



GOVERNMENT OF MEGHALAYA
MEGHALAYA URBAN DEVELOPMENT AUTHORITY
SHILLONG, MEGHALAYA.

**CONSTRUCTION
OF
SHILLONG BUSINESS CUM TOURISM AND CULTURAL
CENTRE AT POLICE BAZAR, SHILLONG ON DESIGN,
ENGINEERING, PROCUREMENT AND CONSTRUCTION
(EPC) BASIS**

VOLUME-I

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Section-1

NOTICE INVITING TENDER

GOVERNMENT OF MEGHALAYA
OFFICE OF THE SECRETARY, MUDA
Police Bazaar,
Shillong, Meghalaya 793001.

Date: 09.07.2021

NOTICE INVITING e-TENDER (NIT)

- 1.0 The Secretary, Meghalaya Urban Development Authority, on behalf of the Governor of Meghalaya invites online open e-tenders in two bid system from experienced and eligible Contractors for “**Construction of Shillong Business cum Tourism and Cultural Centre at Police Bazar, Shillong, Meghalaya on Design, Engineering, Procurement and Construction (EPC) basis**” as per schedule as under:

Tendering Document No.	_____ dated 09.07.2021
Name of the Work	“ Construction of Shillong Business cum Tourism and Cultural Centre at Police Bazar, Shillong, Meghalaya on Design, Engineering, Procurement and Construction (EPC) basis ”
Brief Scope of Work	Design, Engineering, Procurement and Construction (EPC) of Construction of Shillong Business cum Tourism and Cultural Centre , Civil works, interior works, Security & IT Infrastructure, HVAC, Lifts, internal and external plumbing and electrical services, Firefighting services, PA system, Solar water heating, EPABX system, Fire alarm system, HVAC, lifts & Escalators, etc.
Estimated Cost	Rs. 185,94,27,000.00 (Rupees One Hundred Eighty Five Crores Ninety Four Lakh Twenty Seven Thousand Only) + GST Extra.
GST (Taxes)	12% GST will be paid extra.
Period for completion	36 (Thirty-Six) Months (30 months for construction & 6 months for testing and commissioning of services)
Earnest Money Deposit	NIL
Non-refundable cost of Tender document	Rs. 1,00,000.00 (Rupees One Lakhs only) + GST @ 18% in the shape of DD/Bankers Cheque in favour of Secretary, MUDA, payable at Shillong (9% CGST & 9% SGST)
Non-refundable cost of e-Tender processing fee	Rs.5,000.00 (Rupees Five Thousand only) through e-payment gateway.
Last date & time of submission of Online Tender	Up to 05.08.2021 by 03.00 PM (IST)

Period during which hard copy in original of EMD, Cost of Tender Document, e-tender processing fee, Letter of Acceptance of tender conditions unconditional, enlistment order of the contractor and other document as per NIT shall be submitted.	Before and Up 03.00 AM on 05.08.2021 in the Office of the Secretary, MUDA, Shillong, Meghalaya.
Date & Time of Opening of Technical Tender	<u>05.08.2021</u> at 03.30 PM
Date & Time of Opening of Financial Tender	Intimate after technical bid security.
Validity of offer	150 days from the date of opening of price tender.
Pre-Tender Meeting & Venue	Pre-bid conference shall be held virtually through video conferencing [Google Meet Link: https://meet.google.com/-----] with the intending tenderers by the Office of the Secretary, MUDA, Shillong on 26.07.2021 at 11.00 AM

The tender document can be downloaded from website <https://meghalaya.gov.in/tenders>.
“Corrigendum, if any, would appear only on the website and not to be published in any News Paper”.



Secretary
Meghalaya Urban Development
Authority, Shillong.

Minimum Eligibility Criteria:

The interested bidders should meet the following minimum qualifying criteria:

A. Work Experience:

i) Experience of having successfully completed similar works during the last 5 years ending previous day of last date of submission of tenders:

Atlest One Similar work costing not less than 50% of the estimated cost of the bid.

“Similar works for building works” shall mean “Residential/ Non-Residential buildings of any no. of stores in North Eastern States of India”.

- ii) A Project shall be considered to be completed, if more than 80% of the value of work has been completed.
- iii) The tenderer should not have negative remarks in any of the projects executed/ongoing in Meghalaya government.
- iv) The past experience in similar nature of work and also for additional works should be supported by certificates issued by the client’s organization. In case the work experience is of Private sector the completion certificate shall be supported with copies of Letter of Award and copies of Corresponding TDS Certificates. Value of work will be considered equivalent to the amount of TDS Certificates.
- v) The value of executed works shall be brought to the current level by enhancing the actual value of work done at a simple rate of 7% per annum, calculated from the date of completion to previous day of last day of submission of tenders.

B. Financial Strength:

- (i) The Average annual financial turnover for last 3 years shall be at least **50%** of the estimated cost put to tender. The requisite Turnover shall be duly certified by a Chartered Accountant with his Seal/ signatures and registration number.
- (ii) Net Worth of the company /firm as on 31st March of previous Financial Year should be minimum **15%** of the estimated cost of work put to tender.
- (iii) Self-certified copy of Bank Solvency Certificate issued from Nationalized or any Schedule Bank should be at least **40%** of Estimated Cost of the Project put to tender. The certificate should have been issued within **6 months** from original last date of the submission of the tender.
- (iv) The Bidder should at least have earned profit in minimum one year in the available last three consecutive balance sheets. The bidders are required to upload and submit page of summarized Balance Sheet (Audited) and also page of summarized Profit & Loss Account (Audited) for last three years.
- (v) Bidders who meet the minimum qualification criteria will be eligible only if their available bid capacity is more than the estimated cost of the work put to tender.
The available bid capacity will be calculated as under:

$$\text{Assessed available Bid Capacity} = (A \times N \times 2 - B)$$

Where,

A = Maximum value of 1(one) work of similar nature executed in any 1(one) year during the last 5(five) years (updated to current price level) taking into account the completed as well as work in progress.

N = Number of years prescribed for completion of the works for which bids are invited.

B = Value at current price level of existing commitments and on – going works to be completed during the next 24(Twenty-four) Months (period of completion of the works for which bids are invited)

Note: The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer-in-charge not below the rank of an Executive Engineer or equivalent.

C. Evaluation Criteria:

- (i) The detailed submitted by the bidders will be evaluated in the following manner:
- a) The initial criteria prescribed above in respect of experience of similar class of works completed, bidding capacity and financial turn over etc. will first be scrutinized and the bidder’s eligibility for the work be determined.
 - b) The bidders qualifying the initial criteria as set out above will be evaluated for following criteria by scoring method on the basis of details furnished by them.

(a)	Financial strength (Form ‘A’ & ‘B’)	:	Maximum 20 marks
(b)	Experience in similar nature of work during last five years (Form ‘C’)	:	Maximum 20 marks
(c)	Performance on works (Form ‘E’) – Time over run	:	Maximum 20 marks
(d)	Performance on works (Form ‘E’) – Quality	:	Maximum 15 marks
(e)	Personnel and Establishment (Form “F”&”G”)	:	Maximum 10 marks
(f)	Plant & Equipment (Form “H”)	:	Maximum 15 marks
Total			100 marks

To become eligible for short listing the bidder must secure at least **50%** marks in each and **60%** marks in aggregate.

The department, however, reserves the right to restrict the list of such qualified contractors to any number deemed suitable by it.

Bidders who qualify the pre-eligibility as per marking above shall be required to make a presentation of their technical capability. The presentation shall be marked out of 100 and bidders securing more than 70% marks in the presentation shall be eligible for opening of their financial bids.

The time and date for the presentation shall be intimated to eligible bidders separately.

The financial bids of only those bidders who qualify the evaluation criteria shall be opened.

**CRITERIA FOR EVALUATION OF THE PERFORMANCE OF CONTRACTORS FOR
PRE-ELIGIBILITY**

Sl. No.	Attributes	Max. Marks	Evaluation criteria						
(A)	Financial strength	(20)	(i) 60% marks for minimum eligibility criteria (ii) 100% marks for twice the minimum eligibility criteria or more In between (i) & (ii) – on pro-rata basis						
(i)	Average annual turnover	16							
(ii)	Solvency certificate	4							
(B)	Experience in similar class of works	(20)	(i) 60% marks for minimum eligibility criteria (ii) 100% marks for twice the minimum eligibility criteria or more In between (i) & (ii) – on pro-rata basis						
(C)	Performance on works (time over run)	(20)	[TOR = AT/ST, where AT = Actual Time; ST=Stipulated Time in the Agreement plus (+) Justified Period of Extension of Time]. Note: Marks for value in between the stages indicated above is to be determined by straight line variation basis.						
	If TOR =		Score						
			1.00	2.00	3.00	> 3.50			
(i)	Without levy of compensation		20	15	10	10			
(ii)	With levy of compensation		20	5	0	-5			
(iii)	Levy of compensation not decided		20	10	0	0			
(D)	Performance of works (Quality)	(15)							
(i)	Very Good	15							
(ii)	Good	10							
(iii)	Fair	5							
(iv)	Poor	0							
(E)	Personnel and Establishment	(10)							
(i)	Graduate Engineer						3 marks for each		
(ii)	Diploma Holder Engineer						2 marks for each up to Max 4 marks		
(iii)	Supervisor/ Foreman		1 marks for each up to Max 3 marks						
(F)	Plant and Equipment	(15)							
(i)	Tower Crane						2 mark for each up to Max. 4 marks		
(ii)	Batch Mix Plant						2 mark for each up to Max. 4 marks		
(iii)	Boom Pump		1 marks for each up to Max 2 marks						

- 3.0 The intending tenderer must read the terms and conditions of MUDA carefully. He should only submit his tender if he considers himself eligible and he is in possession of all the documents required. Information and Instructions for Tenderers posted on Website(s) shall form part of Tender Document.
- 4.0 Those intending tenderers/contractors not registered on the website i.e. <https://meghalaya.gov.in/tenders> mentioned above are required to get registered beforehand. The intending tenderer must have class-III digital signature to submit the tender.
- 5.0 The Tender Document as uploaded can be viewed and downloaded free of cost by anyone including intending tenderer. But the tender can only be submitted after uploading the mandatory scanned documents such as a) Demand Draft / Pay order or Banker`s Cheque towards cost of tender document, b) proof of deposit of e-Tender Processing Fee & all other documents shall be as per Notice Inviting e-tender.

Joint-venture or Consortia of firms / companies would be limited to 2 (Two) including the Leading/Major Partner). The Joint ventures must comply with the following requirements:

- a) Following are the minimum qualification requirements,
- i. The Lead Partner shall meet not less than **60%** of all the qualifying criteria above. The Joint venture must collectively satisfy the criteria of Para A and B above. The experience of the other joint venture Partner shall be considered if it is not less than **40%** of the qualifying criteria given in Para A and B above.
 - ii. Bid shall be signed so as to legally bind both partners, jointly and severally, and shall be submitted with a copy of the Joint Venture Agreement (JVA), the JVA shall include among other things, the Joint Venture`s objectives, the proposed management structure, Contribution of both partner to the Joint venture, the commitment of the Partners to Joint and several liabilities for due performance with respect to the contract etc.

7.0 **Certificates of Subsidiary/Group Companies:**

Any company/firm while submitting tender can use the work experience of its subsidiary company to the extent of its ownership in the subsidiary company.

However, the companies/firms which intend to get qualified on the basis of experience of the parental company/group company/ Own works, shall not be considered. In case of a Company/firm, formed after merger and/ or acquisition of other companies/firms, past experience and other antecedents of the merged/ acquired companies/firms will be considered for qualification of such Company/firm provided such Company/firm continues to own the requisite assets and resources of the merged/ acquired companies/firms relevant to the claimed experience.

Set of Contract/Tender Documents:

The following documents will constitute set of tender documents:

- a) Notice Inviting e-Tender
- b) Quoting Sheet for Tenderer
- c) Instructions to Tenderers & General Conditions of Contract 2020 EPC Projects (Vol-I) with Amendment 01 & 02
- d) Design Basis Report & Technical Specifications (Vol-II)
- e) Bill of Quantities (Vol-III)
- f) Special Conditions of Contract (SCC) (Vol-IV)
- g) Memorandum Annexure-I of NIT
- h) Acceptance of Tender Conditions (Annexure-II)
- i) Integrity pact (Annexure-III) (To be signed and stamped by the contractors and scanned copy to be uploaded with the bid)
- j) Affidavit duly notarized by Notary Public on Non Judicial Stamp Paper of Rs. 100 (Annexure-IV) for correctness of Documents /Information.
- k) Addendum/Corrigendum, if any- Duly signed by authorized person
- l) Pre-bid clarifications, if any

9.0 The tenderers are required to quote strictly as per terms and conditions, specifications, standards given in the tender documents and not to stipulate any deviations.

The bidders are advised to submit complete details with their bids as Technical Bid Evaluation will be done on the basis of documents uploaded on website by the bidders with the bids. The information should be submitted in the prescribed proforma. Bids with Incomplete /Ambiguous information will be rejected.

10.0 The bidders are advised in their own interest to submit their bid documents well in advance from last date/time of submission of bids so as to avoid problems which the bidders may face in submission at last moment /during rush hours. **However, after submission of the tender the tenderer can re-submit revised tender any number of times but before last time and date of submission of tender as notified.**

11.0 When it is desired by MUDA to submit revised financial tender then it shall be mandatory to submit revised financial tender. If not submitted, then the tender submitted earlier shall become invalid.

- 12.0 On opening date, the tenderer can login and see the tender opening process.
- 13.0 Contractor can upload documents in the form of JPG format and PDF format.
- 14.0 Contractor to upload scanned copies of all the documents including valid GST registration /EPF registration/ PAN No. as stipulated in the tender document.
- 15.0 If the contractor is found ineligible after opening of tenders, his tender shall become invalid and cost of tender document and processing fee shall not be refunded.
- 16.0 If any discrepancy is noticed between the documents as uploaded at the time of submission of tender and hard copies as submitted physically by the contractor the tender shall become invalid and cost of tender document and processing fee shall not be refunded.
- 17.0 Notwithstanding anything stated above, MUDA reserves the right to assess the capabilities and capacity of the tenderer to perform the contract, in the overall interest of MUDA. In case, tenderer's capabilities and capacities are not found satisfactory, MUDA reserves the right to reject the tender.
- 18.0 Certificate of Financial Turnover: At the time of submission of tender, the tender shall upload Affidavit/Certificate from Chartered Accountant mentioning Audited Financial Turnover of last 3 years or for the period as specified in the tender document. There is no need to upload entire voluminous balance sheet. However, one page of summarised Balance Sheet (Audited) and one page of summarised Profit & Loss Account (Audited) for last 03 years shall be uploaded and submitted in hard copy also.
- 19.0 Rates are to be quoted on flat percentage basis and shall be at par or above the estimated cost of the work put to tender. Since this is a percentage rate tender, bidder must ensure to quote single percentage rate in the column meant for quoting rate as indicated. The rate shall be quoted up to 2 decimals. In case two bidders quote the same percentage rate, then both bidders shall be given an opportunity to submit a fresh bid again within stipulated time as decided by tender inviting committee.
- 20.0 The tenderer(s) if required, may submit queries, if any, through E-mail and in writing to the tender inviting authority to seek clarifications within 7 days from the date of uploading of Tender on website but latest by so as to reach MUDA office not less than 2 days prior to the date of Pre-bid meeting (if to be held as per NIT). MUDA will reply only those queries which are essentially required for submission of bids. MUDA will not reply the queries which are not considered fit like replies of which can be implied /found in the NIT/ Tender Documents or which are not relevant or in contravention to NIT/Tender Documents, queries received after 7 days from the date of uploading of Tender on website, request for extension of time for opening of technical bids, etc. Technical Bids are to be opened on the scheduled dates. Requests for Extension of opening of Technical Bids will not be entertained.
- The Pre-Bid meeting shall be attended by the intending bidders only and not by vendors/manufacturers. Further, the intending bidders should depute their authorized person with authorization letter in original to attend the pre-bid meeting.
- 21.0 **Integrity Pact (For all contracts valuing Rs.5.00 Crores and above)**
- 22.0 Integrity Pact duly signed by the tenderer shall be submitted. Any tender without signed integrity Pact shall be liable for rejection.

List of Documents to be scanned, uploaded and also submitted in hard copy within the period of tender submission:

- a) Demand Draft/Pay Order or Banker's Cheque of any Scheduled Bank towards cost of Tender Document.
- b) Memorandum (Annexure-I of NIT).
- c) Unconditional Letter of Acceptance of Tender Conditions (in original) (Annexure-II of NIT) (On Letter Head of the Applicant/ Bidder).
- d) Integrity pact duly signed by the contractor (Annexure-III) (for all contracts valuing Rs. 5.00 Crores & above). The bidders are requested to download the Integrity Pact as uploaded in the tender documents, and sign on the same, put rubber stamp/seal and upload the signed copy on e-tendering websites.
- e) Financial Details - FORM-A
- f) Self-certified copy of Bank Solvency Certificate - FORM-B
- g) Details of Similar Works completed - FORM-C
- h) TDS Details of Private Projects - FORM-C1
- i) Projects under execution or Awarded - FORM-D
- j) Performance Report or Work Experience Certificates - FORM-E
- k) Structure and Organization of the Company/Firm – FORM-F
- l) Details of Technical & Administrative personnel to be employed – FORM-G
- m) Details of Construction plant and equipment – FORM-H
- n) Affidavit duly notarized by Notary Public on Non Judicial Stamp Paper of Rs. 100 (Annexure-IV) for correctness of Documents /Information.
- o) Power of Attorney of the person authorized for signing/submitting the tender.
- p) E-payment Transaction details towards cost of processing fees.
- q) Valid GST registration/ EPF registration/ PAN NO.
- r) All pages of the entire Corrigendum (if any) duly signed by the authorized person.
- s) Pre-bid clarifications, if any.
- t) Joint Venture Agreement in case of Joint venture/ Consortium.
- u) Registration Details of the contractor in the GST Act– Form-I.

NOTE: All the uploaded documents should be in readable, printable and legible form failing which the Bids shall not be considered for evaluation. The document submitted in hard copy should be indexed and duly page numbered.

24.0 (a) No Clarification will be sought in case of non-submission of Cost of tender document or EMD of requisite amount or Unconditional letter of acceptance or Affidavit for correctness of document/information. In such cases the bid shall be rejected out rightly without seeking any further clarification/document.

(b) All the uploaded and submitted documents shall be considered as duly signed by contractor/ authorized representative.

25.0 MUDA reserves the right to reject any or all tenders or cancel/withdraw the invitation for bid without assigning any reasons whatsoever thereof. MUDA does not bind itself to accept lowest tender. The MUDA reserves the right to award the work to a single party or to split the work amongst two or more parties as deemed necessary without assigning any reason thereof. The contractor is bound to accept the portion of work as offered by MUDA after split up at the quoted/ negotiated rates. No claim of the contractor whatsoever shall be entertained by MUDA on this account.

26.0 Canvassing in connection with the tender is strictly prohibited, and such canvassed tenders submitted by the contractor will be liable to be rejected and his earnest money shall be absolutely forfeited.

For any queries, please contact (Name) _____, (Designation) _____,
Mobile No. +91 _____ during Office hours. Email: _____.



Secretary
Meghalaya Urban Development
Authority, Shillong.

Meghalaya Urban Development Authority
Shillong, Meghalaya

Annexure-I

MEMORANDUM

Sl. No.	Description	Cl. No. of NIT/ITT/ Clauses of Contract (CC)	Values/Description to be Applicable for Relevant Clause(s)
1)	Name of Work		“Construction of Shillong Business cum Tourism and Cultural Centre at Police Bazar, Shillong, Meghalaya on Design, Engineering, Procurement and Construction (EPC) basis (Package-I)”
2)	Client/Owner		Government of Meghalaya
3)	Type of Tender		Design & Engineering Procurement Construction (EPC Contract)
4)	Earnest Money Deposit	NIT	NIL
5)	Estimated Cost	NIT	Rs. 185,94,27,000.00 (Rupees One Hundred Eighty Five Crores Ninety Four Lakh Twenty Seven Thousand Only) + GST Extra.
6)	Time allowed for Completion of Work	NIT	36 (Thirty-Six) Months (30 months for construction & 6 months for testing and commissioning of services)
7)	Mobilization Advance	CC / 10B(ii)	10% (Ten Percent) of Contract Value.
8)	Interest Rate of Mobilization Advance	CC / 10B(iv)	Interest Free
9)	Schedule of Rates applicable		Applicable
10)	Validity of Tender	ITT / 7.0	150 (One Hundred Fifty) days from the date of opening of price tender.
11)	Performance Guarantee	CC / 1	3.00 % (Three Percent Only) of contract value within 30 days from the issue of Letter of Award
12)	Security Deposit/ Retention Money	CC/1A	5 % (Five Percent Only) of the gross value of each running /final bill.
13)	Time allowed for starting the work	ITT/14.0	The date of start of contract shall be reckoned from 10 days after the date of issue of letter of Award

14)	Deviation limit beyond which clause 12.2 & 12.3 shall apply for all works except foundation.	CC / 12.0	Applicable.
15)	Escalation	CC /10CA, 10CC	Applicable
16)	Recovery rate of work force supplied by MUDA to Contractor	CC /32	Rs. 25,000/- per person per month (Rupees Twenty Five thousand per person per month only) plus GST @18% or as prevailing rate on the date of recovery.
18)	Defect Liability Period	CC/17	12 months from the date of taking over the works by MUDA or client whichever is later.
19)	GRIHA Rating		Min. Three star rating of GRIHA rating
20)	Applicable GCC	-	GCC 2020 EPC Projects with all Amendments till date.

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Secretary
Meghalaya Urban Development
Authority, Shillong.

Section-2

INSTRUCTION TO TENDERERS

Instructions to Tenderers (ITT)

1.0	Online percentage rate open tenders are invited from experienced and eligible Contractors for “Construction of Shillong Business Cum Tourism and Cultural Centre on Design, Engineering, Procurement And Construction (EPC) Basis” for Government of Meghalaya at Police Bazar, Shillong, Meghalaya.
2.0	The work is estimated to cost Rs.185,94,27,000 . This estimate, however, is given merely as a rough guide.
3.0	The tender document as uploaded can be seen on website https://meghalaya.gov.in/tenders and can be downloaded free of cost.
4.0	<p>Interested contractor who wish to participate in the tender has also to make following payments in the form of Demand Draft/Pay Order or Banker’s Cheque of any Scheduled Bank and to be scanned and uploaded to the e-Tendering website within the period of tender submission:</p> <p>Cost of Tender Document – Rs.1,00,000 + GST @ X%*in the shape of DD/PO in favour of MUDA payable at Shillong.</p> <p>*X% shall be 18% or as prevailing on the date of NIT</p> <p>E-Tender Processing Fee – Rs 5000 (Rs, Five Thousand only) through e- payment only.</p> <p>Demand Draft or Pay Order Banker’s Cheque or Bank Guarantee against Cost of Tender Document and e-Tender Processing Fee online payment receipt, Affidavit for correctness of Documents /Information (In original). Financial Details certified by the Chartered Accountant (In original), Bank Solvency Certificate in original shall be placed in single sealed envelope superscripted as “Cost of Tender Document and Cost of e-Tender Processing Fee” with name of work and due date of opening of the tender also mentioned thereon.</p>
5.0	<p>The documents are to be submitted in the office of MUDA before last date & time of submission of tender mentioned in the NIT.</p> <p>The documents submitted shall be opened at __. __AM on the same day.</p> <p>Online technical tender documents submitted by intending tenderers shall be opened only of those tenderers, whose Cost of Tender Document and e-Tender Processing Fee and other documents placed in the envelope are found in order. The Price tender of those tenderers whose documents are found to be in order and are qualified as per the evaluation criteria shall be opened. The date of opening of price tender shall be informed to the tenderer.</p>
6.0	<p>The tender submitted shall become invalid if:</p> <ol style="list-style-type: none"> i) The tenderer is found ineligible. ii) The tenderer does not upload all the documents (including GST Registration) as stipulated in the tender document. iii) If any discrepancy is noticed between the documents as uploaded at the time of submission of tender and hard copies as submitted physically in the office of tender opening authority.

7.0	<p>VALIDITY OF TENDER</p> <p>The tender for the works shall remain open for acceptance for a period of 150 (One Hundred Fifty) days from the date of opening of financial tender. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the MUDA, then MUDA shall, without prejudice to any other right or remedy, be at liberty to forfeit the said tender fees as aforesaid. Further the tenderers shall not be allowed to participate in the retendering process of work.</p>
8.0	<p>ACCEPTANCE OF TENDER</p> <p>MUDA reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever. MUDA does not bind itself to accept the lowest tender. MUDA reserves the right to award the work to a single party or split the work amongst two or more parties as deemed necessary without assigning any reason thereof. The Contractor is bound to accept the part work as offered by MUDA after split up at the quoted/negotiated rates.</p>
9.0	<p>The tenders shall be strictly as per the conditions of contract. Tenders with any additional condition(s)/modifications shall be rejected. Tenders in which, any of the prescribed conditions are not fulfilled or found incomplete in any respect are liable to be rejected.</p>
10.0	<p>The witnesses to the Tender/Contract Agreement shall be other than the tenderer/ tenderers competing for this work and must indicate full name, address, and status/occupation with dated signatures.</p>
11.0	<p>The acceptance of tender will rest with the MUDA who does not bind itself to accept the lowest tender and reserves the right to reject any or all the tenders received without assigning any reason thereof. Tenders in which, any of the prescribed conditions are not fulfilled or found in complete in any respect are liable to be rejected.</p>
12.0	<p>On acceptance of tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from Engineer-in-Charge or its authorized representative shall be intimated by the contractor within 15 days of issue date of letter of Award (LOA) by MUDA.</p>
13.0	<p>The tenderer shall not be permitted to tender for works if the tenderer/bidder have a conflict of interest. Any tenderer/bidder found to have a conflict of interest shall be disqualified. A tenderer may be considered to be in a conflict of interest including but not limited to the following if:</p> <ul style="list-style-type: none"> i) any near relative is posted in the project office or concerned Office of the MUDA. The contractor shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by the tenderer/bidder and who are near relatives to any of the officers in MUDA. For the purpose of operation of this clause a near relative shall mean wife, husband, parents, grandparents, children, grandchildren, brothers, sisters, uncles, aunts, cousins and their corresponding in-laws. ii) Tenderer/bidder have same legal representative for the purpose of this bid. iii) Tenderer have a relationship with each other, directly or through common third parties, that puts them in a position to have access to the material information about or improperly influence the bid of another bidder, or influence the decision of the Employer/Consultant/Client.
14.0	<p>The time of completion of the entire work, as contained in contract shall be as mentioned in “Memorandum - Annexure-I”, which shall be reckoned from the 10th day after issue of the Final Work Order (FWO) by the MUDA.</p>

15.0	Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.
16.0	The Contract award, execution and completion of work shall be governed by tender documents consisting of (but not limited to) Letter of Award(LOA)/Final Work Order(FWO), Bill of Quantities, Special Conditions of Contract, General Conditions of Contract, Specifications, Drawings and any other relevant documentation. The tenderers shall be deemed to have gone through the various conditions including sub-soil water conditions, topography of the land, drainage and accessibility etc. or any other condition which in the opinion of contractor will affect his price/rates before quoting their rates. No claim whatsoever against the foregoing shall be entertained.
17.0	The drawings with the tender documents are Conceptual Drawings and are indicative only.
18.0	ADDENDA/ CORRIGENDA Addenda/Corrigenda to the tender documents may be issued prior to the date of submission of the tender to clarify or effect modification in specification and/or contract terms included in various tender documents. The tenderer shall suitably take into consideration such Addenda/Corrigenda while submitting his tender. The tenderer shall return such Addenda/ Corrigenda duly signed and stamped as confirmation of its receipt & acceptance and submit along with the tender document. All addenda/ Corrigenda shall be signed and stamped on each page by the tenderer and shall become part of the tender and contract documents.
19.0	SITE VISIT AND COLLECTING LOCAL INFORMATION Before tendering, the tenderers are advised to visit the site, its surroundings to assess and satisfy themselves about the local conditions such as the working and other constraints at site, approach roads to the site, availability of water & power supply, application of taxes, duties and levies as applicable & any other relevant information required by them to execute complete scope of work. The tenderer may obtain all necessary information as to risks, weather conditions, contingencies & other circumstances (insurgencies etc.) which may influence or affect their tender prices. Tenderer shall be deemed to have considered site conditions whether he has inspected it or not and to have satisfied himself in all respect before quoting his rates and no claim or extra charges whatsoever in this regard shall be entertained / payable by the MUDA at a later date.
20.0	ACCESS BY ROAD Contractor, if necessary, shall build temporary access roads to the actual site of construction for the works at his own cost to make the site accessible. The Contractor shall maintain the same in motorable condition at all the times as directed by Engineer-in-Charge at his own cost. The contractor shall be required to permit the use of any roads so constructed by him for vehicles of MUDA or any other agencies/ contractors who may be engaged on the project site, free of cost. Non-availability of access roads or approach to site, for the use of the contractor shall in no case condone any delay in the execution of work nor be the cause for any claim for compensation.

21.0

HANDING OVER & CLEARING OF SITE

- 1.0 The Contractor should note that area for construction may be made available in phases as per availability and in conjunction with pace of actual progress of work at site. The work may be required to be carried out in constrained situations. The work is to be carried out in such a way that the traffic, people movement, if any, is kept operative and nothing extra shall be payable to the contractor due to this phasing / sequencing of the work. The contractor is required to arrange the resources to complete the entire project within total stipulated time. Traffic diversion, if required, is to be done and maintained as per requirement of local traffic police or/and as per specification, by the contractor at his own cost and the contractor shall not be entitled for any extra payment, whatsoever, in this regard.
- 2.0 The efforts will be made by the MUDA to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor, the MUDA shall only consider suitable extension of time for the execution of the work. It should be clearly understood that the MUDA shall not consider any revision in contract price or any other compensation whatsoever viz. towards idleness of Contractor's labour, equipment etc.
- 3.0 Old structures on the proposed site, if required, shall be demolished by the contractor properly at his own cost unless and otherwise mentioned elsewhere in the tender document. The useful material obtained from demolition of structures & services shall be the property of the owner/MUDA and these materials shall be stacked in workmanship like at the place specified by the Engineer-in-charge.
- 4.0 Necessary arrangement including its maintenance is to be made by the contractor for temporary diversion of flow of existing drain and road, as the case may be. The existing drain, road would be demolished, wherever required, with the progress of work under the scope of proposed project. The existing Road and Drain which are not in the alignment of the said project but are affected and/ or need to be demolished during execution for smooth progress of the project, shall be rehabilitated to its original status and condition (including black topping) by the contractor at his own cost. The cost to be incurred by contractor in this regard shall be deemed to be included in the quoted rates of the bill of quantity items and contractor shall not be entitled for any extra payment whatsoever in this regard.
- 5.0 The information about the public utilities (whether over ground or underground) like electrical/ telephone/ water supply lines, OFC Cables, open drain etc. is the responsibility of contractor to ascertain the utilities that are to be affected by the works through the site investigation.
- 6.0 The contractor shall be responsible to obtain necessary approval from the respective authorities for shifting/ re-alignment of existing public utilities. MUDA shall only assist the contractor for liaisoning in obtaining the approval from the concerned authorities.
- 7.0 Any services affected by the works must be temporarily supported by the contractor who must also take all measures reasonably required by the various bodies to protect their services and property during the progress of works. It shall be deemed to be the part of the contract and no extra payment shall be made to the contractor for the same.

22.0

SCOPE OF WORK

The contractor is required to complete the project on Design & Build basis. The scope of work given below is not exhaustive however, contractor is required to execute all the items as per Scope of work, Design basis reports (DBR), technical specifications, Concept / tender Drawings, tender documents etc. covering the entire area in all respect to make the buildings & complex fit for its intended purpose i.e. handing over for functional use.

The brief scope of work in general, inter alia includes the following:

- a) Consultancy Services i.e. Architectural planning and Engineering Consultancy work as per BIS/NBC 2016, etc.
- b) Structural Works – Superstructure to be designed as conventional method with Flat Slab as per DBR. Formwork for Roofs and all other RCC works should be of laminated ply finish Formwork.
- c) Architectural, Civil & Finishing Works
- d) Plumbing Works
- e) Fire Fighting Works
- f) Electrical Works
- g) ETP/STP
- h) Bulk Electrical Services
- i) HVAC & Mechanical Ventilation Works at all floors.
- j) Elevators & Escalators
- k) Mechanical parking in ground
- l) Miscellaneous Works:
 - (i) Solar Power generation system
 - (ii) Rain water harvesting system
 - (iii) Automatic Swing & Sliding Doors
 - (iv) Security System (Access & CCTV System integration with Command & control center)
 - (v) CCTV Cameras are to be provided in all staircases, lifts, common areas, entry/exit, reception, entrance door, and all other area not specifically mentioned in here.
 - (vi) IBMS & Command & Control System
 - (vii) AV System, ICT System & Acoustic system
 - (viii) PA & Background Music System
 - (ix) Outdoor & Landscape Lighting
 - (x) Networking
 - (xi) EPABX
 - (xii) Entrance gate, Check post, Boom Barriers
 - (xiii) Signage Systems
 - (xiv) Boundary wall
 - (xv) Solar Street lighting backed up by regular power

The quantities of various items as entered in the “BILL OF QUANTITIES” are indicative only and may vary depending upon the actual requirement. The contractor shall be bound to carry out and complete the stipulated work irrespective of the variation in individual items specified in the bill of quantities. The variation of quantities will be governed as per clause No. 12 of GCC.

23.0	APPROVAL OF TEMPORARY / ENABLING WORKS The setting and nature of all offices, huts, access road to the work areas and all other temporary works as may be required for the proper execution of the works shall be subject to the approval of the Engineer- in-charge. All the equipments, labour, material including cement, reinforcement and the structural steel required for the enabling/ temporary works associated with the entire Contract- shall have to be arranged by the Contractor only. Nothing extra shall be paid to the Contractor on this account.
24.0	CLARIFICATION AFTER TENDER SUBMISSION Tenderer’s attention is drawn to the fact that during the period, the tenders are under consideration, the tenderers are advised to refrain from contacting by any means, the MUDA and/or his employees/ representatives on matters related to the tender under consideration and that if necessary, MUDA will obtain clarifications in writing or as may be necessary. The tender evaluation and process of award of works is done by duly authorized High Power Committee/Departmental Tender Scrutiny Committee and this committee is authorized to discuss and get clarification from the tenderers.
25.0	ORDER OF PRECEDENCE OF DOCUMENTS In case of difference, contradiction, discrepancy, with regard to conditions of contract, Specifications, Drawings, Bill of quantities etc. forming part of the contract, the following shall prevail in order of precedence. (i) Letter of Award, along with statement of agreed variations and its enclosures, if any. (ii) Special Condition of Contract (SCC) (iii) Description of Bill of Quantity / Schedule of Quantities. (iv) Technical specifications (General, Additional and Technical Specification) as given in Tender documents. (v) General Conditions of Contract (GCC). (vi) Drawings (vii) MPWD/ MORTH specifications (as specified in Technical Specification of the Tender) update with correction slips issued up to last date of receipt of tenders. (viii) Relevant B.I.S. Codes



Secretary
Meghalaya Urban Development
Authority, Shillong.

SCHEDULE OF PAYMENTS

Sl. No.	Stages of Payment	% of quoted amount for payment	Breakup of % of quoted amount for payment	Detailed breakup of % of quoted amount for payment
1	Shillong Business cum Tourism and Cultural Centre	100%		
PART-A		30%		
1.1	Investigation, Planning, Designing and obtaining the approval for the scope of work & Drawings etc. complete		5.00%	
1.2	Mobilisation Advance		5.00%	
1.3	Completion of foundation & plinth including plinth beams & stone soling at ground/stilt floor level in buildings and courtyards		20.00%	
	1.3.1 Excavation and other earth works			1.00%
	1.3.2 Laying of PCC in foundation			2.00%
	1.3.3 Completion of Foundation.			10.00%
	1.3.4 Columns, plinth beams and walls upto plinth level and stone soling at ground floor level including			5.00%
	1.3.5 Filling and Levelling.			2.00%
PART-B		60%		
1.4	Completion of RCC framed structure, finishing works i.e. masonry work, Stone work, flooring, plastering, fixing of doors & windows, False Ceiling and Wall Paneling works, interior & exterior painting, internal water supply and sanitary installation, internal electrical installations, HVAC installations, Synthetic grassing etc. in buildings and courtyards upto First Floor level of the building.		12.00%	
	1.4.1 On Completion up to First Floor level structure			2.00%
	1.4.2 Completion of AAC block / brick masonry work			1.00%
	1.4.3 Completion of all Stone Work			0.50%
	1.4.4 Completion of Plastering (internal and external) i/c putty/POP			0.50%
	1.4.6 Completion of Internal painting and finishing in all respect including fire retardant paint			1.00%
	1.4.7 Completion of Internal water supply works including fixtures			1.00%
	1.4.8 Completion of Internal sanitary installation works including fixtures			1.00%
	1.4.9 Completion of Internal Electrical installation works including fixtures			1.00%

	1.4.10	Completion of HVAC installation works			1.00%
	1.4.11	Completion of rain water pipes, water proofing works			1.00%
	1.4.12	Completion of False Ceiling, Wall Panelling and interior works			1.00%
1.5	Completion of RCC framed structure, finishing works i.e. masonry work, Stone work, flooring, plastering, fixing of doors & windows, False Ceiling and Wall Paneling works, interior & exterior painting, internal water supply and sanitary installation, internal electrical installations, HVAC installations, Synthetic grassing etc. in buildings and courtyards upto Second Floor level of the building.			12.00%	
	1.5.1	On Completion up to Second Floor level structure			2.00%
	1.5.2	Completion of AAC block / brick masonry work			1.00%
	1.5.3	Completion of all Stone Work			0.50%
	1.5.4	Completion of Plastering (internal and external) i/c putty/POP			0.50%
	1.5.5	Completion of all type of flooring, skirting, dado and window sills, jambs including all kind of Mural			1.00%
	1.5.6	Completion of Internal painting and finishing in all respect including fire retardant paint			1.00%
	1.5.7	Completion of Internal water supply works including fixtures			1.00%
	1.5.8	Completion of Internal sanitary installation works including fixtures			1.00%
	1.5.9	Completion of Internal Electrical installation works including fixtures			1.00%
	1.5.10	Completion of HVAC installation works			1.00%
	1.5.11	Completion of rain water pipes, water proofing works			1.00%
	1.5.12	Completion of False Ceiling, Wall Panelling and interior works			1.00%
1.6	Completion of RCC framed structure, finishing works i.e. masonry work, Stone work, flooring, plastering, fixing of doors & windows, False Ceiling and Wall Paneling works, interior & exterior painting, internal water supply and sanitary installation, internal electrical installations, HVAC installations, Synthetic grassing etc. in buildings and courtyards upto Third Floor level of the building.			12.00%	
	1.6.1	On Completion up to Third Floor level structure			2.00%
	1.6.2	Completion of AAC block / brick masonry work			1.00%
	1.6.3	Completion of all Stone Work			0.50%
	1.6.4	Completion of Plastering (internal and external) i/c putty/POP			0.50%
	1.6.5	Completion of all type of flooring, skirting, dado			1.00%

		and window sills, jambs including all kind of Mural			
	1.6.6	Completion of Internal painting and finishing in all respect including fire retardant paint			1.00%
	1.6.7	Completion of Internal water supply works including fixtures			1.00%
	1.6.8	Completion of Internal sanitary installation works including fixtures			1.00%
	1.6.9	Completion of Internal Electrical installation works including fixtures			1.00%
	1.6.10	Completion of HVAC installation works			1.00%
	1.6.11	Completion of rain water pipes, water proofing works			1.00%
	1.6.12	Completion of False Ceiling, Wall Panelling and interior works			1.00%
1.7		Completion of RCC framed structure, finishing works i.e. masonry work, Stone work, flooring, plastering, fixing of doors & windows, False Ceiling and Wall Paneling works, interior & exterior painting, internal water supply and sanitary installation, internal electrical installations, HVAC installations, Synthetic grassing etc. in buildings and courtyards upto Fourth Floor level of the building.		12.00%	
	1.7.1	On Completion up to Fourth Floor level structure			2.00%
	1.7.2	Completion of AAC block / brick masonry work			1.00%
	1.7.3	Completion of all Stone Work			0.50%
	1.7.4	Completion of Plastering (internal and external) i/c putty/POP			0.50%
	1.7.5	Completion of all type of flooring, skirting, dado and window sills, jambs including all kind of Mural			1.00%
	1.7.6	Completion of Internal painting and finishing in all respect including fire retardant paint			1.00%
	1.7.7	Completion of Internal water supply works including fixtures			1.00%
	1.7.8	Completion of Internal sanitary installation works including fixtures			1.00%
	1.7.9	Completion of Internal Electrical installation works including fixtures			1.00%
	1.7.10	Completion of HVAC installation works			1.00%
	1.7.11	Completion of rain water pipes, water proofing works			1.00%
	1.7.12	Completion of False Ceiling, Wall Panelling and interior works			1.00%
1.8		Completion of RCC framed structure, finishing works i.e. masonry work, Stone work, flooring, plastering, fixing of doors & windows, False Ceiling and Wall Paneling works, interior & exterior painting, internal water supply and sanitary installation, internal electrical installations,		12.00%	

	HVAC installations, Synthetic grassing etc. in buildings and courtyards upto Fifth Floor level of the building.				
	1.8.1	On Completion up to Fifth Floor level structure			2.00%
	1.8.2	Completion of AAC block / brick masonry work			1.00%
	1.8.3	Completion of all Stone Work			0.50%
	1.8.4	Completion of Plastering (internal and external) i/c putty/POP			0.50%
	1.8.5	Completion of all type of flooring, skirting, dado and window sills, jambs including all kind of Mural			0.50%
	1.8.6	Completion of Internal painting and finishing in all respect including fire retardant paint			0.50%
	1.8.7	Completion of Internal water supply works including fixtures			1.00%
	1.8.8	Completion of Internal sanitary installation works including fixtures			1.00%
	1.8.9	Completion of Internal Electrical installation works including fixtures			1.00%
	1.8.10	Completion of HVAC installation works			1.00%
	1.8.11	Completion of rain water pipes, water proofing works			1.00%
	1.8.12	Completion of False Ceiling, Wall Panelling and interior works			1.00%
	1.8.13	Completion of Terrace Slab, Tank, Mumty, lift machine room, etc			1.00%
PART-C			5%		
1.9	External Development Works including roads, pavements, footpaths, external water supply, external sewerage, external electrical, Substation, Service trenches, Plant room, Pump room, STP/ETP, Horticulture, etc			5.00%	
	1.9.1	On completion of external water supply network			0.50%
	1.9.2	On completion of external sewerage network			0.50%
	1.9.3	On completion of storm water drain and drainage network			0.50%
	1.9.4	On completion of Services Cable Trench			0.50%
	1.9.5	On completion of Firefighting pump room cum water storage tanks including testing and commissioning			0.50%
	1.9.6	On completion of Electrical Substation with all equipments including testing and commissioning			0.50%
	1.9.7	On completion of HVAC Plant room with all equipments including testing and commissioning			0.50%

	1.9.8	On completion of STP/ETP with all equipments including testing and commissioning			0.50%
	1.9.9	Excavation, ground leveling and preparation, Supply & spreading of good earth and Manure in all landscape areas.			0.50%
	1.9.10	Supply and Planting of Grass and Trees complete			0.50%
PART-D			5%		
2.0	Submission of completion certificate of the building, all statutory post-construction clearances, licenses and as built drawing, Griha Rating, handing over of buildings and successful closing of agreement.			5.00%	



Secretary
Meghalaya Urban Development
Authority, Shillong.

Annexure-II

ACCEPTANCE OF TENDER CONDITIONS

From: (To be submitted in ORIGINAL on the letter head of the company by the authorized officer having power of attorney)

Meghalaya Urban Development Authority,

Sub: Name of the work & NIT No.:

Sir,

- i) This has reference to above referred tender. I/We are pleased to submit our tender for the above work and I/We hereby unconditionally accept the tender conditions and tender documents in its entirety for the above work.
- ii) I/we are eligible to submit the tender for the subject tender and I/We are in possession of all the documents required.
- iii) I/We have viewed and read the terms and conditions of this GCC/SCC carefully. I/We have downloaded the following documents forming part of the tender document:
 - a) Notice Inviting e-Tender
 - b) Quoting Sheet for Tenderer
 - c) Instructions to Tenderers & General Conditions of Contract (Vol-I)
 - d) DBR and Technical Specifications (Vol-II)
 - e) Bill of Quantities (Vol-III)
 - f) Memorandum (Annexure-I of NIT).
 - g) Unconditional Letter of Acceptance of Tender Conditions (in original) (Annexure-II of NIT) (On Letter Head of the Applicant/ Bidder)
 - h) Integrity pact duly signed by the contractor (Annexure-III) (for all contracts valuing Rs. 5.00 Crores & above). The bidders are requested to download the Integrity Pact as uploaded in the tender documents, and sign on the same, put rubber stamp/seal and upload the signed copy on e-tendering websites.
 - i) Financial Details - FORM-A
 - j) Self-certified copy of Bank Solvency Certificate - FORM-B

- k) Details of Similar Works completed - FORM-C
 - l) TDS Details of Private Projects - FORM-C1
 - m) Projects under execution or Awarded - FORM-D
 - n) Performance Report or Work Experience Certificates - FORM-E
 - o) Structure and Organization of the Company/Firm – FORM-F
 - p) Details of Technical & Administrative personnel to be employed – FORM-G
 - q) Details of Construction plant and equipment – FORM-H
 - r) Affidavit duly notarized by Notary Public on Non Judicial Stamp Paper of Rs. 100 (Annexure-IV) for correctness of Documents /Information.
 - s) Power of Attorney of the person authorized for signing/submitting the tender.
 - t) E-payment Transaction details towards cost of processing fees.
 - u) Valid GST registration/ EPF registration/ PAN NO.
 - v) All pages of the entire Corrigendum (if any) duly signed by the authorized person.
 - w) Pre-bid clarifications, if any.
 - x) Joint Venture Agreement in case of Joint venture/ Consortium.
 - y) Registration Details of the contractor in the GST Act– Form-I.
 - z) Special Conditions of Contract (SCC) (Vol-IV)
 - aa) Pre-bid clarifications, if any
- iv) I/we have uploaded the mandatory scanned documents such as cost of tender document, EMD, e-Tender Processing Fee and other documents as per Notice Inviting e-tender AND I/We agree to pay the cost of tender document, EMD, e- Tender Processing Fee (only receipt/proof of online payment) and other documents in physical form in the form and manner as described in NIT/ITT.
- v) Should this tender be accepted, I/We agree to abide by and fulfill all terms and conditions referred to above and as contained in tender documents elsewhere and in default thereof, to forfeit and pay MUDA, or its successors or its authorized nominees such sums of money as are stipulated in the notice inviting tenders and tender documents.
- vi) If I/we fail to commence the work within 10 days of the date of issue of Letter of Award and/or I/we fail to sign the agreement as per Clause 82 of Clauses of Contract and/or I/we fail to submit performance guarantee as per Clause 02 of Clauses of Contract, I/we agree that MUDA shall,

without prejudice to any other right or remedy, be at liberty to cancel the Letter of Award and to forfeit the said earnest money as specified above.

Yours faithfully, (Signature of
the tenderer with rubber stamp)

Dated _____

Annexure-III

INTEGRITY PACT

BETWEEN

MEGHALAYA URBAN DEVELOPMENT AUTHORITY (MUDA), Shillong, Meghalaya represented by the Secretary, hereinafter referred to as “**The Principal**” (which expression, unless repugnant to the context thereof, shall mean and include its legal representatives, heirs and assigns)

AND

.....hereinafter referred to as “**The Bidder/Contractor**” (which expression, unless repugnant to the context thereof, shall mean and include its legal representatives, heirs and assigns)

Preamble

The Principal intends to award, under laid down organizational procedures, contract(s) for.....
(Name of the contract).....(hereinafter referred to as the ‘Project’). The Principal necessarily requires full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the Integrity Pact by all parties concerned, for all works covered in the Project.

To meet the purpose aforesaid both the parties have agreed to comply this Integrity Agreement (hereinafter referred to as "Integrity Pact" or "Pact"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

Section 1 – Commitments of the Principal

- (1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - a. No employee of the Principal, personally or through family members or through any other channel, will in connection with the tender for or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit, which the person is not legally entitled to.
 - b. The Principal will, during the tender process treat all Contractor(s)/Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Contractor(s)/Bidder(s) the same information and will not provide to any Contractor(s)/Bidder(s), confidential/additional information through which the Contractor(s)/Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - c. The Principal will exclude from the process all known prejudiced persons. **The Principal shall** obtain bids from **only** those parties who have been short-listed or pre-qualified or through a process of

open advertisement/ web publishing or any combination thereof.

- (2) If the Principal obtains information on the conduct of any of its employees, Contractor(s) and/or Bidder(s), which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer or the principal will take remedial actions as per department/conduct rules and **subject to its discretion**, can **additionally** initiate disciplinary actions.
- (3) The Principal will enter into agreements with identical conditions with all Contractor(s)/Bidder(s) **for the different Work Packages in the aforesaid Project.**
- (4) The Principal will disqualify from the tender process all Contractor(s)/Bidder(s) with estimated cost of work put to tender of Rs 5.0 crores and above, who do not sign this Pact or violate its provisions.

