3/2 pin modular type sockets with cover plate on suitable hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges, giving all connections etc., complete for LABs & Computer Use. Makes of switches/sockets:-Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>	EACH	POINT	2142.40	2795832
				16A/6A MODULAR SOCKET WITH 16A MODULAR SWITCH				
17		1634	NOS	<p>Supply and fixing of 16A/6A, 2 in one, modular type socket with 16A switch (ISI marked) modular type with cover plate on existing modular metal switch box including all labour charges, giving all connections etc., complete. Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)</p>		EACH	524.40	856870
				20A MODULAR SOCKET FOR GYESER				
18		124	NOS	<p>Supply and Fixing of of 20A, modular type power socket outlet (ISI marked) with front cover plate on existing modular metal switch box including all labour charges, giving all connections etc., complete with following configurations 1) 20A Socket - 1 No</p> <p>Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/</p>		EACH	397.80	49327
				20A MODULAR SWITCH FOR GYESER				

19		91	NOS	Supply and Fixing of of 20A, modular type switch (ISI marked) modular type with front cover plate on existing modular metal switch box including all labour charges, giving all connections etc., complete with following configurations 1) 20A Switch - 1 No. Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/			EACH	321.80	29284
				32A DOUBLE POLE MODULAR SWITCH FOR RECORD ROOMS					
20		11	NOS	Supply and Fixing of 32A modular type Double Pole switch with indicator with suitable cover frame on the existing modular switch board including cost and conveyance of all material and all labour charges etc., complete for master control of individual hostel rooms/record rooms etc., as required at site. Makes of switches/sockets:-Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)			EACH	537.70	5915
				(2 No 16A Switch + 2 No 16A Socket and 2 No of 6A switches and 2 No of 6A sockets) for Computer, LAB and OTs Use					
21		95	NOS	Supply and Fixing of of 16A/6A, 2 in one, modular type power socket outlet with 16A switch (ISI marked) modular type and 2 No of 6A modular type sockets with 6A modular type (ISI marked) switch control with front cover plate on hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges, giving all connections etc., complete with following configurations 1) 16A Socket - 2 No 2) 16A Switch - 2 No 3) 6A socket - 2 No. 4) 6A switch - 2 No Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)			EACH	2310.20	219469
				(1 No 16A Switch + 1 No 16A Socket and 1 No of 6A switches and 1 No of 6A sockets) for Computer, LAB and OTs Use					
22		95	NOS	Supply and Fixing of of 16A/6A, 2 in one, modular type power socket outlet with 16A switch (ISI marked) modular type and 1 No of 6A modular type sockets with 6A modular type (ISI marked) switch control with front cover plate on hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges, giving all connections etc., complete with following configurations 1) 16A Socket - 1 No 2) 16A Switch - 1 No 3) 6A socket - 1 No. 4) 6A switch - 1 No Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)			EACH	1577.50	149863
				(1 No 20A Switch + 1 No 20A Socket) for Computer, LAB and OTs Use					
23		30	NOS	Supply and Fixing of of 20A, modular type power socket outlet with 20A switch (ISI marked) modular type with front cover plate on existing modular metal switch box including all labour charges, giving all connections including earthing etc., complete with following configurations 1) 20A Socket - 1 No 2) 20A Switch - 1 No. Makes of switches/sockets:- Legrand (Myrius) / Schneider (Clipsal X/			EACH	530.20	15906
				RUN OF MAINS					
24		25603	RM	Supply and run of 1 of 22 /0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing pipe for earth continuity including all labour charges etc., complete. .Makes: Finolex / RR kabel / Havells KEI/Polycab	ONE	RM		34.80	890984
25		17630	RM	Supply and run of 3 of 22 /0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing pipe for mains continuity including all labour charges etc., complete. .Makes:Finolex / RR kabel / Havells KEI/Polycab	ONE	RM		103.80	1829994
26		70470	RM	Supply and run of 3 of 2.5 sq.mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for individual lighting circuits including labour charges etc., complete as required for switch boards. .Makes: Finolex / RR kabel / Havells KEI/Polycab	ONE	RM		141.10	9943317
27		80140	RM	Supply and 3 runs of 4.0 sq mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing conduit pipe for run of mains including labour charges etc., complete as required including labour charges for 16A sockets and AC points .Makes: Finolex / RR kabel / Havells KEI/Polycab	ONE	RM		192.70	15442978

28		10660	RM	Supply & run of 3 of 6.0 Sqmm (84/0.3mm) (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for run of mains including labour charges etc. complete for SDB's etc as required. .Makes: Finolex / RR kabel / Havells KEI/Polycab	ONE	RM	272.00	2899520
29		5170	RM	Supply and run of 5 of 6 Sq mm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for circuits including labour charges etc. complete as required for run of mains from Lighting panel board to TPN DB'S with pin type lugs and connections. [for LDBs] .Makes:Finolex / RR kabel / Havells KEI/Polycab	ONE	RM	453.90	2346663
30		6030	RM	Supply & run of 5 of 10.0 Sqmm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in the existing conduit pipe for run of mains from Power panel board to TPN DB's with pin type lugs and connections etc., complete. [for PDBs] .Makes: Finolex / RR kabel / Havells KEI/Polycab	ONE	RM	696.70	4201101
				DISTRIBUTION BOARDS				
				DB for Air-conditioners (AC Box) Flush Mounting				
31		308	NOS	Supply and Fixing of single phase DB in sheet steel enclosure as per IS 8623; IS 13032; IEC 61439-3 with metallic plug and socket with 1 No. 20/32A,10KA 'c' curve SPMCB control including labour charges and giving connections etc., complete concealed in wall. Makes for DBs: Legrand(Ekinox 3) / Schneider-Acti9/ Makes for MCBs: Legrand-DX3 / Schneider-Acti9/Hager-h3/ .		EACH	2503.00	770924
				4-way TPN Lighting DB (LDB WITH RCCB) Flush Mounting				
32		49	NOS	Supply and fixing of TPN 4 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+12 Module) with provision to accommodate the RCCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB with 40A, 30mA, 4 Pole RCCB as incomer and 12 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)		EACH	16443.00	805707
				6-way TPN Lighting DB (LDB WITH RCCB) Flush Mounting				
33		130	NOS	Supply and fixing of TPN 6 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+18 Module) with provision to accommodate the ELCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB with 40A, 30mA, 4 Pole RCCB as incomer and 18 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)		EACH	19497.00	2534610
				4-way TPN Power DB (PDB WITH RCCB) Flush Mounting				
34		30	NOS	Supply and fixing of TPN 4 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+12 Module) with provision to accommodate the ELCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 63A, 10 KA breaking capacity 'c' curve 4 pole MCB with 63A, 30mA, 4 Pole RCCB as incomer and 12 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (POWER DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)		EACH	17070.00	512100
				6-way TPN Power DB (PDB WITH RCCB) Flush Mounting				

35		120	NOS	Supply and fixing of TPN 6-way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+18 Module) with provision to accommodate the RCCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 63A, 10 KA breaking capacity 'c' curve 4 pole MCB with 63A, 30mA, 4 Pole RCCB as incomer and 18 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (POWER DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	20125.00	2415000
				6-way TPN Lighting DB (LDB WITH RCCB & SPD) Flush Mounting					
36		31	NOS	Supply and fixing of TPN 6-way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+18 Module) with provision to accommodate the RCCB/SPD & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB as incomer with 4 Pole, 4 Module 15 KA 1.2 KV Voltage Surge Protector (SPD) and 3 No of 40A, 30mA, 2 Pole RCCB as sub-incomers and 12 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	42005.00	1302155
				8-way TPN Lighting DB (LDB WITH RCCB & SPD) Flush Mounting					
37		30	NOS	Supply and fixing of TPN 8-way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+24 module) with provision to accommodate the RCCB/SPD & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB as incomer with 4 Pole, 4 Module 15 KA 1.2 KV Voltage Surge Protector (SPD) and 3 No of 40A, 30mA, 2 Pole RCCB as sub-incomers and 18 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	44712.00	1341360
				8-way SPN DB Flush Mounting					
38		70	NOS	Supply and fixing of SPN 8 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3 suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve DP MCB as incomer and 6 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	7211.00	504770
				4-way Vertical Type MCCB D.B Concealed Mounting					
39		2	NOS	Supply and fixing of VTPN DB, 4 way vertical type MCCB distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, suitable to accommodate MCCB as incomer and single/three pole MCBs as outgoing with 63A, 4 Pole MCCB adjustable, conforms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release as incomer with 1No of 40A, 10 KA TP MCBs 'c' curve and and 2 No, 6-32A, 10 kA TP MCBs 'c' curve 3 No, 6-32A, 10 kA SP MCBs 'c' curve as outgoing including making connections and labour charges etc., complete concealed in wall. Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	30693.00	61386
				4-way Vertical Type MCCB D.B Flush Mounting					

40		5	NOS	Supply and fixing of VTPN DB, 4 way vertical type MCCB distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, suitable to accommodate MCCB as incomer and single/three pole MCBs as outgoing with 125A, 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release as incomer with 3No of 40/63A, 10 KA TP MCBs 'c' curve and 3 No. 6-32A, 10 kA SP MCBs 'c' curve as outgoing including making connections and labour charges etc., complete concealed in wall. Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	34683.00	173415
				8-way Vertical Type MCCB D.B Flush Mounting					
41		16	NOS	Supply and fixing of VTPN DB, 8 way vertical type MCCB distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, suitable to accommodate MCCB as incomer and single/three pole MCBs as outgoing with 125A, 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release as incomer with 7 No of 40/63A, 10 KA TP MCBs 'c' curve and 3 No. 6-32A, 10 kA SP MCBs 'c' curve as outgoing including making connections and labour charges etc., complete concealed in wall. Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	45864.00	733824
				8-way Vertical Type MCCB D.B Flush Mounting					
42		68	NOS	Supply and fixing of VTPN DB, 8 way vertical type MCCB distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, suitable to accommodate MCCB as incomer and single/three pole MCBs as outgoing with 125A, 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release as incomer with 6 No of 40/63A, 10 KA TP MCBs 'c' curve and 6 No of 6-32A, 10 KA TP MCBs 'c' curve as outgoing including making connections and labour charges etc., complete concealed in wall. Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	44611.00	3033548
				CABLE ADOPTER BOXES (CABLE END BOXES) FOR DISTRIBUTION BOARDS CONCEALED MOUNTING					
43		116	NOS	Supply and fixing of Cable adopter/Cable end box with cover suitable for 4-way TPN, IP-43 protection DBs including, massanory work etc., complete for concealed mounting. Makes: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno)			EACH	1197.00	138852
44		246	NOS	Supply and fixing of Cable adopter/Cable end box with cover suitable for 6-way TPN, IP-43 protection DBs including, massanory work etc., complete for concealed mounting. Makes: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno)			EACH	1613.00	396798
45		129	NOS	Supply and fixing of Cable adopter/Cable end box with cover suitable for 4-way/8-way VTPN MCCB DBs with IP-43 protection including, massanory work etc., complete for concealed mounting. Makes: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno)			EACH	3798.00	489942
				DB for Lift Machine Room power supply					
46		17	NOS	Supply and Fixing of 32-40A, 25/36 KA Four Pole MCCB with suitable sheet steel enclosure on wall for Power Supply in Lift Machine Room including all Labours charges etc complete with connections. [for Lift Machine Room power supply] Makes for DBs: Legrand(Ekinox 3) / Schneider-Acti9/Hager -Novello+/ Seimens/L&T-Newrange and Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	13209.00	224553
				40A/63A, DP MCB in SS Enclosure (for UPS Input/Output control etc.,)					

47		27	NOS	Supply and Fixing of 40/63A, 10 KA breaking capacity 'c' curve double pole MCB in sheet steel DP enclosure with IP 20 Protection etc., complete as per IS 8623; IS 13032; IEC 61439-3 including making connections etc., complete on wall. [for UPS Input/Output control etc.] Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager - Novello+ / Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	2076.00	56052
				40/63A, FP MCB in SS Enclosure (for UPS Input/Output control etc.)					
48		20	NOS	Supply and Fixing of 40/63A, 10 KA breaking capacity 'c' curve four pole MCB in sheet steel FP enclosure with IP 20 Protection etc., complete as per IS 8623; IS 13032; IEC 61439-3 including making connections etc., complete on wall. [for UPS Input/Output control etc.] Makes for DBs: Legrand(Ekinox 3) / Schneider-A9/Hager - Novello+ / Seimens/Havells STADx/L&T_x0002_Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			EACH	3330.00	66600
				63A FP MCCB on wall in S.S. enclosure					
49		24	NOS	Supply and Installation of 63A FP, MCCB,16KA on wall with suitable sheet steel enclosure with cable end boxes including all labour charges etc complete with connections. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno			EACH	12524.00	300576
				125A FP MCCB on wall in S.S. enclosure					
50		12	NOS	Supply and Installation of 125A FP, MCCB, 25KA on wall with suitable sheet steel enclosure with cable end boxes including all labour charges etc complete with connections. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno			EACH	15789.00	189468
				250A FP MCCB on wall in S.S. enclosure					
51		2	NOS	Supply and Installation of 250A FP, MCCB, 35/36KA on wall with suitable sheet steel enclosure with cable end boxes including all labour charges etc complete with connections. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno			EACH	32608.00	65216
				Earthing					
52		40	NOS	Providing independent earthing for Sophisticated Electronic equipment with 600mm x 600mm x 3.15mm thick copper plate rigidly fixed to 40mm dia G.I Pipe of 2.5 mtr length connected with reducer providing G.I funnel with wiremesh as per National Electric Code including C.C.Chamber of size 400m x 400m x 400mm covered with R.C.C. Slab filling with salt and charcoal giving earth connection from electrode with Copper strip of 25mm x 5mm x 200mm length to be bolted with nut bolts to G.I.pipe including 25mm x 3mm copper strip of 6Mtrs length connected from plate to Copper strip with all accessories and labour charges complete as per IS specification 732/1982 (Part II).			EACH	20962.00	838480
53		3	NOS	Providing independent earthing by excavating a trench to a depth of 2.5 M in all soils, as per size specified in the Data, using 100mm dia Heavy SWG Flange C.I (Cast iron) pipe of 2.5 Mtrs length with necessary accessories duly providing staggered holes including filling with equal proportion of Salt and Charcoal in layers and all labour charges etc., complete.			EACH	8266.00	24798
				G.I. STRIP/WIRE					
54	1254.00		RM	Supply and Run of No.8 SWG G.I wire including cost of all accessories and labour charges etc., complete.	ONE	RM	27.20	34109	
55	1814.00		RM	Supply and Run of 25mm x 3mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE	RM	85.10	154371	
56	435.00		RM	Supply and Run of 25mm x 6mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE	RM	150.90	65642	
57	333.00		RM	Supply and Run of 40mm x 6mm G.I Strip including cost of all accessories and labour charges etc., complete	ONE	RM	218.50	72761	
				COPPER STRIP/WIRE					
58	540.00		RM	Supply and Run of No. 8 SWG copper wire including cost of all accessories and labour charges etc., complete.	ONE	RM	131.50	71010	
59	830.00		RM	Supply and Run of 25mm x 3mm copper strip including cost of all accessories and labour charges etc., complete.	ONE	RM	638.00	529540	
60	170.00		RM	Supply and Run of 40mm x 6mm copper strip including cost of all accessories and labour charges etc., complete.	ONE	RM	1980.70	336719	
				FIXTURES					

61		4446	NOS	<p>Supply and fixing of 20-24W, not less than 1100mm length LED batten light with extruded aluminium housing and polycarbonate cover, input voltage AC 220 - 260 Volts with PF>0.9, Surge protection: 2KV,THD<15%, with inbuilt driver and frosted cover CCT: 3000K - 5700K, minimum CRI>70, .etc., complete including fixing on wall / Ceiling with PVC/TW round blocks with all accessories including giving connections and all labour charges etc., complete with 5 years warranty.</p> <p>a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GreenLites / Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight.</p>	EACH	778.00	3458988
62		50	NOS	<p>Supply and Fixing of heavy duty 9 W LED Down lighter, suitable for recessed/surface mounting made of diecast aluminium body with powder coating, acrylic diffuser with Driver as per IS: 15885 (Part 2/ Sec 13) : 2012 , operating voltage range of 150 to 265 Volts AC, P.F > 0.9, Surge protection: 2KV, THD<10% with high power LEDs having efficacy of ≥ 120 lumens / watt, CCT: 3000K - 5700K, minimum CRI > 70, luminaire performance complies to IS 10322 (Part 5 / Sec-3) etc., complete including fixing in the ceiling with recessed/surface mounting, cost of all accessories and giving connections etc., complete with 5years warranty.</p> <p>a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GreenLites / Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight</p>	EACH	925.00	46250
63		105	NOS	<p>Supply and Fixing of heavy duty 12 W LED Down lighter, suitable for recessed/surface mounting made of diecast aluminium body with powder coating, acrylic diffuser with Driver as per IS: 15885 (Part 2/ Sec 13) : 2012 , operating voltage range of 150 to 265 Volts AC, P.F > 0.9, Surge protection: 2KV, THD<10% with high power LEDs having efficacy of ≥ 120 lumens / watt, CCT: 3000K - 5700K, minimum CRI > 70, luminaire performance complies to IS 10322 (Part 5 / Sec-3) etc., complete including fixing in the ceiling with recessed/surface mounting, cost of all accessories and giving connections etc., complete with 5years warranty.</p> <p>a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GreenLites / Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight</p>	EACH	1339.00	140595
64		2257	NOS	<p>Supply and Fixing of heavy duty 18 W LED Down lighter, suitable for recessed/surface mounting made of diecast aluminium body with powder coating, acrylic diffuser with Driver as per IS: 15885 (Part 2/ Sec 13) : 2012 , operating voltage range of 150 to 265 Volts AC, P.F > 0.9, Surge protection: 2KV, THD<10% with high power LEDs having efficacy of ≥ 120 lumens / watt, CCT: 3000K - 5700K, minimum CRI > 70, luminaire performance complies to IS 10322 (Part 5 / Sec-3) etc., complete including fixing in the ceiling with recessed/surface mounting, cost of all accessories and giving connections etc., complete with 5years warranty.</p> <p>a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GreenLites / Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight</p>	EACH	1535.00	3464495
65		1011	NOS	<p>Supply, transportation and fixing of 36W Recessed/Surface mounting 2' x 2' (600x 600 mm) LED luminaire made of CRCA sheet housing with powder coated with acrylic diffuser, Constant current Driver as per IS: 15885 (Part 2/ Sec 13) : 2012 , With System lumen output ≥ 3200lm operating voltage range of 150 to 265 Volts AC, P.F > 0.9, Surge protection: 2KV, THD<10%, with high power LEDs having efficacy of ≥ 120 lumens / watt, CCT: 3000K - 5700K, minimum CRI>70 etc., complete including fixing in the ceiling with recessed/surface mounting, cost of all accessories and giving connections etc., complete with 5years warranty.</p> <p>a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GreenLites / Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight.</p>	EACH	3405.00	3442455
				Linear Profile LED Luminaire			

66		592	NOS	Supply, Transportation and Fixing of 23W/25W, 1100mm length Linear Profile LED Luminaire recessed/surface mounted with Aluminum extrusion, powder coated cover, input voltage AC 90-270 Volts with PF>0.95, Efficiency>90%, with high power LEDs having efficacy of ≥ 120 lumens / watt, System efficacy >95 lm/W, surge protection: 2KV, THD<15%, with inbuilt driver and frosted cover CCT: 3000K - 5700K, minimum CRI>70, .etc., complete including fixing of 23W Linear light duly recessed in the ceiling/surface mounted by hanging from ceiling with necessary mounting arrangements, jointing kit, connecting wire leads etc., and all accessories, giving connections and all labour charges etc., complete with 5years warranty. Makes: Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GreenLites / Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / High Bay Luminaire	EACH	3664.00	2169088
67		54	NOS	Supply, transportation and fixing of 120W LED High Bay Luminaire with high power COB LED made of pressure diecast aluminium housing with powder coated,Supply Input voltage 120 - 270 V AC, P.F > 0.90, high power LEDs having efficacy >120 lumines/watt, System efficacy >95lm/W and junction temperature < 70°C, with Ingress protection IP66, IK05, Driver surge protection 4KV, external Surge protection ≥ 5KV with wide/ Narrow beam optics, THD<10% at 110 Volts AC, driver efficiency >90%, CCT: 3000K - 5700K, minimum CRI>70, etc., complete including fixing to the ceiling at Entrance Foyer with necessary mounting arrangement cost of all accessories and giving connections etc., complete with 5years warranty. a) LUMINAIRE MAKE : Wipro / Philips/ GE-Venture / Crompton/ Bajaj /Greenlites / Havells/Halonix/ Surya b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG .	EACH	12156.00	656424
68		209	NOS	Supply and Fixing of batten holder/angle holder on existing block with 0.5W LED Lamp with input voltage 90 to 300V, Colour temperature 3000k - 6500k, Beam angle 170 - 220 degrees, B22 base and all labour charges etc., complete., in lieu of ceiling rose for bed light in hostel rooms or residential buildings. Makes: Phillips /Crompton / Bajaj / Havells /Halonix/GM/HPLSyska / Green Lites	EACH	128.00	26752
69		1856	NOS	Supply and Fixing of batten holder/angle holder on existing block with 5W LED Lamp with input voltage 90 to 300V, Colour temperature 3000k - 6500k, Beam angle 170 - 220 degrees, B22 base and all labour charges etc., complete. In lieu of ceiling rose. Makes: Phillips /Crompton / Bajaj / Havells /Halonix/GM/HPLSyska / Green Lites / Fortune Arrt / GoldMedal	EACH	202.00	374912
70		312	NOS	Supply and Fixing of skirting light (floor or step marker light), LED foot lamp with 3 or 4 No LEDs in built cover frame on existing 3/4 module metal switch board including all labour charges etc., complete in lieu of ceiling rose for bed light in hostel rooms or residential buildings or step marking in auditoriums. Makes: Legrand (Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)	EACH	239.00	74568
71		528	NOS	Supply and Fixing of 10W LED Mirror light fitting with Pressure die cast aluminium with opal diffuser with water tight clear glass with hinged wire guard etc., complete with IP 65 Protection. Makes: Philips/Bajaj / Crompton / Havells/ HPL.	EACH	694.00	366432
72		124	NOS	Supply and Fixing of 10W LED Bulk head fitting with Pressure die cast aluminium with opal diffuser with water tight clear glass with hinged wire guard etc., complete with IP 65 Protection. Makes: Philips/Bajaj/ Crompton / Surya / Havells / Greenlites/ Insta Power/HPL /Halonix/ Panasonic. / FortuneArrt	EACH	1138.00	141112
73		23	NOS	Supply and fixing of call bell on 6"x8" decolam block including giving connections, cost of all accessories and labour charges etc., complete. Makes: GM G Home / Gold Medal Olive / Million Zoom / Great white Omega/Koncept/Vimal opel/ Anchor/Vihan/CPL/ Havells Reo	EACH	258.40	5943
74		90	NOS	Supply and fixing of Ding dong bell on 6"x8" decolam block including giving connections, cost of all accessories and labour charges etc., complete. Makes: GM G Home / Gold Medal Olive / Million Zoom / Great white Omega/Koncept/Vimal opel/ Anchor/Vihan/CPL/ Havells Reo	EACH	350.40	31536
75		4	NOS	Supply and fixing of buzzer on 4"x4" decolam block including giving connections, cost of all accessories and labour charges etc., complete. Makes: GM G Home / Gold Medal Olive / Million Zoom / Great white Omega/Koncept/Vimal opel/ Anchor/Vihan/CPL/ Havells Reo	EACH	210.60	842
76		25	NOS	Supply and fixing of Electronic Music bell on 6"x8" decolam block including giving connections, cost of all accessories and labour charges etc., complete. Makes: GM G Home / Gold Medal Olive / Million Zoom / Great white Omega/Koncept/Vimal opel/ Anchor/Vihan/CPL/ Havells Reo	EACH	460.80	11520

77		84	NOS	Supply and fixing of Remote bell including giving connections cost of all accessories and all labour charges etc., complete. Makes: GM G Home / Gold Medal Olive / Million Zoom / Great white Omega/Koncept/Vimal opel/ Anchor/Vihan/CPL/ Havells Reo	EACH	953.70	80111
78		24	NOS	Supply and fixing of Cuboid Ceiling fan with integrated light, 400 mm sweep of external dimensions of size 580x580 mm, 95W,1750 RPM Single phase, 230V AC supply with all accessories with remote control in Lecture galleries. Make : Halonix.	EACH	7150.00	171600
79		3192	NOS	Supply and Transportation of 48" (1200mm) Sweep star rated Ceiling Fan, with double ball bearings, air delivery more than 200 cubic meter/min but without Regulator. Makes: Crompton HS Plus / Havells ES PLUS/Orient Energy Star/ Halonix(Zephyr)/Polycab(Synergy 50 ISI) / G.M. (Air Wave Premium)/Bajaj-Edge.	EACH	2665.00	8506680
80		3192	NOS	Supply and fixing of Modular type 2- Module, Electronic fan regulator hum free step type socket size in the existing switch board. Makes :- Legrand (Arteor/Myrius) / Schneider (Clipsal X/ Livia AB)/ Crabtree Murano or Ducor/L&T-englaze/ GM-(Four-Five)/ Goldmedal(GIFA)/ Million (M-VEE)	EACH	560.80	1790074
81		3192	NOS	Labour charges for fixing of ceiling fan including transportation and giving connections with 23/0060 size, 3 core round flexible copper wire leads of make Finolex/RR kabel/ Havells	EACH	211.10	673831
82		3326	NOS	Supply and erecting 19/20mm steel tube down rod of 0.6 mt length with bolts & nuts duly painted with matching colour of fan complete	EACH	162.90	541805
83		177	NOS	Supply and erecting 19/20mm steel tube down rod of 0.75 mt length with bolts & nuts duly painted with matching colour of fan complete Wall mounted Fan.	EACH	182.40	32285
84		50	NOS	Supply and Transportation and fixing of 16" (400mm) Wall mounted Fan. Makes: Crompton Wind Flo / Bajaj Elite / Havells Swing / Orient Wall 50/Halonix Krypton/G.M. (Bolt)/ Goldmedal(Nora-16) Exhaust fan	EACH	3205.40	160270
85		578	NOS	Supply and Transportation of 12" (300mm) Light duty exhaust fan with metallic blades and wire guard etc complete. Makes: Crompton / Bajaj Bahar WG / Havells Ventil Air-DSP / Orient hill air/Halonix /Polycab/G.M. (Xenix)/Goldmedal (Rapido-12)	EACH	2021.20	1168254
86		421	NOS	Supply and Transportation of 12" (300mm) ISI, 900 RPM Heavy duty exhaust fan with metallic blades with Mark. Makes: Crompton / Almounard / Havells Ventil Air x0002 DB	EACH	3836.70	1615251
87		994	NOS	Labour charges for fixing of Exhaust fan in wall with necessary connections and masonry work of making hole, finishing etc., complete	EACH	965.20	959409
88		998	NOS	Supply and fixing of louver shutter suitable for 12" Exhaust fan including all labour charges etc complete with connections and colouring matching to the wall with enamel paint.	EACH	293.30	292713
				LED STREET LIGHTS			
89		114	NOS	Supply, Transportation and Fixing of 30W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LEDs having system efficacy>120 lm/W and junction temprature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0mt of 25mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Greenlites(Hi_x0002_Lux) / b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	EACH	4215.00	480510
90		101	NOS	Supply, Transportation and Fixing of 60W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LEDs having system efficacy>120 lm/W and junction temprature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Greenlites(Hi_x0002_Lux) / b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	EACH	7084.00	715484

91		76	NOS	Supply, Transportation and Fixing of 90W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughened glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LEDs having system efficacy>120 lm/W and junction temperature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Greenlites(Hi_x0002_Lux) / b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG				
					EACH	10293.00	782268	
92		16	NOS	Supply and transportation of 90/100W LED Flood light Luminaire made of pressure diecast aluminium housing with powder coated,having protective toughened glass, Supply Input voltage 120 - 270 V AC, P.F > 0.90, high power LED's System efficacy >100lm/W and junction temperature < 70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5 / Sec-3), IK05, Driver surge protection 4KV, In house additional Surge protection ≥ 10KV with wide/ Narrow beam optics, THD<10% at 110 Volts AC, driver efficiency >90% , , CCT: 3000K -5700K, minimum CRI>70, etc., complete a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Greenlites(Hi_x0002_Lux) / b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG.				
					EACH	10061.00	160976	
				WATER HEATERS				
93				Supply, Transportation and fixing of storage / Pressure type Vertical / Horizontal 230/250V single phase 2000watts ISI mark 5 Star rated water heater with SS tank and ABS plastic body of 25 Ltrs capacity to withstand up to 6.5 bar of water pressure including all standard accessories and dead weight pressure reducing valve on out let side, including cost of 2 Nos nylon / PVC / Metallic hose pipe, testing and all labour charges etc., complete. Makes: Prevailing models of Crompton/ Jaquar / Venus / Racold / AO Smith /Havells /Warmex makes and shall be confirming to SOR specifications				
a		2	NOS	25 Ltrs. Water Heater	EACH	15679.00	31358	
				Heat Pump				
94		7	NOS	Supply, Transportation and fixing of Energy EfficientHeatpump(Hybrid) water heater of split type storage / type Vertical / 230/250V singlephase 50 Hz rated water heater with SS tank coated with Enamel and prepainted steel body with IP X 4 water Proff grade of 500 Ltr capacity Mono Block unit to withstand up to 0.8 - 1.0 MPa bar of water pressure including 2 Kw Heating element and AutoDefrostingand with 50 MM Puf insulation with all standard accessoriesand dead weight pressure reducing valve on out let side, including cost of CPVC Piping / Metallic hose pipe, testing and all labour charges etc., complete. Make:Jaquar/AO Smith/Voltex/Racold /Rheem				
					EACH	215114.00	1505798	
				Solar Water Heaters				
95				Supply, Transportation, erection and Commissioning of MNRE approved and confirming to IS 12933 P-1,2,3&5..... Tube Collector type Solar Water heating System with temperature application of 60 degrees with Stain less steel - 304L grade inner tank with PUF Insulation and Aluminum Cladding for Outer Cover, suitable EPDM rubber pipe connection from Collector to Solar Tank with electrical Heating back up etc., with 3 years Guarantee for Solar system and additional 2 years warranty. Make:TATA / BHEL/ BOSCH/ ETC/V-GUARD /RACOLD				
a		7	NOS	250 LPD	EACH	63238.00	442666	
b		7	NOS	500 LPD	EACH	99300.00	695100	
				WATER COOLERS				
96		41	NOS	Supply and fixing of water cooler fully stainless steel of 60 litres cooling capacity and 120 litres storage capacity to be operated on single phase supply with ISI mark. Makes: Blue star / Voltas / Usha.	EACH	45800.00	1877800	
97		68	NOS	Supply and installation of water dispensers with 3Nos faucets (Hot, Normal & cold), cooling capacity 3Ltrs/hr, without cabinet including powercard etc complete. Make & Model: VoltasMinimagic pure F without cabinet or equivalent in Bluestar	EACH	8500.00	578000	
				PANELS, L.T. U.G. CABLES, CABLE LAYING, TERMINATIONS & CABLE TRAYS				
				PANELS, L.T. U.G. CABLES, CABLE LAYING, TERMINATIONS & CABLE TRAYS				
				3-PHASE ENERGY METER PANEL FOR TEACHING STAFF QUARTERS (S+5) WITH 20 NO, 3 BHK QUARTERS + 1 COMMON SERVICE + 1 NO SPARE				

95			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical type Energy Meter panel made out of CRCA sheet with provision for installing 3-phase Energy Meters by local DISCOM authority with required size of individual chambers with vision panel having required TP MCBs, fuse cut outs, neutral link etc., as per the following specifications for 20 No of Residential Quarters plus one chamber for common service 3-phase Meter and one spare chamber. The panel shall be painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing and shall have PU/Neoprene rubber gasket of not less than 3mm thickness. The panel shall have with individual locking and sealing arrangements for all meter chambers and bus bar chamber as per the norms of local DISCOM authorities and separate detachable gland plate, M.S. base channel, hinged door with locking arrangement for equipment/ switchgear and required hardware. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure, with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			Supply and Fixing of 400A Four Pole, MCCB of adjustable, conforms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			Supply and Fixing of 40-63A, Four Pole, 10 kA MCBs.Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
			Supply and Fixing of 63A, 415V Porcelain rewirable fuse units Makes: C&S/Standard/HPL/ Sputnik / Million / Gold Medal /GM/ Benlo/Anchor				
			63A, Neutral Link - 22 No				
			Metering & Wiring:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - Make:Conzerve/Elmeasure/Meco/HPL/L&T/socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - Make: Conzerve/Elmeasure/Meco/HPL/L&T/Schneider/AE/Socomec				
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - Make: Kappa/L&T/Seimens/C&S/Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 2 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required Make: L&T /C&S/SALZER/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required -Make: L&T /C&S/SALZER/HPL				
			10 kA - 6-32A range SP MCBs - Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade Copper bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves with phases & Neutral equal size of 30mm x 6mm x 4R				
			Internal power wiring with 22 sets of 4 runs of 10.0 Sqmm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable of required length for each chambers form Bus Bars. Make: KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.				

		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, lock and key for all chambers with sealing facility as per DISCOM norms etc., labour charges for erection of switch gear, panels board, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.			EACH	197500.00	197500
			3-PHASE ENERGY METER PANEL FOR NON-TEACHING STAFF QUARTERS & NURSES QUARTERS (S+5) WITH 20 NO, 2 BHK QUARTERS + 1 COMMON SERVICE + 1 NO SPARE					
96			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical type Energy Meter panel made out of CRCA sheet with provision for installing 3-phase Energy Meters by local DISCOM authority with required size of individual chambers with vision panel having required TP MCBs, fuse cut outs, neutral link etc., as per the following specifications for 20 No of Residential Quarters plus one chamber for common service 3-phase Meter and one spare chamber. The panel shall be painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing and shall have PU/Neoprene rubber gasket of not less than 3mm thickness. The panel shall have with individual locking and sealing arrangements for all meter chambers and bus bar chamber as per the norms of local DISCOM authorities and separate detachable gland plate, M.S. base channel, hinged door with locking arrangement for equipment/ switchgear and required hardware. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure, with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).					
			Incomer :-					
			400A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 1 No. Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
			Outgoing feeders:-					
			40A, Four Pole, 10 kA MCBs.Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
			63A, Four Pole, 10 kA MCBs.Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
			63A, 415V Porcelain rewirable fuse units Makes: C&S/Standard/HPL/ Sputnik / Million / GoldMedal /GM/ Benlo/Anchor					
			63A, Neutral Link - 22 No					
			Metering & Wiring:-					
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - Make:Conzerve/Elmeasure/Meco/HPL/L&T/socomec					
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - Make: Conzerve/Elmeasure/Meco/HPL/L&T/Schneider/AE/Socomec					
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - Make: Kappa/L&T/Seimens/C&S/Schneider					
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 2 No of approved make					
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required Make: L&T /C&S/SALZER/HPL					
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required -Make: L&T /C&S/SALZER/HPL					
			10 kA - 6-32A range SP MCBs - Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
			Bus Bars:-					
			Supply and fixing of Electrolytic grade Copper bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves with phases & Neutral equal size of 30mm x 6mm x 4R					

				Internal power wiring with 21 sets of 4 runs of 6.0 Sqmm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable of required length for each chambers form Bus Bars. Make: KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.					
				Internal power wiring with 1 set of 4 runs of 10.0 Sqmm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable of required length for each chambers form Bus Bars. Make: KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.					
		1	NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, lock and key for all chambers with sealing facility as per DISCOM norms etc., labour charges for erection of switch gear, panels board, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.			EACH	194000.00	194000
				1-PHASE ENERGY METER PANEL FOR SHOPS					
97				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical type Energy Meter panel made out of CRCA sheet with provision for installing 1-phase Energy Meters by local DISCOM authority with required size of individual chambers with vision panel having required TP MCBs, fuse cut outs, neutral link etc., as per the following specifications for 9 No of Commercial Shops plus one chamber for common service 3-phase Meter and two spare chambers. The panel shall be painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing and shall have PU/Neoprene rubber gasket of not less than 3mm thickness. The panel shall have with individual locking and sealing arrangements for all meter chambers and bus bar chamber as per the norms of local DISCOM authorities and separate detachable gland plate, M.S. base channel, hinged door with locking arrangement for equipment/ switchgear and required hardware. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure, with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).					
				Incomer :-					
				160A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				Outgoing feeders:-					
				32A, Double Pole, 10 kA MCBs. - Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
				32A, 240V Porcelain rewireable fuse units - Makes: C&S/Standard/HPL/ Sputnik / Million / GoldMedal /GM/ Benlo/Anchor					
				32A, Neutral Link - 12 No					
				Metering & Wiring:-					
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - Make:Conzerve/Elmeasure/Meco/HPL/L&T/socomec					
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - Make: Conzerve/Elmeasure/Meco/HPL/L&T/Schneider/AE/Socomec					
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - Make: Kappa/L&T/Seimens/C&S/Schneider					
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 2 No of approved make					
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required Make: L&T /C&S/SALZER/HPL					
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required -Make: L&T /C&S/SALZER/HPL					
				10 kA - 6-32A range SP MCBs - Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
				Bus Bars:-					

				Supply and fixing of Electrolytic grade Copper bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves with phases & Neutral equal size of 20mm x 3mm x 4R					
				Internal power wiring with 12 sets of 2 runs of 6.0 Sqmm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable of required length for each chambers form Bus Bars. Make: KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.					
		1	NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, lock and key for all chambers with sealing facility as per DISCOM norms etc., labour charges for erection of switch gear, panels board, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.			EACH	95000.00	95000
				SUB-POWER PANEL					
98				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness,separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).					
				Incomer :-					
				250A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				Outgoing feeders:-					
				125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 6 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno					
				63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 4 Nos. Makes:L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno					
				Metering:-					
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec					
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec					
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider					
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make					
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL					
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL					
				10 kA - 6-32A range SP MCBs - 6 No. Makes: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)					
				Bus Bars:-					
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves					

			For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x 8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
	18	NOS	Control wiring, Earth Bus Bar, Door Loop earhtings, Labour charges for erection of switch gears, panels boards including all labour charges etc with connections for finished items of works including transportation charges.		EACH	209500.00	3771000
			SUB-LIGHTING PANEL				
99			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness,separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			160A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted. - 1 No. Makes:L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 5 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno				
			63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 3 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
			10 kA - 6-32A range SP MCBs - 6 No.Make:Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
			For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
	18	NOS	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.		EACH	171500.00	3087000
			LIGHTING/POWER PANEL				

100				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure, with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
				Incomer :-				
				400A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Outgoing feeders:-				
				160A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 4 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL Techno				
				63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make: Conzerve/Elmeasure/ Mecco/ HPL/L&T/ Socomec				
				Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Mecco/HPL/ L&T/ Schneider/AE/ Socomec				
				Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
				Bus Bars:-				
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 50mm x10mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		4	NOS	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.				
				POWER PANEL FOR HV AC UNITS	EACH	252000.00	1008000	

101				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
				Incomer :-				
				250A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Outgoing feeders:-				
				125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted.- 2 Nos. Makes:L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted. - 8 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
				Bus Bars:-				
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
				For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		8	NOS	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.				
				POWER PANEL to be installed in GROUND FLOOR		EACH	189000.00	1512000

102				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
				Incomer :-				
				400A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Outgoing feeders:-				
				250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 6 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 4 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
				Bus Bars:-				
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 50mm x10 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		3	NOS	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.	EACH	333500.00	1000500	
				MAIN LIGHTING PANEL to be installed in GROUND FLOOR				

103				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
				Incomer :-				
				250A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Outgoing feeders:-				
				160A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 6 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
				Bus Bars:-				
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x8 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		3	NOS	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.		EACH	204000.00	612000
				POWER PANEL to be installed in GROUND FLOOR ELECTRICAL ROOM				

104			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			630A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			400A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -WinbreakHPL-Techno				
			250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 8 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
			10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
			For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 80mm x10 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		2 NOS	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.		EACH	429500.00	859000
			LT CABLES				

105				Supply and transportation of following XLPE insulated, 1100V grade armoured aluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Polycab /RR Kabel				
a	1150.00	RM		4 core, 10 Sq.mm	ONE	RM	195.40	224710
b	1270.00	RM		4 core, 16 Sq.mm	ONE	RM	229.50	291465
c	1515.00	RM		3.5 core, 25 Sq.mm	ONE	RM	280.60	425109
d	3082.00	RM		3.5 core, 50 Sq.mm	ONE	RM	460.10	1418028
106	1800.00	RM		Earth work excavation of Trench in hard ground soil, laying of U.G cables upto 50 Sq.mm on sand cushion covering the cable with bricks and back filling of Trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	272.20	489960
107	1070.00	RM		Labour charges for run of U.G cables upto 50 sq.mm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	57.20	61204
108	3970.00	RM		Labour charges for run of armoured U.G cables upto 50 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	44.20	175474
109				Supply and transportation of following XLPE insulated, 1100V grade armoured aluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Polycab /RR Kabel				
a	119.00	RM		3.5 core, 120 Sq.mm	ONE	RM	961.20	114383
b	69.00	RM		3.5 core, 185 Sq.mm	ONE	RM	1416.80	97759
c	97.00	RM		3.5 core, 300 Sq.mm	ONE	RM	2193.90	212808
d	47.00	RM		3.5 core, 240 Sq.mm	ONE	RM	1803.10	84746
f	99.00	RM		3.5 core, 95 Sq.mm	ONE	RM	772.60	76487
110	1640.00	RM		Earth work excavation of Trench in hard ground soil, laying of U.G cables from 70 to 300 Sqmm on sand cushion covering the cable with bricks and back filling of trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	481.80	790152
111	470.00	RM		Labour charges for run of U.G cables from 70 to 300 Sqmm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	91.90	43193
112	1790.00	RM		Labour charges for run of armoured U.G cables from 70 Sq.mm to 300 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	59.50	106505
113				Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI				
a	239	SET		4 core, 6/10/16 Sq.mm	ONE	SET	315.80	75476
b	253	SET		3.5 core, 25 Sq.mm	ONE	SET	310.20	78481
c	259	SET		3.5 core, 50 Sq.mm	ONE	SET	481.70	124760
d	77	SET		3.5 core, 120 Sq.mm	ONE	SET	1031.60	79433
e	77	SET		3.5 core, 185 Sq.mm	ONE	SET	1374.70	105852
f	55	SET		3.5 core, 300 Sq.mm	ONE	SET	2474.50	136098
				Perforated cable trays				
114				Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays without cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	270.00	RM		150mm X 50mm X 1.6mm size	ONE	RM	492.00	132840
b	532.00	RM		300mm X 50mm X 1.6mm size	ONE	RM	907.80	482950
c	112.00	RM		450mm X 50mm X 2mm size	ONE	RM	1315.70	147358
115				Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays with cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	280.00	RM		150mm X 50mm X 1.6mm size	ONE	RM	639.50	179060
b	550.00	RM		300mm X 50mm X 1.6mm size	ONE	RM	1180.10	649055
c	110.00	RM		450mm X 50mm X 2.0mm size	ONE	RM	15050.30	1655533
116				Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron ladder type cable trays with rungs at span of 250 mm including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/wall with suspenders and etc., complete.				
a	180.00	RM		300mm X 50mm X 2.0mm size	ONE	RM	779.40	140292
b	110.00	RM		450mm X 50mm X 2.0mm size	ONE	RM	1028.20	113102

117				Supply, Transportation and Laying of the following sizes of double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. Makes:DURA LINE (Dura Guard) or its equivalent make.				
a	80.00	RM		Outer dia 50mm and Inner dia 38mm	ONE	RM	140.30	11224
b	1580.00	RM		Outer dia 63mm and Inner dia 51mm	ONE	RM	177.20	279976
c	1580.00	RM		Outer dia 78mm and Inner dia 63mm	ONE	RM	208.50	329430
				GI PIPES/ HUME PIPES FOR CABLES AT ROAD CROSSING				
118				Supply and laying of B class GI pipe of ISI mark with all accessories of following sizes for laying at the road crossings for the UG cables.				
a	410.00	RM		40 mm dia medium grade, G.I Pipe	ONE	RM	499.40	204754
119				Supply and Laying NP2 class RCC hume pipe with collars of following sizes for laying at the road crossings for the UG cables.				
a	170.00	RM		150 mm dia Hume pipe	ONE	RM	376.00	63920
b	150.00	RM		300 mm dia Hume pipe	ONE	RM	757.10	113565
				CUTTING C.C/B.T. ROAD SURFACE FOR CABLE TRENCH				
120				Cutting road surface including stacking of excavated materials for UG Cable trench work.				
a	195.00	SQM		a) Cutting open B.T. road surface (as well as asphalt concrete up to 75 mm thick) including water bound macadam	ONE	SQM	118.00	23010
b	187.00	CUM		b) Cutting open C.C. road surface with concrete saw cutter and removal with Breaker	ONE	CUM	3739.10	699212
				LIGHTNING PROTECTION SYSTEM				
121		21	NOS	Supply, installation, testing and commissioning of Lightning counter - To count no of lightning strike & it can record the date and time of the lightning incident also tested as per IEC 62561-6. Make: EARTHPLUS (THUNDER GUARD) / NIMBUS / KALRE / FOREND		EACH	22683.00	476343
122		8	NOS	Supply of ESE Air Terminal of external wide area of protection system based on proactive Early Steamer Emission (ESE) Technology manufactured in accordance with NFC 17-102:2011, is made of high-quality, non corrosive and weather resistant XL-304 Stainless Steel Having triggering advance t = 60µs, Protection Radius ranging from 79 Meters in Level-I to 107 Meters in Level-IV when installed on a 5 Meters Mast. ESE terminal is capable to withstand Current Impulses of 40kA (5 Shots of 8/20µs wave shape) and having capturing rod dia of 25mm. Make : THUNDERGUARD(EARTHPLUS)/ KALRE/ NIMBUS / FOREND		EACH	156721.00	1253768
123		8	NOS	Installation and commissioning of advanced lighting protection systems which includes 1. Laying of CC Bed 2. Installation of Lighting Rod 3. Laying of Down conductor 4. Installation of Counter 5. Installation of GI Mast with stay wire. 6. Termination of down conductor to earth bus etc complete.		EACH	39868.00	318944
124		8	NOS	Supply of G.I mast of 5 Meters length, 50 mm Dia, with FRP Collar (Insulating Bush) Base Plate & Complete Fitting Accessories with Supporting Guy Wire (Stay Wires) and all fitting accessories		EACH	8248.00	65984
125		84	NOS	Providing earth electrode of low carbon steel rod, UL listed of 17.2 mm dia, 3 Mtr long, coated with copper of 254 microns thickness, CPRI tested for short time current withstand test of 25 kA, coating thickness, environmental test (Salt Mist Test), Bend test, Tensile strength, Yield / tensile ratio, Electrical Resistivity test, complete with clamps and 2 bags of (Earthplus ULTRA /TIRUMALA) high grade earthing compound IEC 62561-7 complaint Eco-friendly, Maintenance free, anti corrosive, lead-free, super conductive, mineral based high-grade earthing compound, to enhance soil conductivity. With resistance <0.20 ohms-meter, should be leach proof & sulphur free complete with earth inspection chamber of dimensions : Width : 320 mm x 320 mm, Height : 192 mm, Weight : 30 Kgs, Load bearing capacity :5000 Kgs		EACH	13060.00	1097040
126		480	RM	Supply & Transportation of 70sqmm PVC insulated and sheathed FRLS copper round cable for voltage up to 1100V as per IS 694/1990. Makes: Finolex / RR kabel / Havells /KEI/Polycab/ Gloster/Goldmedal/GM	ONE	RM	803.30	385584
				UPS SYSTEMS & BATTERIES				
				SINGLE PHASE UPS UPTO 10 KVA				
127				Supply, installation, testing and commissioning of the following capacity on line UPS system conforms to IS 16242(Part-I):2014 and IEC 60240-1:2008 with IGBT technology pure sine wave out put, double conversion with auto and manual static by pass switch single phase input / single phase output with, all accessories and labour charges etc., complete excluding batteries. Makes: Numeric/APC/Fuji Electric/ Sakshham /Emerson				
a	11	NOS		6.0 KVA , 192/240V DC UPS with Isolation transformer		EACH	95776.00	1053536
b	12	NOS		10.0 KVA , 192/240V DC UPS with Isolation transformer		EACH	139243.00	1670916
				THREE PHASE UPS UPTO 40 KVA				

128				Supply, installation, testing and commissioning of the following capacity on line UPS system as per IEC 62040-1(Safety) ,IEC 62040-3(Performance) for critical IT solutions, fully digital IGBT Converter and Inverter ,with Internal /External isolation transformer from DC to AC, PWM, pure sine wave out put, double conversion, output pf 0.9, with parallelling facility, standard communicaton features/options auto and manual static by pass switch, three phase input / three phase output, accoustic level shall be less than 58dB at 1 mtr distance, with all accessories and labour charges etc., complete excluding batteries. Makes: Numeric/APC/Fuji Electric / Saksham /Emerson				
a		2	NOS	10.0 KVA , 312/360V DC UPS		EACH	266995.00	533990
b		2	NOS	20.0 KVA , 312/360V DC UPS		EACH	323811.00	647622
c		1	NO	30.0 KVA 360/384/480 V DC		EACH	403333.00	403333
d		2	NOS	40.0 KVA 360/384/480/504 V DC		EACH	488545.00	977090
129		280	NOS	Supply and fixing of 12V, 65 AH SMF Battery with 3 years Warranty, including wire leads, connections etc complete. Makes: Quanta / Racket / Exide		EACH	8998.00	2519440
130		300	NOS	Supply and fixing of 12V, 100 AH SMF Battery with 3 years Warranty, including wire leads, connections etc complete. Makes: Quanta / Racket / Exide		EACH	13048.00	3914400
131		110	NOS	Supply and fixing of 12V, 120/130 AH SMF Battery with 3 years Warranty, including wire leads, connections etc complete. Makes: Quanta / Racket / Exide		EACH	13947.00	1534170
132		14	NOS	Supply and providing of battery rack upto 11 to 20 batteries (42 AH)		EACH	6249.00	87486
133		24	NOS	Supply and providing of battery rack upto 20 to 30 batteries (65 & 100 AH)		EACH	11248.00	269952
134				LIFTS Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of Makes: As per list of recommended brands. with <ul style="list-style-type: none"> • Rated capacity :- 8 Passenger/544Kg • Floors :- S+6 floor (7Stops/7 Landings) • Travel :- 3 to 24 mtrs • Location of Lift Machine:- With mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 800 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floorClear Car size ofmm wide xmm deep xmm high <ul style="list-style-type: none"> • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landingsLift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class • ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing,Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength • Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. •Lift shaft available having clear size ofmm wide x.....mm deep.mm Pit depth,mm Overhead. 				

		1 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire,50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010[with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	2344310	2344310
135			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of Makes: As per list of recommended brands. with</p> <ul style="list-style-type: none"> • Rated capacity :- 8 Passenger/544Kg • Floors :- S+9 floor (10Stops/10 Landings) • Travel :- 3 to 36 mtrs • Location of Lift Machine:- With mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 800 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons <p>with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floorClear Car size ofmm wide xmm deep xmm high</p>							
			<ul style="list-style-type: none"> • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landingsLift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class • ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing,Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength • Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. •Lift shaft available having clear size ofmm wide x.....mm deep.mm Pit depth,mm Overhead. 							

		1 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	3023460	3023460
136			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp</p> <ul style="list-style-type: none"> • Rated capacity :- 13 Passenger/884Kg • Floors :- S+2 floor (3Stops/3 Landings) • Travel :- 3 to 8 mtrs. • Location of Lift Machine:- With Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 900/1000 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 							
			<ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor /control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing, • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work. • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide xmm deep,mm Pit depth,mm Overhead 							

		1 NO	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	2014510	2014510
137			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp</p> <ul style="list-style-type: none"> • Rated capacity :- 13 Passenger/884Kg • Floors :- G+2 floor (3Stops/3 Landings) • Travel :- 3 to 8 mtrs. • Location of Lift Machine:- With Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 900/1000 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 							
			<ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor /control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing, • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work. • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide xmm deep,mm Pit depth,mm Overhead 							

		3 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	2014510	6043530
138			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp</p> <ul style="list-style-type: none"> • Rated capacity :- 13 Passenger/884Kg • Floors :- S+3 floor (4Stops/4 Landings) • Travel :- 3 to 12 mtrs. • Location of Lift Machine:- With Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 900/1000 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 							
			<ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor /control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing, • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work. • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide xmm deep,mm Pit depth,mm Overhead 							

		2 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	2215130	4430260
139			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp</p> <ul style="list-style-type: none"> • Rated capacity :- 13 Passenger/884Kg • Floors :- G+4 floor (5Stops/5 Landings) • Travel :- 3 to 16 mtrs. • Location of Lift Machine:- With Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 900/1000 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 							
			<ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor /control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing, • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work. • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide xmm deep,mm Pit depth,mm Overhead 							

		1 NO	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	2415750	2415750
140			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp</p> <ul style="list-style-type: none"> • Rated capacity :- 13 Passenger/884Kg • Floors :- G+6 floor (7Stops/7 Landings) • Travel :- 3 to 24 mtrs. • Location of Lift Machine:- With Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 900/1000 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 							
			<ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor /control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing, • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work. • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide xmm deep,mm Pit depth,mm Overhead 							

		2 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire,50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010[with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>						EACH	2816990	5633980
141			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp</p> <ul style="list-style-type: none"> Rated capacity :- 13 Passenger/884Kg Floors :- G+7 floor (8Stops/8 Landings) Travel :- 3 to 28 mtrs. Location of Lift Machine:- With Mission Room Rated speed :- 1.0/1.25mps VS Doors type :- COPO/TOPO Doors with frame having clear opening of 900/1000 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/ frames Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc.COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor Clear Car size ofmm wide xmm deep xmm high LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 								
			<ul style="list-style-type: none"> Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor /control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection classARD complete with necessary SMF VRLA batteries Fireman controller having fireman switch at fire Landing, Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strengthOther mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work. Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. Lift shaft available having clear size ofmm wide x.....mm deep,mm Pit depth,mm Overhead 								

		1 NO	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					EACH	3117690	3117690
142			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger cum Stretcher/Hospital Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/ThyssenKrupp with</p> <ul style="list-style-type: none"> • Rated capacity :- 15 Passenger/1020Kg • Floors :- B+G+4 floor (6Stops/6 Landings) • Travel :- 3 to 20 mtrs • Location of Lift Machine:- With Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 800/900/1000 mm wide x 2000mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves /frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor Clear Car size ofmm wide xmm deep xmm high • LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings 							
			<ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision for addition of floor/ control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class ARD complete with necessary SMF VRLA batteries • Fireman controller having fireman switch at fire Landing, • CCTV surveillance system comprises of 2nos minimum 2.0MP FHD IP based vandal proof Dome camera in lift car & in LMR/inside lift shaft top aimed on Lift machinery & controller with NVR kept in LMR/FCC with HDR data backup for 60 days with 18" FHD TV monitor, to be kept in FCC/LMR as directed by Engineer In Charge • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide xmm deep,mm Pit depth, ,mm Overhead 							

		4 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					
					EACH	2942110	11768440	
143			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger cum Stretcher/Hospital Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/ThyssenKrupp.</p> <p>with</p> <ul style="list-style-type: none"> • Rated capacity :- 20 Passenger/1360Kg • Floors :- B+G+4 floor (6Stops/6 Landings) • Travel :- 3 to 20 mtrs • Location of Lift Machine:- with Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 1100/1200 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. • COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio-visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high <p>LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings</p> <ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision 					

			<p>for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class</p> <p>ARD complete with necessary SMF VRLA batteries</p> <ul style="list-style-type: none"> • Fireman controller having fireman switch at fire Landing, • CCTV surveillance system comprises of 2nos minimum 2.0MP FHD IP based vandal proof Dome camera in lift car & in LMR/inside lift shaft top aimed on Lift machinery & controller with NVR kept in LMR/FCC with HDR data backup for 60 days with 18" FHD TV monitor, to be kept in FCC/LMR as directed by Engineer In Charge. • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength. <p>Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work</p> <ul style="list-style-type: none"> • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide x.....mm deep,mm Pit depth,mm Overhead. 				
		1 NO	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warranty: - Job covers three years onsite warranty for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire,50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010[with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>		EACH	3421490	3421490

144			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger cum Stretcher/HospitalLift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/Thys senKrupp. with</p> <ul style="list-style-type: none"> • Rated capacity :- 20 Passenger/1360Kg • Floors :- S+5 floor (6Stops/6 Landings) • Travel :- 3 to 20 mtrs • Location of Lift Machine:- with Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 1100/1200 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. • COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio-visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high <p>LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings</p> <ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision 			
			<p>for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class</p> <p>ARD complete with necessary SMF VRLA batteries</p> <ul style="list-style-type: none"> • Fireman controller having fireman switch at fire Landing, • CCTV surveillance system comprises of 2nos minimum 2.0MP FHD IP based vandal proof Dome camera in lift car & in LMR/inside lift shaft top aimed on Lift machinery & controller with NVR kept in LMR/FCC with HDR data backup for 60 days with 18" FHD TV monitor, to be kept in FCC/LMR as directed by Engineer In Charge. • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength. <p>Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work</p> <ul style="list-style-type: none"> • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide x.....mm deep,mm Pit depth,mm Overhead. 			

		2 NOS	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warrantee: - Job covers three years onsite warrantee for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>					
				EACH	3421490	6842980		
145			<p>Supply, Installation, Testing and Commissioning of Electric Traction Passenger cum Stretcher/Hospital Lift of makes:Kone/Otis/Schindler/Mitsubishi/Johnson/ThyssenKrupp.</p> <p>with</p> <ul style="list-style-type: none"> • Rated capacity :- 20 Passenger/1360Kg • Floors :- B+G+6 floor (8Stops/8 Landings) • Travel :- 3 to 28 mtrs • Location of Lift Machine:- with Mission Room • Rated speed :- 1.0/1.25mps VS • Doors type :- COPO/TOPO Doors with frame having clear opening of 1100/1200 mm wide x 2000 mm high made from SS 304 grade sheet of 1.5mm, thick in hairline finish for car and all landing doors with SS door architraves/frames • Lift car enclosure made from SS 304 grade sheet of 1.5mm, thick with hairline finish with frame made from MS girders, bracing of adequate size with minimum safety factor of 5, with Toe Guard Apron, with necessary false ceiling with adequate LED lights, blower/fan for ventilation & SS chequered plate flooring, handrails, mirror, emergency light etc. • COP with SS face plate having metallic push buttons with Braille Code & luminous indicator around button with FPI, scrolling UP/DN LED indicator & with/without attendant key switch, OWD with audio-visual alarm, VAS in Telugu & English with intercom system with telephone instrument in Lift car, LMR & FCC/ground floor • Clear Car size ofmm wide xmm deep xmm high <p>LOP with SS face plate having recess/surface push button box for all landings with scrolling UP/DN LED indicator having metallic push buttons with Braille Code & luminous indicator around button with CPI, Lift car arrival & next travel direction audio-visual indication at all landings</p> <ul style="list-style-type: none"> • Lift controller based on microprocessor/ PLC with VVVF Drive having closed loop control system, with IBMS compatible having necessary port, control panel duly wired with proper size & strength copper wire for power & control circuit, with provision 					

				<p>for addition of floor/control card & allied accessories control panel having enclosure of 1.5mm CRCA sheet with powder coating with IP54 Protection class</p> <p>ARD complete with necessary SMF VRLA batteries</p> <ul style="list-style-type: none"> • Fireman controller having fireman switch at fire Landing, • CCTV surveillance system comprises of 2nos minimum 2.0MP FHD IP based vandal proof Dome camera in lift car & in LMR/inside lift shaft top aimed on Lift machinery & controller with NVR kept in LMR/FCC with HDR data backup for 60 days with 18" FHD TV monitor, to be kept in FCC/LMR as directed by Engineer In Charge. • Lift Machine of Gearless PMSM of suitable kW with Traction pulley, OSG, electromagnetic brakes, entire assembly mounted on adequate size girders duly fixed on LMR floor/ shaft walls complete with main/diverter traction sheaves, suspension wire ropes/belts of adequate size & strength. <p>Other mechanical parts such as 'T' section adequate size guide rails for car & counter weight with brackets fasteners, counter weight frame with necessary blocks, buffers with necessary support arrangement, MS pit ladder etc. erected with necessary steel work</p> <ul style="list-style-type: none"> • Minor civil work for alteration if any and erection of door frames and accessories, erection buffers, erection of lift machinery, adequate size core cuts if required & scaffolding for erecting guide rails fixing of girders for mounting lift machine etc. complete as per specification no. LFT. • Lift shaft available having clear size ofmm wide x.....mm deep,mm Pit depth,mm Overhead. 					
		1	NO	<p>General: - Job includes entire procedure of obtaining all necessary erection permissions & "License to Work the Lift" from Electrical Inspector (Lifts) with submission to the Engineer In Charge.</p> <p>Warranty: - Job covers three years onsite warranty for all the Lift parts with FCAMC as per the maintenance schedule.</p> <p>If the lift shaft is greater than the required size of the lift as mentioned in relevant Indian Standard [with Amendments up to date], the provision of extra steel required for erecting supports of guide rails shall be made by the department as a separate item</p> <p>The Electric power supply of 415 volts, 3 phase 4 wire, 50Hz shall be made available up to Lift controller, and as per the provisions laid down in relevant The Electricity Safety Regulations 2010 [with Amendments up to date], Indian Standard, relevant Rules, the separate cables for lighting and power & shall be erected through lift shaft only with 2nos distinct earth connections from lift machine & controller</p> <p>The technical specification of Lift duty motor, control panel, brakes, guide rails, and guide shoes, lift car frame, car, counter weight and suspension, lift safety gear and governor, buffer, lift doors, locking device and contacts, lift wire rope of lifts shall be as per actual requirement of the job.</p> <p>For building having height of 15 mtr or more, lift shall meet the requirement of fireman lift as per the statutory requirements laid in relevant Indian Standard</p>			EACH	3906890	3906890
				FIRE FIGHTING					
				Internal Hydrant					
146		116	NOS	<p>Supplying and fixing single headed hydrant valve with instantaneous Gun metal couplings of 63mm dia with Cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gun Metal cap and chain as required.</p> <p>Makes: Newage/ Winco/ Padmini / Safex/Minimax/ ewtech / Honeywell</p>			EACH	9614.00	1115224
147		116	NOS	<p>Supplying and fixing of hose cabinet of size 750mm X 600mm x 250mm made of No 16 gauge SWG CRCA sheet with 6mm thick glazed glass door including necessary locking arrangement suitable to accommodate 2 Nos 15 mtr long Hose pipe, 1 No branch pipe, mounted on wall OR raised brick platform and duly painted with Post office red externally and white internally with synthetic enamel paint complete in all respect, for external hydrant as required.</p> <p>Makes:Minimax/Safex/Newage/Winco/Padmini/NewTech</p>			EACH	4289.00	497524
148		232	NOS	<p>Supplying and fixing 63mm dia, 15 mtr long RRL hose pipe with 63mm dia Male and Female Gun metal duly banded with GI wire, rivets etc conforming to IS 636 (Type -A) as required.</p> <p>Makes: Newage/ Winco/ Padmini / Safex / Minimax/NewTech</p> <p>a) Gun metal</p>			EACH	8328.00	1932096
149		116	NOS	<p>Supply and fixing 63mm dia Gun metal branch pipe with 20mm (Nominal internal diameter) size Gun metal / SS nozzle conforming to IS 903, suitable for instantaneous connection to interconnect hose pipe coupling as required.</p> <p>Makes: Newage/ Winco/ Padmini / Safex / Minimax/ NewTech</p> <p>a) Gun metal</p>			EACH	3254.00	377464

150		116	NOS	Supplying and fixing First -Aid Hose Reel with MS construction spray painted in Post office Red, Conforming to Is 884 with upto date amendments, complete with the following as required. a) 36.6 Mtr Long 20mm (Nominal internal) dia water hose Thermoplastic / Textile reinforced / Rubber braided / Polypropylene Type - 2 as per IS:12585 Makes: Reliance/ Newage/ Safex/NewTech/Winco/Minimax b) 20mm (Nominal internal) dia gun metal globe valve and nozzle. Makes:NEU-G/SANT / Safex. c) Drum and brackets for fixing the equipments on wall. d) Connections from riser with 25mm dia stop valve (gun metal) & MS pipe.			EACH	9910.00	1149560
151				Providing , laying, testing & Commissioning of following ' B ' classes MS pipes conforming to IS 3589 and 1239 including fittings like elbows, tees, flanges, tapers, nuts, bolts, gaskets etc., complete. Makes: Jindal / Hissar / Tata pipes/Prakash Surya					
a		1050.00	RM	150mm dia		ONE	RM	3632.00	3813600
b		1409.00	RM	100mm dia		ONE	RM	2260.00	3184340
c		486.00	RM	80mm dia		ONE	RM	1501.00	729486
d		630.00	RM	65 mm dia		ONE	RM	1130.00	711900
e		706.00	RM	50 mm dia		ONE	RM	904.00	638224
f		780.00	RM	40 mm dia		ONE	RM	767.00	598260
g		675.00	RM	32 mm dia		ONE	RM	606.00	409050
h		790.00	RM	25 mm dia		ONE	RM	452.00	357080
152				Supplying, fixing, testing and commissioning of butterfly valve PN 1.6, with Bronze / Gun metal seat duly ISI marked complete with Nuts, Bolts, Washers, gaskets, conforming to IS 13095 of following sizes as required. Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto / SANT/NEU-G					
a		20	NOS	250 mm dia			EACH	17009.00	340180
b		30	NOS	200 mm dia			EACH	7248.00	217440
c		16	NOS	150 mm dia			EACH	6064.00	97024
d		114	NOS	100mm dia			EACH	4659.00	531126
e		114	NOS	80 mm dia			EACH	4289.00	488946
153				Manufacture, Supply and delivery of CI Wafer Lug type Butterfly Valves conforming to IS 13095/1991 (Reaffirmed 1998) excluding transportation, CED and taxes etc., complete. Operation done with worm actuator ISI marked Rate at Ex-Factory. Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto /SANT/NEUG/Honeywell					
a		114	NOS	50 mm dia			EACH	4141.00	472074
154		138	NOS	Supply, installation, testing and commissioning of 25 / 20mm dia Air Release Valve. Makes : Zoloto / Leader / SANT			EACH	1627.00	224526
155				Supply, Erection, Testing and commissioning of Sluice valves as per IS:14846 (PN 10 Rating, for suction side of the pumps) and rising spindle type with flanges, bolts, nuts, washers, gaskets etc.The valve shall be fitted with Supervisory switch for monitoring Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto / SANT/Honeywell					
a		10	NOS	100mm dia			EACH	13747.00	137470
156				Supply,Installation,testing and commissioning of stainless steel puddle flange fabricated out of 1.6mm thick SS 304 confirming to IS specifications including nuts, bolts and rubber insertions etc Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto / SANT/Honeywell					
a		10	NOS	100mm dia			EACH	7249.00	72490
157		6	TONS	Supply and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25mm dia Gun metal wheel valve, with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.		ONE	TON	22122.00	132732
158		1003.00	KGS	Supply, fabricating , installing structural steel supports for fixing all sizes of MS pipes from ceiling / wall with MS Channels, Angles, Flats, Rods, as required at site with anchor fasteners, Clamps, threaded rods, nuts, bolts,washers etc complete with painting.		ONE	KG	93.00	93279
				SPRINKLER SYSTEM					
159				Providing fixing, testing and commissioning of 15mm size quartzoid bulb type sprinklers of rating 68° C pendent / side wall with required accessories. Makes: HD / TYCO / VIKING / NEWAGE/ SHARP / SAFEX					
a		1844	NOS	PENDENT			EACH	633.00	1167252
b		292	NOS	SIDE WALL			EACH	633.00	184836
160				Supplying, fixing, testing and commissioning of butterfly valve PN 1.6, with Bronze / Gun metal seat duly ISI marked complete with Nuts, Bolts, Washers, gaskets, conforming to IS 13095 of following sizes as required. Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto / SANT/NEU-G					

a		26	NOS	150mm dia		EACH	6064.00	157664
b		40	NOS	100mm dia		EACH	4659.00	186360
161		50	NOS	Supply fixing, testing and commissioning of UL approved flexible dropper of 1.5 mtr length with required accessories Makes: HD / TYCO / VIKING / NEWAGE/ SHARP / SAFEX		EACH	1510.00	75500
162				Providing , laying, testing & Commissioning of following ' B ' classes MS pipes conforming to IS 3589 and 1239 including fittings like elbows, tees, flanges, tapers, nuts, bolts, gaskets etc., complete. Makes: Jindal / Hissar / Tata pipes/Prakash Surya				
a	500.00		RM	150mm dia	ONE	RM	3632.00	1816000
b	215.00		RM	100mm dia	ONE	RM	2260.00	485900
c	390.00		RM	80mm dia	ONE	RM	1501.00	585390
d	125.00		RM	65mm dia	ONE	RM	1130.00	141250
e	385.00		RM	50 mm dia	ONE	RM	904.00	348040
f	280.00		RM	40mm dia	ONE	RM	767.00	214760
g	300.00		RM	32mm dia	ONE	RM	606.00	181800
h	1150.00		RM	25 mm dia	ONE	RM	452.00	519800
163				Providing and fixing Flow Switches in mm dia MS pipe. Makes : System Sensor / Switzer /Honeywell				
a	14.00		RM	100mm dia	ONE	RM	6899.00	96586
b	14.00		RM	150 mm dia	ONE	RM	9630.00	134820
164		13	NOS	Providing, installation, testing and commissioning of 50mm dia gun metal valve. (for drain pipe) Make: NEU-G/Zolotto/Padmini/SANT/Honeywell		EACH	2367.00	30771
				ADDRESSABLE FIRE DETECTION & ALARM SYSTEM				
165				Supply, install, test and commissioning of addressable peer to peer Networkable analogue addressable type fire alarm control panel with minimum 1500 Character / 240X64 Pixel / 7inch Touchscreen graphic LCD display. The panel should be equipped with sufficient numbers of loop with 20% spare capacity, with each networkable intelligent fire alarm Control Panel having SLC with capacity of min 250 detectors/ devices in any combination (Min 120 Detector) with key pad, dual flash-based microprocessor technology, inbuilt USB Port for upload and down load the configuration tools, RS232 serial port for direct PC or modem Supply, install, test and commissioning of addressable peer to peer Networkable analogue addressable type fire alarm control panel with minimum 1500 Character / 240X64 Pixel / 7inch Touchscreen graphic LCD display. The panel should be equipped with sufficient numbers of loop with 20% spare capacity, with each networkable intelligent fire alarm Control Panel having SLC with capacity of min 250 detectors/ devices in any combination (Min 120 Detector) with key pad, dual flash-based microprocessor technology, inbuilt USB Port for upload and down load the configuration tools, RS232 serial port for direct PC or modem Makes: Notifier / Edwards/Bosch				
		7	NOS	2 loop		EACH	287446.00	2012122
		5	NOS	4 loop		EACH	352121.00	1760605
		5	NOS	6 loop		EACH	524589.00	2622945
166		112	NOS	Supply and installation of plug -in type rate of rise cum fixed temperature heat detectors including the cost of base plate. 75mm dia MS outlet box for fixing of the detector base, mounting accessories etc., complete as per specifications and as required. Makes: System Censor / Ravel/Vertex		EACH	1869.00	209328
167		88	NOS	Supply and installation of plug -in type photo electric smoke detectors including the cost of base plate. 75mm dia MS outlet box for fixing the detector base. Mounting accessories etc complete and as per specifications and as required. Makes: System Censor / Ravel/Vertex		EACH	2012.00	177056
168		670	NOS	Supply and installation of response indicators for above false ceiling detectors. Makes: System Censor / Ravel/Vertex		EACH	216.00	144720
169		37	NOS	Supply, Installation, Testing & Commissioning of Dust and Vermin proof (Resettable) addressable analogue Manual call boxes along with Isolators inbuilt having front reset mechanism with 170° viewable LED and can be viewed from the distance of 7 M. also have inbuilt isolator having operating temperature from -40°C-70°C to initiate audio visual alarm in case of Human detection of fire. The manual call point must be indoor type with IP 44 rating. The call point must be resettable type without break glass. Makes: Notifier / Edwards/Bosch		EACH	6468.00	239316
170		37	NOS	Supply, Installation, Testing & Commissioning of Analogue Addressable loop powered Sounder & Beacon with inbuilt isolator and having Min 15 distinct sound patterns/ multitone to indicate Exit doors and direct occupants for safe and fast evacuation and 100dB output with minimum 1Hz Frequency flash rate designed for IP65 requirements and approved to operate in -10°C to +55°C temperature, complies with the essential requirement of the EMC Directive to be supplied with Junction Box, Glands and other mounting accessories for proper installation. Makes: Notifier / Edwards/Bosch		EACH	6611.00	244607