Section 2 – Commitments of the Bidder(s) / Contractor(s) Obligations on Bidder/Contractor

To accept and comply with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by Employer. Duration of the Integrity Agreement shall be in the line with section 8 of the Integrity Agreement.

Bidder/Contractor acknowledge that in the event of breach of the Integrity Agreement Employer shall have unqualified, absolute and unfettered right to take action under section 3.

- (1) It is required that each Bidder/Contractor (including their respective officers, employees and sub-contractors) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of **fraud or corruption or Coercion or Collusion** of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.
- (2) The Bidder(s) / Contractor(s) commit(s) itself/themselves to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
 - (a) The Bidder(s) / Contractor(s) will not, directly or through any other person or firm offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage, of any kind whatsoever, during the tender process or during the execution of the contract.
 - (b) The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
 - (c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contractor(s) will not use improperly, for purpose of competition or

personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

- (d) The Bidder(s) / Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly the Bidder(s) / Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. It shall be incumbent on the Indian agent and the foreign principal to Adhere to the relevant guidelines of Government of India, issued from Time to time regarding availing services of Indian Agents for foreign Suppliers.

Further details as mentioned in the “Guidelines on Indian Agents of Foreign Suppliers” shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only.

- (e) The Bidder(s) / Contractor(s) will, when submitting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- (f) The Bidder(s) / Contractor(s) to disclose any transgression with any other company that may impinge on the anti-corruption principle.

- (3) The Bidder(s) / Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- (4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.
- (5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).
- (6) The Bidder(s)/Contractor(s) signing IP shall not approach the Courts while representing the matters to IEM and he/she will await their decision in the matter.
- (7) The Bidder(s)/Contractor(s), in case of sub-contracting, the Principal contractor shall take the responsibility of the adoption of IP by the sub-contractor.

Section 3: Disqualification from tender process and/or exclusion from future contracts.

Without prejudice to any rights that may be available to the Employer under law or the Contract or its

established policies and laid down procedures, the Employer shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Employer absolute right:

- (1) If the Bidder(s) / Contractor(s), before awarding the Project or during execution has committed a transgression by violating Section 2 above or in any other form so as to put his reliability or credibility in question, the Principal, at its sole discretion, after giving proper opportunity to the bidder is entitled to disqualify the Bidder(s) / Contractor(s) from the tender process or terminate the contract, if already awarded or exclude the Bidder/Contractor from future contract award processes, for that reason, without prejudice to any other legal rights or remedies available to the Principal under the relevant clauses of GCC/SCC of the tender/contract. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal. **Such exclusion may be forever or for a limited period as decided by the Principal.**
- (2) If the Contractor(s)/Bidder(s) has committed a transgression through a violation of any of the terms under Section 2 above or in any other form such as to put his reliability or credibility into question, the Principal will also be entitled to exclude such Contractor(s)/Bidder(s) from future tenders/contract award processes. The imposition and duration of the exclusion will be determined by the Principal, keeping in view the severity of the transgression. The severity will be determined by the circumstances of the case, in particular, the number of transgressions and/or the amount of the damage.
- (3) If it is observed after payment of final bill but before the expiry of validity of Integrity Pact that the contractor has committed a transgression, through a violation of any of the terms under Section 2 above or any other term(s) of this Pact, during the execution of contract, the Principal will be entitled to exclude the contractor from further tender/contract award processes.
- (4) The exclusion will be imposed for a minimum period of six (6) months and a maximum period of three (3) years.
- (5) If the Contractor(s)/Bidder(s) can prove that he has restored/recouped the damage to the Principal caused by him and has installed a suitable corruption prevention system, the Principal may, at its sole discretion, revoke or reduce the exclusion period before the expiry of the period of such exclusion.

Section 4: Compensation for Damages

- (1) If the Principal has disqualified the Bidder(s)/Contractor(s) from the tender process prior to the awarding of the Project according to Section 3, the Earnest Money Deposit (EMD)/ Bid Security furnished, if any, along with the offer, as per terms of the Invitation of Tender, shall also be forfeited. The Bidder(s)/Contractor(s) understands and agrees that this will be in addition to the disqualification and exclusion of the Contractor(s)/Bidder(s) as may be imposed by the Principal, in terms of Section 3 above.
- (2) If, at any time after the awarding of the Project, the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Security Deposit/Performance Bank Guarantee furnished by the contractor, if any, as per the terms of the NIT/Contract shall be forfeited without prejudice to any other legal rights and remedies available to the Principal under the relevant clauses of General/ Special Conditions of Contract.

The Contractor(s)/Bidder(s) understands and agrees that this will be in addition to the disqualification and exclusion of the Bidder(s)/Contractor(s), as may be imposed by the Principal in terms of Section 3 above.

Section 5: Previous transgression

- (1) The Bidder(s)/Contractor(s) herein declares that it has committed no transgressions in the last 5 years with any other Company in any country conforming to the anti-corruption approach as detailed herein or with government/ Central Government or State Government or any other Public Sector Enterprise in India that could justify its exclusion from the tender process.
- (2) If at any point of time during the tender process or after the awarding of the Contract, it is found that the Bidder(s)/Contractor(s) has made an incorrect statement on this subject, he can be disqualified from the tender process or if, as the case may be, that the Contract, is already awarded, it will be terminated for such reason and the Bidder(s)/Contractor(s) can be black listed in terms of Section 3 above.
- (3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Employer may, at its own discretion, revoke the exclusion prematurely.

Section 6: Independent External Monitor / Monitors

- (1) The Principal shall, in case where the Project Value is in excess of Rs 5.0 crore and above, appoint competent and credible Independent External Monitor(s) with clearance from Central Vigilance Commission. The Monitor shall review independently, the cases referred to it to assess whether and to what extent the parties concerned comply with the obligations under this Integrity Pact.
- (2) In case of non-compliance of the provisions of the Integrity Pact, the complaint/ non-compliance is to be lodged by the aggrieved party with the Nodal Officer only, as shall be appointed by the CMD, MUDA. The Nodal Officer shall refer the complaint/ non-compliance so received by him to the aforesaid Monitor.
- (3) The Monitor will not be subject to any instructions by the representatives of the parties and will perform its functions neutrally and independently. The Monitor shall report to the Chairman-cum-Managing Director, MUDA.
- (4) The Bidder(s) / Contractor(s) accepts that the Monitor shall have the right to access, without restriction, all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/her request and demonstration of a valid interest, unrestricted and unconditional access to its project documentation. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s) / Contractor(s) with confidentiality.
- (5) The Principal will provide to the Monitor, sufficient information about all meetings among the parties related to the Project, provided such meetings could have an impact on the contractual relations between the Principal and the Contractor.

- (6) As soon as the Monitor notes, or believes to note, a violation of this Pact, he will so inform the Principal and request the Principal to discontinue and/or take corrective action, or to take other relevant action(s). The Monitor can in this regard submit non-binding recommendations. However, beyond this, the Monitor has no right to demand from the parties that they act in a specific manner and/or refrain from action and/or tolerate action.
- (7) The Monitor will submit a written report to the CMD, MUDA within 4 to 6 weeks from the date of reference or intimation to it and, should the occasion arise, submit proposals for corrective actions for the violation or the breaches of the provisions of the agreement noticed by the Monitor.
- (8) If the Monitor has reported to the CMD, MUDA, of a substantiated suspicion of an offence under relevant IPC/PC Act, and the CMD, MUDA, has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Chief Vigilance Officer, MUDA.
- (9) The word ‘Monitor’ means Independent External Monitor and includes both singular and plural forms.
- (10) For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- (11) IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging malafide on the part of any officer of the organisation should be looked into by the CVO of the concerned organisation.
- (12) The role of IEM is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organisations.
- (13) Issues like warranty/ guarantee etc. should be outside the purview of IEMs.

Section 7 – Criminal charges against violating Bidder(s)/Contractor(s)/ Subcontractor(s)

If the Principal obtains knowledge of conduct of a Bidder/Contractor or any employee or a representative or an associate of a Bidder/Contractor, which constitutes a criminal offence under the IPC/PC Act, or if the Principal has substantive suspicion in this regard, the Principal will forthwith inform the same to the Chief Vigilance Officer, MUDA.

Section 8 – Duration of the Integrity Pact

This Pact shall come into force when both parties have legally signed it. The Pact shall expire, in case of the Contractor(s), 3 (three) months after the last payment under the Contract is made and in case of the unsuccessful Bidder(s), 2 (two) months after the contract for the project has been awarded.

If any claims is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by CMD of MUDA.

The Bidder(s)/Contractor(s), however, understands and agrees that even upon the completion of the Project and/or the last payment under the Contract having been made, if any transgression/violation of the terms of this Pact comes/is brought to the notice of the Principal, it may, subject to its discretion, blacklist and/or exclude such Bidder(s)/Contractor(s) as provided for in Section 3, without prejudice to any other legal right or remedy so available to the Principal.

Section 9 – Other provisions

- (1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. Shillong.
- (2) Changes and supplements as well as termination notices need to be made in writing.
- (3) If the Bidder/Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement shall remain valid and binding. In such a case, the parties will strive to come to an agreement in accordance to their original intentions.
- (5) Wherever he or his as indicated in the above sections, the same may be read as he/she or his/her, as the case may be.
- (6) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Principal in accordance with this Integrity Agreement! Pact or interpretation thereof shall not be subject to arbitration

(For & On behalf of the Principal)
(Office Seal)

(For & On behalf of Bidder/ Contractor)
(Office Seal)

Place _____

Date _____

Witness 1:
(Name & Address) _____

Witness 2:
(Name & Address) _____

Annexure-IV

AFFIDAVIT FOR CORRECTNESS OF INFORMATION PROVIDED

(To be submitted by bidder on non-judicial stamp paper of Rs.100/(Rupees Hundred only) duly attested by Notary Public)

Affidavit of Mr.S/o R/o.....

I, the deponent above named do hereby solemnly affirm and declare as under:

- 1 That I am the Proprietor/Authorized signatory of M/sHaving its Head Office/Regd. Office at
2. That the information/documents/Experience certificates submitted by M/s..... along with the tender for (*Name of work*) To MUDA are genuine and true and nothing has been concealed.
3. I shall have no objection in case MUDA verifies them from issuing authority(ies). I shall also have no objection in providing the original copy of the document(s), in case MUDA demands so for verification.
4. I hereby confirm that in case, any document, information & / or certificate submitted by me found to be incorrect / false / fabricated, MUDA at its discretion may disqualify / reject / terminate the bid/contract and also forfeit the EMD / All dues.
5. I shall have no objection in case MUDA verifies any or all Bank Guarantee(s) under any of the clause(s) of Contract including those issued towards EMD and Performance Guarantee from the Zonal / Branch office of issuing Bank and I/We shall have no right or claim on my submitted EMD before MUDA receives said verification.
6. That the Bank Guarantee issued against the EMD issued by (name and address of the Bank) is genuine and if found at any stage to be incorrect / false / fabricated, MUDA shall reject my bid, cancel pre-qualification and debar me from participating in any future tender for three years.
7. I hereby confirm that our firm /company is not blacklisted/ barred /banned from tendering by MUDA. If this information is found incorrect, MUDA at its discretion may disqualify / reject / terminate the bid/contract.
8. The person who has signed the tender documents is our authorized representative. The Company is responsible for all of his acts and omissions in the tender.

I,, the Proprietor / Authorised signatory of M/s.....do hereby confirm that the contents of the above Affidavit are true to my knowledge and nothing has been concealed there from..... and that no part of it is false.

DEPONENT

Verified atthis.....day of

DEPONENT

ATTESTED BY (NOTARY PUBLIC)

Annexure-V

PROFORMA OF BANK GUARANTEE (PERFORMANCE)
(Judicial Stamp paper of appropriate value as per stamp Act-of respective state)

OFFICE OF THE SECRETARY, MUDA
Police Bazaar, Shillong,
Meghalaya 793001.

Whereas the MUDA, having its Registered Office at Police Bazaar, Shillong, Meghalaya 793001 (hereinafter called "MUDA" which expression shall include its successors and assigns) having awarded a work order/contract / supply order No. dated (hereinafter called the contract) to M/s.

.....
..... (hereinafter called the contractor / supplier) at a total price of Rs subject to the terms and conditions contained in the contract.

WHEREAS, the terms and conditions of the contract require the contractor to furnish a bank guarantee for Rs..... (Rupees.....) being% of the total value of the contract for proper execution and due fulfillment of the terms and conditions contained in the contract.

We, the Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to MUDA immediately on demand in writing and without protest/or demur all moneys payable by the contractor/supplier to MUDA in connection with the execution/supply of and performance of the works/equipment, inclusive of any loss, damages, charges, expenses and costs caused to or suffered by or which would be caused to or suffered by MUDA by reason of any breach by the contractor/supplier of any of the terms and conditions contained in the contract as specified in the notice of demand made by MUDA to the bank. Any such demand made by MUDA on the bank shall be conclusive evidence of the amount due and payable by the bank under this guarantee. However, the Bank's liability under this guarantee, shall be limited to Rs.....in the aggregate which shall be valid up to and the bank hereby agrees to the following terms and conditions: -

(i) This guarantee shall be a continuing guarantee and irrevocable for all claims of MUDA as specified above and shall be valid during the period specified for the performance of the contract.

(ii) We, the said bank further agree with MUDA that MUDA shall have the fullest liberty without our consent and without affecting in any manner our obligations and liabilities hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of contract by the contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by MUDA against the contractor/supplier under the contract and forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variations or extension being granted to the contractor or for any forbearance, act or omission on the part of MUDA or any indulgence by MUDA to the contractor or by any such matter or thing whatsoever, which under the law relating to the sureties would, but for this provision, have effect of so relieving us.

(iii) This guarantee/undertaking shall be in addition to any other guarantee or security whatsoever MUDA may now or at any time have in relation to the performance of the works/equipment and the company shall have full re-course to or enforce this security in performance to any other security or guarantee which the MUDA may have or obtained and there shall be no forbearance on the part of the company in enforcing or requiring enforcement of any other security which shall have the effect of releasing the Bank from its full liability. It shall not be necessary for MUDA to proceed against the said contractor/supplier before proceeding against the Bank.

(iv) This guarantee/ undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier/ contractor, but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to MUDA in terms thereof are paid by the Bank.

(v) The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the bank in terms hereof, shall not be otherwise effected or suspended by reasons of any dispute or disputes having been raised by the supplier/contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the supplier/contractor stopping or preventing or purporting to stop or prevent any payment by the Bank to MUDA in terms hereof.

We, the said Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of MUDA in writing upon expiry of which, we shall be relieved from all liabilities under this guarantee thereafter.

Signed this day of at.....

For and on behalf of Bank

WITNESS.

1. _____

2. _____

Annexure-VI

AGREEMENT FORM

This agreement made this day of (Month) (Year), between the MEGHALAYA URBAN DEVELOPMENT AUTHORITY (MUDA), having its Registered Office at Police Bazaar, Shillong, Meghalaya 793001 (hereinafter referred to as the “MUDA” which expression shall include its administrators, successors, executors and assigns) of the one part and **M/s (NAME OF CONTRACTOR)** (hereinafter referred to as the ‘Contractor’ which expression shall unless the context requires otherwise include its administrators, successors, executors and permitted assigns) of the other part.

WHEREAS, MUDA, has desirous of construction of **(NAME OF WORK)** (hereinafter referred to as the “PROJECT”) on behalf of the **(NAME OF OWNER/MINISTRY)** (hereinafter referred to as “OWNER”), had invited tenders as per Tender documents vide NIT No. _

AND WHEREAS **(NAME OF CONTRACTOR)** had participated in the above referred tender vide their tender dated _____ and MUDA has accepted their aforesaid tender and award the contract for **(NAME OF PROJECT)** on the terms and conditions contained in its Letter of Intent No. _____ and the documents referred to therein, which have been unequivocally accepted by **(NAME OF CONTRACTOR)** vide their acceptance letter dated _____ resulting into a contract.

NOW THEREFORE THIS DEED WITNESSETH AS UNDER:

ARTICLE 1.0 – AWARD OF CONTRACT

SCOPE OF WORK

MUDA has awarded the contract to **(NAME OF CONTRACTOR)** for the work of **(NAME OF WORK)** on the terms and conditions in its letter of intent No. ___ dated ___ and the documents referred to therein. The award has taken effect from **(DATE)** i.e. the date of issue of aforesaid letter of intent. The terms and expressions used in this agreement shall have the same meanings as are assigned to them in the “Contract Documents” referred to in the succeeding Article.

ARTICLE 2.0 – CONTRACT DOCUMENTS

The contract shall be performed strictly as per the terms and conditions stipulated herein and in the following documents attached herewith (hereinafter referred to as “Contract Documents”).

- a) MUDA Notice Inviting Tender vide No. date..... and MUDA’s.... tender documents consisting of:
- i) General Conditions of Contract (GCC) along with amendments/errata to GCC (if any) issued (Volume-I).
 - ii) Special Conditions of Contract including Appendices & Annexures, Volume-II.
 - iii) Bill of Quantities along with amendments/corrigendum of schedule items, if any (Volume-

II).

iv) _____

v) _____

b) **(NAME OF CONTRACTOR)** letter proposal dated _____ and their subsequent communication:

i) Letter of Acceptance of Tender Conditions dated _____

ii) _____

iii) _____

MUDA's detailed Letter of Intent No..... dated..... including Bill of Quantities. Agreed time schedule, Contractor's Organisation Chart and list of Plant and Equipments submitted by Contractor.

All the aforesaid contract documents referred to in Para 2.1 and 2.2 above shall form an integral part of this Agreement, in so far as the same or any part thereof column, to the tender documents and what has been specifically agreed to by MUDA in its Letter of Intent. Any matter inconsistent therewith, contrary or repugnant thereto or deviations taken by the Contractor in its "TENDER" but not agreed to specifically by MUDA in its Letter of Intent, shall be deemed to have been withdrawn by the Contractor without any cost implication to MUDA. For the sake of brevity, this Agreement along with its aforesaid contract documents and Letter of Intent shall be referred to as the "Contract".

ARTICLE 3.0 – CONDITIONS & CONVENANTS

The scope of Contract, Consideration, terms of payments, advance, security deposits, taxes wherever applicable, insurance, agreed time schedule, compensation for delay and all other terms and conditions contained in MUDA's Letter of Intent No. dated are to be read in conjunction with other aforesaid contract documents. The contract shall be duly performed by the contractor strictly and faithfully in accordance with the terms of this contract.

The scope of work shall also include all such items which are not specifically mentioned in the Contract Documents but which are reasonably implied for the satisfactory completion of the entire scope of work envisaged under this contract unless otherwise specifically excluded from the scope of work in the Letter of Intent.

Contractor shall adhere to all requirements stipulated in the Contract documents.

Time is the essence of the Contract and it shall be strictly adhered to. The progress of work shall conform to agreed works schedule/contract documents and Letter of Intent.

This agreement constitutes full and complete understanding between the parties and terms of the

presents. It shall supersede all prior correspondence to the extent of inconsistency or repugnancy to the terms and conditions contained in Agreement. Any modification of the Agreement shall be effected only by a written instrument signed by the authorized representative of both the parties.

The total contract price for the entire scope of this contract as detailed in Letter of Intent is Rs. _____(Rupees_____only), which shall be governed by the stipulations of the contract documents.

ARTICLE 4.0 – NO WAIVER OF RIGHTS

4.1 Neither the inspection by MUDA or the Engineer-in-Charge or Owner or any of their officials, employees or agents nor order by MUDA or the Engineer-in-Charge for payment of money or any payment for or acceptance of, the whole or any part of the work by MUDA or the Engineer-in-Charge nor any extension of time nor any possession taken by the Engineer-in-Charge shall operate as waiver of any provisions of the contract, or of any power herein reserved to MUDA, or any right to damage herein provided, nor shall any waiver of any breach in the contract be held to be a waiver or any other or subsequent breach.

ARTICLE 5.0 – GOVERNING LAW AND JURISDICTION

The Laws applicable to this contract shall be the laws in force in India and jurisdiction of Meghalaya Court (s) only.

Notice of Default

Notice of default given by either party to the other party under the Agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto, if delivered against acknowledgment due or by FAX or by registered mail duly addressed to the signatories at the address mentioned herein above.

IN WITNESS WHEREOF, the parties through their duly authorized representatives have executed these presents (execution whereof has been approved by the Competent Authorities of both the parties) on the day, month and year first above mentioned at Shillong, Meghalaya.

For and on behalf of:

For and on behalf of:

(NAME OF CONTRACTOR)

MUDA

WITNESS:

WITNESS:

1.

1.

Tender For:.....

FINANCIAL DETAILS
(Details to be uploaded online)

MANDATORY INFORMATION DOCUMENTS:

	Profit and loss/Annual Turn Over/Net Worth/Bank Certificate/Working Capital	1 st FY ` (In Lacs)	2 nd FY ` (In Lacs)	3 rd FY ` (In Lacs)
		a	b	c
i.)	Profit/Loss			
ii.)	Gross Annual Turnover of Previous 3 financial years ending as on 31 st March of last FY			
iii.)	Average Annual Turnover for previous 3 financial years (` . In Lacs)= (a+b+c)/3			
iv.)	Net Worth (paid up capital+reserves) as on 31 st March of last FY			
v.)	Working Capital as on 31 st March of Last FY			
v.)	Bank Solvency amount as Mentioned in the Overdraft/Credit Lines Certificate			
vi.)	Working Bid Capacity= [AxNx2]-B			

1. Summarised page of Audited Profit & Loss Account of previous five Financial Years duly certified by the chartered accountants, is to be submitted.
2. Summarised page of Audited balance Sheet of last Financial Year (ending 31st March of preceding FY) duly certified by the chartered account, is to be submitted.
3. Hard copy of Working Bid Capacity details/ calculations is to be submitted by the bidder.

Note: This Form-C1 is to be submitted in original.

Signature of Chartered Accountant with Seal

Seal and Signature of bidder

FORM-B

Dispatch number of bank/ Date

SOLVENCY CERTIFICATE ON LETTER HEAD OF BANK

This is to state that to the best of our knowledge and information that M/s.....
having/registered office address.....
.....is customer of bank and has been
maintaining his accounts with our branch since..... . As per records available with the bank,
M/s..... can be treated as solvent up to a limit of
Rs.....(Rupees in words).

It is clarified that the above information is furnished and this certificate is being issued at the specific request of the customer.

Name, designation, Signature with seal

Notes:-

1. The certificate should have been issued within 6 months from original last date of the submission of the tender.

Tender for:

MANDATORY INFORMATION DOCUMENTS:

DETAILS OF WORK EXPERIENCE CERTIFICATES

(Details to be filled online also)

S. No	Name of work and its location	Name of Client	Date and No. of Completion Certificate	Date of Start	Date of Completion	Cost of Work on completion	Value of TDS in case of Private Work	Reference and Page No. of Documentary Proof of the detail missing in completion certificate
1.								
2.								
3.								

1. Certified that the Completion Certificates of above works are enclosed with the Tender Documents.
2. Details mentioned in the above Form are as per Completion Certificates and have not been presumed.
3. If any detail is not mentioned in the Work Completion Certificate, documentary proof of the details like drawings, LOA, BOQ, completion certificate/occupation certificate, copy of final bill, etc. is to be submitted and uploaded on Tender Website along with the Completion Certificate.

Signature of Bidder with Seal

FORM-C1

Tender for:

TDS DETAILS FOR PRIVATE SECTOR PROJECTS

(Details to be filled online also)

S. No.	Name of Work	Name of Clients	Project Cost in Crores	No. And Date of Completion Certificate	Cost of the work on completion in Crores	Payments Received as per TDS In Crores	TDS Corresponding to the Payments	Year wise TDS as per Form- 26AS/Form 16A relating to the work
1.								
2.								
3.								

Note: Value of Work done will be considered commensurate with value of TDS Certificates.

In case of multiple contracts undertaken from a Client, details of TDS/Form- 26AS for each work mentioned above need to be segregated and given separately.

This form need to be supported with Form-26AS taken in HTML format or Form-16A.

Signature of Bidder with Seal

Signature of Chartered Accountant
with Stamp and Membership Number

FORM-D

Tender for:

DETAILS OF SIMILAR NATURE OF WORKS
UNDER EXECUTION/ONGOING WORKS

(Details to be filled online also)

Sl. No.	Name of work/ project and location	Owner or sponsoring organization	Cost of work in crores of rupees	Date of commencement as per contract	Stipulated date of completion	Upto date percentage progress of works	Slow progress if any and reasons thereof	Name and address / telephone number of officer to whom reference may be made	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Bidder with Seal

FORM- E

Name of the Client with Address, email & phone no.

Dispatch No.....

Date:

WORK EXPERIENCE CERTIFICATE

Name of Contractor _____

1	Name of work / project & Location				
2	Name and Address of the Clients				
3	Agreement Amount				
4	Cost of work on completion				
5	Date of start				
6	Stipulated date of completion				
7	Actual date of completion				
8	Amount of compensation levied for delayed completion, if any				
9	Type of Work: Residential/ Non Residential Building				
10	No. of Basements in any Building of this work				
11	Maximum Height of any Building of this work				
12	Maximum No. of storeys of any Building of this work				
13	Performance report	Outstanding	Very Good	Good	Poor
(a)	Quality of work				
(b)	Resourcefulness				
(c)	Financial soundness				
(d)	Technical proficiency				
(e)	General behaviour				

Date Name & Designation Signature
with Seal of issuing Authority

Tender for:

STRUCTURE & ORGANIZATION OF COMPANY/FIRM
(Details to be filled online also)

1.	Name of Applicant/Company	
2.	Address for correspondence	
3.	Official e-mail for communication	
4.	Contact Person: Telephone Nos. Fax Nos. Mobile	
5.	Type of Organization: a) An individual b) A proprietary firm c) A firm in partnership (Attach copy of Partnership) d) A Limited Company (Attach copy of Article of Association) e) Any other (mention the type)	
6.	Place and Year of Incorporation	
7.	Name of Directors/Partners in the organization	
8.	Name(s) and Designation of the persons , who is authorized to deal with MUDA (Attach copy of power of Attorney)	
9.	Bank Details : Name of Bank, Address of Bank Branch, Account No., RTGS, IFS Code	

Signature of Bidder with Seal

FORM- G

Tender for:

**DETAILS OF TECHNICAL & ADMINISTRATIVE PERSONNEL TO BE
EMPLOYED FOR THE WORK
(Details to be filled online also)**

Sl. No.	Designation	Total Number	Number available for this work	Name	Qualifications	Professional Experience and details of work carried out	Remarks
1	2	3	4	5	6	7	8

Signature of Bidder with Seal

FORM- H

Tender for:

**DETAILS OF CONSTRUCTION PLANT AND EQUIPMENT LIKELY
TO BE USED IN CARRYING OUT THE WORK
(Details to be filled online also)**

S.No.	Name of equipment	Nos.	Capa- city or type	Age	Condition	Ownership status			Current location	Remarks
						Prese- ntly owned	Leased	To be purch- ased		
1	2	3	4	5	6	7	8	9	10	11
	Earth moving equipment 1. Excavators (various sizes) Equipment for hoisting & lifting 1. Tower 2. Builder's hoist Equipment for concrete work 1. Concrete batching plant 2. Concrete pump 3. Concrete transit mixer 4. Concrete mixer (diesel) 5. Concrete mixer (electrical) 6. Needle vibrator (electrical) 7. Needle vibrator (petrol) 8. Table vibrator (elect./ petrol) Equipment for building work 1. Block making machine 2. Bar bending machine 3. Bar cutting machine 4. Wood thickness planer 5. Drilling machine 6. Circular saw machine 7. Welding generators 8. Welding transformer 9. Cube testing machines 10. M.S. Pipes 11. Steel shuttering 12. Steel scaffolding 13. Grinding/polishing machines Equipment for transportation 1. Tippers 2. Trucks Pneumatic equipment 1. Air compressor (diesel) De-watering equipment 1. Pump (diesel) 2. Pump (electric) Power equipment 1. Diesel generators (Any other plant/equipment)									

Signature of Bidder with Seal

FORM- I

Tender for:

GST REGISTRATION
(Details to be filled online also)

GST Registration Details of Contractor/Vender	
Name	
Address (As per registration with GST)	
City	
Postal Code	
Region/State (Complete State Name)	
Permanent Account Number	
GSTIN ID/Provisional ID No.: (copy of Acknowledgement required)	
Type of Business (As per registration with GST)	
Service Accounting Code/HSN Code:	
Contact Person	
Phone Number and Mobile Number	
Email ID	
Compliance Rating (if updated by GSTN)	

Section-3

CLAUSES OF CONTRACT

CONDITIONS OF CONTRACT

Definitions

1. The **Contract** means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of the MUDA and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
2. In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-
 - (i) The expression **works** or **work** shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
 - (ii) The **Site** shall mean the land, places on, into or where work is to be executed under the contract or any adjacent land, path or street or where work is to be executed under the contract or any adjacent land, path or street which may be temporarily allotted or used for the purpose of carrying out the contract.
 - (iii) The **Contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
 - (iv) The **MUDA** means the Secretary, Meghalaya Urban Development Authority and his staffs.
 - (v) **Owner** shall mean the Director or such other Headperson of the client .
 - (vi) The **Engineer-in-charge** means the Engineer Officer who shall supervise and be in charge of the work and who shall sign the contract on behalf of the MUDA as mentioned in Schedule 'F' hereunder .
 - (vii) The term **Managing Director** includes those officers who are specifically authorised by the Managing Director, MUDA.
 - (viii) **Accepting Authority** shall mean the authority mentioned in Schedule 'F'.
 - (ix) **Excepted Risk** are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightning and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by Owner of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to Owner's faulty design of works.
 - (x) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage mentioned in Schedule 'F' to cover, all overheads and profits.

Provided that no extra overheads and profits shall be payable on the part(s) of work assigned to other agency(s) by the contractor as per terms of contract.

Schedule(s) referred to in these conditions shall mean the relevant schedule(s) annexed to the tender documents or the standard Schedule of Rates of the CPWD mentioned in Schedule 'F' hereunder, with the amendments thereto issued upto the date of receipt of the tender.

- (xi) **Department** means MUDA
- (xii) **District Specifications** means the specifications followed by the State Government in the area where the work is to be executed.
- (xiii) **Tendered value** means the value of the entire work as stipulated in the letter of award.
- (xiv) **Date of commencement of work:** The date of commencement of work shall be the date of start as specified in schedule 'F' or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender document.
- (xv) **GST** shall mean Goods and Service Tax - Central, State and Inter State.

Scope and Performance

- 3. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.
- 4. Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
- 5. The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender documents. None of these documents shall be used for any purpose other than that of this contract.

Works to be carried out

- 6. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labourers, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities (Schedule- A) shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

Sufficiency of Tender

- 7. The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.

**Discrepancies and
Adjustment of Errors**

8. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.

In the case of discrepancy between the schedule of Quantities, the Specifications and/or the Drawings, the following order of preference shall be observed:-

- (i) Description of Schedule of Quantities.
- (ii) Particular Specification and Special Condition, if any.
- (iii) Drawings.
- (iv) CPWD Specifications.
- (v) Indian Standard Specifications of B.I.S.

If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.

Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.

Signing of Contract

9. The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of:-

- (i) the notice inviting tender, all the documents including drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
- (ii) Standard MUDA Form as mentioned in Schedule 'F' consisting of:
 - (a) Various standard clauses with corrections up to the date stipulated in Schedule 'F' along with annexures thereto.
 - (b) Safety Code.
 - (c) Model Rules for the protection of health, sanitary arrangements for workers employed by MUDA or its contractors.
 - (d) Contractor's Labour Regulations.
 - (e) List of Acts and omissions for which fines can be imposed.
- (iii) No payment for the work done will be made unless contract is signed by the contractor.

GENERAL CONDITION OF CONTRACT

CLAUSES OF CONTRACT

Performance Guarantee

Clause 1

- (i) The contractor shall submit an irrevocable Performance Guarantee of 5% (Five percent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (notwithstanding and/or without prejudice to any other provisions in the contract) within period specified in Schedule 'F' from the date of issue of letter of acceptance. This period can be further extended by the Engineer-in-Charge up to a maximum period as specified in schedule 'F' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of Cash (in case guarantee amount is less than Rs. 10,000/-) or Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay Order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the MUDA as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the MUDA to make good the deficit.
- (ii) The Performance Guarantee shall be initially valid up to the stipulated date of completion plus minimum 60 days beyond that, if the same is submitted by the agency on scheduled format I as per GCC. If the same is submitted on the format II as per GCC, then the Performance Guarantee shall be valid up to the stipulated date of completion plus minimum 6 months beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.
- (iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the MUDA is entitled under the contract (notwithstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
 - (a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.
 - (b) Failure by the contractor to pay MUDA any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.

(iv) In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the MUDA.

(v) On substantial Completion of any work which has been completed to such an extent that the intended purpose of the work is met and ready to use, then a provisional Completion certificate shall be recorded by the Engineer-in-Charge. The provisional certificate shall have appended with a list of outstanding balance item of work that need to be completed in accordance with the provisions of the contract.

This provisional completion certificate shall be recorded by the concerned Engineer-in-charge. After recording of the provisional Completion Certificate for the work by the competent authority, the 80 % of performance guarantee shall be returned to the contractor, without any interest.

However in case of contracts involving Maintenance of building and services /any other work after construction of same building and services/ other work, then 40% of performance guarantee shall be returned to the contractor, without any interest after recording the provisional Completion certificate.

Clause 1A

Recovery of Security Deposit

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit MUDA at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 2.5% of the gross amount of each running and final bill till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions will be made and held by MUDA by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in cash or in the form of Government Securities or fixed deposit receipts. In case a fixed deposit receipt of any Bank is furnished by the contractor to the MUDA as part of the security deposit and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the MUDA to make good the deficit.

All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by MUDA on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by Scheduled Banks or Government Securities (if deposited for more than 12 months) endorsed in favour of the Engineer-in-Charge, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit shall be collected from the running bills and the final bill of the contractor at the rates mentioned above.

The security deposit as deducted above can be released against bank guarantee issued by a scheduled bank, on its accumulations to a minimum of Rs. 5 lac subject to the condition that amount of such bank guarantee, except last one, shall not be less than Rs. 5 lac. Provided further that the validity of bank guarantee including the one given against the earnest money shall be in conformity with provisions contained in clause 17 which shall be extended from time to time depending upon extension of contract granted under provisions of clause 2 and clause 5.

In case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guaranteeshall be retained as Security Deposit. The same shall be returned year wise proportionately.

Note-1: Government papers tendered as security will be taken at 5% (five per cent) below its market price or at its face value, whichever is less. The market price of Government paper would be ascertained by the Engineer in Charge at the time of collection of interest and the amount of interest to the extent of deficiency in value of the Government paper will be withheld if necessary.

Note-2: Government Securities will include all forms of Securities mentioned in Rule No. 274 of the G.F. Rules except fidelity bond. This will be subject to the observance of the condition mentioned under the rule against each form of security.

Note-3: Note 1 & 2 above shall be applicable for both clause 1 and 1A

Clause 2

Compensation for Delay

If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or justified extended date of completion as per clause 5 (excluding any extension under Clause 5.5) as well as any extension granted under clauses 12 and 15, he shall, without prejudice to any other right or remedy available under the law to the MUDA on account of such breach, pay as compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'F' may decide on the amount of accepted Tendered Value of the work for every completed day/month (as determined) that the progress remains below that specified in Clause 5 or that the work remains incomplete.

- | | |
|------------------------------------|--|
| (i) Compensation for delay of work | With maximum rate @ 1% (one percent) per month of delay to be computed on per day basis based on quantum of damage suffered due to stated delay on the part of Contractor. |
|------------------------------------|--|

Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10 % (ten percent) of the accepted Tendered Value of work or of the accepted Tendered Value of the Sectional part of work as mentioned in Schedule 'F' for which a separate period of completion is originally given.

In case no compensation has been decided by the authority in Schedule 'F' during the progress of work, this shall be no waiver of right to levy compensation by the said authority if the work remains incomplete on final justified extended date of completion. If the Engineer in Charge decides to give further extension of time allowing performance of work beyond the justified extended date, the contractor shall be liable to pay compensation for such extended period. If any variation in amount of contract takes place during such extended period beyond justified extended date and the contractor becomes entitled to additional time under clause 12, the net period for such variation shall be accounted for while deciding the period for levy of compensation. However, during such further extended period beyond the justified extended period, if any delay occurs by events under sub clause 5.2, the contractor shall be liable to pay compensation for such delay.

Provided that compensation during the progress of work before the justified extended date of completion for delay under this clause shall be for non-achievement of sectional completion or part handing over of work on stipulated/justified extended date for such part work or if delay affects any other works/services. This is without prejudice to right of action by the Engineer in Charge under clause 3 for delay in performance and claim of compensation under that clause.

In case action under clause 2 has not been finalized and the work has been determined under clause 3, the right of action under this clause shall remain post determination of contract but levy of compensation shall be for days the progress is behind the schedule on date of determination, as assessed by the authority in Schedule F, after due consideration of justified extension. The compensation for delay, if not decided before the determination of contract, shall be decided after of determination of contract.

The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the MUDA. In case, the contractor does not achieve a particular milestone mentioned in schedule F, or the re-scheduled milestone(s) in terms of Clause 5.4, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied as above. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

Clause 3

When Contract can be Determined

Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, not following safety norms, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

- (i) If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un-workman like manners shall omit to comply with the requirement of such notice for a period of seven days thereafter.
- (ii) If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.
- (iii) If the contractor fails to complete the work or section of work with individual date of completion on or before the stipulated or justified extended date, on or before such date of completion; and the Engineer in Charge without any prejudice to any other

right or remedy under any other provision in the contract has given further reasonable time in a notice given in writing in that behalf as either mutually agreed or in absence of such mutual agreement by his own assessment making such time essence of contract and in the opinion of Engineer-in-Charge the contractor will be unable to complete the same or does not complete the same within the period specified.

- (iv) If the contractor persistently neglects to carry out his obligations under the contract and/or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.
- (v) If the contractor shall offer or give or agree to give to any person in MUDA's service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for MUDA.
- (vi) If the contractor shall enter into a contract with MUDA in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.
- (vii) If the contractor had secured the contract with MUDA as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.
- (viii) If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.
- (ix) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
- (x) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.
- (xi) If the contractor assigns (excluding part(s) of work assigned to other agency(s) by the contractor as per terms of contract), transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer -in-Charge. When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in- Charge shall have powers:
 - (a) To determine the contract as aforesaid so far as performance of work by the Contractor is concerned (of which determination notice in writing to the

contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Earnest Money Deposit, Security Deposit already recovered, Security deposit payable and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the MUDA

- (b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work. In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

Clause 3A

In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract by giving notice to the other party stating the reasons. In such eventuality, the Performance Guarantee of the contractor shall be refunded within 30 days

Neither party shall claim any compensation for such eventuality. This clause is not applicable for any breach of the contract by either party.

Clause 4

In any case in which any of the powers conferred upon the Engineer-in-Charge by Clause-3 thereof, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at

Contractor liable to pay compensation even if action not taken under Clause 3

the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

Clause 5

Time and Extension for Delay

The time allowed for execution of the Works as specified in the Schedule 'F' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the work shall commence from such time period as mentioned in schedule 'F' or from the date of handing over of the site, notified by the Engineer-in-Charge, whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, the performance guarantee shall be forfeited by the Engineer in Charge and shall be absolutely at the disposal of the MUDA without prejudice to any other right or remedy available in law.

As soon as possible but within 7 (seven) working days of award of work and in consideration of

- (a) Schedule of handing over of site as specified in the Schedule 'F'
- (b) Schedule of issue of designs as specified in the Schedule 'F', the Contractor shall submit a Time and Progress Chart for each mile stone. The Engineer-in-Charge may within 7 (seven) working days thereafter, if required modify, and communicate the program approved to the contractor failing which the program submitted by the contractor shall be deemed to be approved by the Engineer-in-Charge. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time imposed in the Contract documents.
 - (i) In case of non submission of construction programme by the contractor, the program approved by the Engineer-in-Charge shall be deemed to be final.
 - (ii) The approval by the Engineer-in-Charge of such programme shall not relieve the contractor of any of the obligations under the contract.
 - (iii) The contractor shall submit the Time and Progress Chart and progress report using the mutually agreed software or in other format decided by Engineer-in-Charge for the work done during previous month to the Engineer-in-charge on or before 5th day of each month failing which a recovery as per Schedule F to be decided by the NIT approving authority shall be made on per week or part basis in case of delay in submission of the monthly progress report

If the work(s) be delayed by:-

- (i) force majeure, or
- (ii) abnormally bad weather, or
- (iii) serious loss or damage by fire, or
- (iv) civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or

- (v) delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
- (vi) any other cause like above which, in the reasoned opinion of the Engineer-in-Charge is beyond the Contractor's control.

then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavours to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

The contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in sub clause 5.2.

In case the work is hindered, by the Department or for any reason / event, for which the Department is responsible, the authority as indicated in Schedule 'F' shall, if justified, give a fair and reasonable extension of time and reschedule the milestones for completion of work. Such extension of time or rescheduling of milestone/s shall be without prejudice to any other right or remedy of the parties in contract or in law; provided further that for concurrent delays under this sub clause and sub clause 5.2 to the extent the delay is covered under sub clause 5.2 the contractor shall be entitled to only extension of time and no damages.

Request for rescheduling of Mile stones or extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed forms i.e. Form of application by the contractor for seeking rescheduling of milestones or Form of application by the contractor for seeking extension of time (Appendix -XVI) respectively to the authority as indicated in Schedule 'F'. The Contractor shall indicate in such a request the period by which rescheduling of milestone/s or extension of time is desired.

With every request for rescheduling of milestones, or if at any time the actual progress of work falls behind the approved programme by more than 10% of the stipulated period of completion of contract, the contractor shall produce a revised programme without causing any delay in execution of the work. A recovery as specified in Schedule 'F' shall be made on per day basis in case of delay in submission of the revised programme.

5.4.1 In any such case the authority as indicated in Schedule 'F' may give a fair and reasonable extension of time for completion of work or reschedule the milestones. E-in-C shall finalize/ reschedule a particular mile stone before taking an action against subsequent mile stone. Such extension or rescheduling of the milestones shall be communicated to the Contractor by the authority as indicated in Schedule 'F' in writing, within 21 days of the date of receipt of such request from the Contractor in prescribed form. In event of non application by the contractor for extension of time E-in-C after affording opportunity to the contractor, may give, supported with a programme (as specified under 5.4 above), a fair and reasonable extension within a reasonable period of occurrence of the event.

In case the work is delayed by any reasons, in the opinion of the Engineer-in-Charge, by the contractor for reasons beyond the events mentioned in clause 5.2 or clause 5.3 or clause 5.4 and beyond the justified extended date; without prejudice to right to take action under Clause 3, the Engineer-in-Charge may grant extension of time required for completion of work without rescheduling of milestones. The contractor shall be liable for levy of compensation for delay for such extension of time.

**Computerized
Measurement Book**

Clause 6

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract.

All measurements as per the stage payments mentioned in Schedule F having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book having pages of A-4 size as per the format of the department so that a complete record is obtained of all the stages of works performed under the contract.

All such measurements recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative. After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in-Charge for the dated signatures by the Engineer-in-Charge and the contractor or their representatives in token of their acceptance.

Whenever bill is due for payment, the contractor would initially submit draft computerized measurement sheets and these measurements would be got checked/test checked from the Engineer-in-Charge and/or his authorized representative. The contractor will, thereafter, incorporate such changes as may be done during these checks/test checks in his draft computerized measurements, and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer-in-Charge and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks.

The final, fair, computerized measurement book given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department. Thereafter, the MB shall be taken in the MUDA Office records, and allotted a number as per the Register of Computerized MBs. This should be done before the corresponding bill is submitted to the MUDA for payment. The contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.

The contractor shall also submit to the department separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered along with two spare copies of the "bill. Thereafter, this bill will be processed by the MUDA Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements by the Engineer-in-Charge or his representative.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the contract notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom.

The contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that the same may be checked and/or test checked and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of checking and/or test checking measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of checking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded by contractor and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that checking and/or test checking the measurements of any item of work in the measurement book and/or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any overmeasurement or defects noticed till completion of the defects liability period .

Clause 7

Payment on intermediate certificate to be regarded as Advances

The running account bills shall be submitted by the contractor for the work executed on the basis of such recorded measurements as per Clause 6 on the format of the Department in triplicate on or before the date of every month fixed for the same by the Engineer-in-Charge. The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment/ adjustment of advances for material collected, if any, since the last such payment is less than the amount specified in Schedule 'F', in which case the interim bill shall be prepared on the appointed date of the month after therequisite progress is achieved. Engineer-in-Charge shall arrange to have the bill verified. In the event of the failure of the contractor to submit the bills, no claims whatsoever due to delays on payment including that of interest shall be payable to the contractor. Payment on account of amount admissible shall be made by the Engineer-in-Charge certifying the sum to which the contractor is considered entitled by way of interim payment at such rates as decided by the Engineer-in-Charge. The amount admissible shall be paid by 10th working day after the day of presentation of the bill by the Contractor to the Engineer-in-Charge or his Authorized Engineer together dismantled materials, if any. In the case of works outside the headquarters of the Engineer-in-Charge, the period of ten working days will be extended to fifteen working days. In case of delay in payment of intermediate bills after 45 days of submission of bill by the contractor provided the bill submitted by the contractor found to be in order, a simple interest @ 5% (five percent) per annum shall be paid to the contractor from the date of expiry of prescribed time limit which will be compounded on yearly basis

All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming

part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

Clause 7A

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

Clause 8

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution; thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish etc., and dispose off the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

Clause 8A

The contractor shall submit completion plans for Internal and External Civil, Electrical and Mechanical Services within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum of 0.1 % (zero point one percent) of Tendered Value or limit prescribed in Schedule F whichever is more as may be fixed by the authority as mentioned in Schedule F and in this respect the decision of the that authority shall be final and binding on the contractor.

Completion Certificate and Completion Plans

Completion Plans to be Submitted by the Contractor

Clause 9

Payment of Final Bill

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-Charge, will, as far as possible be made within the period of three months the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge or his authorized Asstt. Engineer.

If the final bill is submitted by the contractor within the period specified above and delay in payment of final bills is made by the deptt. after prescribed time limit, a simple interest @5 % (five percent) per annum shall be paid to the contractor from the date of expiry of prescribed time limit which will be compounded on yearly basis, provided the final bill submitted by the contractor is found to be in order.

Clause 9A

Payment of Contractor's Bills to Banks

Payments due to the contractor may, if so desired by him, be made to his bank, registered financial, co-operative or thrift societies or recognized financial institutions instead of direct to him provided that the contractor furnishes to the Engineer-in-Charge (1) an authorization in the form of a legally valid document such as a power of attorney conferring authority on the bank; registered financial, co-operative or thrift societies or recognized financial institutions to receive payments and (2) his own acceptance of the correctness of the amount made out as being due to him by MUDA or his signature on the bill or other claim preferred against MUDA before settlement by the Engineer-in-Charge of the account or claim by payment to the bank, registered financial, co-operative or thrift societies or recognized financial institutions. While the receipt given by such banks; registered financial, co-operative or thrift societies or recognized financial institutions shall constitute a full and sufficient discharge for the payment, the contractor shall whenever possible present his bills duly receipted and discharged through his bank, registered financial, co-operative or thrift societies or recognized financial institutions.

Nothing herein contained shall operate to create in favour of the bank; registered financial, co-operative or thrift societies or recognized financial institutions any rights or equities vis-a-vis the MUDA.

Clause 10A

Materials to be provided by the Contractor

The contractor shall, at his own expense, provide all materials, required for the works other than those which are stipulated to be supplied by the MUDA.

The contractor shall, at his own expense and without delay; supply to the Engineer-in-Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in

accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications.

The Engineer

-in-Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor.

The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped at least with the testing equipment as specified in schedule F.

Clause 10B

Secured Advance on Materials

- (i) The contractor, on signing an indenture in the form to be specified XV by the Engineer-in-Charge, shall be entitled to be paid during the progress of the execution of the work up to 75% of the assessed value of any materials or an amount not exceeding 75% of the material element cost in the tendered rate of the finished item of the work, whichever is lower, which are in the opinion of the Engineer-in-Charge non-perishable, non-fragile and non-combustible and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and/or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has

been made under this sub-clause are incorporated in the work, the amount of such advance shall be recovered/deducted from the next payment made under any of the clause or clauses of this contract.

Such secured advance shall also be payable on other items of perishable nature, fragile and combustible with the approval of the Engineer-in-Charge provided the contractor provides a comprehensive insurance cover for the full cost of such materials. The decision of the Engineer-in-Charge shall be final and binding on the contractor in this matter. No secured advance, shall however, be paid on high-risk materials such as ordinary glass, sand, petrol, diesel etc

**Mobilization
advance**

- (ii) Mobilization advance not exceeding 10% of the tendered value may be given, if requested by the contractor in writing within one month of the order to commence the work. Such advance shall be in two or more installments to be determined by the Engineer-in- Charge at his sole discretion. The first installment of such advance shall be released by the Engineer-in-charge to the contractor on a request made by the contractor to the Engineer-in-Charge in this behalf. The second and subsequent installments shall be released by the Engineer-in- Charge only after the contractor furnishes a proof of the satisfactory utilization of the earlier installment to the entire satisfaction of the Engineer-in-Charge.