171		9.00	RM	Supply, install, test and commissioning of Analogue addressable Control (Input/Output) module with inbuilt relay and isolator with LED indicator, approved to operate in -10°C to +55°C temperature, complies with the essential requirement of the EMC Directive to be supplied with Junction Box and other mounting accessories for proper installation. In case of Manufacturer with single Input or Output module need to supply One quantity of each for line item. Makes: Notifier / Edwards/Bosch	ONE	RM	6036.00	54324
				CONVENTIONAL FIRE DETECTION & ALARM SYSTEM				
172				Supply, Installation, testing and commissioning of conventional Micro_x005f processor based Fire Alarm panel with, 12V SMF batteries etc., complete with all standard accessories. Makes: System Censor / Ravel/Vertex				
		18	NOS	a) 2 ZONE Panel		EACH	19403.00	349254
		18	NOS	b) 4 ZONE Panel		EACH	20840.00	375120
		18	NOS	c) 6 ZONE Panel		EACH	21558.00	388044
173		82	NOS	Supply and installation of dust and vermin proof manual call point to initiate audio-visual alarm including the cost of mounting accessories complete as per specifications and as required. Makes: System Censor / Ravel/Vertex		EACH	862.00	70684
				SIGNAGE BOARDS:				
174		189	NOS	Supply and fixing of Escape signage boards in Rigid Photo luminescent based glow in Dark rigid sheet with high intensity luminous properties with specificaiton. Makes: Cease Fire Model1ES01/Safex/Minimax/NewTech/Honeywell		EACH	1600.00	302400
175		19	NOS	Supply and fixing 2 way fire brigade connection of castiron body with 2 Nos Gun metal Male instantaneous inlet couplings complete with cap and chain as required for 100mm dia MS pipe connection, conforming to IS 904 as required. Makes: Newage/Winco/Padmini/Safex/Minimax/NewTech/Honeywell		EACH	8874.00	168606
176				Providing, installation, testing and commissioning of dual Plate non - return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc as required. Makes: BDK / NEU-G / Leader/ Zolotto / SANT/Honeywell				
		56.00	RM	a) 100 mm dia	ONE	RM	5176.00	289856
177				Supply, installation, testing and commissioning of stainless steel Y – Stainer fabricated out of 1.6 mm thick SS 304 with following sizes confirming to IS specifications complete with rubber gasket, GI bolts , nuts, washers etc as required. Makes: Leader / Zolotto/SANT/Honeywell				
		46.00	RM	a) 100 mm dia	ONE	RM	6360.00	292560
178		51.00	RM	Providing and fixing of Pressure Switch in the MS pipe Line including connection etc as required. Makes : Danfoss / Indfoss /Systemsensor/Honeywell	ONE	RM	3235.00	164985
179		51.00	RM	Providing and fixing Flow Switches in 100mm dia MS pipe. Makes : System Sensor / Switzer /Honeywell	ONE	RM	6899.00	351849
180		33.00	RM	Supply, installation, testing and commissioning of Bourden type, stainless steel dial type pressure gauge with isolation valve and pipe having calibration of 0-16 kg/cm2. MAKES: HGURU / FIEBIG and Approved makes	ONE	RM	795.00	26235
181		93.00	RM	Supply, installation, testing and commissioning of 25mm dia Ball valve . Makes : Zoloto / Leader / SANT/NEU-G	ONE	RM	858.00	79794
182		76.00	RM	Supply and fixing of 4Nos of 9 Ltrs capacity round bottom sand buckets along with bucket sand, Fire buckets with round bottom type enamel painted, white inside & red out side and letter FIRE in black out side & Handle with mounting bracket.	ONE	RM	1725.00	131100
183		79.00	RM	Supply and fixing of Fire bucket stand fabricated by M.S. angles to install for Four numbers of buckets as per local fire officers standards	ONE	RM	2156.00	170324
				FIRE DOORS				

184		320.00	SQM	Supply & Fixing of Powder Coated FireRated doors, frames & shutters made of Skin pass galvanized Iron sheet conforming to Base Steel as per IS 513"D" Quality, Galvanized as per IS 277 with Hot Zinc Coating of 120 grams /Sq.Mtr with powder coating of thickness 60-65 Microns, frame with 1.2mm thick Skin pass Galvanized Iron sheet formed to double rebate profile of size 143 mm X 58 mm with maximum bending radius of 1.4 mm and filled with in-fill Polyurethane foam, the Door Shutters are with 0.80 mm thick Skin pass Galvanized Iron Sheet formed to provide a 46 mm thick fully flush, double skin door shell with Lock Seam joints at stile edges, fitted with in-fill of Honeycomb Kraft Paper and coated with polyester powders of Pure polyester/ epoxy polyester or polyurethane powder for powder coating of thickness 60 – 65 microns and are coated with Zinc Phosphate Primer to receive any paint on site or finished with Thermosetting Polyurethane paint of Aliphatic Grade providing high levels of scratch resistance and durability, the Shutter provided with 6 MM clear float vision glass in Circular, Square or Rectangular shapes, Stainless Steel Ball Bearing Butt Hinges 3 mm thick fixed flush to the frame and shutter (Profile 102x76x3mm thick). Mortise Sash Lock with Lever Handles, Mortise Dead Bolt, etc for 120 minutes Fire Rated door conforming to IS:3614 (Part2) 1992					
					Sq.Mtr	Sq.Mtr	15338.00	4908160	
				TERRACE FLOOR					
185				Providing , laying, testing & Commissioning of following ' B ' classes MS pipes conforming to IS 3589 and 1239 including fittings like elbows, tees, flanges, tapers, nuts, bolts, gaskets etc., complete. Makes: Jindal / Hissar / Tata pipes/Prakash Surya					
a		120.00	RM	150mm dia	ONE	RM	3632.00	435840	
b		170.00	RM	100mm dia	ONE	RM	2260.00	384200	
186				Supplying, fixing, testing and commissioning of butterfly valve PN 1.6, with Bronze / Gun metal seat duly ISI marked complete with Nuts, Bolts, Washers, gaskets, conforming to IS 13095 of following sizes as required. Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto / SANT/NEU-G					
a		8	NOS	150 mm dia		EACH	6064.00	48512	
b		8	NOS	100mm dia		EACH	4659.00	37272	
				FIRE EXTINGUISHERS					
187		207	NOS	Supply and fixing of Co2 type Fire Extinguishers 4.5 Kg capacity conforming to IS 2878 made from ISI marked steam less cylinder conforming to IS:7285 & CE certified and fitted with ISI marked controlled valve conforming to IS:3224, high pressure 1 Mtr discharge hose & horn complete with initial gas charged with carrying handle with wheels and wall mounting bracket. Squeeze lever discharge, used un-used indicator, Epoxy coated paint (Red) with 93% gloss with 2 years warranty including transportation, all taxes and all labour charges etc complete. Makes: Cease Fire / Minimax		EACH	16280.00	3369960	
188		307	NOS	Supply and fixing of ISI mark (IS:15683) Mono ammonium phosphate powder 90 (MAP) 6 Kg Fire extinguisher, stored pressure type, pressure gauge, gross wt. 9.4 kg, empty wt.3.4 kg. Discharge time minimum 13 sec, controllable discharge mechanism, range min. 4 mts applicable on classes A,B, C & electrically started fire, A rating -4 A, B rating -34 B, can construction: Deep drawn and Co2 mig welding, Valve construction: Forging & Machining, internal coating of can: Epoxy powder coating, External coating of Can: Epoxy polyester powder coating, sheet metal thickness:1.60mm, Helium leak detection tested with 5 years warranty including transportation, all taxes and all labour charges etc complete. Makes: Cease Fire / Minimax		EACH	11890.00	3650230	
				BOOSTER FIRE PUMPS/ELECTRICAL PANEL					
189		14	NOS	Supplying, installation, testing and commissioning of electric driven Terrace / Booster pump suitable for automatic operation and consisting of following: complete in all respect as required. a) Horizontal type, multistage, centrifugal pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal and flow of 900 lpm at 45 Mtr head conforming to IS 1520 b) Suitable HP SQ cage induction motor TEFC type suitable for operation on 415Volts, 3 phase 50 Hz. AC with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325 c) M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc as required. d) Suitable cement concrete foundation duly plastered with anti-vibration pads. Makes of Pumps : Kirloskar / Mather&Platt. Makes of Motors : Siemens/ ABB/ Kirloskar		EACH	79900.00	1118600	
				CONTROL PANEL FOR BOOSTER FIRE PUMP ON THE TERRACE					

190			<p>Fabrication ,transportation and supply of fully outdoor type wall mounted/floor mounted automatic control panel board with IP-66 protection for 3 phase 7.5 H.P. Motor of Booster Pump set of size 600x 600x 250mm made of 18 SWG CRCA sheet steel enclosure, 14 SWG mounting plate for cable entry fabricated , painted with two coats of Red oxide primer and two coats of Grey paint, lock and key arrangements two side louvers with weld mesh inside and mounted on suitable angle frame work of 450mm height on a PCC pedestal over the terrace consisting of the following equipment/ components with all internal wiring for power and control circuits and control wiring from sensors like pressure switches etc., using copper FRLS cables of suitable size and capacity and cable clamp etc complete with DOL Starter of including cost of all materials and all labour charges, transportation etc., complete for finished item of work. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).</p> <p>1) DOL Starter Make C&S/ Crompton / L&T /KSP/ Siemens/BCH 2) Volt meter Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec 3) AmmeterMake: Conzerve/Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec 4) selector switch Make: L&T / C&S/ Salzer/HPL 5) Single Phase Preventor Makes: L&T / Minilec / Powertec. - 1No. 6) capacitor Makes: L&T / Siemens / Schneider / Epcos/Havells. 7) MPCB (Motor Protection Circuit Breaker) Makes: L&T- D shine / Schneider- NSX/Legrand -DP X3/ Siemens-3VL. 8) ON/OFF/TRIP push button actuators and integral contact block of dia. 22.5 mm i Make:Seimens/ ABB/ Schneider/ L&T/ C&S/HPL 9) power contactor Make: Seimens/ABB/ Schneider/L&T/C&S/HPL/Havells - 3 pole, 35-40A AC3 Rating, Contactor 10) thermal over load relay Make:Seimens/ABB/Schneider/L&T/C&S/HPL/Havells - 1 No 11)Current Transformer Make: Kappa/L&T/ Seimens/ C&S/ Schneider - 3 No</p>					
			<p>1) Supply & Fixing of DOL Starter suitable for 7.5 HP Pump Motor - 1 No 2) Supply and fixing of (0-500) V range Voltmeter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required. -1 No 3) Supply and fixing of CT operated direct reading type Ammeter, below 500A, on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No 4) Supply and fixing of selector switch for Voltmeter & Ammeter (4 position) including making connection etc. as required - 2 No 5) Supply and fixing of 240/220 V, LED (22.5 mm dia) Pilot indication lamps Red, Yellow & Bue Colour with integral circuit, terminal block, including connection etc. as required - 3 No 6) Supply and Fixing of Single Phase Preventor of suitable range - 1No. 7) Supply and fixing of ISI Mark suitable capacitor 8) Supply and Fixing of MPCB (Motor Protection Circuit Breaker) suitable for 7.5 HP Motor, lcu=50 KA with adjustable thermal and magnetic release Panel Mounted 9) Supply and Fixing of Non-Luminous type, ON/OFF/TRIP push button actuators and integral contact block of dia. 22.5 mmincluding making connections etc. as required. 10) Supply and Fixing of AC operated heavy duty 230 /440 Volt power contactor conforming to IS:13947-4-1/IEC:947-4-1 having provision of mechanical interlocking, Din rail mounting type including making connections, testing etc. as required.- 3 pole, 35-40A, AC3 Rating, Contactor - 1 No 11) Supply and fixing of 24 V DC, Aux Contactor with 2 NO + 2NC Contacts with suitable NO+NC ADD on Block 12) Supply and fixing of thermal over load relay with built in single phase protection and having at least 1NO & 1NC contacts, manual /auto reset facility including making connection testing etc. as required - 1 No 13) Supply and Fixing of Current Transformer, upto 150 / 5 ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No</p>					
		14 NOS	<p>Control & Power wiring with suitable size of approved make FRLS PVC flexible copper wires and from pressure sensors etc., Earth Bus Bar, Door Loop earthing, Ferrules, danger plate, door locks, mounting arrangements with 40x40x6mm MS angle iron frame, PCC and masonry work, painting for MS angle frame with red oxide and enamel paint etc., and all other accessories including all labour charges etc with connections for finished item of work including transportation charges</p>			EACH	28196.00	394744
			FIRE FIGHTING EXTERNAL					
			Electric driven Main Fire Pump					

191		2 SET	<p>Supplying , installation , testing and commissioning of electric driven main fire pump suitable for automatic operation and consisting of following : complete in all respect as required.</p> <p>a) Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal to ensure a minimum pressure of 3.5 Kg / sq.cm. at highest and farthest outlet at specified flow of 2280 lpm at 70 Mtr. head conforming to IS 1520</p> <p>b) Suitable HP SQ cage induction motor, TEFC, synchronous speed 1500 RPM, suitable for operation on 415 Volts, 3 phase 50 Hz. AC with IP 55 protection enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325</p> <p>c) M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc as required.</p> <p>d) Suitable cement concrete foundation duly plastered with anti vibration pads.</p> <p>Makes of Pumps: Kirloskar / Mather&Platt. Makes of Motors: Siemens/ ABB/ Kirloskar</p>	ONE	SET	513640.00	1027280
			Diesel engine driven Main Fire Pump				
192		2 SET	<p>Supplying , installation, Testing and commissioning of diesel engine driven main fire pump suitable for automatic operation and consisting of following : complete in all respect as required</p> <p>a) Horizontal type, multistage, centrifugal pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal to ensure a minimum pressure of 3.5 Kg / sq.cm. at highest and farthest outlet at specified flow of 2280 lpm at 70 Mtr head conforming to IS 1520</p> <p>b) Suitable HP, 1500 RPM water cooled with radiator, diesel engine conforming to relevant BS & IS standard complete with auto starting mechanism, 12 Volts / 24 Volts electric starting equipment, Diesel Tank, exhaust pipe extended upto 1 m. outside pump house duly insulated with 50mm thick glass wool with 1.0mm thick aluminium sheet cladding, residential silencer, instruments and protection as per specification, stop solenoid for auto stop in the event of fault with audio indications, painted with post office red colour etc as required.</p> <p>c) M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc as required.</p> <p>d) Suitable cement concrete foundation duly plastered with anti vibration pads.</p> <p>Makes of Engines : Kirloskar / Cummins. Makes of Pumps : Kirloskar / Mather&Platt</p>	ONE	SET	856066.00	1712132
			Electric driven pressurisation / Jockey pump				
193		2 SET	<p>Supplying , installation , testing and commissioning of electric driven pressurisation / Jockey pump suitable for automatic operation and consisting of following : complete in all respect as required.</p> <p>a) Horizontal type, multistage, centrifugal pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal and flow of 180 lpm at 70 Mtr head conforming to IS 1520.</p> <p>b) Suitable HP SQ cage induction motor TEFC type suitable for operation on 415 Volts, 3 phase 50 Hz. AC with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.</p> <p>c) M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc as required.</p> <p>d) Suitable cement concrete foundation duly plastered with anti vibration pads.</p> <p>Makes of Pumps : Kirloskar / Mather&Platt. Makes of Motors : Siemens/ ABB/ Kirloskar</p>	ONE	SET	102728.00	205456
			ELECTRICAL PANEL:				
194			<p>Designing, Supply, Transportation, Installation, Testing and commissioning of system controller to control operation of main electric fire pump, diesel pump, Pressurization pump, Terrace pump in sequence as per specification consisting of relays, timers. Sensors, annunciation window for fault indication, complete as per specification</p> <p>Makes: L&T- D shine / Schneider-NS NSX/Legrand -DP X3/Siemens-3VL / Hager-h3/C&S -Winbreak2</p> <p>Makes of Meters : Schneider (Conzerve) / L&T / Elmeasure / Siemens</p> <p>INCOMING :</p> <p>400A, 50kA 4 Pole MCCB, Ics=100% Icu rating Digital Voltmeter 0-500V with selector switch Ammeter (0-400 A) with selector switch & CTs etc. LED type RYB phase indicating lamps, ON, OFF, trip indicating lamps Set of Copper Bus Bar 500A</p> <p>OUTGOING :</p> <p>(Note : All outgoing feeders for pumps should have digital Ammeter with selector switches, and LED type ON, OFF, trip indicating lamps)</p>				

			2 SET	<p>MAIN FIRE PUMP 200 A, 50kA TPN MCCB, Ics=100% Icu, with fully automatic Star/Delta starter suitable for 75 hp pump with overload protection, current sensing type single phase preventer complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation.</p> <p>JOCKEY PUMP 100 A, 50kA TPN MCCB, Ics=100% Icu, with suitable HP fully automatic Star/Delta starter with overload protection, current sensing type single phase preventer complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation.</p> <p>DIESEL ENGINE CONTROL Control for diesel engine comprising - Automatic/Manual selector switch & 3 attempt starting device, timers and relays as required, push buttons, start/stop in manual mode Indicating lamp for high/ Low Lub. Oil pressure, High Water Temp and Engine on indication Battery charger suitable for 12V/24 V DC with boost and trickle selector switch, 0-30 V DC volt meter, and 0-20 A DC Ammeter All standard relays and accessories for automatic operation of diesel engine System Controller</p>				
					ONE SET	356677.00	713354	
195				<p>Providing , laying, testing & Commissioning of following classes MS pipes conforming to IS 3589 and 1239 including fittings like elbows, tees, flanges, tapers,nuts, bolts, gaskets etc., complete.</p> <p>B-CLASS MS PIPES Makes: Jindal / Hissar / Tata pipes/Prakash Surva</p>				
	a		20.00 RM	250mm dia	ONE RM	5489.00	109780	
	b		1390.00 RM	200mm dia	ONE RM	4762.00	6619180	
	c		300.00 RM	150mm dia	ONE RM	3632.00	1089600	
	d		40.00 RM	100mm dia	ONE RM	2260.00	90400	
				Y-STRAINER				
196				<p>Supply, installation, testing and commissioning of stainless steel Y – Stainer fabricated out of 1.6 mm thick SS 304 with following sizes confirming to IS specifications complete with rubber gasket, GI bolts , nuts, washers etc as required</p> <p>Makes: Leader / Zolotto/SANT/Honeywell.</p>				
	a		10 NOS	150mm dia	EACH	11832.00	118320	
197				<p>Supply, installation, testing and commissioning of stainless steel Y – Stainer fabricated out of 1.6 mm thick SS 304 with following sizes confirming to IS specifications complete with rubber gasket, GI bolts , nuts, washers etc as required</p> <p>Makes: Leader / Zolotto/SANT/Honeywell.</p>				
	a		10 NOS	100mm dia	EACH	6360.00	63600	
198				<p>Supplying, fixing, testing and commissioning of butterfly valve PN 1.6, with Bronze/ Gun metal seat duly ISI marked complete with Nuts, Bolts, Washers, gaskets,conforming to IS 13095 of following sizes as required.Makes:Audco/Kirloskar/BDK/HShankar/Leader/Zolotto/SANT/NEUG/Honeywell</p>				
	a		2 NOS	250 mm . dia	EACH	17009.00	34018	
	b		2 NOS	200 mm . dia	EACH	7248.00	14496	
	c		9 NOS	150 mm dia	EACH	6064.00	54576	
	d		22 NOS	100 mm dia	EACH	4659.00	102498	
199				<p>Providing, installation, testing and commissioning of dual Plate non - return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts,nuts, washers etc as required</p> <p>Makes: BDK / NEU-G / Leader/ Zolotto / SANT/Honeywell</p>				
	a		2 NOS	250 mm . dia	EACH	26622.00	53244	
	b		2 NOS	200 mm . dia	EACH	13608.00	27216	
	c		2 NOS	150 mm dia	EACH	9762.00	19524	
	d		10 NOS	100 mm dia	EACH	5176.00	51760	
200				<p>Providing, fixing, testing & commissioning of installation control valve of cast iron body,brass/bronze working parts comprising of water motor alarm, bronze seat clapper, clapper arm and hydraulically driven mechanical gong bell to sound continuous alarm when the wet riser/sprinkler system activates, pressure gauges,emergency releases, strainer, pressure switch, cock valve complete with drain valve and bypass, test control box, ball valves, MS pipe of required size,flanges,orifice plate, gasket etc of following sizes as required :</p> <p>Makes : HD / TYCO / NEWAGE</p>				
	a		12 NOS	100 mm dia	EACH	56203.00	674436	
201				<p>Providing and fixing Flow Switches in 100mm dia MS pipe. Makes : System Sensor / Switzer /Honeywell</p>	EACH	6899.00	13798	
202				<p>Providing and fixing of Pressure Switch in the MS pipe Line including connection etc as required.</p> <p>Makes : Danfoss / Indfoss /Systemsensor/Honeywell</p>	EACH	3235.00	6470	

203		9	NOS	Supply, installation, testing and commissioning of Bourden type, stainless steel dial type pressure gauge with isolation valve and pipe having calibration of 0-16 kg/cm2. MAKES: HGURU / FIEBIG and Approved makes		EACH	795.00	7155
204		2	NOS	Supply and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25mm dia Gun metal wheel valve, with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.		EACH	22122.00	44244
205		10	NOS	Supply, installation, testing and commissioning of 25 / 20mm dia Air Release Valve. Makes : Zoloto / Leader / SANT		EACH	1627.00	16270
206		20	NOS	Supply and fixing of Escape signage boards in Rigid Photo luminescent based glow in Dark rigid sheet with high intensity luminous properties with specificaiton. Makes: Cease Fire, Model-1ES01/or its equivalent in Safex / Minimax/Honeywell		EACH	1363.00	27260
207		192	NOS	Supply and fixing of ISI mark (IS:15683) Clean Agent HCFC 123, 2 Kg Fire extinguisher , Stored pressure type, pressure gauge, gross weight 3.7Kg , empty weight 1.7 Kg, discharge time minimum 8 secs, controllable discharge mechanism, range minimum 2 meters, applicable on class A,B,C and electrically started Fire, A rating- 1A, B rating-21B, can construction: Deep drawn & CO2 MIG welded, Valve construction: Forging & Machining, Internal coating of Can: Epoxy powder coating, External coating of can: Epoxy polyester powder coating, sheet metal thickness: 1.60 mm, Helium leak detection tested, 5 Years warranty Makes : Cease Fire/ Minimax		EACH	21219.00	4074048
208		23	NOS	Supply & Installation, Testing and commissioning of trolley mounted, electrically operated triplex plunger pumps with 2-H.P, 1-Phase 1450 rpm, 1-phase motor with high pressure triplex pump of 5-0 kg/cmv with nylon hydraulic hose pipe of 3/4" dia, 5mt height for suction and 3/8" dia 30mt length for delivery with all required nozzles has values, high pressure gun, fittings etc with come of 3-core,2.5 Sq mm flexible copper cable with 3-pin 16A top and all required accessories and labour charges for erection, testing including transportation etc. complete, Make of motor: crompton, kiroken, texmo,suguna with ISI mark, Pump: Green tech, Kisan, Ultrajet, Pressurejet, Ambica tools, searaa or any ISI		EACH	47292.00	1087716
209		23	NOS	Supply, Installation and commissioning of Auto Detection and Aerosol Suppression System using Non-Pressurized Aerosol Generator System with detection of thermocord and Inbuilt Aerosol Sprinkler flexibility of adjusting it for a temperature of 57/68/93/141 degree centigrade as per the site environment to make the system standalone. It can be used for all classes of fire. The product Min. Life shall be 15 years and no Maintenance. The Discharge time should be 80 sec. The Generator has a net weight of 8 kg. Active Substance of 4 kg. The Generator has a capacity to cover 80 m³ Makes: SEARA/AGS/SALAMANDRA		EACH	121511.00	2794753
210		184	NOS	Supply and fixing of fire evacuation route plan with 3mm PVC rigid sheet, self illumination sticker ,HP latex printing with lamination and fixing with necessary steel studs. Make: Prolite / Tesla or equivalent		EACH	2600.00	478400
211		51	NOS	Supply and fixing of single side " FIRE SHAFT " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination. Make: Prolite / Tesla or equivalent		EACH	425.00	21675
212		51	NOS	Supply and fixing of single side " FIRE HOSE REEL " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination. Make: Prolite / Tesla or equivalent		EACH	425.00	21675
213		51	NOS	Supply and fixing of single side " ELECTRICAL SHAFT " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination Make: Prolite / Tesla or equivalent		EACH	425.00	21675
214		51	NOS	Supply and fixing of single side " PLUMBING SHAFT " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination. Make: Prolite / Tesla or equivalent		EACH	425.00	21675
215		178	NOS	Supply and fixing of single side " COMMUNICATION SHAFT " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination. Make: Prolite / Tesla or equivalent		EACH	425.00	75650
216		194	NOS	Supply and fixing of single side " FIRE ALARM " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination. Make: Prolite / Tesla or equivalent		EACH	425.00	82450
217		194	NOS	Supply and fixing of single side " EMERGENCY EXIT " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination. Make: Prolite / Tesla or equivalent		EACH	575.00	111550

218		194	NOS	Supply and fixing of single side " FLOOR INDICATOR " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	575.00	111550
219		189	NOS	Supply and fixing of single side " EXIT STAIR CASE " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	575.00	108675
220		194	NOS	Supply and fixing of single side " FIRE EXTINGUISHERS V SHAPE" signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	285.00	55290
221		75	NOS	Supply and fixing of single side " MANUAL CALL POINT V SHAPE " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	285.00	21375
222		155	NOS	Supply and fixing of single side " IN CASE OF FIRE, DO NOT USE LIFT,USE STAI CASE " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	475.00	73625
223		154	NOS	Supply and fixing of single side " FIRE ORDER " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	6300.00	970200
224		154	NOS	Supply and fixing of single side " ACTION BY SECURITY " signage of 3mm PVC rigid sheet with self illumination sticker, HP latex printing with lamination.Make: Prolite / Tesla or equivalent		EACH	6300.00	970200
225		90	NOS	Supply and fixing of wall/ceiling mounted/suspended single side "FIRE EXIT " LED light signage, 240v ac , size 300x150mm Aluminium housing with 10mm/8mm acrylic sheet, 5watt LED illumination system including the cost of in-built rechargeable batteries with charger suitable for 2 hours operation. Make: Prolite / Tesla or equivalent		EACH	2100.00	189000
226		83000.00	RM	Supply and Transportation of 2 core 1.5 sqmm XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 etc complete Make: Torrent / Universal / Unicab / Havells / KEI /Polycab/Gloster/Orbit/ Paragon/RR Kabel/RPG/Rhino/Pawancab/AKG/LS cable	ONE	RM	127.00	10541000
				HVAC BOQ				
				Split Airconditioners				
227				Supply, Transportation, Installation, Testing and Commissioning of the following Inverter model Cool type split AC unit with high wall mounted Single Split indoor unit and outdoor condensing unit Hermetically sealed compressor suitable for operation on 230V, 50Hz, 1Phase AC supply capable of performing Heat, cool, dehumidifying, air circulating and filtering with cooling and condensing units with 3 mts of copper piping, insulation kit and 4 mts of 4 core copper flexible chord with cordless remote control etc., dual barrier coating in order to protect coil form oxidigation and with copper condenser only.				
a		80	NOS	1.5 TR 5 star capable of delivering 18000 BTU/hr and above with operating on refrigerant R-32/ R-410A, COP not less than 4.5 Makes: Mitsubishi MSGN18VF /OGeneralASGA18JCC/ ToshibaRAS18N3KCV/Blue Star PAFU-DAFU series /Daikin FTKC50NVM / Hitachi / Carrier or their prevailing models with above specifictions.		EACH	73379.00	5870320
b		49	NOS	2.0/2.2 TR 5 star capable of delivering 24000 BTU/hrand above with operating on refrigerant R-410A / R-32Makes: Mitsubishi MS-GN26VF / O General ASGA24JCC/Toshiba/Blue Star PAFU-DAFU series /Daikin FTKC50NVM / Hitachi / Carrier or their prevailing models with above specifictions.		EACH	99767.00	4888583
				INVERTER CASSETTE TYPE AC UNITS				
228				Supply, Transportation, Installation, Testing and Commissioning of the following inverter type Cassette type AC unit with ceiling mounted indoor unit and outdoor condensing unit Hermetically sealed compressor suitable for operation on AC supply capable of performing cooling dehumidifying air circulating and filtering with cooling and condensing units etc. complete with Wireless remote controller, without refrigerent piping and cable.				
a		2	NOS	2.0TR 4 star Single Phase capable of delivering 24000 BTU / hr and above with operating on refrigerant R-32 / R-410A, Makes: Mitsubishi PLY-SP24BA / O General AUGA2SFRTA / Toshiba RAV-SE801UP/Blue Star 3HNCS24YAF/ Daikin / Carrier		EACH	120058.00	240116
b		2	NOS	3.5 TR 4 star Three Phase capable of delivering 42000 BTU / hr and above with operating on refrigerant R-32 / R-410A, Makes: Mitsubishi PLYSP42BA /OGeneral/Toshiba/Daikin / Bluestar / Carrier		EACH	208016.00	416032
c		2	NOS	4.0 TR 4 star Three Phase capable of delivering 48000 BTU / hr and above with operating on refrigerant R-32 / R-410A Makes: Mitsubishi PLY-SP48BA / O General / Toshiba RAV-SE1251UP/Daikin / Bluestar / Carrier		EACH	213865.00	427730

229		129	NOS	Supply, Fabrication of 1set MS bracket suitable for fixing out door unit of split AC unit.		EACH	1650.00	212850
230		129	NOS	Supply, Fabrication of 1set MS bracket suitable for fixing out door unit of 2.5/3.5 /4.50 TR Casseete AC unit.		EACH	2337.00	301473
231				Providing 2 runs of Copper tubes for suction and liquid between indoor and outdoor unit for split/ Casseete Air-Conditioner including foaming etc., complete. Make: Copper:Totaline /Nippon /Mandev. Nitrile Insulation: Kflex/ Totaline /Armaflex				
a		70.00	RM	1/2" x 1/4"	ONE	RM	1113.40	77938
b		330.00	RM	5/8" x 1/4"	ONE	RM	1223.60	403788
c		190.00	RM	3/4" x 3/8"	ONE	RM	1340.70	254733
232				Supply and erecting fully automatic line voltage stabilizer for operation on input voltage 200V to 250V rated for the following KVA maximum load and time delay model with 16A, 3-way connector/ socket for output and with 3 core flexible chord and 3 pin 6/16A plug top for input suitable for Air-conditioner for continuous operation including cost and conveyance of all mateials and all labour charges etc., complete. Makes : V-Guard/Real Guard/Uni Stab/ITL				
a		80.00	RM	4 KVA	ONE	RM	3857.00	308560
b		49.00	RM	5 KVA	ONE	RM	4681.00	229369
233				Supply, installation and testing of UPVC Drain piping with 6mm Nitrile Rubber class "O" Insulation covered with interwoven glass cloth protection. Necessary pipe fittings(Including enlarger, bends, T Joints etc) has to be considered to connect the UPVC drain pipe to cast iron floor trap				
a		190.00	RM	25 mm dia	ONE	RM	213.60	40584
b		160.00	RM	32 mm dia	ONE	RM	254.50	40720
				HVAC SYSTEMS(VRV/VRF)				
234				Supply of Air cooled VRV / VRF Air Conditioning system of having high COP complete with indoor and outdoor units duly charged with refrigerant R-410A and oil (first charge) suitable for cooling with individual controller, (suitable for 415 +/- 10% for outdoor and 230 +/- 5% for indoor units) and complete with all accessories, fittings etc. The units shall be BMS Compatible.Outdoor Units shall be fully inverter system complete with 100% scroll/rotary compressor and drive arrangement, initial charge of refrigerant(R-410A),refrigerant piping, drier, sight glass, dual pressure cutout all housed and supported properly in cabinet, air cooled condenser & its controller for following capacities. The VRV system shall be cooling only system. Makes: Mitsubishi /DAIKIN/Toshiba/O General				
				Type of Compressor : Hermitic sealed Inverter Scroll/Twin Rotary				
				ODU should delvier the required capacity at the ambient conditions of the place as per ISHRAE Standards				
				The System should be highly energy efficient and COP shall not be less than 3.7. The outdoor units shall be suitable for operation between 5 and 53 deg C in cooling mode.				
a		2	NOS	8-HP		EACH	247726.00	495452
b		2	NOS	10-HP		EACH	307306.00	614612
c		2	NOS	12-HP		EACH	344935.00	689870
c		2	NOS	14-HP		EACH	390404.00	780808
c		2	NOS	16-HP		EACH	445280.00	890560
c		2	NOS	18-HP		EACH	489181.00	978362
b		28	NOS	20-HP		EACH	537785.00	15057980
235				Supply of Indoor Units consisting of 2/3/4 row deep DX coil, filter, blower section and drive arrangement, initial charge of refrigerant & oil, integral refrigerant piping, electronic expansion valve, electrical panel with controls and duly wired, thermostatic control. Makes: Mitsubishi /DAIKIN/Toshiba/ O General				
				Type Of Units :Hi Wall type units				
a		21	NOS	1.0 TR Capacity		EACH	39524.00	830004
b		5	NOS	1.6 TR Capacity		EACH	43117.00	215585
c		18	NOS	2.0TR Capacity		EACH	44554.00	801972
236				Supply of Indoor Units consisting of 2/3/4 row deep DX coil, filter, blower section and drive arrangement, initial charge of refrigerant & oil, integral refrigerant piping, electronic expansion valve, electrical panel with controls and duly wired, thermostatic control. Makes: Mitsubishi /DAIKIN/Toshiba /O General Type Of Units : Round flow/4 way Cassette units				
a		14	NOS	1.5/1.6 TR Capacity		EACH	58926.00	824964
b		29	NOS	2.0 TR Capacity		EACH	60364.00	1750556
c		7	NOS	2.6 TR Capacity		EACH	66113.00	462791
d		40	NOS	3.2 TR Capacity		EACH	67550.00	2702000
e		45	NOS	4.0 TR Capacity		EACH	68987.00	3104415
237		2	NOS	Lifting Shifting, Positioning, Installation, Testing and commissioning the ODU's including all accessories with Vibration Isolators for ODU's etc., complete - OUT DOOR UNITS, 6 to 8 HP		EACH	9878.00	19756

238		2	NOS	Lifting Shifting, Positioning, Installation, Testing and commissioning the ODUs including all accessories with Vibration Isolators for ODUs etc., complete - OUT DOOR UNITS, -10 to 12 HP		EACH	14111.00	28222
239		28	NOS	Lifting Shifting, Positioning, Installation, Testing and commissioning of the ODUs including all accessories with Vibration Isolators for ODUs etc., complete - OUT DOOR UNITS, 14 to 20 HP		EACH	16933.00	474124
240				Lifting Shifting, Positioning, Installation, Testing and commissioning of the following indoor units with including all required accessoires etc complete., Type Of Units :Hi Wall Units				
a		44	NOS	1.0 TR to 2.0 TR - INDOOR UNITS		EACH	1693.00	74492
241				Lifting Shifting, Positioning, Installation, Testing and commissioning of the following indoor units with including all required accessoires etc complete., Type Of Units :Round Flow Cassette units				
a		21	NOS	1.0 TR to 2.0 TR - INDOOR UNITS		EACH	2117.00	44457
b		92	NOS	2.6 TR to 4.5 TR - INDOOR UNITS		EACH	3528.00	324576
242				Supply, installation and testing of the following sizes of Refrigerant Piping consisting of Copper tubes of wall thickness 20G/22G inclusive of Suction Gas Piping & Fittings,Liquid Line Piping & Fittings, with class "O" nitrile rubber Insulation with finish as required.The piping to be mounted & supported properly with suitable size of clamp,M.S. hanger, tray etc., as required at site Makes:Totaline/Mandav/Mexico The insulation shall be closed cell/cross linked elastomeric Nitrile rubber of thickness 13/19 mm. The insulation thickness upto 19.1 mm dia pipe shall be 13 mm and above 19.1 mm dia, the insulation thickness shall be 19 mm. Testing of refrigerant piping and procedure shall be done as per Manufacturer's recommendations				
a		270	NOS	34.9 mm		EACH	1901.00	513270
b		315	NOS	28.6 mm		EACH	1736.00	546840
c		320	NOS	22.2 mm		EACH	1570.00	502400
d		390	NOS	19.1 mm		EACH	1405.00	547950
e		710	NOS	15.9 mm		EACH	1240.00	880400
f		615	NOS	12.7 mm		EACH	1075.00	661125
243				Supply, installation and testing of UPVC Drain Piping with 6mm Nitrile Rubber class "O" Insulation covered with interwoven glass cloth protection. Necessary pipe fittings (Including enlarger, bends, T Joints etc) has to be considered to connect the UPVC drain pipe to cast iron floor trap. Makes: Ashirvad / Finolex / Waterflo /Sudhakar				
a		1360	NOS	25 mm		EACH	214.00	291040
b		810	NOS	32 mm		EACH	254.00	205740
244		126	NOS	Supply and Installation of Multi Connection Joint / Ref Nets for IDUs		EACH	6036.00	760536
245		40	NOS	Supply and Installation of Multi Connection Joint / Ref Nets for double ODU connections- AT OUT DOOR UNITS		EACH	6899.00	275960
246		14	NOS	Supply and Installation of Multi Connection Joint / Ref Nets for triple ODU connections- AT OUT DOOR UNITS		EACH	13223.00	185122
				HV AC SYSTEMS [DUCTIBLE AIR-CONDITIONERS WITH AHUs]				
				Condensing units for AHU				
247				Supply, Transportation, Installation, Testing and Commissioning of the following actual capacity at 45°C ambient Outdoor Condensing Units-Inverter type suitable to operate upto 52°C ambient temperature with minimum one variable speed inverter scroll compressor. Matching air-cooled condenser with copper tubes and aluminum fins duly covered by anti-corrosion and hydrophilic resin film. Scroll compressors suitable for operation with R-410A. Unit with all necessary safety devices like high/low pressure cut-outs, fan motor thermal overload protector, over current/low current safety, fuses etc. Suitable for operation on 80V~415V, 3Ph~50Hz A.C. supply. Oil separator and accumulator to be provided for inverter compressors and with copper condensing units. Makes: Mitsubishi /DAIKIN/Toshiba/O General/ LG/Voltas/Blue star/Hitachi/Carrier/Samsung Nominal Capacities:				
a		5	NOS	17 TR		EACH	271540.00	1357700
b		8	NOS	11 TR		EACH	165878.00	1327024
c		4	NOS	8.5 TR		EACH	138610.00	554440
d		4	NOS	5.5 TR		EACH	97027.00	388108
e		4	NOS	3.5 TR		EACH	94300.00	377200
f		2	NOS	2.5 TR		EACH	62488.00	124976
				Air handling Units				

248				SITC of double skin horizontal floor mounted air handling unit of recirculation type having mixing box with fresh air & return air manually operated AL dampers. Fresh air inlet should have back draft dampers along with AL manually operated fresh air dampers. Units shall be with minimum 80mm GI base channel. The panel thickness should be 46+/-2mm having thermal break AL profile. Outer skin of the unit should be 0.6mm pre-coated GI sheet & Inner skin should be 0.8mm AL. All internal blank off should be GI. Filter section with 90% efficiency down to 10 micron pre-filter box type followed by 95% efficiency down to 5 micron Microvee filter in a separate filter frame. Cooling coil section should be 6 or 8 Row Deep Direct Expansion intertwining cooling coil compatible for Bluestar/voltas/ Thosibha/Daikin outdoor unit. Fin thickness should be 0.15mm & fin spacing should be 12 FPI. Coil casing should be GI & fin shall be with standard fin material. Coil shall be 18G SS-304 drain pan with 13mm thick closed cell nitrile rubber insulations. Unit shall be ultra violet lamp to kill germs/fungus. Heater section should be with 4kW electric strip heater in 2 banks.				
				Fan section should be SISW direct driven plug fan with a minimum efficiency of 65%. Motors should be IE-2, TEFC squirrel cage induction type with IP-55 protection, 415V, 3Phase & 50Hz. Motor drive should be VFD. VFD drive should be included in AHU supply. Fan should be housed over the spring isolator. Unit should be supplied with manually operated AL dampers. The AHU package should include Electronic expansion valves compatible to condensing units, Temperature sensor/controller compatible to inverter drive, communication cables from AHU to condensing unit MAKES: 1. FAN – KRUGER / ZIEHL-ABEGG 2. MOTORS – ABB/SIEMENS/BBL 3. FILTERS – CAMFIL/THERMADYNE 4. VFD DRIVE - DANFOSS / ABB 5. AHU - EDGE TECH / ZRCO/ CITIZEN/ BOOPATHY				
a		6	NOS	8800 cfm 5.5" static		EACH	437418.00	2624508
b		4	NOS	6800 cfm 4.5" static		EACH	380610.00	1522440
c		6	NOS	4400 cfm 4.5" static		EACH	255634.00	1533804
d		2	NOS	3400 cfm 4.5" static		EACH	210188.00	420376
e		6	NOS	2200 cfm 3.5" static		EACH	130657.00	783942
f		2	NOS	1400 cfm 2.5" static		EACH	85211.00	170422
g		2	NOS	1000 cfm 2.5" static		EACH	73850.00	147700
249				Supply, Transportation, Installation, Testing and Commissioning of Indoor Units consisting of 2/3/4 row deep DX coil, filter, blower section and drive arrangement, initial charge of refrigerant & oil, integral refrigerant piping, electronic expansion valve, electrical panel with controls and duly wired, thermostatic control. Makes: Mitsubishi /DAIKIN/Toshiba/ O General/Blue star/Hitachi/Carrier				
				Type Of Units :High Static Duct Units				
a		5	NOS	3.2-TR		EACH	72293.00	361465
b		4	NOS	4-TR		EACH	75886.00	303544
c		4	NOS	5.5-TR		EACH	121015.00	484060
d		1	NO	6.3-TR		EACH	127483.00	127483
e		1	NO	8-TR		EACH	134382.00	134382
				Ductible TFA Units				
250				Supply, Transportation, Installation, Testing and Commissioning of Indoor Units consisting of 3/4 row deep DX coil, drain pan, filter, blower section and drive arrangement, initial charge of refrigerant & oil, integral refrigerant piping, electronic expansion valve, electrical panel with controls, duly wired, thermostatic control corded/cordless remote controller supports for indoor units etc. Makes: Mitsubishi /DAIKIN/Toshiba/ O General/Blue star/Hitachi/Carrier				
				Type of Units : Ductable TFA Units				
a		6	NOS	4 TR Capacity		EACH	118788.00	712728
b		8	NOS	6 TR Capacity		EACH	143148.00	1145184
c		8	NOS	8 TR Capacity		EACH	150909.00	1207272
251				Supply, installation and testing of the following sizes of Refrigerant Piping consisting of Copper tubes of wall thickness 20G/22G inclusive of Suction Gas Piping & Fittings,Liquid Line Piping & Fittings, with class "O" nitrile rubber Insulation with finish as required.The piping to be mounted & supported properly with suitable size of clamp,M.S. hanger, tray etc., as required at site Makes:Totaline/Mandav/Mexico The insulation shall be closed cell/cross linked elastomeric Nitrile rubber of thickness 13/19 mm. The insulation thickness upto 19.1 mm dia pipe shall be 13 mm and above 19.1 mm dia, the insulation thickness shall be 19 mm. Testing of refrigerant piping and procedure shall be done as per Manufacturer's recommendations				
a		200.00	RM	34.9 mm dia		ONE	1901.00	380200

b	230.00	RM	28.6 mm dia	ONE	RM	1736.00	399280
c	1363.00	RM	22.2 mm dia	ONE	RM	1570.00	2139910
d	120.00	RM	19.1 mm dia	ONE	RM	1405.00	168600
e	70.00	RM	15.9 mm dia	ONE	RM	1240.00	86800
f	120.00	RM	12.7 mm dia	ONE	RM	1075.00	129000
g	120.00	RM	9.5 mm dia	ONE	RM	793.00	95160
h	120.00	RM	6.4 mm dia	ONE	RM	694.00	83280
252			Supply, installation and testing of UPVC Drain Piping with 6mm Nitrile Rubber class "O" Insulation covered with interwoven glass cloth protection. Necessary pipe fittings(Including enlarger, bends, T Joints etc) has to be considered to connect the UPVC drain pipe to cast iron floor trap				
a	1891.00	RM	a) 25 mm dia	ONE	RM	214.00	404674
b	450.00	RM	b) 32 mm dia	ONE	RM	254.00	114300
c	160.00	RM	40 mm Dia	ONE	RM	311.00	49760
253	290.00	SQM	Supply,erection, testing and commissioning of Fresh air intake GI louvers with bird screen as per standard specifications.	ONE	SQM	6248.80	1812152
			DUCTING :				
254			Supply, installation, testing& commissioning of GSS Ducting with required angle flanges & installation materials such as heavy duty supports by anchor fasteners etc as required asper IS 655 /SMACNA Standards. Makes:TATA/Jindal				
a	1356.00	SQM	24 G	ONE	SQM	1186.00	1608216
b	1216.00	SQM	22 G	ONE	SQM	1329.00	1616064
255	112.00	SQM	Supply, installation and testing of Canvas connection for the Treated Fresh Air units to the duct	ONE	SQM	3161.90	354133
256			Supply & Fixing of Duct Accoustic Insulation applied inside of the duct work with All. backed Open cell nitrile/ Cross linked foam duly fixed with adhesive and tapes				
a	827.00	SQM	10/15 mm Thick	ONE	SQM	1294.10	1070221
257			Supply & Fixing of Duct Thermal Insulation applied outside of the duct work with All. backed Closed cell nitrile/ Cross linked foam duly fixed with adhesive and tapes.				
a	982.00	SQM	13 mm Thick	ONE	SQM	833.90	818890
258	201.00	SQM	Supply, Installation, Testing and commissioning of extruded Aluminum powder coated grills/ diffusers for supply with removable core type with collar damper	ONE	SQM	12217.00	2455617
259	201.00	SQM	Supply, Installation, Testing and commissioning of extruded Aluminum powder coated grills/ diffusers for retrun with removable core type without collar damper.	ONE	SQM	8910.80	1791071
260	35.00	SQM	Supply & Erection of 18G Aluminium Backdraft Dampers at inlet of AHU unit. Approved Makes: Airmaster, Systemair, carryair.	ONE	SQM	7761.00	271635
261	475.00	RM	Supply, Transportation and laying of 3 core, 2.5 Sq.mm XLPE/PVC insulated & PVC sheathed Unarmoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 in the existing PVC conduit including all labour charges, giving connections etc., complete. Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard	ONE	RM	153.40	72865
262	400.00	RM	Supply & run of 4 of 6.0 Sqmm (84/0.3mm) (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for run of mains including labour charges etc. complete for AC points etc as required. Makes of wires:- : Finolex / RR kabel / Havells KEI/Polycab/Gloster/Goldmedal/GM/ Finecab/ Fortune Arrt/Anchor/Million	ONE	RM	365.20	146080
263	270.00	RM	Supply & run of 4 of 10.0 Sqmm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in the existing conduit pipe for run of for mains including all labour charges etc., complete. Makes of wires:- : Finolex / RR kabel / Havells EI/Polycab/Gloster/Goldmedal/GM/ Finecab/ Fortune Arrt/Anchor/Million	ONE	RM	561.00	151470
			MODULAR TYPE OPERATION THEATRES				
			Condensing units				
264			Supply, Transportation, Installation, Testing and Commissioning of the following actual capacity at 45°C ambient Outdoor Condensing Units-Inverter type suitable to operate upto 52°C ambient temperature with minimum one variable speed inverter scroll compressor. Matching air-cooled condenser with copper tubes and aluminum fins duly covered by anti-corrosion and hydrophilic resin film. Scroll compressors suitable for operation with R-410A. Unit with all necessary safety devices like high/low pressure cut-outs, fan motor thermal overload protector, over current/low current safety, fuses etc. Suitable for operation on 80V~415V, 3Ph~50Hz A.C. supply. Oil separator and accumulator to be provided for inverter compressors and with copper condensing units. Makes: Mitsubishi /DAIKIN/Toshiba/O General/ LG/Voltas/Blue star/Hitachi/Carrier/Samsung				

				Nominal Capacities:				
a		12	NOS	17 TR		EACH	271540.00	3258480
b		12	NOS	11 TR		EACH	165878.00	1990536
c		12	NOS	8.5 TR		EACH	138610.00	1663320
d		12	NOS	5.5 TR		EACH	97027.00	1164324
e		12	NOS	3.5 TR		EACH	94300.00	1131600
				Air handling Units				
265				Supply, Transportation, Installation, Testing and Commissioning of double skin horizontal floor mounted air handling unit of recirculation type having mixing box with fresh air & return air manually operated AL dampers. Fresh air inlet should have back draft dampers along with AL manually operated fresh air dampers. Units shall be with minimum 80mm GI base channel. The panel thickness should be 46+/-2mm having thermal break AL profile. Outer skin of the unit should be 6 mm pre-coated GI sheet & Inner skin should be 8mm AL with 25mm polyurethane insulation. All internal blank off should be GI. Filter section with 90% efficiency down to 10 micron pre-filter box type followed by 95% efficiency down to 5 micron Microvee filter in a separate filter frame. Cooling coil section should be 6 or 8 Row Deep Direct Expansion intertwining cooling coil compatible for Bluestar/voltas/ Thosibha/Daikin outdoor unit. Fin thickness should be 0.15mm & fin spacing should be 12 FPI. Coil casing should be GI & fin shall be with standard fin material. Coil shall be 18G SS-304 drain pan with 13mm thick closed cell nitrile rubber insulations. Unit shall have ultra violet lamp to kill germs/fungus. Heater section should be with 4kW electric strip heater in 2 banks.				
				Fan section should be SISW direct driven plug fan with a minimum efficiency of 65%. Motors should be IE-2, TEFC squirrel cage induction type with IP-55 protection, 415V, 3Phase & 50Hz. Motor drive should be VFD. VFD drive should be included in AHU supply. Fan should be housed over the spring isolator. Unit should be supplied with manually operated AL dampers. The AHU package should include Electronic expansion valves compatible to condensing units, Temperature sensor/controller compatible to inverter drive, communication cables from AHU to condensing unit and Electrical Control Panel with Interlocking of AHU, CU, Thermostatic Voltmeter with temperature control interlocking system with Aluminum Ducting till ahu etc. APPROVED MAKE: 1. FAN – KRUGER / ZIEHL-ABEGG 2. MOTORS – ABB/SIEMENS/BBL 3. FILTERS – CAMFIL/THERMADYNE 4. VFD DRIVE - DANFOSS / ABB 5. AHU - EDGE TECH / ZRCO/ CITIZEN/ BOOPATHY				
a		12	NOS	4400 cfm 4.5" static		EACH	255634.00	3067608
a		12	NOS	3400 cfm 4.5" static		EACH	210188.00	2522256
a		12	NOS	2200 cfm 3.5" static		EACH	130657.00	1567884
a		12	NOS	1400 cfm 2.5" static		EACH	85211.00	1022532
266				Supply and Installation of Ceiling suspended laminar flow (Planair Ceiling system) with unidirectional airflow work space / discharge plenum for operation rooms comprising as standard feature with HEPA filter efficiency not less than 99.97% down to 0.3 Microns (Factory DOP tested), per operation room shall not be less than 3.1 sqm area with appropriate depth to accommodate absolute filters, with air flow at approx. 90-100 Fpm velocity. Size 8ft X 6ft. The laminar flow system shall have such design that it provides "H13/14" class Hepa filter. Material of construction Shall be 1.2mm thick S S 304 Plenum with S S Perforated sheet at the bottom. Each air inlet should be supplied with Aluminium opposed blade damper. Diffuser : 2 layer monofilament precision woven polyester of uniform porosity with an open area of sufficient resistance to create laminar from diffusers face and inetgral lighting provides an illumination level in excess of 1500 Lux in operating area and 1000 Lux other electronic stepless dimming down to 5% without flicker. The entire plenum should be insulated with 19mm thick Al faced nitrile rubber. Bottom discharge should be perforated SS Sheet of 1.6mm with reinforcement to avoid waveviness APPROVED MAKE : Dyna / American Air Filter / M.K Precesion				
		12	NOS	Laminar flow plenum chamber		EACH	312441.00	3749292
267				Supply, installation and testing of Refrigerant Piping consisting of Copper tubes of wall thickness 20G/22G inclusive of Suction Gas Piping & Fittings,Liquid Line Piping & Fittings, with class "O" nitrile rubber Insulation with finish as required.The piping to be mounted & supported properly with suitable size of clamp,M.S. hanger, tray etc., as required at site Makes:Totaline/Mandav/Mexico The insulation shall be closed cell/cross linked elastomeric Nitrile rubber of thickness 13/19 mm. The insulation thickness upto 19.1 mm dia pipe shall be 13 mm and above 19.1 mm dia, the insulation thickness shall be 19 mm. Testing of refrigerant piping and procedure shall be done as per Manufacturer's recommendations				

a	150.00	RM	22.2 mm	ONE	RM	1570.00	235500
b	150.00	RM	12.7 mm	ONE	RM	1075.00	161250
268			Supply, installation, testing & commissioning of GSS Ducting with required angle flanges & installation materials such as heavy duty supports by anchor fasteners etc as required as per IS 655 /SMACNA Standards Makes:TATA/Jindal a)24 G				
a	150.00	RM	22 Gauge	ONE	RM	1329.00	199350
b	150.00	RM	20 Gauge	ONE	RM	1582.00	237300
269	15.00	RM	Supply & Erection of 18G Aluminium Backdraft Dampers at inlet of AHU unit as per UL 555 Standard. Approved Makes: Airmaster, Systemair, carryair.	ONE	RM	7761.00	116415
270			Supply and Fixing of the following 2 mm thick Hard UPVC drain piping with suitable supports as required & insulated with 6mm thick Nitrile rubber insulation. Approved Makes: Sudhakar, Supreme or equivalent				
a	90.00	RM	25 mm	ONE	RM	214.00	19260
271	1200.00	RM	Supply & Fixing of MS structural support for mounting of Floor mounted AHU with 50 x 50 x 5 mm angle finished with Epoxy painting as per standard practice	ONE	RM	68.00	81600
272	1080.00	RM	Supply,Transportation and Fixing of Wall and Ceiling Paneling with Anti-microbial PVC sheet cladding for Modular OT : WALL Area : Cladding of Antimicrobial PVC sheet Directly on the wall structure customer provided (Cement wall, Stainless Steel , Tiles , e-board Wall , gypsum Partition , Etc. Ceiling area : Cladding of Antimicrobial PVC sheet Directly on the Ceiling structure . Ceiling structure can be Gypsum board (or) MDF Board Technical Specification for wall & ceiling area: Imported wall cladding sheets finished with impregnated silver ion having 100% Anti Microbial Property, high quality, dense, impact resistant UPVC polymer of 2.5mm thickness (EU CE Grade & USFDA Apprvd). The material should have Surface resistance ROE (Ω) in compliance with ASTM D792, Thermal conductivity : ASTM D648 and fire resistance :EN13501 B-S3-D0 The finish material should be bacteriostatic which is easy to clean and extremely hygienic and provide maintenance free cladding system . These sheets can be fixed directly on existing brickwalls , fixed plywood , ceramic tiles and stainless steel. The walls should be zero leveled . These sheet joints will be sealed by hot weld providing seamless finish or joined with matching pic single and 2 part trim syst, which should be Silicon free Joint) IP66 Protection Classification Protected against moisture ingress. Protected against dust ingress. The material shall comply with LEED v4 and v2009 standards under 'Material&Resources' and 'Indoor Environmental Quality' The material shall have Protection against Respiratory, Allergic, or immune effects in infants or children are associated with man-made VOCs and as per ISO (BS EN 438) with Impact Testing The Antimicrobial cladding Sheets shall have a warranty for 20 years on antimicrobial properties Shall be fixed with Special Cladding Paste with seamLess Welded Joints with	ONE	RM	4300.00	4644000
273	360.00	RM	Supply and Laying of Coving : Supply and installation of Aluminium Extruded profiles with 1.50mm thick. Coving has executed as male and female. Female coving with "V" Groove for clip grip for male & supporting at wall to ceiling, wall to wall & wall to floor. Male coving with clip on type powder coated / PCGI Nickel - Chrome Anodizing radius - R 70. to avoid dust accumulation at 90 deg. places like wall to floor, wall to wall & wall to ceiling. Make :- Sumangalam / Zindal. wall to wall and wall to ceiling	ONE	RM	361.00	129960
274	120.00	RM	Supply and Fixing of Epoxy Flooring: Seamless with perfectly curved resistance and dynamic loads and having conductive protection characteristics, 3 mm thick, washable Epoxy flooring and Before apply epoxy apply ESD self leveling - eletrotape copper foil /Copper grounding strips (0.05 mm thick, 50mm width) is used to create ground grids for peel and stic ESD flooring and ESD matting also ESD primer,screading and topping for self leveling. (Make :SIKHA /FOSROC /Schomburg /BAS/ CIPY/ MYK/ TARKETT)	ONE	RM	2959.00	355080
275	12.00	RM	Supply and Fixing of Pass Box SS 304 (Size: 2'*2') can be provided in operation theatre to remove waste materials from the operation theatres to Dirty linen area just adjacent to Operation Theatre. Pass Box is equipped with two doors and the door shall operate electronically. The Pass Box is designed in such a way that only one door should be opened at one time. The UV light shall be installed in chamber. Make: CZS /BLS / SS 304 Zindal	ONE	RM	63500.00	762000

276	12.00	RM	Supply and Fixing of Two Plate X-Ray Viewing Screen designed to provide a high level of control luminance without flicker. Size - 950 x 650 x 115 mm (Make : Mediconz International - Country of Origin -India , Srimodular / CZS / Altos)	ONE	RM	32500.00	390000
277	12.00	RM	Supply and Fixing of Writing Board of size 950 x 650 x 75 mm with 50 mm thick and concealed in wall panelling (Make : CZS /BLS / Altos / Srimodular / Mediconz or equavalent)	ONE	RM	10000.00	120000
278	60.00	RM	Providing & Fixing of Scientific Doors with metal door frames and door shutters made of galvanize steel (base steel as per IS 513 of 0.58 mm thick D quality, galvanized as per IS 277 with Zinc of 120 GSM). coated with Zinc Phosphate Primer to receive any paint on site or finished with Thermosetting Polyurethane paint of Aliphatic Grade providing high levels of scratch resistance and durability/Epoxy polyester powder for powder coating paint thickness 50-60 microns (Dry film thickness) outer frame section of 100 x 58 mm x 1.2 mm thick, shutter section of 0.80 mm thick galvanized steel sheet pressed (roll formed) for 46mm thick fully flush, double skin door shell seam joints at stile edges, in-fill of honeycomb kraft paper used to give the required rigidity and effective acoustic insulation with 6" Tower bolt – 2 Nos., 6" D handles – 2 Nos., 10" Aldrop – 1 No., Butt Hinges – 6 Nos, Mortise Lock of approved quality – 1 No, frames fixed to the concrete/masonry wall by means of self expanding screws complete for finished item of work for Double leaf Door Double leaf Door (2000 mm x 2600 mm / 1800 mm x 2600 mm)	ONE	RM	12498.00	749880
279	12.00	RM	Supply and Fixing of Surgucal Scrub: Surgical scrub sink should be designed for use in OT complex providing Surgeons with a convenient sink for pre – OT scrub up. Each fixture should be fabricated with 18 SWG gauge type 304 stainless steel and should be seamless welded construction, polished to a stain finish. The scrub sink should be provided with a water controlled value, waste connections, stoppers and strainers. 4 Feet Length and 3 Feet Hight with 2 Foot operated and 2 elbow taps should be there. Make : Zindal/ Tata	ONE	RM	68820.00	825840
280	12.00	RM	Supply and Fixing of Surgeon Double Arm Pendant - Comprising of - 1 x Arm 800 & 1 x Arm 800 having a - 1 x drop tube having a carrying capacity of maximum load of 80 kg -Rotation of 330 deg. - 1 x Basic Console - 750 mm - 1 x Fixed shelf (350x350x50 mm) - 1 x Adjustable shelf (350x350x50mm) - 6 x Mains Socket (5/15Amp) - 6 x Medical Gas Terminal & Hose Assembly (2 x Oxy, 2xVac, 1xAir(4bar), 1xAir(7bar), 1xN2O, 1xCO2, Provision for CO2 Data & A/V 2 nos.) Make : Meditech / Altos / Aravali / Digiline or Equalent)	ONE	RM	235000.00	2820000
281	12.00	RM	Supply and Fixing of Anesthesia Single Arm Pendant - Comprising of - 1 x Arm 800 mm having a - 1 x drop tube having a carrying capacity of maximum load of 80 kg -Rotation of 330 deg. - 1 x Basic Console - 600 mm - 1 x Fixed shelf (350x350x50 mm) - 1 x Adjustable shelf (350x350x50mm) - 6 x Mains Socket (5/15Amp) - 6 x Medical Gas Terminal & Hose Assembly (2 x Oxy, 2xVac, 1xAir(4bar), 1xAir 7 Bar, 1x N2O , Provision for AGSS, Data & A/V 2 nos.) (Make : Meditech / Altos / Aravali / Digiline or Equalent)	ONE	RM	175000.00	2100000
282	12.00	RM	OT Distribution Board: DB for controlling Inside OT Surgeon Panel,X-Ray View Panel,Writing Board and LED Lights and its consisting of: 2 Pole - Incomer MCB - 32A - 1 No Single Pole MCB-16A-14 Nos Transformer 0-18V/3A - 1 Nos Earth Connectors for Earth (10Nos),Nutral (10Nos) and Control Panel Supply(14Nos) Relays for on - Off Switch - 1 Nos Make: Siemens/ BLS / CZS	ONE	RM	31104.00	373248
283	12.00	RM	Supply and Fixing of Surgeon Control Panel mounted flush in the theatre wall, comprising of the following: 1 No. Day Time Clock 1 No. Elapse Time Clock 1 Set dimmer for peripheral/ planair lights 1 No. hands free telephone 1 No. Medical Gas status/ alarm 1 set indicator only for temperature and humidity display Size - 650 x 650 x 115 mm (Make :Altos/Mercury/Aravali/ Digiline)	ONE	RM	125207.00	1502484

284		12.00	RM	Supply and Fixing of SS/GI Perforated air Grills with AL VCD as per standard practice. Approved Makes: Airmaster, Systemair, carryair or equivalent	ONE	RM	11520.00	138240
285		12.00	RM	Supply Instalation, testing and commissioning of 60 to 100 degrees F heat Thermostat including making connections and soldering etc, complete. Make : Honey Well / Johnson / Siemens	ONE	RM	2500.00	30000
286		12.00	RM	Supply, Instalation, testing and commissioning of 0 to 100 RH pressure guage Humidistate including making connections and soldering etc, complete. Make : Honey Well / Johnson / Siemens	ONE	RM	2500.00	30000
287		12.00	RM	Supply, Instalation, testing and commissioning of Pressure sensor for VDF including making connections and soldering etc, complete. Make : Honey Well / Johnson / Siemens	ONE	RM	6500.00	78000
288				Supply, transportation and fixing of 36W/40W (600mm x 600mm) square type LED Slim Panel suitable for Recessed / Surface mounting made of diecast alluminium body with powder coating, acrylic diffuser with Driver as per IS: 15885 (Part 2/ Sec 13) : 2012 , operating voltage range of 150 to 265 Volts AC, P.F > 0.9, SurGE-Venture protection: 2KV,THD<10%, with high power LED's having efficacy of > 120 lumens/watt,CCT: 3000K - 5700K, minimum CRI>70 etc., complete including fixing in the ceiling with recessed/surface mounting, cost of all accessories and giving connections etc., complete, with 5 years warranty. a) LUMINAIRE MAKE : Phillips / GE-Venture / Crompton / Wipro / Bajaj / Havells b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG				
		24.00	RM	In side OT's For NON MODULAR OT (Minor OT)	ONE	RM	3920.00	94080
289		90.00	RM	Supply and application of epoxy coving with 50mmx50mm width at the corners of the all walls in Operation Theatres, labour rooms including cost and conveyance of all materials and labour charges, overheads and contractor profit etc., complete for finished item of work. (Make :SIKHA/ FOSROC/ Schomburg /BASF/ CIPY/ MYK/ TARKETT)	ONE	RM	385.00	34650
290		90.00	RM	Supply and application of epoxy flooring of light green or light blue colour in Operation Theatres and labour rooms - seamless joint free finish with 3mm thickness and anti slip & water washable chemical resistance durable and non particle shedding with attractive finishing including cost and conveyance of all materials and all labour charges, overheads and contractor profit etc., complete for finished item of work. (Make :SIKHA/FOSROC /Schomburg /BASF/ CIPY/ MYK/ TARKETT)	ONE	RM	1940.00	174600
291		1080.00	RM	Supply and application of poly urethane (P.U) of light green or light blue colour with 1mm thickness with anti fungal and anti bacterial chemical resistance durable and non particle shedding including cost and conveyance of all materials and labour charges etc., complete for finished item of work in Operation Theatre walls and ceilings	ONE	RM	808.00	872640
292				Supply,Installation& Transportation of AHU Expansion KIT connected VRF outdoor condensor. Make : Mitsubishi /DAIKIN/Toshiba/ O General/Blue star/Hitachi/Carrier				
a		12.00	RM	Upto 10HP AHU KIT	ONE	RM	67720.00	812640
b		12.00	RM	11HP to 20HP AHU KIT	ONE	RM	76900.00	922800
c		12.00	RM	21HP to 30HP AHU KIT	ONE	RM	89620.00	1075440
293		100.00	RM	Supply and Transportation of AHU wired remote controler connecting AHU Expansion Kit. Make : Mitsubishi /DAIKIN/Toshiba/ O General/Blue star/Hitachi/Carrier	ONE	RM	5840.00	584000
294		970.00	RM	Supply, Installation, Testing & Commissioning Simple wireless remote controller to control the IDUs with Machine coding, ON-OFF & Temp. setting of individual IDU and group of IDU.	ONE	RM	2012.00	1951640
295		1800.00	SQM	Supply and Fixing of Modular OT Wall and Ceiling Paneling: Wall & Ceiling with SS Puff Panel with Antibacterial Paint Having 50 mm thick with PUF (Polyurethane Foam) and thickness not less than 0.8 mm thick in room side and 0.8 mm thick in wall side having density of 40 Kg / IM3. Including of all joints with silicon sealant.	ONE	SQM	4000.00	7200000
296		110	NOS	Supply and Fixing of 42W LED Peripheral Lights : Recess mounted IP54 Protocol, Nonhygroscopic Peripheral Lights having power LED elements with suitable electronic Dolly driver and controls. The Peripherallight diffuser is fixed with Powder Coated Frame.(Size: 600 X 600 mm) MAKE : Philips / Crompton / WIPRO / Havells) In Side OTs		EACH	9650.00	1061500

297		24	NOS	<p>Supply, Installation, testing and commissioning of IP panorama Camera as per the specifications as follows. Image Sensor: 1/1.8" CMOS, 6 megapixels, progressive scan, choice of day sensor and choice of night sensor or better Resolution Per Sensor: 3072x2048, 2592 x 1944, 2048 x 1536, 1280 x 960, 1024 x 768, 800 x 600, 768 x 576(D1). Video/ Image Compression: Motion JPEG or Mx PEG or MPEG 4 panorama correction Sensitivity: Color sensor: 0.25 lux at 1/60 s, 0.013 lux at 1 s B/W sensor: 0.005 lux at 1/60 s, 0.0025 lux at 1 s Frame Rate: VGA: 30 fps, MEGA/HD: 30 fps, QXGA: 15 fps, 5MEGA: 10 fps; 6MEGA: 8 fps from Single Sensor Multiple Streaming: More than 2 streams with independent frame rates & resolutions Horizontal View angle of Lens: Factory Fitted 180 degree Lens or Should be variable as per site conditions from 103 degree to 13 degree (as per mounting locations) Digital Zoom: Continuous digital zoom 8X or better Operating Temperature: Between -10°C to +60°C or better Protection: The cameras should comply with minimum of IP65 standards housing and should be powered through POE with temp range of -10°C to +60°C or better. Supported Protocols:TCP/IP, HTTP, FTP, SMTP, DNS, NTP *In camera storage: 4 GB micro SD card (Expandable up to 128GB) Internal buffer memory: 64 MB Security: Password protection, IP address Filtering, 802.1x Audio/Telephony: Built-in speakers & Mic or Line-in/Line out supplied with External speaker and Mic Power requirements: Power over Ethernet (POE) (802.3af) Network Port: 10/100 Base Tx Voice messages: Camera shall be able to customize for announce purpose Intercom facility: Camera shall be able to work as an extension/ intercom with Voice Over IP so that Smart mobiles and / or EPABX can communicate Image processing: Activity sensor for motion detection, adjustment of the high</p>				EACH	63063.00	1513512
298		1	NO	<p>No Supply, installation, testing and commissioning of 6-Bay Network Attached Storage (NAS) with 6X4TB HDD. Makes: Seagate/Netgear</p>				EACH	167012.00	167012
299		24	NOS	<p>Supply, fixing, testing and commissioning of Ultra Micro SD HC 32GB UHS-I Class 10 Memory Card With Adapter Make: Sandisk/Kingston/Samsung</p>				EACH	1450.00	34800
300		24	NOS	<p>Supply and Fixing of VGA to HDMI Convertor etc., complete. (Make: Customs)</p>				EACH	16946.00	406704
301		24	NOS	<p>Supply Installation Testing and commissioning of 25 Mtrs of High-Speed HDMI male to male cable of length. Make : BELKIN or any reputed approved make</p>				EACH	18462.00	443088
DIESEL GENERATOR SETS										
302				<p>Supply, Installation Testing and commissioning of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled. Engine Makes:Cummins/Koel Green/Sterling/ mahindra/Elmot Power Gen/Ashok Leyland/GreavesAlternator Make:Stamford/ Kirloskar/ CromptonGreaves/Leroysomer</p>						
				<p>Alternator: It shall be self regulated, self excited and confirms to IS: 13364/1992 or latest version with regulation of +5% from No load to full load, IP23, with standard Alternator Protection(Over voltage, over speed & under voltage).</p>						
				<p>Diesel Engine: It shall have residential silencer, up to 10 M exhaust piping, Electronic / Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel and AVM. The diesel engine shall be capable of providing 10% over load for 1 Hr for every 11 Hrs of continuous running at full load.</p>						
				<p>Accoustic Enclosure: Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequered plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets</p>						
				<p>The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having processor based genset monitoring and control system MCCB/ACB Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Indication Lamps etc. mounted inside enclosure, visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs as per CPCB-II norms, complete in all respect of following capacity :</p>						
62.5 KVA Generator Set										

a		2	NOS	62.5 KVA DG set at 0.8 pf 415V 50Hz 3-Ø. Engine Makes:Cummins/Koel Green/Sterling/ mahindra/Volvo-Eicher Alternator Make:Stamford/ Kirloskar/ CromptonGreaves /Leroy somer		EACH	715775.00	1431550
				125 KVA Generator Set				
b		3	NOS	125 KVA DG set at 0.8 pf 415V 50Hz 3-Ø. Engine Makes:Cummins/Koel Green/Sterling/ mahindra/Volvo-Eicher Alternator Make:Stamford/ Kirloskar/ CromptonGreaves /Leroy somer		EACH	937324.00	2811972
				250 KVA Generator Set				
c		2	NOS	250 KVA DG set at 0.8 pf 415V 50Hz 3-Ø. Engine Makes:Caterpillar/Cummins/Koel Green Alternator Make:Leroy somer/Crompton Greaves/Stamford		EACH	1761033.00	3522066
				500 KVA Generator Set				
d		2	NOS	500 KVA DG set at 0.8 pf 415V 50Hz 3-Ø. Engine Makes:Caterpillar/Cummins/Koel Green Alternator Make:Leroy somer/Crompton Greaves/Stamford		EACH	3578873.00	7157746
				625 KVA Generator Set				
e		2	NOS	625 KVA DG set at 0.8 pf 415V 50Hz 3-Ø. Engine Makes:Caterpillar/Cummins/Koel Green Alternator Make:Leroy somer/Crompton Greaves/Stamford		EACH	4317370.00	8634740
				PLC based AMF Panel for the DG Set				
303				Supply Installation Testing and Commissioning of PLC based AUTO MAINS FAILURE (AMF) Panel with IP 52 protection, fabricated from CRCA sheet steel 2mm thick, Powder coated finish, Engine START & STOP commands, control Relays, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter, Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for following capacity DG sets				
a		2	NOS	PLC based AMF Panel for 50 to 63.5/62.5 KVA DG sets		EACH	137474.00	274948
b		3	NOS	PLC based AMF Panel for 80 to 160 KVA DG sets		EACH	193714.00	581142
c		2	NOS	PLC based AMF Panel for 180 to 250 KVA DG sets		EACH	262451.00	524902
				Structural Steel Supports for Extended Exhaust Stack for DG sets				
304		500	NOS	Supply, fabricating, installing structural steel supports for fixing all sizes of MS pipes from ceiling / wall with MS Channels, Angles, Flats, Rods, as required at site with anchor fasteners, Clamps, threaded rods, nuts, bolts, washers etc complete with painting.		EACH	93.00	46500
				6 Core, 2.5 Sq.mm Copper Control Cable for DG sets				
305		100	NOS	Supply, Transportation and laying of 6 core, 2.5 Sq.mm XLPE/PVC insulated & PVC sheathed Unarmoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 including all labour charges, giving connections etc., complete for Generators from their AMF/Synchronour Panels and for auxiliary supplies to PCC Panels/HT VCB Panels Panels. Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard		EACH	312.30	31230
				12 Core, 2.5 Sq.mm Copper Control Cable for DG sets				
306		100	NOS	Supply, Transportation and laying of 12 core, 2.5 Sq.mm XLPE/PVC insulated & PVC sheathed Unarmoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 including all labour charges, giving connections etc., complete for Generators from their AMF/Synchronour Panels and for auxiliary supplies to PCC Panels/HT VCB Panels Panels. Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard		EACH	465.20	46520
				625KVA DG SYNCHRONISING PANEL				
307				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness,separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates)				
				DG Incomer :-				

				1000A, Four Pole, 50 kA Electrically operated drawout type Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processer based having over load, shot circuit and earth fault Protection with display and 20 faults history backup . Makes: Siemens-3WLETU45B / L&T-U Power Omega (MTX3.5 EC) / Schneider-Master pact NW 6.0P -2NOS				
				DG Outgoing feeders& EB INCOMER				
				2000A, Four Pole, 75 kA Electrically operated drawout type Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processer based having over load, shot circuit and earth fault Protection with display and 20 faults history backup . Makes: Siemens-3WLETU45B / L&T-U Power Omega (MTX3.5 EC) / Schneider-Master pact NW 6.0P -2NOS				
				Supply of 800A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-2NOS				
				Supply of 630A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-3NOS				
				Supply of 400A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-2NOS				
				Supply of 250A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-2NOS				
				Supply of 125A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-1NOS				
				Supply of 63A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-1NOS				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required. Make:Conzerve/Elmeasure/ Mecco/ HPL/L&T/ Socomec-4NOS				
				Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required. Make: Conzerve/Elmeasure/Mecco/HPL/ L&T/ Schneider/AE/ Socomec-4 NOS				
				Supply and Fixing of Maximum Demand Controller with LCD/LED display capable of Accuracy class 1.0,0.5s . input voltage measurement range 50-520VAC(P-P), Aux supply 80-300VAC/DC ,CT secondary site selectable 1A/5A,flush mount 96x96mm,ct/pt site programmable,Datalog(8mb),4 realy outputs for max demand controller,time of day 6 slots available,block/sliding window site selectable,Running demand,Max demand,predication demand in single page window with RS485. .Make:L&T CAT NO WL6000110000-4NOS				
				Supply and Fixing of 2 No of DG Set Synchrosing Relay Microprocessor based with PLC with all features monitoring, protection and suitable for parralleling of DG Sets Make:woodward model:EG2500-P1-2 NOS				
				Supply and Fixing of Current Transformer, from 2000 / 5 to 3200/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required Make: Kappa/L&T/ Seimens/ C&S/ Schneider-6 NOS				
				Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required Make: Kappa/L&T/ Seimens/ C&S/ Schneider-6 NOS				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Green & Yellow Colour with integral circuit, terminal block, including connection etc. as required-20 NOS				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Blue Colour with integral circuit, terminal block, including connection etc. as required -4NOS				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required. Make: L&T / C&S/ Salzer/HPL- 4NOS				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as requiredMake: L&T/C&S/Salzer/ HPL -4NOS				
				Supply and Fixing of non-luminious type push button actuators and integral contact block of dia. 22.5 mm including making connection etc. as required Make:Seimens/ ABB/Schneider/L&T/C&S/HPL-8NOS				

			Supply and Fixing of Cam operated rotary switches on existing panel with 2 way and off position, two pole, 16A. Makes: L&T (SALZER)/ABB/ Schneider/ Seimens /C&S/HPL-4 NOS.				
			10 kA - 6-32A range SP MCBs. Make: Legrand-DX3 / Schneider-Acti9/Hager-h3/ Siemens-5SX4/ Crabtree-Xpro/L&T-AU -24NOS				
			Supply and Fixing of 25A TNC(TRIP,NEUTRAL ,CLOSE)SWITCH .ACB ON/OFF PURPOSE-4NOS				
			800A FOUR POLE SPREADER LINKS Make:l&t cat no :ST90362O000-2NOS				
			630A FOUR POLE SPREADER LINKS Make:l&t cat no :CM92004O000-3NOS				
			400A FOUR POLE SPREADER LINKS Make:l&t cat no :ST98066O000-2NOS				
			250A FOUR POLE SPREADER LINKS Make:l&t cat no :CM92007O000-2NOS				
			125A FOUR POLE SPREADER LINKS Make:l&t cat no :CM90688O0LO-1NOS				
			Supply and Fixing of 800A MCCB EXTENDED ROTARY HANDLE Make:L&T ((DN4 Extended ROM)-2NOS				
			Supply and Fixing of 630A MCCB EXTENDED ROTARY HANDLE Make:L&T (DN3B, DN3 Extended ROM)-3NOS				
			Supply and Fixing of 400A MCCB EXTENDED ROTARY HANDLE Make:L&T (DN3B, DN3 Extended ROM)-2NOS				
			Supply and Fixing of 250A MCCB EXTENDED ROTARY HANDLE Make:L&T (DN2 Extended ROM)-2NOS				
			Supply and Fixing of 125A MCCB EXTENDED ROTARY HANDLE Make:L&T (DN0 Extended ROM)-1NOS				
			Bus Bars:-				
		1 NO	Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves		EACH	2649100.00	2649100
			500KVA DG SYNCHRONISING PANEL				
308			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness,separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates)				
			DG Incomer :-				
			800A, Four Pole, 50 kA Electrically operated drawout type Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processer based having over load, shot circuit and earth fault Protection with display and 20 faults history backup . Makes: Siemens-3WLETU45B / L&T-U Power Omega (MTX3.5 EC) / Schneider-Master pact NW 6.0P -2NOS				
			EB INCOMER				
			1600A, Four Pole, 50 kA Electrically operated drawout type Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processer based having over load, shot circuit and earth fault Protection with display and 20 faults history backup . Makes: Siemens-3WLETU45B / L&T-U Power Omega (MTX3.5 EC) / Schneider-Master pact NW 6.0P -1NO				
			Outgoing feeders:-				
			1600A, Four Pole, 50 kA Electrically operated drawout type Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processer based having over load, shot circuit and earth fault Protection with display and 20 faults history backup . Makes: Siemens-3WLETU45B / L&T-U Power Omega (MTX3.5 EC) / Schneider-Master pact NW 6.0P -1NOS				
			Supply of 400A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand -DP X3/ Siemens-3VL-6NOS				
			Supply of 250A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand -DP X3/ Siemens-3VL-6NOS				

			Supply of 125A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-6NOS				
			Supply of 63A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-NS NSX/Legrand - DP X3/ Siemens-3VL-2NOS				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required. Make:Conzerve/Elmeasure/ Mecol HPL/L&T/ Socomec-4NOS				
			Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required. Make: Conzerve/Elmeasure/Mecol/HPL/ L&T/ Schneider/AE/ Socomec-4 NOS				
			Supply and Fixing of Maximum Demand Controller with LCD/LED display capable of Accuracy class 1.0,0.5s . input voltage measurement range 50-520VAC(P-P), Aux supply 80-300VAC/DC ,CT secondary site selectable 1A/5A,flush mount 96x96mm,ct/pt site programmable,Datalog(8mb),4 realy outputs for max demand controller,time of day 6 slots available,block/sliding window site selectable,Running demand,Max demand,predication demand in single page window with RS485. .Make:L&T CAT NO WL6000110000-4NOS				
			SUPPLY & FIXING of genset control synchronising relay Make:woodward model:EG2500-P1-2NOS				
			Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required Make: Kappa/L&T/ Seimens/ C&S/ Schneider-12NOS				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Green & Yellow Colour with integral circuit, terminal block, including connection etc. as required-20 NOS				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Blue Colour with integral circuit, terminal block, including connection etc. as required-4NOS				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required. Make: L&T / C&S/ Salzer/HPL-4NOS				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as requiredMake: L&T/C&S/Salzer/ HPL-4NOS				
			Supply and Fixing of non-luminious type push button actuators and integral contact block of dia. 22.5 mm including making connection etc. as required Make:Seimens/ ABB/Schneider/L&T/C&S/HPL-8 NOS				
			Supply and Fixing of Cam operated rotary switches on existing panel with 2 way and off position, two pole, 16A. Makes: L&T (SALZER)/ABB/ Schneider/ Seimens /C&S/HPL.-4 NOS				
			10 kA - 6-32A range SP MCBs. Make: Legrand-DX3 / Schneider-Acti9/Hager-h3/ Siemens-5SX4/ Crabtree-Xpro/L&T-AU -18 NOS				
			Supply and Fixing of 25A TNC(TRIP,NEUTRAL ,CLOSE)SWITCH .ACB ON/OFF PURPOSE-4NOS				
			400A FOUR POLE SPREADER LINKS Make:l&t cat no :ST980660000-6 NOS				
			250A FOUR POLE SPREADER LINKS Make:l&t cat no :CM920070000-6NOS				
			125A FOUR POLE SPREADER LINKS Make:l&t cat no :CM9068800LO-6NOS				
			Supply and Fixing of 400A MCCB EXTENDED ROTARY HANDLE Make:L&T (DN3B, DN3 Extended ROM)-6NOS				
			Supply and Fixing of 250A MCCB EXTENDED ROTARY HANDLE Make:L&T (DN2 Extended ROM)-6NOS				
			Supply and Fixing of 125A MCCB EXTENDED ROTARY HANDLE Make:L&T (DNO Extended ROM)-6NOS				
			Supply and Fixing of 63A MCCB EXTENDED ROTARY HANDLE Make:L&T (DNO Extended ROM)-1NOS				
			Bus Bars:-				
		1 NO	Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves		EACH	2579830.00	2579830
			External Electrification				
			33 KV, 800A, HT, 1-WAY VCB PANEL				

309			<p>Supply, Transportation. Installation, Testing and Commissioning of indoor type floor mounted metal clad, 33 KV, 800A, 1-way VCB Panel with 1 No. of VCB suitable for 50Hz 3-phase system, suitable for 31.5 KA/3sec short circuit withstand capacity & 31.5 KA/1sec Internal Arc capacity. Switchgear Panel enclosure of sheet steel preferably Aluzinc, dust tight, vermin proof, totally enclosed cubicle floor mounting, free standing type with single break, horizontally drawout type breaker with trip free mechanism as per latest standard i.e. IS/IEC 62271-200 as amended up to date and as per technical specifications, IP4X for VCB Panel enclosure. Switchgear Panel shall be electrically & mechanically interlocked as per IEC 62271-1, full voltage insulated copper Busbar with heat shrinkable sleeving, complete with suitable metering & protection devices, breaker featured with mechanical ON-OFF indicator with hand trip device and all accessories such as shunt trip coil, motorized & manually operated spring charging mechanism, emergency trip push buttons, auxiliary switch of 2NO + 2NC, interconnections, space heaters, panel earthing etc. and equipped with following switchgear and accessories including connection suitable for 3x185 to 3x 400 sqmm XLPE 33 KV cable (cable entry from bottom) to be connected through heat shrinkable jointing material etc as required. (Note - Cost of end termination not included in this item.)</p> <p>Makes : ABB/Schneider/Seimens/Kirloskar</p>				
			<p>INCOMER/OUTGOING : 1 No, comprising the following:- 1 No. 800 Amp. VCB. 31.5KA 1 No. Integral Earth switch for line side earthing 3 No. dual core CTs 600A/1/1A of 7.5VA burden max and accuracy Class 0.5 for metering and class 5P10 for protection 3 No. Cast Resin 33000V/v3/110V/v3/110V/v3 PT Class 0.5/3P accuracy and 30VA burden max with and protection fuses / MCB. 1 No. Digital voltmeter with selector switch. 1 No. Digital Ammeter with selector switch. 1 No. Microprocessor based numerical relays with O/L, E/F and S/C protection with Integrated Arc sensing feature alongwith trip/lockout / antipumping / aux. relays. 1 No. Multi-function meter. Set of MCBs for Panel AC/DC Set of MCBs for Main AC/DC Set of Indication lamps LED types TNC Switch, L-R Switch, Pushbuttons for ON-OFF</p>				
		2	NOS 33 KV, 800A, 1 No VCB Panel as said above	EACH	1193412.00	2386824	
			33 KV, 800A, HT 3-WAY VCB PANEL				
310			<p>Supply, Transportation. Installation, Testing and Commissioning of indoor type floor mounted metal clad, 33 KV, 800A, VCB Panel with 3 No. of VCBs suitable for 50Hz 3-phase system, suitable for 31.5 KA/3sec short circuit withstand capacity & 31.5 KA/1sec Internal Arc capacity. Switchgear Panel enclosure of sheet steel preferably Aluzinc, dust tight, vermin proof, totally enclosed cubicle floor mounting, free standing type with single break, horizontally drawout type breaker with trip free mechanism as per latest standard i.e. IS/IEC 62271-200 as amended up to date and as per technical specifications, IP4X for VCB Panel enclosure. Switchgear Panel shall be electrically & mechanically interlocked as per IEC 62271-1, full voltage insulated copper Busbar with heat shrinkable sleeving, complete with suitable metering & protection devices, breaker featured with mechanical ON-OFF indicator with hand trip device and all accessories such as shunt trip coil, motorized & manually operated spring charging mechanism, emergency trip push buttons, auxiliary switch of 2NO + 2NC, interconnections, space heaters, panel earthing etc. and equipped with following switchgear and accessories including connection suitable for 3x185 to 3x 400 sqmm XLPE 33 KV cable (cable entry from bottom) to be connected through heat shrinkable jointing material etc as required. (Note - Cost of end termination not included in this item.)</p> <p>Makes : ABB/Schneider/Seimens/Kirloskar</p>				

				<p>INCOMER : 1 No, comprising the following:- 1 No. 800 Amp. VCB. 31.5KA 1 No. Integral Earth switch for line side earthing 3 No. dual core CTs 600A/1/1A of 7.5VA burden max and accuracy Class 0.5 for metering and class 5P10 for protection 3 No. Cast Resin 33000V/v3/110V/v3/110V/v3 PT Class 0.5/3P accuracy and 30VA burden max with and protection fuses / MCB. 1 No. Digital voltmeter with selector switch. 1 No. Digital Ammeter with selector switch. 1 No. Microprocessor based numerical relays with O/L, E/F and S/C protection with Integrated Arc sensing feature alongwith trip/lockout / antipumping / aux. relays. 1 No. Multi-function meter. Set of MCBs for Panel AC/DC Set of MCBs for Main AC/DC Set of Indication lamps LED types TNC Switch, L-R Switch, Pushbuttons for ON-OFF</p>				
				<p>OUTGOING: 2 No. Each comprising the following 1 No. 800 Amp. VCB.31.5KA 1 No. Integral Earth switch for line side earthing 3 No. dual core CTs 300A/1/1A of 7.5VA burden max and accuracy Class 0.5 for metering and class 5P10 for protection 1 No. Digital Ammeter with selector switch. 1 No. Microprocessor based numerical relays with O/L, E/F and S/C protection with Integrated Arc sensing feature alongwith trip/lockout / antipumping / aux. relays. Set of MCBs for Panel AC/DC Set of Indication lamps LED types TNC Switch, L-R Switch, Pushbuttons for ON-OFF</p>				
		2	NOS	33 KV, 800A, VCB Panel with 3 No VCBs as said above		EACH	3580259.00	7160518
				11 KV, 800A, HT VCB PANEL				
311				<p>Supply, Transportation, Installation, Testing and Commissioning of indoor type floor mounted metal clad, 11 KV 800A VCB Panel with 3 Nos. VCBs suitable for 50Hz 3-phase system, suitable for 26.3 KA/3sec short circuit withstand capacity & 26.3 KA/1sec Internal Arc capacity. Switchgear Panel enclosure of sheet steel preferably Aluzinc, dust tight, vermin proof, totally enclosed cubicle floor mounting, free standing type with single break, horizontally drawout type breaker with trip free mechanism as per latest standard i.e. IS/IEC 62271-200 as amended up to date and as per Technical specifications, IP4X for VCB Panel enclosure. Switchgear Panel shall be electrically & mechanically interlocked as per IEC 62271-1, full voltage insulated copper Busbar with heat shrinkable sleeving, complete with suitable metering & protection devices, breaker featured with mechanical ON-OFF indicator with hand trip device and all accessories such as shunt trip coil, motorized & manually operated spring charging mechanism, emergency trip push buttons, auxiliary switch of 2NO + 2NC, interconnections, space heaters, panel earthing etc. and equipped with following switchgear and accessories including connection suitable for 3x185 to 3x 400 sqmm XLPE 11kV cable (cable entry from bottom) to be connected through heat shrinkable jointing material etc as required. (Note - Cost of end termination not included in this item.) Makes:ABB/Schneider/Seimens/Kirloskar</p>				
				<p>INCOMER 1 No. each comprising the following 1 No. 800 Amp. VCB. 26.3KA 1 No. Integral Earth switch for line side earthing 3 No. dual core CTs 600A/1/1A of 7.5VA burden max and accuracy Class 0.5 for metering and class 5P10 for protection 3 No. Cast Resin 11000V/v3/110V/v3/110V/v3 PT Class 0.5/3P accuracy and 30VA burden max with and protection fuses / MCB. 1 No. Digital voltmeter with selector switch. 1 No. Digital Ammeter with selector switch. 1 No. Microprocessor based numerical relays with O/L, E/F and S/C protection with Integrated Arc sensing feature alongwith trip/lockout / antipumping / aux. relays. 1 No. Multi-function meter. Set of MCBs for Panel AC/DC Set of MCBs for Main AC/DC Set of Indication lamps LED types TNC Switch, L-R Switch, Pushbuttons for ON-OFF</p>				

				<p>OUTGOING 2 Nos. comprising the following</p> <p>1 No. 800 Amp. VCB. 26.3KA</p> <p>1 No. Integral Earth switch for line side earthing</p> <p>3 No. dual core CTs 300A/1/1A of 7.5VA burden max and accuracy Class 0.5 for metering and class 5P10 for protection</p> <p>1 No. Digital Ammeter with selector switch.</p> <p>1 No. Microprocessor based numerical relays with O/L, E/F and S/C protection with Integrated Arc sensing feature alongwith trip/lockout / antipumping / aux. relays.</p> <p>Set of MCBs for Panel AC/DC</p> <p>Set of Indication lamps LED types</p> <p>TNC Switch, L-R Switch, Pushbuttons for ON-OFF</p>				
		1	NO	<p>11 KV, 800A, VCB Panel with 3 No VCBs as said above</p> <p>11 KV, 630A, Load Break Switch</p>	EACH	1813728.00	1813728	
312		2	NOS	<p>Supply, Transportation, Installation, Testing and Commissioning of 11 KV, 630A, 25 KA Outdoor type Load Break Switch as detailed below with suitable CC foundation and 2 Nos GI pipe earthing with brick massonry chambers etc complete for finished item of work.</p> <p>a) Load break switch: 11KV,630A, 25 KA with fuse trip, earth switch, manually operated spring charged mechanism with 2 no + 2 NC.</p> <p>b) HT HRC fuse upto 63A - 3 nos.</p> <p>c) Bus bar connection.</p> <p>d) Indication lamps.</p> <p>e) Manual trip Push button.</p> <p>Make : ABB/ Megawin/L&T/Siemens/Kirloskar</p>	EACH	161820.00	323640	
				4 Core, 4 Sq.mm Copper Cable for VCB Panel Auxiliary Supply/Battery Charger				
313		100	NOS	<p>Supply, Transportation and laying of 4 core, 4 Sq.mm XLPE/PVC insulated & PVC sheathed Armoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 including all labour charges, giving connections etc., complete for Generators from their AMF/Synchronour Panels and for auxiliary supplies to PCC Panels/HT VCB Panels Panels. Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard</p>	EACH	331.10	33110	
				315 KVA Transformer				
314				<p>Supply, Transportation, Installation, Testing and Commissioning of 11/0.433 KV TRANSFORMER with all test reports. The Transformer shall be designed and manufactured as per Energy Efficiency Level – 1 at basic Insulation level conforming to ISS 2026 (Part- I to Part - II) with latest amended, and as per IS 1180 Part-I : 2014 latest amended, OCTC type with initial filling of oil as per IS 335-1993. The basic details of the Transformer are as under.</p> <p>Makes:Schneider/Kirloskar/Voltamp/ Esennar/ Toshiba/ KPEL/ Powertech /SSE / THOTA / Vajra</p> <ol style="list-style-type: none"> 1. Quantity : 1 2. Rated KVA: 315 KVA 3. Service & Location: Continuous Outdoor Distribution Transformer 4. Mounting: Plinth. 5. Wound: Copper Double wound 6. Type: Core type oil immersed 7. Cooling: ONAN 8. Temp Rise: 40°C in oil, 45°C by resistance 9. Vector Group: Dyn 11 10. Primary Connection: Delta 11. Nominal Voltage / Current: _ 12. Highest system Voltage: 12000V 13. Primary Frequency :50 HZ +/- 3% 14. Number of Phases: 3 15. Primary wires: 3 16. Secondary connection: Star 17. Secondary Volts / Current : 433V 18. Secondary phases: 3 19. Secondary wires: 4 				

				20. Taps on primary winding for primary voltage variation: +5% to - 10% in steps of 2.5% of 7 position (6 Steps) 21. Terminal arrangement a. HV: HT terminal box as per the site condition. b. LV: Cable box suitable to receive -----Sq.mm XLPE cable 22. LV: One separate terminal for earthing. 23. Total Losses at 50% Loading [Watts] [Max] --- as per IS 24. Total Losses at 100% Loading [Watts] [Max]---as per IS 25. Percentage Impedance at 75 deg. C at ----as per IS 26. No Load current: Less than 2% of full load current. 27. Standard Fittings & Accessories. a. Rating and terminal marking plate: One b. Lifting Lugs: Two c. Off-circuit tap switch: One. d. Earthing Terminals : Two e. Radiators (Attachable): Adequate f. Explosion vent with Diaphragm : One g. Conservator with Drain plug: one h. Oil filling hole with cap :One i. Oil level indicator: One j. Dehydrating Silica gel Breather: One k. Terminal Arrangement: HV With Terminal Box l. Terminal Arrangement: LV Cable Box m. Separate Neutral Bushing : One n. Drain cum filter valve with blanking plate: One o. Air release device: One p. Thermometer Pocket: One q. Four: Unidirectional flat rollers r. One :10Cm dial thermometer (Rigid stem type)				
a		2	NOS	315 KVA Copper Wound Transformer		EACH	1117119	2234238
b		1	NO	500KVA Copper Wound Transformer		EACH	1466366.00	1466366
				1600 KVA, 33KV/433V Transformer				
315		2	NOS	Supply, Transportation. Installation, Testing and Commissioning of copper wound Transformers 33/0.433 KV, Three Phase, 50 Hz, DYN 11, ONAN type , Standard accessories, winding temperature rise of 45°C/40°C first fill oil, having permissible total loss values not exceeding 7.5%of the maximum total loss values for 33 KV as per energy efficiency level - 2 at basic Insulation level conforming to ISS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part- I : 2014 described as above with Cable box on HV side and Bus duct on LV Side , ON load Tap changer(OLTC) etc., complete and as per the following continuous rating. b) 1600 KVA, 33KV/433V Transformer Make:ABB/ALSTOM/SEIMENS/Kirloskar/Voltamp/ Esennar		EACH	3911872.00	7823744
				2000 KVA, 33KV/433V Transformer				
316		2	NOS	Supply, Transportation. Installation, Testing and Commissioning of copper wound Transformers 33/0.433 KV, Three Phase, 50 Hz, DYN 11, ONAN type , Standard accessories, winding temperature rise of 45°C/40°C first fill oil, having permissible total loss values not exceeding 7.5%of the maximum total loss values for 33 KV as per energy efficiency level - 2 at basic Insulation level conforming to ISS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part- I : 2014 described as above with Cable box on HV side and Bus duct on LV Side , ON load Tap changer(OLTC) etc., complete and as per the following continuous rating. b) 2000 KVA, 33KV/433V Transformer Make:ABB/ALSTOM/SEIMENS/Kirloskar/Voltamp/ Esennar		EACH	4823212.00	9646424
				12 Core, 2.5 Sq.mm Copper Control Cable for OLTC of Transformers				
317		200	NOS	Supply, Transportation and laying of 12 core, 2.5 Sq.mm XLPE/PVC insulated & PVC sheathed Unarmoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 including all labour charges, giving connections etc., complete for Generators from their AMF/Synchronour Panels and for auxiliary supplies to PCC Panels/HT VCB Panels Panels. Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard		EACH	472.00	94400
				33 KV HT CABLES				
318				Supply and Transportation of XLPE insulated IS:7098/II/85 H.T.cable for working voltage 33 K.V.Earthed with Stranded Compacted Circular Aluminium Conductor screened with Extruded Semi-conducting compound, XLPE Insulated Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable etc complete. Make: Torrent / Universal / Unicab / Havells / KEI /Polycab/Gloster/RR Kabel/RPG				
	1300.00		RM	3C X 300 sq.mm HT Cable	ONE	RM	2741.50	3563950

319				Supply and Making heat shrinkable type indoor/ outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 33 KV cable, with required components, preparation of cable ends, testing etc. as required of following sizes. Makes: Raychem /M seal/ Denson/ Multy/ Transeal- Hongshang				
a		14	NOS	Indoor Termination Kit for 33 KV XLPE Cable : 3 core 300/400 sqmm		EACH	23095.70	323340
b		2	NOS	Outdoor Termination Kit for 33 KV XLPE Cable : 3 core 300/400 sqmm		EACH	32479.10	64958
				11 KV HT CABLES				
320				Supply and Transportation of XLPE insulated IS:7098/II/85 H.T.cable for working voltage 11 K.V Earthed with Stranded Compacted Circular Aluminium Conductor Screened with Extruded Semi-conducting compound, in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall extruded PVC type ST- 2 outer Sheathed cable etc complete Make: Torrent / Universal / Unicab / Havells / KEI /Polycab/ Gloster/RR Kabel/RPG				
		300.00	RM	3C X 300 sq.mm, 11 KV HT Cable	ONE	RM	2741.50	822450
321				Supply and making heat shrinkable type outdoor termination joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, preparation of cable ends, testing etc as required of following sizes. Makes: Raychem /M seal/ Denson/ Multy/ Transeal- Hongshang				
a		2	NOS	Outdoor Termination Kit for 11KV XLPE Cable : 3 core 300 sqmm		EACH	18044.00	36088
322				Supply and making heat shrinkable type indoor termination joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, preparation of cable ends, testing etc as required of following sizes. Makes: Raychem /M seal/ Denson/ Multy/ Transeal- Hongshang				
a		4	NOS	Indoor Termination Kit for 11KV XLPE (E) Cable : 3C x 300 sq.mm		EACH	12848.00	51392
				Sandwich Raising Mains/Bus Duct				
				SANDWITCH BUSDUCT				
323				Supply, instalation, testing and commisioning of the followingAmp,KA breaking capacity (100% Neutral busbar) sandwich Busduct system made of CRCA sheet/Hot Galvanized steel encloser of thickness not less than 1.5mm having degree of protection of IP 55/IP 65 as per IEC/EN 61439-6, PVC/Plastic insulated reinforced with glass fibre four strip ALUMINIUM busbar in convinent sections including end cover units suitable for 415 volts 3 phase, 4 wire, 50 Hz A.C. System,etc., with necessary joints Fire barrier at each floor Provision of tapping at each floor/every meter, continuous earthing with 2 nos alluminium strip of suitable size (one on each side) including GI clamping brackets,angle iron brackets,steel fastners,connecting to earth system as required .Makes: Legrand (Zucchini) / L&T / Schneider/C&S/ Advance-Anant				
a		50.00	RM	800 Amp, 42/50 KA	ONE	RM	17800.00	890000
b		50.00	RM	1000 Amp, 42/50 KA	ONE	RM	19580.00	979000
c		25.00	RM	1600 Amp, 80 KA	ONE	RM	25661.00	641525
d		25.00	RM	2000 Amp, 80 KA	ONE	RM	31446.00	786150
e		30.00	RM	2500 Amp, 150 KA	ONE	RM	45094.00	1352820
f		30.00	RM	3200 Amp, 160 KA	ONE	RM	52214.00	1566420
324				Supply and fixing of Horizontal / Vertical bends for the following capacities of Sandwich Bus duct . Makes: Makes: Legrand (Zucchini) / L&T / Schiender /C&S/Advance-Anant				
a		6	NOS	800Amp, 42/50 KA		EACH	17504.00	105024
b		6	NOS	1000Amp, 42/50 KA		EACH	18245.00	109470
c		4	NOS	1600Amp, 75 KA		EACH	22547.00	90188
d		4	NOS	2000Amp, 80 KA		EACH	26255.00	105020
e		4	NOS	2500Amp, 150 KA		EACH	33079.00	132316
f		4	NOS	3200Amp, 160 KA		EACH	40199.00	160796
325				Supply and fixing of flange ends for the following capacities of Sandwich Bus duct . Makes: Legrand (Zucchini) / L&T / Schiender /C&S/Advance-Anant				
a		2	NOS	800Amp, 42/50 KA		EACH	26848.00	53696
b		2	NOS	1000Amp, 42/50 KA		EACH	28332.00	56664
c		2	NOS	1600Amp, 75 KA		EACH	22103.00	44206
d		2	NOS	2000Amp, 80 KA		EACH	34414.00	68828
e		2	NOS	2500Amp, 150 KA		EACH	58296.00	116592
f		2	NOS	3200Amp, 160 KA		EACH	22103.00	44206
326				Supply and fixing of Tap Off Boxes for the following capacities of Sandwich Bus duct . Makes: Makes: Legrand (Zucchini) / L&T / Schiender /C&S/Advance-Anant				
a		6	NOS	250Amp		EACH	37380.00	224280
b		6	NOS	400Amp		EACH	47318.00	283908
c		2	NOS	630Amp		EACH	68678.00	137356
d		2	NOS	800Amp		EACH	103093.00	206186

327				Supply and fixing of the following capacityamps Copper Flexibles for three phases and neutral for Air-Insulated/Sandwich Bus Ducts. Makes: Legrand (Zucchini) / L&T / Schiender /C&S/Advance-Anant				
a		6	NOS	800Amp, 42/50 KA		EACH	39903.00	239418
b		6	NOS	1000Amp, 42/50 KA		EACH	41978.00	251868
c		2	NOS	1600Amp, 75 KA		EACH	47913.00	95826
d		2	NOS	2000Amp, 80 KA		EACH	52214.00	104428
e		2	NOS	2500Amp, 150 KA		EACH	59334.00	118668
f		2	NOS	3200Amp, 160 KA		EACH	63487.00	126974
				EARTHING SYSTEMS				
328		62	NOS	Providing independent earthing for Important equipment with 40mm dia 'B' class 2.5m long G.I pipe and 19mm dia 'B' class G.I pipe of 0.3mtr. long connected with reducer providing G.I funnel with mesh enclosed in C.C.Chamber of 400m x 400m x 400mm with R.C.C. Slab cover duly providing staggered holes filling with salt and charcoal from the bottom of the pipe giving earth connection from electrode through G.I strip of 40 x 6mm x 200mm length with all accessories and labour charges complete, as per IS specifications 732/1982 (Part II)		EACH	7893.00	489366
329		52	NOS	Providing independent earthing for Sophisticated Electronic equipment with 600mm x 600mm x 3.15mm thick copper plate rigidly fixed to 40mm dia G.I Pipe of 2.5 mtr length connected with reducer providing G.I funnel with wiremesh as per National Electric Code including C.C.Chamber of size 400m x 400m x 400mm covered with R.C.C. Slab filling with salt and charcoal giving earth connection from electrode with Copper strip of 25mm x 5mm x 200mm length to be bolted with nut bolts to G.I.pipe including 25mm x 3mm copper strip of 6Mtrs length connected from plate to Copper strip with all accessories and labour charges complete as per IS specification 732/1982 (Part II).		EACH	20962.00	1090024
330		32	NOS	Providing independent earthing by excavating a trench to a depth of 2.5 M in all soils, as per size specified in the Data, using 100mm dia Heavy gauge Flange C.I (Cast iron) pipe of 2.5 Mtrs length with necessary accessories duly providing staggered holes including filling with equal proportion of Salt and Charcoal in layers and all labour charges etc., complete.		EACH	8266.00	264512
				G.I. STRIP/WIRE				
331		100.00	RM	Supply and Run of No.8 SWG G.I wire including cost of all accessories and labour charges etc., complete.	ONE	RM	27.20	2720
332		100.00	RM	Supply and Run of 25mm x 3mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE	RM	85.10	8510
333		500.00	RM	Supply and Run of 25mm x 6mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE	RM	150.90	75450
334		500.00	RM	Supply and Run of 40mm x 6mm G.I Strip including cost of all accessories and labour charges etc., complete	ONE	RM	218.50	109250
				COPPER STRIP/WIRE				
335		100.00	RM	Supply and Run of 25mm x 3 mm copper strip including cost of all accessories and labour charges etc., complete.	ONE	RM	638.00	63800
336		100.00	RM	Supply and Run of 40mm x 6 mm copper strip including cost of all accessories and labour charges etc., complete.	ONE	RM	1980.70	198070
				PANELS, L.T. U.G. CABLES, CABLE LAYING, TERMINATIONS & CABLE TRAYS				
337				Supply and transportation of following XLPE insulated, 1100V grade armoured alluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard [Upto 50 Sq.mm]				
a		100.00	RM	3.5 core, 25 Sq.mm	ONE	RM	280.60	28060
b		100.00	RM	3.5 core, 35 Sq.mm	ONE	RM	347.70	34770
c		300.00	RM	3.5 core, 50 Sq.mm	ONE	RM	460.10	138030
338		300.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables upto 50 Sq.mm on sand cushion covering the cable with bricks and back filling of Trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	272.20	81660
339		50.00	RM	Labour charges for run of U.G cables upto 50 sq.mm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	57.20	2860
340		150.00	RM	Labour charges for run of armoured U.G cables upto 50 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	44.20	6630
341				Supply and transportation of following XLPE insulated, 1100V grade armoured alluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard [from 70 Sq.mm to 300 Sq.mm]				
a		100.00	RM	3.5 core, 70 Sq.mm	ONE	RM	619.20	61920
b		100.00	RM	3.5 core, 95 Sq.mm	ONE	RM	772.60	77260
c		200.00	RM	3.5 core, 120 Sq.mm	ONE	RM	961.20	192240
d		200.00	RM	3.5 core, 150 Sq.mm	ONE	RM	1119.10	223820

e	500.00	RM	3.5 core, 185 Sq.mm	ONE	RM	1416.80	708400
f	500.00	RM	3.5 core, 240 Sq.mm	ONE	RM	1803.10	901550
g	1000.00	RM	3.5 core, 300 Sq.mm	ONE	RM	2193.90	2193900
342	2000.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables from 70 to 300 Sqmm on sand cushion covering the cable with bricks and back filling of trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	481.80	963600
343	200.00	RM	Labour charges for run of U.G cables from 70 to 300 Sqmm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	91.90	18380
344	400.00	RM	Labour charges for run of armoured U.G cables from 70 Sq.mm to 300 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	59.50	23800
345			Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI				
a	10	SET	3.5 core, 25 Sq.mm	SET	SET	310.20	3102
b	10	SET	3.5 core, 35 Sq.mm	SET	SET	412.40	4124
c	15	SET	3.5 core, 50 Sq.mm	SET	SET	481.70	7226
d	15	SET	3.5 core, 70 Sq.mm	SET	SET	714.60	10719
e	15	SET	3.5 core, 95 Sq.mm	SET	SET	819.20	12288
f	15	SET	3.5 core, 120 Sq.mm	SET	SET	1031.60	15474
g	20	SET	3.5 core, 150 Sq.mm	SET	SET	1237.30	24746
h	30	SET	3.5 core, 185 Sq.mm	SET	SET	1374.70	41241
i	30	SET	3.5 core, 240 Sq.mm	SET	SET	2062.10	61863
j	40	SET	3.5 core, 300 Sq.mm	SET	SET	2474.50	98980
346			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays without cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	30.00	RM	100mm X 50mm X 1.6mm size	ONE	RM	423.80	12714
b	50.00	RM	150mm X 50mm X 1.6mm size	ONE	RM	492.00	24600
c	50.00	RM	300mm X 50mm X 1.6mm size	ONE	RM	907.80	45390
d	30.00	RM	450mm X 50mm X 2mm size	ONE	RM	1315.70	39471
347			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays with cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	30.00	RM	100mm X 50mm X 1.6mm size	ONE	RM	550.90	16527
b	30.00	RM	150mm X 50mm X 1.6mm size	ONE	RM	639.50	19185
c	100.00	RM	300mm X 50mm X 1.6mm size	ONE	RM	1180.10	118010
d	50.00	RM	450mm X 50mm X 2.0mm size	ONE	RM	15050.30	752515
348			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron ladder type cable trays with rungs at span of 250 mm including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/wall with suspenders and etc., complete.				
a	50.00	RM	150mm X 50mm X 2.0mm size	ONE	RM	620.30	31015
b	100.00	RM	300mm X 50mm X 2.0mm size	ONE	RM	779.40	77940
c	50.00	RM	450mm X 50mm X 2.0mm size	ONE	RM	1028.20	51410
349			Supply, Transportation and Laying of the following sizes of double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. Makes:DURA LINE (Dura Guard) or its equivalent make.				
a	100.00	RM	Outer dia 50mm and Inner dia 38mm	ONE	RM	140.30	14030
b	200.00	RM	Outer dia 63mm and Inner dia 51mm	ONE	RM	177.20	35440
c	100.00	RM	Outer dia 78mm and Inner dia 63mm	ONE	RM	208.50	20850
			GI PIPES/ HUME PIPES FOR CABLES AT ROAD CROSSING				
350			Supply and laying of B class GI pipe of ISI mark with all accessories of following sizes for laying at the road crossings for the UG cables.				
a	50.00	RM	40 mm dia medium grade, G.I Pipe	ONE	RM	499.40	24970
351			Supply and Laying NP2 class RCC hume pipe with collars of following sizes for laying at the road crossings for the UG cables.				
a	50.00	RM	150 mm dia Hume pipe	ONE	RM	376.00	18800
b	100.00	RM	300 mm dia Hume pipe	ONE	RM	757.10	75710
			CUTTING C.C/B.T. ROAD SURFACE FOR CABLE TERNCH				
352			Cutting road surface including stacking of excavated materials for UG Cable trench work.				
a	100.00	SQM	Cutting open B.T. road surface (as well as asphalt concrete up to 75 mm thick) including water bound macadam	ONE	SQM	118.00	11800
b	20.00	SQM	Cutting open C.C. road surface with concrete saw cutter and removal with Breake	ONE	SQM	3739.10	74782

				PCC PANEL FOR 2 No of 1600 KVA TRANSFORMERS IN ESS-2 OF MEDICAL COLLEGE SUB-STATION				
353				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates)				
				Supply and Fixing of the Incomers :-				
				Incomers and Bus Coupler :3 Nos of 2500A, 75KA, Four Pole, Electrically Operated, drawout type, Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having over load, shot circuit and earth fault Protection with display and 20 faults history backup with electrical and mechanical interlocking. Makes: Siemens/ L&T / Schneider /Legrand /C&S /HPL				
				Supply and Fixing of the following Outgoing feeders:-				
				2 Nos of 1600A 75KA, Four Pole, Electrically Operated, drawout type, Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having over load, shot circuit and earth fault Protection with display and 20 faults history backup. Makes: Siemens/ L&T / Schneider /Legrand /C&S/HPL				
				2 Nos of 800A, 50kA, Three Pole, Electrically Operated, drawout type, Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having over load, shot circuit and earth fault Protection with display and 20 faults history backup. Makes: Siemens/ L&T / Schneider /Legrand /C&S/HPL				
				2 Nos of 800A, 50kA, Four Pole, Electrically Operated, drawout type, Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having over load, shot circuit and earth fault Protection with display and 20 faults history backup. Makes: Siemens/ L&T / Schneider /Legrand /C&S/HPL				
				2 Nos of 630A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: Siemens/ L&T / Schneider /Legrand /C&S/HPL				
				4 Nos of 400A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				6 Nos, 250A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				4 Nos of 125A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				2 Nos of 63-100A, 4 Pole, adjustable MCCB, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required. Make:Conzerve/Elmeasure/ Mec/ HPL/L&T/ Socomec - 2 Nos				
				Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required. Make: Conzerve/Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec - 2 Nos				
				Supply and Fixing of Current Transformer, from 2000 / 5 to 3200/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required. Make: Kappa/L&T/ Seimens/ C&S/ Schneider - 6 Nos				

				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Green & Yellow Colour with integral circuit, terminal block, including connection etc. as required - 33 No. Make:Seimens/ ABB/ Schneider/ L&T/ C&S/HPL				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No. Make:Seimens/ ABB/ Schneider/ L&T/ C&S/HPL				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required. Make: L&T / C&S/ Salzer/HPL - 2 No				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required Make: L&T/C&S/Salzer/ HPL - 2 No				
				Supply and Fixing of non-luminous type push button actuators and integral contact block of dia. 22.5 mm including making connection etc. as required Make:Seimens/ ABB/Schneider/L&T/C&S/HPL - 18 Nos				
				Supply and Fixing of Cam operated rotary switches on existing panel with 2 way and off position, two pole, 16A. Makes: L&T (SALZER)/ABB/ Schneider/ Siemens /C&S/HPL - 9 Nos				
				10 kA - 6-32A range SP MCBs. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno) - 18 Nos				
				Bus Bars:-				
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulators, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves etc., as per standards				
				For Main Bus Bars vertical & horizontal of sizes in two runs i.e. 2R x160mm x 15mm x 4 Nos equal sizes for Phases and Neutral and for sectional bus bars and extended links to all ACBs/MCCBs shall be more than the ratings of MCCBs/ACBs				
		1	NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, all Door Loop earhtings, Ferrules, Feeder identifications, danger plates, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.				
				PCC PANEL FOR 500 KVA TRANSFORMERS				
				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
				Incomer :-				
				Incomers and Bus Coupler : 800A, Four Pole, 50kA Electrically drawout Air Circuit Breaker Confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having over load, shot circuit and earth fault Protection with display and 20 faults history backup with electrical and mechanical interlocking. Makes: Makes: Siemens/ L&T / Schneider /Legrand /C&S/HPL3				
				Outgoing feeders:-				
				Supply of 630A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno 4				
				Supply of 400A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno 4				
				Supply of 250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno 4				
					EACH	4087500.00	4087500	
354								

			Supply of 125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno 2				
			Supply of 63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno 2				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required. Make: Conzerve/Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec--2nos				
			Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required Make: Kappa/L&T/ Seimens/ C&S/ Schneider -6 nos				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Green & Yellow Colour with integral circuit, terminal block, including connection etc. as required-12 nos				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Blue Colour with integral circuit, terminal block, including connection etc. as required				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required Make: L&T/C&S/Salzer/ HPL-2nos.				
			Supply and Fixing of non-luminious type push button actuators and integral contact block of dia. 22.5 mm including making connection etc. as required Make:Seimens/ ABB/Schneider/L&T/C&S/HPL 6nos				
			10 kA - 6-32A range SP MCBs. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno) 6nos				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
			For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 80mm x10 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for errection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.			EACH	1490000.00 1490000
			PCC PANEL FOR 1000 KVA TRANSFORMERS				
355			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness,separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).				
			Incomer :-				
			Incomers and Bus Coupler : Supply of 1600A, 4 Pole, 50kA electrically operated, manually draw out type Air Circuit Breaker confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having overload, shot circuit and earth fault protection with display and 20 faults History backup with BMS compatible communication ports. Makes: Siemens/ L&T / Schneider /Legrand /C&S				
			Outgoing feeders:-				

			Incomers and Bus Coupler : Supply of 1250A, 3 Pole, 50kA electrically operated, manually draw out type Air Circuit Breaker confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having overload, shot circuit and earth fault protection with display and 20 faults History backup with BMS compatible communication ports. Makes: Siemens/ L&T / Schneider /Legrand /C&S				
			Incomers and Bus Coupler : Supply of 800A, 3 Pole, 50kA electrically operated, manually draw out type Air Circuit Breaker confirms to IS 13947-2, IEC 60947-2 and BS-EN 60947 with Micro processor based having overload, shot circuit and earth fault protection with display and 20 faults History backup with BMS compatible communication ports. Makes: Siemens/ L&T / Schneider /Legrand /C&S				
			Supply of 630A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes:L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL				
			Supply of 400A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes:L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL				
			Supply of 250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL				
			Metering:- Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required. Make: Conzerve/Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Green & Yellow Colour with integral circuit, terminal block, including connection etc. as required				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Blue Colour with integral circuit, terminal block, including connection etc. as required				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required Make: L&T/C&S/Salzer/ HPL				
			Supply and Fixing of non-luminous type push button actuators and integral contact block of dia. 22.5 mm including making connection etc. as required Make:Seimens/ ABB/Schneider/L&T/C&S/HPL				
			10 kA - 6-32A range SP MCBs. Make: Legrand-DX3 / Schneider-Acti9/Hager-h3/ Siemens-5SX4/ Crabtree-Xpro/L&T-AU				
			Bus Bars:- Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges @ 5%			EACH	2618500.00 2618500
			400A LIGHTING/POWER PANEL				

355			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			400A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 6 No. Makes: L&T- D shine / Schneider-CVS/Legrand –(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 4 No. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			63A/60A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
			10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
			For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 50mm x10 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.				
					EACH	358500.00	358500
			250A LIGHTING/POWER PANEL				

356			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			250A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			160A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 6 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
			10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/Siemens-5SX4/ Havells STADx /L&T-AU/IndoAsian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
			For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x8 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for errection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.				
			160A LIGHTING/POWER PANEL		EACH	207500.00	207500

357			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			160A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted. - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 5 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			63A/60A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 3 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make: Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
			10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
			For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.				
			500 KVA DG SET PANEL (800A)		EACH	168000.00	168000

358			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
			Incomer :-				
			800A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Outgoing feeders:-				
			400A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 3 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			160A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 6 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			63A/60A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
			Metering:-				
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Mecol/ HPL/L&T/ Socomec				
			Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Mecol/HPL/ L&T/ Schneider/AE/ Socomec				
			Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
			10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)				
			Bus Bars:-				
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				

				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 80mm x12mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs					
		1	NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.			EACH	484000.00	484000
				320 KVA DG PANEL (630A)					
359				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).					
				Incomer :-					
				630A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				Outgoing feeders:-					
				400A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 8 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno					
				125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				63A/60A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				Metering:-					
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec					
				Supply and Fixing of CT operated direct reading type Ammeter, above 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec					
				Supply and Fixing of Current Transformer, from 500 / 5 to 1600/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider					
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make					
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL					
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL					
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)					
				Bus Bars:-					

				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves				
				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 80mm x10 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs				
		1	NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.		EACH	490500.00	490500
				250 KVA DG PANEL (400A)				
360				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).				
				Incomer :-				
				400A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 50 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Outgoing feeders:-				
				250A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 6 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 4 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				63A/60A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno				
				Metering:-				
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Mecco/ HPL/L&T/ Socomec				
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec				
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider				
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make				
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL				
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL				
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)				
				Bus Bars:-				

				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves					
				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 50mm x10 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs					
		1	NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.			EACH	313000.00	313000
				125 KVA DG PANEL (250A)					
361				Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).					
				Incomer :-					
				250A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				Outgoing feeders:-					
				160A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted - 6 No. Makes:L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 2 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
				Metering:-					
				Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec					
				Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec					
				Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider					
				Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make					
				Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL					
				Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL					
				10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)					
				Bus Bars:-					
				Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves					
				For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x8 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs					

		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.					
			62.5 KVA DG PANEL (100A/125A)					
362			Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure with required size of G.I. earth bus bar etc., complete. (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).					
			Incomer :-					
			125A 4 Pole MCCB adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
			Outgoing feeders:-					
			4 No of 63A/60A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 16 KA with thermal magnetic release Panel Mounted - 4 No. Makes: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
			4 No of 40A, TP MCB, 10 KA. Make: L&T- D shine / Schneider-CVS/Legrand -(DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S -Winbreak/HPL-Techno					
			Metering:-					
			Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec					
			Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec					
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio , 15 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider					
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make					
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL					
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL					
			10 kA - 6-32A range SP MCBs - 6 No. Make: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)					
			Bus Bars:-					
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves					
			For Main Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 25mm x 6 mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs					
		1 NO	Control wiring with suitable size of approved make FRLS PVC flexible copper wires, Earth Bus Bar, Door Loop earhtings, Ferrules, Feeder identifications, danger plate, door locks etc., labour charges for erection of switch gears, panels boards, with all other accessories including all labour charges etc with connections for finished item of work including transportation charges.					
			SUB-STATION & YARD ACCESSORIES					
						EACH	284500.00	284500
						EACH	120500.00	120500

363		150.00	SQM	Supply, fabrication, transportation and erection of MS Chequered Plates of 5mm thick, with 40mm x 40mm x 6mm thick MS angle supporting frame welded to the plate all around with lifting handles including painting of angle iron supporting frame and chequered plate with red oxide paint and bitumen paint of black colour and fixing on the cable ducts/trenches over the existing MS Frame work in the sub-station building/electrical power room including cost and conveyance of all materials and all labour charges etc complete.	ONE	SQM	5342.80	801420
364		200.00	RM	Supply, transportation and fixing of MS Angle Iron of size 50 x 50 x 6 mm for fixing as frame work MS chequered plates around the cable ducts duly grouted in flooring with C.C. in the sub-station building/electrical power room including painting with red oxide paint and bitumen paint of black colour and cost and conveyance of all materials and all labour charges etc complete.	ONE	RM	458.50	91700
365		10	NOS	Supply and Erection of 9 mtrs length, 175 X 85mm RS Joist pole with base plate of size 300mm x 300mm x 12mm including excavation of pit, coil earthing, hire charges of special T&P painting of pole, CC 1:3:6 upto ground and 1:2:4 for Couping work, including labour and transportation charges etc., complete.		EACH	29545.80	295458
366		100.00	RM	Supply, Transportation of 100 x 50 mm ISMC 100 channel iron including painting with two coats of aluminium and one coat of red oxide paint etc., complete	ONE	RM	860.00	86000
367		100.00	RM	Supply, Transportation of 75 x 40 mm ISMC 100 channel iron with two coats of aluminium and one coat of red oxide paint complete	ONE	RM	635.00	63500
368		3	NOS	Supply and Fixing of 11 KV, 400 A 3 phase central post rotating double break type AB switch (isolator) as per IS 9921 without earth blade, gang operated, horizontal type, operating mechanism with GI spring loaded reverse loop type fixed contact, solid HD electrolytic copper tubular moving contact with silver/nickle plated at end points, 9 Nos post insulators of 12 KV (IS 2594 and IS 5350) and Hot Dip galvanizing hardware., complete.		EACH	24745.00	74235
369		2	JOB	Labour Charges for construction of DP Structure at site including fixing of 100mm x 50mm and 70mm x 40mm MS channels on existing RS joist poles, with required clamping arrangements as required at site including cost of hardware materials, MS Clamps, nuts and bolts, etc., complete	EACH	JOB	6073.40	12147
370		2	NOS	Supply and fixing of 100 A 11 KV Horn Gap fuse set as per IS 9385 on existing DP structure with 6 nos 24 KV /22 KV post Insulators(IS 5350, Hot dipped Hard ware, fuse wire of required size etc., complete		EACH	7561.00	15122
371		6	NOS	Supply and fixing of distribution type lightning arrester 11 KV 5 kA as per IS 3070 with mounting base on the existing DP structure		EACH	3437.00	20622
372		50.00	RM	Supply and run of one of "0" SWG or 8.25 mm dia hard drawn bare copper wire including copper binding wire etc., complete as required including connections.	ONE	RM	430.90	21545
373		15	NOS	Supply and fixing of 11 KV pin/disc Insulator (IS 731/1971) with minimum creepage distance of 300 mm on existing cross arm including all accessories like Hot dip GI spindle and nuts etc.,		EACH	250.00	3750
374		8	NOS	Providing transformer plinth 1.2 x 1.2 x 1.5 mtr in size with necessary excavation in ground at the bottom with 150mm thick 1:2:4 cement concrete raft at the bottom and top and 225mm thick wall constructed in stone masonry and remaking hollow portion shall be filled with stone chips duly plastered 20mm thick outsides including watering etc., complete.		EACH	13747.40	109979
375		4	NOS	Providing CTPT plinth 600mm x 600mm x 2.1 mtr in size with necessary excavation in ground at the bottom with 150mm thick 1:2:4 cement concrete raft at the bottom and top duly plastered 20mm thick outsides including watering etc., complete.		EACH	8248.40	32994
376		200.00	CUM	Supply, transportation and spreading the 40mm size HBG metal in two layers of about 100mm thick in and around the sub-station yard.	ONE	CUM	1712.30	342460
377		500.00	RM	Supply and erecting 7/3.15 AAAC / Rabbit (55 Sq.mm) conductor for Overhead line with stringing, binding and suitable size of clamps for Jumpering etc., complete.	ONE	RM	93.20	46600
378		150	NOS	Supply and erecting fencing section having size 2.1 mt height from ground level and 1.2 mt width by using angle iron size 50mm x 50mm x 6 mm with 50 x 50 x 6mm 'T' Angle on middle, erected in C.C. foundation 15cm x 15cm x 40 cm deep. The section of the frame shall be fitted with hot dipped galvanised iron chain link mesh of 8 gauge (4.0 mm) as per IS: 2721-1979 at a spacing of 2"x2" (50 mm x 50 mm) with flat iron support of size 25 x 6 mm on top, bottom and middle and sides and including all accessories and duly painted with one coat of red oxide and 2 coats of aluminium paint and all labour charges etc. complete.		EACH	7545.00	1131750

379		6	NOS	Supply and erecting double leaf hinged door each 150 cm in width and 180 cm in height using 40 mm dia medium grade ISI mark GI pipe from all 4 sides with necessary bends and cross supports of angle iron 40mm X 40mm X 6 mm with the door leaf covered with chain links jolley 50 X 50 mm made from 3.26 mm dia/10 SWG G.I. wire with necessary flat iron covering all round with necessary no of spikes of size 10 mm dia at top and bottom at 150 mm apart to match the height of fencing. The door shall have latches and side channel of 100 X50 X5 mm rigidly welded for providing locking arrangement Godrej/Navtal make medium size lock with duplicate keys, gate and fencing completely erected and painted with one coat of anticorrosive red oxide paint and 2 coats of prescribed enamel paint/silver paint, including Channel iron of size 100 X 50 mm by 2.5 mtr long, shall be provided and erected at both sides of gate. (Rate for two doors, total Gate)			EACH	22062.00	132372
380		15	NOS	Supply and fixing printed Shock instructions chart in English / Hindi / Telugu duly framed with front glass for treatment of person suffering from Electric shock.			EACH	619.20	9288
381		10	NOS	Supply of pair of rubber hand gloves suitable for working voltage of 11/22 KV supply.			EACH	275.00	2750
382		90.00	SQM	Supply and fixing of PVC synthetic elastomer electrically insulated mat conforming to IS: 15652-2006 with Class B insulation having 2.5mm thickness upto 11KV.		ONE	SQM	5361.00	482490
383		6	NOS	Supply and Fixing of standard 18"x12"x8" first aid box with all standard contents at appropriate place in the sub-station.			EACH	1478.00	8868
384		48	NOS	Supply of round bottom G.I sheet bucket of 9 Ltrs Capacity as per IS:2546 made out of 24 gauge GI sheet with extra handle at bottom duly painted inside and red out side with printed with FIRE Mark for stand and hook and filled with sand and arranged to existing stand or hook.			EACH	371.50	17832
385		12	NOS	Providing floor mounting stand for keeping 4No of fire bucket 1500mm length, 900mm height made out of 40x40x6mm angle iron welded with 4 hooks and duly painted with one coat of red lead and two coats of enamel paint.			EACH	1512.20	18146
386		50	NOS	Supply and fixing of 11KV/415V Danger Boards with Multi-Languages on the existing poles or structures or panels etc., at appropriate places.			EACH	137.50	6875
387		3	JOB	Preparation of all Drawings, payment of required Fees and arranging inspections and obtaining CEIG Approval.		EACH	JOB	35000.00	105000
388		15	NOS	Supply and fixing of ISI mark (IS:15683) Mono ammonium phosphate powder 90 (MAP) 4 Kg Fire extinguisher, stored pressure type, pressure gauge, gross wt. 6.9 kg, empty wt.2.9 kg, Discharge time minimum 13 sec, controllable discharge mechanism, range min. 4 mts applicable on classes A,B, C & electrically started fire, A rating -3 A, B rating -34 B, can construction: Deep drawn and Co2 mig welding, Valve construction: Forging & Machining, internal coating of can: Epoxy powder coating, External coating of Can:Epoxy polyester powder coating, sheet metal thickness:1.60mm, Helium leak detection tested with 5 years warranty Including transportation, all taxes and all labour charges etc complete. Makes : Safex / Kenex / Bharat / Reliance			EACH	11890.00	178350
389		15	NOS	Supply and fixing of Co2 type Fire Extinguishers 4.5 Kg capacity conforming to IS 2878 made from ISI marked steam less cylinder confirming to IS:7285 & CE certified and fitted with ISI marked controlled valve confirming to IS:3224, high pressure 1 Mtr discharge hose & horn complete with initial gas charged with carrying handle with wheels and wall mounting bracket. Squeeze lever discharge, used un-used indicator, Aphoxy coated paint (Red) with 93% gloss with 2 years warranty Including transportation, all taxes and all labour charges etc complete. Makes : Safex / Kenex / Bharat / Reliance			EACH	16280.00	244200
				12 Core, 2.5 Sq.mm Copper Control Cable for OLTC of Transformers					
390		100.00	RM	Supply, Transportation and laying of 12 core, 2.5 Sq.mm XLPE/PVC insulated & PVC sheathed Unarmoured control cables of 1.1 KV grade with copper conductor as per IS 7098 Part-I -1988 including all labour charges, giving connections etc., complete for Generators from their AMF/Synchronour Panels and for auxiliary supplies to PCC Panels/HT VCB Panels Panels. Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard		ONE	RM	465.20	46520
391				Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Alluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI					
a		10	SET	3.5 core, 25 Sq.mm		ONE	SET	310.20	3102
b		10	SET	3.5 core, 35 Sq.mm		ONE	SET	412.40	4124
c		15	SET	3.5 core, 50 Sq.mm		ONE	SET	481.70	7226
d		15	SET	3.5 core, 70 Sq.mm		ONE	SET	714.60	10719
e		15	SET	3.5 core, 95 Sq.mm		ONE	SET	819.20	12288
f		15	SET	3.5 core, 120 Sq.mm		ONE	SET	1031.60	15474
g		20	SET	3.5 core, 150 Sq.mm		ONE	SET	1237.30	24746
h		30	SET	3.5 core, 185 Sq.mm		ONE	SET	1374.70	41241

i		30	SET	3.5 core, 240 Sq.mm	ONE	SET	2062.10	61863
j		40	SET	3.5 core, 300 Sq.mm	ONE	SET	2474.50	98980
392				Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays without cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a		30.00	RM	100mm X 50mm X 1.6mm size	ONE	RM	423.80	12714
b		50.00	RM	150mm X 50mm X 1.6mm size	ONE	RM	492.00	24600
c		50.00	RM	300mm X 50mm X 1.6mm size	ONE	RM	907.80	45390
d		30.00	RM	450mm X 50mm X 2mm size	ONE	RM	1315.70	39471
393				Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays with cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a		30.00	RM	100mm X 50mm X 1.6mm size	ONE	RM	550.90	16527
b		30.00	RM	150mm X 50mm X 1.6mm size	ONE	RM	639.50	19185
c		100.00	RM	300mm X 50mm X 1.6mm size	ONE	RM	1180.10	118010
d		50.00	RM	450mm X 50mm X 2.0mm size	ONE	RM	15050.30	752515
394				Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron ladder type cable trays with rungs at span of 250 mm including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/wall with suspenders and etc., complete.				
a		50.00	RM	150mm X 50mm X 2.0mm size	ONE	RM	620.30	31015
b		100.00	RM	300mm X 50mm X 2.0mm size	ONE	RM	779.40	77940
c		100.00	RM	450mm X 50mm X 2.0mm size	ONE	RM	1028.20	102820
395				Supply, Transportation and Laying of the following sizes of double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. Makes:DURA LINE (Dura Guard) or its equivalent make.				
a		100.00	RM	Outer dia 50mm and Inner dia 38mm	ONE	RM	140.30	14030
b		200.00	RM	Outer dia 63mm and Inner dia 51mm	ONE	RM	177.20	35440
c		100.00	RM	Outer dia 78mm and Inner dia 63mm	ONE	RM	208.50	20850
				GI PIPES/ HUME PIPES FOR CABLES AT ROAD CROSSING				
396				Supply and laying of B class GI pipe of ISI mark with all accessories of following sizes for laying at the road crossings for the UG cables.				
a		50.00	RM	40 mm dia medium grade, G.I Pipe	ONE	RM	499.40	24970
397				Supply and Laying NP2 class RCC hume pipe with collars of following sizes for laying at the road crossings for the UG cables.				
a		50.00	RM	150 mm dia Hume pipe	ONE	RM	376.00	18800
b		100.00	RM	300 mm dia Hume pipe	ONE	RM	757.10	75710
				CUTTING C.C/B.T. ROAD SURFACE FOR CABLE TRENCH				
398				Cutting road surface including stacking of excavated materials for UG Cable trench work.				
a		100.00	SQM	Cutting open B.T. road surface (as well as asphalt concrete up to 75 mm thick) including water bound macadam	ONE	SQM	118.00	11800
b		20.00	CUM	Cutting open C.C. road surface with concrete saw cutter and removal with Breake	ONE	CUM	3739.10	74782
				STREET/ROAD LIGHTING				
				High Mast				
399		2	NOS	Fabrication, transportation and supply of 12 Mtrs Polygon High Mast with single section of 3mm thick of Bottom 360mm and Top 150mm dia with BSEN - 10025 grade S 355 JO steel plate for shaft, IS 2062 for base plate, having a base plate of size 520mm dia 16mm thick with its accessories. Mast shall be in single section for 12 Mtrs and 2 sections for 16 and 20 Mtrs. Mast shall be hot dip galvanized and suitable for wind velocity of 180 KMPH as per IS 875 part 3 including head frame, 2 point suspension system with steel rope 6mm dia (7/19) construction double drum winch / power tool operating speed of 900 RPM, and necessary cable trailer connections and single speed motor with M24 x 800 mm foundation bolts of required quantity, suitable for 6 luminaires with LED type aviation twin lamp. Makes: Bajaj / Valmont/ Transrail		EACH	140411.00	280822
400		2	NOS	Earth work excavation with a approximate quantity of 4.0 Cum for erection of 12 Mtrs high mast and refilling with a quantity of 0.53 Cum of PCC 1:4:8, 1.50 Cum M 20 grade concrete and (80 Kgs) reinforced steel of 12mm / 10mm / 8mm, Soil bearing capacity of 10 T/Sqm, Anchor plate with cost and conveyance of all above materials including labour charges for erection of High Mast and Carraige etc., complete.		EACH	47916.00	95832