Before any installment of advance is released, the contractor shall execute a Bank Guarantee Bonds not more than 6 in number from Scheduled Bank for the amount equal to 110% of the amount of advance and valid for the period till recovery of advance. This (Bank Guarantee from Scheduled Bank for the amount equal to 110% of the balance amount of advance) shall be kept renewed from time to time to cover the balance amount and likely period of complete recovery.

**Plant Machinery &
Shuttering Material
Advance**

- (iii) An advance for plant, machinery & shuttering material required for the work and brought to site by the Contractor may be given if requested by the contractor in writing within one month of bringing such plant and machinery to site. Such advance shall be given on such plant and machinery which in the opinion of the Engineer-in-charge will add to the expeditious execution of work and improve the quality of work. The amount of advance shall be restricted to 5% percent of the tender value. In the case of new plant and equipment to be purchased for the work, the advance shall be restricted to 90% of the price of such new plant and equipment paid by the contractor for which the contractor shall produce evidence satisfactory to the Engineer-in-Charge. In the case of second hand and used plants and equipment, the amount of such advance shall be limited to 50% of the depreciated value of plant and equipment as may be decided by the Engineer in- Charge. The contractor shall, if so required by the Engineer-in-Charge, submit the statement of value of such old plant and equipment duly approved by a Registered Valuer recognized by the Central Board of Direct Taxes under the Income- Tax Act, 1961. No such advance shall be paid on any plant and equipment of perishable nature and on any plant and equipment of a value less than Rs. 50,000/- Seventy five percent of such amount of advance shall be paid after the plant & equipment is brought to site and balance twenty five percent on successfully commissioning the same.

Leasing of equipment shall be considered at par with purchase of equipment and shall be covered by tripartite agreement with the following:

1. Leasing company which gives certificate of agreeing to lease equipment to the contractor .
2. Engineer in Charge, and
3. The contractor.

This advance shall further be subject to the condition that such plant and equipment (a) are considered by the Engineer-in-Charge to be necessary for the works; (b) and are in working order and are maintained in working order; (c) hypothecated to the Owner as specified by the Engineer-in-Charge before the payment of advance is released. The contractor shall not be permitted to remove from the site such hypothecated plant and equipment without the prior written permission of the Engineer-in- Charge. The contractor shall be responsible for maintaining such plant and equipment in good working order during the entire period of hypothecation failing which such advance shall be entirely recovered in lump sum. For this purpose, steel scaffolding and form work shall be treated as plant and equipment.

The contractor shall insure the Plant and Machinery for which mobilization advance is sought and given, for a sum sufficient to provide for their replacement at site. Any amounts not recovered from the insurer will be borne by the contractor.

Interest & Recovery

- (iv) The mobilization advance and plant and machinery advance in (ii) & (iii) above bear simple interest at the rate of 10 percent per annum and shall be calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractor's bills commencing after first ten percent of the gross value of the work is executed and paid, on pro-rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time eighty percent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment.
- (v) If the circumstances are considered reasonable by the Engineer-in-Charge, the period mentioned in (ii) and (iii) for request by the contractor in writing for grant of mobilization advance and plant and equipment advance may be extended at the discretion of the Engineer-in-Charge.

Clause 10C

Payment on Account of Increase in Prices/Wages due to Statutory Order(s)

If after submission of tender, if the price of any material incorporated in the work (excluding the material covered under clause 10 CA and/ or wages of labour increases as a direct result of the coming into force of any fresh, law or statutory rule or order (but not due to any variation of rate in GST applicable on such material(s) being considered under this clause) beyond the prices/wages prevailing at the time of the last stipulated date of receipt of tenders including extensions, if any, for the work during contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, then the amount of the contract shall accordingly be varied.

If after submission of the tender, the price of any material incorporated in the works (excluding the materials covered under Clause 10CA and/or wages of labour as prevailing at the time of last stipulated date of receipt of tender including extensions, if any, is decreased as a direct result of the coming into force of any fresh law or statutory rule or order (but not due to any variation of rate in GST applicable on such material(s) being considered under this clause), MUDA shall in respect of materials incorporated in the works (excluding the materials covered under Clause 10CA and/or labour engaged on the execution of the work after the date of coming into force of such law statutory rule or order be entitled to deduct from the dues of the contractor, such amount as shall be equivalent to the difference between the prices of the materials and/or wages as prevailed at the time of the last stipulated date for receipt of tenders including extensions if any for the work and the prices of materials and/or wages of labour on the coming into force of such law, statutory rule or order. This will be applicable for the contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2.

Engineer-in-Charge shall call books of account and other relevant documents from the contractor to satisfy himself about reasonability of increase in prices of materials and wages.

The contractor shall, within a reasonable time of his becoming aware of any alteration in the price of any such materials and/or wages of labour, give notice thereof to the Engineer- in-Charge stating that the same is given pursuant to this condition together with all information relating thereto which he may be in position to supply.

For this purpose, the labour component of 85% of the value of the work executed during period under consideration shall not exceed the percentage as specified in Schedule F, and the increase/decrease in labour shall be considered on the minimum daily wages in rupees of any unskilled Mazdoor, fixed under any law statutory role and order. The cost of work for which escalation is applicable (W) is same as cost of work done worked out as indicated in sub-para (ii) of clause 10 CC except the amount of full assessed value of secured Advance.

Clause 10CA

Payment due to variation in prices of materials after receipt of tender

If after submission of the tender, the price of materials specified in Schedule F increases/ decreases beyond the base price(s) as indicated in Schedule F for the work, then the amount of the contract shall accordingly be varied and provided further that any such variations shall be effected for stipulated period of Contract including the justified period extended under the provisions of Clause 5 of the Contract without any action under Clause 2.

However for work done/during the justified period extended as above, it will be limited to indices prevailing at the time of updated stipulated date of completion considering the effect of extra work (extra time to be calculated on pro-rata basis only as cost of extra work x stipulated period/tendered cost). If updated stipulated date of completion as calculated on pro- rata basis does not cover full calendar month then indices will be considered or restricted to previous month.

The increase/decrease in prices of cement, steel reinforcement, structural steel and POL shall be determined by the Price indices issued by the Director General, CPWD. For other items provided in the Schedule 'F', this shall be determined by the All India Wholesale Price Indices of materials as published by Economic Advisor to Government of India, Ministry of Commerce and Industry. Base price for cement, steel reinforcement, structural steel and POL shall be as issued under the authority of Director General CPWD and base price of other materials as indicated in Schedule 'F'. In case, price index of a particular material is not issued by Ministry of Commerce and Industry, then the price index of nearest similar material as indicated in Schedule 'F' shall be followed.

The amount of the contract shall accordingly be varied for all such materials and will be worked out as per the formula given below for individual material:-

Adjustment for component of individual material

$$V = P \times Q \times \frac{CI - CI_0}{CI_0}$$

Where,

V = Variation in material cost i.e. increase or decrease in the amount of rupees to be paid or recovered

material as issued under authority of DG, CPWD and as indicated in Schedule "F". For Projects and Original Works

Q = Quantity of material brought at site for bonafide use in the works since previous bill excluding any such quantity consumed in the deviated quantity of items beyond deviation limit and extra /substituted item, paid/to be paid at rates derived on the basis of market rate under clause 12.2.

CI₀ = Price index for cement, steel reinforcement bars structural steel and POL as issued by the DG, CPWD and corresponding to the time of base price of respective material indicated in Schedule 'F'. For other items, if any, provided in Schedule 'F', All India Wholesale Price Index for the material as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce and corresponding to the time of base price of respective material indicated in Schedule 'F'.

CI = Price index for cement, steel reinforcement bars, structural steel and POL as issued under the authority of DG, CPWD for period under consideration. For other items, if any, provided in Schedule 'F', All India Wholesale Price Index for the material for period under consideration as published by Economic Advisor to Government of India, Ministry of Industry and Commerce.

Note:

- (i) In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of updated stipulated date of completion considering the effect of extra work (extra time to be calculated on pro-rata basis only as cost of extra work x stipulated period/ tendered cost) shall be considered. Provided always that provisions of the preceding Clause 10 C shall not be applicable in respect of Materials covered in this Clause. If updated stipulated date of completion as calculated on pro- rata basis does not cover full calendar month then indices will be considered or restricted to previous month.
- (ii) If during progress of work or at the time of completion of work, it is noticed that any material brought at site is in excess of requirement, then amount of escalation if paid earlier on such excess quantity of material shall be recovered on the basis of cost indices as applied at the time of payment of escalation or as prevailing at the time of effecting recovery, whichever is higher.
- (iii) Cement mentioned wherever in this clause also includes Cement component used in RMC brought at site from outside approved RMC plants, if any.
- (iv) The date wise record of ready mix concrete shall be kept in a register and the cement consumption for the same shall be calculated accordingly.
- (v) If built-up steel items are brought at site from workshop, then the variation shall be paid for the structural steel up to the period when the built up item/finished product is brought at site.

Payment due to Increase / Decrease in Prices/ Wages (excluding materials covered under clause 10 CA) after Receipt of Tender for Works

P = Base Price of

Clause 10CC

If the prices of materials (not being materials supplied or services rendered at fixed prices by the department in accordance with clause 10 & 34 thereof) and/or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contract shall accordingly be varied, subject to the condition that such compensation for escalation in prices and wages shall be

available only for the work done during the stipulated period of the contract including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2. No such compensation shall be payable for a work which the stipulated period of completion is equal to or less than the time as specified in Schedule F. Such compensation for escalation in the prices of materials and labour, when due, shall be worked out based on the following provisions:-

- (i) The base date for working out such escalation shall be the last stipulated date of receipt of tenders including extension, if any.
- (ii) The cost of work on which escalation will be payable shall be reckoned as below :
 - (a) Gross value of work done up to this quarter : (A)
 - (b) Gross value of work done up to the last quarter : (B)
 - (c) Gross value of work done since previous quarter (A-B) (C)
 - (d) Full assessed value of Secured Advance (excluding materials Covered under Clause 10 CA) fresh paid in this quarter : (D)
 - (e) Full assessed value of Secured Advance (excluding materials Covered under Clause 10 CA) recovered in this quarter : (E)
 - (f) Full assessed value of Secured Advance for which escalation Payable in this quarter (D-E): (F)
 - (g) Advance payment made during this quarter: (G)
 - (h) Advance payment recovered during this quarter: (H)
 - (i) Advance payment for which escalation is payable in this Quarter(G-H): (I)
 - (j) Extra items/deviated quantities of items paid as per Clause 12 Based on prevailing market rates during this quarter: (J)

$$\text{Then, } M = C+F+I-J$$

$$N = 0.85 M$$

Cost of work for which escalation is applicable:

$$W = N$$

Components for materials (except cement, reinforcement bars, structural steel, POL or other materials covered under clause 10 CA) labour, etc. shall be pre-determined for every work and incorporated in the conditions of contract attached to the tender papers included in Schedule 'F'.

- (iii) The compensation for escalation for other materials (excluding cement, reinforcement bars, structural steel, POL or other materials covered under clause 10 CA) shall be worked as per the formula given below:-

Adjustment for civil component (except cement, structural steel, reinforcement bars, POL and other materials covered under clause 10CA) / electrical component of construction 'Materials'

$$\frac{V_m}{100} = W \times X_m \times \frac{M_I - M_{I_0}}{M_{I_0}}$$

V_m = Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W = Cost of Work done worked out as indicated in sub-para (ii) of Clause 10CC.

Xm = Component of 'materials' (except cement, structural steel, reinforcement bars POL and other materials covered under clause 10CA) expressed as percent of the total value of work.

MI = All India Wholesale Price Index for civil component/electrical component* of construction material as worked out on the basis of All India Wholesale Price Index for Individual Commodities/ Group Items for the period under consideration as published by Economic Advisor to Govt. of India, Ministry of Industry & Commerce and applying weightages to the Individual Commodities/Group Items. (In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of updated stipulated date of completion considering the effect of extra work (extra time to be calculated on prorata basis only as cost of extra work x stipulated period/tendered cost, shall be considered.) If updated stipulated date of completion as calculated on pro-rata basis does not cover full calendar month then indices will be considered or restricted to previous month.

Mlo = All India Wholesale Price Index for civil component/electrical component* of construction material as worked out on the basis of All India Wholesale Price Index for Individual Commodities/Group Items valid on the last stipulated date of receipt of tender including extension, if any, as published by the Economic Advisor to Govt. of India, Ministry of Industry & Commerce and applying weightages to the Individual Commodities/Group items.

*Note: relevant component only will be applicable.

- (iv) The following principles shall be followed while working out the indices mentioned in para (iii) above.
- (a) The compensation for escalation shall be worked out at quarterly intervals and shall be with respect to the cost of work done as per bills paid during the three calendar months of the said quarter. The dates of preparation of bills as finally entered in the Measurement Book by the Assistant Engineer/ date of submission of bill finally by the contractor to the department in case of computerized measurement books shall be the guiding factor to decide the bills relevant to the quarterly interval. The first such payment shall be made at the end of three months after the month (excluding the month in which tender was accepted) and thereafter at three months' interval. At the time of completion of the work, the last period for payment might become less than 3 months, depending on the actual date of completion.
 - (b) The index (MI/FI etc.) relevant to any quarter/period for which such compensation is paid shall be the arithmetical average of the indices relevant to the three calendar months. If the period up to date of completion after the quarter covered by the last such installment of payment, is less than three months, the index MI and FI shall be the average of the indices for the months falling within that period.
- (v) The compensation for escalation for labour shall be worked out as per the formula given below:-

$$VL = W \times \frac{Y}{100} \times \frac{LI - LI_0}{LI_0}$$

VL : Variation in labour cost i.e. amount of increase or decrease in rupees to be paid or recovered.

W : Value of work done, worked out as indicated in sub-para (ii) above.

Y : Component of labour expressed as a percentage of the total value of the work.

LI : Minimum wage in rupees of an unskilled adult male mazdoor, fixed under any law, statutory rule or order as applicable on the last date of the quarter previous to the one under consideration. (In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the minimum wage prevailing on the last date of quarter previous to the quarter pertaining to updated stipulated date of Completion considering the effect of extra work (extra time to be calculated on prorata basis only as cost of extra work x stipulated period/tendered cost, shall be considered.) If updated stipulated date of completion as calculated on prorata basis does not cover full calendar month then indices will be considered or restricted to previous month.

L10 : Minimum daily wage in rupees of an unskilled adult male mazdoor, fixed under any law, statutory rule or order as on the last stipulated date of receipt of tender including extension, if any.

- (vi) The following principles will be followed while working out the compensation as per sub para (v) above.
- (a) The minimum wage of an unskilled Mazdoor mentioned in sub-para (vi) above shall be the higher of the wage notified by Government of India, Ministry of Labour and that notified by the local administration both relevant to the place of work and the period of reckoning.
 - (b) The escalation for labour also shall be paid at the same quarterly intervals when escalation due to increase in cost of materials is paid under this clause. If such revision of minimum wages takes place during any such quarterly intervals, the escalation compensation shall be payable at revised rates only for work done in subsequent quarters;
 - (c) Irrespective of variations in minimum wages of any category of labour, for the purpose of this clause, the variation in the rate for an unskilled Mazdoor alone shall form the basis for working out the escalation compensation payable on the labour component.
- (vii) In the event the price of materials and/or wages of labour required for execution of the work decrease/s, there shall be a downward adjustment of the cost of work so that such price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard the formula herein before stated under this Clause 10CC shall mutatis mutandis apply, provided that:
- (a) no such adjustment for the decrease in the price of materials and/or wages of labour aforementioned would be made in case of contracts in which the stipulated period of completion of the work is equal to or less than the time as specified in Schedule 'F'.
 - (b) the Engineer-in-Charge shall otherwise be entitled to lay down the procedure by which the provision of this sub-clause shall be implemented from time to time and the decision of the Engineer-in-Charge in this behalf shall be final and binding on the contractor.

(viii) Provided always that:-

- (a) Where provisions of clause 10CC are applicable, provisions of clause 10C will not be applicable but provisions of clause 10CA will be applicable.
- (b) Where provisions of clause 10CC are not applicable, provisions of clause 10C and 10CA will become applicable.

Note: Updated stipulated date of completion (period of completion plus extra time for extra work) for compensation under clause 10C, 10CA and 10 CC

The factor of 1.25 taken into account for calculating the extra time under clause 12.1 for extra time shall not be considered while calculating the updated stipulated date of completion for this purpose in clause 10C, clause 10CA, and clause 10CC.

Clause 10D

Dismantled Material Govt. Property

The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc. as MUDA 's property and such materials shall be disposed off to the best advantage of MUDA according to the instructions in writing issued by the Engineer-in-Charge

Clause 11

Work to be Executed in Accordance with Specifications, Drawings, Orders etc.

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of Central Public Works Department specified in Schedule 'F' or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract.

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

Clause 12

Deviations/ Variations Extent and Pricing

The Engineer-in-Charge shall have power (i) to make alteration in, additions to or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, be extended, if requested by the contractor, as follows :

- (i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus
- (ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

Extra and substituted items

- (i) In case of any change in approved drawings given by the Department and forming part of the Contract, if there are any deviation in the items the contractor may within fifteen days of receipt of order from Engineer in Charge claim the rates, supported by proper analysis for the items the Engineer-in-Charge shall within prescribed time limit of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates of both of extra items or original and substituted items as the case may be (as per invoice, vouchers from the manufacturers or suppliers submitted by the agency and duly verified by Engineer in Charge or his representative and the contractor shall be paid in accordance with the rates so determined.

The prescribed time limit for finalizing rates for Extra Item(s), Substitute Item(s) and Deviated Quantities of contract items is within 45 days after submission of proposal by the contractor without observation of the Engineer-in-Charge.

- (ii) In case there is change/ modification in drawings given by the contractor after the approval by the Engineer -in- Charge due to functional or site requirements the contractor shall carry out the changes including extra items, substitute items, deviations as per direction of Engineer in Charge for which nothing extra shall be payable to the contractor on account of same, provided the additional cost of such work is up to 1 % (one percent) of the accepted tendered amount and worked out on market rate basis for the variation costing above 1 % (one percent), payment shall be made to the contractor as per method given in (i) above.

Clause 13

Foreclosure of contract due to Abandonment or Reduction in Scope of Work

If at any time after acceptance of the tender or during the progress of work, the purpose or object for which the work is being done changes due to any supervening cause and as a result of which the work has to be abandoned or reduced in scope the Engineer-in-Charge shall give notice in writing to that effect to the contractor stating the decision as well as the cause for such decision and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

The contractor shall be paid at contract rates, full amount for works executed at site and, in addition, a reasonable amount as certified by the Engineer-in-Charge for the items hereunder mentioned which could not be utilized on the work to the full extent in view of the foreclosure;

- (i) Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarters and site office; storage accommodation and water storage tanks.

- (ii) MUDA shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided, however Owner/MUDA shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by Owner/MUDA, cost of such materials as detailed by Engineer-in-Charge shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor.
- (iii) Reasonable compensation for transfer of T & P from site to contractor's permanent stores or to his other works, whichever is less. If T & P are not transported to either of the said places, no cost of transportation shall be payable.
- (iv) Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary.

The contractor shall, if required by the Engineer-in-Charge, furnish to him, books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this condition.

The reasonable amount of items on (i), (iii) and (iv) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor's materials at site taken over by the Owner/MUDA as per item (ii) above. Provided always that against any payments due to the contractor on this account or otherwise, the Engineer-in-Charge shall be entitled to recover or be credited with any outstanding balances due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by the Owner/MUDA from the contractor under the terms of the contract.

In the event of action being taken under Clause 13 to reduce the scope of work, the contractor may furnish fresh Performance Guarantee on the same conditions, in the same manner and at the same rate for the balance tendered amount and initially valid up to the extended date of completion or stipulated date of completion if no extension has been granted plus minimum 60 days beyond that. Wherever such a fresh Performance Guarantee is furnished by the contractor the Engineer-in-Charge may return the previous Performance Guarantee.

Clause 14

Pre- construction activities

The data supplied by the Department, if any, are for General Guidance only. The contractor shall be responsible for carrying out pre- construction activities for construction of work as defined in the tender documents. The contractor shall also carry out site investigations to verify site details / Data at his own cost.

Clause 15

Suspension of Work

- (i) The contractor shall, on receipt of the order in writing of the Engineer-in-Charge, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:
 - (a) on account of any default on the part of the contractor or;

- (b) for proper execution of the works or part thereof for reasons other than the default of the contractor; or
- (c) for safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer in- Charge.

- (ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:
 - (a) the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;
 - (b) If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in- Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in- Charge within fifteen days of the expiry of the period of 30 days.
- (iii) If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in sub para (i) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer in- Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by Owner/MUDA or where it affects whole of the works, as an abandonment of the works by Owner/MUDA, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by Owner/MUDA, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months .

Clause 16

Action in case Work not done as per Specifications

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-in - charge, his authorized subordinates in charge of the work and all the superior officers, officer of the Quality Assurance Unit of the Department or any organization engaged by the Department for Quality Assurance and of the Chief Technical Examiner's Office, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

If it shall appear to the Engineer-in-charge or his authorized subordinates in charge of the work or to the Engineer in charge of Quality Assurance or his subordinate officers or the officers of the organization engaged by the Department for Quality Assurance or to the Chief Technical Examiner or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing Rs. 10 Lac and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the authority specified in schedule 'F' may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the contractor.

Clause 17

Contractor Liable for Damages, defects during defect liability Period

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within twentyfour months after a certificate final or otherwise of its completion shall have been given by the Engineer in-Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of twenty four months after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work, if in the opinion of the Engineer-in-Charge, half of the security deposit is sufficient, to meet all liabilities of the contractor under this contract, half of the security deposit will be refundable after twelve months and the remaining half after twelve months of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later.

Clause 18A

**Recovery of
Compensation paid
to Workmen**

In every case in which by virtue of the provisions sub- section (1) of section 12 of the Workmen's Compensation Act. 1923, MUDA is obliged to pay compensation to a workman employed by the contractor, in execution of the works , MUDA will recover from the contractor , the amount of the compensation so paid: and, , without prejudice to the rights of the MUDA under sub- section(2) of section 12 , of the said Act, MUDA shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by MUDA to the contractor whether under this contract or otherwise. MUDA shall not be bound to contest any claim made againstit under sub- section (1) of section 12, of the said Act, except on the written request of thecontractor and upon his giving to MUDA full security for all costs for which MUDA might become liable in consequence of contesting such claim.

Clause 18B

**Ensuring Payment
and Amenities to
Workers if
Contractor fails**

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, MUDA is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the Contractor's Labour Regulations, or under the Rules framed by MUDA from time to time for the protection of health and sanitaryarrangements for workers employed by MUDA Contractors, MUDA will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred;and without prejudice to the rights of the MUDA under sub-section(2) of Section 20,and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, MUDA shall be at liberty to recover such amount or any part thereof by deductingit from the security deposit or from any sum due by MUDA to the contractor whether under this contract or otherwise MUDA shall not be bound to contest any claim made against it under sub-section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the MUDA full security for all costs for which MUDA might become liable in contesting such claim.

Clause 19

**Labour Laws to be
complied by the
Contractor**

The contractor shall obtain a valid licence under the Contract Labour (R&A) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work.

The contractor shall also comply with provisions of the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979.

The contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996.

Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

Clause 19A

No labour below the age of fourteen years shall be employed on the work.

Clause 19B

Payment of Wages

- (i) The contractor shall pay to labour employed by him either directly or through subcontractors, wages not less than fair wages as defined in the Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.
- (ii) The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him.
- (iii) In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorizedly made, maintenance of wage books or wage slips publication of scale of wage and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable
- (iv) (a) The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non- fulfillment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.
- (b) Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.

In the case of Union Territory of Delhi, however, as the all inclusive minimum daily wages fixed under Notification of the Delhi Administration No.F.12(162)MWO/DAB/43884-91, dated 31-12-1979 as amended from time to time are inclusive of wages for the weekly day of rest, the question of extra payment for weekly holiday would not arise.

- (i) The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made there under from time to time.
- (ii) The contractor shall indemnify and keep indemnified MUDA against payments to be made under and for the observance of the laws aforesaid and the Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.
- (iii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.
- (iv) Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise.
- (v) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

Clause 19C

In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this contract, the contractor shall at his own expense arrange for the safety provisions as per Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid, he shall be liable to pay a penalty as decided by the authority mentioned in Schedule F for each default and in addition, the Engineer-in-Charge shall be at liberty to make arrangement and provide facilities as aforesaid and recover the costs incurred in that behalf from the contractor.

Clause 19D

The contractor shall submit by the 4th and 19th of every month, to the Engineer-in-Charge, a true statement showing in respect of the second half of the preceding month and the first half of the current month respectively:-

- (1) the number of labourers employed by him on the work,
- (2) their working hours,
- (3) the wages paid to them,
- (4) the accidents that occurred during the said month showing the circumstances under which they happened and the extent of damage and injury caused by them, and
- (5) the number of female workers who have been allowed maternity benefit according to Clause 19F and the amount paid to them.

Failing which the contractor shall be liable to pay to MUDA, a sum as decided by the authority mentioned in Schedule F for each default or materially incorrect statement. The decision of the Engineer in Charge shall be final in deducting from any bill due to the contractor, the amount levied as fine and be binding on the contractor.

Clause 19E

In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with all the rules framed by MUDA from time to time for the protection of health and sanitary arrangements for workers employed by the Central Public Works Department and its contractors.

Clause 19F

Leave and pay during leave shall be regulated as follows:-

1. Leave :
 - (i) in the case of delivery - maternity leave not exceeding 8 weeks, 4 weeks upto and including the day of delivery and 4 weeks following that day,
 - (ii) in the case of miscarriage - upto 3 weeks from the date of miscarriage.
2. Pay :
 - (i) in the case of delivery - leave pay during maternity leave will be at the rate of the women's average daily earnings, calculated on total wages earned on the days when full time work was done during a period of three months immediately preceding the date on which she gives notice that she expects to be confined or at the rate of Rupee one only a day whichever is greater.
 - (ii) in the case of miscarriage - leave pay at the rate of average daily earning calculated on the total wages earned on the days when full time work was done during a period of three months immediately preceding the date of such miscarriage.
3. Conditions for the grant of Maternity Leave:

No maternity leave benefit shall be admissible to a woman unless she has been employed for a total period of not less than six months immediately preceding the date on which she proceeds on leave.
4. The contractor shall maintain a register of Maternity (Benefit) in the Prescribed Form as shown in appendix -I and II, and the same shall be kept at the place of work.

Clause 19G

In the event of the contractor(s) committing a default or breach of any of the provisions of the MUDA, Contractor's Labour Regulations and Model Rules for the protection of health and sanitary arrangements for the workers as amended from time to time or furnishing any information or submitting or filing any statement under the provisions of the above Regulations and Rules which is materially incorrect, he/they shall, without prejudice to any other liability, pay to the MUDA a sum as decided by the authority mentioned in Schedule F for every default, breach or furnishing, making, submitting, filing such materially incorrect statements and in the event of the contractor(s) defaulting continuously in this respect, the penalty may be enhanced to as decided by the authority mentioned in Schedule F per day for each day of default subject to a maximum of 5 percent of the estimated cost of the work put to tender. The decision of the Engineer-in-Charge shall be final and binding on the parties.

Should it appear to the Engineer-in-Charge that the contractor(s) is/are not properly observing and complying with the provisions of the Contractor's Labour Regulations and Model Rules and the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (R& A) Central Rules 1971, for the protection of health and sanitary arrangements for work-people employed by the contractor(s) (hereinafter referred as "the said Rules") the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said Rules be complied with and the amenities prescribed therein be provided to the work-people within a reasonable time to be specified in the notice. If the contractor(s) shall fail within the period specified in the notice to comply with and/or observe the said Rules and to provide the amenities to the work-people as aforesaid, the Engineer-in-Charge shall have the power to provide the amenities hereinbefore mentioned at the cost of the contractor(s). The contractor(s) shall erect, make and maintain at his/ their own expense and as per approved standards all necessary huts and sanitary arrangements required for his/their work-people on the site in connection with the execution of the works, and if the same shall not have been erected or constructed, according to approved standards, the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said huts and sanitary arrangements be remodelled and/or reconstructed according to approved standards, and if the contractor(s) shall fail to remodel or reconstruct such huts and sanitary arrangements according to approved standards within the period specified in the notice, the Engineer-in-Charge shall have the power to remodel or reconstruct such huts and sanitary arrangements according to approved standards at the cost of the contractor(s).

Clause 19H

The contractor(s) shall at his/their own cost provide his/their labour with a sufficient number of huts (hereinafter referred to as the camp) of the following specifications on a suitable plot of land to be approved by the Engineer-in-Charge.

- (i)
 - (a) The minimum height of each hut at the eaves level shall be 2.10m (7 ft.) and the floor area to be provided will be at the rate of 2.7 sq.m. (30 sq.ft.) for each member of the worker's family staying with the labourer.
 - (b) The contractor(s) shall in addition construct suitable cooking places having a minimum area of 1.80m x 1.50m (6'x5') adjacent to the hut for each family.
 - (c) The contractor(s) shall also construct temporary latrines and urinals for the use of the labourers each on the scale of not less than four per each one hundred of the total strength, separate latrines and urinals being provided for women.
 - (d) The contractor(s) shall construct sufficient number of bathing and washing places, one unit for every 25 persons residing in the camp. These bathing and washing places shall be suitably screened.
- (ii)
 - (a) All the huts shall have walls of sun-dried or burnt-bricks laid in mud mortar or other suitable local materials as may be approved by the Engineer-in-Charge. In case of sun-dried bricks, the walls should be plastered with mud gobi on both sides. The floor may be kutcha but plastered with mud gobi and shall be at least 15 cm (6") above the surrounding ground. The roofs shall be laid with thatch or any other materials as may be approved by the Engineer-in-Charge and the contractor shall ensure that throughout the period of their occupation, the roofs remain water-tight.
 - (b) The contractor(s) shall provide each hut with proper ventilation.

- (c) All doors, windows, and ventilators shall be provided with suitable leaves for security purposes.
 - (d) There shall be kept an open space of at least 7.2m (8 yards) between the rows of huts which may be reduced to 6m (20 ft.) according to the availability of site with the approval of the Engineer-in-Charge. Back to back construction will be allowed.
- (iii) Water Supply - The contractor(s) shall provide adequate supply of water for the use of labourers. The provisions shall not be less than two gallons of pure and wholesome water per head per day for drinking purposes and three gallons of clean water per head per day for bathing and washing purposes. Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river, tanks which may be of metal or masonry, shall be provided. The contractor(s) shall also at his/ their own cost make arrangements for laying pipe lines for water supply to his/ their labour camp from the existing mains wherever available, and shall pay all fees and charges therefore.
- (iv) The site selected for the camp shall be high ground, removed from jungle.
- (v) Disposal of Excreta - The contractor(s) shall make necessary arrangements for the disposal of excreta from the latrines by trenching or incineration which shall be according to the requirements laid down by the Local Health Authorities. If trenching or incineration is not allowed, the contractor(s) shall make arrangements for the removal of the excreta through the Municipal Committee/authority and inform it about the number of labourers employed so that arrangements may be made by such Committee/authority for the removal of the excreta. All charges on this account shall be borne by the contractor and paid direct by him to the Municipality/authority. The contractor shall provide one sweeper for every eight seats in case of dry system.
- (vi) Drainage - The contractor(s) shall provide efficient arrangements for draining away sullage water so as to keep the camp neat and tidy.
- (vii) The contractor(s) shall make necessary arrangements for keeping the camp area sufficiently lighted to avoid accidents to the workers.
- (viii) Sanitation - The contractor(s) shall make arrangements for conservancy and sanitation in the labour camps according to the rules of the Local Public Health and Medical Authorities.

Clause 19I

The Engineer-in-Charge may require the contractor to dismiss or remove from the site of the work any person or persons in the contractors' employ upon the work who may be incompetent or misconduct himself and the contractor shall forthwith comply with such requirements. In respect of maintenance/repair or renovation works etc. where the labour have an easy access to the individual houses, the contractor shall issue identity cards to the labourers, whether temporary or permanent and he shall be responsible for any untoward action on the part of such labour.

Clause 19J

It shall be the responsibility of the contractor to see that the building under construction is not occupied by anybody unauthorized during construction, and is handed over to the

Engineer-in-Charge with vacant possession of complete building. If such building though completed is occupied illegally, then the Engineer-in-Charge shall have the option to refuse to accept the said building/buildings in that position. Any delay in acceptance on this account will be treated as the delay in completion and for such delay, a levy upto 5% of tendered value of work may be imposed by the Superintending Engineer/ Chief Engineer whose decision shall be final both with regard to the justification and quantum and be binding on the contractor.

However, the Engineer In-charge, through a notice, may require the contractor to remove the illegal occupation any time on or before construction and delivery.

Clause 19K

Employment of skilled/semi skilled workers

The contractor shall, at all stages of work, deploy skilled/semi skilled tradesmen who are qualified. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer in charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in- Charge. Failure on the part of contractor to obtain approval of Engineer-in- Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate specified in schedule 'F' per such tradesman per day.

Clause 19L

Contribution of EPF and ESI

The ESI and EPF contributions on the part of employer in respect of this contract shall be paid by the contractor. These contributions on the part of the employer paid by the contractor shall be reimbursed by the Engineer-in-charge to the contractor on actual basis. The verification of deployment of labour will be done through biometric attendance system or any other suitable method by the Engineer in Charge. The applicable and eligible amount of EPF & ESI shall be reimbursed preferably within 7 days but not later than 30 days of submission of documentary proof of payment provided same are in order.

Clause 20

Minimum Wages Act to be Complied With

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time to time and rules framed there under and other labour laws affecting contract labour that may be brought into force from time to time.

Clause 21

Work not to be sublet. Action in case of insolvency

The contract shall not be assigned or sublet without the written approval of the Engineer-in-Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or person in the employ of Government in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer-in-Charge shall have power to adopt the course specified in Clause 3 hereof in the interest of MUDA and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.

Clause 22

Any amount payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Owner/MUDA without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

Clause 23

**Changes in firm's
Constitution to be
Intimated**

Where the contractor is a partnership firm, the previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern, such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement whereunder the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 hereof and the same action may be taken, and the same consequences shall ensue as provided in the said Clause 21.

Clause 24

Life Cycle Cost

The contractor shall be responsible for safety, quality and soundness of the buildings including structural elements beyond maintenance period. The contractor shall have obligation to rectify such defects minimum up to 1 (One) years from the date of completion of work. The defects have to be rectified within a reasonable time not exceeding forty five days after issue of notice by Engineer-in-Charge. If contractor does not take corrective action within 45 days, then action for debarring of the agency shall be taken by the appropriate authority.

Clause 25

**Settlement of
Disputes &
Arbitration**

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

- (i) If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge or if the Engineer in Charge considers any act or decision of the contractor on any matter in connection with or arising out of the

contract or carrying out of the work, to be unacceptable and is disputed, such party shall promptly within 15 days of the arising of the disputes request the Managing Director of MUDA (hereinafter called the “MD”), who shall refer the disputes to Dispute Redressal Committee (DRC) within 15 days along with a list of disputes with amounts claimed if any in respect of each such dispute. The Dispute Redressal Committee (DRC) give its decision within a period of 60 days extendable by 30 days by consent of both the parties from the receipt of reference from MD. The constitution of Dispute Redressal Committee (DRC) shall be as indicated in Schedule 'F'. Provided that no party shall be represented before the Dispute Redressal Committee by an advocate/legal counsel etc.

The DRC will submit its decision to the MD in a time limit of 30 days from receipt of DRC decision will convey acceptance or otherwise on the said decision. If the Dispute Redressal Committee (DRC) fails to give its decision within the aforesaid period or the MD fails to give his decision in the aforesaid time limit or any party is dissatisfied with the decision of Dispute Redressal Committee then either party may within a period of 30 days from the receipt of the decision of Dispute Redressal Committee (DRC)/ MD or on expiry of aforesaid the time limits available to DRC/ MD, may give notice to the Engineer in Charge of the work for appointment of arbitrator on prescribed proforma as per Appendix XVII under intimation to the other party.

It is a term of contract that each party invoking arbitration must exhaust the aforesaid mechanism of settlement of claims/disputes prior to invoking arbitration.

The MD shall in such case appoint the sole arbitrator or one of the three arbitrators as the case may be within 30 days of receipt of such a request and refer such disputes to arbitration. Wherever the Arbitral Tribunal consists of three Arbitrators, the contractor shall appoint one arbitrator within 30 days of making request for arbitration or of receipt of request by Engineer-in-charge to MD for appointment of arbitrator, as the case may be, and two appointed arbitrators shall appoint the third arbitrator who shall act as the Presiding Arbitrator.

In the event of

- (a) A party fails to appoint the second Arbitrator, or
 - (b) The two appointed Arbitrators fail to appoint the Presiding Arbitrator, then the MD shall appoint the second or Presiding Arbitrator as the case may be.
- (ii) Disputes or difference shall be referred for adjudication through arbitration by a Tribunal having sole arbitrator where claimed amount is Rs. 20 Crore or less. Where claimed Value is more than Rs. 20 Crore, Tribunal shall consist of three Arbitrators as above. The requirements of the Arbitration and Conciliation Act, 1996 (26 of 1996) and any further statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall be applicable.

It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed, if any, in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the decision of the MD on the finding / recommendation of DRC.

It is also a term of this contract that member(s) of the Arbitration Tribunal shall be a Graduate Engineer with experience in handling public works engineering contracts, and further he shall have earlier worked at a level not lower than Chief Engineer/ equivalent (i.e. Joint Secretary level of Government of India). This shall be treated as a mandatory qualification to be appointed as arbitrator.

Parties, before or at the time of appointment of Arbitral Tribunal may agree in writing for fast track arbitration as per the Arbitration and Conciliation Act, 1996 (26 of 1996) as amended in 2015.

Subject to provision in the Arbitration and Conciliation Act, 1996 (26 of 1996) as amended in 2015 whereby the counter claims if any can be directly filed before the arbitrator without any requirement of reference by the appointing authority. The arbitrator shall adjudicate on only such disputes as are referred to him by the appointing authority and give separate award against each dispute and claim referred to him and in all cases where the total amount of the claims by any party exceeds Rs. 1,00,000/-, the arbitrator shall give reasons for the award.

It is also a term of the contract that fees payable to arbitral tribunal shall be as followed by CPWD vide OM issued vide no.2/2006/SE(TLC)/CSQ /137 dated 19-11-2019 (or its latest amendment as approved by DG, CPWD). This fee shall be shared equally by parties.

The place of arbitration shall be as mentioned in Schedule F. In case there is no mention of place of arbitration, the arbitral tribunal shall determine the place of arbitration.

The venue of the arbitration shall be such place as may be fixed by the Arbitral Tribunal in consultation with both the parties. Failing any such agreement, then the Arbitral Tribunal shall decide the venue.

Clause 26

Contractor to indemnify MUDA/Owner against Patent Rights

The contractor shall fully indemnify and keep indemnified the MUDA/Owner against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against MUDA/Owner in respect of any such matters as aforesaid, the contractor shall be immediately notified thereof and the contractor shall bear liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the MUDA/Owner if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge in this behalf.

Clause 27

Withholding and lien in respect of sum due from Contractor

- (i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in-Charge or the MUDA shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Engineer-in-Charge or the MUDA shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge or the MUDA shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found

payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the MUDA or any contracting person through the Engineer-in-Charge pending finalization of adjudication of any such claim.

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or MUDA will be kept withheld or retained as such by the Engineer-in-Charge or MUDA till the claim arising out of or under the contract is determined by the arbitrator (if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the MUDA shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise.

- (ii) MUDA shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for MUDA to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by MUDA to the contractor, without any interest thereon whatsoever.

Provided that the MUDA shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Engineer on the one hand and the contractor on the other under any term of the contract permitting payment for work after assessment by the Engineer.

Clause 28

Any sum of money due and payable to the contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or the MUDA or any other contracting person or persons through Engineer-in-Charge against any claim of the Engineer-in-Charge or MUDA or such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Engineer-in-Charge or the MUDA or with such other person or persons. It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the MUDA will be kept withheld or retained as such by the Engineer-in-Charge or the MUDA or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

Lien in respect of claims in other Contracts

Clause 29

Employment of coal mining or controlled area labour not Permissible

The contractor shall not employ coal mining or controlled area labour falling under any category whatsoever on or in connection with the work or recruit labour from area within a radius of 32 km (20 miles) of the controlled area. Subject as above the contractor shall employ imported labour only i.e., deposit imported labour or labour imported by contractors from area, from which import is permitted.

Where ceiling price for imported labour has been fixed by State or Regional Labour Committees not more than that ceiling price shall be paid to the labour by the contractor.

The contractor shall immediately remove any labourer who may be pointed out by the Engineer in-Charge as being a coal mining or controlled area labourer. Failure to do so shall render the contractor liable to pay to Government a sum calculated at the rate of Rs.10/- per day per labourer. The certificate of the Engineer-in-Charge about the number of coal mining or controlled area labourer and the number of days for which they worked shall be final and binding upon all parties to this contract.

It is declared and agreed between the parties that the aforesaid stipulation in this clause is one in which the public are interested within the meaning of the exception in Section 74 of Indian Contract Act, 1872.

Explanation:- Controlled Area means the following areas:

Districts of Dhanbad, Hazaribagh, Jamtara - a Sub-Division under Santhal Pargana Commissionery, Districts of Bankuara, Birbhum, Burdwan, District of Bilaspur.

Any other area which may be declared a Controlled Area by or with the approval of the Central Government.

Clause 30

Water for Works

The contractor(s) shall make his/their own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

- (i) That the water used by the contractor(s) shall be fit for construction purposes to the satisfaction of the Engineer-in-Charge.
- (ii) The Engineer-in-Charge shall make alternative arrangements for supply of water at the risk and cost of contractor(s) if the arrangements made by the contractor(s) for procurement of water are in the opinion of the Engineer-in-Charge, unsatisfactory.

Clause 31

Alternate water Arrangements

The contractor shall be allowed to construct temporary wells in Owner land for taking water for construction purposes only after he has got permission of the Engineer-in-Charge in writing. No charges shall be recovered from the contractor on this account, but the contractor shall be required to provide necessary safety arrangements to avoid any accidents or damage to adjacent buildings, roads and service lines. He shall be responsible for any accidents or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.

Clause 32

Employment of Technical Staff and employees

Contractors Superintendence, Supervision, Technical Staff & Employees

- (i) The contractor shall provide all necessary superintendence during execution of the

work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract.

The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-in-Charge, the name(s), qualifications, experience, age, address(s) and other particulars along with certificates, of the principal technical representative to be in charge of the work and other technical representative(s) who will be supervising the work. Minimum requirement of such technical representative(s) and their qualifications and experience shall not be lower than specified in Schedule 'F'. Even if the contractor (or partner(s) in case of firm/ company) is himself / herself an Engineer, it is necessary on the part of the contractor to employ principal technical representative / technical representative (s) as per stipulation in Schedule 'F'

The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative(s) to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative(s) according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical representative(s) shall be appointed by the contractor soon after receipt of the approval from Engineer-in-charge and shall be available at site before start of work.

All the provisions applicable to the principal technical representative under the Clause will also be applicable to other technical representative(s). The principal technical representative and other technical representative(s) shall be present at the site of work for supervision at all times when any construction activity is in progress and also present himself/themselves, as required, to the Engineer-in-Charge and/or his designated representative to take instructions. Instructions given to the principal technical representative or other technical representative(s) shall be deemed to have the same force as if these have been given to the contractor. The principal technical representative and other technical representative(s) shall be actually available at site fully during all stages of execution of work, during recording/checking/test checking of measurements of works and whenever so required by the Engineer-in-Charge and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative(s) in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements/checked measurements/test checked measurements. The representative(s) shall not look after any other work. Substitutes, duly approved by Engineer-in-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative(s) by more than two days.

If the Engineer-in-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative(s) is/are effectively appointed or is/are effectively attending or fulfilling the provision of this clause, a recovery (non refundable) shall be effected from the contractor as specified in Schedule 'F' and the decision of the Engineer-In-Charge as recorded in the site order book and measurement recorded checked/test checked in Measurement Books shall be final and binding on the contractor. Further if the contractor fails to appoint suitable technical Principal technical representative and/or other technical representative(s) and if such appointed persons are not effectively present or are absent by more than two days without duly approved substitute or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative(s) is/are

appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall submit a certificate of employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) along with every on account bill/ final bill and shall produce evidence if at any time so required by the Engineer-in-Charge.

- (ii) The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work.

The contractor shall provide and employ skilled, semiskilled and unskilled labour as necessary for proper and timely execution of the work.

The Engineer-in-Charge shall be at liberty to object to and require the contractor to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer-in-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-in-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

Clause 33

Levy/Taxes payable by Contractor

- (i) GST, Building and other Construction Workers Welfare Cess or any other tax, levy or Cess in respect of input for or output by this contract shall be payable by the contractor and Owner/MUDA shall not entertain any claim whatsoever in this respect except as provided under Clause 38.
- (ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, etc. from local authorities.
- (iii) If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Owner/MUDA and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Owner/MUDA and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

Clause 34

Conditions for reimbursement of levy/taxes if levied after receipt of Tenders

- (i) All tendered rates shall be inclusive of any tax, levy or cess applicable on last stipulated date of receipt of tender including extension if any. No adjustment i.e. increase or decrease shall be made for any variation in the rate of GST, Building and Other Construction Workers Welfare Cess or any tax, levy or cess applicable on inputs.

However, effect of variation in rates of GST or Building and Other Construction Workers Welfare Cess or imposition or repeal of any other tax, levy or cess applicable on output of the works contract shall be adjusted on either side, increase or decrease.

Provided further that for Building and Other Construction Workers Welfare Cess or any tax (other than GST), levy or cess varied or imposed after the last date of receipt of tender including extension if any, any increase shall be reimbursed to the contractor only if the contractor necessarily and properly pays such increased amount of taxes/levies/cess.

Provided further that such increase including GST shall not be made in the extended period of

contract for which the contractor alone is responsible for delay as determined by authority for extension of time under Clause 5 in Schedule F.

- (ii) The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the Owner/MUDA and/or the Engineer-in-Charge and shall also furnish such other information/document as the Engineer-in-Charge may require from time to time.
- (iii) The contractor shall, within a period of 30 days of the imposition of any such further tax or levy or cess, or variation or repeal of such tax or levy or cess give a written notice thereof to the Engineer-in-charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

Clause 35

Termination of Contract on death of contractor

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer in Charge on behalf of the MUDA shall have the option of terminating the contract without compensation to the contractor.

Clause 36

If relative working in MUDA then the contractor not allowed to tender

The contractor shall not be permitted to tender for works in the MUDA Zone responsible for award and execution of contracts in which his near relative is posted as Accountant or as an officer in any capacity. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Officer in the MUDA. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department. If however the contractor is registered in any other department, he shall be debarred from tendering in MUDA for any breach of this condition.

NOTE: By the term "near relatives" is meant wife, husband, parents and grandparents, children and grand children, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

Clause 37

No Gazetted Engineer to work as Contractor within one year of retirement

No engineer of gazetted rank or other gazetted officer employed in engineering or administrative duties in an engineering department of the Government of India shall work as a contractor or employee of a contractor for a period of one year after his retirement from government service without the previous permission of Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Government of India as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

Clause 38

Theoretical consumption of Material

- (i) After completion of the work and also at any intermediate stage in the event of Non reconciliation of materials issued theoretical quantity of materials used in the work shall be calculated on the basis and method given hereunder:-
 - (a) Quantity of cement & bitumen shall be calculated on the basis of quantity of cement & bitumen required for different items of work as shown in the Schedule of Rates mentioned in Schedule 'F'. In case any item is executed for which standard constants for the consumption of cement or bitumen are not available in the above mentioned schedule/statement or cannot be derived from the same shall be calculated on the basis of standard formula.

- (b) Theoretical quantity of steel reinforcement or structural steel sections shall be taken as the quantity required as per design or as authorized by Engineer-in-Charge, including authorized lappings, chairs etc. plus 3% wastage due to cutting into pieces, such theoretical quantity being determined and compared with the actual, each diameter wise, section wise and category wise separately.
- (c) Theoretical quantity of G.I. & C.I. or other pipes, conduits, wires and cables, pig lead and G.I./M.S. sheets shall be taken as quantity actually required and measured plus 5% for wastage due to cutting into pieces (except in the case of G.I./M.S. sheets it shall be 10%), such determination & comparison being made diameter wise & category wise.

Over the theoretical quantities of materials so computed a variation shall be allowed as specified in Schedule 'F' For non scheduled items, the decision of the Superintending Engineer regarding theoretical quantities of materials which should have been actually used, shall be final and binding on the contractor.

- (ii) The said action under this clause is without prejudice to the right of the Owner/MUDA to take action against the contractor under any other conditions of contract for not doing the work according to the prescribed specifications.