401		12	NOS	Supply, transportation of 200W LED Flood light Luminaire made of pressure diecast alluminium housing with powder coated, having protective toughned glass, Supply Input voltage 120 - 270 V AC, P.F > 0.90, high power LEDs having efficacy >120 lm/W and junction temprature < 70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5 / Sec-3), IK05, Driver surge protection 4KV, external Surge protection ≥10KV with wide/ Narrow beam optics, THD<10% at 110 Volts AC, driver efficiency >90%, , CCT: 3000K - 5700K, minimum CRI>70, etc., complete with 5years warranty. a) LUMINAIRE MAKE : Wipro / Philips/ GE-Venture / Crompton/ Bajaj / Havells b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG.			EACH	18373.00	220476
402		40	NOS	Fabrication, Transportation and supply of of 1.5mtrs sword type or any decorative Single arm bracket with dooms either sides complete with all accessories with MS galvanized 40mm / 50mm dia Pipe. Makes: Bajaj / Valmont/Transrail			EACH	5483.00	219320
403		10	NOS	Fabrication, Transportation and supply of of 1.5mtrs sword type or any decorative double arm bracket with dooms either sides complete with all accessories with MS galvanized 40mm / 50mm dia Pipe. Makes: Bajaj / Valmont/Transrail			EACH	3878.00	38780
404		60	NOS	Supply, Transportation and Fixing of 90W LED Street light Luminaire made of pressure diecast alluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LEDs having efficacy>120 lm/W and junction temprature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, including fixing of luminaire on Pole bracket including all labour charges and giving connections etc., complete with 5years warranty. a) Luminaire make: Wipro(Skyline)/Philips (Green line) / GE-Venture / Crompton(Nexus star) / Bajaj (Edge) / Havells (Endura Pearl) b) LED make:Philips Lumileds/ Cree/Nichia/ Osram/Samsung/LG LEDs			EACH	8458.00	507480
405		9	NOS	Fabrication, Transportation and supply of hot-dip galvanized Octogonal Pole with BSEN - 10025 grade S 355 JO steel plate for shaft, IS 2062 for base plate with Hinged door opening arrangement, including the supply of suitable boards with bakelite sheet as per IS specification suitable to withstand the wind speed of 180 KMPH for 9 Mtrs height Pole having dimensions Bottom 155 mm., Top 70mm with 3mm thick, base plate 260 x 260 x 16mm and 4 Nos of M24 x 750 long 'J' bolts along with template. Makes: Bajaj / Valmont/Laasma /Transrail/Utkarsh/ Skipper/Consoul			EACH	22733.00	204597
406		18	NOS	Supply, transportation of 150W LED Flood light Luminaire made of pressure diecast alluminium housing with powder coated, having protective toughned glass, Supply Input voltage 120 - 270 V AC, P.F > 0.90, high power LEDs having efficacy >120 lm/W and junction temprature < 70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5 / Sec-3), IK05, Driver surge protection 4KV, external Surge protection ≥10KV with wide/ Narrow beam optics, THD<10% at 110 Volts AC, driver efficiency >90%, , CCT: 3000K - 5700K, minimum CRI>70, etc., complete with 5years warranty. a) LUMINAIRE MAKE : Wipro / Philips/ GE-Venture / Crompton/ Bajaj / Havells b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG.			EACH	15311.00	275598
407		6	NOS	Supply and fixing of luminaire carriage suitable for for fixing 4/6 flood light luminaires on high mast/mini mast pole made of 50mm dia G.I. pipe, suitable pole cap, including Labour charges for fixing on the pole, fixing of luminaires, transportation and giving connections etc., complete.			EACH	2923.00	17538
408		1600	RM	Supply and run of 3 core 2.5 Sqmm PVC insulated and sheathed FRLS copper round cable for voltage up to 1100V as per IS 694/1990 for the high mast/octogonal poles inside from cable entry chamber upto luminaire including all labour charges etc., complete. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/ Polycab/ Gloster/V-Guard/ HPL/ GM/ Million/Goldmedal/ Anchor.		ONE RM		135.50	216800
				L.T. U.G. CABLES, CABLE LAYING, TERMINATIONS & CABLE TRAYS					
409				Supply and transportation of following XLPE insulated, 1100V grade armoured alluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard					
a	2500.00		RM	4 core, 16 Sq.mm		ONE RM		229.50	573750
b	500.00		RM	3.5 core, 25 Sq.mm		ONE RM		280.60	140300

410		3000.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables upto 50 Sq.mm on sand cushion covering the cable with bricks and back filling of Trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	270.90	812700
411		100.00	RM	Labour charges for run of U.G cables upto 50 sq.mm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	57.20	5720
412		400.00	RM	Labour charges for run of armoured U.G cables upto 50 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	44.20	17680
413				Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI				
a		200	SET	4 core, 16 Sq.mm	ONE	SET	315.80	63160
b		50	SET	3.5 core, 25 Sq.mm	ONE	SET	310.20	15510
				FEEDER PILLER				
414		20	NOS	Supply and fixing of suitable out door type feeder piller box made with 14 SWG CRCA sheet after 7 tank process including S & F 40-63A FP MCB, 9 Nos SP MCB's,din chanel, bus bars, 6 Sqmm 3 core copper cable for internal wiring , contactor, connectors and provision for energy meter etc., complete for finished item of work. Makes : Legrand / Schnieder / L&T		EACH	25274.00	505480
415				Supply of Automatic Street Light Control System with Optical Micro Sensor, Low volatage / High voltage trip and reset, operating voltage 150 - 280V AC per Phase, 50 HZ with suitable SMC enclosure of IP 54 protection, MCBs and contactor suitable to control the load of of Three phase load with necessary clamping arrangements. Makes :Swadeep Nature Switch / Light Mate /GL/Bajaj				
a		1	NO	5 KW		EACH	18497.00	18497
b		1	NO	8 KW		EACH	19121.00	19121
				Motor pumpsets				
416				Hydropneumatic Pumping System With Variable Frequency Drive for DOMESTIC WATER SYSTEM Supply,Installation,Testing and commissioning of HydroPneumatic System with Variable Speed Drive, Common inlet and outlet manifolds,Non- return valves and isolating valves for each pump on the outlet side, pressures witches and one pressure transmitter connected to the outlet manifold, an outlet pressure gauge on the outlet manifold, pressure tanks, a control panel, Control MPC to electrically switch on/off the pumps, Display&Controller, all necessary interconnections for thea bove items.This entire system should have compatibility to integrate with BMS/IBMS system.Hydro Pneumatic Vertical Multistage inline Pressure Boosting Skid Mounted System with Single VFD				
a		1	NO	Domestic Potable Water Supply Pumps for SUMP 1 to OHT Total Sump Capacity : 1 Lac Total OHT Capacity : 40,000 Ltrs Total Head: 40 mtrs Each Pump Capacity: 27 m3/hr No.of Pumps : 2 Nos (1w + 1s) HYDRO MPC F2xCR32-3, (1w + 1s), (5.5 KW each Pump / 7.5 HP), inlet &outlet :DN 100 Make and Model:Grundfos(HYDRO MPC F2xCR32-3), 5.5 KW Each Pump/7.5HP		EACH	1351420.00	1351420
b		1	NO	Domestic Potable Water Supply Pumps for SUMP 2 to OHT Total Sump Capacity : 1Lac Total OHT Capacity : 30,000 Ltrs Total Head: 40 mtrs Each Pump Capacity: 30 m3/hr No.of Pumps : 2 Nos (1w + 1s) ,HYDRO MPC F2xCR32-3, (1w + 1s), (5.5 KW each Pump / 7.5 HP), inlet &outlet :DN 100 Make and Model:Grundfos(HYDRO MPC F2xCR32-3), 5.5 KW Each Pump/7.5HP		EACH	1351420.00	1351420
c		1	NO	Domestic Potable Water Supply Pumps for SUMP 3 to OHT Total Sump Capacity : 7.0 Lac Total OHT Capacity : 40,000 Ltrs Total Head: 40 mtrs Each Pump Capacity: 34 m3/hr No.of Pumps : 2 Nos (1w + 1s) ,HYDRO MPC F2xCR32-3, (1w + 1s), (5.5 KW each Pump / 7.5 HP), inlet &outlet :DN 100 Make and Model:Grundfos(HYDRO MPC F2xCR32-3), 5.5 KW Each Pump/7.5HP		EACH	1351420.00	1351420
417		3	NOS	Supply,Installation,Testing and commissioning of Diaphragm Pressure Vessel etc Complete		EACH	107617.00	322851

418				Supplying, fixing, testing and commissioning of solenoid valve PN 1.6, with Bronze / Gun metal seat duly ISI marked complete with Nuts, Bolts, Washers, gaskets, conforming to IS 13095 of following sizes as required. Makes: Audco / Kirloskar / BDK / H-Shankar / Leader/ Zolotto / SANT/NEU-G/Honeywell				
a		6	NOS	(a) 65 mm dia		EACH	18500.00	111000
b		6	NOS	(a) 50 mm dia		EACH	15500.00	93000
b		6	NOS	(c) 25 mm dia		EACH	13500.00	81000
419				Supplying, fixing, testing and commissioning of Float switch with controller etc complete				
a		6	NOS	(a) 50 mm dia		EACH	3500.00	21000
				ELV Works				
				EPABX & TELEPHONE WIRING				
420		3	NOS	Supply, Installation, Testing and Commissioning of IP Based digital Telephone (EPABX) system-- complied with following specifications: > IP @ Core, PCM/TDM switching, Non blocking, > Must Support PRI, E1, Analog Junctions > Must Support PC Console, > Must support Mobile SIP (Android and IOs) > Must support Voice Mail > Must support Card based GSM > Inbuilt Call Details Software with search engine software > 8 Analog Trunks > 1 PRI Trunk module > 8 Digital Extensions > 128 Analog Extensions > 1 Digital Key Phone with minimum 16 Keys (Must work only on 2 wires) > Expandable to 220 Ports wired or more at extra cost Makes: NEC/ Alcatel /Avaya/Siemens		EACH	496282.00	1488846
421		1	NOS	Supply, Installation, testing and Commissioning of IP Based digital Telephone (EPABX) system -----complied with following specifications: > IP @ Core, PCM/TDM, Non blocking, > Must Support PRI, E1, Analog Junctions > Must Support PC Console, > Must support Mobile SIP (Android and ios) > Must support Voice Mail > Must support Card based GSM > Inbuilt 8 Channel Auto Attendant > Inbuilt Call Details Software with search engine software > 4 Analog Trunks > 1 ISDN PRI Module > 6 Digital Extensions > 64 Analog Extensions > 1 Digital Key Phone with minimum 16 Keys (Must work only on 2 wires) > Expandable to 64 Analog Extensions or more Makes: NEC/ Alcatel /Avaya/Siemens		EACH	163594.00	163594
422		38	NOS	Supply, Installation, Testing and commissioning of Digital key Telephone instruments with at least of 16 programmable keys, LCD display, fully hands free etc., complete with connectors. Makes: NEC/ Alcatel /Avaya/Siemens		EACH	16701.0	634638
423		6	SET	Supply, Installation, Testing and commissioning of IP Gateway Card and SIP Extension License (IP Extensions 8) etc., complete.	ONE	SET	47150.00	282900
424		30	NOS	Supply and fixing of 16 Port Analog Extension Module etc., complete. Makes : NEC/ Alcatel /Avaya/Siemens		EACH	22609.00	678270
425		898	NOS	Supply, Installation, Testing and commissioning of Non caller ID push button Telephone instruments etc., complete with connectors. Make : Beetel / NEC/ Alcatel /Avaya/Siemens.		EACH	562.00	504676
426	1300.00		RM	Supply and laying of 10 pair telephone wire 0.5mm copper in the existing metallic/non metallic conduit pipe with connections etc.,completeTelephone wire Makes: Finolex / Delton / Surabi / Polycab	ONE	RM	63.40	82420
427	860.00		RM	Supply and laying of 20 pair telephone wire 0.5mm copper in the existing metallic/non metallic conduit pipe with connections etc.,completeTelephone wire Makes: Finolex / Delton / Surabi / Polycab	ONE	RM	111.10	95546
428	330.00		RM	Supply and laying of 50 pair telephone wire 0.5mm copper in the existing metallic/non metallic conduit pipe with connections etc.,complete for telephone wiring. Makes: Finolex / Delton / Surabi / Polycab.	ONE	RM	269.70	89001
429	150.00		RM	Supply and laying of 100 pair telephone wire 0.5mm copper in the existing metallic/non metallic conduit pipe with connections etc.,complete for telephone wiring. Makes: Finolex / Delton / Surabi / Polycab.	ONE	RM	524.90	78735
				Telephone distribution box				

430		130	NOS	Supply and Installation of 10 Pair Telephone distribution box with back mount frame, krone connector, powder coated metal body with lock and key arrangement. Makes: Krone or equivalent make.		EACH	1087.60	141388
431		53	NOS	Supply and Installation of 20 Pair Telephone distribution box with back mount frame, krone connector, powder coated metal body with lock and key arrangement. Makes: Krone or equivalent make.		EACH	1514.40	80263
432		29	NOS	Supply and Installation of 50 Pair Telephone distribution box with back mount frame, krone connector, powder coated metal body with lock and key arrangement. Makes: Krone or equivalent make.		EACH	3132.00	90828
433		2	NOS	Supply and Installation of 100 Pair MDF loaded with 2/10 Modular, Telephone distribution box with back mount frame, krone connector, powder coated metal body with lock and key arrangement. Makes: Krone or its equivalent.		EACH	5499.00	10998
434		3	NOS	Supply and Installation of 200 Pair Telephone distribution box with back mount frame, krone connector, powder coated metal body with lock and key arrangement. Makes: Krone or its equivalent.		EACH	11684.00	35052
435		40	NOS	Supply and Installation of IP Phone NEC -ITX-1615		EACH	4826.00	193040
436		8	NOS	Supply and Installation of Expansion cabinet for 220 more extensions.		EACH	94300.00	754400
437		1	NO	Supply and Installation of IP CPU card for redundancy purpose		EACH	40674.00	40674
438		1	NO	Supply, Installation, testing and Commissioning of NetLink License per remote node		EACH	88755.00	88755
				LAN				
439		48000.00	RM	Supply, laying, testing and commissioning of 4-pair, Cat-6 Solid (Third party ETL Intertek tested 600 MHZ above) to support 1Gbps with Cross (+) filler pair seperator & PVC sheath 23 AWG, UTP Cable , Meets or exceeds ANSI/TIA-568-C.2 and UL Listed &RoHS Compliant in the existing raceways /pvc conduits including making connections to information outlets and patch panels with ferruling at both ends for identification with necessary tools for punching stripping crimping and testing required etc., complete. Makes: Systimax /AMP/ Panduit/ Siemond/ Molex/Legrand	ONE	RM	51.10	2452800
440		1175	NOS	Supply and Fixing installation testing and commisioning of 1No of Cat-6 Toolless built-in crimping mechanism Information Outlet with Dust Cover Exceed ANSI/TIA-568-C.2 and ISO/IEC 11801 standards with 1module face plate for Category 6 component performance & Compatible to T568A,T568B wiring pattern and UL-940V0 Rated Plastic &RoHS Compliant. Makes: Systimax /AMP/ Panduit/ Siemond/ Molex/Legrand		EACH	590.80	694190
441		135.00	RM	Supply installation testing and commisioning of 2 Nos of Cat6 Toolless builtin crimping mechanism Information Outlet with Dust Cover Exceed ANSI/TIA-568-C.2 and ISO/IEC 11801 standards with 2module face plate for Category 6 component performance & Compatible to T568A,T568B wiring pattern and UL-940V0 Rated Plastic &RoHS Compliant. Makes: Systimax /AMP/ Panduit/ Siemond/ Molex/Legrand	ONE	RM	1136.20	153387
442		1875	NOS	Supply installation testing and commisioning of 4 pair 23AWG Cat-6 UTP, flexible, double ended patch cords along with 2 nos of RJ 45 connectors with strain relief boots compatible to T568A,T568B specifications including making connections to information outlets of length - 1 mtr/3 ft Makes: Systimax /AMP/ Panduit/ Siemond/ Molex/Legrand		EACH	287.40	538875
443		1178	NOS	Supply installation testing and commisioning of 4 pair 23AWG Cat-6 UTP, flexible, double ended patch cords along with 2 nos of RJ 45 connectors with strain relief boots compatible to T568A,T568B specifications including making connections to information outlets of length - 2 mtr/7 ft Makes: Systimax /AMP/ Panduit/ Siemond/ Molex/Legrand		EACH	338.60	398871
444				Supply and Fixing, Installation, Testing and Comissioning of Rack mounted 19", Cat 6 UTP,1.5-1.6 MM CRS Chasis, powder coated Modular Patch Panels (upgradable to intelligent panels with use of sensor strips) with collapsible shutters on jacks to support latest ammendments of TIA / EIA Cat 6 Specifications in Existing Communication Rack along with necessary connections of Cat 6 UTP Cables, With Rear Cable management trays and clamps. Makes: Systimax /Legrand/Molex/Panduit/Siemond/AMP				
a		55	NOS	12 Ports Patch Panels		EACH	5454.00	299970
b		3	NOS	18 Ports Patch Panels		EACH	6817.00	20451
c		205	NOS	24 Ports Patch Panels		EACH	16078.00	3295990

445				Supply and Fixing, Installation, Testing and Commissioning of Wall mounted Communication rack in two sections viz rear wall mount Section and hinged front section with glass doors, swing handles ,lock , Top and Bottom Cable entries, Supports for mounting rack on wall , Cable managers, Fan tray with 2 x 230 Volt fans, Equipment mounting hardware, wire managers , power supply box for supplying power to hubs, fans etc along with earth continuity kit, Mcb, indicator, moulded power supply cable, Blank panels , sliding shelves etc. Make: APW/HCL/Valrack/Netrack				
a		11	NOS	15 U(44 mm) wall mounted		EACH	11089.00	121979
b		10	NOS	12 U(44 mm) wall mounted		EACH	9787.00	97870
c		12	NOS	9 U(44 mm) wall mounted		EACH	8333.00	99996
d		23	NOS	6 U(44 mm) wall mounted		EACH	7090.00	163070
446		10	NOS	Supply , Installation, Testing and Commissioning of Floor mounted Communication rack in two sections viz rear Steel Door and hinged front section with glass doors, swing handles ,lock on both doors, Top and Bottom Cable entries with gland plates ,Castor with brakes , 7no Cable managers, 1 no Fan tray with 2 x 230 Volt fans, Equipment mounting hardware, wire managers ,power supply box for supplying power to hubs, fans etc along with earth continuity kit, Mcb, indicator, moulded power supply cable, Blank panels of 1u / 2 u , sliding shelves .Frame of communication rack should be made of heavy grade Aluminum profile PS grey painted and panels should be made from CRCA steel 18 swg RS Beige painted . 1) 42 U (44 mm)Floor Standing Rack 800WX1000D Make: APW/HCL/Valrack/Netrack		EACH	57569.00	575690
447		4	NOS	Supply and Fixing, Installation ,Testing and Commissioning of Small Business 24 port Gigabit Managed Switch. Make :Cisco Model SG350-28 or equivalent in Juniper/Extreme		EACH	55387.00	221548
448		8	NOS	Supply & Fixing of Cisco small business 8 port Gigabit POE Managed Switch. Make : Cisco Model:SG-350- 8PP or equivalent in Juniper/Extreme		EACH	34766.00	278128
449		9	NOS	Supply & Fixing of Cisco small business 24 port Gigabit POE Managed Switch , Make : Cisco Model:SG-350-28PP or equivalent in Juniper/Extreme		EACH	63738.00	573642
450		120.00	RM	Supply , Installation, Testing and Commissioning of Indoor multimode [62.5/125um] glass Fibre Optic Cable as per latest ammendments of TIA /EIA 568B.3 , GR 409 CORE / UL listed NEC 770 Standards in existing Raceways/PVC Conduits/ slotted channels including making Terminations to active passive equipments with ferruling at both ends for identification with necessary tools for Terminations and testing required. 1) 6 Fibre. Makes: Systimax /Legrand/Molex/Panduit/Siemond/AMP	ONE	RM	105.00	12600
451		120.00	RM	Supply installation testing and commissioning Outdoor, steel tape armoured multimode [62.5/125um] glass Fiber Optic Cable as per latest ammendments of TIA/EIA 568B.3 , GR 20 CORE/ UEC 794-1/ EN 187000 Standards in existing MS/PVC Conduits/ hume pipe including making terminations to active passive equipments with ferruling at both ends for identification with necessary tools for Terminations and testing required. 1) 6 Fibre. Makes: Systimax /Legrand/Molex/Panduit/Siemond/AMP	ONE	RM	109.00	13080
452		173	NOS	Supply ,Installation and Testing and commissioning of indoor 1 pair multimode [62.5/125um] glass Fiber Optic Patch Cords of One mtr length as per latest ammendments of TIA /EIA 568B.3 and IEC 794 Standard Specifications including ST II / SC/FC/MT/PC connectors at both ends as per requirements Makes: Systimax/Legrand/Molex/Panduit/Siemond/AMP		EACH	1266.00	219018
453				Supply ,Installation Testing and commissioning of 19 " Rack mounted/surface mounted aluminium / CRS powder coated multimode glass Fiber Optic Cable Patch panel/ LIU(upgradable to intelligent panels with use of sensor strips) along with cable tray/ fiber management system , adapters for ST II/ SC/FC/MT/PC connections including making connections to active / passive equipments with ferruling at both ends for identification with necessary tools for Terminations and testing required. Makes: Systimax /Legrand/Molex/Panduit/Siemond/AMP				
a		14	NOS	8 Ports		EACH	8333.00	116662
b		8	NOS	12 Ports		EACH	10908.00	87264
c		20	NOS	24 Ports		EACH	20643.00	412860
454		42	NOS	Supply installation testing and commissioning of Single Mode LC Pigtails LSZH 2mtr for fibre core connectivity. Makes: Systimax/Legrand/Molex/Krone /AMP		EACH	424.00	17808

455		1	NOS	Supply, Installation, testing and commissioning of Mobile Signal Jammer for 8 Band with all standard accessories. Model:GST-JAMM-009HI(High Cooling Mechanism+ Industrial Model)08 Antennas Power Supply Adopter Unit (Note: This Model will Jamm mobile Signal approximately 40- 50 meters Depending on the Input Signal Strength. Makes : Amrutha Technologies/Dolphin Automation & Technology/Mangal Security Systems			EACH	54535.00	54535
456		2	NOS	Supply ,installation, testing and commissioning of Fully managed L3 Core Switch with 16 port 10G SFP+Ports with blank Slot addon Network card of 2x40G ports. Make & Model: CISCO C 9500-16X or equivalent in Juniper/Extreme			EACH	1185000.00	2370000
457		2	NOS	Supply ,installation, testing and commissioning of Fully managed L2 Distriburion Switch with 20x10G SFP+ +4x10G Copper/SFP+Combo ports.Makes&Model:CISCO CBS350-24xS or equivalent in Juniper/Extreme			EACH	275139.00	550278
458		67	NOS	Supply ,installation, testing and commissioning of 24 port Managed Switch with 4 SFP slots Make & Model: CISCO CBS 350-24T-4G-IN or equivalent in Juniper/Extreme			EACH	49318.00	3304306
459		2	NOS	Supply ,installation, testing and commissioning of 48 port Managed Switch with 4 SFP slots Make & Model: CISCO CBS 350-48T-4G-IN or equivalent in Juniper/Extreme			EACH	93624.00	187248
460		2	NOS	Supply & Fixing of Cisco small business 8 port Gigabit POE Managed Switch with 2 SFP slots. Make & Model: CISCO CBS350-8P-E-2G or equivalent in Juniper/Extreme			EACH	30114.00	60228
461		67	NOS	Supply & Fixing of Cisco small business 24 port GE, full POE with 370W power budget, 4x1G SFP Make & Model: CISCO CBS350-24FP-4G-IN or equivalent in Juniper/Extreme			EACH	99540.00	6669180
462		35	NOS	Supply & Fixing of Wi-Fi Access point with mounting accessories etc.,complete. Make & Model: CISCO C9105AX or equivalent in RUKUS			EACH	48000.00	1680000
463		210	NOS	Supply & Fixing of 1G SFP module, single mode, 10KM range. Make & Model: CISCO GLC-LH-SMD or equivalent in Juniper/Extreme			EACH	19436.00	4081560
464		27	NOS	Supply & Fixing of 10G SFP module, single mode, 10KM range. Make & Model: CISCO SFP-10G-LR-S or equivalent in Juniper/Extreme			EACH	33274.00	898398
465		1	NO	Supply ,installation, testing and commissioning of Sophos XGS 3100 Next-Gen Firewall GS 3100 HW Appliance with 8 GE + 2 SFP + Ports, 1 expansion bay for optional Flexi Port Module, SSD + Base License including FireWall, VPN,&Wireless for unlimited users with required power cables etc complete. (Model :XG3ATCHIN or its equivalent)			EACH	484603.00	484603
466		1	NO	Supply ,installation, testing and commissioning of Xstream protection (Software) for XGS 3100-36 MOS bundle includes, Base Firewall [General Management, Xstream Architecture, Firewall, Networking and Routing, Base Traffic Shaping and Quotas, Secure Wireless, Authentication, Self-Serve User Portal, Base VPN Options, RED Site-to-Site VPN, Sophos Connect VPN Client] + Network Protection [Intrusion Prevention (IPS), ATP and Security Heartbeat™, SD-RED Device Management, Clientless VPN] + Web Protection [Synchronized Application Control, Web Protection and Control, Application Protection and Control, Cloud Application Visibility, Web and App Traffic Shaping] + Zero-Day Protection [Dynamic Sandbox Analysis, Threat Intelligence Analysis] + Central Orchestration* [SD-WAN Orchestration, Central Firewall Reporting Data -30 Days, CFR Advanced Features, XDR and MTR Connector] + Logging and Reporting + Sophos Central Management etc complete.(Model: XF3A3CSES or its equivalent)			EACH	985000.00	985000
467	2300.00		RM	Sitc of 6- core fiber cable indoor cable single mode, Loose- tube, Gel-filled,9/125 SM OS2	ONE	RM	80.00	184000	
468	3000.00		RM	Sitc of 6- core fiber cable single mode Outside Cable- Corrugated Steel tape Armoured, Loose- tube, Gel-filled,9/125 SM OS2	ONE	RM	85.00	255000	
469	149		NOS	sitc of LC-LC Single mode Duplex, LSZH Sheath, Patch Cord, 1 Meter			EACH	1152.00	171648
470	69		NOS	Supply , testing commissioning of 12-fiber LC-Style, Singlemode, 19-inch ,1U Rack mount Patch Panel pre loaded with LC duplex SM adapter, 12 LC, SM OS2 Pigtaills, Splice tray & Splice protectors Makes: Systimax /Legrand/Molex/Panduit/Siemon/AMP\			EACH	9500.00	655500
				G.I. RACEWAYS					
471				Supply and laying of the following sizes of G I Raceways of 2mm thick with top cover and required hard ware etc complete.					
a	730.00		RM	100mm x 25mm size	ONE	RM	592.80	432744	
b	780.00		RM	150mm x 25mm size	ONE	RM	771.10	601458	
c	960.00		RM	300mm x 25mm size	ONE	RM	1377.80	1322688	
472				Supply and Fixing of the following sizes of G.I. Junction box of 2mm thick for direct acces to cables at the inter section of Raceways.					
a	155		NOS	172mm x 52mm size			EACH	585.70	90784
b	317		NOS	222mm x 52mm size			EACH	709.60	224943
c	163		NOS	372mm x 52mm size			EACH	1212.90	197703
				TV & CC SURVEILLANCE SYSTEMS					

473	2220.00	RM	Supply and laying of RG 6 co-axial cable in the existing metallic/non metallic conduit pipe with connections etc., complete for TVs. Makes: Finolex / RR kabel / Havells KEI/Polycab/Gloster/Goldmedal/GM/Million	ONE	RM	44.00	97680
474	69	NOS	Supply and fixing of Modular co-axial socket type TV Antenna outlet in existing MS modular box with modular front cover plate with screws connections etc., complete. Makes : Legrand (Myrius)/ Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(Curve)		EACH	294.00	20286
475	21	NOS	Supply, Installation, Testing and Commissioning of 32CH Embedded 4K NVR 4SATA expandable up to 40TB, audio input & Output, Two way communication supported, G7.11 audio format support, 320Mb recording throughput, 16 alarm inputs & 4 Outputs, RS485, Esata and RS232 to be supported with maximum 16 users, Op. temp -10 to 50 deg. C, NDAA compliant, UL/CE/FCC certified. makes : Honeywell / Sony /Panasonic.		EACH	115649.00	2428629
476	15	NOS	Supply, Installation, Testing and Commissioning of 16CH Embedded 4K NVR 2SATA expandable up to 20TB, audio input & Output, Two way communication supported, G7.11 audio format support, 128Mb recording throughput, 8 alarm inputs & 1 Output, RS485, HDMI, VGA ports to be supported with maximum 16 users, Op. temp -10 to 50 deg. C, NDAA compliant, UL/CE/FCC certified. Make: MATRIX/ Honeywell/ Bosch/Tyco		EACH	57160.00	857400
477	9237	RM	Supply, laying, testing and commissioning of 4-pair, Cat-6 Solid (Third party ETL Intertek tested 600 MHZ above) to support 1Gbps with Cross (+) filler pair separator & PVC sheath 23 AWG, UTP Cable , Meets or exceeds ANSI/TIA-568-C.2 and UL Listed &RoHS Compliant in the existing raceways /pvc conduits including making connections to information outlets and patch panels with ferruling at both ends for identification with necessary tools for punching stripping crimping and testing required etc., complete. [for CC TV systems] Makes: Systimax /AMP/ Panduit/ Siemond/ Molex/Legrand	ONE	RM	51.10	472011
478	284	NOS	Supply, Installation, Testing and Commissioning of 2MP or higher IR MFZ Dome, 2.7-13.5mm DC Iris, 1/2.7" progressive CMOS image sensor, Min. Illumination 0.005 (color), S/N Ratio: 50dB, Electronics Shutter: 1/8 ~ 1/32000, IR Distance: 50M, People Counter, Multi Loitering, Intrusion, Tampering, Smart Motion Detection (SMD), Motion Detection ,WDR~120dB/BLC/HLC/3D DNR, Gain Control: 0 ~100%; SD card up to 256GB, PAN: 0-355, Tilt: 0-75, Rotation: 0-354; Video Compression: H.265 HEVC/H.264/MJPEG, Smart Codec; Triple Stream; Protocols: H.265 HEVC/H.264/MJPEG, Smart Codec; ONVIF: S/G/T; Op. Temp: -40 to 60 Deg; power consumption max. 6W; IP67,IK10,UL,NDAA,BIS Compliance. Makes :Honeywell / Sony /Panasonic.		EACH	21729.00	6171036
479	94	NOS	Supply, Installation, Testing and Commissioning of 2MP or higher IR MFZ Bullet, 2.7-13.5mm DC Iris, 1/2.7" progressive CMOS image sensor, Min. Illumination 0.005 (color), S/N Ratio: 50dB, Electronics Shutter: 1/8 ~ 1/32000, IR Distance: 60M, People Counter, MultiLoitering, Intrusion, Tampering, Smart Motion Detection (SMD), Motion DetectionWDR~120dB/BLC/HLC/3D DNR, Gain Control: 0 ~100%; SD card up to 256GB, Video Compression: H.265 HEVC/H.264/MJPEG, Smart Codec; Triple Stream; Protocols: H.265 HEVC/H.264/MJPEG, Smart Codec; ONVIF: S/G/T; Op. Temp: -40 to 60 Deg; power consumption max. 6W; IP67,IK10,UL &NDAA Compliance, Required accessories mounts to be considered. Makes :Honeywell / Sony /Panasonic.		EACH	21729.00	2042526
480	22	NOS	Supply and fixing of Surveillance HDD-4 TB. Make: Seagate/Hitachi/TOSHIBA		EACH	19428.00	427416
481	16	NOS	Supply and installation of 24 inch (60.96cm) Full HD LED Monitor with Wall Mountable Stand, Height Adjustable, HDMI and VGA Ports with all Accessories Make: Dell / LG / Samsung / Lenovo / HP		EACH	19258.00	308128
482	22	NOS	Supply and Fixing, Installation, Testing and Comissioning of Wall mounted Communication rack in two sections viz rear wall mount Section and hinged front section with glass doors, swing handles ,lock , Top and Bottom Cable entries,Supports for mounting rack on wall , Cable managers, Fan tray with 2 x 230 Volt fans, Equipment mounting hardware, wire managers , power supply box for supplying power to hubs, fans etc along with earth continuity kit, Mcb, indicator, moulded power supply cable, Blank panels , sliding shelves etc. 1) 6 U(44 mm) wall mounted Make: APW/HCL/Valrack/Netrack		EACH	7090.00	155980

483		4	NOS	Supply , Installation, Testing and Comissioning of Floor mounted Communication rack in two sections viz rearSteel Door and hinged front section with glass doors, swing handles ,lock on both doors, Top and BottomCable entries with gland plates ,Castor with brakes , 7no Cable managers, 1 no Fan tray with 2 x 230 Volt fans, Equipment mounting hardware, wire managers ,power supply box for supplying power to hubs, fans etcalong with earth continuity kit, Mcb, indicator, mouldedpower supply cable, Blank panels of 1u / 2 u , slidingshelves .Frame of communication rack should be madeof heavy grade Aluminum profile PS grey painted andpanels should be made from CRCA steel 18 swg RSBeige painted . 1) 42 U (44 mm)Floor Standing Rack 800WX1000D Make: APW/HCL/Valrack/Netrack			EACH	57569.00	230276
484		9	NOS	Supply Installation Testing and commissioning of High Speed HDMI male to male cable of length 10 mtr Make : BELKIN or any reputed approved make			EACH	7385.00	66465
485	620.00		RM	Supply and fixing of DLP PVC Mini-trunking with independent cover on wall/ ceiling 25 x 20 mm including cost of all accessories like end caps, Internal/External angles, flat Angles, flat joints etc., with all labour charges, transportaion etc., complete. Make: Legrand/ Modi/ Honeywell	ONE	RM	139.70	86614	
486	535.00		RM	Supply and fixing of 105/100 x 50 mm DLP PVC Trunking with flexible cover on wall/ ceiling including cost of all accessories like end caps, Internal/External angles, flat Angles, flat joints etc., with all labour charges, transportaion etc., complete. Make: Legrand/ Modi/ Honeywell	ONE	RM	666.90	356792	
487		40	NOS	Supply and fixing of 1 2MP H.265 IR Bullet Camera, 3.2 ~ 10mm (3.1x) motorized varifocal lens, Max. 30fps@2M all resolutions (H.265/H.264), H.265, H.264, MJPEG codec supported, Multiple streaming, Motion detection, Tampering, Defocus detection, Hallway view (90°/270°), LDC support, Micro SD/SDHC/SDXC memory slot (Max. 128GB), IR viewable length 30m, IP66, IK10, PoE/12VDC Make: Samsung Model QNO-6012R or its equivalent specification of makes Honeywell / Sony /Panasonic.			EACH	24050.00	962000
488		20	NOS	Fabrication, Transportation and supply of hot-dip galvanized Octogonal Pole with BSEN - 10025 grade S 355 JO steel plate for shaft, IS 2062 for base plate with Hinged door opening arrangement, including the supply of suitable boards with bakelite sheet as per IS specification suitable to withstand the wind speed of 180 KMPH for 5.0 Mtrs height Pole having dimensions Bottom 130 mm., Top 70mm with 3mm thick, base plate 220 x 220 x 12mm and 4 Nos of M20 x 700 long 'J' bolts along with template. Make : Bajaj / Valmont /Transrail			EACH	9500.00	190000
489		8	NOS	Fabrication, Transportation and supply of 2 Mtr Length Single Arm Bracket made with MS galvanized 40mm / 50mm dia Pipe. Makes: Bajaj / Valmont/Laasma /Transrail/Utkarsh/ Skipper			EACH	2900.00	23200
490		16	NOS	Supply and Fixing of P66 rated outdoor junction box with 600mm (W) x 600mm (H) x 350mm (D) with rain canopy for installation of Industrial grade switch, LIU, IOs			EACH	9300.00	148800
				PUBLIC ADDRESS SYSTEM					
491		7	NOS	Supply and Installation of 120Watt Booster Amplifier, The amplifier is protected against overload and shortcircuits. A temperature-controlled fan ensures highreliability at high output levels and low acoustic noiseat lower output levels. An overheat protection circuitswitches off the power stage and activates an LED onthe front panel, if the internal temperature reaches acritical limit due to poor ventilation or overload. Make: Bosch/ Honeywell.			EACH	22155.00	155085
492		30	NOS	Supply and installation testing and commissioning of Table top mounted gooseneck type Conference Delegate unit Loudspeaker volume is set centrally at the Control Unit for all delegate units. To prevent acoustic feedback, the built-in loudspeaker is automatically muted when the microphone is on, the headphone volume level can be adjusted by means of a thumbwheel on the unit for maximum comfort, Nominal Acoustic Input 85dB SPL, Frequency Response 400Hz to 10kHz, Length of the microphone fromthe base of the stem 488mm. Make: Bosch/ Honeywell.			EACH	16133.00	483990
493		4	NOS	Supply, Fixing and Installation of Table top/Podium mounted gooseneck type Conference Chairman unit Loudspeaker volume is set centrally at the ControlUnit for all delegate units. To prevent acoustic feedback, the built-in loudspeaker is automaticallymuted when the microphone is on, The headphone volume level can be adjusted by meansof a thumbwheel on the unit for maximum comfort. Make: Bosch/Honeywell.			EACH	19087.00	76348
494		4	NOS	Supply, Fixing and Installation of Rack mounted Conference Control unit, having digital acoustic feedback suppression facility that automatically eliminates acoustic feedback, giving better speech intelligibility by allowing the speaker volume to be turned up as loud as required without any risk of feedback. Make: Bosch/ Honeywell.			EACH	33005.00	132020
495		46	NOS	Supply and Fixing of Ceiling mount Speakers with 6W impedance with power taps of 1.5W/3W/6W etc., complete.. Make: Ahuja/Mega/Studio Master.			EACH	3667.00	168682

496		7	NOS	Supply, Fixing and Installation of 4 Channel Mixer, High-fidelity music and speech reproduction, selectable 8 ohm, 70 V and 100 V inputs, Compact yet robust ABS enclosure, Supplied with adjustable mounting bracket, Complies with international installation and safety regulations. Make: Bosch/Honeywell .			EACH	42265.00	295855
497		6	NOS	Supply and Installation of Wireless Handheld microphone, With the touch of a single button, ClearScan™ scans through all 32 preset channels and selects the clearest channel, which ensures noise-free operation over the longest operating range. In the increasingly cluttered world of RF, ClearScan™ gives you confidence that you can easily find an open frequency. Make: Bosch/Honeywell			EACH	33482.00	200892
498		9	NOS	Supply and Fixing of wireless hand held microphone Having Frequency Response of 40Hz-13kHz etc., complete. Make: Ahuja/Mega/Studio Master			EACH	5283.00	47547
499		11	NOS	Supply and Installation of Wireless Collar Microphone with Frequency Response of 40Hz-13kHz etc., complete. Make: Ahuja/Mega/Studio Master.			EACH	5454.00	59994
500		370	NOS	Supply, Installation, Testing and Commissioning of speakers with following specifications:12W Wall mount box Speaker, rated power: 12W, Tapings 100 volt line : 12/6/9WTransformer Impedance, Ohms , 100V : 1.67k/3.33k/6.66k, Frequency Response : 55-15,000 HzSPL at 1kHz (1W/1M) : min 85dB, Color / Finish : White RAL9016 / Black Makes - Bosch/Honeywell			EACH	1977.00	731490
501		7	NOS	Supplying, installing, testing and commissioning of 25 zone selector P.A. console and with CRCA sheet housing and control desk aslo included with rack arrangement as required. Console shall have all call / call back type complete with battery back up and it should also work on AC single phase power. (considered each floor one Zone) Makes - Bosch/Honeywell			EACH	30710.00	214970
502		44	NOS	Supply and Fixing of High fidelity 2-Way wall mountables with 10W impedance with power taps of 1.5W/3W/6W etc., complete. Make: Ahuja/Mega/Studio Master.			EACH	4522.00	198968
503		46	NOS	Supply and Fixing of Ceiling mount Speakers with 6W impedance with power taps of 1.5W/3W/6W etc., complete. Make: Ahuja/Mega/Studio Master.			EACH	3667.00	168682
504		88.00	RM	Supply and Laying of Microphone Cables and connectors etc., complete. Make: Prevailing models in Market.	ONE	RM		55.00	4840
505		450.00	RM	Supply and run of 2 core, 1 Sq.mm PVC insulated and FRLS flexible copper speaker cable for voltage up to 1100V as per IS 694/1990 etc., in the existing PVC conduit pipe/trunking system including labour charges etc., complete. Make: Finolex / RR kabel / Havells /KEI/Polycab	ONE	RM		31.00	13950
506		9	JOB	Testing and commissioning of the above Public Address systems as required at site .	ONE	Each JOB		2272.00	20448
507		13	NOS	Supply and Installation of 240Watt Booster Amplifier, The amplifier is protected against overload and shortcircuits. A temperature-controlled fan ensures highreliability at high output levels and low acoustic noiseat lower output levels. An overheat protection circuit switches off the power stage and activates an LED onthe front panel, if the internal temperature reaches acritical limit due to poor ventilation or overload. Make: Bosh/HoneyWell			EACH	32000.00	416000
508		4	NOS	Supply and Installation of 480Watt Booster Amplifier, The amplifier is protected against overload and shortcircuits. A temperature-controlled fan ensures highreliability at high output levels and low acoustic noiseat lower output levels. An overheat protection circuitswitches off the power stage and activates an LED onthe front panel, if the internal temperature reaches acritical limit due to poor ventilation or overload. Make: Bosh/Honeywell			EACH	65000.00	260000
509		7	NOS	Supply and Installation of 500Watt Booster Amplifier, The amplifier is protected against overload and shortcircuits. A temperature-controlled fan ensures highreliability at high output levels and low acoustic noiseat lower output levels. An overheat protection circuitswitches off the power stage and activates an LED onthe front panel, if the internal temperature reaches acritical limit due to poor ventilation or overload. Make: Bosh/Honeywell			EACH	68000.00	476000
510		8	NOS	Supply and Installation of PA MAIN CONSOLE 6 ZONE CONTROLLER(Make :AHUJA)			EACH	42000.00	336000
511		8	NOS	Supply and Installation of GOOSE NECK MIC(Make :AHUJA)			EACH	42000.00	336000
512		46	NOS	Supply and Fixing of Ceiling mount Speakers with 6W impedance with power taps of 1.5W/3W/6W etc., complete. Make: Ahuja/Mega/Studio Master.			EACH	3228.00	148488
BUILDING MANAGEMENT SYSTEM (Main BMS Items)									

513		1	SET	Supply, Installation, Testing & Commissioning of BMS server with following Latest Intel microprocessor xeon or higher processor, 2.7 to 3.0Ghz or above clock speed, 16 GB expandable upto 32GB DDR 4 RAM,HDD - 1TB SATA, R/W CD / DVD drive, Flat Monitor - 32" LED, Serial Ports - 2 Nos, USB Ports - 4 Nos, Network Card 10/100/1000MB, Graphics card 1GB, Windows Operating System-Higher version, MS office suite Anti virus, Optical mouse & key board etc.as per detailed technical specifications and approved make including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Makes HP/IBM/DELL	ONE	SET	493657.00	493657
514		1	SET	Supply, Installation, Testing & Commissioning of BMS Client Workstation with following Latest Intel microprocessor i7 / higher , 2.7 to 3.0Ghz or above clock speed, 8GB expandable upto 32GB DDR 4 RAM, HDD - 1TB SATA ,R/W CD / DVD drive,Flat Monitor - 32" LED,Serial Ports - 2 Nos,USB Ports - 4 Nos with atleast 2 NOs USB 3.0 Ports,Network Card 10/100/1000MB - 2 Nos,Graphics card 1GB,Windows 10 Operating System / Higher, MS office suite Anti virus, Optical mouse & key board etc.as per detailed technical specifications and approved make. Makes HP/IBM/DELL	ONE	SET	118728.00	118728
515		1	NO	Supply, Transportation and installation of All-in-One (Print,Copy, Scan) with duplex, auto document feeder having the features: -Print Resolution 600 x 600dpi, Print Speed (A4) 27ppm, Auto Duplex Printing Standard , Available Paper Size for Auto Duplex Print A4, Letter, Legal (*1), Indian Legal, Fullscape , COPY Copy Speed (A4) 27ppm, Maximum Number of Copies Up to 999 copies, Scan Type Colour Contact Image Sensor , Scan Resolution Optical Up to 600 x 600dpi Pull Scan Yes, USB and Network . Makes: Canon imageCLASS MF244dw /HP/Brother DCPB7535DW or its equivalent		EACH	28182.00	28182
516		1	SET	Supply, Installation, Testing & Commissioning of Building Control System Software - MAIN BMS SERVER SOFTWARE, of the following windows based graphical software for IBMS system with 1No Client for Operator workstation, 1No Client for Engineer workstation. The Software shall have 3D & HD vector dynamic graphics with Autocad import of plan with Zoom In & Zoom Out facility, Native 64 Bit System , BTL,UL,EN Certified System, BACnet Profile B-AWS (Advanced workstation) as per the BTL Listing, dot net platform, Certified OPC DA Server by OPC Foundation, Web-Based Server software shall permit use of Standard Web-Browsers such as Microsoft Internet Explorer, Chrome, Firefox, Netscape Navigator, etc. The Software shall comply to international standards and strive to deliver products that meet security standards such as ISA/IEC 62443, UL2900, ISO/IEC 27001, ISO/IEC62443 and OWASP. Cybersecurity audit trail , 4-eye principle , Seamless integration of certificates within customer IT infrastructure, Microsoft's active directory-based authentication, Use of network infrastructure that supports physical network or VLAN segmentation, Placing the web server in a "demilitarized zone" (DMZ), End-to-end encryption, from client to server, End-to-end encryption between servers, Certificate-based data exchange, Encrypted backups. The software shall have the capability to integrate with BIM Modelling. The software shall be Energy Conservation Calculation Software, Energy Management & Engineering Software and Software license shall be for 100% spare license. The software shall be Server based with all other accessories complete as required including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: - Honeywell / Siemens/ Schneider/Johnson Controls/Delta	ONE	SET	812347.00	812347
517		1	SET	DDC for Air Handling Unit -(2 AHU per DDC)- Supply, Installation, Testing & Commissioning of 32 Bit Microprocessor true IP Based DDC supporting and I/O's designed as per the IO Summary with all other mounting accessories,The controller shall have inbuilt 2-port Ethernet switch . The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules,The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash.each DDC should contain 20% spare IO for each type of below mentioned IO's. DDC Internal Cabling shall be BMS vendor scope. For more Details, Please refer IO Summary and as per detailed technical specifications and approved make including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make:- Honeywell / Siemens/ Schneider/Johnson Controls/Delta	ONE	SET	77485.00	77485

518		1	SET	DDC for OT - Air Handling Unit - (1 AHU per DDC)- SITC of True IP Based DDC Standalone 32 Bit Intelligent, peer to peer communication, interoperable DDC as per the specification. The compact controller shall have inbuilt 2-port Ethernet switch with WLAN interface. The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules. The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash. The controller shall be freely programmable and have System functions (alarming, scheduling, trending, access protection with individually definable user profiles and categories). It should have Cloud connectivity for remote access and inbuilt port for POT for local interface. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta	ONE	SET	70545.00	70545
519		1	SET	DDC for Ventilation and Lift Lobby Pressurization Fans- (4 Fans per DDC)- SITC of True IP Based DDC Standalone 32 Bit Intelligent, peer to peer communication, interoperable DDC as per the specification. The compact controller shall have inbuilt 2-port Ethernet switch with WLAN interface. The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules. The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash. The controller shall be freely programmable and have System functions (alarming, scheduling, trending, access protection with individually definable user profiles and categories). It should have Cloud connectivity for remote access and inbuilt port for POT for local interface. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta	ONE	SET	68982.00	68982
520		1	SET	DG - SITC of True IP Based DDC Standalone 32 Bit Intelligent, peer to peer communication, interoperable DDC as per the specification. The compact controller shall have inbuilt 2-port Ethernet switch with WLAN interface. The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules. The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash. The controller shall be freely programmable and have System functions (alarming, scheduling, trending, access protection with individually definable user profiles and categories). It should have Cloud connectivity for remote access and inbuilt port for PO. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta	ONE	SET	75611.00	75611
521		1	NO	DDC for Transformer/HT/LT- Supply, Installation, Testing & Commissioning of 32 Bit Microprocessor true IP Based DDC supporting and I/O's designed as per the IO Summary with all other mounting accessories,The controller shall have inbuilt 2-port Ethernet switch . The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules,The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash.each DDC should contain 20% spare IO for each type of below mentioned IO's. DDC Internal Cabling shall be BMS vendor scope. For more Details, Please refer IO Summary..as per detailed technical specifications and approved make including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	225548.00	225548
522		1	NO	DDC for Lifts- Supply, Installation, Testing & Commissioning of 32 Bit Microprocessor true IP Based DDC supporting and I/O's designed as per the IO Summary with all other mounting accessories,The controller shall have inbuilt 2-port Ethernet switch . The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules,The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash.each DDC should contain 20% spare IO for each type of below mentioned IO's. DDC Internal Cabling shall be BMS vendor scope. For more Details, Please refer IO Summary.as per detailed technical specifications and approved make including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	75611.00	75611
523		1	NO	DDC for Plumbing System & Fire Fighting - Supply, Installation, Testing & Commissioning of 32 Bit Microprocessor true IP Based DDC supporting and I/O's designed as per the IO Summary with all other mounting accessories,The controller shall have inbuilt 2-port Ethernet switch . The controller shall have 16 inputs/outputs inbuilt and can be expandable upto max 40 points by Input/Output Modules,The DDC shall have 300 Mhz processor with 128 MByte SDRAM (DDR3) and 512 MByte NAND Flash.each DDC should contain 20% spare IO for each type of below mentioned IO's. DDC Internal Cabling shall be BMS vendor scope. For more Details, Please refer IO Summary..as per detailed technical specifications and approved make including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	72486.00	72486

524		1	LOT	Software Integration- SITC of True IP Based BTL & UL Listed for third party integration for AHU VFD's, VRV System, Thermostates, DG/UPS/LT/HT Panel and Fire Alarm Systems. The controller shall have 2-port Ethernet switch and WLAN interface. It should have BTL label (BACnet communications passed the BTL test) and consisting of Dual microprocessor with Storage capacity of 1 GB RAM. It should support Real Time clock upto 7 Days. It should Support of the major communication protocols: BACnet/IP, BACnet MS/TP, Modbus IP and Modbus RTU upto 500 points. Integrator shall be of same make only. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta	ONE	LOT	312441.00	312441
525		1	NO	Supply, Installation, Testing & Commissioning of Ambient Temperature + RH Sensor with all the mounting accessories included. Temp sensor shall be Pt 1000 RTD type with 4 to 20mA transmitter or thermister type and RH sensor shall be capacitive type with 4 to 20mA transmitter. The temperature measurement range shall be 0 to 50oC and humidity range shall be 0 to 95% RH as technical specification with all other mounting accessories complete as required including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	23500.00	23500
526		2	NOS	Supply, fixing, Testing & Commissioning of Room Type Temprature+Humidity Sensor including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	17097.00	34194
527		19	NOS	Supply, Installation, Testing & Commissioning of Differential Pressure Switch (DPS) with all the mounting accessories included. The maximum pressure limit shall be 0-1000Pa as technical specification with all other mounting accessories complete as required. Field Devices & internal cabling of AHU shall be BMS vendor scope including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	3063.00	58197
528		19	NOS	Supply, Installation, Testing & Commissioning of Duct Static Pressure Sensor with all the mounting accessories included. The maximum pr limit shall be 0-500Pa all other mounting accessories complete as required. Field Devices & internal cabling of AHU shall be BMS vendor scope including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	8560.00	162640
529		10	NOS	Supply, fixing, Testing & Commissioning of Duct Temprature Sensors including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	4241.00	42410
530		20	NOS	Supply, installation, testing and commissioning of Return air CO2 Sensor including all charges complete etc as directed by Engineer In Charge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	19729.00	394580
531		10	NOS	Supply, fixing, Testing & Commissioning of Current Relay including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make:- L&T/ABB/Meco/Schneider/Siemens		EACH	2562.00	25620
532		10	NOS	Supply, fixing, Testing & Commissioning of Voltage Transducer including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make:- L&T/ABB/Meco/Schneider/Siemens		EACH	8123.00	81230
533		10	NOS	Supply, fixing, Testing & Commissioning of Ultrasonic Water Level Sensor (Note: Level should indicate as Liter bases in BMS Screen) for Water tank as technical specification with all other mounting accessories including all charges complete etc as directed by Engineer In Charge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	24356.00	243560
534		4	NOS	Supply, fixing, Testing & Commissioning of Flame Proof Diesel Level Sensor for Diesel Day Tank Monitoring. Tank Height 1 Mtr including all charges complete etc as directed by Engineer Incharge/ departmental authorities. Make: Honeywell / Siemens/ Schneider/Johnson Controls/Delta		EACH	15445.00	61780
535		4000.00	RM	Supply, Laying, Termination of ISI Certified 2 Core 1.5 sq.mm(for Signal & Field devices, Third Party Integration ect...) ATSC, PVC insulated, armored, TinnedCopper, twisted, shielded, PE insulated, Cable with proper ferrules, lugs and other necessary accessories. The spec shall meet the system manufacturer specifications including all charges complete etc as directed by Engineer In Charge/ departmental authorities. Makes : RPG / Finolex / Paragon / V-Guard / Delton	ONE	RM	74.00	296000

536	500.00	RM	Supply, Laying, Termination of ISI Certified 4 Core 1.5 sq.mm (for Valves, Temp & RH ect...) ATSC, PVC insulated, armored, Tinned Copper, twisted, shielded, PE insulated, Cable with proper ferrules, lugs and other necessary accessories. The spec shall meet the system manufacturer specifications including all charges complete etc as directed by Engineer In Charge/ departmental authorities. Makes: RPG / Finolex / Paragon / V-Guard / Delton	ONE	RM	107.00	53500
537	300.00	RM	Supply , testing commissioning of fibre optic cable single mode with all required acceseries including all charges complete etc as directed by Engineer In Charge/ departmental authorities. Makes: RPG / Finolex / Paragon / V-Guard / Delton	ONE	RM	80.00	24000
538	1	NO	Supply & installation,testing & commissioning of system intigrator for connecting energy meter to BMS software Make : Siemens/Honeywell/Delta/Johnson controls		EACH	150000.00	150000
539	2	NOS	Supply , installation and testing commissioning of network switch 12 port, 10/100/1000MBPS with all required acceseries including all charges complete etc as directed by Engineer In Charge/ departmental authorities.Makes - Cisco/Juniper/ Extreme		EACH	27500.00	55000
540	2	NOS	Supply & Fixing of Cisco small business 24 port GE, full POE with 370W power budget, 4x1G SFP Make & Model: CISCO CBS350-24FP-4G-IN or equivalent in Juniper/Extreme		EACH	99540.00	199080
541	1	NO	Supply & installation,testing & commissioning of system intigrator for connecting energy meter to BMS software Make : Siemens/Honeywell/Delta/Johnson controls		EACH	150000.00	150000
542	1	NO	Supply , installation and testing commissioning of network switch 12 port, 10/100/1000MBPS with all required acceseries including all charges complete etc as directed by Engineer In Charge/ departmental authorities.Makes - Cisco/Juniper/ Extreme		EACH	27500.00	27500
AUDIO AND VIDEO SYSTEM							
543	14	NOS	Supply and Fixing of Ceiling Mount Kits for Projector etc. complete. Make:OEM Make or Custom make.		EACH	10305.00	144270
544	30	NOS	Supply and Fixing of 55" Full HD LED Large format Display (LFD) Commercial model for 24x7 operations, As 1920 x 1080 (16:9) resolution & 170°/160°(H/V) viewing angle, with HDMI & VGA Interface etc., complete as. Make: Samsung/LG/Sony		EACH	80060.00	2401800
545	30	NOS	Supply and Fixing of Ceiling Mount Kits for front LED etc. complete. Make:OEM Make or Custom make.		EACH	11221.00	336630
546	14	NOS	Supply and Fixing of 25 Mtr HDMI cable for projector and LED etc. complete. Make: Custom make		EACH	21182.00	296548
547	14	NOS	Supply and Fixing of Wireless remote control Laser point Presenter and Slider etc. complete. Make: Logitech		EACH	6320.00	88480
548	11	NOS	Supply and Fixing of 28U rack for install all AV equipment etc. complete. (Make: Custom make)		EACH	17062.00	187682
549	14	NOS	Supply, installation, testing & comissioning of 2.4 GHz Digital Wireless Handheld Microphone with 256 bit AES Encryption, Frequency Response: 70 Hz–20 KHz, Dynamic Range: 116 dB @ 1 KHz, Signal-to-noise: >90 dBA, Latency<=2.9ms alongwith Up to 12 Hours battery life. Makes: Sennheiser / AKG / Electrovoice/JBL/Bose		EACH	38000.00	532000
550	14	NOS	Supply, installation, testing & comissioning of 2.4 GHz Digital Wireless Lapel Microphone with 256 bit AES Encryption, Frequency Response: 20 Hz–20 KHz, Dynamic Range: 116 dB @ 1 KHz, Signal-to-noise: >90 dBA, Latency<=2.9ms alongwith Up to 12 Hours battery life. Makes: Sennheiser / AKG / Electrovoice/JBL/Bose		EACH	38000.00	532000
551	10	NOS	Supply, installation, testing & comissioning of 250 Watt Mixing Amplifier with frequency response 50Hz to 15kHz +/-3 dB, THD <10%, Inputs: 6 x Mic, 2 x Aux, 1 x Line inputs, Outputs: 1 x Preamp out & 1 x Line out, Signal to Noise ratio:70db, with Bass and treble control. Approved Makes: Bose / JBL / Dynacord / Audac		EACH	23750.00	237500
552	20	NOS	Supply, Installation, Testing and Commissioning of Two way ceiling speaker 4" LF Driver, 0.75" Tweeter, Power Handling Capacity : 60 Watt continuous program power, Sensitivity (SPL 1W/1m) : 87 dB, Peak SPL: 108 dB, Frequency Range: 75 Hz – 20 kHz, Coverage : 120° Conical, impedance: 8 ohms, UL / EN certified, along with integrated steel backcan complete as required. Approved Makes: Bose / JBL / Electrovoice		EACH	9207.00	184140
553	10	NOS	Supply and Fixing of Pop up box etc. complete. (Make: Customs)		EACH	3570.00	35700
554	10	NOS	Supply, installation, testing and commissioning of Wi-fi router. Approved Makes: D-Link / Cisco / Netgear		EACH	4180.00	41800
555	14	NOS	Supply Installation Testing and Commissioning of 15" Passive Loudspeaker - 15" woofer for low-end punch in a compact enclosure and 1.5" high-frequency titanium compression driver 55 Hz - 20 kHz frequency range 250 W continuous and 1000 W peak power handling 95 dB SPL sensitivity etc complete for Lecture Gallery Model No: ZLX 15 Make:Electrovoice/ or equivalent in Bose/JBL		EACH	48000.00	672000
556	14	NOS	Supply Installation Testing and Commissioning of Surround 400Watts Peak Speakers with necessary connections etc complete for Lecture Gallery Make:EVID 4.2 Electrovoice/ or equivalent in Bose/JBL		EACH	32000.00	448000

557		7	NOS	Supply Installation Testing and Commissioning of Fully integrated 600W, 2 Channel Stereo Power Amplifier with FIR Drive technology, Low Z operation and power saving standby mode or BETTER to suit the power requirement of proposed FOH speakers & Subwoofers; Maximum Output Power,Dual Channel:600Watt Make: L1300 Electrovoice (Dyncord) or equivalent in Bose/JBL	EACH	56000.00	392000
558		7	NOS	Supply Installation Testing and Commissioning of Digital Podium with Top Sliding Mechanism Visualizer Tray Rack for Equipment's 21.5 inches Touch Screen Monitor Laptop Interface with inbuilt switcher and Gooseneck Microphone Make: People Link/ Uni Vesco	EACH	165000.00	1155000
559		6	NOS	Supply Installation Testing and Commissioning of Audio Video Switcher with De Embedder to Integrate Multiple Inputs and Give Multiple Inputs and Integration with Video Make: VS44UHDA or VM0404HA Kramer/ Aten	EACH	89000.00	534000
560		12	NOS	Supply Installation Testing and Commissioning of 1/2.8" HD CMOS sensors 20 X PTZ Camera with USB and HDMI Output Wide Viewing Angle up to 59.8" Degrees Full HD 1080p signal output format with a high frame rate of 60 fps Make: Adonis/Samsung/Bosch	EACH	68000.00	816000
561		8	NOS	Supply Installation Testing and Commissioning of WUXGA (1920x1200) 5000 Ansilumens Ultra short throw projector with Contrast ratio of 3,00,000:1 30-bit (1.07 billion colors) having Light source of Laser projection of 150" Diagonal Make: BENQ LU960UST or equivalent in HITACHI/Sony/LG/	EACH	245000.00	1960000
562		4	NOS	Supply Installation Testing and Commissioning of WUXGA (1920x1200) 5000 Ansilumens projector with Contrast ratio of 3,00,000:1 30-bit (1.07 billion colors) having Light source of Laser projection of 150" Diagonal Make: BENQ LU930 or equivalent in HITACHI/Sony/LG	EACH	165000.00	660000
563		14	NOS	Supply Installation Testing and Commissioning of 150" Diagonal Motorized Screen with Mattwhite finish to give accurate colors with necessary mounting Make: Libert/Prolite/Suvira	EACH	38000.00	532000
564		6	NOS	Supply Installation Testing and Commissioning of 65" Interactive Panel to connect Laptop, Android Mobile and Inbuilt PC with Speakers and 20 touch points Android 8.0, 4GB RAM, 32GB Memory Inbuilt PC: Core i5 11th Generation, 8GB RAM, 128GB SSD, Windows 10 Enterprise Make: E6520C Maxhub /LG DK Series	EACH	175000.00	1050000
565		8	NOS	Supply Installation Testing and Commissioning of 4X2 Video Switcher for integrating Cameras with Display to give Multiple Outputs Make: VM 42H2 Kramer/Aten	EACH	74000.00	592000
566				Supply Installation Testing and Commissioning of High Speed HDMI male to male cable of length. Make : BELKIN or any reputed approved make			
		8	NOS	5 Mtr	EACH	3692.00	29536
		14	NOS	10 Mtr	EACH	7385.00	103390
		10	NOS	25 Mtr	EACH	18462.00	184620
567		10	NOS	Supply Installation Testing and Commissioning of 75" Interactive Panel to connect Laptop, Android Mobile and Inbuilt PC with Speakers and 20 touch points Android 8.0, 4GB RAM, 32GB Memory Inbuilt PC: Core i5 11th Generation, 8GB RAM, 128GB SSD, Windows 10 Enterprise Make: E7520C, Maxhub/LG DK series	EACH	215000.00	2150000
568		4	NOS	Supply, testing & Installation of all-in-one intelligent USB meeting device for small and huddle rooms. Featuring 20MP camera and 133 ° super-wide-angle lens, UVC40 delivers outstanding video quality. Together with the electric lens cap, its AI technologies including face detection, sound localization, and speaker tracking and so on allow users to experience a smarter and safer video conference. With 8 MEMS microphone arrays and high fidelity speaker, UVC40 brings excellent call quality even in full-duplex mode. Moreover, UVC40 supports remote management on Yealink Device Management Platform via its built-in Wi-Fi Make & Model: Yealink UVC-40 or its equivalent in Poly studio/ Logitech	EACH	131250.00	525000

569		1	NO	Supply, installation, testing & commissioning of All in one device for 4 Full HD 1080p60 or better Video Sources Capturing, Mixing, Switching, Recording and Live Streaming, Must Support Versatile Inputs: HDMIx4, Line inx4, and IP Streaming Channels x 4,6-Pin phoenix for balanced audio input, 2 HDMI output, 1 line output,RS232 for camera control or better, Device must have capability of inbuilt 2 TB storage. USB drive recording throw front panel, NAS storage support or better, Device must record simultaneous and optional recording of selected 4 inputs and 1 mixed output, dongle for wireless presentation and keypad must be included in the package, AUDIO INPUT INTERFACE 3.5mm Stereo: 4 channels; HDMI: 4 channels; RJ-45: up to 4 channels.AUDIO OUTPUTS -3.5mm Stereo line out: 1 channel; HDMI: 2 channel OEM must have software GUI platform to control of their video recording/streaming in real-time. It makes users easily switch and mix between sources, add or remove logos,backgrounds and overlay graphics (titles) for live production etc, Device must be capable of streaming mixed video to 2 or more platforms simultaneously, such as YouTube, Facebook, Zoom, and other live broadcasting websites with not delay of not more than 1 sec. Must support protocols VISCA / PELCO-D / PELCO-P / VISCA over IP/ONVIF profile S,m RTP,RTMP(RTMPs) and more.must be Integrated with Kaltura, Panopto and Opencast Video Management Systems. Make :- LS860 ARECor equivalent in /KRAMER/EXTRON (For Master Lecture Theatre in College)						
						EACH	365000.00	365000		
570		6	NOS	Supply Installation Testing and commissioning of 12 channel Audio Mixer model:MG12. Make : Yamaha / Sound craft / NX Audio.		EACH	53000.00	318000		
				ELECTRO-MECHANICAL WORKS GRAND TOTAL				649410501		
				COMPREHENSIVE ANNUAL MAINTENANCE FOR ELECTRO-MECHANICAL WORKS (2+5 YEARS)						
				Fire Fighting Equipments						
571				Comprehensive Annual Maintenance of all Fire Fighting Systems including all hydrant systems, sprinkler and alarm systems, extinguishers in all buildings including maintenance of all fire pumps etc., for a period of 7 years, (including the defective liability period of 2 years) after completion of work including cost of all consumables, and periodical cleaning, servicing and testing of all fire pumps and motors, strictly as per the service schedule/program given by OEM including cost of replacement of all spares whatever required for all the equipments for effective and proper functioning of Fire Fighting Systems including refilling and reconditioning of all fire extinguishers, replacement of sprinkler quartz bulbs, all types of damaged valves, hose pipes etc., and cost and conveyance of all materials and all labour charges etc., complete as required at site. [First & Second Years comes under the Defect Liability Period]						
a		1	Year	For Third year after completion of work	PER	Year	871590.00	871590		
b		1	Year	For Fourth year after completion of work	PER	Year	915170.00	915170		
c		1	Year	For Fifth year after completion of work	PER	Year	960929.00	960929		
d		1	Year	For Sixth year after completion of work	PER	Year	1008975.00	1008975		
e		1	Year	For Seventh year after completion of work	PER	Year	1059424.00	1059424		
				Electrical Sub-Stations, Transformers & Generators						
572				Comprehensive Annual Maintenance of Hospital Sub-station (ESS-1) & Medical College Sub-Station (ESS-2) & Nursing College Area Sub-station (ESS-3) in all the Buildings duly attending all external and internal electrical complaints and breakdowns in all the buildings in the entire campus and 33 KV and 11 KV Sub-Stations, Transformers, VCBs, Generators and all HT & LT Panels, all types of HT & LT Cables etc., for a period of 7 years, (including the defective liability period of 2 years) after completion of work						
				The job involves maintenance all 33 KV HT & LT Panels, APFC and AMF Panels, 33 KV Transformers, Generators, repairs to all types of HT & LT Cables, Sub-station yard, earthing systems including replacement of all spares and periodical cleaning, servicing and testing of all HT and LT breakers, transformers, generators etc., through manufacturer's authorised service personnel, strictly as per the service schedule/program given by the OEM and all repairs/ spares whatever required for effective and proper functioning of the power system in the campus including cost and conveyance of all materials and all labour charges etc., complete.						
				The job also includes the cost of all consumables required during servicing like transformer oil, generator engine oil, coolant oil, replacement of engine oil filters, distilled water etc., which are required during servicing to be taken up by the OEM or their authorised service personnel including cost & conveyance of all materials and all labour charges etc., complete.						
i)				33 KV, VCB (Incomer/Outgoing)						
				Annual Maintenance of 33 KV, 800A, 3-way VCB Panel having one incomer VCB and two Outgoing VCBs by authorised service personnel of OEM, one visit per year including cleaning, servicing and testing all components and ON/OFF/TRIP mechanisms etc excluding cost of spares if any needed as per site condition once in an year for 8 No VCBs for a period of 7 years, (including the defective liability period of 2 years)						

a)		8	NOS	For First Year after Commissioning			EACH	15000.00	120000
b)		8	NOS	For Second Year after Commissioning			EACH	15750.00	126000
c)		8	NOS	For Third year after completion of work			EACH	16538.00	132304
d)		8	NOS	For Fourth year after completion of work			EACH	17365.00	138920
e)		8	NOS	For Fifth year after completion of work			EACH	18233.00	145864
f)		8	NOS	For Sixth year after completion of work			EACH	19145.00	153160
g)		8	NOS	For Seventh year after completion of work			EACH	20102.00	160816
				33 KV/433V, 2.0 MVA/1.6 MVA Transformers					
573		28	NOS	Routine maintenance of 33KV/433 KV, 2 No of 2.0 MVA and 2 No of 1.60 MVA Oil filled Transformers, including testing of insulation resistance, oil break down strength, reconditioning / replacement of silicazel, servicing and testing of OLTC and testing cleaning of transformer and topping upto oil level if required once in an year as per requirement as per site condition/as suggested by the OEM for a period of 7 years, (including the defective liability period of 2 years) after commissioning. (extra cost will be paid for oil).			EACH	5346.00	149688
574		28	NOS	Testing of Transformer oil for dielectric breakdown strength once in an year, for a period of 7 years, (including the defective liability period of 2 years) after commissioning for 2.0 MVA/1.60 MVA, 33KV/433V, Transformers			EACH	713.00	19964
575		42000	LTRS	Filtration of transformer oil as per ISS specifications filters to dielectric strength above 40KV, at site (per Ltr) excluding transportation, once in an year for a period of 7 years, (including the defective liability period of 2 years) after commissioning for 2.0 MVA/1.6 MVA, 33KV/433V, Transformers as required at site.	ONE	LITER		12.00	504000
576		8400	LTRS	Supply of new and tested transformer oil as per IS-335 - 1972 (per Ltr) once in an year for a period of 7 years, (including the defective liability period of 2 years) after commissioning for 2.0 MVA/1.6 MVA, 33KV/433V, Transformers as required at site.	ONE	LITER		143.00	1201200
577		28	NOS	Replacing old and unserviceable gasket of top cover plate of transformer having capacity 2.0 MVA as and when required once in an year for a period of 7 years, (including the defective liability period of 2 years) after commissioning for 2.0 MVA/1.6 MVA, 33KV/433V, Transformers as required at site.			EACH	1188.00	33264
578		36	NOS	Replacing old and unserviceable gasket of HT bushing for the transformer having capacity 2.0 MVA/1.60 MVA as and when required once in an year for a period of 7 years, (including the defective liability period of 2 years) after commissioning for 2.0 MVA/1.6 MVA, 33KV/433V, Transformers as required at site.			EACH	1600.00	57600
579		48	NOS	Replacing old and unserviceable gasket of LT bushing for the transformer having capacity 2.0 MVA/1.60 MVA as and when required once in an year for a period of 7 years, (including the defective liability period of 2 years) after commissioning for 2.0 MVA/1.6 MVA, 33KV/433V, Transformers as required at site.			EACH	3500.00	168000
580				Attending power breakdowns due to cable faults by supply and making heat shrinkable type indoor/ outdoor/straight through terminations/joint kit of make Makes: Raychem /M seal/ Denson/ Multy/ Transeal- Hongshang, suitable for XLPE insulated 33 KV cable, with all required components, prepration of cable ends, testing etc. as required at site and restoration of power with all labour charges and transportation etc., complete of following sizes for a period of 5 years from 3rd year to 7th year after completion of work (after the defective liability period of 2 years).					
a		10	SET	Indoor Termination Kit for 33 KV XLPE Cable : 3 core 300/400 sqmm	ONE	SET		20328.00	203280
b		10	SET	Outdoor Termination Kit for 33 KV XLPE Cable : 3 core 300/400 sqmm	ONE	SET		28587.00	285870
c		10	SET	straight through termination kit for 33 KV XLPE Cable :3 core 240/300/400 sqmm	ONE	SET		60349.00	603490
				LT cables					
581				Attending power breakdowns due to cable faults by supply and making heat shrinkable type indoor/ outdoor/straight through terminations/joint kit of make Makes: Raychem /M seal/ Denson/ Multy/ Transeal- Hongshang, suitable for PVC/ XLPE insulated aluminium conductor LT cable of 1.1 KV grade, with all required components, cost of compound, sleeves and prepration of cable ends, testing etc. as required at site and restoration of power with all labour charges and transportation etc., complete of following sizes for a period of 5 years from 3rd year to 7th year after completion of work (after the defective liability period of 2 years).					
a		10	SET	3.5core x 25/35/50 sq.mm	ONE	SET		1906.00	19060
b		10	SET	3.5 corex 70/95/120 sq.mm	ONE	SET		3049.00	30490
c		10	SET	3.5 corex 150/185/240 sq.mm	ONE	SET		4447.00	44470
d		10	SET	3.5core x 300/400 sq.mm	ONE	SET		6988.00	69880
e		10	SET	4 corex 6/10/16 sq.mm	ONE	SET		1016.00	10160
				ACBs					