Clause 39

Compensation during warlike situations

The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the Engineer-in-Charge and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or warlike operation, the contractor shall when ordered (in writing) by the Engineer-in-Charge to remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking or removal of serviceable material and for reconstruction of all works ordered by the Engineer-in-Charge, such payments being in addition to compensation upto the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for, the compensation shall be assessed by the Engineer in Charge upto Rs.2,00,000/-- and by the next higher officer concerned for a higher amount. The contractor shall be paid for the damages/destruction suffered and for restoring the material at the rate based on analysis of rates tendered for in accordance with the provision of the contract. The certificate of the Engineer-in-Charge regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on all parties to this contract.

Provided always that no compensation shall be payable for any loss in consequence of hostilities or warlike operations (a) unless the contractor had taken all such precautions against air raid as are deemed necessary by the A.R.P. (Air Raid Precaution) Officers or the Engineer-in-Charge (b) for any material etc. not on the site of the work or for any tools, plant, machinery, scaffolding, temporary building and other things not intended for the work. In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Engineer in Charge.

Clause 40

Apprentices Act provisions to be complied with

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Superintending Engineer may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

Clause 41

Release of Security deposit after labour clearance

Release of Security Deposit of the work shall not be refunded till the contractor produces a clearance certificate after labour certificate from the Labour Officer. As soon as the work is virtually complete the contractor shall apply for the clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the contractor in respect of the work. If no complaint is pending, on record till after 3 months after completion of the work and/or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the Security Deposit will be released if otherwise due.

Note :- In case of any discrepancies between Hindi and English version, English version will prevail.

C.P.W.D. SAFETY CODE

1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to $1\frac{1}{4}$ horizontal and 1 vertical.)
2. Scaffolding of staging more than 3.6 m (12ft.) above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm. (3ft.) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
3. Working platforms, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 m (12ft.) above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90 cm. (3ft.)
5. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9m. (30ft.) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. (11½”) for ladder upto and including 3 m. (10 ft.) in length. For longer ladders, this width should be increased at least $\frac{1}{4}$ ” for each additional 30 cm. (1 foot) of length. Uniform step spacing of not more than 30 cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit; action or proceedings to any such person or which may, with the consent of the contractor, be paid to compensate any claim by any such person.
6. (a) Excavation and Trenching - All trenches 1.2 m. (4ft.) or more in depth, shall at all times be supplied with at least one ladder for each 30 m. (100 ft.) in length or fraction thereof, Ladder shall extend from bottom of the trench to at least 90 cm. (3ft.) above the surface of the ground. The side of the trenches which are 1.5 m. (5ft.) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 m. (5ft.) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances, undermining or undercutting shall be done.

- (b) Safety Measures for digging bore holes:-
- (i) If the bore well is successful, it should be safely capped to avoid caving and collapse of the borewell. The failed and the abandoned ones should be completely refilled to avoid caving and collapse;
 - (ii) During drilling, Sign boards should be erected near the site with the address of the drilling contractor and the Engineer in-charge of the work;
 - (iii) Suitable fencing should be erected around the well during the drilling and after the installation of the rig on the point of drilling, flags shall be put 50m around the point of drilling to avoid entry of people;
 - (iv) After drilling the borewell, a cement platform (0.50m x 0.50m x 1.20m) 0.60m above ground level and 0.60m below ground level should be constructed around the well casing;
 - (v) After the completion of the borewell, the contractor should cap the bore well properly by welding steel plate, cover the bore well with the drilled wet soil and fix thorny shrubs over the soil. This should be done even while repairing the pump;
 - (vi) After the borewell is drilled the entire site should be brought to the ground level.
7. Demolition - Before any demolition work is commenced and also during the progress of the work,
- (i) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - (ii) 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 electrically charged.
 - (iii) 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 or materials as to render it unsafe.
8. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned:- The following safety equipment shall invariably be provided.
- (iv) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - (v) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes, shall be provided with protective goggles.
 - (vi) Those engaged in welding works shall be provided with welder's protective eyeshields.
 - (vii) Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - (viii) When workers are employed in sewers and manholes, which are in active use, the contractors shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with

suitable railing and provided with warning signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measure are adhered to :-

- (a) Entry for workers into the line shall not be allowed except under supervision of the JE or any other higher officer.
- (b) At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole for working inside.
- (c) Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.
- (d) Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.
- (e) Safety belt with rope should be provided to the workers. While working inside the manholes, such rope should be handled by two men standing outside to enable him to be pulled out during emergency.
- (f) The area should be barricaded or cordoned off by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.
- (g) No smoking or open flames shall be allowed near the blocked manhole being cleaned.
- (h) The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.
- (i) Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge shall decide the time up to which a worker may be allowed to work continuously inside the manhole.
- (j) Gas masks with Oxygen Cylinder should be kept at site for use in emergency.
- (k) Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air blowers are recommended for ventilating the manholes. The Motors for these shall be vapourproof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at least 2 metres away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.
- (l) The workers engaged for cleaning the manholes/sewers should be properly trained before allowing to work in the manhole.
- (m) The workers shall be provided with Gumboots or non sparking shoes bump helmets and gloves nonsparking tools safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.
- (n) Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.

- (o) If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.
 - (p) The extent to which these precautions are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case will be final.
 - (ix) The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of leadpainting, the following precaution should be taken:-
 - (a) No paint containing lead or lead products shall be used except in the form of paste or ready madepaint.
 - (b) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.
 - (c) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall beprovided to enable the working painters to wash during and on the cessation of work.
 - (x) Workmen executing work on scaffolds or other structures above specified height shall be provided withfull body harness and fall arresters.
9. An additional clause (viii)(i) of Central Public Works Department Safety Code (iv) the Contractor shall not employwomen and men below the age of 18 on the work of painting with product containing lead in any form, wherever men above the age of 18 are employed on the work of lead painting, the following principles must be observed for such use :
- (xi) White lead, sulphate of lead or product containing these pigment, shall not be used in painting operationexcept in the form of pastes or paint ready for use.
 - (xii) Measures shall be taken, wherever required in order to prevent danger arising from the application of apaint in the form of spray.
 - (xiii) Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dryrubbing down and scraping.
 - (xiv) Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.
 - (xv) Overall shall be worn by working painters during the whole of working period.
 - (xvi) Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled¹³ by painting materials.
 - (xvii) Cases of lead poisoning and suspected lead poisoning shall be notified and shall be subsequently verified by medical man appointed by competent authority of C.P.W.D PWD(DA).
 - (xviii) C.P.W.D./PWD (DA) may require, when necessary medical examination of workers.
 - (xix) Instructions with regard to special hygienic precautions to be taken in the painting trade shall be distributedto working painters.
10. When the work is done near any place where there is risk of drowning, all necessary equipments

should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.

11. Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions :-
 - (xx) (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.
 - (b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
 - (xxi) Every crane driver or hoisting appliance operator, shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operator.
 - (xxii) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
 - (xxiii) In case of departmental machines, the safe working load shall be notified by the Electrical Engineer-in-Charge. As regards contractor's machines the contractor shall notify the safe working load of the machine to the Engineer-in-Charge whenever he brings any machinery to site of work and get it verified by the Electrical Engineer concerned.
12. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
13. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.
14. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
15. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer or Engineer-in-

Charge of the department or their representatives.

16. Notwithstanding the above clauses from (1) to (15), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

Model Rules for the Protection of Health and Sanitary Arrangements for Workers Employed by Central P.W.D. or its Contractors

1. APPLICATION

These rules shall apply to all buildings and construction works in charge of Central Public Works Department/ PWD (DA) in which twenty or more workers are ordinarily employed or are proposed to be employed in any day during the period during which the contract work is in progress.

2. DEFINITION

Work place means a place where twenty or more workers are ordinarily employed in connection with construction work on any day during the period during which the contract work is in progress.

3. FIRST-AID FACILITIES

- (i) At every work place, there shall be provided and maintained, so as to be easily accessible during working hours, first-aid boxes at the rate of not less than one box for 150 contract labour or part thereof ordinarily employed.
- (ii) The first-aid box shall be distinctly marked with a red cross on white back ground and shall contain the following equipment:-
 - (a) For work places in which the number of contract labour employed does not exceed 50-Each first-aid box shall contain the following equipments :-
 1. 6 small sterilised dressings.
 2. 3 medium size sterilised dressings.
 3. 3 large size sterilised dressings.
 4. 3 large sterilised burn dressings.
 5. 1 (30 ml.) bottle containing a two per cent alcoholic solution of iodine.
 6. 1 (30 ml.) bottle containing salvolatile having the dose and mode of administration indicated on the label.
 7. 1 snakebite lancet.
 8. 1 (30 gms.) bottle of potassium permanganate crystals.
 9. 1 pair scissors.
 10. 1 copy of the first-aid leaflet issued by the Director General, Factory Advice Service and Labour Institutes, Government of India.
 11. 1 bottle containing 100 tablets (each of 5 gms.) of aspirin.
 12. Ointment for burns.
 13. A bottle of suitable surgical antiseptic solution.
 - (b) For work places in which the number of contract labour exceed 50.Each first-aid box shall

contain the following equipments.

1. 12 small sterilised dressings.
 2. 6 medium size sterilised dressings.
 3. 6 large size sterilised dressings.
 4. 6 large size sterilised burn dressings.
 5. 6 (15 gms.) packets sterilised cotton wool.
 6. 1 (60 ml.) bottle containing a two per cent alcoholic solution iodine.
 7. 1 (60 ml.) bottle containing salvolatile having the dose and mode of administration indicated on the label.
 8. 1 roll of adhesive plaster.
 9. 1 snake bite lancet.
 10. 1 (30 gms.) bottle of potassium permanganate crystals.
 11. 1 pair scissors.
 12. 1 copy of the first-aid leaflet issued by the Director General Factory Advice Service and Labour Institutes /Government of India.
 13. A bottle containing 100 tablets (each of 5 gms.) of aspirin.
 14. Ointment for burns.
 15. A bottle of suitable surgical antiseptic solution.
- (iii) Adequate arrangements shall be made for immediate recoument of the equipment when necessary.
- (iv) Nothing except the prescribed contents shall be kept in the First-aid box.
- (v) The first-aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.
- (vi) A person in charge of the First-aid box shall be a person trained in First-aid treatment in the work places where the number of contract labour employed is 150 or more.
- (vii) In work places where the number of contract labour employed is 500 or more and hospital facilities are not available within easy distance from the works. First-aid posts shall be established and run by a trained compounder. The compounder shall be on duty and shall be available at all hours when the workers are at work.
- (viii) Where work places are situated in places which are not towns or cities, a suitable motor transport shall be kept readily available to carry injured person or person suddenly taken ill to the nearest hospital.

4. DRINKING WATER

- (i) In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.
- (ii) Where drinking water is obtained from an Intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.
- (iii) Every water supply or storage shall be at a distance of not less than 50 feet from any latrine drain or

othersource of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door which shall be dust and waterproof.

- (iv) A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

5. WASHING FACILITIES

- (i) In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of contract labour employed therein.
- (ii) Separate and adequate cleaning facilities shall be provided for the use of male and female workers.
- (iii) Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

6. LATRINES AND URINALS

- (i) Latrines shall be provided in every work place on the following scale namely :-
 - (a) Where female are employed, there shall be at least one latrine for every 25 females.
 - (b) Where males are employed, there shall be at least one latrine for every 25 males.Provided that, where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25 males or females as the case may be upto the first 100, and one for every 50 thereafter.
- (ii) Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.
- (iii) Construction of latrines: The inside walls shall be constructed of masonry or some suitable heat-resisting nonabsorbent materials and shall be cement washed inside and outside at least once a year, Latrines shall not be of a standard lower than borehole system.
- (iv) (a) Where workers of both sexes are employed, there shall be displayed outside each block of latrine and urinal, a notice in the language understood by the majority of the workers “For Men only” or “For Women Only” as the case may be.
 - (b) The notice shall also bear the figure of a man or of a woman, as the case may be.
- (v) There shall be at least one urinal for male workers upto 50 and one for female workers upto fifty employed at a time, provided that where the number of male or female workmen, as the case may be exceeds 500, it shall be sufficient if there is one urinal for every 50 males or females upto the first 500 and one for every 100 or part thereafter.
- (vi) (a) The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.
 - (b) Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of the Public Health Authorities.

- (vii) Water shall be provided by means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.
- (viii) Disposal of excreta :- Unless otherwise arranged for by the local sanitary authority, arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incinerator. Alternately excreta may be disposed of by putting a layer of night soil at the bottom of a pucca tank prepared for the purpose and covering it with a 15 cm. layer of waste or refuse and then covering it with a layer of earth for a fortnight (when it will turn to manure).
- (ix) The contractor shall at his own expense, carry out all instructions issued to him by the Engineer-in-Charge to effect proper disposal of night soil and other conservancy work in respect of the contractor's workmen or employees on the site. The contractor shall be responsible for payment of any charges which may be levied by Municipal or Cantonment Authority for execution of such on his behalf.

7. PROVISION OF SHELTER DURING REST

At every place there shall be provided, free of cost, four suitable sheds, two for meals and the other two for rest separately for the use of men and women labour. The height of each shelter shall not be less than 3 metres (10ft.) from the floor level to the lowest part of the roof. These shall be kept clean and the space provided shall be on the basis of 0.6 sq.m. (6 sft) per head.

Provided that the Engineer-in-Charge may permit subject to his satisfaction, a portion of the building under construction or other alternative accommodation to be used for the purpose.

8. CRECHES

- (i) At every work place, at which 20 or more women worker are ordinarily employed, there shall be provided two rooms of reasonable dimensions for the use of their children under the age of six years. One room shall be used as a play room for the children and the other as their bedroom. The rooms shall be constructed with specifications as per clause 19H (ii) a, b & c.
- (ii) The rooms shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean.
- (iii) The contractor shall supply adequate number of toys and games in the play room and sufficient number of cots and beddings in the bed room.
- (iv) The contractor shall provide one ayah to look after the children in the creche when the number of women workers does not exceed 50 and two when the number of women workers exceed 50.
- (v) The use of the rooms earmarked as creches shall be restricted to children, their attendants and mothers of the children.

9. CANTEENS

- (i) In every work place where the work regarding the employment of contract labour is likely to continue for six months and where in contract labour numbering one hundred or more are ordinarily employed, an adequate canteen shall be provided by the contractor for the use of such contract

labour.

- (ii) The canteen shall be maintained by the contractor in an efficient manner.
- (iii) The canteen shall consist of at least a dining hall, kitchen, storeroom, pantry and washing places separately for workers and utensils.
- (iv) The canteen shall be sufficiently lighted at all times when any person has access to it.
- (v) The floor shall be made of smooth and impervious materials and inside walls shall be lime-washed or colourwashed at least once in each year.

Provided that the inside walls of the kitchen shall be lime-washed every four months.

- (vi) The premises of the canteen shall be maintained in a clean and sanitary condition.
- (vii) Waste water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause a nuisance.
- (viii) Suitable arrangements shall be made for the collection and disposal of garbage.
- (ix) The dining hall shall accommodate at a time 30 per cent of the contract labour working at a time.
- (x) The floor area of the dining hall, excluding the area occupied by the service counter and any furniture except tables and chairs shall not be less than one square metre (10 sft) per diner to be accommodated as prescribed in sub-Rule 9.
- (xi) (a) A portion of the dining hall and service counter shall be partitioned off and reserved for women workers in proportion to their number.
(b) Washing places for women shall be separate and screened to secure privacy.
- (xii) Sufficient tables stools, chair or benches shall be available for the number of diners to be accommodated as prescribed in sub-Rule 9.
- (xiii) (a) 1. There shall be provided and maintained sufficient utensils crockery, furniture and any other equipments necessary for the efficient running of the canteen.
2. The furniture utensils and other equipment shall be maintained in a clean and hygienic condition.
(b) 1. Suitable clean clothes for the employees serving in the canteen shall be provided and maintained.
2. A service counter, if provided, shall have top of smooth and impervious material.
3. Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipments.
- (xiv) The food stuffs and other items to be served in the canteen shall be in conformity with the normal habits of the contract labour.
- (xv) The charges for food stuffs, beverages and any other items served in the canteen shall be based on 'Noprofit, No loss' and shall be conspicuously displayed in the canteen.
- (xvi) In arriving at the price of foodstuffs, and other article served in the canteen, the following items shall not be taken into consideration as expenditure namely:-
 - (a) The rent of land and building.
 - (b) The depreciation and maintenance charges for the building and equipments provided for the

canteen.

- (c) The cost of purchase, repairs and replacement of equipments including furniture, crockery, cutlery and utensils.
 - (d) The water charges and other charges incurred for lighting and ventilation.
 - (e) The interest and amounts spent on the provision and maintenance of equipments provided for the canteen.
- (xvii) The accounts pertaining to the canteen shall be audited once every 12 months by registered accountants and auditors.

10. ANTI-MALARIAL PRECAUTIONS

The contractor shall at his own expense, conform to all anti-malarial instructions given to him by the Engineer-in-Charge including the filling up of any borrow pits which may have been dug by him.

- 11.** The above rules shall be incorporated in the contracts and in notices inviting tenders and shall form an integral part of the contracts.

12. AMENDMENTS

Owner/UPRNN may, from time to time, add to or amend these rules and issue directions - it may consider necessary for the purpose of removing any difficulty which may arise in the administration thereof.

Contractor's Labour Regulations

1. SHORT TITLE

These regulations may be called the Contractors Labour Regulations.

2. DEFINITIONS

- (i) Workman means any person employed by UPRNN or its contractor directly or indirectly through a subcontractor with or without the knowledge of the Central Public Works Department/PWD (DA) to do any skilled, semiskilled or unskilled manual, supervisory, technical or clerical work for hire or reward, whether the terms of employment are expressed or implied but does not include any person :-
- (a) Who is employed mainly in a managerial or administrative capacity : or
 - (b) Who, being employed in a supervisory capacity draws wages exceeding five hundred rupees per mensem or exercises either by the nature of the duties attached to the office or by reason of powers vested in him, functions mainly of managerial nature: or
 - (c) Who is an out worker, that is to say, person to whom any article or materials are given out by or on behalf of the principal employers to be made up cleaned, washed, altered, ornamental finished, repaired adopted or otherwise processed for sale for the purpose of the trade or business of the principal employers and the process is to be carried out either in the home of the out worker or insome other premises, not being premises under the control and management of the principal employer.

No person below the age of 14 years shall be employed to act as a workman.

- (ii) Fair Wages means wages whether for time or piece work fixed and notified under the provisions of the Minimum Wages Act from time to time.
- (iii) Contractors shall include every person who undertakes to produce a given result other than a mere supplyof goods or articles of manufacture through contract labour or who supplies contract labour for any workand includes a subcontractor.
- (iv) Wages shall have the same meaning as defined in the Payment of Wages Act.

3. (i) Normally working hours of an adult employee should not exceed 9 hours a day. The working day shall be so arranged that inclusive of interval for rest, if any, it shall not spread over more than 12 hours on anyday.
- (ii) When an adult worker is made to work for more than 9 hours on any day or for more than 48 hours in anyweek, he shall be paid over time for the extra hours put in by him at double the ordinary rate of wages.
 - (iii) (a) Every worker shall be given a weekly holiday normally on a Sunday, in accordance with the provisions of the Minimum Wages (Central) Rules 1960 as amended from time to time irrespective of whether such worker is governed by the Minimum Wages Act or not.
 - (b) Where the minimum wages prescribed by the Government under the Minimum Wages Act

are not inclusive of the wages for the weekly day of rest, the worker shall be entitled to rest day wages at the rate applicable to the next preceding day, provided he has worked under the same contractor for a continuous period of not less than 6 days.

- (c) Where a contractor is permitted by the Engineer-in-Charge to allow a worker to work on a normal weekly holiday, he shall grant a substituted holiday to him for the whole day on one of the five days immediately before or after the normal weekly holiday and pay wages to such worker for the work performed on the normal weekly holiday at overtime rate.

4. DISPLAY OF NOTICE REGARDING WAGES ETC.

The contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain in a clear and legible condition in conspicuous places on the work, notices in English and in the local Indian languages spoken by the majority of the workers giving the minimum rates of wages fixed under Minimum Wages Act, the actual wages being paid, the hours of work for which such wages are earned, wages periods, dates of payments of wages and other relevant information as per Appendix 'III'.

5. PAYMENT OF WAGES

- (i) The contractor shall fix wage periods in respect of which wages shall be payable.
- (ii) No wage period shall exceed one month.
- (iii) The wages of every person employed as contract labour in an establishment or by a contractor where less than one thousand such persons are employed shall be paid before the expiry of seventh day and in other cases before the expiry of tenth day after the last day of the wage period in respect of which the wages are payable.
- (iv) Where the employment of any worker is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the second working day from the date on which his employment is terminated.
- (v) All payment of wages shall be made on a working day at the work premises and during the working time and on a date notified in advance and in case the work is completed before the expiry of the wage period, final payment shall be made within 48 hours of the last working day.
- (vi) Wages due to every worker shall be paid to him direct by contractor through Bank or ECS or online transfer to his bank account.
- (vii) All wages shall be paid through Bank or ECS or online transfer.
- (viii) Wages shall be paid without any deductions of any kind except those specified by the Central Government by general or special order in this behalf or permissible under the Payment of Wages Act 1956.
- (ix) A notice showing the wages period and the place and time of disbursement of wages shall be displayed at the place of work and a copy sent by the contractor to the Engineer-in-Charge under acknowledgment.
- (x) It shall be the duty of the contractor to ensure the disbursement of wages through bank account of labour.

- (xi) The contractor shall obtain from the Junior Engineer or any other authorised representative of the Engineer- in-Charge as the case may be, a certificate under his signature at the end of the entries in the “Register of Wages” or the “Wage-cum-Muster Roll” as the case may be in the following form:-
- (xii) “Certified that the amount shown in column No..... has been paid to the workman concerned through bank account of labour on at... ”

FINES AND DEDUCTIONS WHICH MAYBE MADE FROM WAGES

- (i) The wages of a worker shall be paid to him without anydeduction of any kind except the following:-
 - (a) Fines
 - (b) Deductions for absence from duty i.e. from the place or the places where by the terms of his employment he is required to work. The amount of deduction shall be in proportion to the period for which he was absent.
 - (c) Deduction for damage to or loss of goods expressly entrusted to the employed person for custodyorfor loss of moneyor anyother deduction which he is required to account, where such damage or lossis directly attributable to his neglect or default.
 - (c) Deduction for recovery of advances or for adjustment of overpayment of wages, advances granted shall be entered in a register.
 - (d) Any other deduction which the Central Government may from time to time allow.
- (ii) No fines should be imposed on any worker save in respect of such acts and omissions on his part as have been approved of by the Chief Labour Commissioner.

Note :- An approved list of Acts and Omissions for which fines can be imposed is enclosed at Appendix-X

- (iii) No fine shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deductions.
- (iv) The total amount of fine which may be imposed in anyone wage period on a worker shall not exceed an amount equal to three paise in a rupee of the total wages, payable to him in respect of that wage period.
- (v) No fine imposed on any worker shall be recovered from him by instalment, or after the expiry of sixty daysfrom the date on which it was imposed.
- (vi) Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which itwas imposed.

LABOUR RECORDS

- (i) The contractor shall maintain a Register of persons employed on work on contract in Form XIII of the CL(R&A) Central Rules 1971 (Appendix IV)
- (ii) The contractor shall maintain a Muster Roll register in respect of all workmen employed by him on the work under Contract in Form XVI of the CL (R&A) Rules 1971 (Appendix V).
- (iii) The contractor shall maintain a Wage Register in respect of all workmen employed by him on the workunder contract in Form XVII of the CL (R&A) Rules 1971 (Appendix VI).

- (iv) Register of accident - The contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars:
 - (a) Full particulars of the labourers who met with accident.
 - (b) Rate of Wages.
 - (c) Sex
 - (d) Age
 - (e) Nature of accident and cause of accident.
 - (f) Time and date of accident.
 - (g) Date and time when admitted in Hospital,
 - (h) Date of discharge from the Hospital.
 - (i) Period of treatment and result of treatment.
 - (j) Percentage of loss of earning capacity and disability as assessed by Medical Officer.
 - (k) Claim required to be paid under Workmen's Compensation Act.
 - (l) Date of payment of compensation.
 - (m) Amount paid with details of the person to whom the same was paid.
 - (n) Authority by whom the compensation was assessed.
 - (o) Remarks
- (vi) The contractor shall maintain a Register of Fines in the Form XII of the CL (R&A) Rules 1971 (Appendix-XI)
- (vii) The contractor shall display in a good condition and in a conspicuous place of work the approved list of facts and omissions for which fines can be imposed (Appendix-X)
- (viii) The contractor shall maintain a Register of deductions for damage or loss in Form XX of the CL (R&A) Rules 1971 (Appendix-XII)
- (ix) The contractor shall maintain a Register of Advances in Form XXIII of the CL (R&A) Rules 1971 (Appendix-XIII)
- (x) The contractor shall maintain a Register of Overtime in Form XXIII of the CL (R&A) Rules 1971 (Appendix-XIV)

6. ATTENDANCE CARD-CUM-WAGE SLIP

- (i) The contractor shall issue an Attendance card-cum-wage slip to each workman employed by him in the specimen form at (Appendix-VII)
- (ii) The card shall be valid for each wage period.
- (iii) The contractor shall mark the attendance of each workman on the card twice each day, once at the commencement of the day and again after the rest interval, before he actually starts work.
- (iv) The card shall remain in possession of the worker during the wage period under reference.
- (v) The contractor shall complete the wage slip portion on the reverse of the card at least a day prior

to the disbursement of wages in respect of the wage period under reference.

- (vi) The contractor shall obtain the signature or thumb impression of the worker on the wage slip at the time of disbursement of wages and retain the card with himself.

7. EMPLOYMENT CARD

The contractor shall issue an Employment Card in Form XIV of the CL (R&A) Central Rules 1971 to each worker within three days of the employment of the worker (Appendix-VIII).

8. SERVICE CERTIFICATE

On termination of employment for any reason whatsoever the contractor shall issue to the workman whose services have been terminated, a Service certificate in Form XV of the CL (R&A) Central Rules 1971 (Appendix-IX)

9. PRESERVATION OF LABOUR RECORDS

All records required to be maintained under Regulations Nos. 6 & 7 shall be preserved in original for a period of three years from the date of last entries made in them and shall be made available for inspection by the Engineer-in-Charge or Labour Officer or any other officers authorised by the Ministry of Urban Development in this behalf.

10. POWER OF LABOUR OFFICER TO MAKE INVESTIGATIONS OR ENQUIRY

The Labour Officer or any person authorised by Central Government on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of Fair Wage Clauses and the Provisions of these Regulations. He shall investigate into any complaint regarding the default made by the contractor or subcontractor in regard to such provision.

11. REPORT OF LABOUR OFFICER

The Labour Officer or other persons authorised as aforesaid shall submit a report of result of his investigation or enquiry to the Executive Engineer concerned indicating the extent, if any, to which the default has been committed with a note that necessary deductions from the contractor's bill be made and the wages and other dues be paid to the labourers concerned. In case an appeal is made by the contractor under Clause 13 of these regulations, actual payment to labourers will be made by the Executive Engineer after the Superintending Engineer has given his decision on such appeal.

- (i) The Executive Engineer shall arrange payments to the labour concerned within 45 days from the receipt of the report from the Labour Officer or the Superintending Engineer as the case may be.

12. APPEAL AGAINST THE DECISION OF LABOUR OFFICER

Any person aggrieved by the decision and recommendations of the Labour Officer or other person so authorised may appeal against such decision to the Superintending Engineer concerned within 30 days from the date of decision, forwarding simultaneously a copy of his appeal to the Executive Engineer concerned but subject to such appeal, the decision of the officer shall be final and binding upon the contractor.

13. PROHIBITION REGARDING REPRESENTATION THROUGH LAWYER

- (i) A workman shall be entitled to be represented in any investigation or enquiry under these regulations by:-
 - (a) An officer of a registered trade union of which he is a member.
 - (b) An officer of a federation of trade unions to which the trade union referred to in clause (a) is affiliated.
 - (c) Where the employer is not a member of any registered trade union, by an officer of a registered trade union, connected with the industry in which the worker is employed or by any other workman employed in the industry in which the worker is employed.
- (ii) An employer shall be entitled to be represented in any investigation or enquiry under these regulations by :-
 - (a) An officer of an association of employers of which he is a member.
 - (b) An officer of a federation of associations of employers to which association referred to in clause (a) is affiliated.
 - (c) Where the employer is not a member of any association of employers, by an officer of association of employer connected with the industry in which the employer is engaged or by any other employer, engaged in the industry in which the employer is engaged.
- (iii) No party shall be entitled to be represented by a legal practitioner in any investigation or enquiry under these regulations.

14. INSPECTION OF BOOKS AND SLIPS

The contractor shall allow inspection of all the prescribed labour records to any of his workers or to his agent at a convenient time and place after due notice is received or to the Labour Officer or any other person, authorised by the Central Government on his behalf.

15. SUBMISSIONS OF RETURNS

The contractor shall submit periodical returns as may be specified from time to time.

16. AMENDMENTS

The Central Government may from time to time add to or amend the regulations and on any question as to the application/Interpretation or effect of those regulations the decision of the Superintending Engineer concerned shall be final.

LIST OF ACTS AND OMISSIONS FOR WHICH FINES CAN BE IMPOSED

In accordance with rule 7(v) of the CPWD Contractor's Labour Regulations to be displayed prominently at the site of work both in English and local Language.

1. Wilful insubordination or disobedience, whether alone or in combination with other.
2. Theft fraud or dishonesty in connection with the contractors beside a business or property of CPWD.
3. Taking or giving bribes or any illegal gratifications
4. Habitual late attendance.
5. Drunkenness lighting, riotous or disorderly or indifferent behaviour
6. Habitual negligence.
7. Smoking near or around the area where combustible or other materials are locked
8. Habitual indiscipline.
9. Causing damage to work in the progress or to property of the MUDA or of the contractor.
10. Sleeping on duty.
11. Malingering or slowing down work.
12. Giving of false information regarding name, age father's name, etc.
13. Habitual loss of wage cards supplied by the employers.
14. Unauthorised use of employer's property of manufacturing or making of unauthorised particles at the work place.
15. Bad workmanship in construction and maintenance by skilled workers which is not approved by the Department
and for which the contractors are compelled to undertake rectifications.
16. Making false complaints and/or misleading statements.
17. Engaging on trade within the premises of the establishments.
18. Any unauthorised divulgence of business affairs of the employees.
19. Collection or canvassing for the collection of any money within the premises of an establishment unless authorised by the employer.
20. Holding meeting inside the premises without previous sanction of the employers.
21. Threatening or intimidating any workman or employer during the working hours within the premises.

DETAILED PROJECT REPORT

Business cum Tourism and Cultural Centre at Police Bazar, Shillong

ARCHITECTURE

Master Planning, Zoning, & Building Design



Client: Govt. of Meghalaya, Shillong, Meghalaya



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1 PREFACE

The Business cum Tourism and Cultural Centre at Police Bazar, Shillong is visualized as a state of the art, contemporary space that is developed on the lines of the ever growing nature of Shillong and its people. Apart from its commercial nature it would act as a congregational space to the ever expanding surroundings it resides in.

The location of the Business cum Tourism and Cultural Centre on a prime spot such as the police bazar market allows for high visibility from all sides. At an urban scale the Business cum Tourism and Cultural Centre would be an urban marker around the area and for the city at large; but for the individual visitor it will provide an 'immersive experience' using both traditional planning skills and contemporary architecture.

The proposed Business cum Tourism and Cultural Centre includes public gathering zones that would be open to performances by musicians, artists, etc. that would help retain visitors longer and increase the overall value to the commercial space.

Ultimately, the Business cum Tourism and Cultural Centre through imagery and language would express the modernistic ideals of Meghalaya, both of which are exemplified in Shillong and its youth.



Figure 1 Proposed view of the Business cum Tourism and Cultural Centre at Police Bazar

2 SCOPE OF WORK

The scope of work for the project as mentioned by the Government of Meghalaya includes the Architectural & Engineering Design, Preparation of Detailed Project Report (DPR) including Master Planning, Zoning & Landscaping of the proposed Business cum Tourism and Cultural Centre.

2.1 Location

The proposed Business cum Tourism and Cultural Centre is to be constructed at the existing Meghalaya Transport building and warehouse on both sides of the road coming from jail to the police bazar chowk and is located at 25°56'64"N and 91°88'43"E.



Figure 2 Location map of the proposed site

2.2 Landmarks

The main landmarks for the proposed location of the Business cum Tourism and Cultural Centre includes the main police bazar chowk which is the oldest market place of Shillong that lies to its south and the Marriott Hotel that lies to its north.



Figure 3 Landmarks around the proposed Business cum Tourism and Cultural Centre

2.3 The Business cum Tourism and Cultural Centre

The Business cum Tourism and Cultural Centre is planned of the Archery, traditional sport of the Khasi tribe of Meghalaya with an approach to utilizing the proposed site to its maximum while providing design elements that help create a contemporary space that helps invite visitors to stay and appreciate the space.

A proposed combination of retail, entertainment, auditorium, hotel and open public space will help keep the Business cum Tourism and Cultural Centre running at all times and sustain its maintenance in the long run.

2.4 Future Expansion

The proposed Business cum Tourism and Cultural Centre is planned in a manner that allows for integration of adjoining areas.

The upper two floors of the Business cum Tourism and Cultural Centre are so designed that they can be converted to luxurious hotel without any further modifications of the structure.

This phase currently has been designed with these floors as state guest houses for various departments of the Government of Meghalaya and as convention and exhibition spaces.

The future scope shall be decided by the government as to what purpose these floors shall be used.

3 THE SITE

3.1 Urban Context

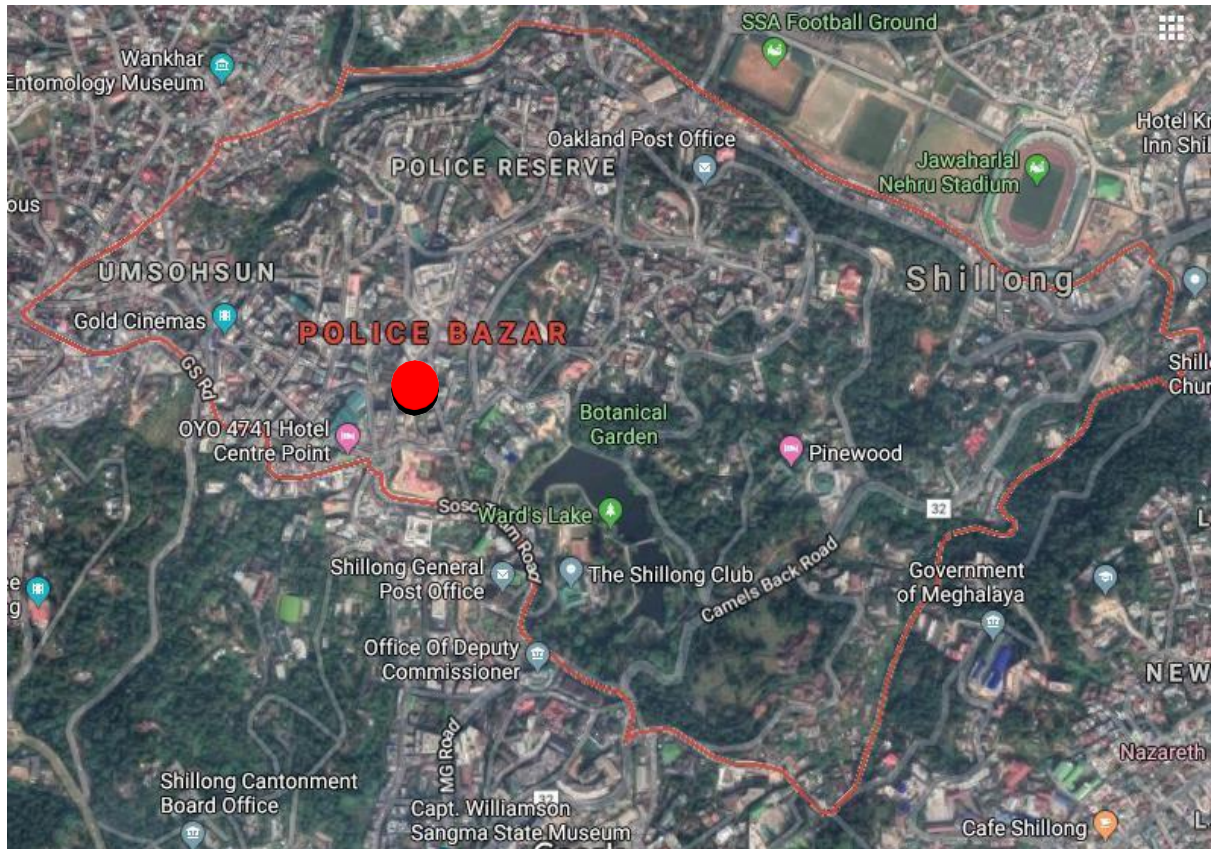


Figure 4 The Site with respect to the town

Shillong the capital city of the State as well as the District headquarter of East Khasi Hills District. Shillong is the only hill station in the country that is accessible from all sides. The name Shillong is derived from U-Shyllong, a powerful deity and is situated at an altitude of 1,491m above sea level. This beautiful city is 103kms. from Guwahati, the nearest air and train link.

The proposed Business cum Tourism and Cultural Centre is to be located at Police Bazar that lies on the Jail road approaching the police bazar chowk.

3.2 Immediate Context

The main landmarks for the proposed location of the Business cum Tourism and Cultural Centre includes the Hotel Marriott that lies to its north and the Police Bazar Chowk that lies to its south. The location is strewn with many commercial spaces, old market spaces and eateries that bring a lot of people to its vicinity.

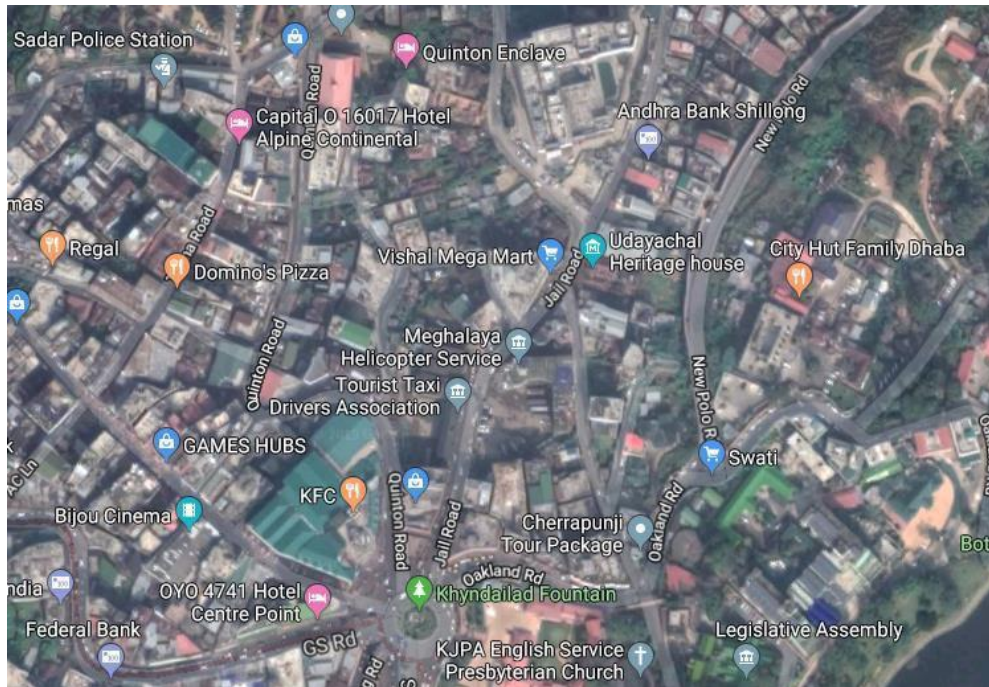


Figure 5 Site context map

3.3 Site Surrounding Photographs



Figure 6 Photographs around the proposed site (1)



Figure 7 Photographs around the proposed site (2)

3.4 Survey

The site survey provided a detailed assessment of the existing conditions on the proposed site at Police Bazar. The site has a slope of around 8 mts from extreme south end to extreme north end. The highest point being the south and lowest being the north.

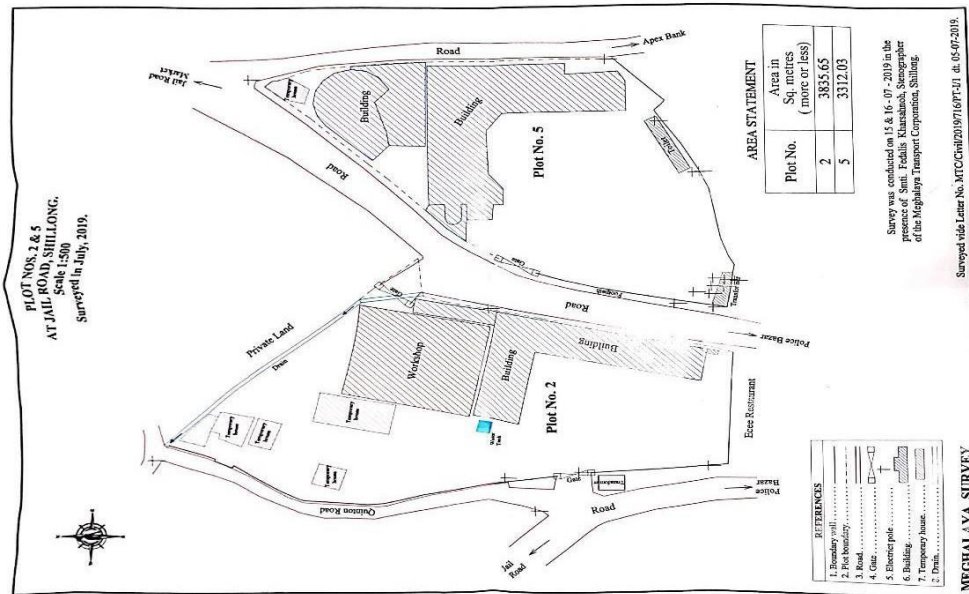


Figure 8 The survey plan of the proposed site for the Business cum Tourism and Cultural Centre



Figure 9 The spot levels of the proposed site for the Business cum Tourism and Cultural Centre

3.5 Climatology

3.5.1 Temperature

The maximum temperature recorded in Shillong is 24.0°C and the minimum recorded is 4.4°C.

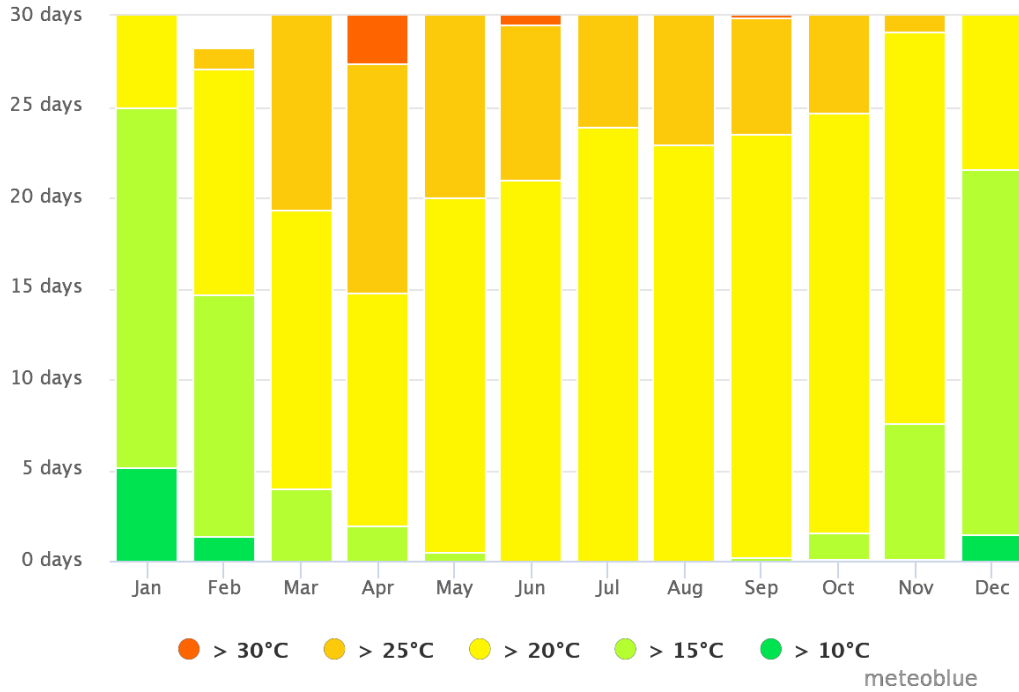


Figure 10 Maximum Temperature Graph for Shillong

3.5.2 Humidity

Under Köppen's climate classification the city features a subtropical highland climate (Cwb). Its summers are cool and very rainy, while its winters are cool and dry.

3.5.3 Precipitation/ Rainfall

Shillong is subject to vagaries of the monsoon. The monsoons arrive in June and it rains almost until the end of August. October–November and March–April are the best months to visit Shillong.

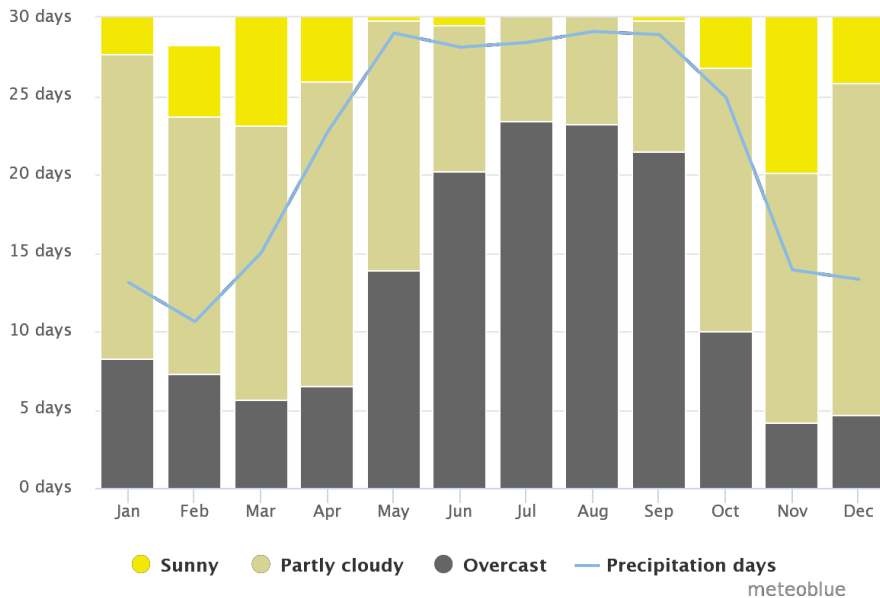


Figure 11 Average precipitation Graph for Shillong

3.5.4 Wind

The characteristics of wind in this areas as depicted in the tabulation below has a speed of about 12 km/h period during monsoon where it reaches the peak and is slightly lower around the rest of the year.

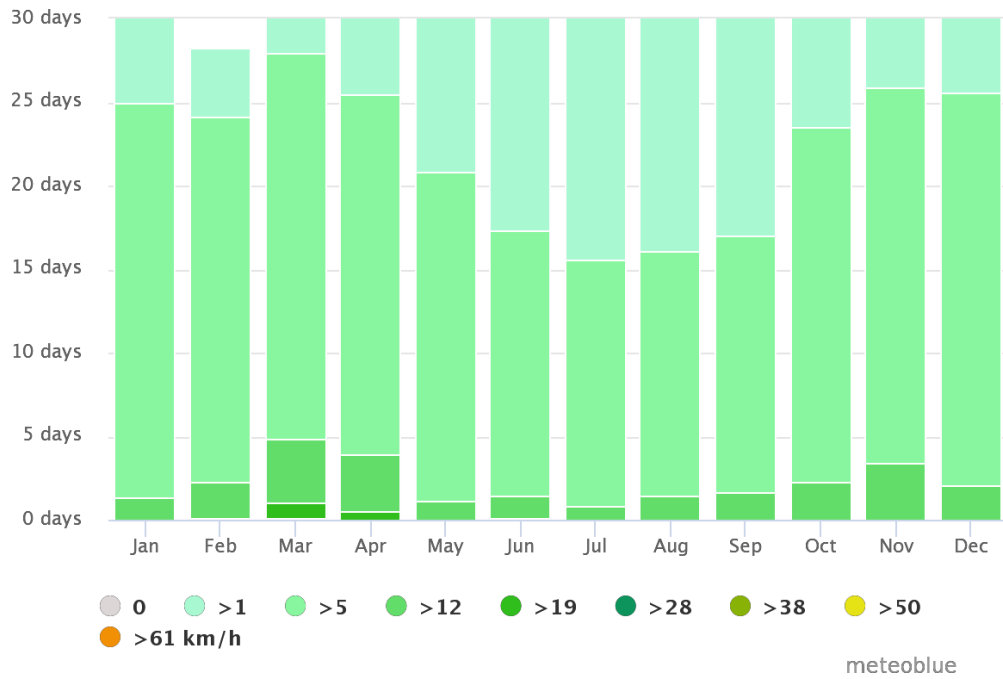


Figure 12 Wind speed through the months in Shillong

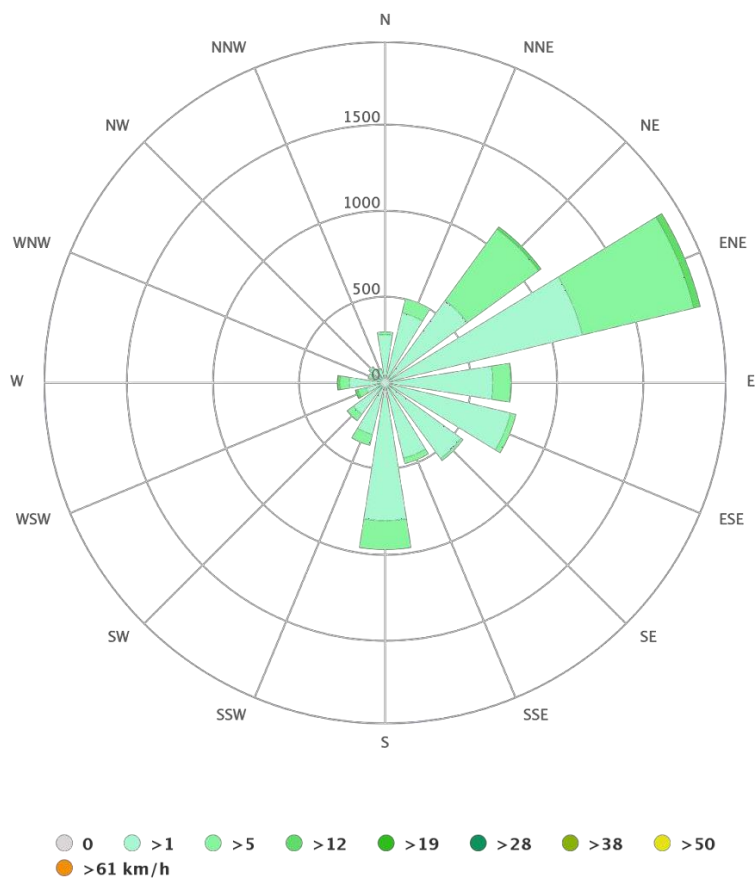


Figure 13 Wind rose diagram of Shillong

3.5.5 Solar Orientation

The sun - path diagram for Shillong as below shows fairly consistent day light hours and orientation.

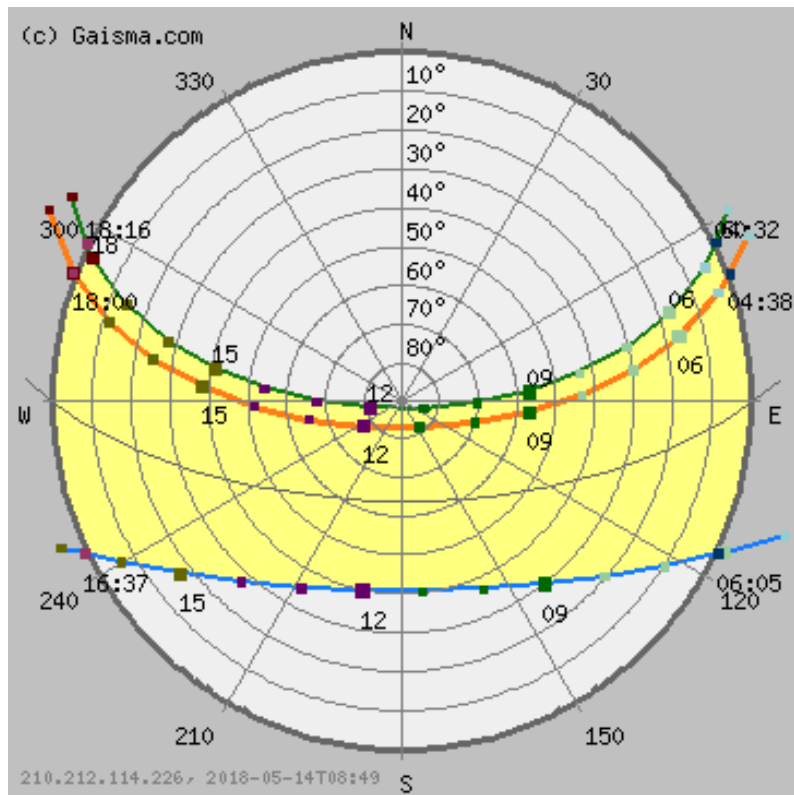


Figure 14 Sun Path Diagram for Shillong

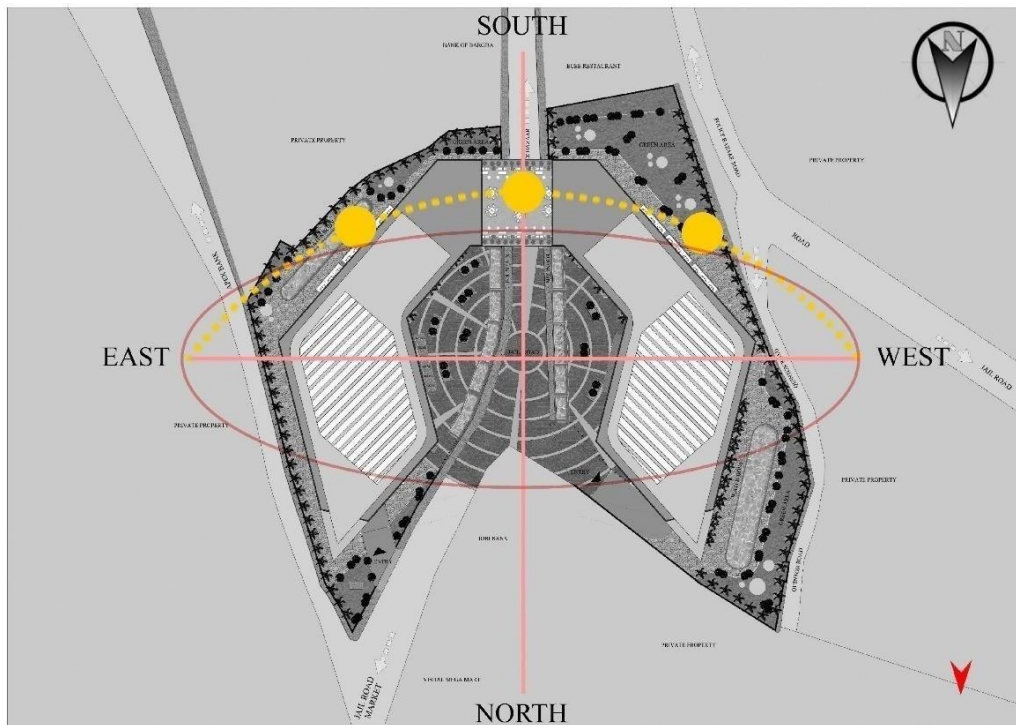


Figure 15 Sun Path Diagram for proposed site

3.6 Sustainability

The client has given special emphasis on a design that utilizes the site in the most cost effective way while providing a compact design with all its minimal requirements. An environmentally friendly and energy efficient building design were also highly sought for by the client.

As a part of the process of implementing these instructions the following two processes are being pursued in parallel. The first is ensuring that all statutory environmental compliances are sought, revised as required and adhered to stringently, the second aspect is to ensure that the project is benchmarked using a recognized green rating system.

3.6.1 Statutory Compliances

The Environmental Clearance and other related clearances issued for the project would be reviewed for the accepted design.

3.6.2 Green Building

The project is envisaged as a sustainable and environmentally responsive design and the client has specifically sought to ensure the same by seeking an energy efficient design. For the same appropriate Star Certificate would be sought to make it a green building.

3.7 Site linkages

The proposed site is best approached by road. The National Highway 40 connects Shillong to Guwahati and the national Highway 44 connects Shillong with Tripura and Mizoram.

3.7.1 Road Linkage

The site is accessed from NH6 that leads upto Lower Jail Road and the Police Bazar Road from the east or via Wards Lake Road from the south.



Figure 16 Map showing the roads linkage to the proposed site

3.7.2 Rail Linkage

The closest railway station to the proposed site is at Guwahati which is about 96km away.

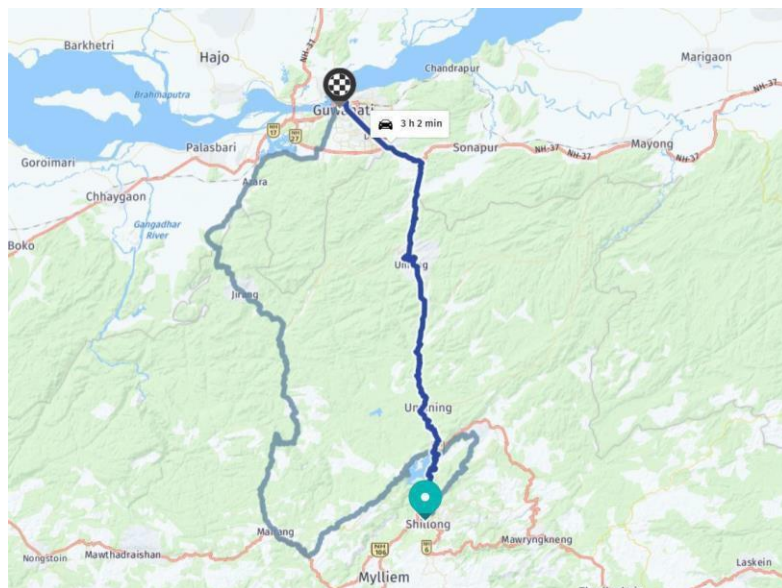


Figure 17 Route map from Guwahati railway station to the proposed site in Shillong

4 BUILDING BYELAWS

4.1 Floor area ratio & maximum coverage

The specific Floor Area Ratio and Plot Coverage stipulations shall be as per the table below as per the Meghalaya Building-Bye Laws 2021:

TABLE D – 2

Sl. No.	Type of Occupancy	Maximum permissible F.A.R	Maximum permissible Plot Coverage	Maximum no. of Permissible Floors	Maximum Building Height in metres
				(Inclusive of Basement / Lower Ground Floor / Underground Floor / Cellar)	(Inclusive of Basement / Lower Ground Floor / Underground Floor / Cellar/mezzanine floor / Service Floor)
				Motorable plots	Motorable plots
1	2	3	4	5	6
1	Residential Bungalows	2	50%	4	13
2	Residential Apartments	2	50%	6	19
3	Commercial	2	60%	6	21
4	Institutional	1.5	40%	5	17
5	Public & Semi-Public Buildings	2.0	50%	6	21
6	Mixed Use Buildings	2.0	Coverage of predominant use to be adopted.	6	19
7	Assembly	1.5	50%	5	21
8	Industrial	1.5	40%	3	14
9	Storage	2.0	60%	3	14
10	Hazardous	1.2	30%	2	8
11	Special Projects	3.0	40%	7	27
12	Industrial Zone (factory)	1.0	40%	As per functional requirement	

Figure 19 FAR & PC as per Meghalaya Building Bye Laws 2021

‘Special Projects’ – Means those projects / buildings with large scale activities such as Hotels, Public Institutions, Healthcare, Shopping Malls, Multiplexes, ICT / BPO’s, Educational Institution having a minimum plot area of 50,000 sq.ft and a minimum single covered area of 40% of the plot area. **(Point A2.60 Meghalaya Building-Bye Laws 2021- Page 139)**

4.2 Setback

The minimum setbacks shall be as per the table below as per the Meghalaya Building-Bye Laws 2021:

TABLE D – 3

Plot size (in Sq ft.)	Minimum Front Setback (in Mts.) Abutting Road width					Minimum Setbacks for other sides (in Mts.)	
	Non- motorable Footpath	Single Lane / Motorable Footpath	Double Lane	Four Lane	Six Lane	Rear side	Other sides
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Less than 2000	1.80	3.00	3.00	4.50	4.50	1.80	1.00/1.00
Above 2000 & width <10m	2.40	3.00	3.00	4.50	4.50	1.80	1.20/1.20
Above 2001 & upto 5000	3.00	3.00	3.00	6.00	9.00	2.10	1.80/1.80
Above 5001 & upto 7500	3.00	3.00	3.00	6.00	9.00	2.40	2.10/1.80
Above 7501 & upto 20000	3.00	4.00	4.00	6.00	9.00	3.00	3.00/2.40
Above 20001 & upto 35000	3.00	4.50	5.00	6.00	9.00	3.00	4.50/3.00
Above 35001 & upto 50000	3.00	6.00	6.00	6.00	9.00	6.00	5.00/5.00
Above 50001	6.00	6.00	6.00	6.00	9.00	6.00	6.00/6.00

Figure 20 Setbacks as per Meghalaya Building bye laws 2021

4.3 Parking norms

The Minimum Parking Spaces shall be as shown in Table-D-1 below as per the Meghalaya Building-Bye Laws 2021:

Table- D-1

Sl. No.	Occupancy	One parking Space for every
(a)	(b)	(c)
1	Residential Bungalow	At least one parking space beyond mandatory setback
	Residential Apartment	100 sq.m. of floor area.
2	(i) Lodging establishments tourist homes, hotels with lodging accomodation.	3(three) guest rooms.
	(ii) Restaurants	75 sq.m. of floor area.
3	Institutional (Hospitals, Medical Institutions)	75 sq.m. floor area.
4	Assembly (Theatres, cinema houses, concert halls, auditoria, assembly halls, including those of college and hostels for working men / women)	25 sq.m floor area.
5	Banquet Halls, Cultural Halls, places of worships	10 sq.m. floor area.
6	Sport facility / Stadiums	50 sq.m.
7	Educational	100 sq.m. floor area.
8	Public and semipublic, private business buildings etc.	75 sq.m. floor area.
9	Commercial (markets, departmental stores, shops and other commercial users) including wholesale markets.	75 sq.m. floor area.
10	Industrial	300 sq.m. floor area.
11	Storage (any type)	300 sq.m. floor area.

Figure 21 Parking Norms as per Meghalaya Building Bye Laws 2021

No off-street parking space shall be less than 2.50 m in width and 5.00m in length, with a minimum head room of 2.4 m measured at the bottom of beam, if parked in a covered area. **(Point D1 (a) Meghalaya Building-Bye Laws 2021- Page 169)**

The minimum width of circulation driveway to be provided for adequate maneuvering of vehicles shall be 3.0m for cars and 5.00 m for trucks exclusive of parking space referred to in (a) above. However, a projection from a height above 5.50 m from the ground level may be permitted keeping the mandatory open space open to sky. **(Point D1 (b) Meghalaya Building-Bye Laws 2021- Page 169)**

Special Exemption: In case of special project where the plot coverage of the proposed building is within the maximum permissible coverage, additional floor/floors above the maximum permissible floor may be permitted by the government provided the proposed total floor area is within the permissible F.A.R. limit. **(Point D2.2 Meghalaya Building-Bye Laws 2021- Page 173)**

5 SITE PLANNING

5.1 Concept

The basic site layout has evolved from Archery, traditional sport of the Khasi tribe of Meghalaya for centuries. The form of the building has been derived from the bow and arrow of the archery sport. The building form forms the bow and the road passing through the two sites forms the arrow. The central portion in between the left and right wings has been developed as the target board with concentric circles.

Based on this basic concept the proposed site was divided into retail, entertainment, office and public zones that were first placed according to their function and immediate accessibility.

It was further on consolidated based on their internal functional connectivity and then further split and spaced to create the central plaza that act as open public space.

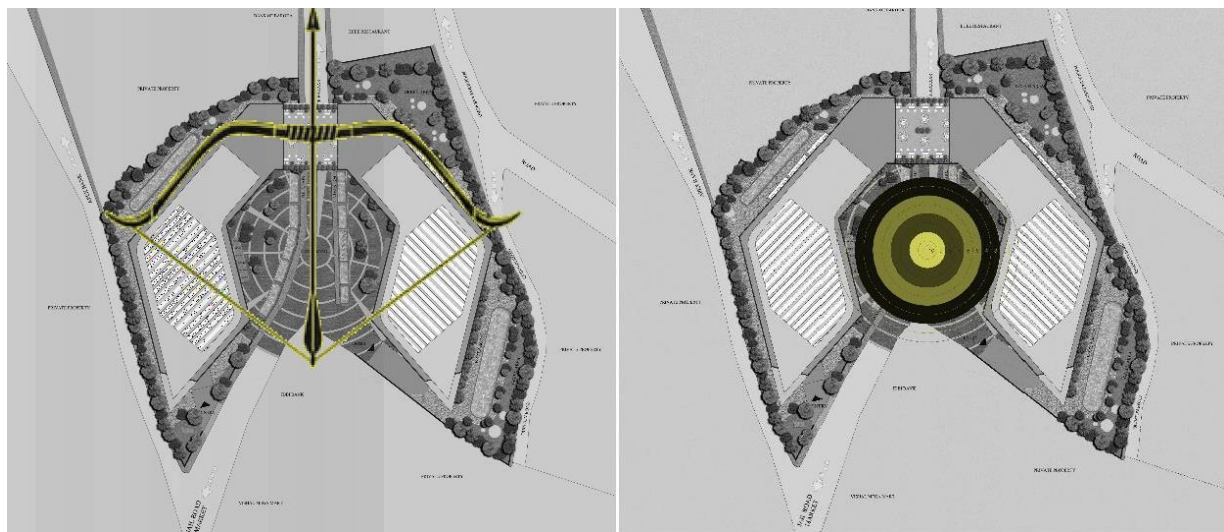


Figure 22 Image showing the conceptual layout of the Business cum Tourism and Cultural Centre

5.2 Cost effective site utilization

The optimum utilization of the proposed site for maximum cost effectiveness was achieved by:

1. **Consolidating functional planning on site for maximum user interaction between spaces**
2. **Creating a stilt for parking**

Utilizing the natural slope of the site to create a stilt for parking and services reduces the cost of excavation and creation of a basement for parking which could be prone to water logging. This was achieved by taking an intermediate level from the extreme levels and cutting and filling the site as required to achieve an adequate height to create a stilted parking.

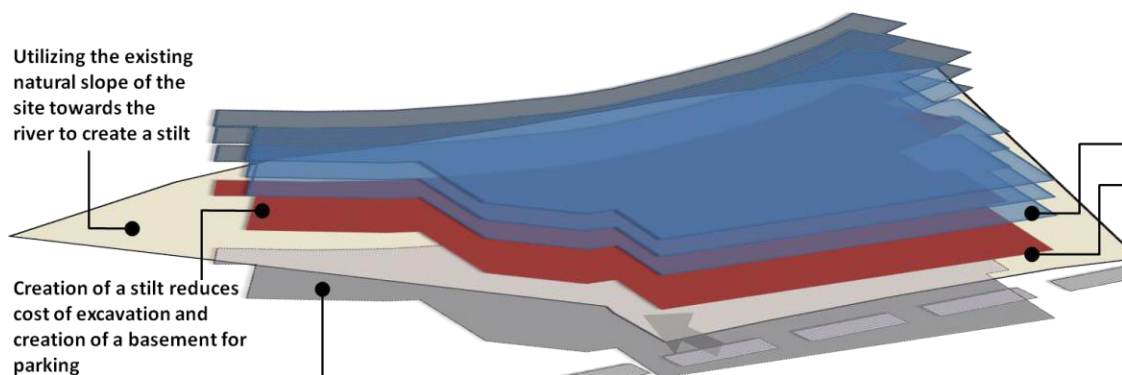


Figure 23 Schematic scheme showing cost effective measures used to create a stilt

3. Orientation

- The building has been placed in a north – south axis parallel to the Jail Road, the primary access road.
- This helps provide easy access from the main street and reduces un-necessary site circulation.

4. Energy efficient measures

- The orientation of the building helps provides architectural measures that can help lower the overall cooling and lighting in the structure.
- To maximize the natural ventilation in the rooms, windows have been optimally placed to take advantage of the prevailing winds.

5. Environmental Friendly Materials

- Use of Fibre Reinforced Concrete Precast Elements
- Use of Grass Paver blocks to extend the green element further into the site.

5.3 Applicable norms

AREA CHART POLICE BAZAR SITE				
S.NO.	DESCRIPTION	AREA	UNIT	
1	Plot area	7147.68	Sq.Mt.	1.76 Acre
2	Permissible Ground Coverage	3216.46	Sq.Mt.	40% + 5%
3	Proposed Ground Coverage	3154.00	Sq.Mt.	44.12%
4	Permissible FAR	22157.81	Sq.Mt.	3.0 + 10%
5	Achieved FAR	15903.68	Sq.Mt.	2.23
6	Parking Required	194	ECS	1 ECS /75 Sq.m. of Achieved FAR for Commercial, 1 ECS /25 Sq.m. of Achieved FAR for Assembly areas & 1 ECS for every 3 guest room.
7	Parking Provided in Ground Floor with Stack Parking	250	ECS	
8	Maximum Floors Permissible	6		
9	No. of Floors Proposed	6		

AREA CHART POLICE BAZAR SITE			
S.NO.	DESCRIPTION	AREA (SQ.M.)	USAGE
1	GROUND FLOOR (NON FAR)	3154.00	Parking & Services
2	FIRST FLOOR	3054.00	Commercial Space, Food Court & Kids Gaming Zone
3	SECOND FLOOR	3078.00	Art Gallery & Performing Art Centre
4	THIRD FLOOR	3436.20	Performance Halls, Convention Centre & Auditorium
5	FOURTH FLOOR	2716.78	Multipurpose Hall, Tourism Facilitation Centre & Kitchen
6	FIFTH FLOOR	3618.70	Hotel
7	GRAND TOTAL (SQM.) BUILT-UP	19057.68	
8	GRAND TOTAL (SQM.) FAR	15903.68	

NOTE: This building, under clause A2.60 of the Meghalaya Building Bye Laws 2021, is to be treated under 'SPECIAL PROJECT' category.

5.4 List of Facilities

S.NO	FLOOR	FUNCTIONS (TRANSPORT)			FUNCTIONS (TOURISM)	
		LEFT WING	RIGHT WING	TOP WING	LEFT WING	RIGHT WING
1	GROUND FLOOR	• PARKING	• PARKING		• PARKING	• PARKING
		• LIFT LOBBIES	• LIFT LOBBIES		• LIFT LOBBIES	• LIFT LOBBIES
		• KIOSKS	• KIOSKS		• KIOSKS	• KIOSKS
2	FIRST FLOOR		• SHOPS		• SHOPS	
			• KIDS GAMING ZONE		• FOOD COURT	
3	SECOND FLOOR	• ART GALLERY				• PERFORMING ART CENTRE
4	THIRD FLOOR		• CONVENTION CENTRE	• CANTEEN	• PERFORMANCE HALL	
			• AUDITORIUM			
5	FOURTH FLOOR		• KITCHEN	• RESTAURANT	• MULTI PURPOSE HALL	
			• ADMIN		• TOURISM FACILITATION CENTRE	
6	FIFTH FLOOR		• ROOMS-24	• TERRACE GARDEN	• ROOMS-24	
			• LOUNGE		• LOUNGE	
			• SIT-OUTS		• SIT-OUTS	
			• STAFF ROOMS		• LINEN STORE	
			• KITCHEN			
		• LAUNDRY				

5.5 Architectural Vocabulary

Keeping in mind with the client’s requirement of a modern space the proposed Business cum Tourism and Cultural Centre follows the same approach to create a structure with optimum natural lighting and ventilation based on the modern architectural form. s

A centrally loaded corridor allows for both sides with cross ventilation and natural illumination in all spaces while a covered raised roof provide adequate natural cooling to upper floors by the provision of ventilators while keeping the rain out.

Solid surfaces and fins placed appropriately help cut any direct sun glare and provide visitors shaded circulation amongst the spaces in the Business cum Tourism and Cultural Centre.



Figure 24 Building elements for the structure

5.6 Zoning

- The Site has been planned to cater to four primary zones, namely Retail, Arts center, hotel and open public spaces.
- Retail being of prime importance has been placed below with two open spaces for visitors to congregate as well as to host public events.

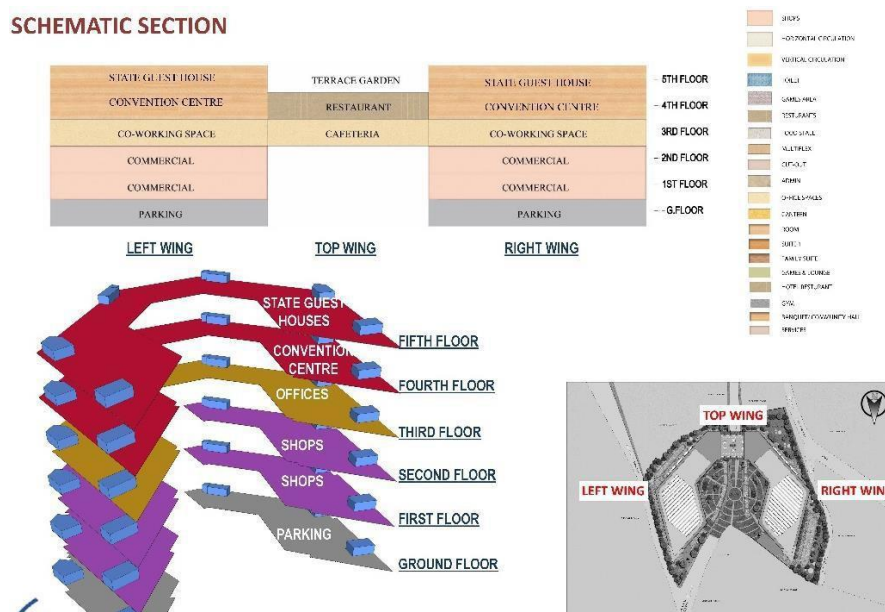


Figure 25 Zoning on site based on grouping of functions

5.7 Circulation

Planning a clear, unambiguous circulation network is a major aspect of the design of a public space, more so when the space has high footfall. This was attained by dividing the space into three circulatory zones primarily the Public space, Retail and inter connection zones. These circulation zones have been shown below:



Figure 26 Circulation Zones on the G.F. of the proposed layout of the Business cum Tourism and Cultural Centre

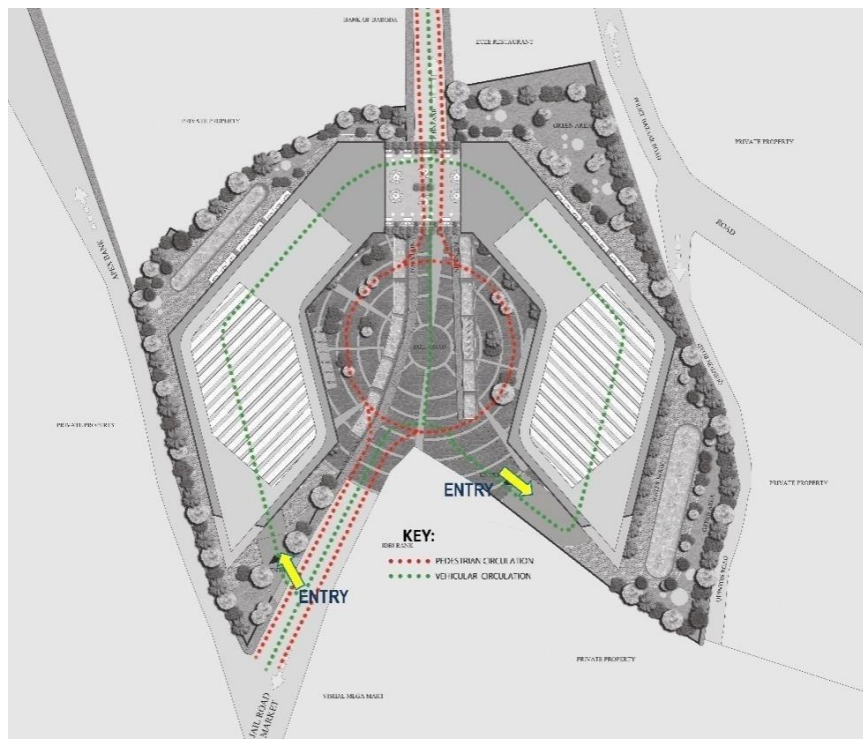


Figure 27 Layout of circulation pattern for visitors

6 BENEFITS FROM THE PROJECT

The residents of the catchment area of Shillong will be directly benefited from the project in the form of a modern shopping complex at their neighborhood. Apart from the residents of Shillong, the project will directly benefit the residents of nearby town and villages in the district, too.

This Shopping complex will inevitably contribute the economic growth of Shillong as a whole and will also help in improving the basic infrastructure of the town and enhance the revenue collection of the state which in turn will be used for the development activities of the place. The mesmerizing shopping complex will attract more visitors to the town and will add glitter to the town.

A modern shopping complex where variety of items can be purchased under a roof will provide an easy shopping experience to the resident there. This modern shopping complex will promote the local vendors too as maximum commodities will be collected from this area only.

The shopping complex will also form a destination place for the catchment area. This will be a destination place for the catchment area. This will be a destination place not only in terms of shopping experience as well as a daily market catering to the daily needs of human life but also in terms of fun and entertainment, family get together, assembly place of the youths, etc. There are foods and beverages outlets in the form of state-of-the-art restaurants as well as tea counters, coffee shops, etc. People will have a bite and a sip in between doing shopping and may also come here for lunch, dinner, etc.

7 SWOT ANALYSIS

SWOT analysis is the analysis of Strengths, Weaknesses, Opportunities, and Threats. SWOT analysis is one of the first steps in the strategic planning process and has many applications regarding the success and failure of any projects, endeavor in any field.

Strengths: The following are the strong points encouraging taking up the project:

- The project is located at the busiest part of town and the space will easily be let out. This is already a market place and is familiar to people of the catchment area. The shopkeepers will also prefer to have the development at the same place of trade they are already habituated with. Potential shop owners, who did not have enough space earlier and could not start business here in spite of having the intent and the capacity will also get the opportunity once this space is developed into shopping complex.
- There will be sufficient car parking facility for the off- street car parking within the campus. Hence this will help in attracting more people.
- The existing market running earlier will ensure a regular footfall at the shopping complex after the market is constructed.

Weakness:

- There is always a risk of irregular receipt of rent and electricity charges from lessees. The client must have some strong clauses in the lease rent agreement in order to ensure there are no defaulting lessees.

Opportunities:

- The shopping complex after constructed will be the biggest in the city thereby gaining a centre of attraction among residents and visitors.

Threats:

The local youths may insist for allotment of shop spaces/ premises to local youths only and this may lead to negative publicity amongst the reputed brands. But this threat can be overcome by the government easily by way of negotiating with the local youths.

8 RISK ANALYSIS

There are risks in the project and they must be tactfully handled and mitigated so that the maximum benefits from the investment can be obtained.

Location Risk:

The location of the shopping complex is in very busy market of police bazar, Shillong. The place is always overcrowded and congested. So during the construction period there can be some risk of hazards.

Project Completion Risk:

This is a risk which is present in almost all the project. The allowed construction period is 23-24 months, after that the quarterly liability in terms of loan installment starts. There is a risk of project not completing in given 23-24 months. Must ensure the project is completed within the time frame by appointing more than one contractor and by carrying out more than one work simultaneously.

Promoter Risk:

The project is managed by a group of elected representatives. The management body changes once in five years. The next management team may not be as aggressive and honest than the present one. HUDCO must enter into an agreement with strong clauses binding all the present and future management teams.

Repayment Risk:

There is always a risk from the irregular lessees. With irregular rent there will be lack of funds in the hand of Client thereby posing a risk towards repayment. The Client will have to execute a strong rent agreement with tenants in order to mitigate the risk.

9 MONITORING OF THE PROJECT

The monitoring is an essential component of the project management. Monitoring is the continuous process of assessing the status of project implementation in relation to the approved work plan and budget. Monitoring helps to improve performance and achieve desired results within stipulated time frame.

To ensure the same, a four person committee shall be constituted for each of the project which will ensure that the projects are completed in a time bound manner with desired efficiency and efficacy.

The committee shall be headed by a Chairman, which will be selected by the , and 3 nos. of members. One of them will be a Junior Engineer, one will be a finance executive and the third one will be a selected executive member of the government.

While the quality check points and milestones will be ascertained by the Committee at every stage of the construction, graphs and diagrams will also be prepared and monitored for each type of construction activity on regular basis. This will result in the control of not only time targets but also the cash flow targets and expenditures.

10 MAINTENANCE OF THE CONSTRUCTED ASSETS

Post construction maintenance of the assets is essential in order to ensure that the assets remain useful for the purpose for which it is being built and aesthetically as attractive as new for years to come. Thus, after construction of the building, the same shall be handed over to maintenance Committee who shall overlook the overall operations and maintenance of the buildings.

11 SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACT ASSESSMENT

11.1 Socio-Economic

For any development to happen, proper infrastructure in terms of market complex, proper parking and conducive environment is very essential. Thus, the government has envisaged this project to provide enabling environment to the people for the overall development of the region.

With the completion of the project, the project will provide ample opportunity to small and micro entrepreneurs to establish their business which will in turn generate direct and indirect employment opportunities in the region. Further, the state of Art Guest House will satiate sociological needs of the people of the region by giving them scope for social interaction and relaxation.

11.2 Environmental

The project will not cause any hazard to environment neither in terms of air nor water.

11.3 Waste Management

The waste generated within buildings must be managed properly in order to minimize the negative impact of waste on the health of the tenants and visitors.

12 DEMAND & MARKETING

Demand marketing is the process by which marketers get people excited about a new brand or product to generate demand. Driving awareness and generating interest are the key focal points of demand marketing. Demand captures the umbrella of marketing and sales programs that get people enthusiastic enough to make them eager to learn more about your product, and eventually, realize its significance in their lives.

Demand creation is the process by which marketers create demand where none exists. Demand creation is commonly utilized for new products and services, where the demand has not been proven or tested yet. In short, marketers want to create and study the demand for a certain product or service targeted towards specific consumers.

Afterward, you collect leads from the demand you've established through lead generation tactics such as content marketing, SEO, email marketing, and social media. With lead generation, the main goal is to collect the contact information of sales prospects (from the generated demand) that can eventually be used to nurture them into customers. Getting people to fill out your lead generation forms can be done through gated content such as eBooks, whitepapers, case studies, videos, and webinars.

13 INDUSTRIAL OVERVIEW

An industry overview is the overall analysis of an industry's economic, legal, and market status. The document consists of the historical background of the company as well as its present state and forecast the future position of the business in the market. Such an analysis allows companies to present their business records in an organized manner and also lures bond buyers. Moreover, it helps get clients for investment and trade purposes.

The document consists of the total working and production capacity of the industry. It has information about the imports and exports, and the demand and supply related activities. It contains data regarding the forces that determine the demand and supply of the company. Besides, this document also possesses information about the market size, the technology used to manufacture the goods and the services, price variations, position in the global market, and the company's competitors.

Industry overview services deal with assessing a particular industry to prepare the final report. These reports allow businesses to make decisions related to investments, promotional activities, along with other such business movements. A number of such industry overviews are published on the internet by industry overview services, which are available for everyone. This data is offered in the form of graphs, statistics, and pie charts.

14 ARCHITECTURAL LAYOUTS



Figure 28 GROUND FLOOR PLAN



Figure 29 FIRST FLOOR PLAN

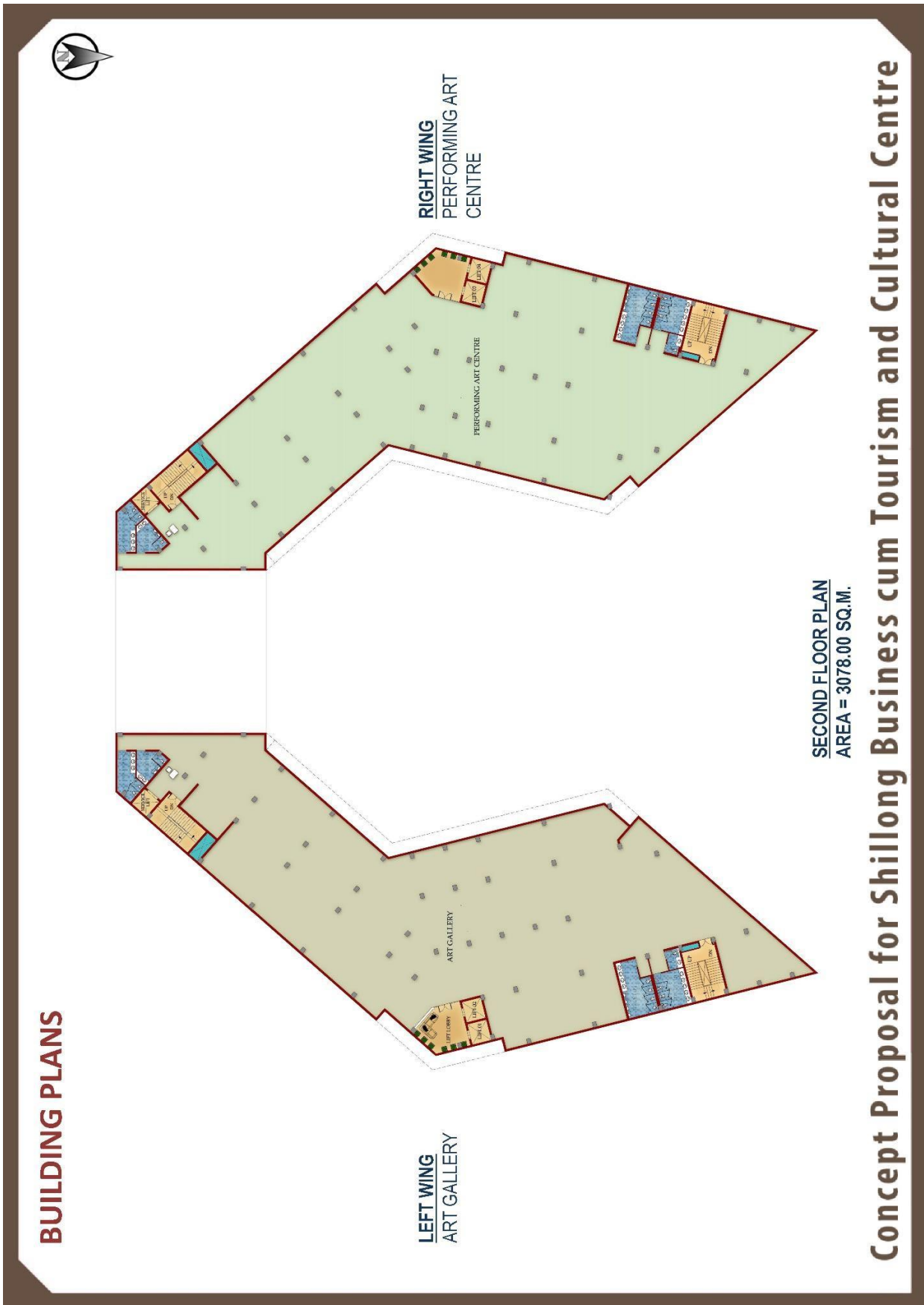


Figure 30 SECOND FLOOR PLAN

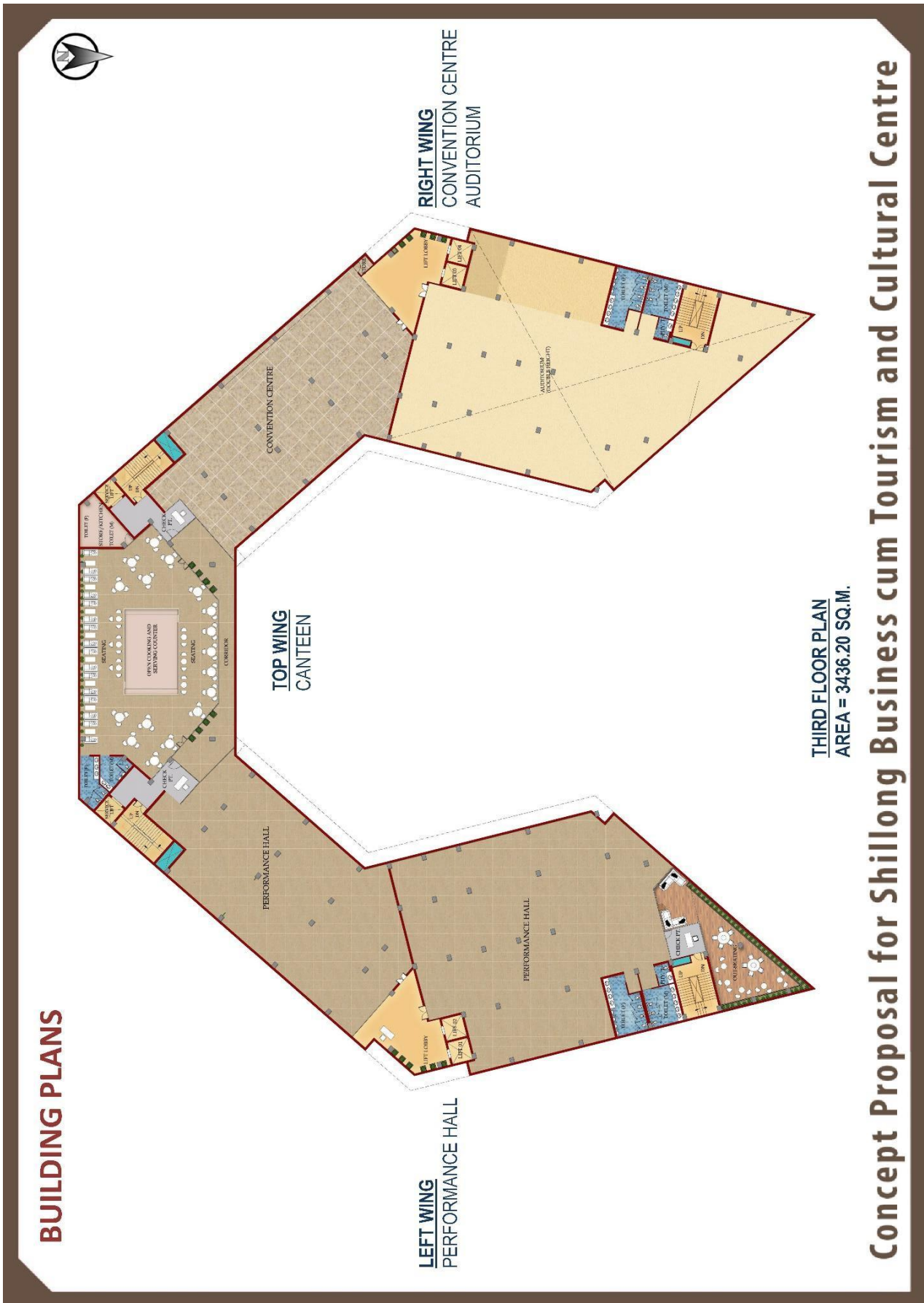


Figure 31 THIRD FLOOR PLAN

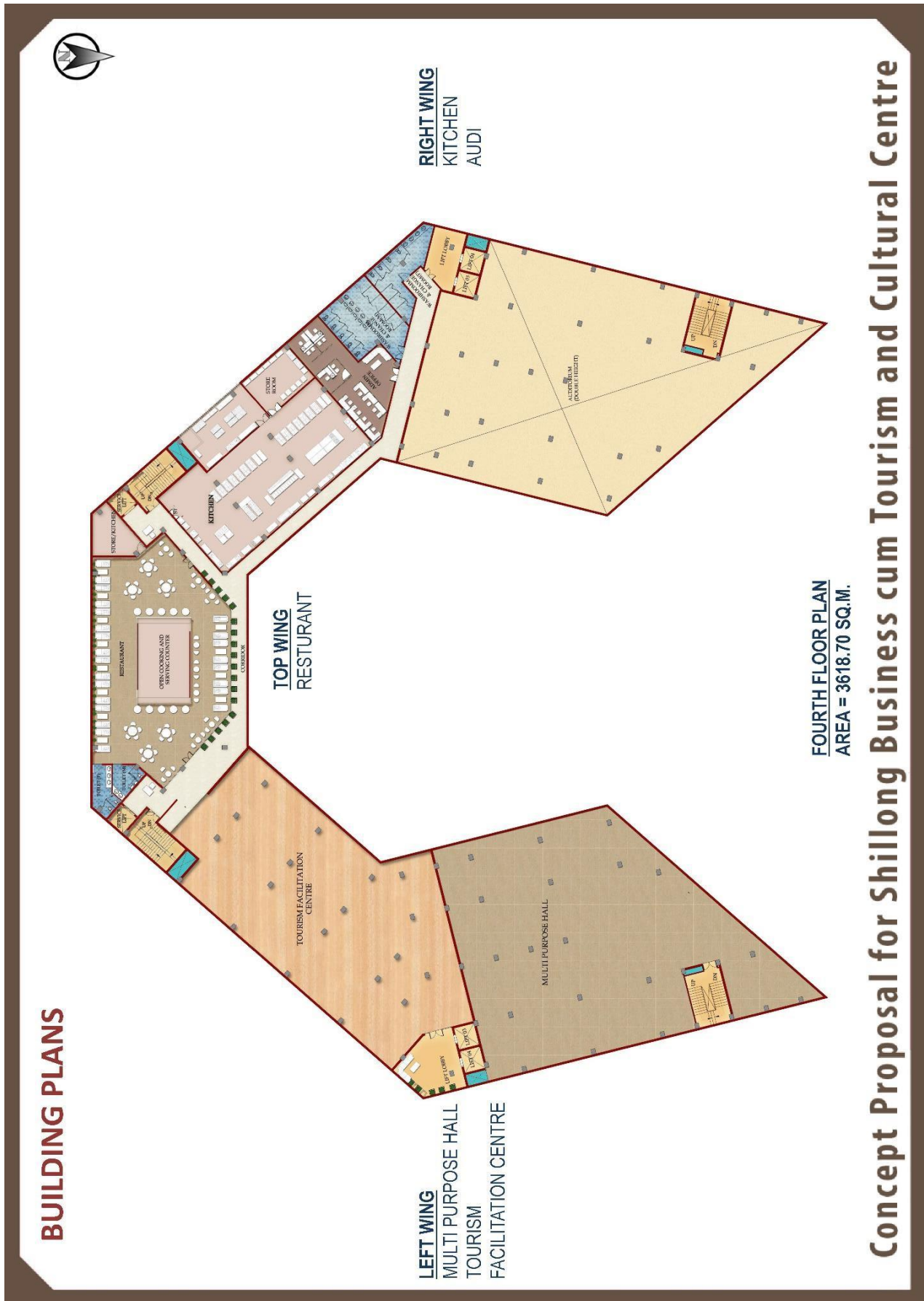


Figure 32 FOURTH FLOOR PLAN



Figure 33 FIFTH FLOOR PLAN

15 ARTISTIC IMPRESSIONS



Figure 34 View of the Business cum Tourism and Cultural Centre from the Main Road

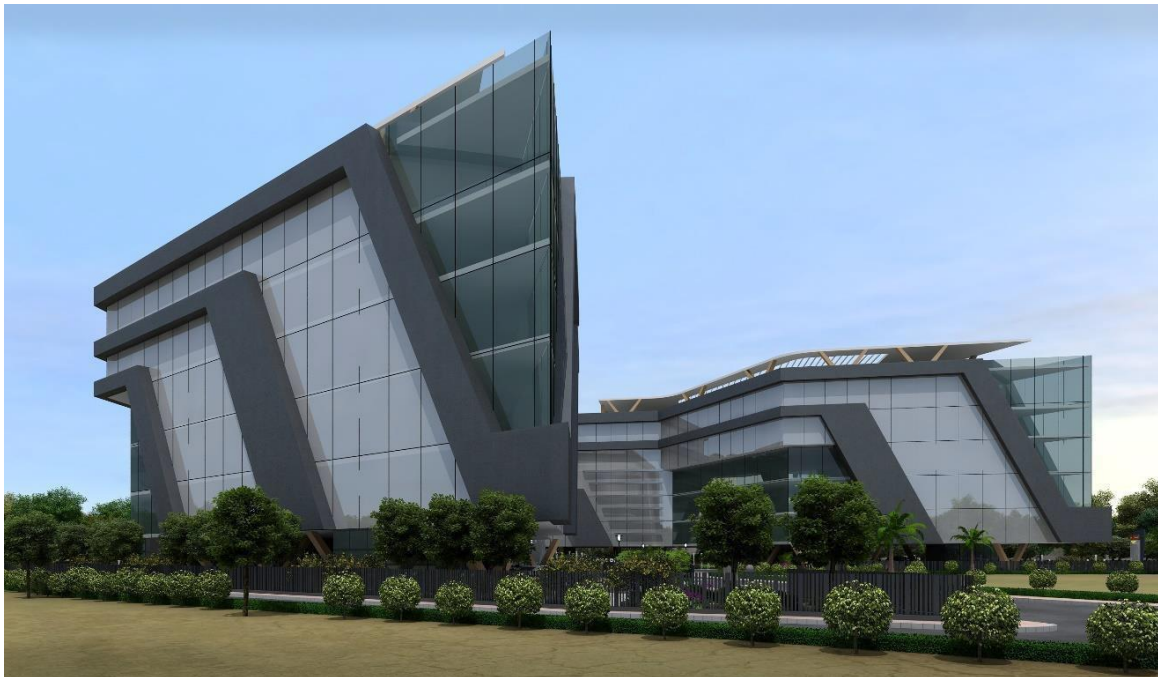


Figure 35 View of the Business cum Tourism and Cultural Centre from the side



Figure 36 View of the Business cum Tourism and Cultural Centre through the central road



Figure 37 View of the Business cum Tourism and Cultural Centre from the main road

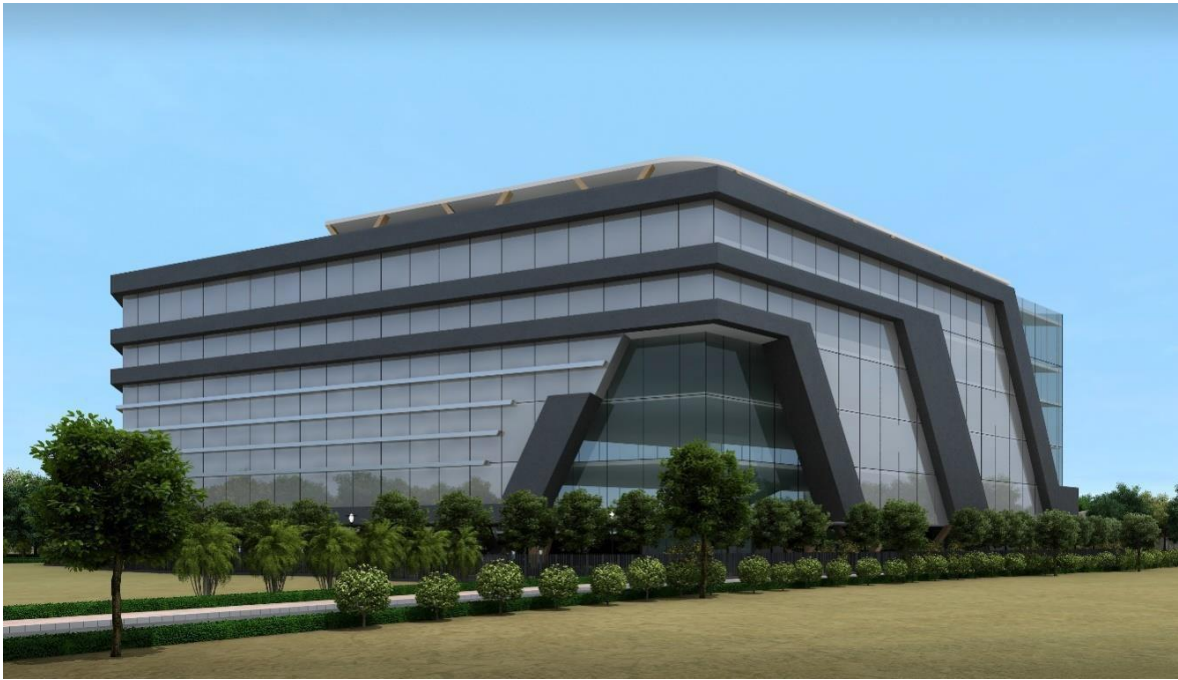


Figure 38 View of the Business cum Tourism and Cultural Centre from the side



Figure 39 View of the Business cum Tourism and Cultural Centre from the north

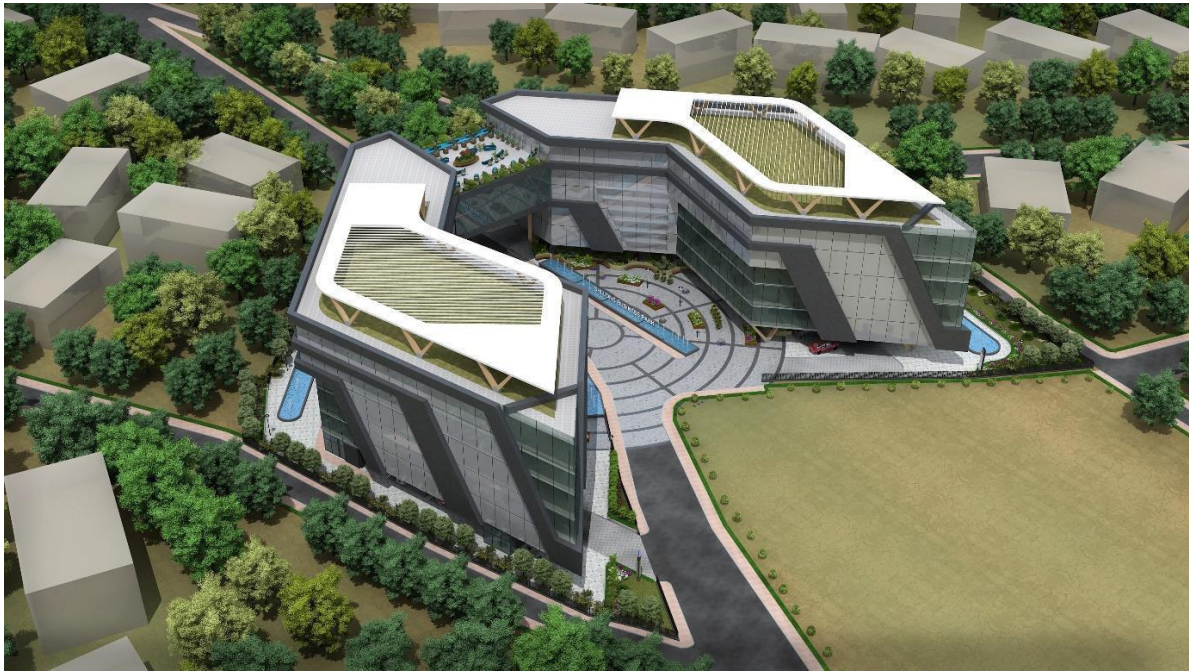


Figure 40 View of the structure from the top

DETAILED PROJECT REPORT

Business cum Tourism and Cultural Centre at Police Bazar, Shillong

STRUCTURE



16 SCOPE OF STRUCTURAL DESIGN

This criterion covers the structural design basis for concrete Structures for Proposed "POLICEBAZAR, SHILLONG".