582		200	NOS	Carryout routine maintenance, servicing and testing of 630A to 3200A L.T. ACBs by cleaning fixed contacts, moving contacts and archchutes including servicing and putting the ACB in perfect working condition after detting all relay and ON, OFF mechanism etc done with only manufacturing companies/authorised service personnel of OEM once in an year for a period of 7 years, (including the defective liability period of 2 years) after commissioning as required at site.		EACH	5940.00	1188000
				DG Sets Maintenance				
583				Comprehensive Annual Maintenance for a period of 7 years, (including the defective liability period of 2 years) after commissioning, for 625 KVA/500 KVA/250 KVA/125 KVA/62.5 KVA Diesel Generator Sets in the Hospital Buildings & Medical College, Nursing College, Hostels, Residential Blocks and other areas by authorised service personnel of the OEM including general servicing, cleaning and testing of engine & alternator, AMF Panels once in an year including cost of all consumables like Engine Oil, Coolant Oil, Engine Oil Filters etc., as per manufacturers specifications and standards as required at site during servicing. The job also includes incidental repairs and attending all complaints/service requests etc., complete, for 12 visits per each year for each DG set.				
I				For 2 No of 62.5 KVA DG Sets				
a		2	NOS	for First Year after Commissioning		EACH	14316.00	28632
b		2	NOS	For Second Year after of Commissioning		EACH	15032.00	30064
c		2	NOS	For Third Year after of Commissioning		EACH	15784.00	31568
d		2	NOS	For Fourth Year after of Commissioning		EACH	16573.00	33146
e		2	NOS	For Fifth Year after of Commissioning		EACH	17402.00	34804
f		2	NOS	For Sixth Year after of Commissioning		EACH	18272.00	36544
g		2	NOS	For Seventh Year after of Commissioning		EACH	19186.00	38372
II				For 3 No of 125 KVA DG Sets				
a		3	NOS	for First Year after Commissioning		EACH	28120.00	84360
b		3	NOS	For Second Year after of Commissioning		EACH	29526.00	88578
c		3	NOS	For Third Year after of Commissioning		EACH	31002.00	93006
d		3	NOS	For Fourth Year after of Commissioning		EACH	32552.00	97656
e		3	NOS	For Fifth Year after of Commissioning		EACH	34180.00	102540
f		3	NOS	For Sixth Year after of Commissioning		EACH	35889.00	107667
g		3	NOS	For Seventh Year after of Commissioning		EACH	37683.00	113049
III				For 3 No of 250 KVA DG Sets				
a		3	NOS	for First Year after Commissioning		EACH	35221.00	105663
b		3	NOS	For Second Year after of Commissioning		EACH	36982.00	110946
c		3	NOS	For Third Year after of Commissioning		EACH	38831.00	116493
d		3	NOS	For Fourth Year after of Commissioning		EACH	40773.00	122319
e		3	NOS	For Fifth Year after of Commissioning		EACH	42812.00	128436
f		3	NOS	For Sixth Year after of Commissioning		EACH	44953.00	134859
g		3	NOS	For Seventh Year after of Commissioning		EACH	47201.00	141603
IV				For 2 No of 500 KVA DG Sets				
a		2	NOS	for First Year after Commissioning		EACH	71577.00	143154
b		2	NOS	For Second Year after of Commissioning		EACH	75156.00	150312
c		2	NOS	For Third Year after of Commissioning		EACH	78914.00	157828
d		2	NOS	For Fourth Year after of Commissioning		EACH	82860.00	165720
e		2	NOS	For Fifth Year after of Commissioning		EACH	87003.00	174006
f		2	NOS	For Sixth Year after of Commissioning		EACH	91353.00	182706
g		2	NOS	For Seventh Year after of Commissioning		EACH	95921.00	191842
V				For 625 KVA DG Sets				
a		2	NOS	for First Year after Commissioning		EACH	86347.00	172694
b		2	NOS	For Second Year after of Commissioning		EACH	90664.00	181328
c		2	NOS	For Third Year after of Commissioning		EACH	95197.00	190394
d		2	NOS	For Fourth Year after of Commissioning		EACH	99957.00	199914
e		2	NOS	For Fifth Year after of Commissioning		EACH	104955.00	209910
f		2	NOS	For Sixth Year after of Commissioning		EACH	110203.00	220406
g		2	NOS	For Seventh Year after of Commissioning		EACH	115713.00	231426
				LIFTS				
				Comprehensive Annual Maintenance for 22 No of LIFTs in Hospital, Medical College, Nursing College and other Buildings in the campus				
584				Comprehensive Annual Maintenance for all 22 No Lifts in the campus (6 Lifts in the 24x7 Main Hospital, 4 Lifts in the OPD Block and 2 Lifts in the IPD Block, 4 Lifts in the Medical College and 1 Lift in the Nursing College, 2 Lifts in Hostels and 3 Lifts in Residential area) for a period of 7 years (including the 3 years warranty period that shall be given by the Lift Manufacturer as specified in the (SOR) after commissioning of Lifts, covering routine servicing for 7 years strictly as per the service schedule/program given by OEM, cost and replacement of all spare parts including all batteries whatever required for maintaining the Lifts in uninterrupted running condition throughout the year for a period of 7 years, attending all breakdowns, repairs and rectifications, transportation, cost and conveyance of all materials and all labour charges etc., complete as required at site. [First, Second & Third years comes under the Manufacturer's Warranty]				
a		1	YEAR	For Fourth year after commissioning of Lifts		ONE YEAR	608980.00	608980

b		1	YEAR	For Fifth year after commissioning of Lifts	ONE	YEAR	639429.00	639429
c		1	YEAR	For Sixth year after commissioning of Lifts	ONE	YEAR	671400.00	671400
d		1	YEAR	For Seventh year after commissioning of Lifts	ONE	YEAR	704970.00	704970
				HVAC including Split, VRV & Ductable Units				
585				Comprehensive Annual Maintenance of all HVAC Systems including all HVAC Equipments, Split type, VRV & Ductable AC Units in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted service of all air-conditioning systems in the campus including cost and supply of all types of spares including compressors, fan motors, capacitors, electronic parts etc., and any other spare parts whatever required in routine and all incidental repairs and gas fillings and all repairs and periodical cleaning of filters, equipments etc., servicing and testing of all HVAC systems strictly as per the service schedule/ program given by OEM, with required T&P etc., for uninterrupted functioning of all the HVAC systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	1375619.00	1375619
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	1444400.00	1444400
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	1516620.00	1516620
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	1592451.00	1592451
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	1672074.00	1672074
				EPABX Systems				
586				Comprehensive Annual Maintenance of all EPABX Systems in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted service of all EPABX systems in the campus including cost and supply of all types of spares including all electronic parts, batteries etc., and any other spare parts whatever required in routine and all incidental repairs etc., servicing and testing of all EPABX systems strictly as per the service schedule/ program given by OEM, with required T&P etc., for uninterrupted functioning of all the EPABX systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site from time to time. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	55808.00	55808
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	58598.00	58598
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	61528.00	61528
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	64604.00	64604
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	67834.00	67834
				LAN & Networking Systems				
587				Comprehensive Annual Maintenance of all Networking & LAN Systems in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted service of all LAN systems in the campus including cost and supply of all types of spares including all electronic parts, cables, IOs, networking switches, patch panels, defective patch cords, and any other networking components etc., and any other spare parts whatever required in routine and all incidental repairs etc., servicing and testing of all LAN systems strictly as per the service schedule/ program given by OEM, with required T&P etc., for uninterrupted functioning of all the LAN systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site from time to time. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	382089.00	382089
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	401193.00	401193
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	421253.00	421253
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	442316.00	442316
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	464432.00	464432
				C.C. Surveillance systems				

588				Comprehensive Annual Maintenance of all C.C. Surveillance systems in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted service of all C.C. Surveillance systems in the campus including cost and supply of all types of spares including all electronic parts, spares to all types of cameras, NVRs, electronic POE switches, display units etc., and any other spare parts whatever required in routine and all incidental repairs etc., servicing and testing of all C.C. Surveillance systems strictly as per the service schedule/ program given by OEM, with required T&P etc., and replacement of defective cameras if any required etc., for uninterrupted functioning of all the C.C. Surveillance systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site from time to time. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	165747.00	165747
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	174034.00	174034
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	182736.00	182736
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	191873.00	191873
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	201467.00	201467
PUBLIC ADDRESS SYSTEM								
589				Comprehensive Annual Maintenance of all public address systems in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted service of all public address systems in the campus including cost and supply of all types of spares including electronic parts, repairs/replacement of damaged microphones, speakers, recording devices, amplifiers etc., and any other spare parts whatever required in routine and all incidental repairs etc., servicing and testing of all public address systems strictly as per the service schedule/ program given by OEM, with required T&P etc., for uninterrupted functioning of all the public address systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site from time to time. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	52417.00	52417
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	55038.00	55038
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	57790.00	57790
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	60680.00	60680
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	63714.00	63714
BUILDING MANAGEMENT SYSTEM								
590				Comprehensive Annual Maintenance of all Building Management Systems and associated Equipments, in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted functioning of all Building Management Systems in the campus including cost and supply of all types of spares including replacement of all types of sensors, electronic parts etc., as per requirement from time to time and any other spare parts whatever required in routine and all incidental repairs etc., including servicing and testing of all Building Management Systems strictly as per the service schedule/ program given by OEM, with required T&P etc., for uninterrupted functioning of all the Building Management Systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site from time to time. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	45144.00	45144
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	47401.00	47401
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	49771.00	49771
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	52260.00	52260
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	54873.00	54873
AUDIO AND VIDEO SYSTEM								

591				Comprehensive Annual Maintenance of all Audio and Video Systems and all related Equipments, in all buildings in the campus including all hospital buildings, medical college and nursing college etc., for a period of 7 years, (including the defective liability period of 2 years) after commissioning to maintain uninterrupted service of all Audio and Video Systems in the campus including cost and supply of all types of spares including electronic parts, repairs/repalcement of projectors, speakers, microphones, recording devices etc., as per requirement and any other spare parts whatever required in routine and all incidental repairs etc., servicing and testing of all Audio and Video Systems strictly as per the service schedule/ program given by OEM, with required T&P etc., for uninterrupted functioning of all the Audio and Video Systems including cost and conveyance of all materials, transportation and all labour charges etc., complete as required at site. [First & Second Years comes under the Defect Liability Period]				
a		1	YEAR	For third year after completion of work	ONE	YEAR	175051.00	175051
b		1	YEAR	For fourth year after completion of work	ONE	YEAR	183804.00	183804
c		1	YEAR	For fifth year after completion of work	ONE	YEAR	192994.00	192994
d		1	YEAR	For sixth year after completion of work	ONE	YEAR	202644.00	202644
e		1	YEAR	For seventh year after completion of work	ONE	YEAR	212776.00	212776
MAINTENANCE FOR ELECTRO-MECHANICAL SERVICES TOTAL								29801325
MEDICAL GAS PIPELINE SYSTEM								
592		1	SET	Supply and Fixing of 2 x 20 Oxygen Main Manifold with 19 mm O.D x12 mm ID Copper Pipe mounted on Top Frame, Middle Frame and Bottom Frame, along with brass blocks, NRVs/Cylinder Valves and Pigtail Pipes of 1 mtr long of size 8 mm O.D x 3 mm I.D, duly tested at 250 Kg/Cm2 pressure, withAutomatic Control Panel including cost and conveyance of all material, taxes,transportation charges and labour charges erection and commissioning charges etc.complete for finished item of work Makes: IBP Conex / Maxflow	ONE	SET	293979.00	293979
593		1	SET	Supply and Fixing of 2 x 4 Oxygen Emergency Manifold with 19 mm O.D x12 mm ID Copper Pipe mounted on Top Frame, Middle Frame and Bottom Frame, along with brass blocks, NRVs/Cylinder Valves and Pigtail Pipes of 1 mtr long of size 8 mm O.D x 3 mm I.D,duly tested at 250 Kg/Cm2 pressureand manifold fixed with High Pressure Valve System fixed on the Manifold both the Sides Makes: IBP Conex / Maxflow	ONE	SET	96573.00	96573
594		1	SET	Supply and Fixing of 2 x 4 Main Nitrous Oxide Manifold with 19 mm O.D x12 mm ID Copper Pipe mounted on Top Frame, Middle Frame and Bottom Frame, along with brass blocks, NRVs/Cylinder Valves and Pigtail Pipes of 1 mtr long of size 8 mm O.D x 3 mm I.D,duly tested at 250 Kg/Cm2 pressure. & Semi Automatic Control Panel for Nitrous Oxide. Makes: IBP Conex / Maxflow	ONE	SET	96573.00	96573
595		1	SET	Supply and Fixing of 2 x 2 Nitrous Oxide Emergency Manifold with Heavy Duty with 19 mm O.D x12 mm ID Copper Pipe mounted on Top Frame, Middle Frame and Bottom Frame, along with brass blocks, NRVs/Cylinder Valves and Pigtail Pipes of 1 mtr long of size 8 mm O.D x 3 mm I.D,duly tested at 250 Kg/Cm2 pressure with Regulator kit and 1 no. service point, including cost and conveyance of all materials, taxes, transportation charges and labour charges erection and commissioning charges etc. complete for finished item of work Makes: IBP Conex / Maxflow	ONE	SET	31358.00	31358
596		1	SET	Supply and Fixing of 15 V x 10 Model Ingersoll Rand model Twin Vacuum pump system with 2000 Ltrs Capacity Vacuum Receiver, 10 HP Motors, Starters, Filters, Vacuum Switches and other standard accessories, Twin System. Makes: IBP Conex / Maxflow	ONE	SET	1199434.00	1199434
597		1	SET	Supply and Fixing of Aneste Iwata Make TFS 150 C9 Model, Compresso Two stage, Motor 15 HP & 57.18 CFM, 60 CFM Air Dryer with2000 Ltrs Receiver Twin System Makes: IBP Conex / Maxflow	ONE	SET	1295211.00	1295211
598				Supply and fixing ofmm thick copper pipe thick for distribution, pipes shall be half drawn, tempered, seamless, phosphorous deoxidized, non arsenic and decreased confirming to BS 2871-1971 Part-1 (Table-X) and the chemical compositions shall be as per BS 6017 of 1981 table-2 with Lloyd Test Certification, including cost and conveyance of pipes, cost of necessary specials made of copper and suitable for a steam working pressure of 17 bar and should confirm to BS 864 with specially made for brazed socket type connections, including taxes, transportation charges including laying and jointing, testing, commissioning and all other labour charges etc. complete for finished item of work. Makes: IBP Conex / Maxflow				
a	2100.00		RM	12mm O.D x 0.7 mm	ONE	RM	327.20	687120
b	3800.00		RM	15mm O.D x0.9mm	ONE	RM	522.60	1985880
c	2800.00		RM	22mm O.D x0.9mm	ONE	RM	719.20	2013760
d	4100.00		RM	28mm O.D x0.9mm	ONE	RM	862.30	3535430

e	1500.00	RM	42mm O.Dx1.2mm	ONE	RM	2101.90	3152850
f	300.00	RM	54mm O.Dx1.5mm	ONE	RM	3079.00	923700
599			Supply and fixing of..... Isolation Valves with necessary brass end fittings designed for a working pressure of 300 psi / 27 inc. Hg. Vacuum, Non Ferrous, Non Lubricated with 90 degrees turn, Hand lever operated of standard make of valves including cost and conveyance of all materials, taxes, transportation charges, fixing charges and testing charges and all labour charges etc. complete for finished item of work. Makes: IBP Conex / Maxflow				
a	72	NOS	15 mm Valves (1/2")		EACH	1306.60	94075
b	15	NOS	22 mm Valves (3/4")		EACH	719.20	10788
c	45	NOS	28 mm Valves (1")		EACH	862.30	38804
d	10	NOS	42 mm Valves (1")		EACH	2417.70	24177
e	6	NOS	54 mm Valves (2")		EACH	3541.40	21248
600			Supply and fixing ofconsisting of all necessary accessories ie pressure sensors, regulators, pressure SWGs etc. complete including cost and conveyance of all materials, taxes, transportation charges etc. complete for finished item of work. Makes: IBP Conex / Maxflow				
a	30	NOS	3 Gas Digital Alarm Panel		EACH	31812.00	954360
b	3	NOS	4 Gas Digital Alarm Panel		EACH	32664.00	97992
601	323	NOS	Supply and Fixing of Oxygen Flow meters with Humidifier Bottles Makes: Aktiv Technologies// Atlas Capco/ Draeger Medical/ / Airox Technologies / Aastha Medical technologies/ GMP Technical Solutions / Medicare gas pipe line/Mediline Engineers		EACH	1591.00	513893
602	161	NOS	Supply and Fixing of Ward Vacuum Units with 600 ml Jar Makes: Aktiv Technologies// Atlas Capco/ Draeger Medical/ / Airox Technologies / Aastha Medical technologies/ GMP Technical Solutions / Medicare gas pipe line/Mediline Engineers		EACH	1959.90	315544
603	200.00	RM	Supply and Fixing of Vacuum Tube. Makes: Aktiv Technologies// Atlas Capco/ Draeger Medical/ / Airox Technologies / Aastha Medical technologies/ GMP Technical Solutions / Medicare gas pipe line/Mediline Engineers	ONE	RM	51.10	10220
604	250.00	RM	Supply and Fixing of HP (High pressure) Tube. Makes: Aktiv Technologies// Atlas Capco/ Draeger Medical/ / Airox Technologies / Aastha Medical technologies/ GMP Technical Solutions / Medicare gas pipe line/Mediline Engineers	ONE	RM	59.10	14775
			MGPS Total Rs:				17407744
			Annual Maintenance of Medical Gas pipe line				
605			Comprehensive Annual Maintenance of all Medical Gas pipe line including all equipments in all buildings including maintenance of all Medical Gas pipe line etc., for a period of 7 years, (including the defective liability period of 2 years) after completion of work including cost of all consumables, and periodical cleaning, servicing and testing of all Medical Gas pipe line, strictly as per the service schedule/program given by OEM including cost of replacement of all spares whatever required for all the equipments for effective and proper functioning of Medical Gas pipe line including refilling and reconditioning of all Medical Gas pipe line, replacement of Medical Gas pipe line etc., and cost and conveyance of all materials and all labour charges etc., complete as required at site. [First & Second Years comes under the Defect Liability Period]				
a	1	YEAR	For third year after completion of work	ONE	YEAR	174077.00	174077
b	1	YEAR	For fourth year after completion of work	ONE	YEAR	182781.00	182781
c	1	YEAR	For fifth year after completion of work	ONE	YEAR	191920.00	191920
d	1	YEAR	For sixth year after completion of work	ONE	YEAR	201516.00	201516
e	1	YEAR	For seventh year after completion of work	ONE	YEAR	211592.00	211592
			MAINTENANCE FOR MEDICAL GAS PIPE LINE TOTAL				961886
			GRAND TOTAL				697581456

ETP- 0.075 MLD CAPACITY):ETP-I ELECTRICAL							
SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)		
1		MECHANICAL WORKS					
1	1 NO	Supply and fixing, testing and commissioning of Manual Coarse Bar Screen Size: To Suit 400mm Wide x 200mm Liquid Height Clear Opening of Screen: 25mm Size of Flat: 50mm x 6mm Angle of Inclination: 60 Degree Shape of Screen: Curved Top Accessories: Rake & 2 Nos. Side Plate MOC: SS 304 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	NO	40901.00	40901		
2	1 NO	Supply and fixing, testing and commissioning of Manual Fine Bar Screen Size: To Suit 300mm Wide x 200mm Liquid Height Clear Opening of Screen: 10mm Size of Flat: 50mm x 6mm Angle of Inclination: 45 Degree Shape of Screen: Curved Top Accessories: Rake MOC: SS 304 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	NO	49991.00	49991		
3	1 NO	Supply and fixing, testing and commissioning of Slotted Pipe Oil Skimmer Size: To Suit 750mm Wide Oil & Grease Trap Size of Slotted Pipe: 200mm Dia Type of Operation: Manual Hand Wheel MOC of All Wetted Parts : SS 304 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	NO	96573.00	96573		
4	1 NO	PH METER :- supply and Fixing of PH meter PO 650 ph/ orp with push button type for physical dimensions 105x105x130mm cut out size 92x92mm enclosure ABS weather proof IP-65 calibration /set point ,Sensor dimension 140mmx32mm ,Flow throw . It including cost and conveyance , all taxes specification Provided at the outlet of Sewerage treated water sump it including all taxes as directed by Engineer-in-charge . Make:MettlerToledo/Aster/Transformium Engrs/Konvio	NO	21587.00	21587		
5	6 NOS	Supply and fixing, testing and commissioning of Coarse Bubble Diffusers Type: Disc Diffuser Size: 80mm Dia MOC: EPDM Make: Rehau/OTT/SSI/Aquaflex/Techpro/Shridevi /Sreetech including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	NOS	852.00	5112		
6	2 NOS	Supply and fixing, testing and commissioning of Equ Effluent/Sewage Pump Capacity of Pump: 4.00 Cu.m/Hr @ 6m Head Type of Pump: Non Clog Vertical Submersible Solid Handling Size: 10mm Impeller Type: Non Clog MOC of Casing: CI MOC of Impeller: CI	NOS	64761.00	129522		

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Accessories: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop			
		Make: Kishor/KSB/Grundfos/CRI/Wilo/Kirloskar			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
7	1 NO	Supply and fixing, testing and commissioning of Mixer for Anoxic Tank	NO	85211.00	85211
		Type: Turbine Type			
		RPM of Mixer: 50			
		MOC of Shaft & Blades: SS 304			
		Motor KW: 1.1			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
8	2 NOS	Supply and fixing, testing and commissioning of Aeration Blower	NOS	181784.00	363568
		Capacity of Blower: 120Nm ³ /Hr @ 5.5 MWC			
		Type of Blower: Twin Lobe			
		MOC of Blower: CI			
		Speed of Blower : Less than 1000 RPM			
		Speed of Blower Motor: 1440 RPM			
		The Blower shall be complete with Blower & Motor mounted on a common base frame, belt drive, belt guard, Suction & Discharge Silencer, Air Filter, Safety Valve, NRV, etc., complete.			
		Make: Kay/Everest/Swan			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
9	14 NOS	Supply and fixing, testing and commissioning of Fine Bubble Diffusers	NOS	2272.00	31808
		Type: Tubular			
		Size: 1.0m Long x 90 Dia			
		MOC: EPDM			
		Make: Rehau/OTT/SSI/Aquaflex/Techpro/Shridevi/Sreetech			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
10	100 KGS	Supply and fixing, testing and commissioning of Air Piping from Blower upto Diffusers for Equ Tank Blower & Aeration Blower	ONE KG	511.00	51100
		MOC of Exposed Pipes: SS 304			
		MOC of Vertical Drops: SS 304			
		MOC of Under Water pipes: SS 304			
		MOC of Guide Pipe & Lifting Chain: SS 304			
		The Air Piping shall be complete with Individual blower delivery piping with NRV, Diaphragm Valve, Main Header Piping from the Blower delivery up to equ tank/aeration tank including drop/vertical piping, header along the tank, vertical drop pipes with control valve & dismantling type joint, diffuser header pipe & laterals with nozzles for diffuser, end cap, vertical guide pipe at the other end of diffuser header, lifting chain, etc., complete. The design of piping shall be such that it should be possible to remove diffusers from the tanks without emptying tank & shutting off the system. The arrangement shall be that the we should be able to take out the Vertical drop pipe & the diffuser header just by dismantling the joint in the vertical drop pipe and should be able to refix the same in position.			
		Pipe Sizes: As per Diffuser Manufacturer recommendations.			
		The Contractor has to provide detailed air piping calc for the air pipes from the diffuser supplier to match the specified blower.			

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Battery Limit: Form Flange of Blowers till diffuser			
		The Piping cost is inclusive all necessary materials required for the piping like pipes, fittings, adapters, flanges, fasteners, pipe supports, clamps, valves, labour charges for fabrication, erection, pressure testing, etc., complete.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
11	8 CUM	Supply, Transportation and fixing, testing and commissioning of Media for MBBR (Moving Bed Bio Reactor) Tank	ONE CUM	9489.00	75912
		Volume of Media: Cu.m			
		Shape of Media: Conical Frustum			
		Surface Area:300-400 m2/m3 of media			
		Structure: Cylindrical with Fins			
		Sp Gravity: 0.9 to 0.95			
		MOC: P P UV Stabilised			
		No.of Pieces 50,000-70000 No/Cu.Mt			
		Weight per Cum 95 to 100 Kgs			
		Make: MM Aqua/ Tecpro/Enery Equipment/Shridevi/Sreetech			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
12	2 NOS	Supply and fixing, testing and commissioning of Internal Recirculation Pump	NOS	64761.00	129522
		Capacity of Pump: 1 Cu.m/Hr @ 5m Head			
		Type of Pump: Non Clog Vertical Submersible			
		Solid Handling Size: 10mm			
		Impeller Type: Non Clog			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Accessories: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop			
		Make: Kishor/KSB/Grundfos/CRI/Wilo/Kirloskar			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Final payment after Lab Testing treated water satisfying the following parameters BOD less than 20, COD less than 50			
13	2 NOS	Supply and fixing, testing and commissioning of Sludge Pump	NOS	39765.00	79530
		Capacity of Pump : 1 Cu.m/Hr @ 5m Head			
		Type of Pump: Horizontal Centrifugal			
		Impeller Type: Non Clog			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB/Kirloskar			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
14	2 NOS	Supply and fixing, testing and commissioning of Filter Feed Pump	NOS	39197.00	78394
		Capacity of Pump: 5 Cu.m/Hr @ 20m Head			
		Type of Pump: Horizontal Centrifugal			
		Impeller Type: Closed			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB/Kirloskar			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
15	1 NO	Supply and fixing, testing and commissioning of Pressure Sand Filter	NO	130657.00	130657
		Capacity of Filter: 7.50 Cu.m/Hr.			
		Minimum Dia of Filter: 0.90m			
		Minimum HOS of Filter: 1.8m			
		Minimum Height of Filter Sand: 0.30m			
		Minimum Plate Thickness for Shell & Dish: 6mm			
		Type of Underdrain: Nozzle Plate with Plastic Nozzles			
		Type of Inlet: Inlet Distribution Box/ Bell Mouth.			
		Specification for Filter Media: As per CPHEEO Manual			
		MOC of Filter: MSEP			
		Accessories: Frontal Piping & Valves.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Makes: Sreetech/Fluid Systems/Anju Enterprises/Any approved make			
16	1 NO	Supply and fixing, testing and commissioning of Activated Carbon Filter	NO	181784.00	181784
		Capacity of Filter: 7.50 Cu.m/Hr.			
		Minimum Dia of Filter: 0.70m			
		Minimum HOS of Filter: 1.8m			
		Minimum Height of Activated Carbon: 0.30m			
		Minimum Plate Thickness for Shell & Dish: 6mm			
		Type of Underdrain: Nozzle Plate with Plastic Nozzles			
		Type of Inlet: Inlet Distribution Box.			
		Type of Activated Carbon: Coal Based/Coconut shell			
		Minimum Iodine Value for Activated Carbon: 1000			
		MOC of Filter: MSEP			
		Accessories: Frontal Piping & Valves.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Makes: Sreetech/Fluid Systems/Anju Enterprises/Any approved make			
17	1 SYSTEM	Supply and fixing, testing and commissioning of Hypochlorite solution dosing System	SYSTEM	45446.00	45446
		Dosing System shall be complete with			
		1 No. - 100 Lit Capacity HDPE Tank with Inlet & Outlet Connections Level Indicator			
		Dosing Pump, 0 - 5 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. makes of MS/SS with reputed brands of accessories			
18	2 NOS	Supply and fixing, testing and commissioning of Treated Water Pump	NOS	44310.00	88620
		Capacity of Pump: 5 Cu.m/Hr @ 20m Head			
		Type of Pump: Horizontal Centrifugal			
		Impeller Type: Closed			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB/Grundfos			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
19	2 NOS	Supply and fixing, testing and commissioning of Filter Press Feed Pump	NOS	59080.00	118160
		Capacity of Pump: 1 Cu.m/Hr @ 20m Head			
		Type of Pump: Screw Pump			
		Impeller Type: Screw			
		MOC of Casing: CI			
		MOC of stator : Nitrile			
		MOC of rotor : SS 304			
		Make: PD pumps / Rotomac / Alpha helical /Roto			

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
20	1 NO	Supply and fixing, testing and commissioning of Manual Plate Filter Press Size of Plate: 610 x 610mm No. of Chambers: 8 Chamber Operation: Hydraulic Pump Capacity: For Dewatering of 2 Cu.m/Day, 3% Sludge in 10Hour Make: Hydro Press/Yo-Tana/Amar	NO	149972.00	149972
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
21	2 CUM	Supply and fixing, testing and commissioning of Tube deck Media for Tube settler . Volume of Media: 48 Cu.m Shape of Media: Vertical Plate Structure: Sheet with locking arrangement MOC: PVC No.of Pieces 150 per Cum (Size 1 Mtr x 0.5)	ONE CUM	9657.00	19314
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work			
		Make: MM Aqua/ Tecpro/Enery Equipment/Rehau/ OTT/ SSI/Aquaflex/Techpro/Shridevi /Sreetech			
		Sub - Total			19,72,684
		ELECTRICAL			
22	1 NOS	Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).	EACH	209500.00	209500
		Incomer :-			
		250A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		Outgoing feeders:-			
		125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 6 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 4 Nos. Makes:L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		Metering:-			
		Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec			
		Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec			
		Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider			
		Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make			
		Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL			
		Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL			
		10 kA - 6-32A range SP MCCBs - 6 No. Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			
		Bus Bars:-			
		Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves			
		For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x 8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs			
		Control wiring, Earth Bus Bar, Door Loop earhtings, Labour charges for errection of switch gears, panels boards including all labour charges etc with connections for finished items of works including transportation charges.			
23	20 NOS	Supply & Fixing of 5 to 7.5 HP D.O.L Starter 415V, 3 phase, 50Hz. enclosed with no volt coil and overload protection with necessary materials, etc., complete suitable for..... Makes: Siemens / Crompton / L&T (MK2 DOL).	EACH	2612.00	52240
		U.G CABLES			
24		Supply and transportation of following XLPE insulated, 1100V grade armoured alluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard			
a	250.00 RM	3.5 core, 150 Sq.mm	ONE RM	1119.10	279775

SI.No.	Quantity		Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
b	130.00	RM	3.5 core, 70 Sq.mm	ONE	RM	619.20	80496
c	120.00	RM	3.5 core, 50 Sq.mm	ONE	RM	460.10	55212
d	120.00	RM	3.5 core, 35 Sq.mm	ONE	RM	347.70	41724
e	200.00	RM	3.5 core, 25 Sq.mm	ONE	RM	280.60	56120
f	150.00	RM	4 core, 16 Sq.mm	ONE	RM	229.50	34425
g	120.00	RM	4 core, 10 Sq.mm	ONE	RM	195.40	23448
h	120.00	RM	4.0 Core 6 Sq.mm.	ONE	RM	165.90	19908
i	200.00	RM	4.0 Core 4 Sq.mm.	ONE	RM	125.00	25000
25	50.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables upto 50 Sq.mm on sand cushion covering the cable with bricks and back filling of Trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	272.20	13610
26	100.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables from 70 to 300 Sqmm on sand cushion covering the cable with bricks and back filling of trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	481.80	48180
27	50.00	RM	Labour charges for run of U.G cables upto 50 sq.mm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	57.20	2860
28	50.00	RM	Labour charges for run of U.G cables from 70 to 300 Sqmm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	91.90	4595
29	580.00	RM	Labour charges for run of armoured U.G cables upto 50 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	44.20	25636
30	580.00	RM	Labour charges for run of armoured U.G cables from 70 Sq.mm to 300 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	59.50	34510
31			Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Alluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI				
a	60	SET	4 core, 6/10/16 Sq.mm	ONE	SET	315.80	18948
b	40	SET	3.5 core, 25 Sq.mm	ONE	SET	310.20	12408
b	30	SET	3.5 core, 35 Sq.mm	ONE	SET	412.40	12372
c	30	SET	3.5 core, 50 Sq.mm	ONE	SET	481.70	14451
d	30	SET	3.5 core, 70 Sq.mm	ONE	SET	714.60	21438
e	30	SET	3.5 core, 90 Sq.mm	ONE	SET	819.20	24576
32			Supply,transporatation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays without cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	20.00	RM	150mm X 50mm X 1.6mm size	ONE	RM	492.00	9840
b	20.00	RM	300mm X 50mm X 1.6mm size	ONE	RM	908.00	18160

SI.No.	Quantity		Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
33			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays with cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	30.00	RM	150mm X 50mm X 1.6mm size	ONE	RM	639.50	19185
b	30.00	RM	300mm X 50mm X 1.6mm size	ONE	RM	1180.10	35403
34			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron ladder type cable trays with rungs at span of 250 mm including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/wall with suspenders and etc., complete.				
a	30.00	RM	300mm X 50mm X 2.0mm size	ONE	RM	779.40	23382
35			Supply, Transportation and Laying of the following sizes of double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. Makes:DURA LINE (Dura Guard) or its equivalent make.				
a	50.00	RM	Outer dia 50mm and Inner dia 38mm	ONE	RM	140.30	7015
b	100.00	RM	Outer dia 63mm and Inner dia 51mm	ONE	RM	177.20	17720
c	30.00	RM	Outer dia 78mm and Inner dia 63mm	ONE	RM	208.50	6255
			GI PIPES/ HUME PIPES FOR CABLES AT ROAD CROSSING				
36			Supply and laying of B class GI pipe of ISI mark with all accessories of following sizes for laying at the road crossings for the UG cables.				
a	20.00	RM	40 mm dia medium grade, G.I Pipe	ONE	RM	499.40	9988
37			Supply and Laying NP2 class RCC hume pipe with collars of following sizes for laying at the road crossings for the UG cables.				
a	20.00	RM	150 mm dia Hume pipe	ONE	RM	376.00	7520
b	20.00	RM	300 mm dia Hume pipe	ONE	RM	757.10	15142
			CUTTING C.C/B.T. ROAD SURFACE FOR CABLE TRENCH				
38			Cutting road surface including stacking of excavated materials for UG Cable trench work.				
a	10.00	SQM	a) Cutting open B.T. road surface (as well as asphalt concrete up to 75 mm thick) including water bound macadam	ONE	SQM	118.00	1180
b	10.00	CUM	b) Cutting open C.C. road surface with concrete saw cutter and removal with Breaker	ONE	CUM	3739.10	37391
			PVC CONDUIT PIPE				
39	100.00	RM	Supply and fixing of ISI 25mm outer dia (2.00 to 2.20)mm thickness, heavy grade with IS:9537 part 3 FRLS rigid PVC pipe (ISI marked) concealed in Roof Slabs with all required PVC deep junction boxes and all accessories including and labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/Beljin/Vasavi/DEC	ONE	RM	112.20	11220

SI.No.	Quantity		Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
40	100.00	RM	Supply and Fixing of 25mm outer dia (1.60 to 1.80)mm thickness medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC junction boxes and all accessories including masonry work for light, bell, fan, and separate plug point with hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/Beijin/Vasavi/DEC	ONE	RM	131.40	13140
			LIGHT POINT WITH MODULAR SWITCH				
			Non - Residential Buildings				
41	20	PTS	Wiring with 2 runs of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 6A Modular switch (ISI marked) with cover plate, Ceiling rose/BH/ SBH, including all labour charges etc., complete for Light, Bell, Fan and Exhaust Fan points etc., complete. (for Non Residential Building). Makes of wires:- Finolex / RR kabel / Havells KEI/Polycab/Gloster/Goldmedal/GM/ Finecab/ Fortune Art/Anchor/Million Makes of switches:- Legrand (Myrius/Lyncus) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(GIFA)/Million (M-VEE)/Anchor Roma (PLUS)	EACH	POINT	839.50	16790
			MODULAR SOCKET ON COMMON BOARD				
42	2	PTS	Supply and Fixing of 6 Amps modular type (ISI marked) switch, and 6 A 3/2 pin Modular type socket with cover plate on a common switch board including giving all connections and all labour charges etc., complete. Makes of switches/sockets:- Legrand (Myrius/Lyncus) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(GIFA)/Million (M-VEE)/Anchor Roma (PLUS	EACH	POINT	440.30	881
			16A MODULAR SWITCH ON 16A MODULAR SOCKET				
43	2	NOS	Supply and fixing of 16A/6A, 2 in one, modular type socket with 16A switch (ISI marked) modular type with cover plate on existing modular metal switch box including all labour charges, giving all connections etc., complete. Makes of switches/sockets:- Legrand (Myrius/Lyncus) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(GIFA)/Million (M-VEE)/Anchor Roma (PLUS	EACH		524.40	1049
			RUN of MAINS				
44	50.00	RM	Supply and run of 1 of 22 /0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing pipe for earth continuity including all labour charges etc., complete. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE	RM	34.80	1740

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
45	150.00 RM	Supply and run of 3 of 2.5 sq.mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for individual lighting circuits including labour charges etc., complete as required for switch boards. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	141.10	21165
46	100.00 RM	Supply and 3 runs of 4.0 sq mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing conduit pipe for run of mains including labour charges etc., complete as required including labour charges for 16A sockets. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	192.70	19270
47	50.00 RM	Supply & run of 3 of 6.0 Sqmm (84/0.3mm) (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for run of mains including labour charges etc. complete for AC points & SDB's etc as required. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	272.00	13600
48	50.00 RM	Supply and run of 5 of 6 Sq mm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for circuits including labour charges etc. complete as required for run of mains from Lighting panel board to TPN DB'S with pin type lugs and connections. [for LDBs] Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/ HPL/GM/ Million/ Goldmedal/Anchor.	ONE RM	453.90	22695
DISTRIBUTION BOARDS					
6-way TPN Lighting DB with RCCB (LDB) Flush Mounting					
49	1 NOS	Supply and fixing of TPN 6 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+18 Module) with provision to accommodate the ELCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB with 40A, 30mA, 4 Pole RCCB as incomer and 18 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)	EACH	19497.00	19497
EARTHINGS					

SI.No.	Quantity		Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
50	6	NOS	Providing independent earthing by excavating a trench to a depth of 2.5 M in all soils, as per size specified in the Data, using 100mm dia Heavy gauge Flange C.I (Cast iron) pipe of 2.5 Mtrs length with necessary accessories duly providing staggered holes including filling with equal proportion of Salt and Charcoal in layers and all labour charges etc., complete.	EACH		8266.00	49596
51	6	NOS	Providing independent earthing for Important equipment with 40mm dia 'B' class 2.5m long G.I pipe and 19mm dia 'B' class G.I pipe of 0.3mtr. long connected with reducer providing G.I funnel with mesh enclosed in C.C.Chamber of 400m x 400m x 400mm with R.C.C. Slab cover duly providing staggered holes filling with salt and charcoal from the bottom of the pipe giving earth connection from electrode through G.I strip of 40 x 6mm x 200mm length with all accessories and labour charges complete, as per IS specifications 732/1982 (Part II)	EACH		7893.00	47358
52	2	NOS	Providing independent earthing for Sophisticated Electronic equipment with 600mm x 600mm x 3.15mm thick copper plate rigidly fixed to 40mm dia G.I Pipe of 2.5 mtr length connected with reducer providing G.I funnel with wiremesh as per National Electric Code including C.C.Chamber of size 400m x 400m x 400mm covered with R.C.C. Slab filling with salt and charcoal giving earth connection from electrode with Copper strip of 25mm x 5mm x 200mm length to be bolted with nut bolts to G.I.pipe including 25mm x 3mm copper strip of 6Mtrs length connected from plate to Copper strip with all accessories and labour charges complete as per IS specification 732/1982 (Part II).	EACH		20962.00	41924
53	100.00	RM	Supply and Run of No.8 SWG G.I wire including cost of all accessories and labour charges etc., complete.	ONE RM		27.20	2720
54	100.00	RM	Supply and Run of 25mm x 3mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE RM		85.10	8510
55	100.00	RM	Supply and Run of 25mm x 3mm copper strip including cost of all accessories and labour charges etc., complete.	ONE RM		638.00	63800
FIXTURES							
56	20	NOS	Supply and Fixing of 20-24W, not less than 1100mm length LED batten light with extruded aluminium / CRCA housing and polycarbonate cover, input voltage AC 220 - 260 Volts with PF>0.9, Surge protection: 2KV, THD<15%, with high power LEDs having efficacy of ≥ 120 lumens / watt with inbuilt and replacable driver with earth connection brought outside and frosted cover CCT: 3000K - 5700K, minimum CRI>70 etc., complete including fixing on wall / Ceiling with PVC/TW round blocks with all accessories including giving connections and all labour charges etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GM / GreenLites / Gold Medal/Eveready// Rhino/Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight.	EACH		778.00	15560

SI.No.	Quantity	Description	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
57	5 NOS	Supply and Fixing of batten holder/angle holder on existing block with 0.5W LED Lamp with input voltage 90 to 300V, Colour temperature 3000k - 6500k, Beam angle 170 - 220 degrees, B22 base and all labour charges etc., complete., in lieu of ceiling rose for bed light in hostel rooms or residential buildings. Makes: Phillips /Crompton / Bajaj / Havells /Halonix/GM/HPLSyska / Green Lites / Fortune Arrt / GoldMedal / Luker/Leo/Orbit /Rhino / GLO LED/Million	EACH	128.00	640
		STREET LIGHT			
58	6 NOS	Supply, Transportation and Fixing of 30W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temperature<70°C, with Ingress protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0mt of 25mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04) b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	EACH	4215.00	25290
59	4 NOS	Supply, Transportation and Fixing of 60W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temperature<70°C, with Ingress protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04) b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	EACH	7084.00	28336

SI.No.	Quantity	Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
60	2 NOS	Supply, Transportation and Fixing of 90W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughened glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temprature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04) b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	EACH		10293.00	20586
		Electrical Sub Total:				17,64,979
		III: PIPING:				
61		Supplying, Laying, Testing & Commissioning of Piping from Last Manhole to Coarse Screen Chamber.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI				
		The Scope of Piping Shall Include the following:				
a	10.00 RM	Piping from Last Manhole to Coarse Screen Chamber - 300 Dia PVC 10 KSC Pipe	ONE RM		1193.00	11930

SI.No.	Quantity		Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
62			Supplying, Laying, Testing & Commissioning of Delivery Piping with Valves & NRV for Raw Effluent/Sewage Pump up to Inlet Chamber.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI				
a	20.00	RM	Delivery Piping with Valves & NRV for Raw Effluent/Sewage Pump up to Inlet Chamber - 100 NB - DI Pipe	ONE	RM	1022.50	20450
63			Supplying, Laying, Testing & Commissioning of Delivery Piping with Valves & NRV for Internal Recirculation Pump up to Inlet of Anoxic Tank.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI				
a	12.00	RM	Delivery Piping with Valves & NRV for Equ Effluent/Sewage Pump up to Anoxic Tank - 80 NB - uPVC Sch 40 Pipe	ONE	RM	852.10	10225
b	15.00	RM	Delivery Piping with Valves & NRV for Internal Recirculation Pump up to Inlet of Anoxic Tank - 100 NB - uPVC Sch 40 Pipe	ONE	RM	1079.30	16190
64			Supplying, Laying, Testing & Commissioning of Piping from Sec Clarifier Launder Outlet to Filter Feed Tank through UV disinfection module.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI				

SI.No.	Quantity		Description	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
a	5.00	RM	Piping from Sec Clarifier Launder Outlet to Filter Feed Tank through UV disinfection module - 125 NB uPVC Sch 40 Pipe	ONE	RM	1306.60	6533
65			Suction (Dual Suction, one from Filter Feed Tank & second from UF Feed Tank) and Delivery Piping with valves, NRV, up to frontal piping of PSF & ACF.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI				
a	25.00	RM	Filter Feed Pump Suction (Dual Suction, one from Filter Feed Tank & second from UF Feed Tank) and Delivery Piping with valves, NRV, up to frontal piping of PSF & ACF - 80 NB uPVC Sch 40 Pipe	ONE	RM	852.10	21303
g	20.00	RM	Sludge Pump Suction and Delivery Piping with valves, NRV, up to Thickener/Inlet of Aeration Tank - 65 NB - uPVC Sch 40 Pipe	ONE	RM	650.00	13000
h	120.00	RM	Treated Water Pump Suction and Delivery Piping with valves, NRV, up to battery limit - 80 NB - uPVC Sch 40 Pipe	ONE	RM	750.00	90000
			PIPING: Sub Total:				1,89,630
			IV: INSTRUMENTATION				
62	1	NO	SITC of DO Meter of approved make with interconnection wiring for auto switching on and off of Blowers, based on the DO Levels of the aeration tank. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH		56808.00	56808
63	1	NO	SITC of 50 Dia Electro Magnetic Flow Meter with local & remote indication panel with totaliser, including wiring between instrument & remote indicator, power supply wiring, etc., complete. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH		56808.00	56808
64	20	NOS	Supply, installation, testing and commissioning of Bourden type, stainless steel dial type pressure gauge with isolation valve and pipe having calibration of 0-16 kg/cm2.. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH		795.00	15900
65	20.00	RM	Supply and Installation of 600mm x 75mm x 2mm thick hot dip GI perforated cable tray with cover along with required angle supports with coupler plates, Anchor bolts and nuts etc complete and the tray, should be fitted on the wall / Ceiling etc. complete.	ONE	RM	1958.50	39170
			Instrumentation Sub Total:				168686
			TOTAL VALUE OF WORK FOR THE ETP - 0.075 MLD				4095980

STP-I - 0.2 MLD CAPACITY):STP-I ELECTRICAL							
Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)		
		I:MECHANICAL WORKS					
1	1 NO	Supply and fixing, testing and commissioning of Manual Coarse Bar Screen Size: To Suit 600mm Wide x 200mm Liquid Height (3850mm Total Height) Clear Opening of Screen: 25mm Size of Flat: 50mm x 6mm Angle of Inclination: 60 Degree Shape of Screen: Curved Top Accessories: Rake & 2 Nos. Side Plate for 2.8m Height MOC: SS 304 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	45446.00	45446		
2	3 NOS	Supply and fixing, testing and commissioning of Raw Effluent/Sewage Pump Capacity of Pump: 48 Cu.m/Hr @ 12m Head Type of Pump: Non Clog Vertical Submersible Solid Handling Size: 80mm Impeller Type: Non Clog MOC of Casing: CI MOC of Impeller: CI Accessories: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop Make: Kishor/KSB/Grundfos/CR1/Wilo including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	100000.00	300000		
3	1 NO	Supply and fixing, testing and commissioning of Manual Fine Bar Screen Size: To Suit 500mm Wide x 200mm Liquid Height (700mm Total Height) Clear Opening of Screen: 10mm Size of Flat: 50mm x 6mm Angle of Inclination: 45 Degree Shape of Screen: Curved Top Accessories: Rake MOC: SS 304 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	45446.00	45446		
4	1 NO	Supply and fixing, testing and commissioning of Mechanical Fine Bar Screen Size: To Suit 500mm Wide x 200mm Liquid Height (700mm Total Height) Clear Opening of Screen: 6mm Size of Flat: 50mm x 3mm Angle of Inclination: 75 Degree Type of Screen: Fixed Bar, Mechanically Raked Screen Accessories: Discharge Chute MOC of All Wetted Parts : SS 304 Make: Jash/PicoPuro/Equ. including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	147700.00	147700		
5	1 NO	Supply and fixing, testing and commissioning of Slotted Pipe Oil Skimmer Size: To Suit 2000mm Wide Oil & Grease Trap Size of Slotted Pipe: 200mm Dia Type of Operation: Manual Hand Wheel MOC of All Wetted Parts : SS 304 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	147700.00	147700		

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
6	2 NOS	Supply and fixing, testing and commissioning of Equ Tank Blower Capacity of Blower: 180m ³ /Hr @ 5.5 MWC Type of Blower: Twin Lobe MOC of Blower: CI Speed of Blower : Less than 1000 RPM Speed of Blower Motor: 1440 RPM The Blower shall be complete with Blower & Motor mounted on a common base frame, belt drive, belt guard, Suction & Discharge Silencer, Air Filter, Safety Valve, NRV, etc., complete. Make: Kay/Everest/Swan including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	193146.00	386292
7	1 NO	PH METER :- supply and Fixing of PH meter PO 650 ph/orp with push button type for physical dimensions 105x105x130mm cut out size 92x92mm enclosure ABS weather proof IP-65 calibration /set point ,Sensor dimension 140mmx32mm ,Flow throw . It includeing cost and conveyance , all taxes specification Provided at the outlet of Sewerage treated water sump it including all taxes as directed by Engineer-in-charge .	EACH	21587.00	21587
8	30 NOS	Supply and fixing, testing and commissioning of Coarse Bubble Diffusers Type: Disc Diffuser Size: 90mm Dia MOC: EPDM Make: Rehau/OTT/SSI/Aquaflax/Techpro including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	2272.00	68160
9	2 NOS	Supply and fixing, testing and commissioning of Equ Effluent/Sewage Pump Capacity of Pump: 32.5 Cu.m/Hr @ 6m Head Type of Pump: Non Clog Vertical Submersible Solid Handling Size: 80mm Impeller Type: Non Clog MOC of Casing: CI MOC of Impeller: CI Accessoris: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop Make: Kishor/KSB/Grundfos/CRI/Wilo including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	113615.00	227230
10	3 NOS	Supply and fixing, testing and commissioning of Mixer for Anoxic Tank Size: To Suit 2.275 x 2.0 x 4.5m LD (5.0m TD) Type: Turbine Type RPM of Mixer: 100 MOC of Shaft & Blades: SS 304 Motor KW: 1.1 including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	107934.00	323802
11	1 NOS	Supply and fixing, testing and commissioning of Aeration Blower Capacity of Blower: 504Nm ³ /Hr @ 5.5 MWC Type of Blower: Twin Lobe MOC of Blower: CI Speed of Blower : Less than 1000 RPM Speed of Blower Motor: 1440 RPM	EACH	323803.00	323803

Sl.No.	Quantity	Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
		The Blower shall be complete with Blower & Motor mounted on a common base frame, belt drive, belt guard, Suction & Discharge Silencer, Air Filter, Safety Valve, NRV, etc., complete.				
		Make: Kay/Everest/Swan				
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.				
12	20 NOS	Supply and fixing, testing and commissioning of Fine Bubble Diffusers		EACH	2272.00	45440
		Type: Tubular				
		Size: 1.0m Long x 90 Dia				
		MOC: EPDM				
		Make: Rehau/OTT/SSI/Aquaflex/Techpro				
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.				
13	200 KGS	Supply and fixing, testing and commissioning of Air Piping from Blower upto Diffusers for Equ Tank Blower & Aeration Blower	ONE	ONE KG	386.00	77200
		MOC of Exposed Pipes: SS 304				
		MOC of Vertical Drops: SS 304				
		MOC of Under Water pipes: SS 304				
		MOC of Guide Pipe & Lifting Chain: SS 304				
		The Air Piping shall be complete with Individual blower delivery piping with NRV, Diaphragm Valve, Main Header Piping from the Blower delivery up to equ tank/aeration tank including drop/vertical piping, header along the tank, vertical drop pipes with control valve & dismantling type joint, diffuser header pipe & laterals with nozzles for diffuser, end cap, vertical guide pipe at the other end of diffuser header, lifting chain, etc., complete. The design of piping shall be such that it should be possible to remove diffusers from the tanks without emptying tank & shutting off the system. The arrangement shall be that the we should be able to take out the Vertical drop pipe & the diffuser header just by dismantling the joint in the vertical drop pipe and should be able to refix the same in position.				
		Pipe Sizes: As per Diffuser Manufacturer recommendations.				
		The Contractor has to provide detailed air piping calc for the air pipes from the diffuser supplier to match the specified blower.				
		Battery Limit: Form Flange of Blowers till diffuser				
		The Piping cost is inclusive all necessary materials required for the piping like pipes, fittings, adopters, flanges, fasteners, pipe supports, clamps, valves, labour charges for fabrication, erection, pressure testing, etc., complete.				
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.				
14	32 CUM	Supply, Transportation and fixing, testing and commissioning of Media for MBBR (Moving Bed Bio x005f Reactor) Tank	ONE	CUM	9458	302656
		Volume of Media: Cu.m				
		Shape of Media: Conical Frustum				
		Surface Area:300-400 m2/m3 of media				
		Structure: Cylindrical with Fins				
		Sp Gravity: 0.9 to 0.95				
		MOC: P P UV Stabilised				
		No.of Pieces 50,000-70000 No/Cu.Mt				
		Weight per Cum 95 to 100 Kgs				
		Makes: Rehau/OTT/SSI/Aquaflex/Techpro/Shridevi /Sreetech/ MM Aqua/ Tecpro/Enery Equipment				
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.				

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
15	1 NOS	Supply and fixing, testing and commissioning of Internal Recirculation Pump Capacity of Pump: 62.5 Cu.m/Hr @ 3m Head Type of Pump: Non Clog Vertical Submersible Solid Handling Size: 80mm Impeller Type: Non Clog MOC of Casing: CI MOC of Impeller: CI Accessories: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop Makes: Kishor/KSB/Grundfos/CRI/Wilo/Kirloskar including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Final payment after Lab Testing treated water satisfying the following parameters BOD less than 5, COD less than 10	EACH	107934.00	107934
16	1 NO	Supply and fixing, testing and commissioning of Secondary Clarifier To Suit: 9.1m x 9.1m x 3.0m SWD (0.5m FB) Sq Clarifier. Floor Slope: 1 in 12 Free Board: 0.5m The Clarifier shall be to suit the Civil Tank (As per the attached GA Drg). The Launder top will be finished to true level to ensure uniform overflow to avoid overflow weirs. The clarifier shall be complete with Mechanical Bridge/Platform spanning across the tank with GI Grating & Handrails for the entire length, Feed Well, Central Drive mechanism, Centre shaft, scrapper arm with neoprene squeezes, sludge pit cone scrapper, etc., complete. MOC: MSEP + GI Gratings + GI Handrails Make: ShivPAD/Eimco-KCP/PicoPuro/Voltas including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	454460.00	454460
17	2 NOS	Supply and fixing, testing and commissioning of Sludge Pump Capacity of Pump: 32 Cu.m/Hr @ 3m Head Type of Pump: Horizontal Centrifugal Impeller Type: Non Clog MOC of Casing: CI MOC of Impeller: CI Make: Johnson/Kirloskar/KSB including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	113615.00	227230
18	1 NO	Supply and fixing, testing and commissioning of UV Disinfection System Flow: 32 Cu.m/Hr. Type of Flow: Gravity Type: UV Lamp covered with Quartz Glass MOC of Enclosure: SS 304 Accessories: Control Panel Make: Hitech/Sukrut/Equ. including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.	EACH	266995.00	266995
19	2 NOS	Supply and fixing, testing and commissioning of Filter Feed Pump Capacity of Pump: 33.5 Cu.m/Hr @ 30m Head Type of Pump: Horizontal Centrifugal Impeller Type: Semi Open MOC of Casing: CI	EACH	134066.00	268132

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
20	1 NO	Supply and fixing, testing and commissioning of Pressure Sand Filter	EACH	235183.00	235183
		Capacity of Filter: 32.50 Cu.m/Hr.			
		Minimum Dia of Filter: 1.9m			
		Minimum HOS of Filter: 1.5m			
		Minimum Height of Filter Sand: 0.75m			
		Minimum Plate Thickness for Shell & Dish: 6mm			
		Type of Underdrain: Nozzle Plate with Plastic Nozzles			
		Type of Inlet: Inlet Distribution Box/ Bell Mouth.			
		Specification for Filter Media: As per CPHEEO Manual			
		MOC of Filter: MSEP			
		Accessories: Frontal Piping & Valves.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Makes: Sreetech/Fluid Systems/Anju Enterprises/Any approved make			
21	1 NO	Supply and fixing, testing and commissioning of Activated Carbon Filter	EACH	301080.00	301080
		Capacity of Filter: 32.50 Cu.m/Hr.			
		Minimum Dia of Filter: 1.90m			
		Minimum HOS of Filter: 1.5m			
		Minimum Height of Activated Carbon: 0.75m			
		Minimum Plate Thickness for Shell & Dish: 6mm			
		Type of Underdrain: Nozzle Plate with Plastic Nozzles			
		Type of Inlet: Inlet Distribution Box.			
		Type of Activated Carbon: Coal Based/Coconut shell			
		Minimum Iodine Value for Activated Carbon: 1000			
		MOC of Filter: MSEP			
		Accessories: Frontal Piping & Valves.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Makes: Sreetech/Fluid Systems/Anju Enterprises/Any approved make			
22	1 SYSTEM	Supply and fixing, testing and commissioning of Hypochlorite solution dosing System	EACH SYSTEM	45446.00	45446
		Dosing System shall be complete with			
		1 No. - 100 Lit Capacity HDPE Tank with Inlet & Outlet Connections, Level Indicator			
		Dosing Pump, 0 - 5 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
23	1 SYSTEM	Supply and fixing, testing and commissioning of FeCl3 solution dosing System	EACH SYSTEM	32664.00	32664
		Dosing System shall be complete with			
		1 No. - 150 Lit Capacity HDPE Tank with Inlet & Outlet Connections, Level Indicator			
		1 No. - Agitator to suit 150 Lit HDPE tank of SS 304 MOC, 100 RPM speed.			
		Dosing Pump, 0 - 6 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
24	2 NOS	Supply and fixing, testing and commissioning of Treated Water Pump	EACH	90892.00	181784
		Capacity of Pump: 32 Cu.m/Hr @ 30m Head			
		Type of Pump: Horizontal Centrifugal			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Impeller Type: Semi Open			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
25	2 NOS	Supply and fixing, testing and commissioning of Filter Press Feed Pump	EACH	59080.00	118160
		Capacity of Pump: 1 Cu.m/Hr @ 30m Head			
		Type of Pump: Screw Pump			
		Impeller Type: Screw			
		MOC of Casing: CI			
		MOC of stator : Nitrile			
		MOC of rotor : SS 304			
		Make: PD pumps / Rotomac / Alpha helical /Roto			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
26	1 NO	Supply and fixing, testing and commissioning of Manual Plate Filter Press	EACH	284038.00	284038
		Size of Plate: 610 x 610mm			
		No. of Chambers: 16 Chamber			
		Operation: Hydraulic Pump			
		Capacity: For Dewatering of 5 Cu.m/Day, 3% Sludge in 12 Hour			
		Make: Hydro Press/Yo-Tana/Amar/Equ.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
27	1 SYSTEM	Supply and fixing, testing and commissioning of Dewatering PE solution dosing System	EACH SYSTEM	73850.00	73850
		Dosing System shall be complete with			
		2 Nos. - 50 Lit Capacity HDPE Tank with Inlet & Outlet Connections, Level Indicator			
		2 Nos. - Agitator to suit 100 Lit HDPE tank of SS 304 MOC, 100 RPM speed.			
		Dosing Pump, 0 - 60 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Makes:Verito Engineering/Fluid Systems/ Fabricated item as per specification with SOR approved makes of MS/SS with reputed brands of accessories			
28	1 NO	Supply and fixing, testing and commissioning of Jib Crane for Lifting of Submersible Pumps	EACH	136338.00	136338
		Capacity : 0.5 Ton			
		Min Clear Height: 2.50m to the Bottom of the Hook (From Base plate).			
		Degree of Rotation: 360 Degrees.			
		Length of Boom: 2.0m to the Centre of Lifting Hook from the centre of mast.			
		Rotating Operation: Manual			
		Accessories Reqd: 0.5 Ton Capacity Chain Pulley Block with Lifting Chain of 9.0m + Trolley of reputed make.			
		Mast section: Circular Mast of required Height			
		Method of Installation: By Welding to Fish Plate embedded in concrete.			
		Make: Reputed			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
29	14 CUM	Supply and fixing, testing and commissioning of Tube Settler Media for Settling tank	ONE CUM	9657	135198

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Volume of Media: 48 Cu.m			
		Shape of Media: Verticle Plate			
		Structure: Sheet with locking arrangement			
		MOC: PVC			
		No.of Pieces 150 per Cum (Size 1 Mtr x 0.5)			
		Make: MM Aqua/ Tecpro/Enery Equipment			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
		Mechanical Works Sub Total:			5330954
		STP-I ELECTRICAL WORKS			
		MAIN PANEL IN ELECTRICAL ROOM			
1	1 NO	Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness,separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).	Each	209500.00	209500
		Incomer :-			
		250A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		Outgoing feeders:-			
		125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 6 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 4 Nos. Makes:L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		Metering:-			
		Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec			
		Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider			
		Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make			
		Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL			
		Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL			
		10 kA - 6-32A range SP MCBs - 6 No. Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			
		Bus Bars:-			
		Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves			
		For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x 8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs			
		Control wiring, Earth Bus Bar, Door Loop earhtings, Labour charges for erection of switch gears, panels boards including all labour charges etc with connections for finished items of works including transportation charges.			
2	20 NOS	Supply & Fixing of D.O.L Starter 415V, 3 phase, 50Hz.. enclosed with no volt coil and overload protection with necessary materials, etc., complete suitable for..... Makes: Siemens / Crompton / L&T (MK2 DOL). UP to 5 to 7.5 HP	EACH	2612.00	52240
		U.G CABLES			
3		Supply and transportation of following XLPE insulated, 1100V grade armoured alluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard			
a	250.00 RM	3.5 core, 150 Sq.mm	ONE RM	1119.10	279775
b	130.00 RM	3.5 core, 70 Sq.mm	ONE RM	619.20	80496
c	120.00 RM	3.5 core, 50 Sq.mm	ONE RM	460.10	55212
d	120.00 RM	3.5 core, 35 Sq.mm	ONE RM	347.70	41724
e	200.00 RM	3.5 core, 25 Sq.mm	ONE RM	280.60	56120
f	150.00 RM	4 core, 16 Sq.mm	ONE RM	229.50	34425
g	120.00 RM	4 core, 10 Sq.mm	ONE RM	195.40	23448
h	120.00 RM	4.0 Core 6 Sq.mm.	ONE RM	165.90	19908
i	200.00 RM	4.0 Core 4 Sq.mm.	ONE RM	125.00	25000

Sl.No.	Quantity		Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
4	50.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables upto 50 Sq.mm on sand cushion covering the cable with bricks and back filling of Trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	272.20	13610
5	100.00	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables from 70 to 300 Sqmm on sand cushion covering the cable with bricks and back filling of trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE	RM	481.80	48180
6	50	RM	Labour charges for run of U.G cables upto 50 sq.mm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	57.20	2860
7	50	RM	Labour charges for run of U.G cables from 70 to 300 Sqmm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE	RM	91.90	4595
8	580	RM	Labour charges for run of armoured U.G cables upto 50 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	44.20	25636
9	580	RM	Labour charges for run of armoured U.G cables from 70 Sq.mm to 300 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE	RM	59.50	34510
10			Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Alluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI				
a	60	SET	4 core, 6/10/16 Sq.mm	EACH	SET	315.80	18,948.00
b	40	SET	3.5 core, 25 Sq.mm	EACH	SET	310.20	12,408.00
b	30	SET	3.5 core, 35 Sq.mm	EACH	SET	412.40	12372
c	30	SET	3.5 core, 50 Sq.mm	EACH	SET	481.70	14451
d	30	SET	3.5 core, 70 Sq.mm	EACH	SET	714.60	21438
e	30	SET	3.5 core, 90 Sq.mm	EACH	SET	819.20	24576
11			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays without cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	20	RM	150mm X 50mm X 1.6mm size	ONE	RM	492.00	9840
b	20	RM	300mm X 50mm X 1.6mm size	ONE	RM	908.00	18160
12			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays with cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete				
a	30	RM	150mm X 50mm X 1.6mm size	ONE	RM	639.50	19185
b	30	RM	300mm X 50mm X 1.6mm size	ONE	RM	1180.10	35403

Sl.No.	Quantity		Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
13			Supply,transportation & installation of following sizes of Hot Dipped Galvanized Iron ladder type cable trays with rungs at span of 250 mm including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/wall with suspenders and etc., complete.				
a	30	RM	300mm X 50mm X 2.0mm size	ONE	RM	779.40	23382
14			Supply, Transportation and Laying of the following sizes of double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. Makes:DURA LINE (Dura Guard) or its equivalent make.				
a	50	RM	Outer dia 50mm and Inner dia 38mm	ONE	RM	140.30	7015
b	100	RM	Outer dia 63mm and Inner dia 51mm	ONE	RM	177.20	17720
c	30	RM	Outer dia 78mm and Inner dia 63mm	ONE	RM	208.50	6255
			GI PIPES/ HUME PIPES FOR CABLES AT ROAD CROSSING				
15			Supply and laying of B class GI pipe of ISI mark with all accessories of following sizes for laying at the road crossings for the UG cables.				
a	20	RM	40 mm dia medium grade, G.I Pipe	ONE	RM	499.40	9988
16			Supply and Laying NP2 class RCC hume pipe with collars of following sizes for laying at the road crossings for the UG cables.				
a	20	RM	150 mm dia Hume pipe	ONE	RM	376.00	7520
b	20	RM	300 mm dia Hume pipe	ONE	RM	757.10	15142
			CUTTING C.C/B.T. ROAD SURFACE FOR CABLE TERNCH				
17			Cutting road surface including stacking of excavated materials for UG Cable trench work.				
a	10	SQM	a) Cutting open B.T. road surface (as well as asphalt concrete up to 75 mm thick) including water bound macadam	ONE	SQM	118.00	1180
b	8.38	CUM	b) Cutting open C.C. road surface with concrete saw cutter and removal with Breaker	ONE	CUM	3739.10	31334
			PVC CONDUIT PIPE				
18	100	RM	Supply and fixing of ISI 25mm outer dia (2.00 to 2.20)mm thickness, heavy grade with IS:9537 part 3 FRLS rigid PVC pipe (ISI marked) concealed in Roof Slabs with all required PVC deep junction boxes and all accessories including and labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/Beljin/Vasavi/DEC	ONE	RM	112.20	11220
19	100	RM	Supply and Fixing of 25mm outer dia (1.60 to 1.80)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC junction boxes and all accessories including masonry work for light, bell, fan, and separate plug point with hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges etc., complete.Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/Beljin/Vasavi/DEC	ONE	RM	131.40	13140
			LIGHT POINT WITH MODULAR SWITCH				
			Non - Residential Buildings				