The buildings will be made with RCC framed structure with cast-in-situ columns, beams and slabs to suit the approved/ finalized architectural drawings. The buildings are multi-storey buildings with floors at different levels, as per various architectural drawings.

The buildings shall be as per the Architectural requirement for civil and structural works, standard specifications, relevant I.S. codes and local regulations.

17 CODES AND STANDARDS FOR STRUCTURAL DESIGN

All the design shall be based on Indian standard & codes as specified here.

List of Codes and Standards:

- IS-875 (Part 1 To 3)-1987 - Code Of Practice For Design Loads (Other Than Earthquake) For Buildings And Structures
- IS1893-2016 - Criteria For Earthquake Resistant Design Of Structures
- IS-456-2000 - Plain And Reinforced Concrete - Code Of Practice
- IS-13920-2016 - Ductile Detailing Of Reinforced Concrete Structures Subjected To Seismic Forces - Code Of Practice
- IS-800-2007 - Code Of Practice For General Construction, In Steel
- Code IS 1786 -2008 - Specification for high strength deformed steel bars and wires for concretereinforcement
- SP-34 – Handbook on Concrete reinforcement and Detailing
- SP-16 – Design aids for IS-456

18 LOADS AND FORCES

Loads and forces used for design shall be as defined in IS875, and is specified below.

The following type of loads and forces shall be considered.

- Dead load (DL)
- Live load (LL)
- Wind load (WL)
- Earthquake load (EQ)

18.1 Dead Load (DL)

Dead load is the load of the structure itself

Following are the unit weight of major construction materials.

- Reinforced Cement Concrete 25.0 kN/m³
- Plain Cement Concrete 24.0 kN/ m³

- Structural Steel 78.5 kN/ m³
- Saturated soil density 19.5 kN/ m³
- Masonry walls will be with AAC blocks of max density 8 kN/m³ & clay brick of density 19 kN/ m³. Walls thickness to be in accordance with Architectural drawings.

18.2 Live Load (LL)

Live load for building and structure shall be in accordance with IS875 part 2 unless otherwise specified.

18.3 Wind Load (WL)

Wind load to be applied for structures shall be in accordance with IS875 part 3, and noted below.

- Basic wind speed, V_b , Shall be 55m/sec
- Risk coefficient 'K1' shall be equal to 1.0.
- Terrain Height & Structure Height factor 'K2' shall be obtained form table 2 IS 875 part
- Topographic factor $K_3 = 1.0$

Design wind speed V_z at any height z in m/sec

$$V_z = V_b \times K_1 \times K_2 \times K_3$$

Design wind pressure P_z at any height z in N/m²

$$P_z = 0.6 V_z^2$$

However as either of wind or seismic forces has to be considered at a time, wind loads will not be considered for the design, as they don't govern.

18.4 Seismic Load (EQ)

Seismic loads to be applied for structures shall be in accordance with the applicable provision of the IS 1893, 2016 and noted below.

- Seismic Zone Factor, Z , shall be 0.36
- Importance factor I , shall be 1.5
- Soil type=Medium
- Response reduction factor shall be 5 for RCC structures (SMRF).
- Average response acceleration factor

$$A_h = Z/2 \times I/R \times S_a/g$$

$$E = A_h \times W$$

Where 'W' is seismic weight of structure with appropriate live load.

Time period in accordance with IS code of infill wall condition and non infill condition to be calculated separately. Average of the two values to be considered for design as the frames of the towers are semi in filled.

Ductility provision in detailing of RCC structures shall be considered judiciously based on IS: 13920-2016 for Lateral force resisting elements of the structure.

19 COMBINATION OF LOADS

19.1 Load Combination for Concrete Structures

Concrete structural members shall be designed to have, at all sections, a calculated strength necessary to carry the following factored loads and forces as per table 18 of IS 456.

Load Combination	Limit State of Collapse			Limit States of Serviceability		
	DL (2)	IL (3)	WL (4)	DL (5)	IL (6)	WL (7)
(1)						
DL + IL	1.5		1.0	1.0	1.0	-
DL + WL	1.5 or 0.9 ¹⁾	-	1.5	1.0	-	1.0
DL + IL + WL	1.2			1.0	0.8	0.8

Figure 41 Load Combination for concrete structures

When the lateral load resisting elements are not oriented along the orthogonal horizontal directions, the structure shall be designed for the effects due to full design earthquake load in one horizontal direction plus 30 percent of the design earthquake load in the other direction.

19.2 Load Combination Used

19.2.1 Serviceability Combs

LOAD COMB 11 FOOTING (1.0 DL 0.5LL)

3 1.0 4 1.0 5 0.5

LOAD COMB 12 (1.0 EQX 1.0 DL)

1 1.0 3 1.0 4 1.0

LOAD COMB 13 (1.0 EQZ 1.0 DL)

2 1.0 3 1.0 4 1.0

LOAD COMB 14 (-1.0 EQX 1.0 DL)

1 -1.0 3 1.0 4 1.0

LOAD COMB 15 (-1.0 EQZ 1.0 DL)

2 -1.0 3 1.0 4 1.0

LOAD COMB 16 (0.8 EQX 1.0 DL 0.8 LL)

1 0.8 3 1.0 4 1.0 5 0.8

LOAD COMB 17 (0.8 EQZ 1.0 DL 0.8 LL)

2 0.8 3 1.0 4 1.0 5 0.8

LOAD COMB 18 (-0.8 EQX 1.0 DL 0.8 LL)

1 -0.8 3 1.0 4 1.0 5 0.8

LOAD COMB 19 (-0.8 EQZ 1.0 DL 0.8 LL)

2 -0.8 3 1.0 4 1.0 5 0.8

*****LIMIT STATE OF COLLAPSE*****

19.2.2 Column And Beam

LOAD COMB 20 (COL) (1.5 DL 0.75 LL)

3 1.5 4 1.5 5 0.75

LOAD COMB 21 (BEAM)(1.5 DL 1.5 LL)

3 1.5 4 1.5 5 1.5

LOAD COMB 22 (1.5 EQX 1.5 DL)

1 1.5 3 1.5 4 1.5

LOAD COMB 23 (1.5 EQZ 1.5 DL)

2 1.5 3 1.5 4 1.5

LOAD COMB 24 (-1.5 EQX 1.5 DL)

1 -1.5 3 1.5 4 1.5

LOAD COMB 25 (-1.5 EQZ 1.5 DL)

2 -1.5 3 1.5 4 1.5

LOAD COMB 26 (1.5 EQX 0.9 DL)

1 1.5 3 0.9 4 0.9

LOAD COMB 27 (1.5 EQZ 0.9 DL)

2 1.5 3 0.9 4 0.9

LOAD COMB 28 (1.2 EQX 1.2 DL 0.3 LL)

1 1.2 3 1.2 4 1.2 5 0.3

LOAD COMB 29 (1.2 EQZ 1.2 DL 0.3 LL)

2 1.2 3 1.2 4 1.2 5 0.3

LOAD COMB 30 (-1.5 EQX 0.9 DL)

1 -1.5 3 0.9 4 0.9

LOAD COMB 31 (-1.5 EQZ 0.9 DL)

2 -1.5 3 0.9 4 0.9

LOAD COMB 32 (-1.2 EQX 1.2 DL 0.3 LL)

1 -1.2 3 1.2 4 1.2 5 0.3

LOAD COMB 33 (-1.2 EQZ 1.2 DL 0.3 LL)

2 -1.2 3 1.2 4 1.2 5 0.3

20 CONCRETE STRUCTURES AND FOUNDATIONS

20.1 Design and calculation

All concrete design shall conform to IS456-2000, unless noted otherwise. The detailing of concrete reinforcement shall be in accordance with the requirements given in IS13920-2016

21 DESIGN PARAMETERS

RCC structures shall be designed based on limit state method of design as given in IS: 456-2000 & ductility provision in detailing of RCC structures shall be considered judiciously based on IS: 13920-2016 for Lateral force resisting elements or the structure. The following parameters shall be used:

RCC GRADE: Minimum M30 for all works, or as per drawings in accordance with clause 6.0 (Table 5) of IS 456-2000 for all.

REINFT STEEL GRADE 500 N/sqmm: High yield strength deformed bars conforming to IS 1786 with minimum yield strength of 500N/sqmm have been considered.

CLEAR COVERS: (clause 26.4 of IS 456:2000 Table 6)

Foundations - 50mm

Columns - 40mm

Beams/Walls - 25mm

Slabs - 20mm

22 SEPARATION BETWEEN ADJACENT UNITS

Two adjacent buildings or two adjacent units of the same building with separation joint in between shall be separated by a distance equal to the amount R times the sum of the calculated storey displacements due to earthquake loads, to avoid damaging contact when the two units deflect towards each other.

The force to be considered for calculation of storey displacements shall not be scaled as per Clause 7.8.2, IS 1893:2016. Service load combinations will be used for calculation of the same.

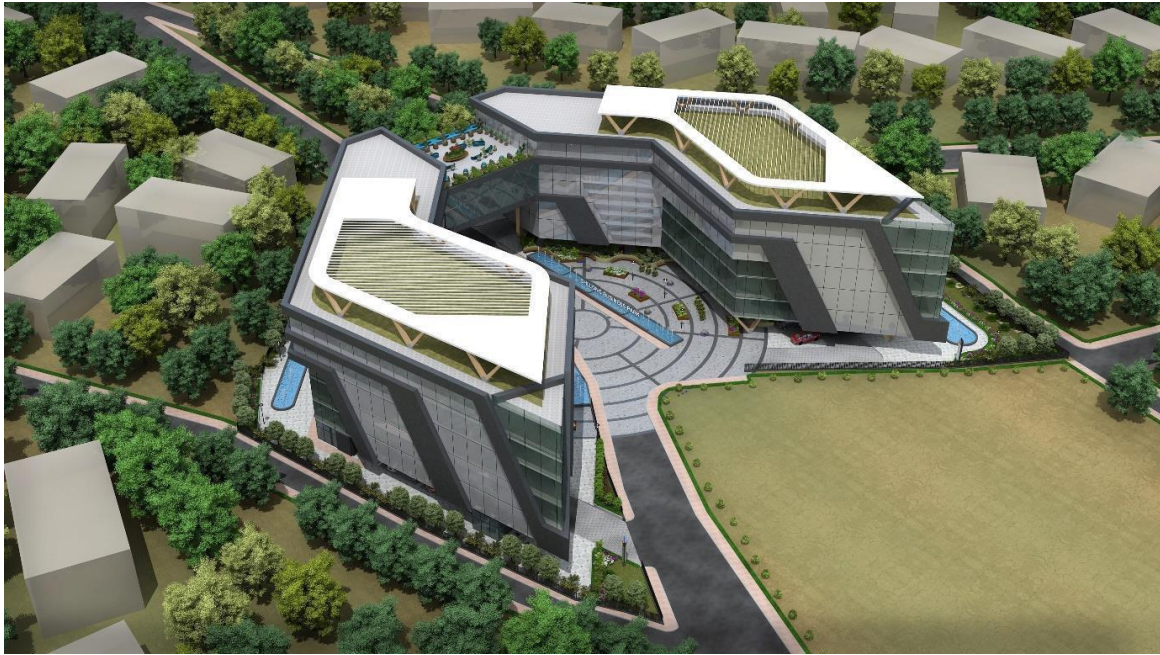
23 SOIL PARAMETERS

Allowable bearing capacity in accordance with soil report has to be followed in designing the structures.

DETAILED PROJECT REPORT

Business cum Tourism and Cultural Centre at Police Bazar, Shillong

PLUMBING, FIRE FIGHTING, ELECTRICAL & HVAC WORKS



24 INTRODUCTION - MEP FOR BUSINESS CUM TOURISM AND CULTURAL CENTRE

The proposed Commercial project consists of one Stilt, Ground and four upper floors as given below.

- Ground Floor = Car Parking & Services
- First Floor = Shops
- Second Floor = Art gallery & Performing art
- Third Floor = Performance Halls, Convention & Auditorium
- Fourth Floor = Multipurpose Hall, Tourism Facilitation and Kitchen
- Fifth Floor = Hotel

25 PLUMBING & FIRE FIGHTING SYSTEM

25.1 Scope of Work

This report is intended to cover engineering and technical details relating to the following heads in Plumbing and Fire suppression services:

- I. External Water Supply
 - Sourcing
 - Storage
 - Pumping & Distribution system
- II. Internal Plumbing Works
 - Internal Water Supply
 - Hot Water Supply
 - Soil, waste and rain water pipes
 - Disposal to 1st manhole
- III. Sewerage System
 - Conveyance
 - Disposal to external sewerage system
 - Reuse of treated water from STP for - Flushing of Toilets - Horticulture Purpose .
- IV. Storm Water Drainage System
 - Collection
 - Conveyance
 - Rain water harvesting for recharging aquifer and disposal of average fall of one day storm water based on IGBC requirement.
- V. Garden Hydrant System
 - Based on IGBC-Garden Hydrant system consisting variable frequency drive pumps, and moisture sensor controller, Time based controller and pressure regulating device with drip irrigation.

25.2 Design Consideration

Occupants comfort, sustainable development and ease in maintenance are the main considerations for the scheme.

There shall be enough potable water on continuous basis to every usage points.

Proper use of treated effluent from the STP, wherever possible to achieve minimal use of fresh water.

Quick disposal of rainwater without stagnation and flooding and maximum use of storm water to recharge the aquifer.

Minimize the energy requirements by using variable frequency driven pumping system.

Reliable fire suppression system.

Evolve a cost effective, Maintenance friendly and functionally efficient system.

Minimize adverse impact on environment.

25.3 Green Building Compliance

Following measures will be taken to comply with Green Building Certification:

- Use of dual flush cistern water closet 3/6 LPF, sensor operated flush for urinals and taps for Common toilets and low flow faucets along with flow regulator in toilets and kitchen.
- Rain water harvesting to recharge aquifer.

25.4 Water Supply System

25.4.1 Design Calculations

Detailed water calculations are given below in Table.

S.No.	Description	Area in Sq.m.	Population	Cold water Requirement				Total Daily Water Requirement	Net Flow to Sewer in lpd 100% of Flushing	Net Flow to Sewer in lpd 80% of Domestic	Total Flow to STP
				Flushing Use		Domestic Use					
				LPCD	LPD	LPCD	LPD				
	DOMESTIC USE										
1.1	Ground Floor 1P/3 Sqm.	3054	1018								
1.1.1	Main Population		916	10	9162	5	4581	13743	9162	3665	12827
1.1.2	Staff @10% of Total Population		102	20	2036	25	2545	4581	2036	2036	4072
1.1.3	Food Court		150	10	1500	35	5250	6750	1500	4200	5700
1.2	First Floor	3078	513								
1.2.1	Main Population		462	10	4617	5	2309	6926	4617	1847	6464
1.2.2	Staff @10% of Total Population		51	20	1026	25	1283	2309	1026	1026	2052
1.3	Second Floor										
1.3.1	Offices	3436	344	20	6872	25	8591	15463	6872	6872	13745
1.3.2	Canteen		150	15	2250	55	8250	10500	2250	6600	8850

1.4	Third Floor										
1.4.1	Rooms	48	48	45	2160	90	4320	6480	2160	3456	5616
1.4.3	Restaurant		150	15	2250	55	8250	10500	2250	6600	8850
1.5	Fourth Floor										
1.5.1	Rooms	48	48	45	2160	90	4320	6480	2160	3456	5616
1.5.2	Laundry							45000	0	36000	36000
1.5.3	Kitchen							15000	0	12000	12000
1.6	Filters Backlash etc							5000	0	4000	4000
1.7	Irrigation 3994 sqm @ 6 Litre/sqm.							23964			
	Total				34033		49698	172695	34033	91758	125791

Figure 42 Detailed water calculations chart

25.5 Water Distribution System

25.5.1 Domestic Water Supply and Distribution System

Water from City Supply main will be brought to the underground static fire tank and allow it to overflow into the Raw water tank. After water treatment water shall store in domestic water tank. Stored water from the underground domestic storage tank will be pumped to overhead water tank through one sets of booster pumps. Pipe line will be laid at stilt ceiling up to the overhead fire tank and overflow from the overhead fire tank will be connected to overhead domestic storage tank. Level sensing probes in domestic overhead tank will be provided to shut-off the pumps when domestic overhead tank is full and to start pumps when water level is low in overhead domestic tank. Water distribution at each floors will be gravitational flow

25.5.2 Flushing Water Supply & Distribution System

Treated water from STP will be pumped from flushing UGT to OHWT by a boosting pumps set, and controlled through level sensing probes will be provided to shutoff the pumps when flushing overhead tank is full and to start pump when water level is low in overhead flushing water tank.

25.5.3 Water Demand of Irrigation System

Water demand for irrigation system shall be met from the STP. Distribution of water for irrigation through a pumping set installed in STP pump Room.

25.5.4 Location Of Under Ground Tank & Pump Room

Pump Room is Located in Stilt Floor.

25.5.5 Materials for Water Supply

Authority Connection to UGT – GI Pipe –Class-C conforming to IS: 1239 with malleable iron fittings.

Water Supply Pumping Main – GI Pipe –Class-C conforming to IS: 1239 with malleable iron fittings.

Terrace floor rings main for down take - GI Pipe – Class-B conforming to IS: 1239 With malleable iron fittings.

Piping in shaft for down takes – GI Pipe – Class-B conforming to IS: 1239 With malleable iron fittings.

Piping with in toilets and kitchens in chases- CPVC SDR-11

Insulation to hot water piping – Polyolefin extruded pipe section.

All external irrigation pipes in trenches along with the road and parking (external pipe network) shall be Cpvcpipes.

25.5.6 UG Tank Detail

- Fire Water Tank = 150 KL
- Raw Water Tank = 30 KL
- Domestic Water Tank = 30 KL
- Flushing Water Tank = 35 KL

25.5.7 OH TANK DETAIL

- Fire Water Tank = 10 KL
- Domestic Water Tank = 20 KL
- Flushing Water Tank = 15 KL

25.6 Sewerage System

25.6.1 Internal Drainage

The soil and waste shall be carried down in two stack vented pipes. Two pipes drainage systems shall be adopted as per IS standard. The sanitary, waste & vent system shall be water tight and gas tight designed to prevent escape of foul gas and odour from various fixtures. It is proposed to use CI pipe IS:3989 for all vertical & horizontal soil drainage, for terrace rain water down take proposing uPVC pipes conforming to IS:4985. The soil & waste piping shall be under-sunken and the horizontal header shall be subsequently connected to the vertical stack located inside the associated pipe shaft which shall be coordinated carefully with other services and in consultation with Architect.

25.6.2 Sunken Slab Requirement

We are proposing all balcony & toilet to sink by 100 mm . All Waste connection from appliances will be laid under the sunk & main soil and waste pipe hang below slab.

25.6.3 External Sewerage System

Sewer line will be laid around the periphery of the buildings. Internal waste water line will be connected to this sewer line through manholes. Sewer line will be laid at adequate depth and manholes will be provided at maximum of 25 meter distance to facilitate cleaning. Entire sewage generated from the building will be connected to the STP.

25.6.4 Material For The Sewerage System

HDPE pipes confirming to IS: 14333 type PE-100, (6 Kg/Cm²)r dia.

25.6.5 Manholes

The manholes shall be constructed of brick masonry as per CPWD specifications and sizes will:-

Rectangular of size 900x800mm up to 900mm depth. Type 'A' - Circular Manhole of size 900 mm dia. Up to 1670 mm depth. Type 'B' - Circular Manhole of size 1200 mm dia. From 1671 mm depth to 2300 mm depth. Type 'C' - Circular Manhole of size 1500mm dia. Beyond 2301 mm depth and beyond.

25.6.6 Manhole Covers

Heavy duty SFRC Manhole cover with frame conforming to IS: 12592 shall be provided, as required.

25.7 Rain Water / Storm Water Drainage and Rain Water Harvesting Arrangement

Rain water from the roof top of buildings and balcony will be drained out to the rain water stacks located at strategic positions within the shaft or at exposed positions as directed by the building Architect or as per building profile. These vertical pipes will be brought up to Basement floor ceiling and diverted to the external storm water line along the ceiling. Another option is to dispose rain water from the building to the drain at ground level in case adequate filling is available over the extended basement. At surface level storm water drain along with road gully/catch basin will be located at strategic location depending upon the landscaping and ground levels. Water collected through this storm water drain along with rain water from the roof will be diverted to rain water harvesting arrangement.

25.7.1 Design Parameters

MOEF/ State Environment Impact Assessment Authority (SEIAA) recommends 15 minute holding capacity based on 25 mm rain fall per hour. Therefore, we have considered rainwater harvesting arrangement based on 25 mm rain fall. However storm water drainage line will be designed for 25 mm/hr rainfall. Runoff Co-efficient for various surfaces are: Terraces & rooftop - 90%, Road and paved surfaces - 70% & Landscaped areas, gardens, parks etc. - 20%. In this scheme there will be rain water retention tanks. As directed by the CGWB depth of these bore holes will be 5 meter short of the water table prevailing at the site. Proper de-silting and oil separation arrangement will be made before connecting storm water line to the harvesting arrangement as per the guidelines of MOEF/SEIAA/CGWB. Surplus/ Excess water from the harvesting arrangement will be allowed to overflow into the storm water drain of Authority drain.

25.7.2 Pipe Material

All storm water drainage lines shall be RCC NP2 class pipe as per IS-458. and provides bedding accordingly the required strength of pipe for particular condition.

25.7.3 Sewage Treatment Plant

- Capacity = 125 KLD
- Technology = SBR Technology

25.8 Internal Plumbing System

25.8.1 Details of System

- System Designed Two Pipe System
- Soil/Waste & Vent Pipe

All main soil / waste pipes and branches 150/100 mm CI PIPE Conforming to IS: 3989 and for Rain water- uPVC Pipes conforming to IS:4985.

Vent Pipes 75 mm CI PIPE–Conforming to IS: 3989.

Wash Basin waste connection to floor traps. 32mm GI pipe Conforming to IS: 1239

Floor Drain 65/50mm GI pipe Conforming to IS: 1239

Piping at stilt floor 100/150 mm CI PIPE–Conforming to IS: 3989.

25.8.2 Sanitary Fixtures And Faucets

Sanitary fixtures shall be provided as decided by the Client/ Architect.

25.9 Fire Fighting

25.9.1 Design Basis

The fire fighting arrangement shall be designed as per the requirement of local guidelines, National Building Code (NBC) & engineering design standard.

25.9.2 Type of Systems Proposed

Following are the various Fire Protection systems proposed,

Fire pump house & Static water storage tanks in stilt floor level.

Fire Pumps & Accessories

External Fire Hydrants

Wet Riser System

Fire Sprinkler System

Portable Fire extinguishers

25.9.3 Fire Water Storage

150 cum capacity static fire water storage tank at stilt level.

Terrace level fire water storage tanks capacity as per table as given above to be provided to cater the NBC requirement.

Fire department connection shall also be provided in the tank . These shall comprise of 4 Nos. 63 mm dia male outlets capable of directly feeding the ring mains through inbuilt non return valves or directly filling the static fire storage tanks. These shall be mounted in specially identified boxes.

25.9.4 Fire Water Pumps

Electric motor & diesel Engine driven pumps as mentioned below.

- 1 No. Main Electric Pump of 2280 LPM @ 75 M. Head.
- 1 No. Diesel Engine Pumps of 2280 LPM @ 75 M. Head.
- 1 No. Electric Jockey Pumps of 180 LPM @ 75 M. Head.

25.9.5 Sprinkler System

Sprinkler System shall be provided in all floors.

Pendant/Upright/Sidewall type sprinklers shall be used with a center to center spacing of 3 meters.

The sprinklers shall be automatically activated at 68 Deg.C by breaking of the glass bulb in the event of fire.

The sprinkler line shall be always pressurized. Sprinkler pump shall have the backup of main electrical and diesel engine driven fire pumps.

Necessary accessories such as Alarm Valves, Flow Switches, Inspector's Test Valve Assembly, and Annunciation Panel etc. shall be provided as per the requirements.

25.9.6 Fire Hydrant System

- A rising main at stilt floor ceiling with isolation valves.
- Wet risers
- Landing Hydrants with hose reel on all floors near staircases inside the dedicated Shaft.
- Fire Brigade Inlet connection for filling wet riser system.

25.9.6.1 Wet Riser System

Wet riser cum down comer for every 1000 sq.mts floor area for all buildings.

Single headed Landing Hydrants on all floors, 2 x 15Mts. of fire hoses, Hose reel with 36.5 Mts. Rubber hose and nozzle.

25.9.6.2 Yard Hydrants

Yard Hydrants at every 45m of periphery of the Building with Single headed Hydrant valve, 2 x 15 Mts. long fire hoses and Branch pipe with Nozzle.

25.9.7 Water curtain system shall be proposed for basement car parking area as per NBC.

25.9.8 Portable Fire Extinguishers

Portable fire extinguishers confirming to IS: 15683 shall be provided at locations mentioned below,

Dry chemical powder type fire extinguisher for main switch board room, generator room, pump room, AHU rooms and lift machine room.

carbon-dioxide type & ABC Powder type fire extinguisher located inside the FHC.

Carbon dioxide type fire extinguishers for electrical panel room, pump room, lift machine room.

Mechanical foam type fire extinguishers at D.G. Rooms, Firewater pump house and near oil filled Transformers.

The entire fire fighting system installation shall be compliant with the most stringent codes / standard for the entire Business cum Tourism and Cultural Centre to ensure the highest safety standard and uniformity of

system. Further, before property is opened to public, the fire fighting shall be fully operated and tested under simulated conditions to demonstrate compliance with the most stringent standards, codes and guidelines. Following functional system shall be provided; strictly in compliance with the listed reference standards:

- Piping System Piping system confirming to MS Class 'C' Pipes for hydrant & sprinkler system IS:1239 up to 150 mm dia & IS : 3589 (6.35mm thk.).
- Fire water static Storage Fire water static storage has been provided in accordance to NBC requirement & in consultation with local CFO.
- Fire Pumping system Pumping system as mentioned above.
- Hydrant system External hydrant complete with canvas hose & branch pipe housed in external type cabinet. Internal hydrant complete with hose reel branch pipe & canvas hose housed in shaft having shutter.
- Sprinkler system Sprinkler rating and type shall be selected for respective areas (IS 15105 : 2002)
- Hand held fire extinguishers strategically placed at designated areas.

26 ELECTRICAL SYSTEM

Various electrical facilities for the **POLICEBAZAR** have been envisaged considering the usage of area, pattern of electrical load and relevant Indian Standards/ Codes.

The objective of “The Concept Electrical Project Report” is to briefly describe the salient features of Electrical System taken into consideration.

26.1 Statutory Requirements:

The following provisions shall be observed where energy at high or extra-high voltage is supplied, converted, transformed or used:

- Transformers:

Only dry type of transformers shall be used for installations inside the residential/ commercial buildings as per Indian Electricity Rules 1956, 64(2)(e)(iv).

- Generators:

All generators of rating 1000 KVA and above shall be protected against faults within the generator winding using restricted earth fault protection or differential protection or by both as per Indian Electricity Rules 1956, 64A(2)(e). All generators upto 1000 KVA shall be available with acoustic enclosure only.

26.2 Executive Summary

The Concept Report explains various systems etc. in more detailed. However, a brief executive summary has been below outlining the salient feature of various systems.

- Supply Voltage shall be 11KV as per (SEB) **State Electricity Board**. For detailing we are assuming to have 11 KV supply voltage.
- Total Estimated Maximum Demand Load based on Authority for Entire Project floor is 480 KVA (Refer attached load sheet).
- As per envisaged load sub-station in Basement with 1 No. 630 KVA, 11 KA/0.433 has been proposed on the basis of Authority.
- All the Distribution Boards shall have earth leakage circuit breaker (ELCB) of 30/100mA.
- MS Conducting in proposed for all exposed areas.
- Conventional Lightning System Proposed.
- Fire Detection and Alarm System shall be Conventional Type.

26.3 Energy Savings

All LED Lights (used in common area) in place of copper choke and tube. This is to reduce the power losses caused by 100 power factor. The average power factor to be mentioned – 0.9

26.4 Scope

The following aspects are covered in scope of this report:

- HT Supply
- HT Sub-station
- L.T. Power Distribution

- D.G. Sets
- Power Factor Improvement
- Internal Electrification for common area
- Cabling
- Fire Detection and Alarm System
- Cable TV System
- Security system
- Data Networking System

26.5 H.T. Supply

As per norms supply shall be received from STATE ELECTRICITY BOARD at 11 KV as per nearest and available load upto 5000 KVA – 11KV.

26.5.1 H.T. Metering

As per Regulations, H.T. Metering Room is to be provided near the entrance on Ground Floor, measuring 3.5M x 3.5M, with a clear height of 3.6 Meter. Meter Room of the required size shall be located at Site.

26.6 Sub-Station

26.6.1 Electrical Sub-Station

Power is proposed to be obtained at 11 KV from SEB. The H.T. Meter Room, HT Panel Room and Transformers will have direct access and will be provided at ground level.

26.7 Transformer

According to the attached Load detail Sheet, we are proposing 2 nos. Dry Transformer of 1000 KVA each.

26.8 Emergency Power Supply

26.8.1 Emergency Power Supply

We are proposing **1 No. 500 KVA + 1 No. 250 KVA DG Sets** according to the detail Load Sheet attached. All the DG Sets will be synchronized. DG shall be 100% Backup.

26.8.2 Emergency /Critical Lighting

Although entire common area lighting in the building shall be 100% backed up by the stand by DG Sets, yet the lighting of all the escape routes i.e. all staircases on all the floors, some elected spot light in the lift lobbies on the all the floors shall be connected to inverter lighting circuit. Some light points in the terrace electrical/DG set room and the pump room shall also be connected to the inverter circuit. The purpose of this critical/emergency lighting circuit is to ensure no break power supply to these areas. The power supply to these critical circuits shall be through independent DC battery backed inverter sets.

26.9 M.V. Switchgear

26.9.1 Main LT Panel

The L.T. Panels shall be provided with adequate size of ACBs/MCCBs. The bus bars of the panel shall be made of aluminum strips and the panel shall be in compartmentalized design (From-IV). Bus duct connections shall be provided between transformers and L.T. Panels. Bus ducts are preferable on technical and safety considerations. The cable connections are not recommended for such a higher

rating of transformer and DG Set as the number of cables will be very large and it will be not feasible to handle such a large number of cables.

The panel shall be located in the sub-station (utility block) and shall be suitable for 415V, 50Hz, 3 phase 4 wire system. The size of feeders and cables may be so, selected to have economy in overall distribution as well as to have minimum voltage drop in the system.

26.9.2 Distribution

Shops / office Unit:

The electric supply from the LT Panel shall be distributed to the actual load centers through suitable sized 240/415V, 50Hz, 1/3 phase, 3/4 wire, 1.1 KV grade PVC power cables/wires.

The distribution scheme shall be such as there would be dedicated one electrical room/ shaft at each floor where the incoming supply shall come to feed individual Shops / Office Units.

Each of the Unit shall be fed from Meter board Panel through suitable size of copper wires.

26.10 Power Factor Improvement

26.10.1 Power Factors Correction System

Besides the requirement of State Electricity Authority, improving the power factor has an added advantage that it reduces the overall demand on to the Supply Authority thereby adding to overall economy. Thus, for power factor improvement suitable size capacitor panels in the Bank formation shall be provided. The capacitor shall be connected to the Main LT bus and will be located alongwith the main LT panel. Automatic power factor correction relay of reputed make shall be provided to improve the power factor of the system and switch on the capacitor depending on the system requirement. The power factor shall be maintained around 0.9.

26.11 Wiring

Wiring in all Flats, common areas shall be provided with copper wiring in concealed in PVC Conduits. The wiring installation shall conform to IS: 732-1963 latest addition. The wiring for lights and small power outlets shall be with PVC insulated copper conductor wires of 1.5 Sq.mm size and power wiring shall be carried out with 2.5/4.0/6.0 sq.mm copper conductor wires. Colour coding shall be strictly maintained for the entire wiring installation i.e. Red, Yellow and Blue for the phases and Black for the Neutral.

Individual Factory made MCB Distribution Boards shall be provided at Load Centre. The Distribution Boards shall be connected through Sub-mains of Copper wires in concealed/surface conduits. It is proposed to use earth leakage circuit breaker (ELCB) in the incoming side of DB's.

26.12 Lighting

Lighting for common areas will be designed based on interiors requirement preference would be given to energy saving fixtures. For Commercial areas LPD (Light Power density) of 2W/sq.ft is proposed for design purpose.

26.13 Street & Area Lighting

High efficiency sodium vapor /mercury vapor /metal halide /LED lamps and bollards shall be provided as per landscape design.

26.14 Earthing

Considering the hazardous nature of electrical energy, safety measures in using this energy is of paramount importance. Earthing system shall be provided in accordance with Indian Standards IS-3043-1987 and other statutory regulations.

All non current carrying metal parts forming the Electrical System shall be connected to the Earthing System as per the requirements of Indian Electricity Rules and local statutory requirements. The earthing system shall be so designed that the resistance of the earthing network shall be less than 1.1 ohm at any point of the system.

All the Bus-Ducts/Cable Trays shall be provided with suitable size of 2 Nos. G.I. strip in full length. Separate Earthing shall be provided for Computers/UPS Network and entire earthing shall be insulated with PVC tape.

Separate earthing grid shall be provided for the earthing of Panels, and earthing of Data/Telephone System.

The proposed Earthing System can be divided into three sections:

Sub Station Equipments:

- Transformer Neutral Earthing - Copper Earthing
- Transformer body Earthing - G.I. Earthing
- H.T switch-gear Earthing - G.I. Earthing
- D.G. Set Earthing - G.I. Earthing
- D.G. Set Neutral Earthing - Copper Earthing
- f) L.T. panels Earthing (Body) - G.I. Earthing
- g) Distribution boards Earthing - G.I. Earthing
- Equipment Earthing - G.I. / Copper Earthing
- Lighting/Power Point circuits - Copper Wire Earthing

26.15 UPS System/Inverter

Uninterrupted power supply is essential for the Building Maintenance Services and same will be provided for common usage of EPABX, Servers, Voice, Security, exit lights etc.

26.16 Fire Alarm System

26.16.1 Fire Detection And Alarm System

We have proposed Conventional fire Detection and alarm system for the entire project where Multi Criteria detectors shall be provided in all Air-conditioned areas and heat detectors shall be provided in all Non Air-conditioned areas.

Bell-Push and hooter shall be provided at lift lobby and staircase. A central control panel shall be provided in the fire control room located at ground floor which shall be connected to detectors, bell-pushes MCP and hooters.

26.17 Communication Systems

26.17.1 Voice (Tele-Communication System)

A telephone exchange (EPABX) with requisite lines shall be provided by P&T/Service provider for the Business cum Tourism and Cultural Centre. For maintenance staff internal communication system using 10/150 line EPABX would be done by Management. The telephone tag blocks shall be Krone type and shall be provided at all the floors to feed to individual tag Block / telephone outlets. Multi-core telephone cables shall be provided between the EPABX and individual telephone tag block.

26.17.2 Data (Computer Network)

It is proposed to provide the data points in the following areas:

- Chief Engineer
- Parking Facility
- Management Services
- Records
- Security Rooms

Only Conduits/Computer Data outlets for Computer Network shall be considered. Data Cabling and Networking shall be provided by Computer Company as per the requirements.

26.17.3 Cable Tv System

It is proposed that no central Cable TV System would be installed. However, conduiting provisions will be made, to provide Cable TV signal to each units through cable service provider.

TV outlets shall be provided in all the Units in the buildings, which shall be connected to a cable provider for various channels.

26.18 Security & Surveillance

26.18.1 CCTV System

We are proposing to install the Close Circuit Television Cameras for monitoring in Basements, corridors and lobby area. The system shall be comprise CCD Cameras, TV Monitor, Multiplexer, and Time Lapse Recorder. All the cameras shall be connected through 10-channel multiplexer. The unit shall record all the cameras as paid succession of full scale images. The multiplexer shall receive the alarm signal, select the camera covering the forced entry area and records exclusively the camera to tape. The time lapse recorder shall be provided which shall be connected to the multiplexer unit to tape events seen by all cameras simultaneously.

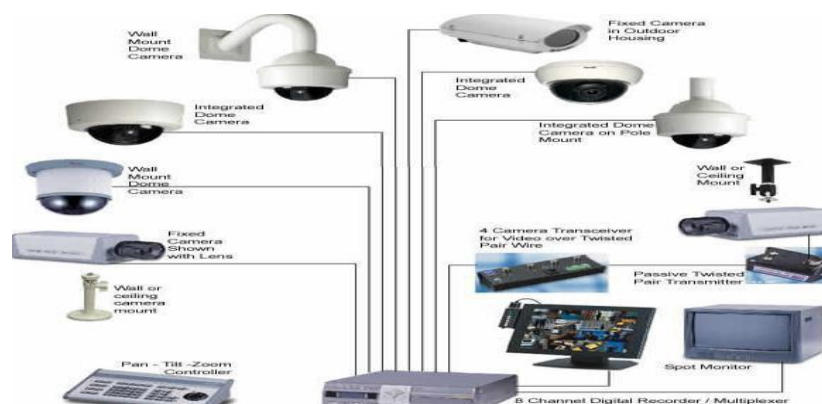


Figure 43 CCTV System layout

26.19 Construction Guidelines

Following architectural provisions need to be made for installation of electrical equipments:

26.19.1 Room Clear Heights

EQUIPMENT	MINIMUM CLEAR ROOM HEIGHT UNDER THE BEAM
11KV HT Panel Room	3.6M
Transformer Room	3.6M
Main LT Panel Room	4.0M

Figure 44 Table showing Room clear heights

26.19.2 Electrical Rooms & Shaft Construction & Doors

All electrical rooms, substation rooms & shaft's civil construction and doors need to be provided as per fire ratings specified in NBC-2016.

26.19.3 Sealing of Shafts & Cutouts

All sleeves & cutouts after passing of electrical services such as conduits, cables, cable trays etc. need to be 'Fire Safe Sealed' to prevent spread of fire between floors.

26.20 Electrical Load Details

- Please refer Detail Electrical Load Sheet.

S. No	DESCRIPTION	TOTAL AREA (SQM)	GRID SUPPLY ONLY (A)				POWER BACK UP (B)				
			LOAD PER UNIT (KW)	TOTAL LOAD PER BLOCK (KW)	FAC TOR	DEMA ND LOAD (KW)	LOAD PER BLOC K	NO OF BLOC K	TOTAL LOAD FOR ALL BLOCK	D.F.	DEMAND LOAD (KW)
(A)	LOAD										
	MAIN BUILDINGS	19960		1996	0.8	1597	998	1	998	0.8	798
	PLUMBING SYSTEM LOAD			100	0.8	80	50	1	50	0.8	40
	EXTERNAL LIGHTING			100	0.8	80	50	1	50	0.8	40
	TOTAL	19960				1757					878
	OVERALL DIVERSITY					0.5					0.5
	DEMAND LOAD					878					439
	TOTAL LOAD FOR GRID SUPPLY (A+B)					1318					
	POWER FACTOR					0.85					
	DEMAND LOAD IN KVA					1550					
	TRANSFORMER CAPACITY										
	DEMAND LOAD					1550					
	LOADING FACTOR					0.80					
	TRANSFORMER CAPACITY					1938					
	TRANSFORMER CAPACITY					2 X1000KVA					2000KVA
	D.G. SET CAPACITY										
	DEMAND LOAD										439
	POWER FACTOR										0.80
	DEMAND LOAD										549
	LOADING FACTOR										0.85
	D.G. SET CAPACITY										646
	D.G. SET CAPACITY					1 X 500 KVA + 1 X 250 KVA					750 KVA

Figure 45 Load calculation sheet

27 HVAC SYSTEM (VENTILATION)

27.1 General

The Business cum Tourism and Cultural Centre at Police Bazar has G+4 level including one level stilt floor which is used for parking and other service like DG, STP, Transformer and panel room etc.

The report outlines the basis of preliminary design, estimated requirements for Ventilation Works.

27.2 Standards & Codes

The applicable Standards/Codes are:

- National Building Codes 2016.
- ASHRAE Design of Smoke Management Systems, (Pressurization Norms)
- IBC 2006 Sec-9009.7.2
- NFPA-1998
- The following IS codes shall be applicable:

Material/item of Work	Standard/Code
<ul style="list-style-type: none"> • Ducting Fabrication (minor works wherever applicable) 	IS : 655 (Latest Rev.)/ SMACNA
<ul style="list-style-type: none"> • Galvanized Sheets 	IS : 277-1977

27.2.1 Safety codes

The following safety codes as laid down by ISI shall be followed:

- | | |
|--|-----------|
| • Safety code for scaffolding and ladders for maintenance | IS : 3696 |
| • Code for practice for safety and health requirements
in electrical and gas welding & cutting operations | IS : 3696 |
| • Code of safety procedures and practices in electrical works | IS : 5216 |

27.3 Ventilation and Smoke Control

27.3.1 Basement Ventilation

Automobile parking areas either fully enclosed or partially open require mechanical ventilation as per NBC codes & regulations.

Underground or basement parking presents two concerns. The emission of Carbon Monoxide and presence of fumes, which needs to be exhausted from mechanical ventilation and also exhaust the smoke in the event of fire in the basement. The ventilation is required to dilute Carbon Monoxide and other fumes of vehicle by exhaust to acceptable levels.

Ventilation system can be classified as supply only, exhaust only or a combination of both. We propose induced fresh air and mechanical exhaust air as per NBC 2016 and its amendments for its provision.

27.3.2 Area to be Ventilated (Normal & Emergency)

- Volume of Stilt/Basement

Total Parking Area of Stilt/Basement (A1) : 3154 Sqmt- Area

(B1) : 4.3 m- Height

Volume of Parking Stilt/Basement

(A1xB1): 13562.2 Cum-Vol.

27.3.3 Basis of Design

- Basement/Stilt Area

Emergency Fresh air & Exhaust air parking : 12 ACPH

Normal Fresh air & Exhaust air parking : 6.0 ACPH

STP : 30 ACPH

Service Area : 15 ACPH

27.3.4 System Design

Ventilation for car park as defined in National Building Code of India that mechanical ventilation for car parking in basements shall be designed to permit 6 ACPH for normal & total 12ACPH (6+6) for Emergency or smoke ventilation. The system shall comprise of axial flow fans for exhaust air and fresh air through cutout. There is two fan proposed in one zone for ventilation one for normal ventilation and other for smoke exhaust. During normal condition one fan will run and provide 6 ACPH & during Emergency or smoke condition both fan will work together and provide 12 ACPH in same fire zone.

- It is proposed to provide mechanical ventilation system for the entire basement as per NBC 2016.
- There will be cutout/shafts marked in basement for exhaust air. The Exhaust air shaft will be located at opposite side of fresh air source for proper air circulation & maintaining air quality as per NBC. Axial fan will be located in basement for exhaust air at near shafts.
- Cutouts in Basement are proposed in dead areas for fresh air & exhaust air, which are far away from staircases & ramp.
- Other service areas in the basements like, Pump Room, transformer rooms, panel room, STP & DG rooms are provided with normal ventilation system by axial flow fan based on 15 air changes. DG room ventilation as per 30cfm/ kava (DG rating).
- All lift well & core lift lobby & staircases are provided with pressurization system as per NBC.
- All fire Exhaust fans are fire rated up to **2 hrs operations**. They work efficiently without any failure in case of fire.

27.3.5 Stair Case, Lift Lobby & Liftwell Pressurization/Natural Ventilation

It is proposed to provide pressurization system for tower lift well and closed basement or core area staircases for maintaining a positive pressure in both the areas about 50 Pascal and 25 Pascal in basement or core area lift Lobbies as per National Building Codes of India 2016. Pressurizing these areas is to provide a smoke free escape of occupants from building in case of emergency (Fire). Axial fans of required capacity are installed as per requirement.

External stair case & lobby is naturally ventilated by 0.5 sqm opening on external wall. Location of opening/vent on External wall of stairs at each landing on top position as per NBC 2016.

28 ESTIMATED PROJECT COST

COST OF THE PROJECT		
S.No	Particulars	Total (in lakhs)
1	Civil/interior works	11116
2	External development	726
3	Plumbing works	838
4	Firefighting works	385
5	Electrical works	4081
6	HVAC works	1075
7	Furniture	242
8	Signage	127
9	Art & murals work	160
10	Mechanical parking	112
10	SUB TOTAL	18866
11	Cost escalation of five years @ 5 x 6.5% on sor 2015-16 till 2021-22	2111
12	TOTAL AMOUNT	20977
13	Contingency @2%	419
14	Labour Cess @1%	210
17	TOTAL PROJECT COST	21607
18	Less Contingency @2%	419
19	Less GST @ 12% on project cost	2593
20	GRAND TOTAL IN Rs.	18594
	SAY	186 Crores

Figure 46 Cost Sheet

29 LIST OF MAKES

LIST OF APPROVED MAKES- CIVIL & PLUMBING SERVICES

.No.	Details of Equipment / Material	Make / Manufacturer
1.	Adhesive for Door Work	Fevicol / Vamicol / Dunlop / Araldite / Century
2.	Air Release Valve	Azud / AIP / Bermad /Bird / Kirloskar / Venus / Zoloto
3.	Aluminium Accessories and Hardware	Classic / Argent / Oxford / Newlite / Crown / EBCO
4.	Aluminium Cladding Sheets	Aludecor / Alstrong / Alucobond / Alupan / Alstone / Alshine / Durabuild
5.	Aluminium Die-Cast handles & two point locking kit	Giesse / Securistyle / Alu – alpha
6.	Aluminium Extrusion	Indal / Mahavir / Hindalco / Jindal / Bhoruka
7.	Aluminium Fabricators	M/s. International Glass House, M/s. AGV Alfa Lab Ltd., M/s. Consolidated Engg. Company / M/s. Ajit (India) Pvt. Ltd./ Calco / Alkarma
8.	Anchor Fastner	Hilti / Fischer / Bosch
9.	Anti – Termite Treatment	Pest Control India Ltd. or any permanent members of IPCA as approved by Engr-in-Charge.
10.	Automatic variable temperature control / fixed temperature control faucets	Jaquar / AOS-Robo-U-Tec/ Parry/ Angash / Euronics
11.	Ball Cock	Zoloto / L&T/Audco/Advance
12.	Ball valves with floats	Zoloto / Leader / Sant / Jayco / GPA / Audco/ AIP
13.	Batch Mix Concrete (BMC) / Ready Mix Concrete (RMC)	The contractor to install his own computerized batching plant of suitable capacity and arrange for Transit Mixers, pumps etc. as per approval of Engineer – In- Charge. Or The RMC shall be procured from the source as approved by Engineer – in Charge.
14.	Brass stop & Bib Cock	Zoloto / Sant / Jaguar/ AIP
15.	Butterfly valves	Zoloto/Audco / AIP/Sant/Advance
16.	C. I Fitting	RKS/ AVR/ UNIK/ Electrosteel/ Kesoram/ ISSCO/ Neco/ RIF/SKF
17.	C.I Sluice Valve & Non Return Valve	Kirloskar / IVC/ Leader / Zoloto / L&T / Audco / Advance / AIP
18.	C.I Valves (Full way, Check and Globe Valves)	Leader / Kirloskar / SKF / Zolto / Sant / Upadhyay / Castle / Kartar
19.	C.I. Manhole Covers	Neco / R.I.F./ B.I.C. / Hepco / SKF / Kajeco
20.	C.P. Fittings Mixer / Pillar taps/ C.P brass angle valve/ Valves Washers, C.P. brass accessories	Parko / Jaguar / Marc / Dripless / Soma / Kingston / Gem / Parry / Kohler/Kerovit
21.	C.P. Waste, Spreaders, Urinal	Jaguar / Parko / Kingston / GEM/Kerovit
22.	Calcium Silicate False Ceiling	India Gypsum / Armstrong / Decosonic / Daiken /

		Aerolite
23.	Calcium Silicate Boards	Hilux / Aerolite
24.	Calcium Silicate Tiles	Aerolite / Hilux
25.	Carpet Flooring (Tiles & Rolls)	Modulyss / Forbo / Corus / Shanhua / Heritage
26.	Cement	ACC / L&T / Ultra tech / Birla Corp. Ltd. (Cement Divn.) / JK Cement / Jaypee-Rewa / Shree / Lafarge / Prism / India Cement / Bangur
27.	Cement: White	Birla White / JK
28.	Central Control	Rain Bird, USA/Toro/Nelson,
29.	Centrifugally cast C.I Rainwater fitting / Bronze gratings etc.	Sages Metals/ GMGR/ Electro Steel / Kesoram / IISCO / Neco / BIC / Neer
30.	Centrifugal Pump	Crompton /Kirloslar/ KSB/ Willo/Lobara
31.	Centrifugally C.I Rainwater Intel fitting , Bronze gratings	Sages Metals, GMGR, Electro Steel , Kesoram, IISCO , Neco , BIC , Neer
32.	Centrifugally casted C.I. Pipes	Neco / Hepco / SKF/ Kapilash
33.	Ceramic tiles	Johnson / Somany / Kajaria / Nitco Ceramics / RAK / Spartek / Bell / Orient
34.	Ceramic tiles Adhesive	BASF/ Sika / CICO / Bell / Pidilite / Bal Endura / Swastik
35.	Chlorinator	Thermax Ltd/ Watcon, Ion exchange/ Sigma DH Combine Inc./ Siemens/ Techcon/ Jesco / Prominent
36.	Chlorine Dosing System	Toshcon / Chloromax
37.	Clear Glass / Clear Float Glass / Toughened Glass	ModiGUARD / Saint Gobain (SG) /Asahi India Safety Glass Ltd / GSC / Tata / Atul
38.	Cockroach Trap	Chilly/ GMGR/ Camry
39.	Compressed Chequered tiles	Johnson / Somany /Johnson/ Kajaria / Spartek / Nitco/ Orient / Bell Ceramics
40.	Concrete Additive	Sika /STP/CICO/Pidilite / Fosroc / Fairmate / MC Bauchemie / Chokesy/ BASF
41.	Copper Fittings (Capillary)	Yorkshire Imperial, U.K./ Mexflow / Rajco Metal Works Mumbai / Conex - Benninger
42.	Copper Pipes	Mexflow, Rajco Metal works, Mumbai / Conex - Benninger
43.	CPVC Pipes & Fittings	Prakash Surya/Flowguard / Astral / Ashrivad / Kishan/ AKG/ Supreme
44.	Curtain Rod/Drapery Rod	Vista work / Mac Décor / Hunter Douglas
45.	Dash Fasteners	Hilti / Fischer / Bosch
46.	Disc Filter	Azud/ Spain/ Amaid / Arkal,
47.	Door closer / Floor spring	Ozone / Godrej / Everite / Hardwyn/ Master / Dorset Kaba / Dorma/ Doorking
48.	Door Locks	Godrej / Harrison / Link / DorsetKaba
49.	Door Seal – Woolpile Weather Strip	Anand Reddiplex/ Enviroseal
50.	Doors & Windows Fixtures /	Everite / Argent / Classic/ Crown / Earl Bihari/

	Fitting.	DorsetKaba, Dorma, Haffele, Hettich
51.	Drainage Pumps	Grundfos/ KSB/Salmson/Kirloskar
52.	Ductile Iron Fittings (IS:9523)	Electrosteel/Kesoram/Tisco/Jindal
53.	Ductile Iron Pipes (IS:8329)	Electrosteel/Kesoram/Tisco/Jindal
54.	E.P.D.M Gaskets	Anand Reddiplex / Enviro Seals
55.	Epoxy Floor	Fosroc / Cico/ Sika Pidilite/ MC Bouchehe
56.	Epoxy SLF Flooring	Sika/ Stonhard / STP / Pidilite
57.	Extruded Polystyrene Board	Styrofoam by DOW Chemicals/ Insuboard by Supreme Industries
58.	Filtration Plant / Softening Plant	Bikon water / Ion exchange /Thermax/ Pentair/ Eureka Forbes/Doshi Ion/Fontus
59.	Fire rated Doors & Frames	Navair / Shaktimet / GMP/ Promat / Godrej
60.	Fire Rated Glass	Saint Gobin, Torch, Glaberwal
61.	Fire Retardant Paint	Viper FRS 881, Nullifire, Burger
62.	Fire Seal	Sealz, Alstroflam, Abacus
63.	Fire: Door Closures, Mortice Dead locks	Becker Fire Solution, Inersoll Rand LCN Series, Dorma TH Series / DorsetKaba
64.	Fire: D-Type Pull Handles	Becker Fire Solution, Dorma, Hardwin / DorsetKaba
65.	Fire: Hinges,	Becker Fire Solution, Inersoll Rand, Dorma / DorsetKaba
66.	Fire: Panic Exit Device	Dorma / D-line / DorsetKaba
67.	Fire: Panic Exit Devices	Becker Fire Solution, Inersoll Rand LCN Series, Dorma PHA Series / DorsetKaba
68.	Fire: Tower Bolts	Suzu, Nulite, Dorsetkaba
69.	Flush Door Shutters	Archidply/Duro / Greenply/ Century
70.	Flush Valves	Gem/ Jaquar / Parko/Kingston / Plumber / Marc
71.	Forged Steel Fittings & Flanges (For Welded joints)	Rohini /Kanwal/ Vijay Cycle & Steel
72.	G.I. Fittings	R/Unik/S.S./Sun/Swastik
73.	G.I. Pipes	Jindal Hissar / Tata / Prakash Surya / SAIL / Swastik
74.	Geyser	AO Smith / Racold / Venus / Voltas / Usha Lexus / Almonard / Bajaj / Havells
75.	Glass : Mirror	Modiguard / Atul / Saint gobain/ Asahi India Safety/ Modi Float / Pilkington
76.	Glass Wool	Owens Corning /UP Twiga / KIMMCO
77.	Insulation	Roxul rockwool / Knauff / NISCHIAS
78.	Glass / Glass for Aluminum Doors/ Windows	Glaverbel / Asahi India Safety Glass Ltd. / Atul / Saint Gobain / Modi Float glass (India) / Pilkington
79.	Grab bars and Disabled Hardware	Dorma / Ozone / D-line
80.	Gunmetal Valves / C.P brass angle valve	Zoloto / Leader / Kilburn / Sant / Kartar/ AIP/ Audco/Jaquar/Kerovit
81.	Gypsum Board	Beral Gypsum / India Gypsum / USG Boral/ Saint Gobain (Gyproc)

82.	Chairs	Godrej / Wipro / Herman Miller / Haworth
83.	Hand Drier	Kopal / Utech Systems / Blue Circle (India) Pvt. Ltd. / Euronics Automat
84.	HDPE Pipes / Moulded Fittings	Emco / Polyefins/Pioneer Plyfab/Supreme/Jain Irrigation
85.	HDPE Solution tank	Watcon / Ion Exchange / Water Supply Specialist Pvt. Ltd.
86.	Heat Resistant Terrace Tiles	Thermatek
87.	Horizontal Centrifugal / Monoblock Pumps	Kirloskar / DP Holland / Wilo/Ground fiss/CRI Pumps/Salmson / Ebara
88.	Hydro-pneumatic System	Willo/ Grundfoss / Salmson / Nocchi / Xyllum
89.	Inbuilt Drip Line	Azud/ Rainbrid-USA/ Netafim
90.	Insulation of Hot water pipes	Vidoflex insulation / Superion insulation Kaiflex – Kaimann/Armoflex/Thermafex/ Armacell
91.	Laminates	Archidlam /Century / Greenlam / Formica / Amulya / Merino
92.	Liquid Level Controllers / Indicators	Advance Auto / Sridhan International / Minilec / Radar / Femac / Switzer
93.	Liquid Soap Dispenser	Chilly/Euronics/Camry/Utec/Kopal
94.	M.S. Pipe	Jindal Hissar / Prakash – Surya / BST/ Kalinga /TATA / TT Swastik
95.	Mainline Isolation Valve	Sant/Leader /Zoloto/Audco/Advance
96.	Metal False Ceiling	Hunter Douglas / Armstrong / Durlum / Lindner / Chicago Metals
97.	Mineral fibre ceiling	Armstrong / AMF/ USG Boral/ Anutone
98.	Modular SS Railing System	Metallica India / Stark Steel Fabricators / Het creators / D – Line International Denmark / Mobil Hardware
99.	MS Saddle with G.I. Riser	Harvel/Alprene/Rain Bird, USA
100.	Night Latch	Godrej / Harrison / Link / DorsetKaba / Dorma
101.	Non Return Valve	Sant/Leader /Zoloto/Audco/Advance
102.	OT: Bumper Guard Stretcher Guard Crash Rail System	MDD / TSI / LSR / Radius / CS / Gerflor / Care4
103.	OT: Wall Guard Grab Rail / Hand Rail System	MDD / TSI / LSR / Radius / Care4
104.	OT: Anti-bacterial paint	SikkaAG / Viesmann/ SSK/ TRILUX
105.	OT: Conductive Tile Flooring: ESD-Control Tile Flooring	Tarkett / Gerflor / Armstrong/ Forbo / Polyflor
106.	OT: Doors	TRILUX/Penlon/LSR/TSI/Metaflex/Portalp
107.	OT: Stainless Steel Scrub Sink Two Bay	MDD/ LSR/ radius/ TSI/ Mediconz
108.	P.R.S. Dials	Rain Bird, USA/ Toro, USA/ Nelson,
109.	P.T.M.T. Fitting	Prince India / Symet
110.	MDF	Archidply/Valbopan/ Green / Action Tesa
111.	Pre-Laminate MDF	Merino/ Green/Jaitra/ Action Tesa
112.	Metalic Laminates	Metlam, Homapal, Dekodur

113.	Glass Fibre Acoustical Ceiling Tile	Decosonic / Ecophone / Armstrong / Anutone
114.	Acoustic Wooden Perfonated Slat	Decosonic/Armstrong/SaintGobin
115.	Acoustical Fabric (With Glasswood) Wall Panels	Anutone/Ecophone/Saint Gobain
116.	R.C.C Pipes	Indian Hume Pipe / Pragati Concrete Udyog /ISI Marked Pipes/Daya/KK / JSP
117.	Paint- Cement Paint	All types of paints i.e. cement based paints, Oil bound distemper, acrylic paints, plastic emulsion paints etc shall be First quality of ICI, Berger, Asian, Dulux, Goodlas Nerolac and Johnson & Nicholsan make, For Cement based paint add Snowcem plus and Tatacem make.
118.	Paint - Dry Distemper	
119.	Paint - Oil Bound Distemper / Acrylic Washable Distemper	
120.	Paints - Cement Based	
121.	Paints - External Emulsion Paint	
122.	Paints - Other Paints / Primer	
123.	Paints - Plastic Emulsion Paint	
124.	Paints - Resin Based Paints	
125.	Paints - Synthetic Enamel Paints	
126.	Paint Epoxy paint	Nerolac / Shalimar / Cico / Fairmate / Sika / BASF / Berger / Asian / Pidilite
127.	Paints - Texture paint	Berger / J & N / Spectrum / Unilite heritage /Asian / Dulux / ICI
128.	Paver blocks (All Types)	KK Manholes / Uni Stone Products (India) Pvt. Ltd/ Hindustan Tiles
129.	PE-AL-PE Pipe and Accessories	Kitec/ Jindal/ Kissan/Vista
130.	Pipe coat material (pipe protection)	RPGRaychem/Pypkote/Makphalt
131.	Plastic seat cover of W.C	Commander/Hindware / Johnson / Poddar / Parryware / Bestolite/ Capri
132.	Plywood/Block board/Ply board	Archidply/Duro/ Green/ Century
133.	Polycarbonate Sheets	Danpalon / Macrolux / GE Plastic / Vergola / Midori / Zesta (All standing seam type)
134.	Poly-sulphide Sealant	Pidilite / Fosroc / Choksey / ChematalRai/ Cico / Sika, MC Bouchemie, BASF
135.	Pop up Connecting Assembly	Rain Bird/Dura/Lasco,
136.	Pop up Spray Head	Rain Bird/Toro, USA/Nelson,
137.	Powder Coating Material pure Polyester	Jotun / Berger / Goodlass Nerolac
138.	PP-R Pipes (PN – 16)	Amitex Polymers Pvt. Ltd. / Prince/ Supreme/ Vector
139.	Pre-coated Galvanised Steel Sheet	Tata BlueScope / Llyod Insulations India Ltd / S.R.Metals
140.	Pre-Laminated Particle Board	Century / Jaitra /Action TESA / Merino
141.	Pressed Steel Doors Frame	West Wind Concepts Pvt. Ltd., Gurgaon/ Shiva Steel Pvt. Ltd., Noida /AGEW Steel Manufacturing, Ahmedabad/ Sukri / Godrej / Gurdian / Navair
142.	Pressure Relief Valve	Omega/ Sant/Leader/ Zolato / Upadhyay / Audco
143.	Pumps	DP Holland / Willo/ Grund foss/Xyllum/Lobara

144.	PVC continuous fillet for periphery packing of glazings / Structural/Glazing	Roop / Anand / Forex Plastic/ Nagalia/Trading Company
145.	PVC Flooring	Forbo / Tarkett Floors / Gerflor / Armstrong / Polyfloor
146.	PVC flushing cistern	Commander /Johnson Pedder / Parryware / Duralite/ Geberit
147.	PVC Pipes & fitting SWR Soil, Waste & Vent Pipes and fittings, Type B PVC Casing & Screen Pipes	Prince / Supreme / Finolex /AKG / ORI PLAST / Kasta / Vector/ Prakash surya
148.	PVC Water Stops	Prince , Supreme , Finolex , Oriplast, BASF , Maruti
149.	Polyethylene Storage Tank	Sintex / Polycon/ Fusion / Plasto
150.	R.O. System	Ion Exchange/ Sterling India Ltd. / Pentair water /Eureka Fobes
151.	Reinforcement Steel (Primary)	SAIL/RINL/TISCO/IISCO OR EQUIVALENT
152.	RQRC Hydrant	Harvel/Alprene/Rain Bird, USA
153.	RQRC Key	Harvel/ Aqua/ Drip& Drip
154.	Sensor Operated Auto Flushing System Urinals	Jaquar / AOS-Robo/U-tec/Angash/Euronics
155.	SFRC / RCC Manhole Covers/ Perfect RCC Grating	KK Manholes /SK Precast Concrete/ Advent concreteovision
156.	Silicon sealants /Weather Sealant / Structural Glazing Sealant	GE- Silicon / Pidilite / Choksey /Wacker / Forsoc / Cico/Dow Corning / Sika/
157.	Sluice valve / NRV	Kirloskar/IVC/Kilburn /Zoloto/Castle/ Leader / L&T/Audco
158.	Solar Hot water system	Emmvee Solar / Racold / Solahart (India)/Venus/Honeywell
159.	Solenoid valve	Rain Bird, USA/Toro/Nelson
160.	SS Gratings, Soap Dish Towel Rail etc.	Camry/Glacier/Gem
161.	Stainless Steel	Salem Steel or as approved E-in-Charge
162.	Stainless Steel bolts, Washers and Nuts	Kundan / Puja / Atul
163.	Stainless Steel Clamps	Hilti /Intellotech Konzept
164.	Stainless steel CP Grating	Chilly / Camry
165.	Stainless Steel D-handles	D-line / Giesse /Dorma / DorsetKaba
166.	Stainless Steel Friction Stay	Earl Bihari / Securistyle / EBCO
167.	Stainless Steel Pressure Plate Screws	Kundan/ Puja/ Atul
168.	Stainless Steel Screw for Fabrication and	Kundan / Puja / Atul
169.	Stainless Steel Sink	Hindware / Jayna / Neelkanth / Nirali / Kingston /AMC/ Orient / Commander
170.	Stone ware pipes & Gully Traps	Perfect / R.K/ Hind / Anand
171.	Submersible Drainage pump	Jyoti / Crompton/ Kirloskar/ KSB /Grundfos/ Mather & Platt / JS/Wilo/Xyllum
172.	Sunken Portion Treatment	Choksey / Sika / Cico, MC Bouchemie / MC Bouchemie / BASF

173.	Super plasticizer	CICO, MC Bauchemie (India) Pvt Ltd, Roffes Construction Chemicals, Pidilite Industries
174.	STP	Thermax/Ionexchange/Brizanzia Technologies/BS Enviro/Eureka fobes
175.	Tiles: Glass Mosaic Tiles	Mridul/ Italias/ Bisazza/ Pace India
176.	Tiles: Glazed tiles	Bell/ Somany / Johnson / Kajaria / Spartek / Orient / Nitco/RAK
177.	Tiles: Vitrified Tiles	Somany / H.R.Johnson / Kajaria / Nitco / RAK / Restile / Bell Spartek / Orient
178.	UPVC Pipes & fittings	Prakash surya / Finolex / Prince / Supreme / AKG / Kasta / Vector / Astral
179.	Vacuum Dewatered Flooring	Tremix / Sun Build / Avcon technics
180.	Valve Box	Rain Bird, USA/Carson Brook, USA/Dura,
181.	Veneer	Duro / Greenply / Century
182.	VFD Pump	Jyoti / Crompton/ Kirloskar/ KSB/ Grundfos/ Mather & Platt / Ebara.
183.	Vibration Eliminator Resisto-flex Pads & Connections	Relay Corpn./ Kanwal
184.	Vitreous China/ Sanitary ware	Parryware / Neycer / Cera / Hindware/ Kohler / Grohe/Kerovit
185.	Water Cooler	Blue Star/Voltas/Usha/Godrej/Eureka fobes
186.	Water Meter	Capstan / Kranti/ Anand/ Kant
187.	Water Proofing Agencies	Shalimar Tar products / IWL (India) Ltd./ Llyod Insulations India Ltd./ Chemisol Adhesive Pvt. Ltd. Mumbai / Indian Water proofing / Overseas Water proofing / (Chemistik) Texas Ltd. / Fosroc / Sika/ Cico/ MC Boucheme
188.	Water Proofing Materials	Shalimar Tar products / IWL (India) Ltd./ M/S Llyod Insulations India Ltd./ MIS Chemisol Adhesive Pvt. Ltd. Mumbai (Chemistik) Texas Ltd. / Grace / Sika / Cico / MC Boucheme / Fosroc
189.	Water supply pumps	KSB/ Grunfos/ Kirloskar/ Crompton/ Mather & Platt/ Ebara.
190.	White Glazed Fire Clay Sink	Sanfire/ Cera / Neycer / Hindware
191.	Wooden Laminated Flooring	Berryfloor / Krono / Egger / Harro / Pergo / Armstrong/ Kaindl
192.	P U Water Proofing	BASF, SIKA,MAPAI, PHOSROC
193.	T.P.O Laxer W.P.	BASF, PHOSROC, SIKA, FIRESTONE
194.	Modular Furniture	Godrej, BP Ergo, Wipro, Featherlite
195.	Fabric Blinds	Hunter Douglas / Mac
196.	Aluminium Louvers / Facades.	Hunter Douglas / Lindner / Chicago Metals
197.	STP/ETP	BS ENVIRO/C-TECH / DOSHION /
198.	WTP	BS ENVIRO/PENTAI / DOSHION /

NOTE : All makes shall further confirm to standard specifications of each items as mentioned in technical specifications of tender documents.

2. FIRE ALARM SYSTEM:

Note: All fire alarm components/ Panels shall be UL listed & confirm to NFPA standard.

S. No.	Details of equipment/ material	Make/ Manufacturer
1	FIRE ALARM SYSTEM	HONEYWELL NOTIFIER / HONEYWELL ESSER
2	RESPONSE INDICATOR	REPUTED AS APPROVED BY ARCHITECT / CONSULTANT
3	PA SYSTEM	HONEYWELL/ ATIES/ BOSE PRASEDIO

SCHEDULE OF APPROVED MAKES (FIRE FIGHTING WORK)

S	S. No.	Details of equipment/ material	Make/ Manufacturer
	1.	Diesel engine driven pump	Kirloskar / Ashok Leyland / Mather & Platt/ Wilo
	2.	Air Break Contractors	Seimens / L&T / ABB
	3.	Air Release Valve	Rb / Tbs /Cimbrio/ Zoloto
	4.	Alarm valve & Hydraulic (Alarm motor with coupling)	HD fire protect/ Mather&Platt
	5.	Alternator	Stamford/ Lorey Somer/ kirloskar/ toyo denki/ avk
	6.	Ammeter, Voltmeter, PF, kW, Hz, meter (Analogue), Energy	AE/ Enercon/Conzerve
	7.	Ball Valve	Rb / Zoloto / Leader / Danfoss / Sant / Rapid / Castel/Emerald Audco/ Sant
	8.	Battery	Exide/ Amco/ Amaraja/ Chabbi/Statcon
	9.	Butt welded fitting (UL Listed	V.S.Forge /True Forge / DRP-M
	10.	Butterfly valves / C.I. Double flanged sluice Valves & check valves	Interval/ Leader/ Audco / Kirloskar / Advance
	11.	Cable lugs and glands	Comet/Dowell/Lotus/Jainson
	12.	Cables	Universal , CCI , Gloster, Elektron, Polycab, Finolex
	13.	Control / Potential /	Precise, Gillbert & Maxwell/ AE/ Kappa

	Transformer	
14.	Deluge valve	Eversafe / HD / Tyco
15.	ELCB	MG/MDS Legrand – Lexic/ L&T Hager/ Siemens
16.	Electrical Motors	Kirloskar / Seimens / Crompton / Wilo / Mather & Platt
17.	Epoxy Paint	ICI/ Berger/Asian/Nerolac
18.	Fire Aid / Fire Hose Reels, GM short branch pipe, 2/3/4 FB inlet/draw off connection	Ceasefire / Newage / Safeguard/ Minimax/ Usha fire
19.	Fire Buckets	Safex , Minimax, Peter Autokit
20.	Fire Extinguisher	Safex, Minimax, Peterautokit, Omaxe, Padmini Fire. Ceasefire, Newage
21.	Fire Hose Pipes	Ceasefire / Newage / Safex/ jayshee/ ushafire
22.	Fire Hydrant Valves	Ceasefire / Newage / Safeguard / Minimax/ Peterautokit
23.	Fire Man's Axe	Ceasefire / Newage / Safeguard
24.	Flexible trailing cable for lifts	Lapp Kabel or approved equivalent
25.	Flow switch	Potter / System sensors/ Rapid flow
26.	Foot Valve (Cast iron/ Gunmetal)	Kirloskar/ Neta/ Leader/ Zoloto
27.	Forged steel fitting	V.S.Forge/True Forge / DRP-M
28.	Forged Steel Fittings & Flanges (For Welded joints)	Rohini / Kanwal
29.	GI clamps	Chilly/Hilti/GMGR
30.	GI , MS Pipes	Tata / Jindal Hissar / Praksh Surya / BST
31.	Gunmetal Branch Pipe	Newage / Ushafire / Safeguard/Newage
32.	Gunmetal Valves (fullway Check and Globe Valves)	Audco / Interval / Advance
33.	Hose Reel	Minimax /Usha Fire / Omaxe/ Padmini Fire/ Newage / Minimax/ Ceasefire/ Safeguard
34.	Hydrant Valves	Newage / Minimax / Peterautokit/ Safeguard/ Ceasefire
35.	Indicating Lamps & Push Buttons	L&T / Technico / Led Type
36.	Non-Return Valve – Swing	Intervale /Audco (Cast Iron)/ Zoloto, Sant
37.	Nozzle	Newage / Safeguard/ Ushafire / Minimax
38.	Over Load Relays	GE / L&T / Siemens
39.	Pipe coat material (pipe protection)	Pypcoat / Makphalt / Safex
40.	Pipe External Protection	Pipe Kote (4mm thick) equivalent or other approved makes
41.	Pipe Hangers	Chilly/ GMGR
42.	Power/auxiliary Contactors	MG/ Siemens/ ABB/GE/L&T
43.	Pressure guage	Fiebig/ H.GURU
44.	Pressure Switch	Danfoss , Indfoss , Switzer
45.	Push Buttons, Indicating lamps LED	MG/ Larsen&Toubro/ Schneider
46.	RRL Hose	Jayshee / Newage / Ushafire / Padmini Fire/

		Ceasefire/ Safeguard /Superex / Jyoti
47.	Single Phase Preventer	L&T / Minilac/ Grinnel/ Tyco/ Yiking/ Eversafe
48.	Sluice Valves	Kirloskar / Audco / Unik / Leader/ Zoloto/ Sant
49.	Solenoid valve, Spray nozzle	Parker / HD / Tyco/Emersion
50.	Sprinkler (ICV)	HD/Tyco/ Reliable / Wormald/ Viking
51.	Sprinkler Heads /Water Curtain Nozzle	Grinnel / Tyco / Viking / Eversafe/ Reliable/ HD/ Fireasfe
52.	Steel flexible extension	Eversafe / Safex/ Tyco
53.	Suction “Y” Type Strainer	Kirloskar / Leader / Zoloto/ Sant
54.	Vibration Eliminator	Resistoflex / D waren / Kanwal
55.	Weld Electrodes	Advani/ ESAB/ L&T
56.	Deluge valve	Tyco/Viking/HD
57.	• Fire Hydrants (Landing Valves)	Padmini, Safega urd, Newage
58.	Hose Reel Drum & Tube	Padmini, Safegaurd, Newage
59.	Hose Pipes	Padmini, Safegaurd, Newage
60.	Branch Pipes	Padmini, Safegaurd, Newage
61.	Fire Brigade Inlet & Draw Off Connections	Padmini, Safegaurd, Newage
62.	Fire Men,s Axe	Padmini, Safegaurd, Newage
63.	Fire Extinguishers	Padmini, Safegaurd, Newage
64.	• Flexible Pipe for Sprinkle	• Padmini, Safegaurd, Newage
65.	• Sprinkler Head	HD, Tyco, Newage
66.	• Fire Pumps	Kirloskar, M&P
67.	• Installation Control Valve/ Fire alarm Valve	HD, Viking
68.	• Flow Switch	System Sensor, Rapid Control, Potter

SCHEDULE OF APPROVED MAKES (HVAC WORK)

1.	Chillers	
1.1	Water Cooled Centrifugal Chillers With VSD (AHRI Certified)	Carrier / Daikin / Trane Dunhumbush / Jhonson
1.2	Rotary Screw Water-cooled Water Chilling Machine (AHRI Certified – 200 TR & Above)	Carrier / Daikin / Trane Dunhumbush / Jhonson
1.3	Rotary Screw Water-cooled Water Chilling Machine (Below 200 TR)	Carrier / Daikin / Trane / Dunhumbush / Jhonson / Blue Star / Voltas / Hitachi
1.4	Rotary Screw Air-cooled Water Chilling Machine (AHRI Certified - 100 TR & Above)	Carrier / Daikin / Trane / Dunhumbush / Jhonson
1.5	Rotary Screw Air-cooled Water	Carrier / Daikin / Trane /

	Chilling Machine (Below 100 TR)	Dunhumbush / Jhonson / Blue Star / Voltas / Hitachi
1.6	Magnetic Bearing Water Chilling Machine	Daikin / Trane / Dunhumbush / Jhonson
1.7	Scroll Air-cooled / Water Cooled Water Chilling Machine	Carrier / Blue Star / Voltas
2.	VRV / VRF System (Outdoor / Indoor Units, Copper Y Joints and Fittings, Central & Remote Controller)	Daikin / Toshiba / Mitsubishi / LG / Samsung / Hitachi / O General / Panasonic
3.	Air-cooled Ductable Split Unit	Voltas / Blue Star / Daikin / Hitachi / Carrier / LG
4.	Air-cooled Packaged Unit	Voltas / Blue Star / Daikin / Hitachi / Carrier / LG
5.	Air Cooled Hi-wall / Cassette Unit	Voltas / Blue Star / Carrier / Hitachi / Daikin / ETA-O-General
6	Air Cooled Precision AC Unit	Emerson / APC / Stulz / Blue Box
7.	Horizontal Split Casing / Vertical Inline / End Suction / Monoblock Pump Sets (For Primary CHW Pumps & Condenser Water Pumps & Hot Water Pumps)	ITT Xylem / Armstrong / Grundfoss / Wilo / Kirloskar
8.	Variable Speed Pumping System (For Secondary Chilled Water Pumps Motors)	ITT Xylem / Armstrong / Grundfoss
9.	Variable Frequency Drive (For Pumps, Cooling Tower & AHU)	Danfoss (FC 102) / ABB (ACH 550) / Siemens (Sinamics G120P)
10.	Air Separator & Expansion Tank	Emerald / K D Agency / Spirotech
11.	Cooling Tower (CTI Approved & Certified)	Paharpur / Delta / Advance / Bell
12.	Air & Dirt Separator, Automatic Air Vent, Vacuum Degasser	Spirotech / Comfort / Spirotherm
13.	Hot Water Generator & Pan Humidifier	KEPL / Emerald / Rapid Cool
14.	Electrochemical Water Treatment & Disinfection System (For AC Plant)	Elgressy / Terragon / ENPAR Technologies
15.	Air Handlers Unit	Zeco / Edgetech / Waves / Flakt / System Air
16.	Fan Coil Unit	Zeco / Edgetech / Waves / Flakt / System Air
17.	ARI certified Cooling / Heating Coil (AHU)	Zeco / Edgetech / Waves / Flakt /

	& FCU)	System Air
18.	AHU Fans (AMCA Certified for Sound & Performance)	Comferi / Krugger / Wolter / Nikotra
19.	Heat / Energy Recovery Wheel	DRI / Novelair-Sevcon / Greenheck / Enventus
20.	Air-washer & Wet Scrubber	Zeco / Edgetech / Airflow / Waves
21.	Dry Scrubber	Espair / Trion / Waves
22.	Scrubber & Air-washer Fans (AMCA Certified for Sound & Performance)	Comferi / Krugger / Wolter / Nikotra
23.	Acoustically Insulated Box Type Inline Fans	Greenshank / Kruger / Wolter / Airflow / Pineair-Ostberg / Caryaire
24.	Axial Fan / Centrifugal Fan (AMCA Certified for Sound & Performance)	Greenheck / Airflow / Krugger / Wolter / Comefri
25.	Propeller Fan	GE / Usha / Bajaj
26.1	Three phase motors	ABB / CG / Siemens / Marathon
26.2	Three phase motors (250°C for 2 Hours)	Marathon / Havells-Lafert / Baldor
27.	Water Piping	Tata / SAIL / Jindal Hissar /Prakash Surya
28.	Y-strainer / Pot – strainer	Emerald / Betaflo / Rapid Cool
29.1	Butterfly Valve (Manual & Motorized)	Advance / Audco
29.2	Actuator for Motorised Butterfly Valve	Belimo / Siemens / Danfoss / Honeywell
30.	Manual Balancing Valve	Advance / Audco
31.	Dual Plate Check Valve	Advance / Larsen Toubro / Audco
32.	Automatic Balancing Valves	Danfoss / Flowcon / TA / Siemens
33.	Pressure Independent Balancing Cum 2-way Control Valve (Single Body)	Danfoss / Flowcon / TA / Siemens
34.	Three Way / Two Motorized Valves,	Siemens / Johnson / Honeywell /
	Thermostat / Humidistat	Danfoss
35.	Globe / Ball Valve (With or Without Strainer)	Giacomini / Betaflo / Leader / Rapid Cool / Sant
36.	Auto Air Vent Valve	Giacomini / Spirotech / Airtech

37.	Pressure Gauges	Feibig / Emerald / H Guru / Taylor
38.	Industrial Type Thermometer (Alcohol filled V form)	Feibig / Emerald / H Guru / Taylor
39.	GSS Sheet	Sail / Tata / Jindal
40.	Factory Fabricated Duct	Rolastar / Zeco / Ductofab / Waves / Equivalent
41.	Aluminium Sheet	Hindalco / Balco / Nalco
42.	Vibration Isolation Spring & Flexible Pipe Connector	Easyflex / Resistoflex / Dunlop / Kanwal
43.	VAV Boxes	Titus / Conaire / York / Johnson
44.	CAV	Conaire / Trox / Airflow
45.	Fire & Smoke Damper Spring Type	Caryaire / Mapro / System Air
46.	Fire Damper Actuator	Belimo / Siemens / Danfoss / Honeywell
47.	Extruded aluminum grills / Diffusers	Caryaire / Mapro / Tristar / System Air
48.	Pre Filters, Fine Filters & Hepa Filters	Thermodyne / Klenzoid / Purolator / Spectrum / Mechmark
49.	Closed Cell Fire Retardant XPE (For Duct Insulation)	Paramount / Supreme / Trocylene
50.	Nitrile Rubber For Pipe / Duct Insulation (With Mechanical & UV Protection)	Armaflex / Vidoflex / Furobatex / K Flex
51.	Expanded Polystyrene (For Underdeck	Mettur Beardsell / Styrene Packing / Toshiba / Indian Packaging
52.	Fibre Glass Rigid Board	U.P.Twiga / Owen corning / Kimco or equivalent
53.	Paints	ICI / Asian / Berger / Nerolac
54.	Tar felt / CPRX compound	Shalimar tar product
55.	Dash Fasteners	Fisher / Hilti / Bosch
56.	Welding Rods	Advani / L&T / Esab
57.	Insulated Flexible Duct	Pineair / Atco / Caryaire
58.	Duct / Pipe Support	Easyflex / Gripple / Resistoflex
59.	Copper Refrigerant Piping	Mandev / Rajco / Shree Shyam / Mexflow / Mehta tube

60.	Copper Refrigerant Pipe Insulation	Armaflex / Aeroflex / Kflex / Aflex
61.	Imported Duct Mounted Ozone System	Ruks / Trimed
62.	Imported AHU UVC / CoiloTron / UVGI	Ruks / Trimed
63.	Electrical Panel, Console Panel & Sub-Panels	KEPL / Tricolite / SPC Electrotech / System Power Control or Equivalent
64.	Air-Circuit Breaker	L&T / Siemens / Schenider
65.	M.C.C.B.	L&T / Siemens / Schenider
66.	MCB	L&T / Siemens / MDS
67.	Starters, Contactors, Push Buttons, Overload Relay	L&T / Siemens / Schenider
68.	Single Phase Preventer	L&T / Minilec / Siemens
69.	Current Transformer	G & M / Kappa / Precise/ C & S
70.	Rotary Switches	L&T / Siemens / BCH
71.	Selector & Toggle Switch	Kaycee / L&T
72.	Change Over Switch	Elecon / L&T
73.	HRC Fuse and Fittings	L&T / Siemens / C & S
74.	Voltmeter / Ammeter	A.E. / IMP / Elmeasure
75.	Indicating Lamps	Siemens / L&T.
76.	Time Delay Device	Siemens / L&T/ BCH.
77.	Power Cable & Accessories	Worldcab / Gemscab / Finolex / KEI
78.	Control Cable & Accessories	Worldcab / Gemscab / Finolex / KEI
79.	MS Conduits ISI Approved	BEC / Steelcraft / AKG
80.	TDRs	LT-LK / BCH
81.	GI Cable Tray (Factory Fabricated)	CTM Engg / KEPL / MEM / Rico
82.	Vacuum Degasser	Spirotech / Comfort / Spirotherm
83.	BMS System	
a)	Software	Honeywell / ALC / Siemens
b)	Network Area Controller	Honeywell Trend / ALC / Siemens
c)	Third Party Integrator	Honeywell Trend / ALC / Siemens

d)	Central and DDC Controllers	Honeywell Trend / ALC / Siemens
e)	Ultrasonic BTU / Flow Meters	Forbes Marshall/ Landis & Gyr / Siemens / Fuji
f)	Immersion Temperature Sensor	Honeywell / ALC / Siemens / Elektron
g)	Return Air Temperature Sensor	Honeywell / ALC / Siemens / Elektron
h)	Network / Remote Operator Terminal	Honeywell / ALC / Siemens
i)	Smoke Sensor	Honeywell / MSR / MSA / Elektron
j)	Temperature plus RH Sensor	Honeywell / ALC / Siemens
k)	Differential Pressure Switch-Air	Honeywell / Siemens / Beck
l)	Differential Pressure Switch-Water	Honeywell / ALC / Siemens / Danfoss
m)	Computer	IBM / Compaq / HP / Dell
n)	Laser Printer	HP / Sharp / Canon
o)	Communication Cable	Molex / Fusion Polymer / belden/R&M
p)	Signal Cable	Delton / Fusion Polymer / Skytone
q)	CO2 Sensor	MSR / Siemens / Honeywell / Elektron
r)	CO Sensor (Electro Chemical Gel Based)	MSR / MSA / Honeywell / Elektron
s)	Level Switch	Dwyer / Radix / Veksler
t)	Current Relay	ABB / Minilac / Seto
u)	DC Voltage Transducer	ABB / Siemens / Seto / Mosibus
v)	Multifunction Meter with Communication Port	Conzerve / L&T
w)	Lux Level Sensor	Honeywell / Schneider / Siemens / Hager
x)	Differential Pressure Transmitter-Air	Honeywell / Siemens / Beck
y)	Pressure Transmitter-Water	Honeywell / Siemens / Schnider
85.	Digital Thermostat / Humidistat	Siemens / Honeywell / Carrier Race
86	Any Missing Item	Prior Permission is required from HVAC Consultant

LIST OF APPROVED MAKES FOR: ELECTRICAL WORKS:

1	AIR CIRCUIT BREAKER (MODEL SHALL BE AS PER TENDER SPECIFICATION & BOQ)	L&T/ SCHNEIDER/ SIEMENS / ABB/ MITSUBISHI/LEGRAND
2	MCCBS BREAKER (MODEL SHALL BE AS PER TENDER SPECIFICATION & BOQ)	L&T/ SCHNEIDER/ SIEMENS / ABB/ MITSUBISHI/LEGRAND
3	SFU / FSU	L&T/ SIEMENS/ SCHNEIDER/ ABB
4	HRC/ HBC FUSES & BASES	L&T/ SIEMENS/ SCHNEIDER/ ABB
5	MCB/MCB ISOLATORS	L&T/ SCHNEIDER/ SIEMENS / ABB/ LEGRAND
6	RCCBS/ RCBS	L&T/ SCHNEIDER/ SIEMENS / ABB/ LEGRAND
7	MCB DISTRIBUTION BOARDS	L&T/ SCHNEIDER/ SIEMENS / ABB/ LEGRAND
8	CHANGE OVER SWITCH (OFF LOAD/ ON LOAD)	L&T/ HPL/ SOCOMEC
9	METAL CLAD SHEET STEEL ENCLOSED SOCKET/ PLUG BOX	L&T/ SCHNEIDER/ SIEMENS/ ABB/ LEGRAND
10	AUTOMATIC TRANSFER SWITCHES	ASCO / RUSSEL / SOCOMEC
11	LOAD BREAK SWITCHES	L&T/ SIEMENS/ SCHNEIDER
12	FR/ FRLS/ FIRE SURVIVAL PVC INSULATED COPPER WIRES/ CABLES (ARMoured OR OTHERWISE)	KEI / POLYCAB / FINOLEX/ CCI/ BATRA HENLAY / NATIONAL CABLES/ HAVELLS. OR EQUIVALENT
13	MODULAR PLATE SWITCHES AND SOCKETS	WIPRO (NORTH-WEST) / SCHNEIDER/ CRAB TREE/ MK/ LEGRAND/ PHILIPS/ SIMON
14	TRIVECTOR METER	L&T/ SECURE/ CONZERV/ HPL SOCOMEC/ ENERSOL/ PULSE EQUIPMENT
15	LUMINARES	WIPRO/ CROMPTON/ GE/ PHILLIPS/ OSRAM/ BAJAJ/ KESELEC/ INSTA POWER/ HPL/ LUSTRE/ TWINKLE LUMINAIRE/ NOVA./ HAVELLS
16	TELECOMMUNICATION / TV CABLE	POLYCAB/ NATIONAL/ FUSION POLYMER INDUSTRIES/ LAPP CABLE/

17	LT PANEL/ PCC/ MCC/ MCBS/ DG SYNCHRONIZING PANELS/ APFC/ PANELS/ CONTROL PANELS/ FEEDER PILLARS/ SERVICE PILLAR / H.T. PANEL	<p>TRICOLITE/ ADVANCE PANEL & SWITCHGEAR/ ADLEC/ AMBIT SWITCHGEAR/ SPC ELECTROTECH. OR ANY OTHER PANEL MANUFACTURER COMPLIENCE TO FOLLOWING CONDITIONS-</p> <ol style="list-style-type: none"> 1) CPRI CERTIFICATE NOT OLDER THAN 5 YEARS. 2) FORM OF SEPERATION – 3B 3) PANEL MANUFACTURER MAKE APPROVAL SHALL BE TAKEN BY ARCHITECT / CONSULTANT BEFORE ORDER THE PANEL. 4) FABRICATION FACILITY UP TO IP 54/55. 5) 7 TANK PRE TREATMENT FACILITY FOR SHEET. 6) EQUIPPED WITH LATEST CNC BENDING, POWDER COATING, BUS BAR BENDING & PUNCHING MACHINE, AND COMPRESSOR ETC.
18	a) CONVENTIONALBUSTRUNKING	TRICOLITE / ADLEC / ADVANCE PANEL & SWITCHGEAR / SPC ELECTROTECH / SAME MAKE AS THAT OF THE LT PANELS. OR EQUIVALENT
	b) SANDWITCH BUSDUCT	SCHNEIDER / LEGRAND / GE OR EQUIVALENT
19	PVC CONDUIT (ISI MARKED)	BEC/ AKG/ POLYPACK/ ATUL
20	STEEL CONDUCT (ERW) (ISI MARKED)	AKG/BEC/RMCON/ATUL
21	FLEXIBLE CONDUIT	LAPP/ HENSEL/ JAINSONS
22	BAKELITE SHEET	HYLAM/ FORMICA/ GREENLAM
23	COMPUTER/ DATA CABLE	SYSTMIX/ SHYAM/ LUCENT/ AVAYA/ LAPP/
24	VOLTAGE TRANSFORMERS	SIEMENS/ L&T / KAPPA / ANAND POWERTECH/ PEPL
25	CURRENT TRANSFORMER	SIEMENS/ L&T / KAPPA / ANAND POWERTECH/ PEPL

26	AMP METER/ VOLT METER / ENERGY METER/MFM	CONZERV/ SOCOMEC/ L&T/ TRINITY/ ENERSOL/ HPL
27	CEILING FAN	CROMPTON/ BAJAJ/ USHA/ HAVELS/
28	EXHAUST FAN	CROMPTON/ BAJAJ/ USHA/ POLAR/ HAVELS
29	TAG BLOCK	KRONE/ ERICSON/ TVAR&M
30	TRANSFORMERS	VOLTAMP/ KOTSUN/ UNIVERSAL/ KIRLOSKAR/ ESSENAR/ RECTIFIER & CONTROL OR EQUIVALENT
31	AUTOMATION POWER FACTOR CONTROL RELAY	L&T/ SIEMENS/ SCHNEIDER/ ABB
32	CAPACITORS & REACTORS	L&T/ SIEMENS/ SCHNEIDER/ ABB
33	CABLE GLANDS (DOUBLE COMPRESSION WITH EARTHING LINKS)	DOWELLS/ COMET/ BRASCO/ HMI/ GRIPWELL/ LAPP/ MULTI/ COMEX/ BALIGA
34	BI-METALLIC CABLES LUGS/ PVC GLANDS	DOWELLS/ ACTION/ JAINSONS/ KABEL OR EQUIVALENT
35	CABLE JOINTING KITS	RAYCHEM/ JAINSONS/ 3M/ DENSONS/ SAFEKI
36	CABLE TRAYS (FACTORY FABRICATED) / RACEWAYS	PILCO/ SLOTTCO/ PATNEY SYSTEM LTD/ STORACK/ INDIANA/ STEELWAYS/ CTM ENGINEERS/ PROFAB/ MEM/ BHARTI
37	BATTERY (SEALED MAINTENANCE FREE)	YUASA/ POWERSAFE/ HBL NIFE/ AMCO/ EXIDE/ AMARA RAJA/
		STANDARA/ BATTERIES/ STANDARD- FURUKAWA
38	BATTERY CHARGER	BCH/ LOBOTEK/ HBL NIFE/ AMARA RAJA/ CHABI/ CALDYNE/ CROMPTON GREAVES
39	DG SET	CATERPILLAR/ CUMMINS/ PENTA/ MITSUBISHI/ MTU/ VOLVO PENTA (UP TO 600 KVA ONLY)/ PERKINS OR EQUIVALENT
40	DG SET ALTERNATOR	STAMFORD / LERROY SOMMER
41	CONTROL GEAR (CONTRACTORS ETC.)	L&T/ SIEMENS/ SCHNEIDER/ ABB
42	PROTECTION RELAYS MICROPROCESSER BASED	AREVA/ L&T/ ABB/ SIEMENS/ SCHNEIDER
43	EARTH LEAKAGE RELAY	L&T/ PIC/ MINILEC/ EATON
44	SINGLE PHASING DEVICE	L&T/ SIEMENS/ MINILEC
45	PUSH BUTTONS	L&T/ SIEMENS/ SCHNEIDER/ ABB
46	TIME RELAY DEVICE	L&T/ SIEMENS/ SCHNEIDER/ ABB
47	SELECTOR SWITCHES &	L&T/ SIEMENS/ SCHNEIDER/ ABB

ROTARY SWITCHES		
48	INDICATING LIGHTS	L&T/ SIEMENS/ SCHNEIDER/ ABB
49	TERMINALS	ELMEX/ ESSEN/ DEINKI/ WAGO
50	MS SWAGED TUBLAR POLE STREET LIGHT POLES	ASPL/ ADVANCE STEEL TUBES/ KLITE/ PHILLIPS/ ORIENTS/ LAASMA/ KESELEC/ BAJAJ / LUSTRE
51	TELEPHONE OUTLETS	AS PER SWITCH / SOCKET MAKE.
52	MOTORS	ABB/ CROMPTON/ SIEMENS/ KIRLOSKAR/ BHARAT BIJLI/ JYOTI/ NGEF
53	EPBAX & TELEPHONE SYSTEM	SIEMENS/ ERICSSON/ TADIRON/MYTEL
54	MULTI-METER & MEGGARS	ESCROP/ MOTWANI OR EQUIVALENT
55	PROGRAMMABLE LOGIC CONTROLLER	SIEMENS/ WOODWARD/ ALLEN BRADLEY
56	LIGHTING PROTECTION UNIT	ABB/ ERICO/ SCHNEIDER/ LPI/ OBO BETTERMAN
57	UPS	APC SCHNEIDER/ EMERSON/ TATA LIBERT/ SOCOMEC/ GE POWER/ AUTO METER ALLIENCE / EATON POWER
58	PACKAGE SUB-STATION (WITH OFF LOAD TAP CHANGER)	SCHNEIDER/ ABB/ L&T/ SIEMENS/ UNIVERSAL
59	UNITED SUB-STATION (WITH ON LOAD TAP CHANGER)	AMBIT SWITCHGEAR / SUDHIR ENGINEERING/UNIVERSAL
60	PUMPS	KIRLOSKAR/ CROMPTON / GROUNDFOF/KSB/ MATHER & PLATT/ BEACON/ WORTHINGTON
61	AVIATION OBSTRUCTION LIGHT	BAJAJ/ WIPRO/ PHILLIPS/ GE/ CROMPTON OR EQUIVALENT
62	HIGH MAST LIGHTING SYSTEM	PHILLIPS/ BAJAJ/ CROMPTON/ THRON/ KESELEC
63	LT SERVO AUTOMATIC VOLTAGE STABILIZER	AE/ LOGICSTAT/ LD POWER TRANSFORMERS (PVT.)LTD. / STABLINE RECON/ICON/GLOBE
64	D.G. SET ACCOUSTIC ENCLOSURE	AS PER D.G. SUPPLIER AND APPROVED BY OEM AND CONSULTANT / ARCHITECT.
65	M.S. PIPE	TAT/ JINDAL/ SAIL
66	BUTTERFLY / BALANCING VALVE	ADVANCE / AUDCO
67	COOLING TOWER	BELL/ PAHARPUR/ DELTA
68	POT STRAINER / Y STRAINER	RAPID COOL/ EMERALD/ SANT

69	CCTV CAMERA / DVR / NVR	MOBOTIX / IMPULSE / AXIS/PELCO
70	ACCESS CONTROL	SYRIS / ESSL / MATRIX / IMPULSE / INFIANIS
71	CAT 6A	BELDEN/MOLEX/R&M
72	LIFTS / ELEVATORS	OTIS / KONE / MITSUBISHI/ JOHNSON LIFTS PVT. LTD. CHENNAI / SCHINDLER

LIST OF APPROVED MAKES FOR: AUDIO VIDEO WORKS

1	Digital Interface Unit	Bosch,Senhisser, Brahler
2	Speakers	Bosch ,Renkus Heinz,Martin Audio
3	Cables, Conduits & Accessories	Bosch,Senhisser, Brahler
4	RG-59 Video Cable	Krystal,Falcon, Kramer
5	CAT 6 Cable	Krystal,Falcon, Kramer
6	Transmitter	Kramer,Extron, Crestron
7	Receiver	Kramer,Extron, Crestron
8	3G SDI Rx/Tx Extender over Ultra–Reach SM Fiber	Kramer,Extron, Crestron
9	6 core armoured single mode opticalFiber cable.	Molex,Tyco, Belden
10	2 core Loudspeaker cable Asian / Aarkay lite	Krystal,Falcon, Kramer
11	2 Core Shielded Mike Cable	Krystal,Falcon, Kramer
12	Connector	Bosch, Senhisser, Brahler
13	1.5Sq MM mm speaker cable	Krystal,Falcon, Kramer
14	Should be High Speed with Ethernet HDMI Cable. Should support Data Transfer rate of upto minimum 10GBps and upto 48 bit Deep Color.f. Connectors must have a minimal locking capability to prevent ousting of cables from ports.g. Should have an overall shield against EMI/RFI interference Should be CL2 flame tested.	Kramer, Extron, Crestron

NOTE: All makes shall further confirm to standard specifications of each items as mentioned in technical specifications of tender documents.