Sl.No.	Quantity	Description of Work	Unit (in words)		Rate (in Rs.)	Amount (in Rs.)
20	20 PTS	Wiring with 2 runs of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 6A Modular switch (ISI marked) with cover plate, Ceiling rose/BH/ SBH, including all labour charges etc., complete for Light, Bell, Fan and Exhaust Fan points etc., complete. (for Non Residential Building). Makes of wires:- Finolex / RR kabel / Havells KEI/Polycab/Gloster/Goldmedal/GM/ Finecab/ Fortune Arrt/Anchor/Million Makes of switches:- Legrand (Myrius/Lyncus) / Schneider (Clipsal X/ Livia AB)/ Crabtree (Murano/Athena)/L&T-englaze/ GM-(Four-Five)/ Goldmedal(GIFA)/Million (M-VEE)/Anchor Roma (PLUS)	POINT	Each POINT	839.50	16790
		MODULAR SOCKET ON COMMON BOARD				
21	2 PTS	Supply and Fixing of 6 Amps modular type (ISI marked) switch, and 6 A 3/2 pin Modular type socket with cover plate on a common switch board including giving all connections and all labour charges etc., complete. Makes of Switches/Socket:- Legrand Myrius / Crabtree verona / L&T/ HPL/ Schneider Livia/GM (Zicono/Four Five)/C&S/Goldmedal (Curve)/Million Mway/Logus Platina/ Panasonic Vision/Salzer S90 series/Anchor-Roma.	EACH	POINT	440.30	881
		16A MODULAR SWITCH ON 16A MODULAR SOCKET				
22	2 NOS	Supply and fixing of 16A/6A, 2 in one, modular type socket with 16A switch (ISI marked) modular type with cover plate on existing modular metal switch box including all labour charges, giving all connections etc., complete. Makes of Switches/Socket:- Legrand Myrius / Crabtree verona / L&T/ HPL/ Schneider Livia/GM (Zicono/Four Five)/C&S/Goldmedal (Curve)/Million Mway/Logus Platina/ Panasonic Vision/Salzer S90 series/Anchor-Roma.		Each	524.40	1049
		RUN of MAINS				
23	51 RM	Supply and run of 1 of 22 /0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing pipe for earth continuity including all labour charges etc., complete. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE	RM	34.80	1757
24	150 RM	Supply and run of 3 of 2.5 sq.mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for individual lighting circuits including labour charges etc., complete as required for switch boards. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE	RM	141.10	21165

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
25	100 RM	Supply and 3 runs of 4.0 sq mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing conduit pipe for run of mains including labour charges etc., complete as required including labour charges for 16A sockets. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	192.70	19270
26	50 RM	Supply & run of 3 of 6.0 Sqmm (84/0.3mm) (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for run of mains including labour charges etc. complete for AC points & SDB's etc as required. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	272.00	13600
27	50 RM	Supply and run of 5 of 6 Sq mm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for circuits including labour charges etc. complete as required for run of mains from Lighting panel board to TPN DB'S with pin type lugs and connections. [for LDBs] Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/ HPL/GM/ Million/ Goldmedal/Anchor.	ONE RM	453.90	22695
		DISTRIBUTION BOARDS			
		6-way TPN Lighting DB with RCCB (LDB) Flush Mounting			
28	1 NO	Supply and fixing of TPN 6 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+18 Module) with provision to accommodate the ELCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB with 40A, 30mA, 4 Pole RCCB as incomer and 18 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoing including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)	Each	19497.00	19497
		EARTHINGS			
29	6 NOS	Providing independent earthing by excavating a trench to a depth of 2.5 M in all soils, as per size specified in the Data, using 100mm dia Heavy gauge Flange C.I (Cast iron) pipe of 2.5 Mtrs length with necessary accessories duly providing staggered holes including filling with equal proportion of Salt and Charcoal in layers and all labour charges etc., complete.	Each	8266.00	49596

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
30	6 NOS	Providing independent earthing for Important equipment with 40mm dia 'B' class 2.5m long G.I pipe and 19mm dia 'B' class G.I pipe of 0.3mtr. long connected with reducer providing G.I funnel with mesh enclosed in C.C.Chamber of 400m x 400m x 400mm with R.C.C. Slab cover duly providing staggered holes filling with salt and charcoal from the bottom of the pipe giving earth connection from electrode through G.I strip of 40 x 6mm x 200mm length with all accessories and labour charges complete, as per IS specifications 732/1982 (Part II)	Each	7893.00	47358
31	2 NOS	Providing independent earthing for Sophisticated Electronic equipment with 600mm x 600mm x 3.15mm thick copper plate rigidly fixed to 40mm dia G.I Pipe of 2.5 mtr length connected with reducer providing G.I funnel with wiremesh as per National Electric Code including C.C.Chamber of size 400m x 400m x 400mm covered with R.C.C. Slab filling with salt and charcoal giving earth connection from electrode with Copper strip of 25mm x 5mm x 200mm length to be bolted with nut bolts to G.I.pipe including 25mm x 3mm copper strip of 6Mtrs length connected from plate to Copper strip with all accessories and labour charges complete as per IS specification 732/1982 (Part II).	Each	20962.00	41924
32	100 RM	Supply and Run of No.8 SWG G.I wire including cost of all accessories and labour charges etc., complete.	ONE RM	27.20	2720
33	100 RM	Supply and Run of 25mm x 3mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE RM	85.10	8510
34	100 RM	Supply and Run of 25mm x 3mm copper strip including cost of all accessories and labour charges etc., complete.	ONE RM	638.00	63800
		FIXTURES			
35	20 NOS	Supply and Fixing of 20-24W, not less than 1100mm length LED batten light with extruded aluminium / CRCA housing and polycarbonate cover, input voltage AC 220 - 260 Volts with PF>0.9, Surge protection: 2KV, THD<15%, with high power LEDs having efficacy of ≥ 120 lumens / watt with inbuilt and replacable driver with earth connection brought outside and frosted cover CCT: 3000K - 5700K, minimum CRI>70 etc., complete including fixing on wall / Ceiling with PVC/TW round blocks with all accessories including giving connections and all labour charges etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GM / GreenLites / Gold Medal/Eveready// Rhino/Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight.	Each	778.00	15560
36	5 NOS	Supply and Fixing of batten holder/angle holder on existing block with 0.5W LED Lamp with input voltage 90 to 300V, Colour temperature 3000k - 6500k, Beam angle 170 - 220 degrees, B22 base and all labour charges etc., complete., in lieu of ceiling rose for bed light in hostel rooms or residential buildings. Makes: Phillips /Crompton / Bajaj / Havells /Halonix/GM/HPLSyska / Green Lites / Fortune Arrt / GoldMedal / Luker/Leo/Orbit /Rhino / GLO LED/Million	Each	128.00	640
		STREET LIGHT			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
37	6 NOS	<p>Supply, Transportation and Fixing of 30W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughened glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temperature<70°C, with Ingress protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0mt of 25mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty.</p> <p>a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) / Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04)</p> <p>b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG</p>	Each	4215.00	25290
38	4 NOS	<p>Supply, Transportation and Fixing of 60W LED Street light Luminaire made of pressure diecast aluminium body with powder coated, having protective toughened glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temperature<70°C, with Ingress protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty.</p> <p>a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) / Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04)</p> <p>b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG</p>	Each	7084.00	28336

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
39	2 No	Supply, Transportation and Fixing of 90W LED Street light Luminaire made of pressure diecast alluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temprature<70°C, with Ingrees protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04) b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	Each	10293.00	20586
		Electrical Sub Total:			1758940
		III: PIPING:			
40		Supplying, Laying, Testing & Commissioning of Piping from Last Manhole to Coarse Screen Chamber.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
		The Scope of Piping Shall Include the following:			
a	10 RM	Piping from Last Manhole to Coarse Screen Chamber - 300 Dia PVC 10 KSC Pipe	ONE RM	1193.00	11930
41		Supplying, Laying, Testing & Commissioning of Delivery Piping with Valves & NRV for Raw Effluent/Sewage Pump up to Inlet Chamber.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
a	20 RM	Delivery Piping with Valves & NRV for Raw Effluent/Sewage Pump up to Inlet Chamber - 100 NB - DI Pipe	ONE RM	1022.50	20450
42		Supplying, Laying, Testing & Commissioning of Delivery Piping with Valves & NRV for Internal Recirculation Pump up to Inlet of Anoxic Tank.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
a	12 RM	Delivery Piping with Valves & NRV for Equ Effluent/Sewage Pump up to Anoxic Tank - 80 NB - uPVC Sch 40 Pipe	ONE RM	852.10	10225
b	15 RM	Delivery Piping with Valves & NRV for Internal Recirculation Pump up to Inlet of Anoxic Tank - 100 NB - uPVC Sch 40 Pipe	ONE RM	1079.30	16190
43		Supplying, Laying, Testing & Commissioning of Piping from Sec Clarifier Launder Outlet to Filter Feed Tank through UV disinfection module.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
a	5 RM	Piping from Sec Clarifier Launder Outlet to Filter Feed Tank through UV disinfection module - 125 NB uPVC Sch 40 Pipe	ONE RM	1306.60	6533

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
44		Suction (Dual Suction, one from Filter Feed Tank & second from UF Feed Tank) and Delivery Piping with valves, NRV, up to frontal piping of PSF & ACF.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
a	25 RM	Filter Feed Pump Suction (Dual Suction, one from Filter Feed Tank & second from UF Feed Tank) and Delivery Piping with valves, NRV, up to frontal piping of PSF & ACF - 80 NB uPVC Sch 40 Pipe	ONE RM	852.10	21303
45	20 RM	Sludge Pump Suction and Delivery Piping with valves, NRV, up to Thickener/Inlet of Aeration Tank - 65 NB - uPVC Sch 40 Pipe	ONE RM	650.00	13000
45	120 RM	Treated Water Pump Suction and Delivery Piping with valves, NRV, up to battery limit - 80 NB - uPVC Sch 40 Pipe	ONE RM	750.00	90000
		PIPING: Sub Total:			189631
		IV: INSTRUMENTATION			
41	1 NO	SITC of DO Meter of approved make with interconnection wiring for auto switching on and off of Blowers, based on the DO Levels of the aeration tank. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH	56808.00	56808
42	1 NO	SITC of 50 Dia Electro Magnetic Flow Meter with local & remote indication panel with totaliser, including wiring between instrument & remote indicator, power supply wiring, etc., complete. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH	56808.00	56808
43	20 NOS	Supply, installation, testing and commissioning of Bourden type, stainless steel dial type pressure gauge with isolation valve and pipe having calibration of 0-16 kg/cm2.. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH	795.00	15900
44	20 RM	Supply and Installation of 600mm x 75mm x 2mm thick hot dip G/ perforated cable tray with cover along with required angle support with coupler plates, Anchor bolts and nuts etc complete and the tray, should be fitted on the wall / Ceiling etc. complete.	ONE RM	1958.50	39170
		Instrumentation Sub Total:			168686
		TOTAL VALUE OF WORK FOR THE STP-I			7448211

STP-I - 0.75 MLD CAPACITY):STP-I ELECTRICAL					
Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		I:MECHANICAL WORKS			
1	1 NO	Supply and fixing, testing and commissioning of Manual Coarse Bar Screen	EACH	45446.00	45446
		Size: To Suit 600mm Wide x 200mm Liquid Height (3850mm Total Height)			
		Clear Opening of Screen: 25mm			
		Size of Flat: 50mm x 6mm			
		Angle of Inclination: 60 Degree			
		Shape of Screen: Curved Top			
		Accessories: Rake & 2 Nos. Side Plate for 2.8m Height			
		MOC: SS 304			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
2	3 NOS	Supply and fixing, testing and commissioning of Raw Effluent/Sewage Pump	EACH	100000.00	300000
		Capacity of Pump: 48 Cu.m/Hr @ 12m Head			
		Type of Pump: Non Clog Vertical Submersible			
		Solid Handling Size: 80mm			
		Impeller Type: Non Clog			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Accessories: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop			
		Make: Kishor/KSB/Grundfos/CRI/Wilo			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
3	1 NO	Supply and fixing, testing and commissioning of Manual Fine Bar Screen	EACH	45446.00	45446
		Size: To Suit 500mm Wide x 200mm Liquid Height (700mm Total Height)			
		Clear Opening of Screen: 10mm			
		Size of Flat: 50mm x 6mm			
		Angle of Inclination: 45 Degree			
		Shape of Screen: Curved Top			
		Accessories: Rake			
		MOC: SS 304			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
4	1 NO	Supply and fixing, testing and commissioning of Mechanical Fine Bar Screen	EACH	147700.00	147700
		Size: To Suit 500mm Wide x 200mm Liquid Height (700mm Total Height)			
		Clear Opening of Screen: 6mm			
		Size of Flat: 50mm x 3mm			
		Angle of Inclination: 75 Degree			
		Type of Screen: Fixed Bar, Mechanically Raked Screen			
		Accessories: Discharge Chute			
		MOC of All Wetted Parts : SS 304			
		Make: Jash/PicoPuro/Equ.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
5	1 NO	Supply and fixing, testing and commissioning of Slotted Pipe Oil Skimmer	EACH	147700.00	147700
		Size: To Suit 2000mm Wide Oil & Grease Trap			
		Size of Slotted Pipe: 200mm Dia			
		Type of Operation: Manual Hand Wheel			
		MOC of All Wetted Parts : SS 304			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
6	2 NOS	Supply and fixing, testing and commissioning of Equ Tank Blower	EACH	193146.00	386292
		Capacity of Blower: 180m ³ /Hr @ 5.5 MWC			
		Type of Blower: Twin Lobe			
		MOC of Blower: CI			
		Speed of Blower : Less than 1000 RPM			
		Speed of Blower Motor: 1440 RPM			
		The Blower shall be complete with Blower & Motor mounted on a common base frame, belt drive, belt guard, Suction & Discharge Silencer, Air Filter, Safety Valve, NRV, etc., complete.			
		Make: Kay/Everest/Swan			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
7	1 NO	PH METER :- supply and Fixing of PH meter PO 650 ph/orp with push button type for physical dimensions 105x105x130mm cut out size 92x92mm enclosure ABS weather proof IP-65 calibration /set point ,Sensor dimension 140mmx32mm ,Flow throw . It includeing cost and conveyance , all taxes specification Provided at the outlet of Sewerage treated water sump it including all taxes as directed by Engineer-in-charge .	EACH	21587.00	21587
8	30 NOS	Supply and fixing, testing and commissioning of Coarse Bubble Diffusers	EACH	2272.00	68160
		Type: Disc Diffuser			
		Size: 90mm Dia			
		MOC: EPDM			
		Make: Rehau/OTT/SSI/Aquaflex/Techpro			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
9	2 NOS	Supply and fixing, testing and commissioning of Equ Effluent/Sewage Pump	EACH	113615.00	227230
		Capacity of Pump: 32.5 Cu.m/Hr @ 6m Head			
		Type of Pump: Non Clog Vertical Submersible			
		Solid Handling Size: 80mm			
		Impeller Type: Non Clog			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Accessoreis: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop			
		Make: Kishor/KSB/Grundfos/CRI/Wilo			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
10	4 NOS	Supply and fixing, testing and commissioning of Mixer for Anoxic Tank	EACH	107934.00	431736
		Size: To Suit 2.275 x 2.0 x 4.5m LD (5.0m TD)			
		Type: Turbine Type			
		RPM of Mixer: 100			
		MOC of Shaft & Blades: SS 304			
		Motor KW: 1.1			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
11	2 NOS	Supply and fixing, testing and commissioning of Aeration Blower	EACH	323803.00	647606
		Capacity of Blower: 504Nm ³ /Hr @ 5.5 MWC			
		Type of Blower: Twin Lobe			
		MOC of Blower: CI			
		Speed of Blower : Less than 1000 RPM			
		Speed of Blower Motor: 1440 RPM			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		The Blower shall be complete with Blower & Motor mounted on a common base frame, belt drive, belt guard, Suction & Discharge Silencer, Air Filter, Safety Valve, NRV, etc., complete.			
		Make: Kay/Everest/Swan			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
12	72 NOS	Supply and fixing, testing and commissioning of Fine Bubble Diffusers	EACH	2272.00	163584
		Type: Tubular			
		Size: 1.0m Long x 90 Dia			
		MOC: EPDM			
		Make: Rehau/OTT/SSI/Aquaflex/Techpro			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
13	400 KGS	Supply and fixing, testing and commissioning of Air Piping from Blower upto Diffusers for Equ Tank Blower & Aeration Blower	ONE KG	386.00	154400
		MOC of Exposed Pipes: SS 304			
		MOC of Vertical Drops: SS 304			
		MOC of Under Water pipes: SS 304			
		MOC of Guide Pipe & Lifting Chain: SS 304			
		The Air Piping shall be complete with Individual blower delivery piping with NRV, Diaphragm Valve, Main Header Piping from the Blower delivery up to equ tank/aeration tank including drop/vertical piping, header along the tank, vertical drop pipes with control valve & dismantling type joint, diffuser header pipe & laterals with nozzles for diffuser, end cap, vertical guide pipe at the other end of diffuser header, lifting chain, etc., complete. The design of piping shall be such that it should be possible to remove diffusers from the tanks without emptying tank & shutting off the system. The arrangement shall be that the we should be able to take out the Vertical drop pipe & the diffuser header just by dismantling the joint in the vertical drop pipe and should be able to refix the same in position.			
		Pipe Sizes: As per Diffuser Manufacturer recommendations.			
		The Contractor has to provide detailed air piping calc for the air pipes from the diffuser supplier to match the specified blower.			
		Battery Limit: Form Flange of Blowers till diffuser			
		The Piping cost is inclusive all necessary materials required for the piping like pipes, fittings, adopters, flanges, fasteners, pipe supports, clamps, valves, labour charges for fabrication, erection, pressure testing, etc., complete.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
14	130 CUM	Supply, Transportation and fixing, testing and commissioning of Media for MBBR Tank	CUM	9458	1229540
		Volume of Media: Cu.m			
		Shape of Media: Conical Frustum			
		Surface Area: 400 m2/m3 of media			
		Structure: Cylindrical with Fins			
		Sp Gravity: 0.9 to 0.95			
		MOC: P P UV Stabilised			
		No.of Pieces 50,000 nos.			
		Weight per Cum 95 to 100 Kgs			
		Make: MM Aqua/ Tecpro/Enery Equipment Tempreture 80 deg Centigrade			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
15	2 NOS	Supply and fixing, testing and commissioning of Internal Recirculation Pump	EACH	107934.00	215868
		Capacity of Pump: 62.5 Cu.m/Hr @ 3m Head			
		Type of Pump: Non Clog Vertical Submersible			
		Solid Handling Size: 80mm			
		Impeller Type: Non Clog			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Accessories: Auto Coupling, SS304 Lifting Chain, SS Guide Pipe, Control Panel with Level Switches for auto Start & Stop			
		Make: Kishor/KSB/Grundfos/CRI/Wilo			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work. Final payment after Lab Testing treated water satisfying the following parameters BOD less than 5, COD less than 10			
16	1 NO	Supply and fixing, testing and commissioning of Secondary Clarifier	EACH	454460.00	454460
		To Suit: 9.1m x 9.1m x 3.0m SWD (0.5m FB) Sq Clarifier.			
		Floor Slope: 1 in 12			
		Free Board: 0.5m			
		The Clarifier shall be to suit the Civil Tank (As per the attached GA Drg).			
		The Launder top will be finished to true level to ensure uniform overflow to avoid overflow weirs.			
		The clarifier shall be complete with			
		Mechanical Bridge/Platform spanning across the tank with GI Grating & Handrails for the entire length, Feed Well, Central Drive mechanism, Centre shaft, scrapper arm with neoprene squeezes, sludge pit cone scrapper, etc., complete.			
		MOC: MSEP + GI Gratings + GI Handrails			
		Make: ShivPAD/Eimco-KCP/PicoPuro/Voltas			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
17	2 NOS	Supply and fixing, testing and commissioning of Sludge Pump	EACH	113615.00	227230
		Capacity of Pump: 32 Cu.m/Hr @ 3m Head			
		Type of Pump: Horizontal Centrifugal			
		Impeller Type: Non Clog			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
18	1 NO	Supply and fixing, testing and commissioning of UV Disinfection System	EACH	266995.00	266995
		Flow: 32 Cu.m/Hr.			
		Type of Flow: Gravity			
		Type: UV Lamp covered with Quartz Glass			
		MOC of Enclosure: SS 304			
		Accessories: Control Panel			
		Make: Hitech/Sukrut/Equ.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
19	2 NOS	Supply and fixing, testing and commissioning of Filter Feed Pump	EACH	134066.00	268132
		Capacity of Pump: 33.5 Cu.m/Hr @ 30m Head			
		Type of Pump: Horizontal Centrifugal			
		Impeller Type: Semi Open			
		MOC of Casing: CI			
		MOC of Impeller: CI			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Make: Johnson/Kirloskar/KSB			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
20	1 NO	Supply and fixing, testing and commissioning of Pressure Sand Filter	EACH	235183.00	235183
		Capacity of Filter: 32.5 Cu.m/Hr.			
		Minimum Dia of Filter: 1.9m			
		Minimum HOS of Filter: 1.5m			
		Minimum Height of Filter Sand: 0.75m			
		Minimum Plate Thickness for Shell & Dish: 6mm			
		Type of Underdrain: Nozzle Plate with Plastic Nozzles			
		Type of Inlet: Inlet Distribution Box/ Bell Mouth.			
		Specification for Filter Media: As per CPHEEO Manual			
		MOC of Filter: MSEP			
		Accessories: Frontal Piping & Valves.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
21	1 NO	Supply and fixing, testing and commissioning of Activated Carbon Filter	EACH	301080.00	301080
		Capacity of Filter: 32.5 Cu.m/Hr.			
		Minimum Dia of Filter: 1.90m			
		Minimum HOS of Filter: 1.5m			
		Minimum Height of Activated Carbon: 0.75m			
		Minimum Plate Thickness for Shell & Dish: 6mm			
		Type of Underdrain: Nozzle Plate with Plastic Nozzles			
		Type of Inlet: Inlet Distribution Box.			
		Type of Activated Carbon: Coal Based/Coconut shell			
		Minimum Iodine Value for Activated Carbon: 1000			
		MOC of Filter: MSEP			
		Accessories: Frontal Piping & Valves.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
22	1 SYSTEM	Supply and fixing, testing and commissioning of Hypochlorite solution dosing System	EACH SYSTEM	45446.00	45446
		Dosing System shall be complete with			
		1 No. - 100 Lit Capacity HDPE Tank with Inlet & Outlet Connections, Level Indicator			
		Dosing Pump, 0 - 5 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
23	1 SYSTEM	Supply and fixing, testing and commissioning of FeCl3 solution dosing System	EACH SYSTEM	32664.00	32664
		Dosing System shall be complete with			
		1 No. - 150 Lit Capacity HDPE Tank with Inlet & Outlet Connections, Level Indicator			
		1 No. - Agitator to suit 150 Lit HDPE tank of SS 304 MOC, 100 RPM speed.			
		Dosing Pump, 0 - 6 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
24	2 NOS	Supply and fixing, testing and commissioning of Treated Water Pump	EACH	90892.00	181784
		Capacity of Pump: 32 Cu.m/Hr @ 30m Head			
		Type of Pump: Horizontal Centrifugal			
		Impeller Type: Semi Open			
		MOC of Casing: CI			
		MOC of Impeller: CI			
		Make: Johnson/Kirloskar/KSB			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
25	2 NOS	Supply and fixing, testing and commissioning of Filter Press Feed Pump	EACH	59080.00	118160
		Capacity of Pump: 1 Cu.m/Hr @ 30m Head			
		Type of Pump: Screw Pump			
		Impeller Type: Screw			
		MOC of Casing: CI			
		MOC of stator : Nitrile			
		MOC of rotor : SS 304			
		Make: PD pumps / Rotomac / Alpha helical /Roto			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
26	1 NO	Supply and fixing, testing and commissioning of Manual Plate Filter Press	EACH	284038.00	284038
		Size of Plate: 610 x 610mm			
		No. of Chambers: 16 Chamber			
		Operation: Hydraulic Pump			
		Capacity: For Dewatering of 5 Cu.m/Day, 3% Sludge in 12 Hour			
		Make: Hydro Press/Yo-Tana/Amar/Equ.			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
27	1 SYSTEM	Supply and fixing, testing and commissioning of Dewatering PE solution dosing System	EACH SYSTEM	73850.00	73850
		Dosing System shall be complete with			
		2 Nos. - 100 Lit Capacity HDPE Tank with Inlet & Outlet Connections, Level Indicator			
		2 Nos. - Agitator to suit 100 Lit HDPE tank of SS 304 MOC, 100 RPM speed.			
		Dosing Pump, 0 - 60 LPH Capacity, 2 Nos.			
		Complete Flexible Tubing with Valves, NRV's, Strainers, etc., from Dosing Tank to dosing Point			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
28	1 NO	Supply and fixing, testing and commissioning of Jib Crane for Lifting of Submersible Pumps	EACH	136338.00	136338
		Capacity : 0.5 Ton			
		Min Clear Height: 2.50m to the Bottom of the Hook (From Base plate).			
		Degree of Rotation: 360 Degrees.			
		Length of Boom: 2.0m to the Centre of Lifting Hook from the centre of mast.			
		Rotating Operation: Manual			
		Accessories Req'd: 0.5 Ton Capacity Chain Pulley Block with Lifting Chain of 9.0m + Trolley of reputed make.			
		Mast section: Circular Mast of required Height			
		Method of Installation: By Welding to Fish Plate embedded in concrete.			
		Make: Reputed			
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
29	14 CUM	Supply and fixing, testing and commissioning of Tube Settler Media for Settling tank	CUM	9657	135198
		Volume of Media: 48 Cu.m			
		Shape of Media: Verticle Plate			
		Structure: Sheet with locking arrangement			
		MOC: PVC			
		No.of Pieces 150 per Cum (Size 1 Mtr x 0.5)			
		Make: MM Aqua/ Tecpro/Enery Equipment			

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		including all incidental and operational charges etc, as per approved drawings and as directed by Engineer-in-charge complete for finished item of work.			
		Mechanical Works Sub Total:			6992853
		STP-I ELECTRICAL WORKS			
		MAIN PANEL IN ELECTRICAL ROOM			
1	1 NO	Supply Installation Testing & commissioning of free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated/epoxy/PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/ switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (Panel shall be fabricated from reputed and branded manufacturers approved by dept and having CPRI approval with CPRI test certificates).	Each	209500.00	209500
		Incomer :-			
		250A Four Pole, MCCB of adjustable, confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 35/36 KA with thermal magnetic release Panel Mounted - 1 No. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		Outgoing feeders:-			
		125A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 6 Nos. Makes: L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		63-100A, 3 Pole, Adjustable, Confirms to IEC 60947-2 and IS 13947-Part 1&2 having Breaking Capacity 25 KA with thermal magnetic release Panel Mounted with separate individual neutral connector link. - 4 Nos. Makes:L&T- D shine / Schneider-CVS/Legrand – (DP X3/DRX)/ Siemens- 3VL / Hager-h3/C&S - Winbreak/HPL-Techno			
		Metering:-			
		Supply and Fixing of (0-500) V range Volt meter on existing panel, making connection by PVC insulated copper conductor with PVC sleeves/channel etc., as required - 1 No. Make:Conzerve/Elmeasure/ Meco/ HPL/L&T/ Socomec			
		Supply and Fixing of CT operated direct reading type Ammeter, below 500A, on existing panel , making connection by PVC insulated copper conductor with PVC sleeves/channel etc. as required - 1 No. Make: Conzerve/ Elmeasure/Meco/HPL/ L&T/ Schneider/AE/ Socomec			

Sl.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
			Supply and Fixing of Current Transformer, from 200 / 5 to 400/5 Ratio, 10 VA , class 1 accuracy with all necessary support in existing panel including connection etc. as required - 3 No. Make: Kappa/L&T/ Seimens/ C&S/ Schneider			
			Supply and Fixing of 240/220 V, LED (22.5 mm dia) Pilot lamp Red, Yellow & Blue Colour with integral circuit, terminal block, including connection etc. as required - 3 No of approved make			
			Supply and Fixing of selector switch for voltmeter (4 position) including making connection etc. as required - 1 No. Make: L&T / C&S/ Salzer/HPL			
			Supply and Fixing of CT linked selector switch of 10 A for Ampere meter (4 position) including making connection etc. as required - 1 No. . Make: L&T/C&S/Salzer/ HPL			
			10 kA - 6-32A range SP MCBs - 6 No. Makes: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)			
			Bus Bars:-			
			Supply and fixing of Electrolytic grade aluminium bus bars by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves			
			For Bus Bars vertical & horizontal, Phases & Neutral equal sizes of 40mm x 8mm x 4R and for sectional bus bars and extended links to MCCBs shall be more than or equal to the ratings of MCCBs			
			Control wiring, Earth Bus Bar, Door Loop earhtings, Labour charges for errection of switch gears, panels boards including all labour charges etc with connections for finished items of works including transportation charges.			
2	20	NOS	Supply & Fixing of D.O.L Starter 415V, 3 phase, 50Hz.. enclosed with no volt coil and overload protection with necessary materials, etc., complete suitable for..... Makes: Siemens / Crompton / L&T (MK2 DOL). UP to 5 to 7.5 HP	EACH	2612.00	52240
			U.G CABLES			
3			Supply and transportation of following XLPE insulated, 1100V grade armoured alluminium cable as per specification confirming to IS:7098 (Part-I)/1554-I Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab /RR Kabel/RPG / Finolex / V-Guard			
a	250	RM	3.5 core, 150 Sq.mm	ONE RM	1119.10	279775
b	130	RM	3.5 core, 70 Sq.mm	ONE RM	619.20	80496
c	120	RM	3.5 core, 50 Sq.mm	ONE RM	460.10	55212
d	120	RM	3.5 core, 35 Sq.mm	ONE RM	347.70	41724
e	200	RM	3.5 core, 25 Sq.mm	ONE RM	280.60	56120
f	150	RM	4 core, 16 Sq.mm	ONE RM	229.50	34425
g	120	RM	4 core, 10 Sq.mm	ONE RM	195.40	23448
h	120	RM	4.0 Core 6 Sq.mm.	ONE RM	165.90	19908
i	200	RM	4.0 Core 4 Sq.mm.	ONE RM	125.00	25000
4	50	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables upto 50 Sq.mm on sand cushion covering the cable with bricks and back filling of Trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE RM	272.20	13610

Sl.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
5	100	RM	Earth work excavation of Trench in hard ground soil, laying of U.G cables from 70 to 300 Sqmm on sand cushion covering the cable with bricks and back filling of trench duly providing route indicator embedded in C.C including cost and conveyance of materials and labour charges etc., complete.	ONE RM	481.80	48180
6	50	RM	Labour charges for run of U.G cables upto 50 sq.mm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE RM	57.20	2860
7	50	RM	Labour charges for run of U.G cables from 70 to 300 Sqmm on wall with necessary fixing arrangements such as saddles, clamps etc., as directed by department including cost and conveyance of all materials etc., complete.	ONE RM	91.90	4595
8	580	RM	Labour charges for run of armoured U.G cables upto 50 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE RM	44.20	25636
9	580	RM	Labour charges for run of armoured U.G cables from 70 Sq.mm to 300 Sq.mm in existing cable trench/cable duct/ cable tray/hume pipe/G.I. pipe with necessary fixing arrangements such as cable ties etc., as directed by department at site.	ONE RM	59.50	34510
10			Supply and making one end termination with heavy duty double compression brass gland as per BS 6121:2005 ,IP 66 complete, SIBG type, heavy duty Alluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. Makes:Dowels/Comet/SMI			
a	60	SET	4 core, 6/10/16 Sq.mm	Each SET	315.80	18,948.00
b	40	SET	3.5 core, 25 Sq.mm	Each SET	310.20	12,408.00
b	30	SET	3.5 core, 35 Sq.mm	Each SET	412.40	12372
c	30	SET	3.5 core, 50 Sq.mm	Each SET	481.70	14451
d	30	SET	3.5 core, 70 Sq.mm	Each SET	714.60	21438
e	30	SET	3.5 core, 90 Sq.mm	Each SET	819.20	24576
11			Supply,transporatation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays without cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete			
a	20	RM	150mm X 50mm X 1.6mm size	ONE RM	492.00	9840
b	20	RM	300mm X 50mm X 1.6mm size	ONE RM	908.00	18160
12			Supply,transporatation & installation of following sizes of Hot Dipped Galvanized Iron perforated cable trays with cover , including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/Wall with suspenders etc., complete			
a	30	RM	150mm X 50mm X 1.6mm size	ONE RM	639.50	19185
b	30	RM	300mm X 50mm X 1.6mm size	ONE RM	1180.10	35403
13			Supply,transporatation & installation of following sizes of Hot Dipped Galvanized Iron ladder type cable trays with rungs at span of 250 mm including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling/wall with suspenders and etc., complete.			
a	30	RM	300mm X 50mm X 2.0mm size	ONE RM	779.40	23382

Sl.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
14			Supply, Transportation and Laying of the following sizes of double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. Makes:DURA LINE (Dura Guard) or its equivalent make.			
a	50	RM	Outer dia 50mm and Inner dia 38mm	ONE RM	140.30	7015
b	100	RM	Outer dia 63mm and Inner dia 51mm	ONE RM	177.20	17720
c	30	RM	Outer dia 78mm and Inner dia 63mm	ONE RM	208.50	6255
			GI PIPES/ HUME PIPES FOR CABLES AT ROAD CROSSING			
15			Supply and laying of B class GI pipe of ISI mark with all accessories of following sizes for laying at the road crossings for the UG cables.			
a	20	RM	40 mm dia medium grade, G.I Pipe	ONE RM	499.40	9988
16			Supply and Laying NP2 class RCC hume pipe with collars of following sizes for laying at the road crossings for the UG cables.			
a	20	RM	150 mm dia Hume pipe	ONE RM	376.00	7520
b	20	RM	300 mm dia Hume pipe	ONE RM	757.10	15142
			CUTTING C.C/B.T. ROAD SURFACE FOR CABLE TERNCH			
17			Cutting road surface including stacking of excavated materials for UG Cable trench work.			
a	10	SQM	a) Cutting open B.T. road surface (as well as asphalt concrete up to 75 mm thick) including water bound macadam	ONE SQM	118.00	1180
b	8.38	Cu. Mt	b) Cutting open C.C. road surface with concrete saw cutter and removal with Breaker	ONE Cu. Mt	3739.10	31334
			PVC CONDUIT PIPE			
18	100	RM	Supply and fixing of ISI 25mm outer dia (2.00 to 2.20)mm thickness, heavy grade with IS:9537 part 3 FRLS rigid PVC pipe (ISI marked) concealed in Roof Slabs with all required PVC deep junction boxes and all accessories including and labour charges etc., complete. Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/Beljin/Vasavi/DEC	ONE RM	112.20	11220
19	100	RM	Supply and Fixing of 25mm outer dia (1.60 to 1.80)mm thicknes medium grade with IS:9537 part 3 FRLS rigid P.V.C. pipe (ISI marked) concealed in wall with all required PVC junction boxes and all accessories including masonry work for light, bell, fan, and separate plug point with hot dip galvanized 20/18 SWG MS modular metal switch box with earthing terminal including all labour charges etc., complete.Makes: Precision/Universal& Marudhar/VIP/ GoldMedal / Million plast / GM / Sudhakar /Polycab/Anchor/ Polyline/Orbit/AKG/Beljin/Vasavi/DEC	ONE RM	131.40	13140
			LIGHT POINT WITH MODULAR SWITCH			
			Non - Residential Buildings			

Sl.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
20	20	PTS	Wiring with 2 runs of 22/0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable (ISI marked) in existing pipe with 6A Modular switch (ISI marked) with cover plate, Ceiling rose/BH/ SBH, including all labour charges etc., complete for Light, Bell, Fan and Exhaust Fan points etc., complete. (for Non Residential Building) Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor. Makes of switches:- Legrand Myrius / Crabtree verona / L&T/ HPL/ Schneider Livia/GM (Zicono/Four Five)/C&S/Goldmedal (Curve)/Million Mway/Logus Platina/ Panasonic Vision/Salzer S90 series/Anchor-Roma.	Each POINT	839.50	16790
			MODULAR SOCKET ON COMMON BOARD			
21	2	PTS	Supply and Fixing of 6 Amps modular type (ISI marked) switch, and 6 A 3/2 pin Modular type socket with cover plate on a common switch board including giving all connections and all labour charges etc., complete. Makes of Switches/Socket:- Legrand Myrius / Crabtree verona / L&T/ HPL/ Schneider Livia/GM (Zicono/Four Five)/C&S/Goldmedal (Curve)/Million Mway/Logus Platina/ Panasonic Vision/Salzer S90 series/Anchor-Roma.	Each POINT	440.30	881
			16A MODULAR SWITCH ON 16A MODULAR SOCKET			
22	2	NOS	Supply and fixing of 16A/6A, 2 in one, modular type socket with 16A switch (ISI marked) modular type with cover plate on existing modular metal switch box including all labour charges, giving all connections etc., complete. Makes of Switches/Socket:- Legrand Myrius / Crabtree verona / L&T/ HPL/ Schneider Livia/GM (Zicono/Four Five)/C&S/Goldmedal (Curve)/Million Mway/Logus Platina/ Panasonic Vision/Salzer S90 series/Anchor-Roma.	Each	524.40	1049
			RUN of MAINS			
23	51	RM	Supply and run of 1 of 22 /0.3mm (1.5 Sq.mm) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing pipe for earth continuity including all labour charges etc., complete. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	34.80	1757
24	150	RM	Supply and run of 3 of 2.5 sq.mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for individual lighting circuits including labour charges etc., complete as required for switch boards. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	141.10	21165

Sl.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
25	100	RM	Supply and 3 runs of 4.0 sq mm (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing conduit pipe for run of mains including labour charges etc., complete as required including labour charges for 16A sockets. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	192.70	19270
26	50	RM	Supply & run of 3 of 6.0 Sqmm (84/0.3mm) (phase neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for run of mains including labour charges etc. complete for AC points & SDB's etc as required. Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/HPL/GM/ Million/Goldmedal/Anchor.	ONE RM	272.00	13600
27	50	RM	Supply and run of 5 of 6 Sq mm (phases, neutral and earth) FRLS / FRLSH / HFFR / ZHFR P.V.C. insulated 1100V grade as per IS : 694 / 1990 specification flexible copper cable in existing MS conduit pipe for circuits including labour charges etc. complete as required for run of mains from Lighting panel board to TPN DB'S with pin type lugs and connections. [for LDBs] Makes of wires:- Finolex/RR kabel/ Havells/ KEI/Polycab/ Gloster/V-Guard/ HPL/GM/ Million/ Goldmedal/Anchor.	ONE RM	453.90	22695
			DISTRIBUTION BOARDS			
			6-way TPN Lighting DB with RCCB (LDB) Flush Mounting			
28	1	NO	Supply and fixing of TPN 6 way distribution board with IP-43 protection and as per IS 8623; IS 13032; IEC 61439-3, (8+18 Module) with provision to accommodate the ELCB & FP MCB as incomer and suitable for single pole outgoing MCB's in sheet steel enclosure with 40A, 10 KA breaking capacity 'c' curve 4 pole MCB with 40A, 30mA, 4 Pole RCCB as incomer and 18 No of 6 to 32A single pole, 10 KA breaking capacity 'c' curve MCBs as outgoings including making connections etc., complete concealed in wall. (LIGHTING DB). Makes for DBs: Legrand (Ekinox 3) / Schneider-A9/Hager -Novello+/ Seimens/Havells STADx/L&T Newrange/Indo Asian-Opti Pro/ HPL (Techno). and Makes for MCBs: Legrand-DX3 / Schneider-A9/Hager-h3/ Siemens-5SX4/ Havells STADx /L&T-AU/Indo Asian-Opti pro/ HPL (Techno)	Each	19497.00	19497
			EARTHINGS			
29	6	NOS	Providing independent earthing by excavating a trench to a depth of 2.5 M in all soils, as per size specified in the Data, using 100mm dia Heavy gauge Flange C.I (Cast iron) pipe of 2.5 Mtrs length with necessary accessories duly providing staggered holes including filling with equal proportion of Salt and Charcoal in layers and all labour charges etc., complete.	Each	8266.00	49596

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
30	6 NOS	Providing independent earthing for Important equipment with 40mm dia 'B' class 2.5m long G.I pipe and 19mm dia 'B' class G.I pipe of 0.3mtr. long connected with reducer providing G.I funnel with mesh enclosed in C.C.Chamber of 400m x 400m x 400mm with R.C.C. Slab cover duly providing staggered holes filling with salt and charcoal from the bottom of the pipe giving earth connection from electrode through G.I strip of 40 x 6mm x 200mm length with all accessories and labour charges complete, as per IS specifications 732/1982 (Part II)	Each	7893.00	47358
31	2 NOS	Providing independent earthing for Sophisticated Electronic equipment with 600mm x 600mm x 3.15mm thick copper plate rigidly fixed to 40mm dia G.I Pipe of 2.5 mtr length connected with reducer providing G.I funnel with wiremesh as per National Electric Code including C.C.Chamber of size 400m x 400m x 400mm covered with R.C.C. Slab filling with salt and charcoal giving earth connection from electrode with Copper strip of 25mm x 5mm x 200mm length to be bolted with nut bolts to G.I.pipe including 25mm x 3mm copper strip of 6Mtrs length connected from plate to Copper strip with all accessories and labour charges complete as per IS specification 732/1982 (Part II).	Each	20962.00	41924
32	100 RM	Supply and Run of No.8 SWG G.I wire including cost of all accessories and labour charges etc., complete.	ONE RM	27.20	2720
33	100 RM	Supply and Run of 25mm x 3mm G.I Strip including cost of all accessories and labour charges etc., complete.	ONE RM	85.10	8510
34	100 RM	Supply and Run of 25mm x 3mm copper strip including cost of all accessories and labour charges etc., complete.	ONE RM	638.00	63800
FIXTURES					
35	20 NOS	Supply and Fixing of 20-24W, not less than 1100mm length LED batten light with extruded alluminium / CRCA housing and polycarbonate cover, input voltage AC 220 - 260 Volts with PF>0.9, Surge protection: 2KV, THD<15%, with high power LEDs having efficacy of ≥ 120 lumens / watt with inbuilt and replacable driver with earth connection brought outside and frosted cover CCT: 3000K - 5700K, minimum CRI>70 etc., complete including fixing on wall / Ceiling with PVC/TW round blocks with all accessories including giving connections and all labour charges etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Phillips / GE- Venture / Crompton / Wipro / Bajaj / Havells / Halonix/Jaquar/HPL/GM / GreenLites / Gold Medal/Eveready// Rhino/Panasonic b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG/ Everlight.	Each	778.00	15560
36	5 NOS	Supply and Fixing of batten holder/angle holder on existing block with 0.5W LED Lamp with input voltage 90 to 300V, Colour temperature 3000k - 6500k, Beam angle 170 - 220 degrees, B22 base and all labour charges etc., complete., in lieu of ceiling rose for bed light in hostel rooms or residential buildings. Makes: Phillips /Crompton / Bajaj / Havells /Halonix/GM/HPLSyska / Green Lites / Fortune Art / GoldMedal / Luker/Leo/Orbit /Rhino / GLO LED/Million	Each	128.00	640
STREET LIGHT					

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
37	6 NOS	<p>Supply, Transportation and Fixing of 30W LED Street light Luminaire made of pressure diecast alluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temprature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0mt of 25mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty.</p> <p>a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04)</p> <p>b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG</p>	Each	4215.00	25290
38	4 NOS	<p>Supply, Transportation and Fixing of 60W LED Street light Luminaire made of pressure diecast alluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temprature<70°C, with Ingres protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty.</p> <p>a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04)</p> <p>b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG</p>	Each	7084.00	28336

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
39	2 NO	Supply, Transportation and Fixing of 90W LED Street light Luminaire made of pressure diecast alluminium body with powder coated, having protective toughned glass, supply Input voltage 120-270 V AC, P.F>0.90, high power LED's having system efficacy>120 lm/W and junction temprature<70°C, with Ingress protection IP66, Luminaire performance complies to IS 10322 (Part 5/Sec-3), Driver surge protection 4KV, external Surge protection 10 KV with optics distribution, THD< 10% at 110 Volts AC, driver efficiency >90%, CCT:3000K-5700K, minimum CRI>70, etc., complete including fixing of luminaire on wall/Pole with 1.0 mt of 40mm dia GI pipe bracket and anti-tilting MS flat, 3 core 1.5 Sq.mm sheathed flexible round copper cable including all labour charges and giving connections etc., complete with 5 years warranty. a) LUMINAIRE MAKE : Wipro(Skyline) / Philips (Green line) / GE-Venture / Crompton(Neo Series) / Bajaj (Edge) / Halonix(Lumos - Super) / Havells (Endura Series) /Capart(Premium)/Greenlites(Hi Lux) /Polycab/Keselec/ HPL(City Vision)/ Jaquar(Premium)/Eveready/ Surya (Pollux) / FortuneArrt (Leaf) / Rhino(GPSL04) b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG	Each	10293.00	20586
		Electrical Sub Total:			1758940
		III: PIPING:			
40		Supplying, Laying, Testing & Commissioning of Piping from Last Manhole to Coarse Screen Chamber.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
		The Scope of Piping Shall Include the following:			
a	10 RM	Piping from Last Manhole to Coarse Screen Chamber - 300 Dia PVC 10 KSC Pipe	ONE RM	1193.00	11930
41		Supplying, Laying, Testing & Commissioning of Delivery Piping with Valves & NRV for Raw Effluent/Sewage Pump up to Inlet Chamber.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to IS, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			

Sl.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
a	20	RM	Delivery Piping with Valves & NRV for Raw Effluent/Sewage Pump up to Inlet Chamber - 100 NB - DI Pipe	ONE RM	1022.50	20450
42			Supplying, Laying, Testing & Commissioning of Delivery Piping with Valves & NRV for Internal Recirculation Pump up to Inlet of Anoxic Tank.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to ISI, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
a	12	RM	Delivery Piping with Valves & NRV for Equ Effluent/Sewage Pump up to Anoxic Tank - 80 NB - uPVC Sch 40 Pipe	ONE RM	852.10	10225
b	15	RM	Delivery Piping with Valves & NRV for Internal Recirculation Pump up to Inlet of Anoxic Tank - 100 NB - uPVC Sch 40 Pipe	ONE RM	1079.30	16190
43			Supplying, Laying, Testing & Commissioning of Piping from Sec Clarifier Launder Outlet to Filter Feed Tank through UV disinfection module.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes conforming to ISI, including pipe specials like bends of suitable degree, elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
a	5	RM	Piping from Sec Clarifier Launder Outlet to Filter Feed Tank through UV disinfection module - 125 NB uPVC Sch 40 Pipe	ONE RM	1306.60	6533

SI.No.	Quantity		Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
44			Suction (Dual Suction, one from Filter Feed Tank & second from UF Feed Tank) and Delivery Piping with valves, NRV, up to frontal piping of PSF & ACF.....complete piping for the MLD E&STP to match the P & ID and to match the layout, using suitable material pipes of approved makes elbow, tee, union/flanges, valves, fasteners, Cutting the pipes to requirement, making joints with pipe specials, earth work excavation, laying, refilling as required, or in pipe supports including its foundation, pipe supports, clamping system, etc., Conducting wet run, rectifying the leaks if any in laid pipe work, etc, complete with valves as applicable. Battery Limits: From Head Manhole near the STP-I (Approx. 15m), piping for Treated Water Pump for a length of 100m from the STP boundary. The complete piping within the E&STP area shall be contractor's scope. As Per Approved Makes in SOR for uPVC/D.I./KSC Pipes/ Reputed makes with ISI			
a	25	RM	Filter Feed Pump Suction (Dual Suction, one from Filter Feed Tank & second from UF Feed Tank) and Delivery Piping with valves, NRV, up to frontal piping of PSF & ACF - 80 NB uPVC Sch 40 Pipe	ONE RM	852.10	21303
g	20	RM	Sludge Pump Suction and Delivery Piping with valves, NRV, up to Thickener/Inlet of Aeration Tank - 65 NB - uPVC Sch 40 Pipe	ONE RM	650.00	13000
h	120	RM	Treated Water Pump Suction and Delivery Piping with valves, NRV, up to battery limit - 80 NB - uPVC Sch 40 Pipe	ONE RM	750.00	90000
			PIPING: Sub Total:			189631
			IV: INSTRUMENTATION			
41	1	NO	SITC of DO Meter of approved make with interconnection wiring for auto switching on and off of Blowers, based on the DO Levels of the aeration tank. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH	56808.00	56808
42	1	NO	SITC of 50 Dia Electro Magnetic Flow Meter with local & remote indication panel with totaliser, including wiring between instrument & remote indicator, power supply wiring, etc., complete. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH	56808.00	56808
43	20	NOS	Supply, installation, testing and commissioning of Bourden type, stainless steel dial type pressure gauge with isolation valve and pipe having calibration of 0-16 kg/cm2.. Makes: Metlor Tolodo/Vector Technologies/Lutron/Spectra Labs/Kytola/Any reputed brand with ISI	EACH	795.00	15900
44	20	RM	Supply and Installation of 600mm x 75mm x 2mm thick hot dip G/pperforated cable tray with cover along with required angle supportwith coupler plates, Anchor bolts and nuts etc complete and the tray,should be fitted on the wall / Ceiling etc. complete.	ONE RM	1958.50	39170
			Instrumentation Sub Total:			168686
			TOTAL VALUE OF WORK FOR THE STP-I			9110110

OPERATION AND MAINTENANCE OF STPs & ETP					
Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
OPERATION & MAINTENANCE for Sewerage Treatment Plants- I & II (2 No STPs, 0.75 MLD and 0.2 MLD) and Effluent Treatment Plant (ETP) (1 No)					
1		Operation and maintenance of 2 No sewerage treatment plants (STP) and 1 No effluent treatment plant (ETP) for 2 years after commissioning within the DLP by engaging man power round the clock i.e. for 24 hours in a day with two helpers and one technician/ electrician including replacement of spares like motor bearings, capacitors and motor rewinding charges and servicing of all motors and pumpsets strictly as per the service schedule/program given by OEM and replacement of any other consumables and all repairs required during operation for effective functioning of the plants and periodical cleaning and servicing of all equipments including cost and conveyance of all materials and all labour charges etc., complete.			
	12 Months	For first year after commissioning of the Plants	One Month	58650.00	703800
	12 Months	For second year after commissioning of the Plants	One Month	62250.00	747000
		Man Power Cost within the DLP of 2 years			1450800
	c	Cost of Consumables for all routine consumable items i.e. chemicals such as hypo-chloride, alum etc., and ionizer plates, e-cell plates and all labour charges including transportation etc., complete within the DLP period of 2 years for the STPs and ETP			
	12 Months	For first year after commissioning of the STP-I	One Month	8000.00	96000
	12 Months	For second year after commissioning of the STP-I	One Month	8400.00	100800
	12 Months	For first year after commissioning of the STP-II	One Month	4000.00	48000
	12 Months	For second year after commissioning of the STP-II	One Month	4200.00	50400
	12 Months	For first year after commissioning of the ETP	One Month	4000.00	48000
	12 Months	For second year after commissioning of the ETP	One Month	4200.00	50400
		Cost of Consumables for STP-I within the DLP of 2 years			393600
		Total cost of O&M for STP-I within DLP Period:			1844400
2		Comprehensive annual maintenance charges for another five years i.e. from 3rd year to 7th year after DLP period of 2 years, covering the following:			
		Operation and maintenance of 2 No sewerage treatment plants (STP) and 1 No effluent treatment plant (ETP) from 3rd year to 7th year for 5 years after the DLP period by engaging man power round the clock i.e. for 24 hours in a day with two helpers and one technician/ electrician including motor bearings, capacitors and motor rewinding charges and servicing of all motors and pumpsets strictly as per the service schedule/program given by OEM and any other consumables and all repairs required during operation for effective functioning of the plants and periodical cleaning and servicing of all equipments including cost and conveyance of all materials and all labour charges etc., complete.			
	12 Months	For third year after commissioning of the Plants	One Month	66030.00	792360
	12 Months	For fourth year after commissioning of the Plants	One Month	70080.00	840960
	12 Months	For fifth year after commissioning of the Plants	One Month	74370.00	892440
	12 Months	For sixth year after commissioning of the Plants	One Month	78570.00	942840
	12 Months	For seventh year after commissioning of the Plants	One Month	82980.00	995760

Sl.No.	Quantity	Description of Work	Unit (in words)	Rate (in Rs.)	Amount (in Rs.)
		Cost of Man Power from 3rd year to 7th year after DLP			4464360
3		Cost of Consumables for all routine consumable items i.e. chemicals such as hypo-chloride, alum etc., and ionizer plates, e-cell plates and all labour charges including transportation etc., complete from 3rd year to 7th year after the DLP period of 2 years for the Plants			
	12 Months	For third year after commissioning for STP-I	One Month	8820.00	105840
	12 Months	For fourth year after commissioning for STP-I	One Month	9261.00	111132
	12 Months	For fifth year after commissioning for STP-I	One Month	9724.00	116688
	12 Months	For sixth year after commissioning for STP-I	One Month	10210.00	122520
	12 Months	For seventh year after commissioning for STP-I	One Month	10721.00	128652
	12 Months	For third year after commissioning for STP-II	One Month	4410.00	52920
	12 Months	For fourth year after commissioning for STP-II	One Month	4631.00	55572
	12 Months	For fifth year after commissioning for STP-II	One Month	4862.00	58344
	12 Months	For sixth year after commissioning for STP-II	One Month	5105.00	61260
	12 Months	For seventh year after commissioning for STP-II	One Month	5360.00	64320
	12 Months	For third year after commissioning for ETP	One Month	4410.00	52920
	12 Months	For fourth year after commissioning for ETP	One Month	4631.00	55572
	12 Months	For fifth year after commissioning for ETP	One Month	4862.00	58344
	12 Months	For sixth year after commissioning for ETP	One Month	5105.00	61260
	12 Months	For seventh year after commissioning for ETP	One Month	5360.00	64320
		Cost of Consumables from 3rd year to 7th year after DLP			1169664
4		Cost of replacement of all spares whatever required to all the equipments for proper functioning of the STP plant including cost and conveyance of all materials and all labour charges etc., complete as required at site after the DLP period from 3rd year to 7th year, for the Plants			
	1 Year	For third year after commissioning for STP-I	One Year	139857.00	139857
	1 Year	For fourth year after commissioning for STP-I	One Year	139857.00	139857
	1 Year	For fifth year after commissioning for STP-I	One Year	139857.00	139857
	1 Year	For sixth year after commissioning for STP-I	One Year	139857.00	139857
	1 Year	For seventh year after commissioning for STP-I	One Year	139857.00	139857
	1 Year	For third year after commissioning for STP-II	One Year	106619.00	106619
	1 Year	For fourth year after commissioning for STP-II	One Year	106619.00	106619
	1 Year	For fifth year after commissioning for STP-II	One Year	106619.00	106619
	1 Year	For sixth year after commissioning for STP-II	One Year	106619.00	106619
	1 Year	For seventh year after commissioning for STP-II	One Year	106619.00	106619
	1 Year	For third year after commissioning for ETP	One Year	39454.00	39454
	1 Year	For fourth year after commissioning for ETP	One Year	39454.00	39454
	1 Year	For fifth year after commissioning for ETP	One Year	39454.00	39454
	1 Year	For sixth year after commissioning for ETP	One Year	39454.00	39454
	1 Year	For seventh year after commissioning for ETP	One Year	39454.00	39454
		Cost of Spares from 3rd year to 7th year after DLP			1429650
		Total cost of O&M from 3rd year to 7th year after DLP			7063674
		OVERALL COST O&M FOR THE 3 No PLANTS, (2 NO STP & 1 NO ETP) FOR 7 YEARS			8908074

BOQ (Minor Equipment of Hospital and Medical College) PARVATHIPURAM

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
1	50	Nos.	Alfa Beds	EACH	2542.37	127119
2	25	Nos.	Algometer	EACH	4237.29	105932
3	10	Nos.	Ambulatory Blood pressure machine	EACH	22033.90	220339
4	2	Nos.	Anaerobic apparatus	EACH	18644.07	37288
5	2	Nos.	Analytical Balance :upto 200g/1gm increment	EACH	59322.03	118644
6	1	Nos.	Anthropometric Set including A) Folding Metal Rod Upto 7 Ft B) Osteometric Board C) Craniometer D) Mandibulometer E) Goniometer F) Vernier Calipers G) Equipment for Reporting Height H) Weighing Machine Dial Type Human	EACH	42372.88	42373
7	2	Nos.	Antibiotic zone scale	EACH	32203.39	64407
8	2	Nos.	Apparatus for passive movement	EACH	22033.90	44068
9	6	Nos.	Articulated Skeleton set	EACH	21610.17	129661
10	4	Nos.	Vertical Autoclave	EACH	68413.80	273655
11	1	Nos.	Automated Blood Culture System	EACH	2937500.00	2937500
12	1	Nos.	Automated Rotary Microtome	EACH	335000.00	335000

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
13	6	Nos.	Autopsy Tables	EACH	38134.75	228808
14	10	Nos.	Baby weighing machine Digital	EACH	16271.19	162712
15	1	Nos.	Balance Electronic Digital	EACH	71694.92	71695
16	1	Nos.	Balance for weighing food stuff(Capacity 2 Kg).	EACH	4025.42	4025
17	1	Nos.	Balance Micro	EACH	71694.92	71695
18	3	Nos.	Balance, chemical with weights	EACH	5072.03	15216
19	10	Nos.	Balances	EACH	12711.86	127119
20	1	Nos.	Basal metabolism apparatus	EACH	12711.86	12712
21	4	Nos.	Basic Boyles Apparatus	EACH	263579.66	1054319
22	1	Nos.	Bicycle Ergometer	EACH	7203.39	7203
23	220	Nos.	Binocular Microscope	EACH	29661.02	6525424
24	10	Nos.	BiPAP	EACH	94791.86	947919
25	1	Nos.	Blood and Fluid warmer	EACH	117743.32	117743
26	1	Nos.	BOD Incubator	EACH	75397.46	75397
27	2	Nos.	Boiling Water baths	EACH	36016.95	72034
28	6	Nos.	Bones (Dis-articulated) sets	EACH	16949.15	101695
29	50	Nos.	BP Apparatus (Anroid)	EACH	2149.15	107458
30	42	Nos.	BP Apparatus (Digital)	EACH	2118.64	88983

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
31	8	Nos.	Bubble CPAP	EACH	246822.03	1974576
32	12	Nos.	Centrifuge	EACH	31139.83	373678
33	2	Nos.	Chemical Single Pan Digital Balance,	EACH	45762.71	91525
34	10	Nos.	Chloroscope	EACH	1694.92	16949
35	70	Nos.	Clinical Thermometer	EACH	191.53	13407
36	2	Nos.	CO2 Incubator	EACH	160588.98	321178
37	1	Nos.	Colony Counter	EACH	11863.56	11864
38	1	Nos.	Color perception lantern Edridge green	EACH	6779.66	6780
39	1	Nos.	Colorimeter, photoelectric	EACH	11271.19	11271
40	30	Nos.	Compass aesthesiometer	EACH	847.46	25424
41	2	Nos.	Complete Chromatographic Unit for paper & TLC	EACH	25423.73	50847
42	1	Nos.	Complete Electrophoresis apparatus with power supply (Paper, PAGE, agarose)	EACH	38135.59	38136
43	1	Nos.	Constant temperature water bath Tank Capacity: (Temperature range 5 to 80 degree Celsius)	EACH	21186.44	21186
44	4	Nos.	CTG	EACH	148257.63	593031
45	1	Nos.	Dark ground microscope	EACH	305084.75	305085
46	1	Nos.	Deep Freeze -20° C	EACH	150395.22	150395

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
47	29	Nos.	Defibrillator with external pacer (with additional attachments/ paddles for pediatric age group)	EACH	296610.17	8601695
48	3	Nos.	Demonstration eye piece	EACH	72033.90	216102
49	1	Nos.	Densitometer	EACH	847.46	847
50	3	Nos.	Dental Chairs with units	EACH	226372.88	679119
51	1	Nos.	Digital Analytical Balance	EACH	21186.44	21186
52	1	Nos.	Digital Automatic camera > 5 megapixel	EACH	21186.44	21186
53	5	Nos.	Digital Colorimeters	EACH	11271.19	56356
54	1	Nos.	Digital pH Meter	EACH	402542.37	402542
55	1	Nos.	Physiograph Digital	EACH	169491.53	169492
56	1	Nos.	Digital SLR at least 20 megapixel with micro, macro, wide angle zoom lenses, Flash and other accessories	EACH	72033.90	72034
57	10	Nos.	Digital Thermometers of different temperatures	EACH	168.64	1686
58	90	Nos.	Dissection microscope	EACH	1694.92	152542
59	1	Nos.	Distillation Plant	EACH	14850.00	14850
60	1	Nos.	Distilled water Plant	EACH	21186.44	21186
61	3	Nos.	Double demonstration eye piece	EACH	2542.37	7627
62	1	Nos.	Douglas bag, complete	EACH	1694.92	1695
63	6	Nos.	Drill machine	EACH	105932.20	635593

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
64	1	Nos.	Dynamometer	EACH	29932.20	29932
65	39	Nos.	ECG machine (12 lead) with trolley	EACH	112320.76	4380510
66	1	Nos.	Electric Warming blanket	EACH	2542.37	2542
67	2	Nos.	Electromagnetic time marker	EACH	1271.19	2542
68	1	Nos.	Electronic stimulator	EACH	12706.78	12707
69	3	Nos.	ELISA (Demonstration)	EACH	296610.17	889831
70	2	Nos.	Embalming Machine	EACH	169491.53	338983
71	20	Nos.	Examination Lights Mobile	EACH	39864.41	797288
72	2	Nos.	Facility for heating slides	EACH	102631.36	205263
73	1	Nos.	First Aid Kit	EACH	2114.41	2114
74	10	Nos.	fixed volume micro auto pipettes Set	EACH	31047.46	310475
75	1	Nos.	Fume Hood	EACH	211864.41	211864
76	1	Nos.	Gas analysis apparatus, Halden's student type	EACH	42372.88	42373
77	22	Nos.	Glucometer	EACH	1281.36	28190
78	1	Nos.	Hand Set Heat Sealer	EACH	2542.37	2542
79	2	Nos.	Harpden Calipers (for skinfold thickness)	EACH	21186.44	42373
80	3	Nos.	Height measuring stand	EACH	2980.00	8940
81	60	Nos.	Height scale wall fix	EACH	2979.66	178780
82	60	Nos.	Hemocytometer	EACH	2118.64	127119
83	90	Nos.	Hemocytometers with red and white pipettes	EACH	2966.10	266949

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
84	60	Nos.	Hemoglobin-meter Sahli's or Hellige (with spaces)	EACH	1993.22	119593
85	5	Nos.	Hemoglobinometer	EACH	3558.47	17792
86	4	Nos.	Hot air oven (200 litres)	EACH	102631.36	410525
87	3	Nos.	Hot Plate	EACH	2966.10	8898
88	4	Nos.	Hot plates for flattening sections	EACH	2966.10	11864
89	2	Nos.	Hydrometer, milk	EACH	257.63	515
90	1	Nos.	Ice Lined Refrigerator (I.L.R.) (at Health Centre)	EACH	110201.69	110202
91	5	Nos.	Incubator	EACH	40677.97	203390
92	30	Nos.	Infant radiant warmer with bassinet	EACH	46200.00	1386000
93	50	Nos.	Infusion pumps	EACH	38135.59	1906780
94	30	Nos.	Instrument Sterilizers Big	EACH	4237.29	127119
95	30	Nos.	Instrument Sterilizers Small	EACH	2966.10	88983
96	3	Nos.	Lab Refrigerator (minimum 400 litres)	EACH	144067.80	432203
97	1	Nos.	Laminar flow chamber	EACH	169491.53	169492
98	10	Nos.	Laryngoscope straight and curved adult	EACH	11864.41	118644
99	10	Nos.	Laryngoscope straight and curved Infants	EACH	11864.41	118644
100	10	Nos.	Laryngoscope straight and curved neonate	EACH	11864.41	118644
101	10	Nos.	Laryngoscope straight and curved Pediatric	EACH	11864.41	118644
102	15	Nos.	Led Aprons	EACH	6779.66	101695

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
103	60	Nos.	LED Binocular with Scanner, 10X, 40X, & Oil immersion lenses and inbuilt Battery backup power source	EACH	29661.02	1779661
104	1	Nos.	Maddox rod	EACH	423.73	424
105	4	Nos.	Magnifying Lens	EACH	381.36	1525
106	2	Nos.	Man Man Drill set	EACH	105932.20	211864
107	3	Nos.	Manual Rotary Microtome	EACH	105084.75	315254
108	2	Nos.	Marey's tambour	EACH	1694.92	3390
109	3	Nos.	Meat cutting machine for thin body sections (trans and vertical) for gross anatomy sectional study	EACH	80508.47	241525
110	1	Nos.	Microcentrifuge	EACH	8896.61	8897
111	1	Nos.	Micrometer eye pieces	EACH	847.46	847
112	1	Nos.	Micrometer stage	EACH	1694.92	1695
113	2	Nos.	Microscope with universal condenser containing oil immersion, Bright field, Phase Contrast & Dark ground	EACH	105084.75	210169
114	20	Nos.	Microscopes, oil immersion(high end for teachers)	EACH	29661.02	593220
115	3	Nos.	Microtomes, Sledge, large cutting	EACH	105932.20	317797
116	10	Nos.	Mobile OT Light single Dome LED	EACH	67796.61	677966
117	60	Nos.	Monocular Microscopes	EACH	8474.58	508475
118	8	Nos.	Mortuary cooler for storing cadavers	EACH	381355.08	3050841

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
119	1	Nos.	Mosquito catching kit	EACH	12711.86	12712
120	10	Nos.	Mosso's Ergograph	EACH	21186.44	211864
121	2	Nos.	Multimedia Projector with Screen	EACH	67796.61	135593
122	84	Nos.	Multipara monitors 3 channal	EACH	46610.17	3915254
123	73	Nos.	Multipara monitors 5 channal	EACH	76027.12	5549980
124	2	Nos.	Myograph stand	EACH	21186.44	42373
125	80	Nos.	Nebulizers	EACH	2966.10	237288
126	50	Nos.	Needle destroyer	EACH	2894.92	144746
127	3	Nos.	Needle Shredder	EACH	2966.10	8898
128	1	Nos.	Newtons color wheel	EACH	762.71	763
129	25	Nos.	Oil-immersion lens for student microscope	EACH	2203.39	55085
130	1	Nos.	Olfactometer	EACH	15254.24	15254
131	6	Nos.	Ophthalmoscope	EACH	24772.88	148637
132	6	Nos.	OT Table Electrical	EACH	407627.12	2445763
133	2	Nos.	OT Table Mannual	EACH	89830.51	179661
134	2	Nos.	Otoscope	EACH	6454.24	12908
135	4	Nos.	Oxygen cylinders	EACH	7250.00	29000
136	6	Nos.	Paraffin embedding bath	EACH	1694.92	10169
137	2	Nos.	PCR Machine	EACH	237288.14	474576
138	10	Nos.	Perimeter Pristely Smith S/LP.984 B & T	EACH	29661.02	296610

Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
139	8	Nos.	pH meters of wide range digital	EACH	42300.00	338400
140	1	Nos.	Phakoscope	EACH	84745.76	84746
141	20	Nos.	Photo Therapy	EACH	64400.00	1288000
142	150	Nos.	Pipettes of various sizes with disposal tips. (For Students) set	EACH	12600.00	1890000
143	8	Nos.	POP Cutters	EACH	8474.58	67797
144	4	Nos.	Portable suction machines	EACH	43389.83	173559
145	4	Nos.	Public Address system (2 portable for field based activities and one each for RHTC & UHTC) Sets	EACH	29661.02	118644
146	75	Nos.	Pulse oximeter with probes for all age groups including neonates, infants, children and adolescents	EACH	42372.88	3177966
147	1	Nos.	Rapid autoclave machine	EACH	127117.80	127118
148	10	Nos.	Rectal Thermometer	EACH	84.75	847
149	1	Nos.	Refrigerated Centrifuge	EACH	177966.10	177966
150	1	Nos.	Refrigerator	EACH	16949.15	16949
151	5	Nos.	Refrigerator 9 cu.ft.	EACH	35593.22	177966
152	1	Nos.	RO water plant 500 lts (Dyalisis)	EACH	338983.05	338983
153	2	Nos.	Salters Baby weighing machine	EACH	15000.00	30000
154	1	Nos.	Schematic eye	EACH	6355.93	6356
155	2	Nos.	Semi autoanalyser	EACH	93220.34	186441



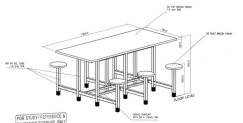


Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
156	2	Nos.	Sherrington Starling kymograph (electrically driven)	EACH	27542.37	55085
157	1	Nos.	Slide Warming Table	EACH	2966.10	2966
158	1	Nos.	Smart TV 65 inches	EACH	55084.75	55085
159	2	Nos.	Spectroscopic Lens With Adjustable Slit	EACH	21186.44	42373
160	15	Nos.	Spirometer, ordinary	EACH	423.73	6356
161	4	Nos.	Splints for all types of fractures Set	EACH	29661.02	118644
162	1	Nos.	Stage incubator	EACH	63559.32	63559
163	15	Nos.	Stand Type BP apparatus	EACH	3813.56	57203
164	1	Nos.	Stand-alone cold plate	EACH	46610.17	46610
165	25	Nos.	Stethograph	EACH	635.59	15890
166	72	Nos.	Stethoscope	EACH	1044.07	75173
167	15	Nos.	Stethoscopes, demonstration with multiple ear pieces	EACH	5084.75	76271
168	15	Nos.	Stop watch	EACH	296.61	4449
169	5	Nos.	Stop watch reading at 1/5 second.	EACH	1271.19	6356
170	8	Nos.	Storage tank to hold cadavers, static/movable, durable tank with input and output facility with lid	EACH	40677.97	325424
171	3	Nos.	Stryker Type Autopsy Saw With Accessories	EACH	105932.20	317797
172	68	Nos.	Suction Apparatus	EACH	22874.58	1555471
173	12	Nos.	Surgical Diathermy	EACH	159153.39	1909841






Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
174	100	Nos.	Syringe pumps	EACH	25423.73	2542373
175	30	Nos.	Thermo-aesthesiometer	EACH	1271.19	38136
176	5	Nos.	Thermometer 0 – 250 degree Celsius	EACH	381.36	1907
177	100	Nos.	Thermometers	EACH	211.86	21186
178	1	Nos.	Three Part Fully Automated Cell Counter	EACH	211864.41	211864
179	1	Nos.	Ultrapure water solutions - Distilled water plant	EACH	21186.44	21186
180	4	Nos.	Ultrasonic nebulizers	EACH	8466.10	33864
181	35	Nos.	Urinometers calibrated (Mercury based instruments to be replaced with other alternatives)	EACH	211.86	7415
182	5	Nos.	Vaccine carrier	EACH	1525.42	7627
183	1	Nos.	Van Slyke's apparatus manometric	EACH	5084.75	5085
184	15	Nos.	Variable volume micro auto pipettes Set	EACH	12600.00	189000
185	1	Nos.	VDRL shaker	EACH	21165.25	21165
186	1	Nos.	Venous pressure apparatus	EACH	4237.29	4237
187	4	Nos.	Vortex mixers	EACH	15055.08	60220
188	2	Nos.	Water bath	EACH	20839.83	41680
189	6	Nos.	Water bath (Tissue Floatation)	EACH	17999.15	107995
190	2	Nos.	Water bath with variable temperature	EACH	38125.42	76251
191	6	Nos.	Weighing machine adult	EACH	1336.44	8019
192	1	Nos.	Weighing Machine For Dead Bodies	EACH	15254.24	15254
193	3	Nos.	Weighing Machine For Fetus	EACH	2966.10	8898
194	3	Nos.	Weighing Machine For Organs	EACH	2966.10	8898







Sl. No.	Qty	Units	Name of the Equipment	Units	Rate (in Rs.)	Amount (in Rs.)
195	10	Nos.	Weighing machines for dialysis wheel char compatible	EACH	4237.29	42373
196	80	Nos.	Weighing Scales	EACH	1336.44	106915
197	20	Nos.	Westergren's pipette for E.S.R. on stand(with space pipette)	EACH	1271.19	25424
198	20	Nos.	Wintrobe's pipette for ESR and PCV with stand	EACH	1271.19	25424
199	64	Nos.	X- Ray lobby double	EACH	4406.78	282034
200	4		LCD/LED Projector		80000.00	320000
201	4		OHP projector		21186.00	84744
202	10		Gas stoves		4500.00	45000
203	1		Audio visual room sound system		150000.00	150000
204	2		PA system		25424.00	50848
					Total Rs.	82112159
			Maintenance cost per year @ 2%			1642243
			Maintenance cost for 5 years			8211216
			Grand Total			90323375




The bidder should provide equipment for first two years under warranty and from 3rd to 7th year, every year 2% of total cost of equipment shall be paid as comprehensive maintenance




Furniture BOQ for College (Medical and Nursing) PARVATHIPURAM




S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
1	12 Nos.	<p>3 seater sofa</p> <p>1. Width 1750 mm (69" Inch) 2. Depth 750 mm (30" Inch) 3. Height 830 mm (33" Inch)</p> <p>Material 1. Primary Material Fabric 2. Secondary Material Solid Wood 3. Filling Material Foam</p> <p>Certificates: ISO9001, Notified CE/BIS</p>	Nos.	16000	1,92,000.0	
2	69 Nos.	<p>Alamirah with glass door</p> <p>Steel alamirah with Toughened Glass Size: Height 1980mm, Width 915mm, Depth 480mm Manufactured from CRCA sheet conforming to IS 513-1994 grade D material. The CRCA sheet of uniform thickness and of 22 gauge for the body, 20 gauge for doors duly cut and bend with the help of CNC machines. The alamirah shall be equipped with four fixed shelves, manufactured from 22 gauge CRCA sheet, thereby making five compartments in the Alamirah. The steel shelf shall be capable of carrying a uniformly distributed load of 70kgms. Certification: Manufacturer should have ISO: 9001, BIS/ CE</p>	Nos.	15254	10,52,526.0	
3	24 Nos.	<p>cafeteria with fixed 4 seater SS</p> <p>1. 1200 X 750 X 750h Mm 2. BRUSH STAINLESS STEEL FINISH TOP 3. Two Leg Support With Central Brace 4. Ms Powder Coated Legs With Brush Stainless Steel Finish</p> <p>Certificates: ISO9001, Notified CE/BIS</p>	Nos.	21,186	5,08,464.0	
4	710 Nos.	<p>Chairs with writing pad</p> <p>1 Stainless Steel Writing Chair 2. Model Number Stainless Steel Frame Writing Chair, PP Back and Seat, Red & Black 3. Model Name Stainless Steel Frame Writing Chair, PP Back and Seat, Red & Black 4. Style Contemporary & Modern 5. Suitable For Kids Room, Study & Home Office 6. Frame Material Subtype Stainless Steel 7. Upholstery Material Fabric 8. Upholstery Included Yes 9. Upholstery Type Cushion 10. Chair Features Armrest 11. Finish Type Stainless Steel Finish 12. Armrest 13. W x H: 221 cm x 341 cm (7 ft 3 in x 11 ft 2 in) 14. Frame Material: Engineered Wood 15. Upholstery Type: Cushion 16. DIY - Basic assembly to be done with simple tools by the customer comes with instructions. Certificates: ISO9001, Notified CE/BIS</p>	Nos.	4,500	31,95,000.0	
5	88 Nos.	<p>Table for clerk</p> <p>900 x 600 mm TABLE TOP – LAMINATED PARTICLE BOARD FINISHED WITH POST FORM ROUNDED EDGE AND TAPING MS POWDER COATED SQUARE LEG PROFILE NO MODESTY ROUND CABLE MANAGER ON TABLE TOP</p>	Nos.	6396	5,62,848.0	





S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
6	89 Nos.	Coffee table Primary Material Plywood Finish Color Walnut Dimensions W x H x D (cm) 119.9 x 45 x 59.9 StyleContemporary & Modern Certificates: BIS/CE, ISO 9001	Nos.	12,712	11,31,368.0	
7	15 Nos.	Table for computer Contemporary & Modern Style Computer Desk Set-up for Study & Home Office with Storage Space W x H x D: 1003.3 mm x 749.3 mm x 508 mm (3 ft 3 in x 2 ft 5 in x 1 ft 8 in) With CPU Compartment Built-in Keyboard Tray Certificates: BIS/CE, ISO 9001	Nos.	5085	76,275.0	
8	131 Nos.	Computer work stations 1. Size 775 X 600 2. Prelaminated 18 mm thick B.W.P ply board with M.S powder coated legs & required frame. 3. Table should have leveling studs. 4. Table should have power provision for 1 desktops and modesty panel only for island tables as/ plan Certificates: Notified CE/BIS/FDA and ISO 13485	Nos.	6,780	8,88,180.0	
9	1 Nos.	Conference table for 20 people 1. 1 STR-675 X 600 X 730 2. 2 STR-1350 X 600 X 730 3. 150 HEAD ST-1459 X 837 X 730 4. 30 HEAD ST-760 X 630 X 730 5. 165 HEAD ST-1509 X 825 X 730 6. 15 HEAD ST-685 X 622 X 730 7. CORNER 90 ST-850 X 850 X 730 8. 1800W ST-1800 X 850 X 730 9. 2350W ST-2350 X 850 X 730 10. Work Surface-Made of 36mm thick MDFone side pre laminate board conforming to IS14587: 11. 1998 with 0.4mm PVC membrane pressed on to top and having chamfered edge. 12. Plastic ABS access flap is provided for easy access to wires and cables. Work top is available in various shapes as shown above. 13. Understructure-The Under-structure consists of mixture of 25mm and 18mm Pre-laminated twin board ofE1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with 14. Matching 2 mm thick PVC lapping. Aluminum alloy 63400 - WP profile is used for 15. Connecting panels together. 16. Modesty Panel-Made of 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade 17. Conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lapping. 18. Powder coated accent metal strip provided below work surface to enhance aesthetics. It is Made of 0.8mm CRCA as per IS 513, epoxy polyester powder coated (DFT 40-60 microns). 19. Wire Management-An array of panels made of 0.8mm CRCA MS IS:513, epoxy polyester powder coated (DFT40-60 microns) is used for flow of wires and cables. Provision to mount Anchor Roma 6 20. Module plate is provided below worktop. Cutout on top with two piece injection moulded 21. Plastic part polymer component is fitted to pullout audio, video cables onto worktop and connect devices, charger to power socket below worktop	Nos.	1,20,000	1,20,000.0	
10	2 Nos.	Conference table for 10 people (Suitable for 20 people)	Nos.	60,000	1,20,000.0	







S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
11	9 Nos.	Dias with chair and table Dias 6'X3' TABLE TOP – LAMINATED PARTICLE BOARD FINISHED WITH POST FORM ROUNDED EDGE AND TAPING MS POWDER COATED SQUARE LEG PROFILE NO MODESTY ROUND CABLE MANAGER ON TABLE TOP	Nos.	20,339	1,83,051.0	 
12	45 Nos.	Dissection tables (2 per table) Material Stainless Steel Shape RECTANGULAR Capacity 1 BODY Automation Type Semi-Automatic Color Grey Minimum Order Quantity 5 Piece Strong Stainless Steel tubular Frame Work. Top is covered with SS Sheet, with Centre Slope In cross Form. Provision of Drainage Hole connected with Waste water outlet Pipe. Provision of SS Bucket and Sliding Tray Mounted on Rubber Stumps Size: - 48"L x 24"W x 36" H.	Nos.	9,500	4,27,500.0	
12	23 Nos.	Dissection tables (Big) Material Stainless Steel Shape RECTANGULAR Capacity 1 BODY Automation Type Semi-Automatic Color Grey Minimum Order Quantity 5 Piece Strong Stainless Steel tubular Frame Work. Top is covered with SS Sheet, with Centre Slope In cross Form. Provision of Drainage Hole connected with Waste water outlet Pipe. Provision of SS Bucket and Sliding Tray Mounted on Rubber Stumps Size: - 6.5f x 2.5"W x 36" H.	Nos.	19,000	4,37,000.0	
13	25 Nos.	Chair for hod Comfortable executive chair upholstered in bonded leather and PVC Padded seat and back for all-day comfort and support Pneumatic seat-height adjustment; 360-degree swivel; smooth-rolling casters Measures 29.13 by 25.59 by 41.34 to 45.08 inches (L x W x H) Maximum weight capacity - 150 KGS Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, BIS/Notified CE	Nos.	15000	3,75,000.0	
14	69 Nos.	Chair for Doctor Comfortable executive chair upholstered in bonded leather and PVC Padded seat and back for all-day comfort and support Pneumatic seat-height adjustment; 360-degree swivel; smooth-rolling casters Measures 29.13 by 25.59 by 41.34 to 45.08 inches (L x W x H) Maximum weight capacity - 124.7 KGS Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, BIS/Notified CE	Nos.	10593	7,30,917.0	

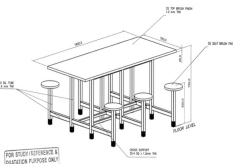




S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
15	69 Nos.	Table for Doctor Executive Wooden Desk Size: 1800 x 900 x 750 mm. shape: Rectangular with side table Usage/Application: Hospital/Doctor Material: MDF. Color: Brown. Storage/Drawers: Yes. Table Thickness: 20-25 mm	Nos.	21186	14,61,834.0	
16	2 Nos.	Food trolley 1. Material Stainless Steel 2. Shape Rectangular 3. Material Grade SS304 4. Number Of Wheels 4 Wheel 5. Surface finish Polished 6. Sheet thickness 2-5 mm 7. Frequency 50 Hz Double walled insulated with glass wool. Inner side made of 18swg & outer side made of 20 swag as Stainless steel 304 sheet with 4 no heavy duty Castor wheels (4"/6" dia) with 2 wheels locking arrangement and push cart type handle constructed from ss pipe. Trolley has Immersion type 3Kw heating elements with auto temp. Controller & indicating lamp with temp. Indicator to keep 4 No's round containers with lids to keep food hot vegetable and one rectangular for container for to keep chapattis Also fitted with one middle and bottom shelves with lockable door. Rubber cushion to be fitted at the corners to prevent damage during transportation Certificates: Notified CE/BIS/FDA and ISO 13485	Nos.	27,283	54,566.0	
17	54 Nos.	High rise stools SEAT ASSEMBLY: The seat should be made up of 1.2±0.1cm thick flat plywood and with moulded Polyurethane foam and should be upholstered with replaceable synthetic leather covers. SEAT SIZE: Diameter 40.0 cm ADJUSTMENTS: 360° Revolving type. BACK ASSEMBLY: The back foam should be designed with contoured Lumbar support for extra comfort. The upholstery should be available in synthetic leather. *BACK SIZE: 45.0 cm (W) covered with polyurethane foam HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be moulded with density = 45 +1-2 kg/m ³ and Hardness load 16 ± 2 kgf for 25% compression HEIGHT ADJUSTMENT: The manual height adjustment should be very easy to operate with a help of a knob.. It can be easily locked at the most comfortable position. PEDESTAL ASSEMBLY: The five-prong pedestal should be fabricated from 0.2 ± 0.02 cm thick HR sheet, (should be DD 1079 / HR), powder coated (DFT 40-60 microns) and fitted with an injection moulded black Polypropylene Hub Cap and 5 nos. twin wheel castors. The pedestal should be 55.0±0.5cm pitch-circle-diameter- (65.0±1.0cm-with-castors).-Circular-foot-ring of 052.0±0.2cm made up of 01.9±0.2 x 0.12±0.0096cm thk MS ERW Tube for foot support in High-base stool. TWIN WHEEL CASTORS: The twin wheel castors should be injection moulded in Black Nylon. Overall dimensions shall be Width- 65.0cm, Depth- 65.0 cm, Height- 88.0 to 99.5 cm, Seat Height- 67.0 to 78.5 cm.	Nos.	2,200	1,18,800.0	


S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
18	44 Nos.	<p>Journal racks</p> <ol style="list-style-type: none"> Overall Dimensions of All Steel Periodical Display Rack Shall be 900mm (W) x450mm (D) x1830mm (H). Rigid Knockdown construction Panels shall be made from CRCA 0.6 mm thick and front frame shall be made from CRCA 0.8 mm thick . CRCA D grade as per IS 513. There shall be 5 level racks, Display tray shall be suitable for foolscap size magazines, periodicals, aesthetically appealing metal tray at an angle for easy viewing. Receding facility to access the storage behind. Sliding on plastic rollers. Behind storage shelving each of 5 level has a behind storage shelf. Uniformly Distributed Load capacity per each shelf is 40 kg . Leveler shall be screw type with hex plastic base and finish shall be epoxy polyester powder coated to the thickness of 50 microns... <p>Certificates: ISO9001, Notified CE/BIS</p>	Nos.	19,900	8,75,600.0	
19	68 Nos.	<p>L Angular Rack</p> <p>Size: 2130 (H) X 1080 (W) X 380 (D) mm</p> <p>Rack with 5 Compartments of 6 nos. of shelves.</p> <p>Distance between each shelf will be 410 mm. These 6 shelves should be hanging arrangement (adjustable).</p> <p>Racks shall be manufactured from Slotted M.S angle 14 SWG.</p> <p>Shelves shall be manufactured from 18 SWG thick sheet.</p> <p>The rack shall be assembled with G I bolt, nuts and washers.</p> <p>Slotted angle and M.S sheet shall be made of cold rolled with anti-rust treated and shall be finished with powder coating (color: Prince Gray).</p> <p>H/D Rubber bushes shall be provided to the bottom of legs of slotted angle racks.</p> <p>The quality of M.S sheet which is used for racks shall be free from any defects, Undulations, and old paints and surface corrosion, etc.</p> <p>Certificates: ISO 9001, BIS/CE</p>	Nos.	6780	4,61,040.0	
20	3 Nos.	<p>Laboratory tables for per lab seater with water, gas pipeline , sink and racks for bottles (for 3 labs)</p> <ol style="list-style-type: none"> 16mm thickness solid lab-grade phenol resin. 19mm thickness epoxy resin. 20mm thickness ceramics. 25mm thickness stainless steel 16mm thickness compact. 25mm thickness plywood. 12mm thickness tempered glass. Running length * 750 *850 /900mm (custom-made) Heavy gauge formed 1.2mm cold-rolled and welded steel cabinet body, coated with epoxy resin powder, anti-corrosive With open multi-angles quality hinges, with three knob sliding rail, no noise. Sound-absorbing material applied to door and drawers Full length adjustable shelf is for maximum storage. 304 Stainless steel handle. aluminum alloy long handle aluminum alloy embedded handle with adjustable stainless steel feet covered with rubber Brass body with ceramic valve core coated with epoxy resin powder. PP sink; ceramic sink; epoxy resin sink. Multi-functional with splash-proof box and safeguard cover British style sockets with cover Layers are made of 12mm thickness tempered glass and can be adjustable according to different 	Nos.	25,22,250	75,66,750.0	

S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
20	7 Nos.	<p>Laboratory tables for per lab seater with water, sink and racks for bottles (for 7 labs)</p> <ol style="list-style-type: none"> 16mm thickness solid lab-grade phenol resin. 19mm thickness epoxy resin. 20mm thickness ceramics. 25mm thickness stainless steel 16mm thickness compact. 25mm thickness plywood. 12mm thickness tempered glass. Running length * 750 *850 /900mm (custom-made) Heavy gauge formed 1.2mm cold-rolled and welded steel cabinet body, coated with epoxy resin powder, anti-corrosive With open multi-angles quality hinges, with three knob sliding rail, no noise. Sound-absorbing material applied to door and drawers Full length adjustable shelf is for maximum storage. 304 Stainless steel handle. aluminum alloy long handle aluminum alloy embedded handle with adjustable stainless steel feet covered with rubber Brass body with ceramic valve core coated with epoxy resin powder. PP sink; ceramic sink; epoxy resin sink. Multi-functional with splash-proof box and safeguard cover British style sockets with cover Layers are made of 12mm thickness tempered glass and can be adjustable according to different 	Nos.	50,79,900	3,55,59,300.0	
21	8 Nos.	<p>Lecture theater (Each lecture theater to have capacity of 180people)</p> <p>Arc Type Desk & Bench-</p> <p>Table Size: Length-300mm x Height-750mm Till Table Top, Bench Size: Length-300mm x Depth-395mm x Height-450mm.</p> <p>Table Top, Leg, Shelf all made out of 24mm thick finger joint rubber wood board and apron and top support with 18mm thick finger joint rubber wood board, Table top and Legs connected with EBCO hidden fittings, with approved PU polish (2 Coats of sealer, 1 Coat for top finish glossy or matt as per approval) on outer side and 2 coats of sealer finish on inner surfaces</p> <p>Back Partition - Back Partition will be used in passage way of the last bench and to the last bench of the gallery. Partition made out of 18mm thick finger joint wood board, with approved PU polish (2 Coats of sealer, 1 Coat for top finish glossy/ matt)</p>	Nos.	12,18,220	97,45,760.0	
22	213 Nos.	<p>Library stacks</p> <ol style="list-style-type: none"> Overall Dimensions of Double Sided Steel Book Rack Base Unit shall be 900mm (W) x600mm (D) x1850mm (H). Rigid Knockdown Construction, Material used shall be CRCA 0.8 mm thick. The Stack ability shall be add-on units can be stacked width wise to form a bank of racks having common side panel. Number of adjustable shelf shall be five with 12 loading levels. Uniformly distributed load capacity per each shelf is 80 kg maximum. Shelf back stiffener at the rear end of the shelves shall be provided. These are to support books on the rear side. Label holder & range indicator on each main unit for inserting labels. <p>Certificates: ISO9001, Notified CE/BIS</p>	Nos.	18,644	39,71,172.0	

S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
23	2 Nos.	PA System 1. Amplifier Power Rating 2000 W Peak 355 W RMS (at 8 Ohms) 2. Connectivity: 3. 1 x 1/8" / 3.5 mm TRS Headphone Output 4 x Binding Post Pair Output Stereo RCA Line Output 2 x XLR 3-Pin Balanced Mic Input 4 x 1/4" TS Unbalanced Hi-Z Input 1 x 1/8" / 3.5 mm TRS Aux Input 4. Signal Processing: 5. 2 x 10-Band Graphic (on Master) HF Shelf (per Channel) MF Notch/Peak (per Channel) 6. EQ LF Shelf (per Channel) 7. Audio I/O 2 x Stereo RCA Input 8. USB Type-A (Audio Recording, Media Playback) 9. Media Playback SD (32 GB Max) 10. Wireless Connectivity Bluetooth 11. Bluetooth 2.0 + EDR 12. Bluetooth Range 30' / 9.1 m Certificates: ISO9001, Notified CE/BIS	Nos.	25,424	50,848.0	
24	91 Nos.	Reading table 1. 2400 X 1050 mm 2. Prelaminated 18 mm thick B.W.P Ply with M.S powder coated 4 nos. of legs & required frame 3. Table should have leveling studs & 2 power point provision 4. (Single wire manager with cover, at center of table) Certificates: ISO9001, Notified CE/BIS	Nos.	7,203	6,55,473.0	
25	5 Nos.	Reception table Reception Table Top shall be of Laminate with clean Matt PU finish 18 mm thick , inside radius - 700 mm , outside radius - 1350 mm and depth - 650 mm . Cork shall be 18 mm thick of rubber. Glass shall be Frosted 10 mm thick diamond cut finishing on edges, inside radius shall be - 1202.5 mm ,outside radius - 1402.5 mm and depth - 200 mm The Modesty Panel shall be MS Perforated sheet below worksurface: 0.8 mm (thick) x 665 mm (height) x 1345 mm (flat length) . Above Work surface: 0.8 mm (thick) x 260 mm (height) x 1345 mm (flat length) . The legs shall be of MS tube 1.6 mm thick diameter 50.8 mm and height 604 mm	Nos.	50,000	2,50,000.0	
26	325 Nos.	Revolving chair Material: Fire retardant breathable mesh inbuilt into the backrest and Polyester fabric integrated into the seat. (BM Mesh & 5060 fabric seat). Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy movement. Arms: Fixed Polypropylene inbuilt arms. Centre tilt: Adjust your work posture by using the tilt to recline on the chair for meetings / phone calls and more. Use the tilt lock for upright posture like keyboarding. Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, Notified CE/BIS	Nos.	4600	14,95,000.0	


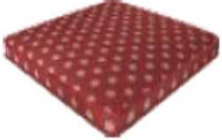

S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
27	108 Nos.	Revolving Stool • Height: 19 to 25 Inches • Seat Dia: 15 Inch • Material: Stainless Steel • Four legs with ring and Nylon Bushes • Certificate: ISO 9001	Nos.	2966	3,20,328.0	
28	110 Nos.	ALMIRAH SS 1 Internal Size of Almirah: 1850 (H) X 900 (W) X 450 (D) mm 2 Leg Size of Almirah: 150 (H) X 120 (W) X 450 (D) mm 3 Rack with 5 Compartments. 4 Distance between each shelf will be 360 mm. 5 These 4 shelves should be hanging arrangement (adjustable). 6 One shelf should have internal door and lock 7 Standard lock and 2 sets of keys. 8 The thickness of the Almirah sheet shall be 18 SWG. 9 The body of the Almirah shall be manufactured from cold rolled MS sheet (C. R. Sheet) with Antirust treatment and shall be finished with powder coating The quality of used M.S sheet for making Almirah shall be free from any pitting and corrosion etc. 10 H/D Rubber bushes shall be provided to the bottom of legs of Almirah. Certificates : ISO 9001 and BIS/Notified CE	Nos.	16949	18,64,390.0	
29	280 Nos.	Table with desk, seating and backrest (4' length) 1. Material Wooden 2. Seating Capacity Two Seater 3. Application College 4. Appearance Modern 5. Frame Material Iron 6. Surface Paint Coated	Nos.	7,000	19,60,000.0	
30	1203 Nos.	Chair For Visitors Dimensions: 60.90 Lx 64.20 D x 98.20 H x 44.80 seat Ht. in CM Frame Tubular Stain less Steel High Density Polyurethane Foam combined with Premium Leatherette. Sturdy PU Soft Arms. Seat and back rest with comfort cushion Legs with Nylon heavy duty bushes Certificates: ISO 9001, BIS/ CE	Nos.	5085	61,17,255.0	
31	248 Nos.	Work stations without computers 1200 X 600 X 750 MM HIGH with 300 x 600 wide storage below 2. Prelaminated 18 mm thick B.W.P ply board/ commercial board with M.S powder chrome finish & required frame, with 3 drawer pedestal. 3. Table should have leveling studs, wire manager and modesty panel. Certificates: Notified CE/BIS/FDA and ISO 13485	Nos.	4,542	11,26,416.0	
32	109 Nos.	2 seater sofa 1. 1350l X 820w X 700h Mm 2. Two Seater With Full Back 3. Leatherette Finish Certificates: ISO9001, Notified CE/BIS	Nos.	12,000	13,08,000.0	



S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
33	8 Nos.	Cafeteria Table with fixed 6 Seater SS Cantina Table with SS Top and SS Stools size shall be 1800 Width mm x 1580 Depth mm x 750 Height mm . Top shall be of Stainless Steel brushed with PLB insert for Durability . Easy to maintain hygiene . The Understructure shall be made of 50.8 mm x 50.8 mm 1.2 mm thick powder coated ERW tubes at base which are welded and fixed to the Top with screws . Tubular stiffeners that are provided between the two vertical frames . The tubes shall be closed with plastic caps . Level adjustment shall be provided to take care of unevenness in floor . There shall be Stainless Steel stools .	Nos.	31,779	2,54,232.0	
34	1 Nos.	Plain tables for 50 students 66"w x 36"d x 30"h Basement iron	Nos.	1,05,932	1,05,932.0	
35	250 Nos.	Single desk with chair Prelaminated 18 mm thick B.W.P Ply with M.S powder coated 4 nos. of legs & required frame. Table should have leveling studs & 2 power point provision (single wire manager with cover, at center of table). Made of weatherproof, U.V. resistant, high quality, durable moulded plastic. It should be comfortable. Chair to have 4 legs. It should be stackable	Nos.	6,780	16,95,000.0	
36	35 Nos.	Iron Cot with Mattresses Epoxy Coated Mild Steel / CRC Frame Uniformly Perforated CRC Top Square Head and Foot Bows of Unequal Height Head Board 1050 mm Foot Board 670 mm Pre-treated and Epoxy Powder Coated Overall Approx. Size: 180L x 90W x 60H cms Mattress: Well matching size spring mattress with tempered bonnell steel 100% Cotton Covers Approx. Height 25 Mm High quality Polyurethane foam Certificate: ISO 9001, BIS/CE	Nos.	15,000	5,25,000.0	
37	20 Nos.	SS top tables SS 304 Grade Total Material: 40mm x 16 Gauge Round/Square Pipe Legs and 25mm x 16 Gauge Round Pipe Leg Supports. Table Top : 16 Gauge SS Sheet. Size: 36" Width x 90" Length x 36" Height. Finish: Mirror Finished.	Nos.	9,500	1,90,000.0	


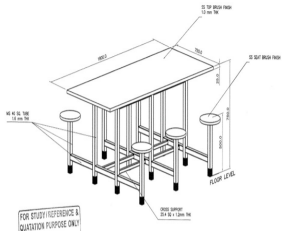

S.NO	Quantity	SPECIFICATIONS	Unit	Rate (in Rs)	Amount (in Rs.)	IMAGE
38	1 no's	<p>Principal Table & Chair</p> <p>1.TBL 2400 LH RU 1200 PDL- 2100x2250x750 & 1800W 1800H- 1800x500x1800</p> <p>2.Primary Work Surface: Made of 30mm Thick Pre-laminated twin board of E1-P2 grade and approved shade confirming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.</p> <p>3.Secondary Work Surface: Made of 30mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top. Soft closing access flap with in-build power box are provided on work surface for wire management.</p> <p>4.Modesty Panel: Made of 25mm thick MDF one side laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top Under- structure: Made of 25mm Thick Pre-laminated twin board of E1-P2 grade and approved shade confirming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.</p> <p>5.Integrated Pedestal: Made of 25mm Thick Pre-laminated twin board of E1-P2 grade and approved shade confirming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.</p> <p>6.Drawer fronts made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top Pedestal construction is BOX-BOX-FILE type which Uses powder coated 400 MM long metal Panel Drawer Slides.</p> <p>7.Drawer extension is 325 MM. Drawers have a soft closing & anti slam mechanism. Handles are provided for ease of opening. Pedestal is provided with lock for security.</p> <p>Recommendation to add two supporter at both ends of table and increase the length of table</p>	no's	1,40,000	1,40,000.0	
		<p>Prinipal Chair</p> <p>1.Chair High Back: SEAT/BACK ASSEMBLY: The back is made up of 1.2 ±0.1cm. thick hot-pressed 2.plywood & seat is made up of 1.5 ±0.1cm. thick hot-pressed plywood measured as per QA method described in OCP-QLTA-P14-18 and upholstered with fabric upholstery covers and moulded.</p> <p>3.POLYURETHANE FOAM: The HR polyurethane foam is moulded with density = 45±2 kg/m3 and hardness load 14 ± 2 kgf as per IS:7888 for 25% compression. ARMRESTS (THRILL PLUS CHAIR): The adjustable armrest is designed with the following features</p> <ul style="list-style-type: none"> · Up-Down adjustment– 6 steps (7.2 ± 0.5cm range) · Armrest top is mounted on Armrest structure made of glass filled Nylon. · Armrest Top is PU moulded over glass filled Nylon insert. 5. CENTER TILT <p>4.SYNCHRO MECHANISM WITH MULTI LOCK: The mechanism is designed with the following features:</p> <ul style="list-style-type: none"> · 360° revolving type. · 3 position locking with anti-shock mechanism. · Tilt tension adjustment. 6. PNEUMATIC HEIGHT ADJUSTMENT: The pneumatic height adjustment has an adjustment stroke of 9.5 ± 0.3 cm <p>6.PEDESTAL ASSEMBLY (THRILL PLUS): The pedestal is injection moulded in black glass-filled Nylon and fitted with 5 nos. twin wheel castors. The pedestal is 66.1 ±0.5cm. pitch-center dia. (76.1 ±1.0cm with castors).9. TWIN WHEEL CASTORS: The twin wheel castors are injection moulded in Black Nylon.</p>				
Grand Total					8,78,72,825.0	




Note: Image is only for referential purpose. The bidder should propose the furniture and get approved from the client before procurement


Office Furniture BOQ for Hostel & Guest House PARVATHIPURAM



S.No			Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image
1	626	Nos.	<p>Bed with Head Board Overall Size:Width - 2050.0 mm Depth - 970.0 mm Height - 720.0 mm Material:Headboard panels are made of 18 mm thick Prelaminated Particle Board. All the exposed edges are edge banded with 2 mm thick PVC edge banding.Bed leg frame structure consist of metal frames made of M.S. 50 x 25 mm box section in 1.2 thickness Internal Pipes made of 19 x 19 mm box section in 0.9 mm thickness. Headboard pipes are made of 25 x 25 mm box section in 0.9 mm thickness. Hardware:The high quality hardware used. Construction:Knock Down construction.Finish:18 mm thick Prelaminated Particle Board. Bed leg frame structure are powder coated. to thickness of 50 microns (+-10). Mattress frame structure are powder coated to thickness of 50 microns (+-10). Rest all metals are powder coated to thickness of 50 microns (+-10).</p>	Nos.	7200	4507200.00	
2	626	Nos.	<p>Matresses Thickness: 10cm Tulip is made of a breathable coir base with a cushioning foam layer on top for increased comfort</p>	Nos.	3390	2122140.00	
3	626	Nos.	<p>Pillow Size (in cm) : 40 x 60 FEATURES-Open cell structure that reacts to body heat and weight by moulding to the sleeper's body</p> <ul style="list-style-type: none"> • Organic Cotton Fabric for extra comfort • Anti-fungal & Anti-allergic • Excellent neck support • Outstanding elasticity • Durable 	Nos.	127	79502.00	




S.No		Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image	
4	644	Nos.	<p>Study Table(900*450*750) Overall Size:Width - 900.0 mm Depth - 450.0 mm Height - 750.0 mm Material:Top panel is made of 18 mm thick Prelaminated Particle Board All the exposed edges are edge banded with 2 mm thick PVC edge banding. Structure consist of metal frames made of M.S. 25 mm Square Pipes in 0.9 mm Thickness. Drawer assembly consists of drawer front made of 0.6mm CRCA sheet, drawer tray of 0.8mm CRCA sheet.Hardware :The high quality hardware used .Packets:3 packets. Finish:18 mm thick Prelaminated Particle Board. Side frame structure and Back frame structure are powder coated to thickness of 50 microns (+-10).Rest all metals are powder coated to thickness of 50 microns (+-10).</p>	Nos.	3814	2456216.00	
5	644	Nos.	<p>Chair The seat and back are made uo injection moulded high impact strength polypropylene polymer compound with indoor graade UV Resistance. The Powder coated (DFT50+ microns) weled tubular frame is made from 2.22 + 0.03 cm x 0.16+/- 0.0128cm and 3.5+/- 0.03 cmx1.5+/-0.03 cm x 0.16 +/- 0.0128 cm M.S.E.R.W tubThe Shoes are made of high impact strenght polypropylene polymer compund with indoor grad UV Resistance and pressed fitted with tubularfram. SIZE : (W)52.5cm*(D)55.8cm*(H)84.5cm*(seat H) 45.0 cm.Seat Size 52.5cm(W)*53.2 cm(D).Back Size 51.6 cm(W)*40.5 cm (H).</p>	Nos.	1695	1091580.00	

S.No		Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image
6	644 Nos.	<p>Wardorbe Main Unit : 450W : 45cm x 50cm x 202.5cm Addon Unit : 450W : 45cm x 50cm x 202.5cm METAL DOOR-Overall Size : (W x D x H) : For 450W Unit : 44.8cm x 2cm x 197.8cm Aesthetically appealing plain, made from combination of dent resistance 0.5mm & CRCA 0.8mm hanging rod made of 1.0mm thk. MS ERW oblong tube. Legs are fitted with screw type leveler. Construction:completely knock down. Finish:All MS sheetmetal and metal frame components are powder coated with epoxy polyster powder to the thickness of 50-60 microns. Hardware:High quality standard hardware like screw,washer,shelf supports,lock, door hinges,bumpers,etc.</p>	Nos.	12712	8186528.00	
7	167 Nos.	<p>Cafeteria Table with fixed 6 Seater SS Cantina Table with SS Top and SS Stools size shall be 1800 Width mm x 1580 Depth mm x 750 Height mm . Top shall be of Stainless Steel brushed with PLB insert for Durability . Easy to maintain hygiene . The Understructure shall be made of 50.8 mm x 50.8 mm 1.2 mm thick powder coated ERW tubes at base which are welded and fixed to the Top with screws . Tubular stiffeners that are provided between the two vertical frames . The tubes shall be closed with plastic caps . Level adjustment shall be provided to take care of unevenness in floor . There shall be Stainless Steel stools .</p>	Nos.	31779	5307093.00	
8	16 Nos.	<p>Office Table 900 x 600 mm TABLE TOP – LAMINATED PARTICLE BOARD FINISHED WITH POST FORM ROUNDED EDGE AND TAPING MS POWDER COATED SQUARE LEG PROFILE NO MODESTY ROUND CABLE MANAGER ON TABLE TO</p>	Nos.	5932	94912.00	

S.No		Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image
9	16 Nos.	<p>Office chairs</p> <p>Material: Fire retardant breathable mesh inbuilt into the backrest and Polyester fabric integrated into the seat. (BM Mesh & 5060 fabric seat).</p> <p>Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy movement.</p> <p>Arms: Fixed Polypropylene inbuilt arms.</p> <p>Centre tilt: Adjust your work posture by using the tilt to recline on the chair for meetings / phone calls and more. Use the tilt lock for upright posture like keyboarding.</p> <p>Pneumatic height: Change the height of the chair relative to the floor by 100 mm.</p> <p>Certificates: ISO 9001, Notified CE/BIS</p>	Nos.	2542	40672.00	
10	16 Nos.	<p>Office Storwels</p> <p>Storwel plain shall have an overall size of 916mm(W)x486mm(D)x1980mm(H) with welded construction. It should have the shelf thickness of 0.7 mm, Back thickness of 0.8mm, Door thickness of 0.8mm (high yield strength) and all other components shall have a thickness of 0.9mm. These components shall be made of CRCA 'D' grade high yield strength as per IS:513. The Storwel Plain should have a Mazak handle and Three way locking mechanism with Shooting Bolts. It should have a height wise adjustable shelf mounting which shall have a Uniformly Distributed Load Capacity of max 40 Kg. It should also have a M10 Screw type Leveller with Hex plastic base. The finishing shall include Epoxy powder coated to the thickness of 50 microns (+/- 10). Plenty of colour options and shelving options shall be available.</p>	Nos.	15254	244064.00	
11	35 Nos.	<p>Chair For Visitors</p> <p>Dimensions: 60.90 Lx 64.20 D x 98.20 H x 44.80 seat Ht. in CM</p> <p>Frame Tubular Stain less Steel</p> <p>High Density Polyurethane Foam combined with Premium Leatherette.</p> <p>Sturdy PU Soft Arms.</p> <p>Seat and back rest with comfort cushion</p> <p>Legs with Nylon heavy duty bushes</p> <p>Certificates: ISO 9001, BIS/ CE</p>	Nos.	5085	177975.00	



S.No		Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image
12	30 Nos.	<p>3 seater with out side stand</p> <p>seat shell : the seat shell should be a welded assembly of seat,back and side frame. the seat and back should be made of 0.12±0.013cm thk cr steel sheet with oblong perforations.they should be welded to sideframe of size 3.2±0.05cm x 0.5 ± 0.05 cm thk hr steel.the welded assembly should be powder coated (dft 40-60 microns).</p> <p>the seat has a front water fall edge to provide popliteal clearance for comfortable seating. it also has a buttock support curve that not only provides rear support but also prevents small children from falling through the gap between seat and back. clean and flat surfaces of seat and back aids in easy maintenance.</p> <p>* seat size : 47.8 cm (w) x 44.6 cm (d) * back size : 41.6 cm (w) x 23.0 cm (h)</p> <p>understructure assembly: understructure assembly consshould be ts of connecting beam and leg assembly made of m.s. e.r.w. oblong tube of size 7.5±0.03cm x 2.5±0.03cm x 0.2±0.016cm thk.the welded structure assembly should be powder coated (dft 40-60 microns).the leg assembly should be fitted with shoes and levellers in nylon. the leg structure should be designed with minimal should be a of contact close to ground providing easy access for cleaning purposes.</p> <p>the shoes fitted to leg assembly help in aligning the structure for back to back arrangements. levellers take cshould be of uneven flooring.connecting beam should be fitted with snap locking end cap.It also aids in side-by-side understructure alignment arm rest assembly: armrest assembly consshould be ts of armrest frame and armrest pad . the armrest frame should be made up of size 3.175±0.05cm x 0.47±0.027cm thk hr steel and it should be powder coated (dft 40-60 microns). armrest pad should be injection molded in nylon and should be fitted onto the armrest frame.</p>	Nos.	16398	491940.00	




S.No		Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image
13	30 Nos.	<p>2 seater with out side stand</p> <p>seat shell : the seat shell should be a welded assembly of seat,back and side frame. the seat and back should be made of 0.12±0.013cm thk cr steel sheet with oblong perforations.they should be welded to sideframe of size 3.2±0.05cm x 0.5 ± 0.05 cm thk hr steel.the welded assembly should be powder coated (dft 40-60 microns).</p> <p>the seat has a front water fall edge to provide popliteal clearance for comfortable seating. it also has a buttock support curve that not only provides rear support but also prevents small children from falling through the gap between seat and back. clean and flat surfaces of seat and back aids in easy maintenance.</p> <p>seat size : 47.8 cm (w) x 44.6 cm (d) back size : 41.6 cm (w) x 23.0 cm (h)</p> <p>understructure assembly: understructure assembly consshould be ts of connecting beam and leg assembly made of m.s. e.r.w. oblong tube of size 7.5±0.03cm x 2.5±0.03cm x 0.2±0.016cm thk.the welded structure assembly should be powder coated (dft 40-60 microns).the leg assembly should be fitted with shoes and levellers in nylon. the leg structure should be designed with minimal should be a of contact close to ground providing easy access for cleaning purposes.</p> <p>the shoes fitted to leg assembly help in aligning the structure for back to back arrangements. levellers take cshould be of uneven flooring.connecting beam should be fitted with snap locking end cap.It also aids in side-by-side understructure alignment.</p> <p>arm rest assembly: armrest assembly consshould be ts of armrest frame and armrest pad . the armrest frame should be made up of size 3.175±0.05cm x 0.47±0.027cm thk hr steel and it should be powder coated (dft 40-60 microns). armrest pad should be injection molded in nylon and should be fitted onto the armrest frame. Overall Dimensions of Chair-Seat Height - 44.1 cm.</p> <p>Height - 78.5 cm.Width & Depth of Chair as - Width-114.5cm and Depth-63.8 cm.</p>	Nos.	11051	331530.00	
14	8 Nos.	<p>3 seater sofa</p> <p>SEAT FOAM: The seat is made of PU foam with Density 28± 2 kg/cu.mtr having an additional top layer of super soft PU foam in Density 32 ± 2 kg/cu. upholstered with fabric or leatherette.</p> <p>BACK FOAM: The back is made of PU foam with Density 28 ± 2 kg/cu. mtr with two additional top layer of supersoft foam of density 32±2 kg/cu. mtr, upholstered with fabric or leatherette</p> <p>.UNDERSTRUCTRE : Understructure is made up of 1.2±0.1 cm. thick hot pressed plywood (moisture resistance & termite proof as per IS: 303) & pinewood of cross section devoid of major knots & surface defects 6 nos. per seat & 3.8 mm Dia zigzag spring assembly is mounted over understructure for cushioning purpose 6 nos. per seat & 3.8 mm Dia zigzag spring assembly is mounted over understructure for cushioning purpose. LEG ASSEMBLY: It is a welded assembly made in Stainless steel (grade SS 202) tube & plate with plastic endcap. (W) 206.0* (D) 90.5(H) 85.5 cm seat (H) 45.0 cm</p>	Nos.	16000	128000.00	




S.No		Description of work	Unit	Rate (in Rs.)	Amount (in Rs.)	Reference Image
15	10 Nos.	<p>Coffee Table Glass should be 12 ±0.3 mm thick black tinted toughened glass uv glued with bushes made in ss 202 grade for fixing with under structure. Should be a center table under structure: it should be a welded assembly made in ss202 grade having dia. 12±0.04 as per should be: 1762. Width of table= 112.0 cm, Depth=60.0 cm, height=35.1 cm.</p>	Nos.	12712	127120.00	
16	10 Nos.	<p>2 Seater Sofa seat foam: the seat should be made of pu foam with density 32 ± 2 kg/cu.mtr having an additional top layer of j pu foam with density 28 ± 2 kg/cu. seat should be upholstered with fabric or leatherette. 2) back foam: the back should be made of pu foam with density 28 ± 2 kg/cu. mtr with two additional top layer of supersoft foam of density 23±2 kg/cu. mtr, upholstered with fabric or leatherette understructure : understructure should be made up of 1.2±0.1 cm. thick hot pressed plywood ocp-qlta-pl14-18 4. dia 4mm zigzag spring assembly should be mounted in understructure for support and additional cushioning purpose leg assembly: it should be a welded assembly made in stainless steel (grade ss 202) tube & plate.Width (W): 146.0 CM. Depth (D): 92.0 CM. Height (H): 82.0 CM. Seat Height (SH): 45.0 CM.</p>	Nos.	12000	120000.00	
17	2 Nos.	<p>Dining table with 6 chairs Overall Size: Length - 1525 mm Width - 1525 mm Height - 760 mm Material: Legs and structural members of dining table are made of Rubberwood which is free from knots and defects on all faces. Top panel of the dining table is made up of MDF with wenge staining and PU coat.The wooden top of the dining table is fitted with S.S. strips for good aesthetic appearance.Hardware: The hardware and joinery used is of high quality standard.Construction: Knock down construction.Packet: 1 Nos. Finish: PU coated with Wenge Stain shade.</p>	Nos.	21186	42372.00	
					25548844.00	

Note: Image is only for referential purpose. The bidder should propose the furniture and get approved from the client before procurement




Office Furniture BOQ for Medicine Store PARVATHIPURAM

S.NO	SPECIFICATIONS	Qty	Units	Rate (in Rs.)	Amount (in Rs.)	IMAGE
1	<p>L Angular Rack Size: 2130 (H) X 1080 (W) X 380 (D) mm Rack with 5 Compartments of 6 nos. of shelves. Distance between each shelf will be 410 mm. These 6 shelves should be hanging arrangement (adjustable). Racks shall be manufactured from Slotted M.S angle 14 SWG. Shelves shall be manufactured from 18 SWG thick sheet. The rack shall be assembled with G I bolt, nuts and washers. Slotted angle and M.S sheet shall be made of cold rolled with anti-rust treated and shall be finished with powder coating (color: Prince Gray). H/D Rubber bushes shall be provided to the bottom of legs of slotted angle racks. The quality of M.S sheet which is used for racks shall be free from any defects, Undulations, and old paints and surface corrosion, etc. Certificates: ISO 9001, BIS/CE</p>	30	Nos.	6780	2,03,400.0	
2	<p>ALMIRAH SS 1 Internal Size of Almirah: 1850 (H) X 900 (W) X 450 (D) mm 2 Leg Size of Almirah: 150 (H) X 120 (W) X 450 (D) mm 3 Rack with 5 Compartments. 4 Distance between each shelf will be 360 mm. 5 These 4 shelves should be hanging arrangement (adjustable). 6 One shelf should have internal door and lock 7 Standard lock and 2 sets of keys. 8 The thickness of the Almirah sheet shall be 18 SWG. 9 The body of the Almirah shall be manufactured from cold rolled MS sheet (C. R. Sheet) with Antirust treatment and shall be finished with powder coating The quality of used M.S sheet for making Almirah shall be free from any pitting and corrosion etc. 10 H/D Rubber bushes shall be provided to the bottom of legs of Almirah. Certificates : ISO 9001 and BIS/Notified CE</p>	6	Nos.	16949	1,01,694.0	




S.NO	SPECIFICATIONS	Qty	Units	Rate (in Rs.)	Amount (in Rs.)	IMAGE
3	<p>Almirah with glass door Steel almirah with Toughened Glass Size: Height 1980mm, Width 915mm, Depth 480mm Manufactured from CRCA sheet conforming to IS 513-1994 grade D material. The CRCA sheet of uniform thickness and of 22 gauge for the body, 20 gauge for doors duly cut and bend with the help of CNC machines. The almirah shall be equipped with four fixed shelves, manufactured from 22 gauge CRCA sheet, thereby making five compartments in the Almirah. The steel shelf shall be capable of carrying a uniformly distributed load of 70kgms. Certification: Manufacturer should have ISO: 9001, BIS/ CE</p>	6	Nos.	15254	91,524.0	
4	<p>Table for clerk 900 x 600 mm TABLE TOP – LAMINATED PARTICLE BOARD FINISHED WITH POST FORM ROUNDED EDGE AND TAPING MS POWDER COATED SQUARE LEG PROFILE NO MODESTY ROUND CABLE MANAGER ON TABLE TOP</p>	2	Nos.	6396	12,792.0	
5	<p>Table for Computer Contemporary & Modern Style Computer Desk Set-up for Study & Home Office with Storage Space W x H x D: 1003.3 mm x 749.3 mm x 508 mm (3 ft 3 in x 2 ft 5 in x 1 ft 8 in) With CPU Compartment Built-in Keyboard Tray Certificates: BIS/CE, ISO 9001</p>	2	Nos.	5085	10,170.0	

S.NO	SPECIFICATIONS	Qty	Units	Rate (in Rs.)	Amount (in Rs.)	IMAGE
6	<p>Revolving Chair Material: Fire retardant breathable mesh inbuilt into the backrest and Polyester fabric integrated into the seat. (BM Mesh & 5060 fabric seat). Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy movement. Arms: Fixed Polypropylene inbuilt arms. Centre tilt: Adjust your work posture by using the tilt to recline on the chair for meetings / phone calls and more. Use the tilt lock for upright posture like keyboarding. Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, Notified CE/BIS</p>	2	Nos.	4600	9,200.0	
7	<p>Chair For Visitors Dimensions: 60.90 Lx 64.20 D x 98.20 H x 44.80 seat Ht. in CM Frame Tubular Stain less Steel High Density Polyurethane Foam combined with Premium Leatherette. Sturdy PU Soft Arms. Seat and back rest with comfort cushion Legs with Nylon heavy duty bushes Certificates: ISO 9001, BIS/ CE</p>	6	Nos.	5085	30,510.0	
8	<p>Attender stool Approx. size:- 300mm square 18G double bent top of MS Height 510mm. Framework of MS press bent 25mm x 25mm x 3mm angles and 'C' channe riveted to angles made from 18G. MS CRCA sheet superimposed press bent argon arc welded top made from 0.6mm thick 304 grade S.S. sheet riveted with MS Drive on MS. Top. Legs fitted with PVC angle shoe Certificates : Manufacturer should have ISO:900, notified CE/BIS</p>	6	Nos.	1695	10,170.0	
Grand Total					4,69,460.0	




Furniture BOQ (Office) for Hospital PARVATHIPURAM

S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
1	<p>ALMIRAH SS 1 Internal Size of Almiraah: 1850 (H) X 900 (W) X 450 (D) mm 2 Leg Size of Almiraah: 150 (H) X 120 (W) X 450 (D) mm 3 Rack with 5 Compartments. 4 Distance between each shelf will be 360 mm. 5 These 4 shelves should be hanging arrangement (adjustable). 6 One shelf should have internal door and lock 7 Standard lock and 2 sets of keys. 8 The thickness of the Almiraah sheet shall be 18 SWG. 9 The body of the Almiraah shall be manufactured from cold rolled MS sheet (C. R. Sheet) with Antirust treatment and shall be finished with powder coating The quality of used M.S sheet for making Almiraah shall be free from any pitting and corrosion etc. 10 H/D Rubber bushes shall be provided to the bottom of legs of Almiraah. Certificates : ISO 9001 and BIS/Notified CE</p>	95	Nos	16949	16,10,155.0	
2	<p>Attender stool Approx. size:- 300mm square 18G double bent top of MS Height 510mm. Framework of MS press bent 25mm x 25mm x 3mm angles and 'C' channe riveted to angles made from 18G. MS CRCA sheet superimposed press bent argon arc welded top made from 0.6mm thick 304 grade S.S. sheet riveted with MS Drive on MS. Top. Legs fitted with PVC angle shoe Certificates : Manufacturer should have ISO:900, notified CE/BIS</p>	53	Nos	1695	89,835.0	
3	<p>Chair for Doctor Comfortable executive chair upholstered in bonded leather and PVC Padded seat and back for all-day comfort and support Pneumatic seat-height adjustment; 360-degree swivel; smooth-rolling casters Measures 29.13 by 25.59 by 41.34 to 45.08 inches (L x W x H) Maximum weight capacity - 124.7 KGS Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, BIS/Notified CE</p>	38	Nos	10593	4,02,534.0	




Furniture BOQ (Office) for Hospital PARVATHIPURAM




S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
4	<p>Chair for nurse Dimensions: 60.90 Lx 64.20 D x 98.20 H x 44.80 seat Ht. in CM Frame Tubular Stain less Steel High Density Polyurethane Foam combined with Premium Leatherette. Sturdy PU Soft Arms. Seat and back rest with comfort cushion Legs with Nylon heavy duty bushes Certificates: ISO 9001, BIS/ CE</p>	41	Nos	5051	2,07,091.0	
5	<p>Chair For Visitors (principal room,supt,hod) Material: Fire retardant breathable mesh inbuilt into the backrest and Polyester fabric integrated into the seat. (BM Mesh & 5060 fabric seat). Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy movement. Arms: Fixed Polypropylene inbuilt arms. Centre tilt: Adjust your work posture by using the tilt to recline on the chair for meetings / phone calls and more. Use the tilt lock for upright posture like keyboarding. Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, Notified CE/BIS</p>	200	Nos	7500	15,00,000.0	
6	<p>Chair For Visitors Dimensions: 60.90 Lx 64.20 D x 98.20 H x 44.80 seat Ht. in CM Frame Tubular Stain less Steel High Density Polyurethane Foam combined with Premium Leatherette. Sturdy PU Soft Arms. Seat and back rest with comfort cushion Legs with Nylon heavy duty bushes Certificates: ISO 9001, BIS/ CE</p>	687	Nos	5085	34,93,395.0	
7	<p>Revolving Chair Material: Fire retardant breathable mesh inbuilt into the backrest and Polyester fabric integrated into the seat. (BM Mesh & 5060 fabric seat). Base: 700 mm diameter Nylon base with 50 mm castors for stability and easy movement. Arms: Fixed Polypropylene inbuilt arms. Centre tilt: Adjust your work posture by using the tilt to recline on the chair for meetings / phone calls and more. Use the tilt lock for upright posture like keyboarding. Pneumatic height: Change the height of the chair relative to the floor by 100 mm. Certificates: ISO 9001, Notified CE/BIS</p>	325	Nos	4600	14,95,000.0	

Furniture BOQ (Office) for Hospital PARVATHIPURAM




S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
8	<p>Table for Computer Contemporary & Modern Style Computer Desk Set-up for Study & Home Office with Storage Space W x H x D: 1003.3 mm x 749.3 mm x 508 mm (3 ft 3 in x 2 ft 5 in x 1 ft 8 in) With CPU Compartment Built-in Keyboard Tray Certificates: BIS/CE, ISO 9001</p>	7	Nos	5085	35,595.0	
9	<p>Dust Bin Big Material: Plastic, Color: Blue Package Contents: 1 x waste dustbin with swing lid Size: 38 cm x 38 cm x 53 cm Material: made in India - resistant to uv, heat - extra strong 100 percent virgin (hdpe) - space saver design and no need of touching the bin as it is equipped with easy swing lid Can be used for (wet, dry, e waste) garbage waste management bin with strong and durable body, enhances the appearance of your room and allows you to keep surroundings clean and hygienic</p>	22	Nos	2966	65,252.0	
10	<p>Dust Bin For Bio Medical Waste (set) Material: Plastic Color: Yellow, Red & Black waste dustbin with swing lid Size: 38 cm x 38 cm x 53 cm Material: Resistant to UV, Heat - 100 percent virgin (HDPE) – No need of touching the bin for open the lid (with easy swing lid) Can be used for (wet, dry, e waste) garbage waste management bin with strong and durable body, enhances the appearance of your room and allows you to keep surroundings clean and hygienic Removable swing lid which rotates 360 degree, lightweight, easy to lift with metal coated side handle's, swing lid minimizes the smell escaping the bin and helps to keep insects away Capacity: 50, liter each Certification: Manufacturer should have ISO: 9001</p>	63	Nos	5084	3,20,292.0	

Furniture BOQ (Office) for Hospital PARVATHIPURAM



S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
11	<p>Dust bin Small twin model Material: Plastic, Color: Green & Blue Package Contents: 2 Dustbin + 1 Outer body Size: 32 cm x 30 cm x 40 cm Handle: Yes It is also equipped with a pedal that could be opened easily with just a press by your foot creating a hassle-free experience Wheel Support: No Made up of 100 percent food grade and bpa free, our twin bins are used for dry, wet waste of offices and homes, as the name convey twin bin because of has twin waste compartments Creative design Certification: Manufacturer should have ISO: 9001, CE/BIS</p>	316	Nos	902	2,85,032.0	
12	<p>Almirah with glass door Steel almirah with Toughened Glass Size: Height 1980mm, Width 915mm, Depth 480mm Mmanufactured from CRCA sheet conforming to IS 513-1994 grade D material. The CRCA sheet of uniform thickness and of 22 gauge for the body, 20 gauge for doors duly cut and bend with the help of CNC machines. The almirah shall be equipped with four fixed shelves, manufactured from 22 gauge CRCA sheet, thereby making five compartments in the Almirah. The steel shelf shall be capable of carrying a uniformly distributed load of 70kgms. Certification: Manufacturer should have ISO: 9001, BIS/ CE</p>	76	Nos	15254	11,59,304.0	
13	<p>L Angular Rack Size: 2130 (H) X 1080 (W) X 380 (D) mm Rack with 5 Compartments of 6 nos. of shelves. Distance between each shelf will be 410 mm. These 6 shelves should be hanging arrangement (adjustable). Racks shall be manufactured from Slotted M.S angle 14 SWG. Shelves shall be manufactured from 18 SWG thick sheet. The rack shall be assembled with G I bolt, nuts and washers. Slotted angle and M.S sheet shall be made of cold rolled with anti-rust treated and shall be finished with powder coating (color: Prince Gray). H/D Rubber bushes shall be provided to the bottom of legs of slotted angle racks. The quality of M.S sheet which is used for racks shall be free from any defects, Undulations, and old paints and surface corrosion, etc. Certificates: ISO 9001, BIS/CE</p>	150	Nos	6780	10,17,000.0	


Furniture BOQ (Office) for Hospital PARVATHIPURAM						
S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
14	<p>Table for Doctor Executive Wooden Desk Size: 1800 x 900 x 750 mm. shape: Rectangular with side table Usage/Application: Hospital/Doctor Material: MDF. Color: Brown. Storage/Drawers: Yes. Table Thickness: 20-25 mm</p>	12	Nos	21186	2,54,232.0	
15	<p>Three Seater Chair Visitor Chairs (Three Seat with perforated) Penetrated Tandem Chair for Visitors and Patient (Size 35mmx585mmx840mmx 460mm) Frame: Frame made of round tubular pipe of 500mmx50mm dia of 1.8mm wall t thickness with pipe connecting in bottom side 50mmx39mm dia with 1.7mmthickness Fitting PVC Bush adjustable and plain, 2820mm with 40mm dia double connected round pipe wall thickness 1.6mm proper welded with 25.2mmx25.2mmx80mm sq.pipe welded 6 pipes to connect seat to frame and openings of the frame covered with SS Sheet Bushes Seat and Back: Ergonomically designed seat and back (Size:445x445x760) made of penetrated sheet with thickness of 1.2mm with seat of waterfall type 4side covered with 11mm bend and properly welded with 18.7mm dia round tube properly welded on all sides (Seat size: 405mmx435mm) and half round designed curved back (Size:430x205mm) provided with 3mm road internally for extra grip attached with 18.7mm round tube properly welded. Certificate: ISO 9001, CE/BIS</p>	300	Nos	15254	45,76,200.0	
16	<p>Table for clerk 900 x 600 mm TABLE TOP – LAMINATED PARTICLE BOARD FINISHED WITH POST FORM ROUNDED EDGE AND TAPING MS POWDER COATED SQUARE LEG PROFILE NO MODESTY ROUND CABLE MANAGER ON TABLE TOP</p>	285	Nos	6396	18,22,860.0	

Furniture BOQ (Office) for Hospital PARVATHIPURAM




S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
17	<p>High Rise Stools SEAT ASSEMBLY: The seat should be made up of 1.2±0.1cm thick flat plywood and with moulded Polyurethane foam and should be upholstered with replaceable synthetic leather covers. SEAT SIZE: Diameter 40.0 cm ADJUSTMENTS: 360° Revolving type. BACK ASSEMBLY: The back foam should be designed with contoured Lumbar support for extra comfort. The upholstery should be available in synthetic leather. *BACK SIZE: 45.0 cm (W) covered with polyurethane foam HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be moulded with density = 45 +1-2 kg/m³ and Hardness load 16 ± 2 kgf for 25% compression HEIGHT ADJUSTMENT: The manual height adjustment should be very easy to operate with a help of a knob. It can be easily locked at the most comfortable position. PEDESTAL ASSEMBLY: The five-prong pedestal should be fabricated from 0.2 ± 0.02 cm thick HR sheet. (should be DD 1079 / HR), powder coated (DFT 40-60 microns) and fitted with an injection moulded black Polypropylene Hub Cap and 5 nos. twin wheel castors. The pedestal should be 55.0±0.5cm pitch-circle-diameter- (65.0±-1.0cm-with-castors).- Circular-foot-ring of 052.0±0.2cm made up of 01.9±0.2 x 0.12±0.0096cm thk MS ERW Tube for foot support in High-base stool. TWIN WHEEL CASTORS: The twin wheel castors should be injection moulded in Black Nylon. Overall dimensions shall be Width- 65.0cm, Depth- 65.0 cm, Height- 88.0 to 99.5 cm, Seat Height- 67.0 to 78.5 cm. As per make in India initiative the product should be "Indian Made" conforming to international standards manufactured by Indian Company having manufacturing plant and quality control facility in India operational for over 5 years with certifications like ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 for Occupational health & safety management system certification, BIFMA, Greenguard, ISO 45001:2018, energy management certification like ISO 50001:2011 etc. All Hospital furniture should be Indian made and should have or comply to international certifications like ISO 13485:2016, CE certification from European notifying body, USFDA certification for hospital beds. Also supplier should submit EMI/EMC test report and safety ad leakage current test report as per IEC 60601-2-52 standards for Motorized ICU bed as and when asked for.</p>	55	Nos	2200	1,21,000.0	
18	<p>Conference Table (U shaped ,7.1 mtr length) 22 PAX U SHAPE Conference Table TABLE System- Gable End, Size - 7100 L X 3300D X 750HT (Main Table Size3300L X 750D X 750HT Specifications: Table top: 25mm thick Pre-laminate particle board (E1- norms) with 2mm PVC edge lipping on all exposed edges with approved shade. Under Structure: 25mm thick PLT Gable Ends with approved shade. Modesty : 18mm thick PLT Modesty Panel of 600mm Ht with approved shade. Wire Management: Anodised Finish 11 nos Flip up box 450 x 150 with soft closures, without sockets and switches are provided, PVC Cable Dump & vertical cover is considered for wire entry from the floor to the table top.</p>	2	Nos	42373	84,746.0	
19	<p>Teapoy table Size: Length (78 cm), Width (50 cm), Height (40 cm) Material: Teak wood frame and Glass top</p>	25	Nos	3390	84,750.0	




Furniture BOQ (Office) for Hospital PARVATHIPURAM



S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
20	<p>1. Frames shall be available in nominal heights of 38", 54", 70", and 86" and widths of 2' to 4' in 6-inch increments. To accommodate the wheelchair patient the frame shall be designed to provide for a work surface height from 29 to 34 inches on 1-inch increments. Work surface should be at a continuous height from inside to outside with a minimum six (6) inch overhang on the exterior.</p> <p>(2) Frames shall be constructed of a minimum of 16-gauge steel tubing with a nominal 2" X 2" cross section to insure structural integrity and safety and shall have plastic floor glides which will adjust vertically at least 1" to accommodate floor variance. They shall be designed in such a fashion to permit all hanging components (work surfaces and shelves) to be adjusted in 1-inch vertical increments. All hanging components must, by design, have an anti-dislodgment feature. Each frame shall have hinged injection-molded or similar extruded PVC wire management baseboard covers accessible on both sides which shall provide locations for electrical outlets and an enclosed raceway for the non-electrical. The hinged covers shall allow for the laying in of non-electrical and eliminate the need to thread wires through the base of the frame and around the corners.</p> <p>3. Frames shall have a wire management system that permits both</p> <p>4. Locks and keying. Key all locks differently. Furnish each lock with two keys.</p> <p>5. Finish Colors shall be selected from manufacturer's standard line. Colors may be specified to identify areas for materials management</p>	35	Nos	29661	10,38,135.0	
21	<p>Reception table Reception Table Top shall be of Laminate with clean Matt PU finish 18 mm thick , inside radius - 700 mm , outside radius - 1350 mm and depth - 650 mm . Cork shall be 18 mm thick of rubber. Glass shall be Frosted 10 mm thick diamond cut finishing on edges, inside radius shall be - 1202.5 mm ,outside radius - 1402.5 mm and depth - 200 mm The Modesty Panel shall be MS Perforated sheet below worksurface: 0.8 mm (thick) x 665 mm (height) x 1345 mm (flat length) . Above Work surface: 0.8 mm (thick) x 260 mm (height) x 1345 mm (flat length) . The legs shall be of MS tube 1.6 mm thick diameter 50.8 mm and height 604 mm</p>	23	Nos.	50,000	11,50,000.0	



Furniture BOQ (Office) for Hospital PARVATHIPURAM						
S.NO	SPECIFICATIONS	Qty	UNIT	Rate(in Rs)		IMAGE
				In fig	Grant total (Rs)	
22	Computer work station 1. Size 775 X 600 2. Prelaminated 18 mm thick B.W.P ply board with M.S powder coated legs & required frame. 3. Table should have leveling studs. 4. Table should have power provision for 1 desktops and modesty panel only for island tables as/ plan Certificates: Notified CE/BIS/FDA and ISO 13485	13	Nos	6780	88,140.0	
Grand Total					2,09,00,548.0	


Note: Image is only for referential purpose. The bidder should propose the furniture and get approved from the client before procurement




Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
1	<p>Attendants Stool Dimensions • Width : 11 Inch • Height : 18.5 inch • Depth : 11 inch • Weight : 4 kgs Thickness of Leg: 16-gauge Diameter of Leg: 1" Material : High Density Stain Less Steel 304 grade Legs: Double tubler SS Load Capacity: 100 kgs Bushes : Nylon heavy duty Bushes of 4 inch length Certificates : Manufacturer should have ISO:9001</p>	374	Nos.	1695	6,33,930.0	
2	<p>Bed Side Lockers (ABS) Made of ABS (Acrylonitrile Butadiene Styrene) • Size: 450 x 450 x 760mm • One Drawer • One Towel Rail • 50mm Castors • Tower hangers both sides Certificates: Manufacturer should have ISO:9001</p>	815	Each	7627	62,16,005.0	
3	<p>Blood Donor Couch Should be an automatic enveloping variable tilt chair. • Should have movable arm rest • Should have soft upholstery of 2 ½ inch thickness. • Should have corded remote control for initiating the movements. • Should have lockable fiber wheels. • Should have provision for blood collection monitor stand and IV stand. • Reclining and upright body positions should be possible. • Should be able to lower the back rest and raise the leg rest. • Should have a lifting capacity of 150 kg • Height of the seat should be adjustable from ground. • Back rest, leg rest and seat should be separable. • Electrical actuators and mechanism should be housed inside the structure • Should have safety certificate from a competent authority notified CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid. • Should work with input 200 to 240Vac 50 Hz supply.</p>	7	Each	105932	7,41,524.0	



Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
4	<p>Crash Cart deluxe</p> <ul style="list-style-type: none"> The trauma care crash cart should have 18g stainless steel (SS 304) tubular/Rectangular frame work. Two lockable plastic box units with 3 drawers should measure 305mm l x 380mm d x 320mm h. The trauma care crash cart should have following facilities: 6 nos. hand out bins to keep important supplies easily accessible of size approx. 110 mm W x 125 mm D x 75mm H. light weight plastic box with three drawers each to hold emergency medicines, Ambu. Bags, IV solutions, catheters. The trauma care crash cart should have facility to carry monitors, ECG, suction apparatus on open areas at top centre and bottom shelves The trauma care crash cart should have stainless steel saline rod made of 12 mm dia. 304 grade s.s. approx. 750 mm long and bent at top to have an arm of 400 mm approx. at the end of which of 6 mm dia. s.s. hook shall be welded with tig. The trauma care crash cart should have 12.5 cms dia non-rusting swivelling castor wheels. Two having locking arrangement. The trauma care crash cart should have pull out cardiac massage board made of plywood. The trauma care crash cart should have oxygen cylinder stand epoxy powder coated, on one side. <p>Certificates: Should have notified body CE/BIS/USFDA certification.</p>	44	Each	35186	15,48,184.0	
5	<p>B Type Cylinder Trolley</p> <ul style="list-style-type: none"> The trolley should be mounted on good quality wheels of 100mm. The trolley should have MS tubular frame work and SS base. Manufacturer should have ISO certificate 	44	Each	2542	1,11,848.0	
6	<p>Double Basin Stand</p> <ul style="list-style-type: none"> Hand Wash Basin stand (with double basin) Four legs plastic base mounted on 5 cms dia castors. With two approx. 35 cms S.S. basin. Vertical SS tube made of 25 mm x 1.22 mm and basin holder tube made of 16 mm x 1.22 mm SS tube All mild steel components should be thoroughly pre-treated chemically to remove rust and foreign matter like Grease, Oil etc. by dip tank process pre-treatment system. The treated Metal Surface should have coating of Epoxy Polyester Powder and oven baked at 180 degree to 200 degree Centigrade to avoid contamination of the clean metal surface from dust particles. <p>Certificates: BIS/CE/USFDA and ISO 13485</p>	18	Each	3390	61,020.0	



Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
7	<p>Dressing Trolley</p> <ul style="list-style-type: none"> Standard dressing trolley of dimensions approx. 765 mm x 450 mm x 820 mm. Framework made of SS Tubes and SS Shelves (SS Grade 304). On the side of shelf two SS rings of diameter 200 mm-250 mm for placing wash basin and Bucket Should be supplied with SS basin and bucket . On top shelf, in one corner three SS rings of 125 mm diameter each. On top shelf, in other corner a rectangular SS holder of 150 mm x 100 mm. Robust 360° rotating wheels of 100 mm diameter with locks in two. A variation of ± 10 mm is acceptable in point no. 1 A variation of ±5 mm is acceptable in point no 3, 5 & 7. <p>Certificates: BIS/Notified CE/USEFDA and ISO 13485</p>	45	Each	12712	5,72,040.0	
8	<p>Examination Couch with foot step</p> <ul style="list-style-type: none"> Examination Couch Assisted adjustable backrest of 450 mm Three sliding door & three drawers for storage. It should have overall size: 1890 mm L x 560 mm W x 840 mm H It should have fixed rexine upholstered top 64 mm thick in two sections Body frame work made from 20G CRCA sheet & 20 mm x 40 mm x 16G.MS. rectangular Tubes. It should have fitted stainless steel legs & powder coated on all metal surfaces. It should have headrest adjustable on gas spring. It should have upper section of box approx. size 1220 mm L x 460 mm W x 630 mm H with three sliding drawers of approx. size 320 mm L x 430 mm W x 75 mm It should have lower section comprising of three cabinets of approx. inside size 350 mm L x 440 mm W x 430 mm H with separate doors. It should have sliding foot step under the front side of lower middle cabinet. It should have BP apparatus tray made of 18 G MS sheet of approx. size 350 mm L x 120 mm W x 20 mm H provided on swinging rod rotating through a bush fixed on the body of the couch. All MS parts should be pre-treated & powder coated & SS parts finished with matt polish. Powder Coating - Min 8 dip tanks pre-treatment and powder epoxy coating of minimum 60 microns with phosphate layer underneath for corrosion resistance. V. Phosphate coating with test certificate. Certificates: Manufacturer should have ISO:9001 	37	Each	21000	7,77,000.0	



Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
9	<p>Patient Examination Table</p> <ul style="list-style-type: none"> • Patient examination table Overall approx size: 1890 mm L x 560mm W x 840mm H. with 3inch two piece rexine mattress • Fixed upholstered top 64mm thick in two sections. • Body frame work made from 18G. CRCA sheet and 20 mm x 40mm x 18 G MS. • Rectangular Tubes frame • fitted with stainless steel Legs. • Headrest adjustable on gas spring. • Should be provided sliding Drawer and a cabinet as shown in picture. • B.P. apparatus tray made of 18 G MS sheet of approx size 350 mm L x 120 mm W X 20 mm H provided on a swinging rod rotating through a bush welded on the body of the couch. • Should have Step Stool. • All mild steel components should be thoroughly pre-treated chemically to remove rust and foreign matter like Grease, Oil etc. by dip tank processpre-treatment system. • The treated Metal Surface should have coating of Epoxy Polyester Powder and oven baked at 180 degree to 200 degree Centigrade to avoid contamination of the clean metal surface from dust particles. <p>Certificates: ISO: 13485</p>	74	Each	9500	7,03,000.0	
10	<p>Foot Step</p> <ul style="list-style-type: none"> • A double foot step with non slip synthetic mattress for the examination table conveniently. • Size: Approx. 50L X 30 W X 35 H cm • The steps shall be made of Stainless Steel sheet of 1mm thick confirming to IS designation 19000, 31000, 31500, SS tube 25.4 , 1.22 mm thick <p>Certificates: ISO 13485</p>	74	Each	1695	1,25,430.0	



Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
11	<p>Fowler Cots</p> <ul style="list-style-type: none"> • Overall approx size 2090 mm L X 910 mm W X 610 mm H, Bed Frame size-1980 mm L X 910 mm W, with height adjustment. • The main frame should be made from 60 x 30 x18 G ERW rectangle tubes. • Two sections top should be made From18G CRCA sheet uniformly perforated. • The backrest should be maneuvered by crank mechanism smoothly operated with trust bearing. • The bows should be made of approximately 31.75mm OD x 18g ERW tube with head bow of 106cm H and leg Bow 81cm H. • Both head and leg bow should have one. • Tubular horizontal support approx.. 25mm dia x 18G ERW tube and three vertical supports of approx. 15.80mm dia X 18G ERW tubes. • Bows should be provided with PVC shoes with nylon reinforcement molded to the bows in such a way that bolt or nut should not appear on top surface of the bed frame. • Four IV Rod locations & one SS telescopic Saline rod with 12mm dia.to be provided supplied in KDC. 4 A Mattress suitable for the bed made of high density UP foam of 100 mm thickness covered with good quality rexine to be provided. <p>FINISH:- All components shall be thoroughly pre-treated chemically to remove rust and foreign matter like grease, oil etc by dip tank processes including separate degreasing, De-rusting, phosphating each followed by water rinsing & hot air drying to give phosphate coating conforming IS 3618-1966 class 'C'. The treated metal surface should then be coated with epoxy powder with paint film thickness of 60 microns and over baked at 180.</p> <ul style="list-style-type: none"> • Backrest should be at least 45% of the total top section length. • Load bearing capacity should be 135kg. • Food table should be along with cot with following dimension 560mm L x 400 mm W x 280 mm H made from SS 304 grade pressed on edges and maintained on folding legs of S.S. • Backrest Section maneuvered by crank mechanism from foot end. Provision for location I.V. Rod • Mattress For Bed Size : As Per Bed (4" Thick, 32 Density, Pu Foam) Standard 	764	Each	29661	2,26,61,004.0	


Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
12	<p>I.C.U. BED/CCU BED/RECOVERY BED/MOTORISED ICU COT</p> <ul style="list-style-type: none"> • Over all Size: Aprox 2120mm L x 1020 mm W x 450 mm To 770 mm H (Without Mattress). Bed frame size 2070mmL x 960 mm W Four section ABS detachable top. • Bed should be electrically operated: Remote control or Integrated panel for easy to operate various positions like height, back, foot movement etc. by touching single fold protection button. • It should have CPR button for emergency override to return the backrest to flat position quickly and instantly. • Battery backup with inbuilt battery charger should be provided. • The hand control box and the nurse hand control should have indications for power on and the battery charge. • Degree indicator required for backrest, upper leg elevation &Trendelenburg / Reverse trendelenburge positions. • All electro mechanical actuators needs to be compatible with class of IP 54. • Backrest and upper leg section should retract as they are individually and simultaneously raised. • Bed frame should be mainly made from 50 x 25 mm x 2 mm thick ERW tube with proper support. • This frame should be fitted on the base mainly made of dia 80 x 1.6 mm ERW tubes with supportive C channel of thickness 2mm on various supporting links. • The base frame should be mounted on 125mm dia non-rusting castor wheels with central and directional locking mechanism and pedal operated at the foot end of the bed. • The bed should have easily detachable moulded head & foot side panels and four corner buffers. • Bed should have split type swing down railings, 2 nos on each side made from non-rusting moulded material. • There should be two locations on the head side of a bed to hold one stainless steel Saline rod 12 mm dia with 31.7mm dia, 18 g stainless steel outer covering tube holder with a knob to fix syringe pump holders. • Quick manual backrest release system with operating lever on both side of top frame 	46	Each	125932	57,92,872.0	
13	<p>Instrument Trolley</p> <ul style="list-style-type: none"> • Overall size : Size: 680mm L x 450mm W x 900mm H. • Stainless steel tubular frame work made of 25.4mm OD x 18 G verticals mounted on 100 mm dia non-rusting swiveling castor wheels two with brakes, two without brakes. • Two stainless steel shelves with protective railings on three sides. • Only 304 grade stainless steel should be used for trolley frame work and STAINLESS STEEL shelves. <p>Certificates: ISO 13485, BIS/notified CE/USFDA</p>	57	Each	6780	3,86,460.0	
14	<p>Saline Stand</p> <ul style="list-style-type: none"> • Made of 304 grade Stain Steel • Five legs Stainless Steel stable base made of 20mm x 40 mm x 18g Square tubes • Fitted with 50mm Dia non rusting Castor, • STAINLESS STEEL rod with double hooks made from 304 Grade STAINLESS STEEL 10mm Rod. • Height adjustment from 1620mm to 2340 mm. • Certificates: Manufacturer should have ISO:9001 	45	Each	2542	1,14,390.0	



Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
15	<p>Linen Trolley</p> <ul style="list-style-type: none"> • Overall Size :- 1066mm (L) x 508mm(W) x 838 mm(H) Height from Ground level to top. • Frame : Vertical & horizontal frame CRCA tube 25.4mm OD, 18SWG. • Curved bended at top side. Lengthwise half side structure have Two shelves & other side bottom have tubular horizontal five supports at equal distance, 19mm OD, 18SWG. • Two Shelves CRCA sheet 18SWG internally fitted at bottom & top in half side. • Provide detachable square plastic bean suitable at half side structure. • Supported with smooth moving & non-rusted 100mm x25mm OD,PU Wheels, double bearing with brake facility, should be fitted at bottom. <p>Finish:</p> <ul style="list-style-type: none"> • All components shall be thoroughly pre-treated chemically to remove rust and foreign matter like grease, oil etc by dip tank processes, including separate Degreasing, De-rusting, Phosphating each followed by water rinsing, passivating and hot air drying to give phosphate coating confirming IS 3618 of 1966 Class 'C' or latest. • The treated metal surface should then be coated with epoxy polyester powder with film thickness of minimum 60 microns and oven baked at 180 -200° C . • Tow section tops should be smooth edges and burr free and corners should be round off so that there should be no sharp corners. • Powder coating shall be of grade A & shall pass requirement specified in Table 1 of IS 13871 of 1993. This finish should exclude stainless steel parts and hardware if any. • All mild steel shall be of CRCA and as per IS 513 of 2008 or latest. <p>General Requirements:</p> <ul style="list-style-type: none"> • All dimensions will be considered — Length, Width, Height in millimeter(mm), thickness in gauge (SWG — Standard Wide Gauge), Diameter should consider as Outer Diameter (OD). • The linen trolley must be sturdy, vibration free and self balance. • The linen trolley shall be properly constructed with all welded joints grounded, cleaned and well-formed. Unless otherwise specified, the vertical members shall be perpendiculars to the wheel base and parallel to each other and the horizontal members shall be at right angles to the vertical members. • The linen trolley shall stand on all the legs at the same time on a level surface. • All the surfaces shall be smooth and free from pitting. • Welding shall fully penetrate and shall be sound in every detail and it shall be finished flush. In the finished stage, there shall be no exposed sharp edges in the frame-work or other unsealed formations which may harbor dirt or foreign matter. 	51	Each	7627	3,88,977.0	
16	<p>Mayo's Trolley</p> <ul style="list-style-type: none"> • Mayo's Trolley Adjustable height of SS tray from 845 mm to 1300 mm. • Tray size: 770 mm L x 510 mm W • Trolley mounted on 50mm Dia.castors. • SS tubular frame mainly made of 31.7mm dia x 16G round tube. • Tray made from 0.9 mm thick S.S. 304 grade sheet. • Tray frame made from 25 x 5mm, a cantilever of 10 mm dia SS 304 grade rod and SQ. bar of 16 mm S.S. 304 Q mounted on four swivels, twin wheel non rusting castors, 50 mm wheel dia, all without brake. • SS parts finished with Matt Polish. <p>Certificates: ISO 13485</p>	18	Each	5508	99,144.0	

Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
17	<p>Over bed table</p> <ul style="list-style-type: none"> • Frame should be made of SS 304 grade • Should have height adjustment facility from 850 mm to 1100 mm with the help of operating lever which activates the gas spring to assist the table top to lift • Gas spring should function smoothly with adjustable height and consistent motion during operation • Table top frame shall be designed to hold the top as well as extension works as a handle for the handling of over bed table. • Should have anti scratch, good surface finish ABS Laminated top having dimension 760 mm L x 360 mm W approximately. • Should be mounted on four 5 cm swivel castors <p>Certificates: BIS/Notified Body CE/USFDA and ISO13485</p>	45	Each	5085	2,28,825.0	
18	<p>Revolving Stool</p> <ul style="list-style-type: none"> • Height: 19 to 25 Inches • Seat Dia: 15 Inch • Material: Stainless Steel • Four legs with ring and Nylon Bushes • Certificate: ISO 9001 	115	Each	2966	3,41,090.0	

Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
19	<p>Transport Stretcher Trolley (Deluxe)</p> <ul style="list-style-type: none"> • Patient Stretcher Trolley Overall Size: 1905mm L x 710mm W x 660mm To 910 mm H. • Stretcher dimension 1830 mm L x 555 mm W. • Two section top. • Height adjusted by foot operated maintenance free hydraulic pump. • Height adjustment shall be obtained by hydraulically operated mono block type linear actuator pump foot operated actuation having stroke of 140 +/- 5 mm, push force 10 KN at 270 bars, number of complete pump stroke 22 to 24 for full stroke length. • X-ray permeable removable stretcher, Backrest raised on ratchet. • Quick Trendelenburg as well as reverse Trendelenburg positions shall be provided with easily accessible operating handle provided with two gas springs for easy action. • S.S. saline rod with 12 mm dia S.S. rod shall telescope in SS socket tube approx. 15.8 mm dia x 18G welded on angular base bracket of 14G SS sheet. • Nylon bracket provided to prevent colour damage. • It could be placed at four different locations. • Complete with sliding X-ray cassette holder, storage tray. • Trolley shall be mounted on 125 mm dia non-rusting imported castor wheels two with brakes and two without. • Castor housing and wheels made from high grade non floor-staining synthetic materials with integrated thread guards. • Wheel centre having precision ball bearing to run smoothly. • Complete with corner buffers, one on each corner. • Covered handles. • Oxygen cylinder arrangement. • It shall have a pair of Stainless steel tuck down type railings made of 19 mm dia x 18G tube fitted with M.S. brackets. 	42	Each	21186	8,89,812.0	
20	<p>Patient Wheel chair Fixed</p> <ul style="list-style-type: none"> • Patient wheel chair Fixed Overall size: 1120mm D x 670mm W x 920mm H approx made of Stainless steel. • Tubular frame work of 22 mm OD x 18 G tube except for the four width wise stays of 19 mm OD x 18 G Stain less Tubes • For self-propulsion, two hoops of 15.8mm OD x 18 G SS tube mounted on rims of solid rubber tyre wheels of approx. 457 mm • Wheel chair should have cushioned seat and cushioned back of 50 mm thick PU foam mattress covered with rexine. • Two foldable case aluminum foot rest and two 200 mm dia strong swiveling castor wheels provided in the front <p>Certificates: ISO 13485 and BIS/CE/USFDA</p>	21	Each	7627	1,60,167.0	

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S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
21	<p>Wheel Chair Foldable</p> <ul style="list-style-type: none"> • Patient wheel chair Foldable: Stainless Steel • Width: 23.5" (19 seat) • Length/Depth: 24" • Weight Capacity: 180 kg. • Seat Width:19" • Seat Depth: 16" • Seat to Floor Height: 19". • Back Height: 17". • Arms: Fixed Full, ABS anti-skid hand rail. • Front Riggings: Swing-away steel Footrests • 5 cm 50PU density foam cushioned top and back covered with leathered Rexene of 2mm thickness. Rear Axle: Single Position 12mm • All the Stainless Steel should be 304 grade/ 16 gauge. <p><i>Certificate: Should be BIS/notified CE/ISEDA and ISO- 13485</i></p>	20	Each	6780	1,35,600.0	
22	<p>Food trolley</p> <ol style="list-style-type: none"> 1. Material Stainless Steel 2. Shape Rectangular 3. Material Grade SS304 4. Number Of Wheels 4 Wheel 5. Surface finish Polished 6. Sheet thickness 2-5 mm 7. Frequency 50 Hz <p>Double walled insulated with glass wool. Inner side made of 18swg & outer side made of 20 swag as Stainless steel 304 sheet with 4 no heavy duty Castor wheels (4"/6" dia) with 2 wheels locking arrangement and push cart type handle constructed from ss pipe. Trolley has Immersion type 3Kw heating elements with auto temp. Controller & indicating lamp with temp. Indicator to keep 4 No's round containers with lids to keep food hot vegetable and one rectangular for container for to keep chapattis Also fitted with one middle and bottom shelves with lockable door. Rubber cushion to be fitted at the corners to prevent damage during transportation</p> <p><i>Certificates: Notified CE/BIS/FDA and ISO 13485</i></p>	6	Each	27283	1,63,698.0	

Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
23	<p>LDR Cots (Motorised)</p> <ol style="list-style-type: none"> 1. The bed should be suitable for use in Delivery room. 2. It should have an Electrical Motor (DC) for Hi-Low Function. The delivery bed should be dedicated to support any natural birthing position (Squatting, Lithotomy and Lateral)The lowest level of the bed (Top 3. surface of the bed) should be Maximum 47 cm from ground for mothers to sit on and adjust to different labour position. 4. The highest level of the bed at maximum highest position should be at least 110 cm 5. It should have an Electrical Motor (DC) for Backrest tilting. 6. When the back rest is raised, the seat should tilt upward to avoid patient from slipping down 7. Calf support , foot support and arm rest should be standard 8. The seat section should be easily removable for cleaning. 9. The leg section should be easily detachable for easy access of the pelvic area with a U-cut seat 10. Should be supplied with PU moulded hand rest for easy cleaning 11. The hand rest should be easily adjustable to suit various heights of Patients. 12. Should be supplied with the PU moulded calf support. 13. All the rails and the mechanism for the various fixation devices should be in stainless steel 14. Side handle to be provided 15. Swivable IV Stand to be provided 16. Should have paper holder with roller 17. The bed should be on 4 castors with total lock (swivel & rotation). 18. The castor should be at least 5 inches and made of plastic body for corrosion resistance 19. Should work on optionally in battery in case of power failure (at least 12-13 operations) 20. It should have CPR release optionally for instantly 21. bringing down the bed to the horizontal position in case of cardiac problems 22. Should have a remote options of hand (or) foot 23. Anesthesia screen holder should be optionally available 	10	Each	110169	11,01,690.0	

Furniture of BOQ for Hospital PARVATHIPURAM						
S.No	Description of work	Qty	Unit	Rate in fig.	Total Amount (Rs.)	Reference Image
24	<p>Mechanical 5 fold ICU Cot</p> <p>1. Type of bed : Fowler 2. Number of bed platform sections: 5 for fowler cot 3. Availability of Backrest section : Yes 4. Backrest section linkage : welded with MS CRCA tube (14 G) 5. Availability of Leg section : Yes 6. Leg section linkage : welded with MS CRCA tube (16 G) 7. Mattress platform shall be perforated : Yes 8. Screw mechanism : welded with ERW MS tube (18 G) in M.S. cover made from (16 G) ERW tube 9. Manual adjustments : Backrest, knee rest through two screw systems with thrust bearings individually maneuvered by two handles for fowler bed 10. Back rest - min 45 % of the frame length : Yes 11. The bottom end of the H legs are provided with PVC shoes : Yes in case of bed without castors 12. The bed has head & foot panels detachable by hand without need of any tool : Yes 13. Saline rod provision : four locations on the bed platform to hold stainless steel Telescopic Saline rod 12mm dia with 15.87 mm dia x 1.2 mm (18 G) stainless steel 304 Grade 14. Provision for mounting of syringe pump : outer covering tube with a knob to mount syringe pump 15. Finishing & workmanship shall be of high standard : Yes 16. All corners shall be rounded off so that there shall be no sharp corners and holes should be burr free : Yes 17. Coating for metal parts : M.S. tubular parts, linkages, flats are to be In-house, pretreated / shot blasted and Epoxy powder coated with coating thickness 50 to 100 microns 18. Material of handle : SS 304 • Number of detachable moulded PP with PVC insert head and foot side panels : 4 19. Provision of castors NA (No castors provided) 20. Number of hooks in Telescopic I V Pole : 2 • Urine Bag Holder : Yes 21. Mounded Chart Holder: Yes 22. Provision of mattress : No 23. Number of sections in mattress : NA (In case mattress is not provided) 24. Provision of collapsible Railing : Yes 21. Diameter of Four corner rubber buffers in mm : 75 22. Material of head and foot panels : SS 304 Tubular 23. Diameter of MS tubular in mm : 30 to 50 mm 24. Diameter of SS Laminated : 30 to 50 mm 25. Patient Working Load : 135 Kg 26. Safe Working Load : 150 Kg 27. Material of collapsing railing : SS 304 Certificate: ISO 9001, BIS/CE</p>	5	Each	61016	3,05,080.0	
25	<p>Iron Cot with Mattresses</p> <p>Epoxy Coated Mild Steel / CRC Frame Uniformly Perforated CRC Top Square Head and Foot Bows of Unequal Height Head Board 1050 mm Foot Board 670 mm Pre-treated and Epoxy Powder Coated Overall Approx. Size: 180L x 90W x 60H cms Mattress: Well matching size spring mattress with tempered bonnell steel 100% Cotton Covers Approx. Height 35 Mm High quality Polyurethane foam Certificate: ISO 9001, BIS/CE</p>	28	Each	15000	4,20,000.0	
					4,46,78,790.0	

Note: Image is only for referential purpose. The bidder should propose the furniture and get approved from the client before procurement

Abstract of Skill Lab for Medical College, Vizianagaram

Sl. No.	Name of the equipment	Qty	Rate (in Rs.)	Amount Rs.
1	First aid, Bandaging, splinting	5	280000	1400000
2	Basic Life Support (BLS), CPR (Cardio Pulmonary Resuscitation) mannequin	10	49000	490000
3	Various types of injections- Subcutaneous, Intra-muscular,	10	24500	245000
4	Intra-Venous	5	64400	322000
5	Urine Catheter insertion	5	70000	350000
6	Skin & Fascia suturing	10	8216.60	82166
7	Breast examination model /mannequin	5	210000	1050000
8	Gynecological examination model/mannequin including IUCD (Intra Uterine Contraceptive Device) Training model	5	35000	175000
9	Obstetrics mannequins including Obstetric examination, conduct and management of vaginal delivery. (Hybrid0) Mama Birthie and Mama natalie	5	112000	560000
10	Obstetrics mannequins including Obstetric examination, conduct and management of vaginal delivery. (Hybrid0) Prombt Flex	3	1260000	3780000
11	Neonatal resuscitation mannequins	10	16100	161000
12	Pediatric Resuscitation Mannequins	10	49000	490000
13	Trauma mannequin EXTRI KELLY	5	210000	1050000
14	Trauma mannequin BTLS /Advanced Trauma Models	5	404320	2021600
15	ACLSmannequins (Adult)	2	1680000	3360000
16	ACLSmannequins (Child)	1	1080000	1080000
17	High Fidelity Patient Simulators for UG/PG/ Emergency	1	4200000	4200000
18	High Fidelity Patient Simulators for UG/PG/ANESTHESIA/CRITICAL CARE	1	21000000	21000000
19	High Fidelity Patient Simulators for OB/GY	1	10780000	10780000
20	High Fidelity Patient Simulators for PEDIATRICS	1	8400000	8400000
21	Airway mannequins Child	5	160000	800000
22	Airway mannequins Adult	5	185000	925000
23	Suturing mannequins	10	4200	42000
24	AUDIO/VIDEO Recording for Debriefing the Skills and Simulation- Learning Management soution	1	56,00,000	5600000
			Total Rs.	68363766

Abstract of Laundry for Proposed Medical college and Hospital,Parvathipuram

Sl. No.	Name of the equipment	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	Washer cum dryer	3	942926	2828779
2	Water softner	1	65600	65600
3	Steam iron	2	16810	33620
4	L-Angular rack	10	5559.6	55596
5	SS top table for iron	2	11111	22222
6	Wash room trolleys	3	8141	24423
		Total Rs.		3030239

Abstract of CSSD for Proposed Medical college and Hospital, Parvathipuram

Sl. No.	Name of the equipment	Quantity	Rate (in Rs.)	Amount (in Rs.)
1	Horizontal autoclave rectangular	1	6642000	6642000
2	Horizontal autoclave round	2	650000	1300000
3	Vertical autoclave 2 bin	4	67797	271188
4	ETO machine	1	1044000	1044000
5	L-Angular racks	6	6780	40680
6	Packing table SS	1	13550	13550
7	Water softner	1	80000	80000
			Total Rs.	9391418

ESTIMATE CONTRACT VALUE: 4194743179

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

HM&FW - Establishment of new Government Medical College at Parvathipuram, Manyam District - Administrative sanction for an amount of Rs.600 Crores - Accorded - Orders - Issued.

HEALTH MEDICAL AND FAMILY WELFARE (C1) DEPARTMENT

G.O.Ms.No.301.

Dated:23.11.2022.
Read the following:

1. From the MD, APMSIDC e.file computer No.1824818.
2. From the Director of Medical Education, AP e.file computer No. 1824323.

ORDER:

Under the Nadu-Nedu programme, Government have decided to revitalize the hospital and healthcare services across the State. The program enlists holistic revamping of healthcare infrastructure of the State including strengthening / upgradation of primary & secondary health care and strengthening of existing medical colleges and attached institutions and new medical colleges with nursing colleges etc. within a span of next (3) years.

2) In the reference 1st read above, the Managing Director, APMSIDC has informed that Government have restructured the Districts in Andhra Pradesh and formed total number of 26 Districts in the State. All the Districts except Parvathipuram of Manyam District are having Existing / New Medical Colleges and in the Review Meeting held on 17.08.2022, the Hon'ble Chief Minister has ordered for Establishment of a New Medical College at Parvathipuram in Parvathipuram Manyam District and requested for according administrative sanction for an amount of Rs.600 Crores.

3) In the reference 2nd read above, the Director of Medical Education has furnished the Detailed Project Report for establishment of Government Medical College at Parvathipuram.

4) The Government after careful examination of the matter, hereby accord an administrative sanction to the Director of Medical Education, AP for an amount of Rs.600.00 crores (Rupees six hundred crores only) towards establishment of new Government Medical College alongwith Teaching Hospital, Hostels, Quarters, Ancillary Buildings and Nursing College and Hostel at Parvathipuram, Parvathipuram Manyam District.

5) Further, the Director of Medical Education, AP is directed to send a proposal to the Government of India for obtaining the sanction under CSS.

PTO...

6) The Director of Medical Education, AP/MD, APMSIDC shall take further action accordingly.

7) This orders issue with the concurrence of Finance (FMU-HM&FW) Department vide U.O.No. FIN01-FMU0MRAS(HMF1)/2/2022-FMU-HMFW, Dt.07.11.2022.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

M. T. KRISHNA BABU
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Director of Medical Education, AP, Vijayawada.

The Managing Director, APMSIDC, Mangalagiri, Guntur District.

Copy to:

The District Collector, Parvathipuram Manyam District.

The Finance (FMU-HM&FW) Department.

The Director of Treasuries and Accounts, AP, Vijayawada.

The DTOs concerned

PS to Special Chief Secretary to C.M.

OSD to Minister (HFW & ME)

The PS to Principal Secretary to Government, HM&FW Dept.

SF/SC. (Computer No.1824409).

//FORWARDED::BY ORDER//



SECTION OFFICER



Name of the Work: Establishment of Government Medical College at Parvathipuram in Parvathipuram Manyam District.

GENERAL ABSTRACT

Sl.No.	Description of Item	Amount (in Rs.)
1	Civil Works	3,03,13,23,598
2	Sanitary & Water Supply	8,56,96,485
3	Electrical Works:	64,94,10,501
4	Maintenance of Electro Mechanical Works	2,98,01,325
5	Medical Gas Pipe Line System	1,74,07,744
6	Maintenace of Gas pipe line	9,61,886
7	STP (0.75 MLD& 0.20MLD) and ETP (0.075 MLd)	20654301
8	Operation and Maintenance of STP & ETP Plants	89,08,074
9	Minor Equipment	9,03,23,375
10	Furniture	26,02,55,890
	Estimate Contract Value:	4,19,47,43,179
11	Provision towards Seignorage Charges @ 1%	3,03,13,236
12	Provision towards Price adjustment @ 5% as per G.O.Ms No.62	18,83,21,529
13	Provision towards NAC @ 0.10%	41,94,743
	Estimate Contract Value:	4,41,75,72,687
14	Provision towards GST @ 18%	79,51,63,084
15	Provision towards Elevation Treatment	1,00,00,000
16	Provision towards Internal & External Signage Boards	25,00,000
17	Provision towards APEPDCL Charges for Release of 3 No of HT Service Connection Including Extension of line	1,00,00,000
18	Provision for Access control/ Nurse call systems and any other unforeseen electrical items	1,00,00,000
19	Provision for Dedicated Water Supply	10,00,00,000
20	Provision towards RO and ERO plants	25,00,000
21	Provision for play fileds & land scaping	1,00,00,000
22	Provision for maintenance of Buildings, Roads, Water Supply & Sanitary, Electrical (Internal & Extenal) Insatllations after defects and liability period and for 5 years maintenance	2,00,00,000
23	Provision towards Consultancy Charges @ 0.43% + GST @18%	18817534
24	Provision towards local approvals and mislenious	1,00,00,000
25	Provision towards Pylon	10,00,000
26	Provision towards Foundation and Inauguration Charges	5,00,000
27	Provision towards variation in foundations, unforeseen items and rounding off	4,88,93,937
28	Provision towards Engineering Supervision charges @ 7%	29,36,32,023
29	Provision for Medical Equipment to be procured after commissioning of Hospital Building (including GST)	24,94,20,735
	GRAND TOTAL	6,00,00,00,000

Administrative Sanction: GO MS No. 301 of HM&FW (C1) Dept. dated 23.11.2022 of the Principal Secretary to Government, HM & FW Dept.

The estimate is Technically sanctioned for Rs.600.00 crores (Rupees Six hundred crores only) against Administrative Sanction amount of Rs.600.00 crores and assigned T.S.No: 20/APMSIDC/2023-24, dt.08.12.2023


CHIEF ENGINEER
APMSIDC
 slw
 P/n
 AREII

**To,
The Executive Engineer (Architect),
Andhra Pradesh Medical Services & Infrastructure
Development Corporation,
Head Office- Mangalagiri**

Sub: Submission of Revised Architectural Drawings for New Medical College at Parvathipuram, Andhra Pradesh.

Madam,

With reference to the meeting held on 09/10/2023 and subsequent discussions, we are hereby submitting revised architectural drawings for the following blocks for your kind approval:

- 1. Medical College Site (2 Options)**
- 2. Hospital Site Plan**
- 3. Medical College (B+G+4)**
- 4. Nursing College (G+2)**
- 5. Nursing Staff Hostel**
- 6. UG Boys Hostel (G+6)**
- 7. UG Girls Hostel (G+7)**
- 8. SR. Resident Male (S+6)**
- 9. SR Resident Female (S+6)**
- 10. Interns Male Hostel (S+5)**
- 11. Interns Female Hostel (S+5)**
- 12. Teaching Staff Quarters (S+6)**
- 13. Non-Teaching Staff Quarters (S+9)**
- 14. Guest House (G Only)**
- 15. Central Kitchen & Dining (G+3) - Medical College Site**
- 16. Hospital Kitchen (G only)**
- 17. Drug Store (G+1)**

Thanks & Regards

Vivek Kumar Saxena
Chief General Manager
M/s Skyline Architectural Consultant

CONCEPT DRAWING

NOTES -
 THIS DRAWING IS CONFIDENTIAL AND SHOULD NOT BE DISCLOSED, COPIED OR LENT TO A THIRD PARTY WITHOUT WRITTEN CONSENT OF SKYLINE ARCHITECTURAL CONSULTANTS EXCEPT THE SYSTEM FOR WHICH THE DRAWING IS MEANT.

DO NOT SCALE DRAWING ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED

SCHEDULE OF JOINERY :

S.No.	Type Mark	Width	Height	Sill Height	GF	FF	SF	TF	Description
1.	ED7	1500	2100	-	03	--	--	--	Double Door
3.	D1c	1000	2100	-	06	32	32	--	Wooden Door
4.	D3	800	2100	-	--	16	16	--	PVC Door
5.	SLD	1050	2100	-	01	--	--	--	Aluminum Sliding Door (Powder coated)
6.	SD4	1000	2100	-	01	01	01	02	Steel Door
7.	SWb	750	1300	800	03	--	--	--	Steel Window/ Mosquito Mesh
8.	SW2a	1200	1300	800	06	24	24	--	Steel Window Mosquito Mesh
9.	SW4a	1800	1300	800	01	01	01	01	Steel Window Mosquito Mesh
10.	O	900	2100	-	--	--	--	--	Opening
11.	SKW	600	900	-	00	16	16	--	Steel Window
12.	SV4	1500	900	-	01	01	01	01	Steel Ventilator (N-Type)
13.	CB	1800	2100	-	03	16	16	--	Cupboard
14.	V	600	600	-	00	00	00	16	Steel Ventilator

REVISIONS

Sl. No.	DESCRIPTION	BY	DATE

CLIENT: A.P.M.S.I.D.C

PROJECT: PROPOSED MEDICAL COLLEGE & HOSPITAL AT PARVATHIPURAM, ANDHRA PRADESH

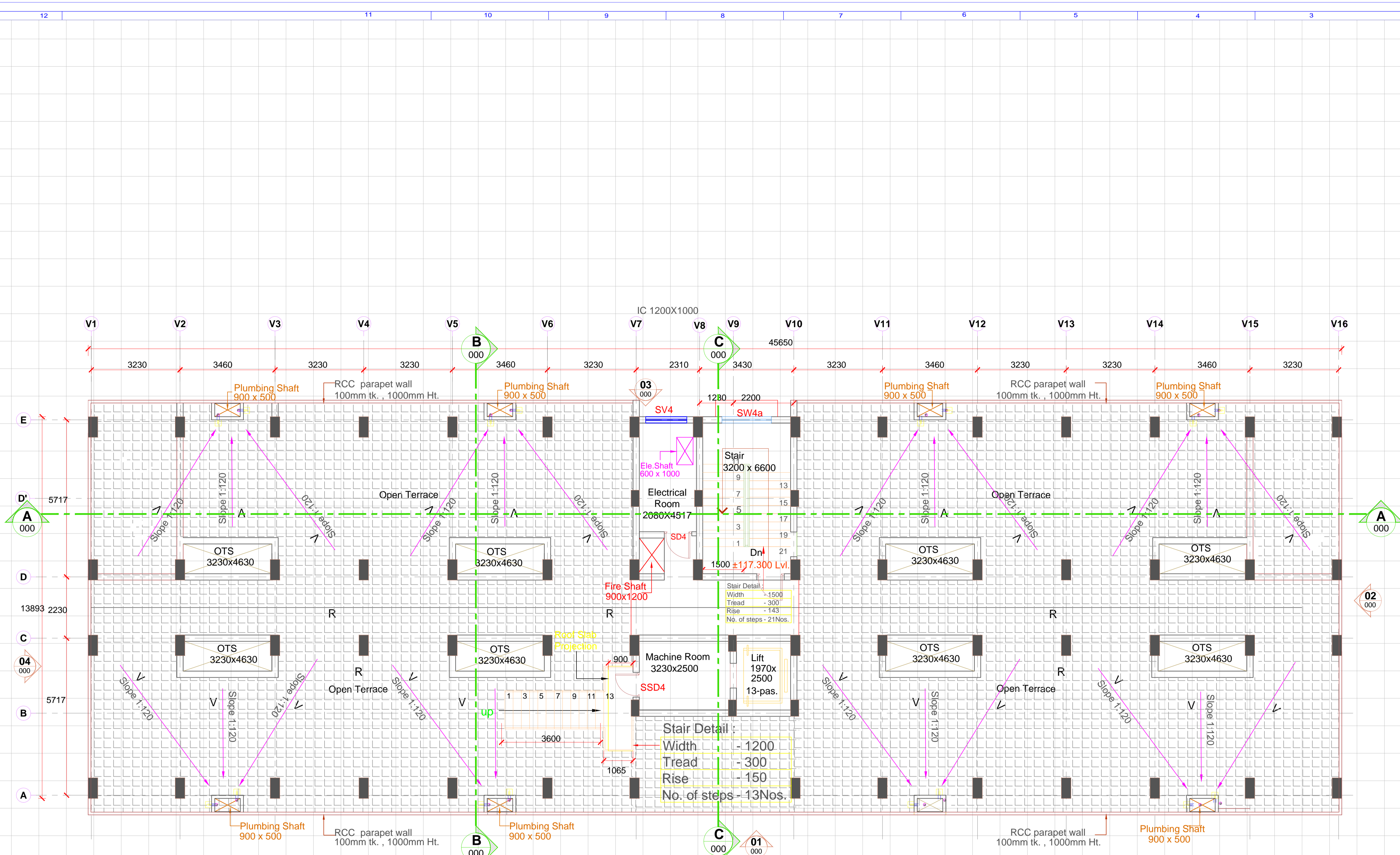
PROJECT MANAGEMENT CONSULTANT

ARCHITECT



architectural consultant
 architects, engineers, planner
 Office - IInd & IInd floor laami varden landscape design, interior design, & value
 gomtinagar, lucknow.
 Dial :- +91-522-2393123, 2394123, 4044123
 Email id :- skyline@usahcc.com
 Asso. office- 516A & 516B, 5TH floor world trade center near hotel IIT, barbar road,
 new delhi, 110001, Dial - 011-43575123, 43575124
ARCHITECTS :- SANJAY & VIJAY SINHA

TITLE	SCALE	DATE
SR. RESIDENT FEMALE		
TERRACE FLOOR PLAN		
DRAWING NO. SAC/PARVATHIPURAM/SR.RESIDENT FEMALE/09		REV.
SHEET NO. A4		



TERRACE FLOOR PLAN

GRID - 1MX1M

CONCEPT DRAWING

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DO NOT SCALE DRAWING ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED

SCHEDULE OF JOINERY :

S.No.	Type Mark	Width	Height	Sill Height	GF	FF	TF	Description
1.	ED7	1500	2100	-	03	--	--	Double Door
3.	D1c	1000	2100	-	06	32	32	Wooden Door
4.	D3	800	2100	-	--	16	16	PVC Door
5.	SLD	1050	2100	-	01	--	--	Aluminum Sliding Door (Powder coated)
6.	SD4	1000	2100	-	01	01	02	Steel Door
7.	SWb	750	1300	800	03	--	--	Steel Window/Mosquito Mesh
8.	SW2a	1200	1300	800	06	24	24	Steel Window/Mosquito Mesh
9.	SW4a	1800	1300	800	01	01	01	Steel Window/Mosquito Mesh
10.	O	900	2100	-	--	--	--	Opening
11.	SKW	600	900	-	00	16	16	Steel Window
12.	SV4	1500	900	-	01	01	01	Steel Ventilator (N-Type)
13.	CB	1800	2100	-	03	16	16	Cupboard
14.	V	600	600	-	00	00	00	Steel Ventilator

REVISIONS

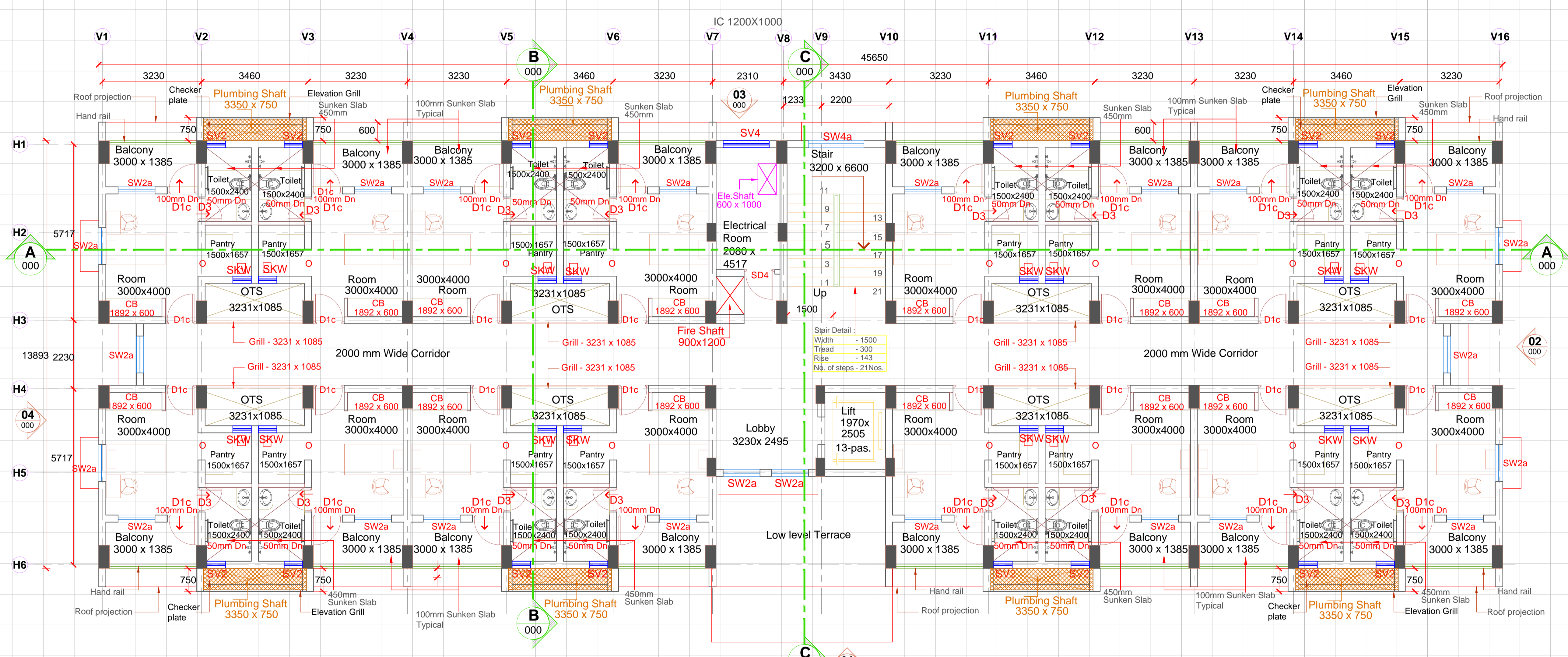
Sl. No.	DESCRIPTION	BY	DATE

CLIENT: A.P.M.S.I.D.C
 PROJECT: PROPOSED MEDICAL COLLEGE & HOSPITAL AT PARVATHIPURAM, ANDHRA PRADESH

ARCHITECT

 architectural consultant
 architects, engineers, planner
 Office - 11th & 12th floor, IITM, Vardaan, near Patanjali Puram crossing, Guntur, Andhra Pradesh.
 Dial: +91-522-2393123, 2394123, 4044123
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 Asso. office: 516A & 516B, 5TH floor world trade center near hotel IITM, barbar road, new delhi, 110001, Dial: 011-43575123, 43575124
ARCHITECTS :- SANJAY & VIJAY SINHA

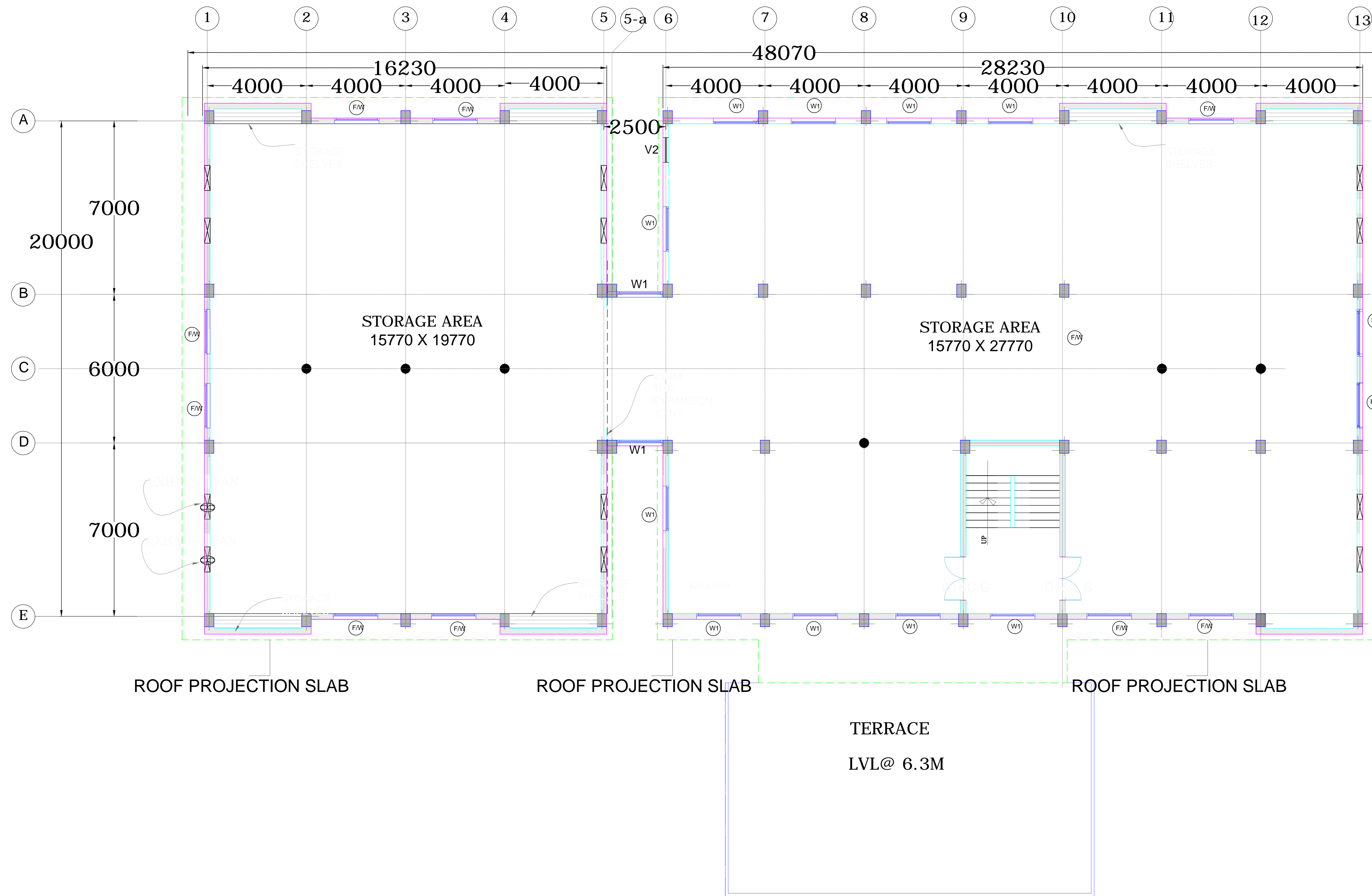
TITLE	SCALE	DATE
SR. RESIDENT FEMALE		
SECOND FLOOR PLAN		
DRAWING NO. SAC/PARVATHIPURAM/SR.RESIDENT FEMALE/09		REV.
SHEET NO. A3		




TYPICAL SECOND & THIRD FLOOR
AREA - 652.67 SQMT

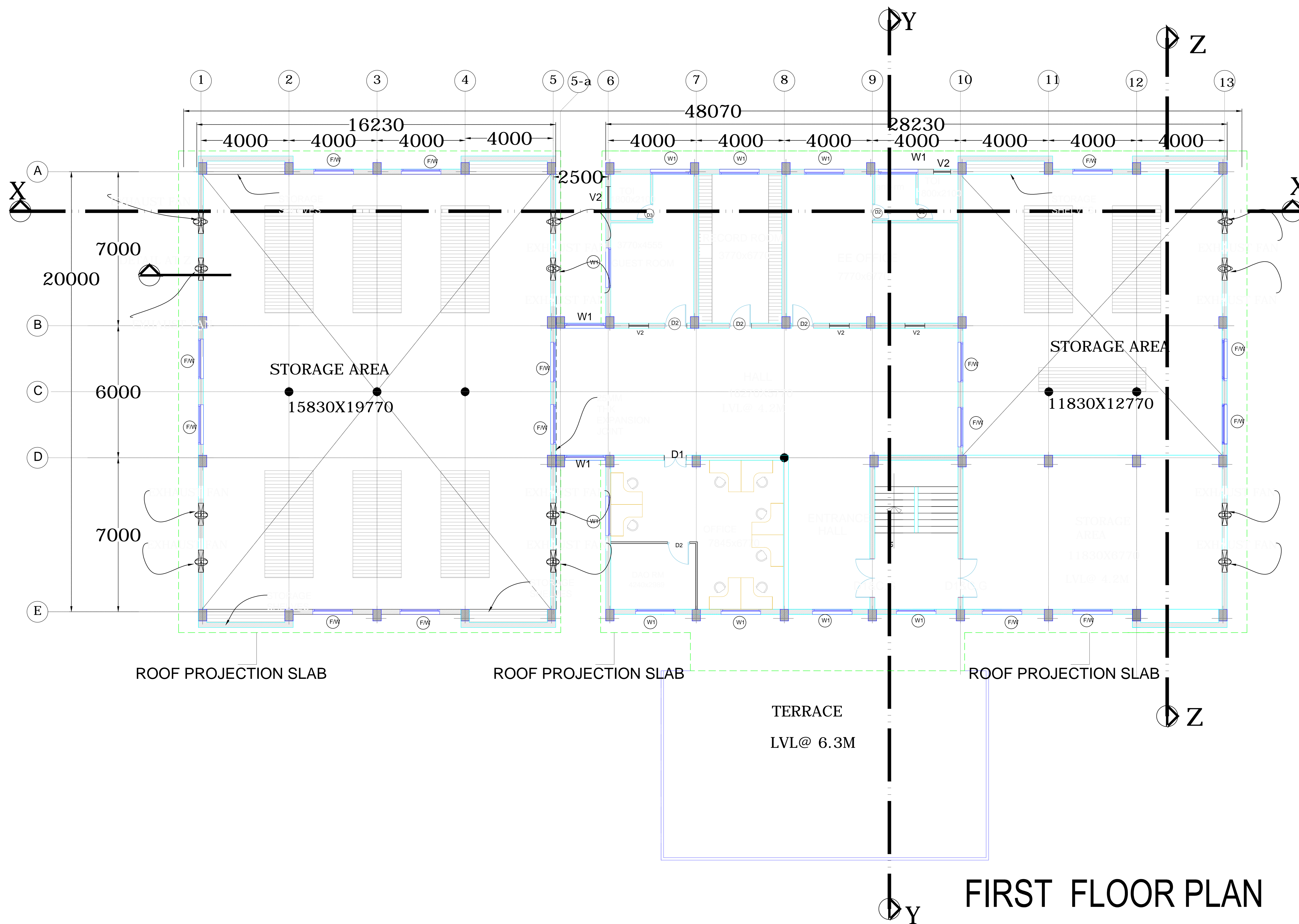
GRID - 1MX1M

SAC/PARVATHIPURAM/SR.RESIDENT FEMALE/09



SECOND FLOOR PLAN

PROJECT: MEDICINE STORES	AREA'S STORAGE AREA: 1000.0SQ.MTS FIRST FLOOR EE OFFICE AREA : 329.0SQ.MTS PORTICO AREA : 128.0SQ.MTS AUXILLARY BUILDING AREA : 125.0SQ.MTS TOTAL AREA : 1582.0SQ.MTS	SCHEDULE OF JOINERY			WINDOWS			PROJECT: MEDICINE STORES	DRG. NO.:	ARCHITECT
		DOORS	F/W	FIXED WINDOW	1800X1200	900	PROJECT	CLIENT	 architectural consultant architects, engineers, planner landscape design, interior design, & value Office :- 1st & 2nd floor team vastan commercial complex at patrakar puram crossing 90 m t i d a g a r i , u c k a m e Dial :- +91-522-2393123, 2394123, 4044123 Email id :- skylines@sahcc.com Asso. office:- 515A & 515B, 5TH floor world trade center near role mall, barbar road, near dchh, 110001, Dial :- 011-43575123, 43575124 ARCHITECTS :- SANJAY & VIJAY SINHA	
	S.No. TYPE SIZE SILL LEVEL	W1 WINDOW	1800X1200	900	TITLE:	SCALE :	DATE			
	MD MAIN DOOR 1800X2400	V2 VENTILATOR	900X500		GROUND FLOOR PLAN	FIRST FLOOR PLAN				
	D1 1200X2100	RS ROLLING SHUTTER	3000 X 2400			DRAWING NO. SAC/PARVATHIPURAM/D.S/12	REV.			
	D2 1000X2100	CG COLLAPSEBLE GATE	3000 X 2400			SHEET NO. A1				
	D3 TOILET DOOR 750X2100	(BOTTOM CHANNEL OF CG SHALL BE EMBEDDED IN FLOORING)								



FIRST FLOOR PLAN

PROJECT: **MEDICINE STORES**

AREA'S
 STORAGE AREA: 1000.0SQ.MTS
 FIRST FLOOR EE OFFICE AREA : 329.0SQ.MTS
 PORTICO AREA : 128.0SQ.MTS
 AUXILLARY BUILDING AREA : 125.0SQ.MTS
 TOTAL AREA : 1582.0SQ.MTS

SCHEDULE OF JOINERY				WINDOWS			
DOORS				F/W	FIXED WINDOW	1800X1200	900
S.No.	TYPE	SIZE	SILL LEVEL	W1	WINDOW	1800X1200	900
MD	MAIN DOOR	1800X2400		V2	VENTILATOR	900X500	
D1		1200X2100		RS	ROLLING SHUTTER	3000 X 2400	
D2		1000X2100		CG	COLLAPSEBLE GATE	3000 X 2400	
D3	TOILET DOOR	750X2100		(BOTTOM CHANNEL OF CG SHALL BE EMBEDDED IN FLOORING)			

PROJECT: **MEDICINE STORES**
 DRG. NO.:
 CLIENT: **A.P.M.S.I.D.C**
 TITLE: **GROUND FLOOR PLAN**

PROJECT		ARCHITECT	
PROPOSED MEDICAL COLLEGE & HOSPITAL AT PARVATHIPURAM, ANDHRA PRADESH			
TITLE: FIRST FLOOR PLAN		SCALE:	DATE:
DRAWING NO.:	SAC/PARVATHIPURAM/D.S/12	REV:	
SHEET NO.:	A1		

ARCHITECTS :- **SANJAY & VIJAY SINHA**
 Office :- 1st & 2nd floor, Vastan commercial complex at parvathipuram crossing
 G.P.O. 1st & 2nd floor, Vastan commercial complex at parvathipuram crossing
 Dial :- +91-522-2393123, 2394123, 4044123
 Email id :- skylines@sahcc.com
 Ass. office :- 515A & 515B, 5TH floor world trade center near toilet hall, barbar road, near delhi, 110001, Delhi - 011-43575123, 43575124

UG GIRLS HOSTEL

This Drawing is the property of MUKESH & ASSOCIATES and should not be copied or reproduced in any manner without prior permission.

Key Plan:

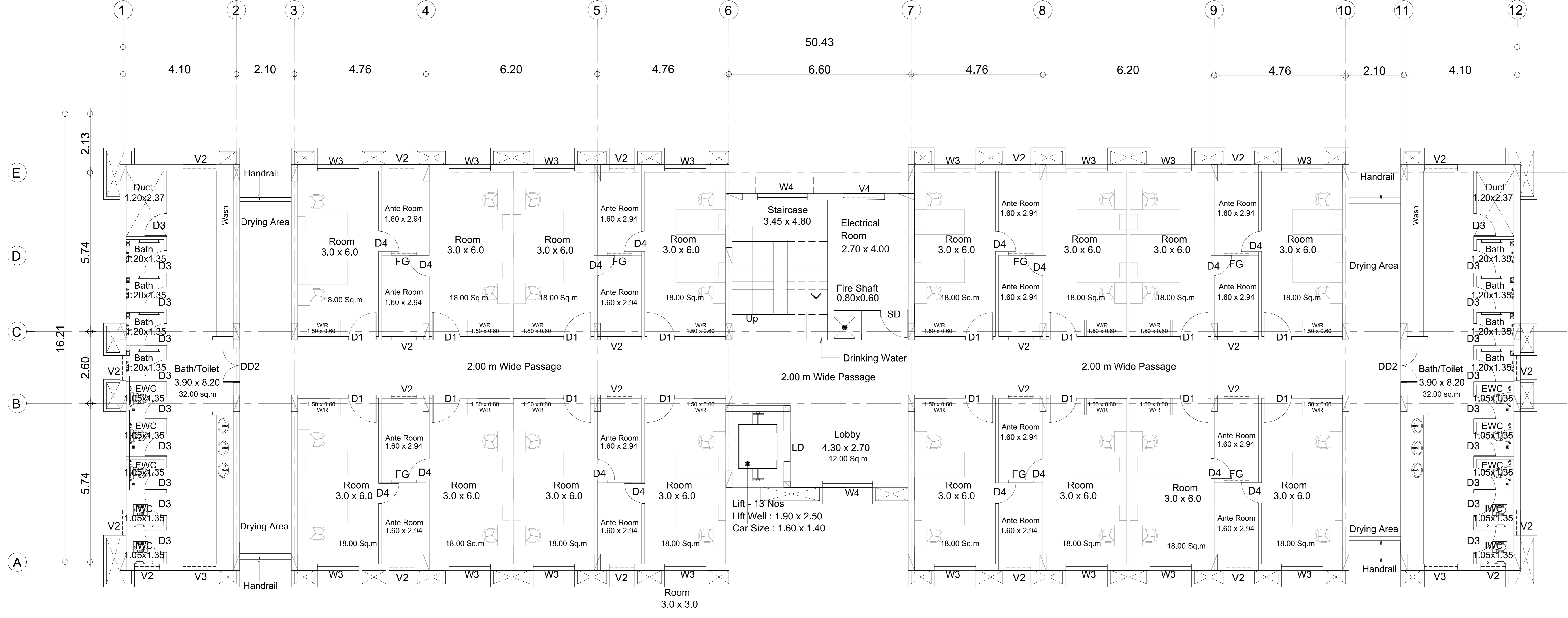


Notes :

1. All Dimensions are in Meters unless otherwise specified.
2. Dimensions are in scale.
3. Any discrepancy between this drawing and other drawings must be brought to the notice of consultants.

SCHEDULE OF JOINERY :

S.No.	Type	Width	Height	Height	Description
1	DD1	1.50	2.10	-	Double Door (Wooden)
2	DD2	1.20	2.10	-	Double Door (Wooden)
3	D1	1.00	2.10	-	Wooden Door
4	D2	0.90	2.10	-	Wooden Door
5	W3	1.50	1.30	0.80	Steel Window with Mosquito Mesh
6	W4	1.80	1.30	0.80	Steel Window with Mosquito Mesh
7	GD	1.00	2.10	-	Grill Door
8	D3	0.80	2.10	-	PVC Door
9	D4	0.75	2.10	-	Wooden Door
10	SD	1.00	2.10	-	Steel Door
11	V	0.75	0.60	-	Steel Ventilator with louver
12	V2	0.90	0.60	-	Steel Ventilator with louver
13	V3	1.20	0.60	-	Steel Ventilator with louver
14	V4	1.50	0.90	-	Steel Ventilator (N-Type)
15	FG	0.90	0.60	-	Fixed Glazing



THIRD FLOOR PLAN
SCALE 1:150

REV.NO.	DATE	DESCRIPTION	DRN. BY	CHKD. BY
R04	27.01.2021	Revised Upto Date	M.P.L	A.D

Client:

APMSIDC
ANDHRA PRADESH
MEDICAL SERVICES & INFRASTRUCTURE
DEVELOPMENT CORPORATION

Consultant:

Mukesh & Associates
consultants & engineers
www.mukeshassociates.com
2/6, Ranganathar Avenue,
Penumal malai road (via)
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INDIA
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Project:

S.V.R.R. GOVERNMENT GENERAL HOSPITAL
& MEDICAL COLLEGE, CHITTOOR DISTRICT,
TIRUPATI, ANDHRA PRADESH.

Building Name:

UG GIRLS HOSTEL

Title:

THIRD FLOOR PLAN

CONCEPT TENDER GOOD FOR CONSTRUCTION

Proj. No: APMSIDC-02	Drawing No. AP-SVVRGH-GHS-ARC-2153	Plot scale: 1:200	Sheet: A3	Rev: R04
Date: 29.06.2020	File name: WDG01VAP HospitalPulivendula	Drawn: S.G	Chkd.: P.V.K	Appd: M.K.D

FOR APPROVAL PURPOSE

UG GIRLS HOSTEL

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Key Plan:

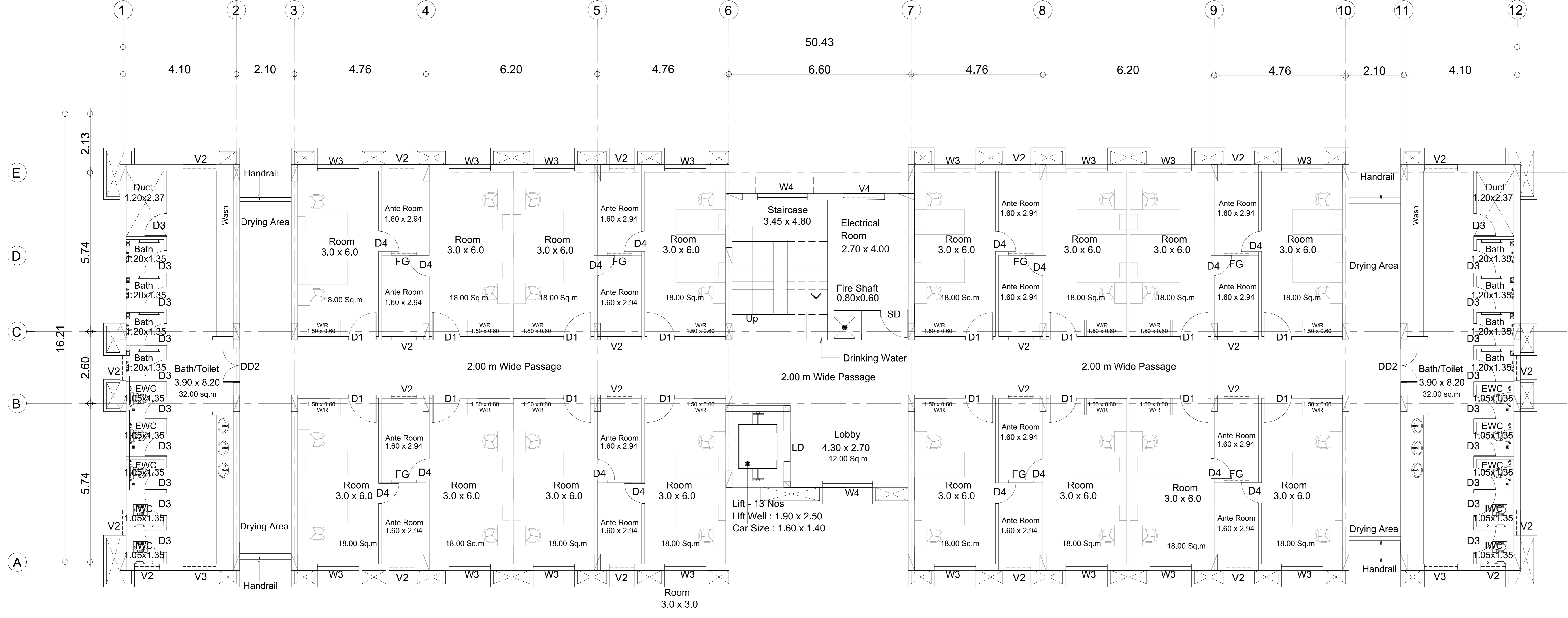


Notes :

1. All Dimensions are in Meters unless otherwise specified.
2. Dimensions are in scale.
3. Any discrepancy between this drawing and other drawings must be brought to the notice of consultants.

SCHEDULE OF JOINERY :

S.No.	Type	Width	Height	Height	Description
1	DD1	1.50	2.10	-	Double Door (Wooden)
2	DD2	1.20	2.10	-	Double Door (Wooden)
3	D1	1.00	2.10	-	Wooden Door
4	D2	0.90	2.10	-	Wooden Door
5	W3	1.50	1.30	0.80	Steel Window with Mosquito Mesh
6	W4	1.80	1.30	0.80	Steel Window with Mosquito Mesh
7	GD	1.00	2.10	-	Grill Door
8	D3	0.80	2.10	-	PVC Door
9	D4	0.75	2.10	-	Wooden Door
10	SD	1.00	2.10	-	Steel Door
11	V	0.75	0.60	-	Steel Ventilator with louver
12	V2	0.90	0.60	-	Steel Ventilator with louver
13	V3	1.20	0.60	-	Steel Ventilator with louver
14	V4	1.50	0.90	-	Steel Ventilator (N-Type)
15	FG	0.90	0.60	-	Fixed Glazing



SECOND FLOOR PLAN
SCALE 1:150

Client:

APMSIDC
ANDHRA PRADESH
MEDICAL SERVICES & INFRASTRUCTURE
DEVELOPMENT CORPORATION

Consultant:

Mukesh & Associates
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Project:

S.V.R.R. GOVERNMENT GENERAL HOSPITAL
& MEDICAL COLLEGE, CHITTOOR DISTRICT,
TIRUPATI, ANDHRA PRADESH.

Building Name:

UG GIRLS HOSTEL

Title:

SECOND FLOOR PLAN

CONCEPT TENDER GOOD FOR CONSTRUCTION

Proj. No: APMSIDC-02	Drawing No. AP-SVVRGH-GHS-ARC-2152	Plot scale: 1:200	Sheet: A3	Rev: R04
Date: 29.06.2020	File name: WDG01VAP HospitalPulivendula	Drawn: S.G	Chkd.: P.V.K	Appd: M.K.D

FOR APPROVAL PURPOSE

UG GIRLS HOSTEL

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Key Plan:

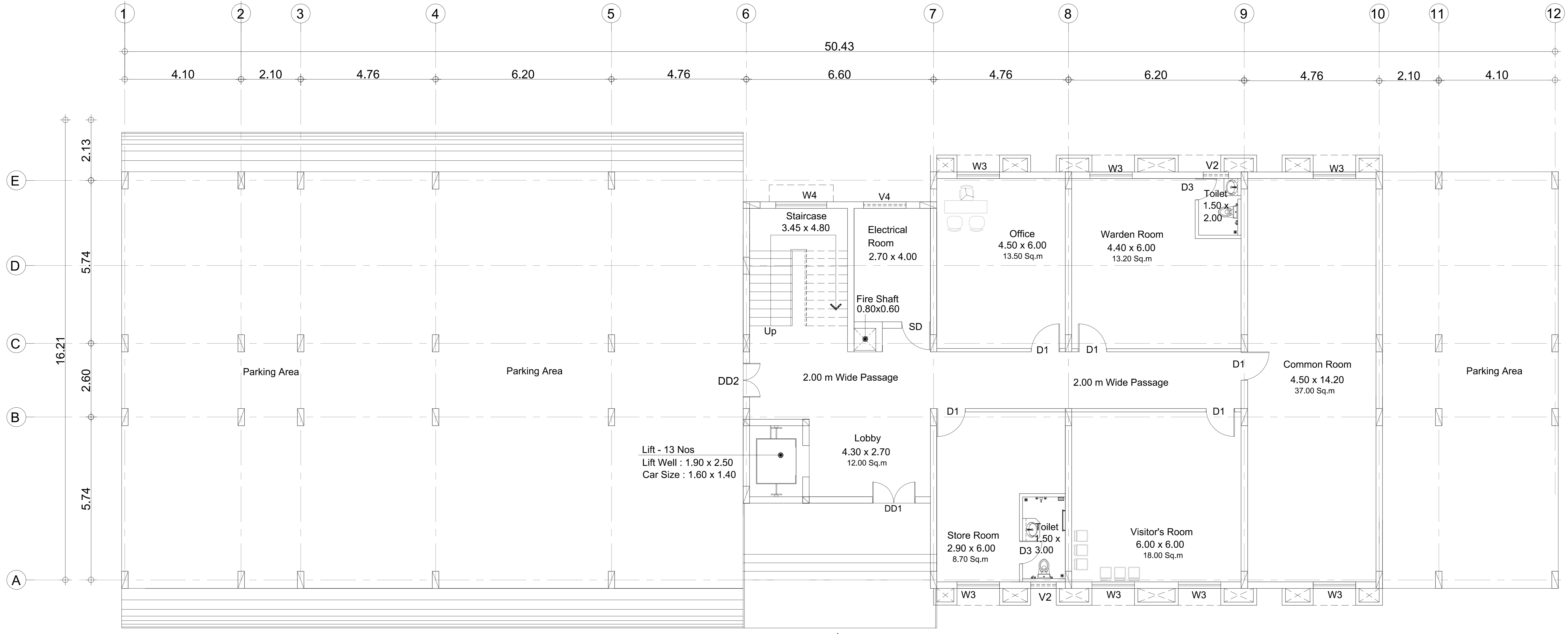


Notes :

1. All Dimensions are in Meters unless otherwise specified.
2. Dimensions are in scale.
3. Any discrepancy between this drawing and other drawings must be brought to the notice of consultants.

SCHEDULE OF JOINERY :

S.No.	Type	Width	Height	Height	Description
1	DD1	1.50	2.10	-	Double Door (Wooden)
2	DD2	1.20	2.10	-	Double Door (Wooden)
3	D1	1.00	2.10	-	Wooden Door
4	D2	0.90	2.10	-	Wooden Door
5	W3	1.50	1.30	0.80	Steel Window with Mosquito Mesh
6	W4	1.80	1.30	0.80	Steel Window with Mosquito Mesh
7	GD	1.00	2.10	-	Grill Door
8	D3	0.80	2.10	-	PVC Door
9	D4	0.75	2.10	-	Wooden Door
10	SD	1.00	2.10	-	Steel Door
11	V	0.75	0.60	-	Steel Ventilator with louver
12	V2	0.90	0.60	-	Steel Ventilator with louver
13	V3	1.20	0.60	-	Steel Ventilator with louver
14	V4	1.50	0.90	-	Steel Ventilator (N-Type)
15	FG	0.90	0.60	-	Fixed Glazing



FIRST FLOOR PLAN
SCALE 1:150

ENTRY

REV.NO.	DATE	DESCRIPTION	DRN. BY	CHKD. BY
R04	27.01.2021	Revised Upto Date	M.P.L	A.D

Client:

APMSIDC
ANDHRA PRADESH
MEDICAL SERVICES & INFRASTRUCTURE
DEVELOPMENT CORPORATION

Consultant:

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Building Name:

UG GIRLS HOSTEL

Title:

FIRST FLOOR PLAN

CONCEPT TENDER GOOD FOR CONSTRUCTION

Proj. No.	Drawing No.	Plot scale:	Sheet:	Rev:
APMSIDC-02	AP-SVVRGH-GHS-ARC-2151	1:200	A3	R04
Date:	File name :	Drawn:	Chkd.:	Appd:
29.06.2020	\WDG01AP Hospital\Pulivendula	S.G	P.V.K	M.K.D

FOR APPROVAL PURPOSE