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**PROJECT NAME: CONSTRUCTION OF SHILLONG BUSINESS CUM TOURISM AND CULTURAL CENTRE
AT SHILLONG, MEGHALAYA**

SUMMARY OF COST

SL.No	Description	Amount MSOR	Amount DSR	Amount NSR	Total Amount (MSOR+DSR+NSR)
1	CIVIL/INTERIOR WORKS	56,99,97,537.20	31,91,43,746.37	22,24,75,978.00	1,11,16,17,261.56
2	EXTERNAL DEVELOPMENT	4,38,70,974.36	2,85,72,011.02	2,36,217.40	7,26,79,202.78
3	PLUMBING WORKS	1,64,83,227.00	1,25,43,834.35	5,48,03,146.00	8,38,30,207.35
4	FIRE FIGHTING WORKS	-	2,16,78,731.00	1,68,36,656.00	3,85,15,387.00
5	ELECTRICAL WORKS	1,91,54,207.00	1,79,18,488.00	37,10,39,886.00	40,81,12,581.00
6	HVAC WORKS	-	2,82,37,902.00	7,93,17,013.00	10,75,54,915.00
7	FURNITURE			2,42,78,968.46	2,42,78,968.46
8	SIGNAGES	-	-	1,27,93,443.00	1,27,93,443.00
9	ART & MURALS WORK	-	-	1,60,38,228.00	1,60,38,228.00
10	MECHANICAL PARKING			1,12,20,000.00	1,12,20,000.00
10	SUB TOTAL	64,95,05,945.56	42,80,94,712.74	80,90,39,535.86	1,88,66,40,194.16
11	COST ESCALATION OF FIVE YEARS @ 5 X 6.5% ON SOR 2015-16 TILL 2021-22	21,10,89,432.31			21,10,89,432.31
12	TOTAL AMOUNT	86,05,95,377.87	42,80,94,712.74	80,90,39,535.86	2,09,77,29,626.46
13	CONTINGENCY @2%	2%		2,09,77,29,626.46	4,19,54,592.53
14	LABOUR CESS @ 1% OF PROJECT COST	1%		2,09,77,29,626.46	2,09,77,296.26
15	TOTAL PROJECT COST				2,16,06,61,515.26
16	LESS CONTINGENCY @2%	2%			4,19,54,592.53
17	LESS GST @ 12% OF PROJECT COST	12%		2,16,06,61,515.26	25,92,79,381.83
18	GRAND TOTAL IN Rs.				1,85,94,27,540.90
	SAY				1,85,94,27,000.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
CIVIL/INTERIOR WORKS							
SUB HEAD-I :- EARTH WORK							
1	Earth work in excavation upto a depth of 2m below the existing ground level for foundation trenches of foundations, footings of column/ walls, retaining walls, septic tank etc. including bailing out water where necessary and removal of surplus earth with all lead and lifts as directed and specified for the following classification of soils.						
a	In ordinary soil	300	Cu.m.	179.00	Rupees One Hundred Seventy Nine Only	53,700.00	
b	In hard/ dense soil	750	Cu.m.	231.00	Rupees Two Hundred Thirty One Only	1,73,250.00	
c	In soft or laminated rock or medium shale	300	Cu.m.	358.00	Rupees Three Hundred Fifty Eight Only	1,07,400.00	
2	Extra over item no.1.1 above for each 1m depth or part thereof beyond the initial depth of 2m		Cu.m.	77.00	Rupees Seventy Seven Only		
2.1	Extra for every additional lift of 1.5 m or part thereof in excavation /banking excavated or stacked materials.						
(a)	All kinds of soil (From 1.50 to 3.00 m depth)		Cu.m.	180.80	Rupees One Hundred Eighty and Eighty Paise		
(b)	All kinds of soil (From 3.00 to 4.50 m depth)		Cu.m.	271.20	Rupees Two Hundred Seventy One and Twenty Paise		
(a)	Ordinary or hard rock (From 1.50 to 3.00 m depth)		Cu.m.	324.20	Rupees Three Hundred Twenty Four and Twenty Paise		
(b)	Ordinary or hard rock (From 3.00 to 4.50 m depth)		Cu.m.	486.30	Rupees Four Hundred Eighty Six and Thirty Paise		

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
3	Shuttering and shoring the earth at different levels in foundations where necessary with required prop, struts, planks, timbers, nails etc. including dewatering if necessary, complete as directed and specified (measurement to be taken in the face area timbered)						
	Upto a depth of 1.5 metre	10276	Cu.m.	324.00	Rupees Three Hundred Twenty Four Only	33,29,343.00	
	Above 1.5 m upto 3.00 m depth	10276	Cu.m.	386.00	Rupees Three Hundred Eighty Six Only	39,66,439.50	
	Above 3.0 m upto 4.5 m depth	8221	Cu.m.	478.00	Rupees Four Hundred Seventy Eight Only	39,29,446.80	
4	Earthwork in filling including necessary carriage, watering, ramming etc. complete as directed and specified.						
	Earth/ Sand filling in plinth in layers not exceeding 150mm thick						
	With earth/stone dust obtained by carriage upto 8 km	666	Cu.m.	788.00	Rupees Seven Hundred Eighty Eight Only	5,24,992.39	
5	With available excavated earth including breaking of clods, consolidating each layer by ramming and watering with all lead and lifts.	666	Cu.m.	210.00	Rupees Two Hundred Ten Only	1,39,909.14	
6	Disposal of surplus earth from the work site including loading and unloading complete as directed.						
	Lead upto 5kms	9610	Cu.m.	483.00	Rupees Four Hundred Eighty Three Only	46,41,396.23	
7	Earth work in Excavation by mechanical means over areas (exceeding 30cm in depth, 1.5m in width as well as 10sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and nearly dressed.						
	In ordinary soil	2055	Cu.m.	157.00	Rupees One Hundred Fifty Seven Only	3,22,658.55	
	In medium rock	3083	Cu.m.	330.00	Rupees Three Hundred Thirty Only	10,17,299.25	
	In hard rock (blasting prohibited)	5138	Cu.m.	1,110.00	Rupees One Thousand One Hundred Ten Only	57,03,041.25	
	SUB HEAD-II :- CEMENT CONCRETE WORKS						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
8	Plain cement concrete works with coarse aggregate of sizes 13mm to 32mm in foundation bed for footing steps, walls, brick works etc. as directed and specified including dewatering if necessary, and curing complete (shuttering where necessary shall be measured and paid separately).						
a)	In prop. 1:4:8 (1 cement:4 coarse sand : 8 coarse agg. by volume (using mixture machine)	75	Cu.m.	5688.00	Rupees Five Thousand Six Hundred Eighty Eight Only	4,26,600.00	
9	Providing and laying in position ready mixed plain cement concrete, using fly ash and cement content as per approved design mix and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for plain cement concrete work, including pumping of R.M.C. from transit mixer to site of laying and curing, excluding the cost of centering, shuttering and finishing, including cost of curing, admixtures in recommended proportions as per IS : 9103 to accelerate/ retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer-in-charge.sand and aggregate derived from natural sources.						
	Note : (1) Excess/less cement used than specified in this item is payable/ recoverable separately. (2) Fly ash conforming to grade I of IS 3812 (Part-1) only be used as part replacement of OPC as per IS : 456. Uniform blending with cement is to be ensured in accordance with clauses 5.2 and 5.2.1 of IS: 456 -2000 in the items of BMC and RMC."						
a	All works upto plinth level :						
	M-10 grade plain cement concrete (cement content considered @ 220 kg/cum)	1137	Cu.m.	7598.70	Rupees Seven Thousand Five Hundred Ninety Eight and Seventy Paise		86,41,515.95
10	Providing and laying 25mm thick damp proof course with cement concrete in prop 1:1.5:3 with graded stone aggregate of 10mm down nominal size including providing approved damp proof admixture in proportion as recommended by the manufacturer including curing etc. complete as directed.	150	Sq.m	264.00	Rupees Two Hundred Sixty Four Only	39,600.00	
11	Plain cement concrete apron in prop 1:4:8 with 20mm down graded coarse aggregate Over soling including neat cement finish using cement slurry 2.75Kg. of cement per sq.m. of floor (soling to be measured separately).						
a)	35 mm thick in proportion 1:4:8	150	Sq.m	328.00	Rupees Three Hundred Twenty Eight Only	49,200.00	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
12	Providing plinth protection with bricks laid on edge and grouted with cement mortar 1:4 (1 cement : 4 coarse sand) and finishing with cement pointing in prop. 1:1 including necessary levelling and preparing the subgrade complete as directed.	605	Sq.m	820.00	Rupees Eight Hundred Twenty Only	4,95,690.00	
SUB HEAD-III :- REINFORCED CEMENT CONCRETE WORKS							
13	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using fly ash and cement content as per approved design mix, and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying, excluding the cost of centering, shuttering, finishing and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate / retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge.						
	NOTE- (1) Cement content considered in this item is @ 330 kg/cum. Excess/ less cement used as per design mix is payable/ recoverable separately. (2) Fly ash conforming to grade I of IS 3812 (Part-1) only be used as part replacement of OPC as per IS : 456. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS:456 -2000 in the items of BMC and RMC.						
a)	All works upto plinth level	4326	Cum	8365.80	Rupees Eight Thousand Three Hundred Sixty Five and Eighty Paise		3,61,86,721.33
b)	All works above plinth & up to floor V level.	11586	Cu.m.	9769.35	Rupees Nine Thousand Seven Hundred Sixty Nine and Thirty Five Paise		11,31,86,507.93
14	Extra for providing richer mixes at all floor levels..						
	Note:- Excess/less cement over the specified cement content used is payable /recoverable separately.						
a)	Providing M-30 grade concrete instead of M-25 grade BMC/ RMC. (Note:- Cement content considered in M-30 is @ 340 kg/ cum)	15911	cum	69.50	Rupees Sixty Nine and Fifty Paise		11,05,844.61

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
b)	Providing M-35 grade concrete instead of M-25 grade BMC/ RMC. (Note : Cement content considered in M-35 is @ 350 kg/ cum)		cum	138.95	Rupees One Hundred Thirty Eight and Ninety Five Paise		0.00
c)	Providing M-40 grade concrete instead of M-25 grade BMC/ RMC.(Note : Cement content considered in M-40 is @ 360 kg/ cum)	4259	cum	208.45	Rupees Two Hundred Eight and Forty Five Paise		8,87,878.65
15	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.		cum	232.30	Rupees Two Hundred Thirty Two and Thirty Paise		0.00
REINFORCEMENT							
16	Supplying, fitting and fixing in position reinforcement bars upto 1st floor level, conforming to relevant I.S. Code for R.C.C. work/ R.B. walling including straightening, cleaning, cutting and bending to proper shapes and length as per details, supplying and binding with 20G annealed black wire and placing in position with proper blocks, supports, chairs, spacers etc. complete. (Rates inclusive of all wastage, lappage, hooks, chairs, anchorage etc. and no measurements for the same is required)						
	From Primary Sources like TATA/ SAIL/ ESSAR/ JINDAL/ SHYAM/ RINL						
	Super Ductile (SD) TMT reinforcement bars	27845	Qntl	9,944.00	Rupees Nine Thousand Nine Hundred Forty Four Only	27,68,90,762.18	
17	Extra over item 2.8 (a, b, c) above for each subsequent floor or part thereof above first floor level.	22276	Qntl	114	Rupees One Hundred Fourteen Only	25,39,464.75	
SHUTTERING/ FORMWORK							
18	Providing form work of ordinary timber planking of thickness not less than 25mm and removal of the same for concrete members so as to give a rough finish including centering, shuttering, strutting and propping etc., for height of propping and centering of supporting floor to the soffit of the concrete member not exceeding 4.0M as specified for the following items:						
a)	Foundation, footings, bases of columns, pile cap, raft and mass concrete works etc.	399	Sq.m	339.00	Rupees Three Hundred Thirty Nine Only	1,35,210.56	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
b)	Arches/ slabs having curved surface in one direction. (Using 38mm thick plank)	120	Sq.m	1226.00	Rupees One Thousand Two Hundred Twenty Six Only	1,47,120.00	
c)	Domes, Vaults and shell roofs having curved surface in both directions (only area of the underside shall be measured for payment).		Sq.m	2411.00	Rupees Two Thousand Four Hundred Eleven Only	0.00	
d)	Extra for each subsequent 1.0M height or part thereof beyond the initial height of 4.0M as mentioned in item no. 2.10		Sq.m	79.00	Rupees Seventy Nine Only	0.00	
19	Providing form work of 12mm thick Plywood Board and removal of the same for concrete members so as to give a rough finish including centering, shuttering, strutting and propping etc., for height of propping and centering of supporting floor to the soffit of the concrete member not exceeding 4.0M as specified for the following items:						
a)	Columns, Pillars, Posts & Strut of square/ rectangular/ polygonal in plan or any shape like Tee/L etc. having plane vertical face	13880	Sq.m	606.00	Rupees Six Hundred Six Only	84,11,267.88	
b)	Sides and Soffits of Beams, beam haunchings, cantilever girders, bressumers, lintels and horizontal ties.						
	For depth not exceeding 1.0M.	6146	Sq.m	429.00	Rupees Four Hundred Twenty Nine Only	26,36,804.57	
	For depth exceeding 1.0M.		Sq.m	577.00	Rupees Five Hundred Seventy Seven Only	0.00	
c)	Flat Surfaces such as soffits of suspended floors, roofs, landings, cantilever slabs, chajjas, balconies and the like.						
	Floors etc. upto 200mm in thickness.	120	Sq.m	616.00	Rupees Six Hundred Sixteen Only	73,920.00	
	Floors etc. above 200mm in thickness.	28750	Sq.m	664.00	Rupees Six Hundred Sixty Four Only	1,90,90,153.36	
d)	Sloping or Battering surfaces such as sloped slabs etc. including folded plates.						
	Where inclination to horizontal plane does not exceed 30° requiring shuttering only on the underside.	120	Sq.m	729.00	Rupees Seven Hundred Twenty Nine Only	87,480.00	
	Where inclination to horizontal plane exceeds 30° where shuttering may be provided both on under side & upper side, if required.	120	Sq.m	1046.00	Rupees One Thousand Forty Six Only	1,25,520.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
e)	Vertical surface such as walls (any thickness), parapet walls, partitions and the like including attached pilasters, buttresses, plinth and string courses and the like.	2529	Sq.m	514.00	Rupees Five Hundred Fourteen Only	12,99,818.41	
f)	Vertical ties, fins, sun breaker, louvers, bands, dropwalls etc.	120	Sq.m	734.00	Rupees Seven Hundred Thirty Four Only	88,080.00	
g)	Staircase with sloping or stepped soffits including risers and stringers but excluding Landing.	684	Sq.m	622.00	Rupees Six Hundred Twenty Two Only	4,25,149.44	
h)	Extra for each subsequent 1.0M height or part thereof beyond the initial height of 4.0M as mentioned in item no. 2.11	42071	Sq.m	79.00	Rupees Seventy Nine Only	33,23,622.16	
	EXPANSION JOINT						
20	Supplying fitting and fixing 200mm x 6mm thick A.C. plain sheet for vertical and horizontal expansion joints fixed to one side of column/ wall by necessary rawal plugs/ screws/ wooden plugs placed not more than 300mm c/c as directed and specified.	651	R.m	195.00	Rupees One Hundred Ninety Five Only	1,26,968.40	
21	Providing and fixing Dura board HD-100 pre-moulded compressible filler board at all heights and depths of minimum density 95kg/cum, non-staining having less than 1% water absorption, compression recovery of 93% (minimum) as per manufactured specification with polysulphide sealant to seal the expansion joint including preparation of surface, Polymer Modified Mortar (PMM) (Proportion 1cement: 3 sand:1 acrylic polymer) nosing, carriage of materials, cutting and placing to the required size complete at all levels as per drawings and direction of Engineer-in-Charge.						
	50mm thick	130	Sq.m.	2665.00	Rupees Two Thousand Six Hundred Sixty Five Only	3,47,046.96	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
22	Providing and applying of swellable type water stop tape, 19mm x 25mm thick in linear meter (expansive nature) for construction joints treatment of RCC structure such as raft slab, retaining walls, water storage tank and at the junctions of raft slab with the retaining walls etc.. After cleaning the surface, one coat of required primer for swellable water stop tape shall be applied throughout the length of the joint @3.78 litre per 240 running meter. Over the primed surface swellable type water stop tape shall be placed. The work shall be carried out all complete as per specification and the direction of the Engineer-In-Charge. The product performance shall carry guarantee for 10 years against any leakage.	752	metre	552.20	Rupees Five Hundred Fifty Two and Twenty Paise		4,14,984.93
SUB HEAD-IV :- MASONRY WORKS							
23	Filling sunken floor with broken brick bats/ Stone aggregates and sand including compacting and supplying of materials complete as specified and directed for all levels.						
	Brick bats	226	cu.m.	3156.00	Rupees Three Thousand One Hundred Fifty Six Only	7,12,930.93	
24	Extra cost for lifting of brickbats/Stone soling and sand for filling of sunk floor for each subsequent floors above the ground floor as directed and specified.	226	cu.m.	312.00	Rupees Three Hundred Twelve Only	70,479.86	
25	Brick work in cement mortar with 1st class brick including racking out joints and curing complete in sub-structure upto plinth level including dewatering if necessary as directed.						
	In proportion 1:6 (1 cement : 6 sand)	120	cu.m.	6996.00	Rupees Six Thousand Nine Hundred Ninety Six Only	8,39,520.00	
26	Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.	185	Cum	8227.35	Rupees Eight Thousand Two Hundred Twenty Seven and Thirty Five Paise		15,23,582.39

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
27	Providing and laying autoclaved aerated cement blocks masonry with 150mm/230mm/300 mm thick AAC blocks in super structure above plinth level up to floor V level with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineer-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).	5574	Cum	6636.95	Rupees Six Thousand Six Hundred Thirty Six and Ninety Five Paise		3,69,94,142.59
28	Extra for brick walling for each subsequent floor or part thereof above the 1st floor level						
	Half Brick (~112 mm) thick brick/ R.B wall over Item No. 4.6 - 4.9 above	1852	sq.m.	70.00	Rupees Seventy Only	1,29,629.55	
SUB HEAD-V :- MARBLE AND GRANITE WORK							
29	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished) machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 coarse sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels.						
	Granite of any colour and shade						
a)	Area of slab upto 0.50 sqm	24	Sq.m	4217.35	Rupees Four Thousand Two Hundred Seventeen and Thirty Five Paise		1,01,216.40
b)	Area of Slab over 0.50sqm	121	Sq.m	4007.65	Rupees Four Thousand Seven and Sixty Five Paise		4,84,880.76
30	Extra for providing edge moulding to 18mm thick marble stone counters, Vanities etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.						
	Granite work.	202	Meter	376.25	Rupees Three Hundred Seventy Six and Twenty Five Paise		75,870.06
31	Extra for fixing marble /granite stone over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive including cleaning etc. complete.	202	Meter	434.25	Rupees Four Hundred Thirty Four and Twenty Five Paise		87,565.64

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
32	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble/Granite/stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edges etc. complete.	206	Each	734.55	Rupees Seven Hundred Thirty Four and Fifty Five Paise		1,51,611.12
SUB HEAD VI :- FLOORING WORK							
33	40 mm thick cement concrete floor consisting of 25 mm under layer of cement concrete in prop. 1:3:6 (1 cement: 3 coarse sand: 6 coarse aggregate of 12.5 mm and down) and 15 mm thick wearing layer in cement concrete in prop. 1:1:2 (1 cement: 1 coarse sand: 2 coarse aggregate of size 10mm down) finished with a floating coat of neat cement finish using cement slurry for bond @ 2.75 kg. per square metre of floor area , wearing layer is to be laid in panels including curing etc. complete as directed.	120	Sq.m.	571.00	Rupees Five Hundred Seventy One Only	68,520.00	
34	Providing and fixing glass strips in joints of cement concrete flooring /Terrazzo flooring in all level 25 mm wide 4 mm thick	1200	R.m.	54.00	Rupees Fifty Four Only	64,800.00	
35	Cement plaster skirting with cement mortar in prop. 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement including rounding of junctions with floor. 15 mm thick.	12	Sq.m.	307.00	Rupees Three Hundred Seven Only	3,684.00	
36	Providing Ceramic Tiles of Somany/ Orient/ Nitco/ Qutone make or equivalent of approved quality, size, shape and thickness not less than 8 mm on floors, skirting, treads and risers of steps over cement mortar bed 15 mm thick in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with fix-A Tile Choksey/ Sika/ Pidilite/ Rouf/ White cement slurry mixed with approved pigment to match the shade of tiles, complete at all levels as specified and directed (cement plastering to be measured and paid separately). Normal range (sizes 300mmx300mm and above) Deluxe Range	942	Sq.m.	1246.00	Rupees One Thousand Two Hundred Forty Six Only	11,73,343.25	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Executive Range-2 (sizes 600mmx600mm and above)						
	Deluxe Range		Sq.m.	2479.00	Rupees Two Thousand Four Hundred Seventy Nine Only	0.00	
37	Providing polished ceramic wall tiles of Somany/ Orient/ Nitco/ Qutone make or equivalent of approved quality, size, shape and thickness not less than 8mm on walls and skirting over cement mortar bed 10 mm thick in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with Fix-A-Tile (Choksey / Sika / Pidilite / Rouf) or white cement slurry mixed with approved pigment to match shade of tiles complete at all levels as specified and directed. (Cement plastering to be measured and paid separately).						
a)	Executive range-2 (Sizes 300mmx450mm and above)						
	Deluxe Range	120	Sq.m.	1672.00	Rupees One Thousand Six Hundred Seventy Two Only	2,00,640.00	
b)	Executive range-4 (Sizes 300mm x 600mm and above)						
	Deluxe Range	145	Sq.m.	2233.00	Rupees Two Thousand Two Hundred Thirty Three Only	3,23,224.07	
38	Providing VITRIFIED floor tiles of Somany/ Orient/ Nitco/ Qutone make or equivalent of approved quality of specified size, shape and thickness not less than 18mm on floors, skirting, risers and treads of steps over 15 mm thick base of cement mortar in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with Fix-A-Tile (Choksey/Sika/Pidilite/Rouf) / white cement slurry mixed with approved pigment to match shade of tiles, mixed with approved pigment to match the shade of the tiles, complete at all levels as specified and directed. (Cement plastering to be measured and paid separately). (Coloured pigment should be in conformity with colour of tiles and as approved and directed by the Department)						
	Deluxe Range	2259	Sq.m.	2716.00	Rupees Two Thousand Seven Hundred Sixteen Only	61,36,434.80	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
39	Providing polished VITRIFIED wall tiles of Somany/ Orient/ Nitco/ Qutone make or equivalent of approved quality, size, shape and thickness not less than 8mm on walls and skirting over cement mortar bed 10 mm thick in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with Fix-A-Tile (Choksey / Sika / Pidilite / Rouf) or white cement slurry mixed with approved pigment to match shade of tiles complete at all levels as specified and directed. (Cement plastering to be measured and paid separately).						
	Deluxe Range	1461	Sq.m.	2980.00	Rupees Two Thousand Nine Hundred Eighty Only	43,52,689.32	
	KOTA STONE SLAB / SAND STONE FLOORING						
40	Kota-stone slab flooring of 18 mm thick over 20mm thick base of cement plaster 1:6 (1 cement : 6 coarse sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete.						
	Slab upto 0.4sq.m. size	2994	Sq.m.	1798.00	Rupees One Thousand Seven Hundred Ninety Eight Only	53,83,635.32	
41	Kota stone slab of 18 mm thick in riser of steps, skirting, dado and pillars laid with 10mm thick cement plaster 1:3 (1 cement : 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs including rubbing and polishing complete.						
	Slab upto 0.4sq.m. size	299	Sq.m.	1857.00	Rupees One Thousand Eight Hundred Fifty Seven Only	5,56,029.52	
	GRANITE FLOORING						
42	Providing 18mm thick Granite slab on vertical face of pedestal laid over 10 mm thick base of cement mortar in prop. 1:3 (1 cement : 3 coarse sand) jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete as directed with approved quality of shade.						
	Deluxe Quality	120	Sq.m.	6204.00	Rupees Six Thousand Two Hundred Four Only	7,44,480.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
43	Providing polished granite slab of approved quality, size, shape and thickness not less than 18 mm on floors, skirting, treads and risers of steps over cement mortar bed 15 mm thick in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with Fix-A-Tile Choksey/Sika/Pidilite/Rouf) /white cement slurry mixed with approved pigment to match the shade of granite slab, complete at all levels as specified and directed. (Cement plastering to be measured and paid separately). (Coloured pigment should be in conformity with colour of slab and as approved and directed by the Department).						
	Deluxe Quality	6522	Sq.m.	6393.00	Rupees Six Thousand Three Hundred Ninety Three Only	4,16,95,600.16	
	ANTISKID TILES						
44	Providing Antiskid Tiles of approved quality size, shape not less than 8mm on floor, skirting over a cement mortar bed 15mm thick of 1:3 (1 cement: 3 coarse sand) approved make fix with Fix-A-Tile (Choksey/Sika/Pidilite/Rouf)/ white cement complete at all level as specified and directed.						
a)	CERAMIC ANTISKID TILES						
	Deluxe Range	1619	Sq.m.	1987.00	Rupees One Thousand Nine Hundred Eighty Seven Only	32,15,994.79	
b)	VITRIFIED ANTISKID TILES						
	Deluxe Range	9758	Sq.m.	2533.00	Rupees Two Thousand Five Hundred Thirty Three Only	2,47,15,926.23	
45	Providing, fitting and fixing Loop pile carpet of thickness not less than 4mm with maximum 7mm pile height with pile fibre of 100% BCF polypropylene of width 3.66m laid on existing concrete floor with approved transparent polythene and foam sheet to make the floor surface even and sound free complete as directed and specified						
	Deluxe Quality		Sq.m.	2622.00	Rupees Two Thousand Six Hundred Twenty Two Only	0.00	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
46	Providing, fitting and fixing Laminated abrasion resistant wooden flooring of thickness not less than 8.2mm laid on existing concrete floor with under layer of approved transparent polythene and foam sheet to make the floor surface even and sound free complete as directed and specified						
	Premium range		Sq.m.	3013.00	Rupees Three Thousand Thirteen Only	0.00	
47	Application of MYK Laticrete LATAPOXY SP-100 Stainfree Grout into the joints using joint spacer to provide required gap as directed in between tiles after surface & joints are thoroughly cleaned and free from dust, oil & other impurities & acid or alkali substance, fully dried, using standard SpectraLOCK Pro Premium Grout grouting mixing techniques of MYK Laticrete LATAPOXY SP-100 & fill the joints complete as per specification of the manufacturing company	22186	Sq.m.	301.00	Rupees Three Hundred One Only	66,77,979.09	
48	Providing and fixing removable raised/false access flooring with system and its components of approved make for different plenum height with possible height adjustment upto 50 mm, comprising of modular load bearing floor panels supported on G.I. rectangular stinger frame work and G.I. Pedestal etc. all complete, as per the architectural drawings, as specified and as directed by Engineer-in-charge consisting of: (a) Providing at required spacing to form modular framework, pedestals made out of GI tube of thickness minimum 2 mm and 25 mm outer diameter, fully welded on to the G.I. Base plate of size 100mm x 100mm x 3mm at the bottom of the pedestal tube, G.I. pedestal head of size 75mmx75mmx3.5 mm welded with GI fully threaded stud 16mm outer diameter with two GI Check nuts screwed on the stud for level adjustment upto 50mm, locking and stabilizing the pedestal head in position at the required level. The pedestals shall be fixed to the subfloor (base) through base plate using epoxy based adhesive of approved make or the machine screw with rawl plug. (b) Stringers system in all steel construction hot dipped galvanized of rectangular size 570x20x30x0.80mm thick having holes at both ends for securing the stringers on to the pedestal head using fully threaded screws ensuring maximum lateral stability in all directions, the grid formed by the pedestal and stringer assembly shall receive the floor panel, this system shall provide adequate solid, rigid support for access floor panel, the system shall provide a minimum clear uninterrupted clearance between the bottom of the floor for electrical conduits and wiring etc. all complete as per the architectural drawings, as specified and as directed by the Engineer-in-charge.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(c) Providing and fixing Access Floor panel of 600x600x32 mm medium grade Filled Steel anti static high pressure Lamination of 800H grade (FS800H). Access Floor panel shall be steel welded construction with an enclosed bottom pan with uniform pattern of 64 hemispherical cones. The top and bottom plates of Steel Gauges: top 0.6 mm and bottom 0.7 mm fused spot welded together (minimum 64 welds in each dome and 20 welds along each flange). The panel should be Corroresist epoxy coated for lifetime rust protection and cavity formed by the top and bottom plate is filled with Pyrogrip noncombustible Portland cementitious core mixed with lightweight foaming compound. The access floor shall be factory finished with Anti-static High Pressure laminate with Non Warp technology upto 1mm thickness for superior adhesion and Surface flatness within 0.75mm.The panel is to withstand a Concentrated Load of 363 kgs applied on area 25mm x 25mm without collapse in the centre of the panel which is placed on four steel blocks. The panel will withstand and Uniformly Distributed Load (UDL) minimum 1250 kg/sqm and an impact load of 50kg all complete as per the approved manufacturers specification and as per the direction of Engineer-in-charge. All specification must be printed on the side of the panel to ensure the quality of the product.						
	300 mm Finished Floor Height (FFH)	59	sqm	5075.30	Rupees Five Thousand Seventy Five and Thirty Paise		3,01,472.82
49	Providing and laying C.C. pavement of mix M-25 with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator , vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-in-charge. (The panel shuttering work shall be paid for separately).	720	cum	8663.05	Rupees Eight Thousand Six Hundred Sixty Three and Five Paise		62,37,396.00
	(Note:- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/ recoverable separately).						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
50	Providing and laying machine cut, mirror polished Marble stone flooring, in required design (Simple geometrical, abstract etc.) and in patterns in combination with Italian marble stones of different colours, shades and finished surface texture etc., in linear portions of the building, all complete as per the architectural drawings, with 18 mm thick stone slab laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm, including pointing with white cement slurry admixed with pigment to match the marble shade, including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.						
a)	18 mm thick Italian Marble stone slab, Perlato, Rosso verona, Fire Red or Dark Emperadore etc.	1450	sqm	6276.05	Rupees Six Thousand Two Hundred Seventy Six and Five Paise		91,00,096.77
51	Providing and fixing machine cut, mirror/ eggshell polished , Marble stone work for wall lining (vener work) including dado, skirting, risers of steps etc., in required design and pattern wherever required, stones of different finished surface texture, on 12 mm (average) thick cement mortar 1:3 (1 cement : 3 coarse sand) laid and jointed with white cement slurry @ 3.3 kg/sqm including pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing, polishing etc. all complete as per Architectural drawings, and as directed by the Engineer-in-Charge.						
a)	18 mm thick Italian Marble stone slab,Perlato, Rosso verona, Fire Red or Dark Emperadore etc.	2199	sqm	8823.75	Rupees Eight Thousand Eight Hundred Twenty Three and Seventy Five Paise		1,94,05,268.65
52	Providing and fixing Glass mosaic tiles on finished plain wall surface of size 20 mm x 20 mm x 4 mm in all colour, design , fixing in customize design as per direction of Engineer-in- Charge. The glass mosaic tiles to be fixed on the wall surface with the help of approved adhesive applied at the rate of 2.5 kg per sqm and grouting of the same. The rate is inclusive of all operation, material and required pattern approved by Engineer-in-Charge:	30	sqm	3250.35	Rupees Three Thousand Two Hundred Fifty and Thirty Five Paise		97,510.50

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
53	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	180	sqm	1933.75	Rupees One Thousand Nine Hundred Thirty Three and Seventy Five Paise		3,48,075.00
SUB HEAD-VII :- FINISHING WORK							
54	10 mm thick Cement plaster in single coat on fair side of brick/concrete walls for interior plastering up to 1st floor level including arises or rounded angles not exceeding 80mm girth and finished even and smooth including curing complete as directed.						
	In cement mortar 1:4	6058	Sq.m.	193.00	Rupees One Hundred Ninety Three Only	11,69,135.40	
55	15 mm thick Cement plaster in single coat on rough side of single or half brick wall for interior plastering up to 1st floor level including arises, internal rounded angles, not exceeding 80mm girth and finished even and smooth including curing complete as directed.						
	In cement mortar 1:4	23181	Sq.m.	235.00	Rupees Two Hundred Thirty Five Only	54,47,525.74	
56	15 mm thick Cement plaster in single coat on fair side of single or half brick wall for interior plastering up to 1st floor level including arises, internal rounded angles, not exceeding 80mm girth and finished even and smooth including curing complete as directed.						
	In cement mortar 1:4	1771	Sq.m.	225.00	Rupees Two Hundred Twenty Five Only	3,98,550.48	
57	20 mm thick Cement plaster on rough side in two coats (backing coat 15 mm and finishing coat 5mm thick) on single or half brick walls for interior plastering up to 1st floor level including arises, internal rounded angles, chamfers and / or rounded angles not exceeding 80mm in girth and finished even and smooth including curing complete as directed.						
	In cement mortar 1:4		Sq.m.	323.00	Rupees Three Hundred Twenty Three Only	0.00	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
58	Extra over item no 5.1 to 5.5 for providing and mixing water proofing materials in cement mortar in prop as recommended by the manufacturer including curing complete as directed.						
	10 mm thick plaster						
	In cement mortar 1:4	6058	Sq.m.	8.00	Rupees Eight Only	48,461.57	
59	15 mm thick plaster						
	In cement mortar 1:4	24952	Sq.m.	12.00	Rupees Twelve Only	2,99,427.55	
60	20 mm thick plaster						
	In cement mortar 1:4		Sq.m.	12.00	Rupees Twelve Only	0.00	
61	Extra over item no 5.1 to 5.6 for plastering on ceiling and soffits of stairs up to 1st floor level (instead of plastering on walls) including curing complete as directed.	18821	Sq.m.	45.00	Rupees Forty Five Only	8,46,957.60	
62	Extra over item no 5.1 to 5.7 for interior plastering above 1st floor level for every addl. floor or part thereof including curing complete as directed.						
	On two coat plaster	24808	Sq.m.	12.00	Rupees Twelve Only	2,97,695.93	
63	Extra over item no 5.1 to 5.7 for exterior plastering up to a height of 1st floor level above ground level including curing complete as directed.						
	On two coat plaster		Sq.m.	7.00	Rupees Seven Only	0.00	
64	Extra over item no 5.1 to 5.7 for exterior plastering for every addl floor or part thereof beyond 1st floor level including curing complete as directed.						
	On two coat plaster		Sq.m.	6.00	Rupees Six Only	0.00	
65	15 mm thick plain cement mortar bands in cement mortar 1:4 in width including curing complete as directed.						
	Upto 300 mm width						
	Sunk band	12476	Sq.m.	519.00	Rupees Five Hundred Nineteen Only	64,75,120.83	
	Raised band	12476	Sq.m.	539.00	Rupees Five Hundred Thirty Nine Only	67,24,643.79	
66	Above 300 mm width						
	Sunk band		Sq.m.	338.00	Rupees Three Hundred Thirty Eight Only	0.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Raised band		Sq.m.	391.00	Rupees Three Hundred Ninety One Only	0.00	
67	Supplying and laying of permanent wall finish for interior and exterior walls with surface coating of Heritage Surface Texture of Bakelite Hylam Limited for all types of buildings at all levels as specified and directed by the department.						
	Flakes with Top coat (Code : HFRT)		Sq.m.	930.00	Rupees Nine Hundred Thirty Only	0.00	
	Fine Flakes with Top coat (Code : FFHT)		Sq.m.	909.00	Rupees Nine Hundred Nine Only	0.00	
	Granite Finish (Code : HFG)		Sq.m.	1106.00	Rupees One Thousand One Hundred Six Only	0.00	
	Roller Coat (Application by Special Roller) (RCSR)		Sq.m.	433.00	Rupees Four Hundred Thirty Three Only	0.00	
68	Providing two coats of Birla White Wall Care Putty (Water Resistant White Cement based putty for concrete/ mortar walls and ceiling both internal and external) after removing all loosely adhering material from the wall surface with the help of emery stone, putty blade or wire brush and moistening the wall with sufficient quantity of clean water as specified and directed by the department. (Total thickness of two coats is maximum 1.5mm)						
	For 1.5mm thick application		Sq.m.	501.00	Rupees Five Hundred One Only	0.00	
	For 1.0mm thick application	31010	Sq.m.	492.00	Rupees Four Hundred Ninety Two Only	1,52,56,916.29	
69	6 mm cement plaster of mix :						
	1:3 (1 cement : 3 fine sand)	18821	Sq.m.	227.35	Rupees Two Hundred Twenty Seven and Thirty Five Paise		42,79,018.01
70	Wall painting (two coats) with acrylic emulsion paint approved brand and manufacture (Asian paint/ Berger paint/ICI paint/ J & N paint/ Nerolac) on new surface to give an even shade after thoroughly brushing the surfaces free from mortar droppings and other foreign matter and sand papered smooth.	31010	Sq.m.	212.00	Rupees Two Hundred Twelve Only	65,74,118.40	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
71	Finishing wall with two coats of waterproofing cement coatings of Unicem "Shakti" brand of required shade by thinning 1 part of paint with 1 part of water to give an even shade after thoroughly brooming the surfaces to remove all dirt and remains of loose powdered materials as specified and directed by the department.		Sq.m.	224.00	Rupees Two Hundred Twenty Four Only	0.00	
72	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete.						
	On steel work	360	sqm	189.75	Rupees One Hundred Eighty Nine and Seventy Five Paise		68,310.00
SUB HEAD-VIII :- ROOFING & FALSE CEILING							
73	Supplying, fitting, fixing M/F Suspended Ceiling with G.I. perimeter channels of size 0.55mm thick (having one flange of 20mm and another flange of 30mm and a web of 27mm) along perimeter of ceiling, screw fixed to brick wall/ partition with the help of nylon sleeves and screws at 610mm c/c; and suspending G.I. intermediate channels of size 45mm (0.9mm thick with two equal flanges of 15mm each) from the soffit at 1220mm c/c with ceiling angle of size 25mm x 10mm x 0.55mm fixed to soffit with G.I. cleat and steel expansion fasteners; Ceiling section of 0.55mm thickness having knurled web of 51.5mm and two equal flanges of 26mm each with lips of 10.5mm are to be fixed to the intermediate channel with the help of connecting clip and in direction perpendicular to the intermediate channel at 457mm c/c; fixing 9.5mm/12.5mm tapered edge Gypboard (conforming to IS:2095-1982) to ceiling section with 25mm long drywall screws at 230mm c/c. and boards to be joined by filling and finishing the tapered and square edges of the boards with jointing compound, joint paper tape and two coats of drywall topcoat suitable for Gypboard so as to have a flush look and painting where necessary (one coat primer and two coats of paint) complete at all levels as specified and directed. (For light fittings, providing opening for doors, window, ventilators, etc. cut out made with frame of perimeter channel supported suitably to be measured and paid separately where necessary).						
	12.5mm thick	12541	Sq.m.	1261.00	Rupees One Thousand Two Hundred Sixty One Only	1,58,13,605.81	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
74	Providing 10mm thick plaster of paris (Gypsum, Anhydrous) ceiling up to a height of 5m above floor level over 1st class Hollock / Bonsum / Diengrai/Sundi wood strips 25mm x 6mm with 10mm gap in between with rabbit wire mesh fixed to wooden frame (frame work to be measured and paid separately).						
	Flat surface	1254	Sq.m.	1310.00	Rupees One Thousand Three Hundred Ten Only	16,42,809.17	
	Curved surface	627	Sq.m.	1593.00	Rupees One Thousand Five Hundred Ninety Three Only	9,98,853.06	
75	Extra for sunk or raised mouldings in plaster of paris (Gypsum, anhydrous) ceiling over item no 6.43 (a) & (b) above.	1881	Sq.m.	621.00	Rupees Six Hundred Twenty One Only	11,68,150.18	
					No Rupees Only		
76	Extra for sunk or raised mouldings , cornices in cement plaster using moulds as per drawings and design matching with elevations.	1881	Sq.m.	621.00	Rupees Six Hundred Twenty One Only	11,68,150.18	
77	Providing colour coated DURASHINE/TATA BLUESCOPE zinc-aluminium roof, wall and tile profile sheet accessories of DURASHINE/ TATA BLUESCOPE make or equivalent (total coating thickness =0.45mm) including fasteners class 2 SDS, fitting and fixing complete. (Roof trusses, purlins etc. to be measured and paid separately.)						
	Crimped End Curved Ridge		Sq.m.	954.00	Rupees Nine Hundred Fifty Four Only	0.00	
	Gutter / Flashings		Sq.m.	588.00	Rupees Five Hundred Eighty Eight Only	0.00	
	Plain sheet		Sq.m.	650.00	Rupees Six Hundred Fifty Only	0.00	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
78	Providing and fixing tiled false ceiling of approved materials of size 595x595 mm in true horizontal level suspended on inter locking metal grid of hot dipped galvanized steel sections (galvanized @ 120 gsm/sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38mm made from 0.30mm thick (minimum) sheet, spaced at 1200mm center to center and cross "T" of size 24x25mm made of 0.30mm thick (minimum) sheet, 1200mm long spaced between main "T" at 600mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600mm and size 24x25mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600mm panel to form grids of 600x600mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, wherever, required, cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x1.6 x mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete at all heights as per specifications drawings and as directed by Engineer-in-charge.						
	GI Metal Ceiling Lay in perforated Tegular edge global white color tiles of size 595x595 mm and 0.5 mm thick with 8 mm drop; made of GI sheet having galvanizing of 100 gms/sqm (both sides inclusive) and 20% perforation area with 1.8 mm dia holes and having NRC (Noise Reduction Coefficient) of 0.5, electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending and perforation, and backed with a black Glass fiber acoustical fleece.	2508	sqm	1649.15	Rupees One Thousand Six Hundred Forty Nine and Fifteen Paise		41,36,242.35
	SUB HEAD-IX :- WOOD AND PVC WORK						
79	Providing wood work in frame (chowkats) of doors, windows, clerestory windows and other similar works wrought, framed and fixed in position in contact with C.C or brick masonry wall including supplying, fitting and fixing with M.S. hold fast (40mmx3mmx250mm) as per design embedded in cement concrete block in proportion 1:2:4 and with two coats of kiricide oiling to the timber faces in contact with C.C and masonry as directed and specified.				No Rupees Only		
	With Sal wood	6	Cu.m	121882.00	Rupees One Lac Twenty One Thousand Eight Hundred Eighty Two Only	7,89,426.79	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
					No Rupees Only		
	ARCHITRAVE / BEADING				No Rupees Only		
80	Providing and fixing 1st class timber moulded architrave of size 50x20mm to door and window frames with countersunk wood screw, wooden plugs and applying a coat of wood preservative on unexposed surface etc.				No Rupees Only		
	1st class Teak wood / Sissu wood	459	R.M	353.00	Rupees Three Hundred Fifty Three Only	1,62,154.08	
					No Rupees Only		
81	Providing and fixing 1st class timber moulded beading of size 25mm x 15mm around panel inserts of doors with countersunk wood screws including applying a coat of wood preservative on unexposed surface.				No Rupees Only		
	With Teak wood/Sissu wood.	327	R.M	223.00	Rupees Two Hundred Twenty Three Only	72,947.76	
82	Providing and fixing 1st class timber beading for fixing clear sheet glass/frosted glass including applying a coat of wood preservative on unexposed surface.						
	With Teak wood/Sissu wood.	845	R.M	109.00	Rupees One Hundred Nine Only	92,122.44	
83	Providing 1st Class Local timber (Pooma/ Hollock/ Oak/ Gamari/Diengrai and the like) ventilating louvre in 50mm x 38mm size wooden frame with 150mm x 20mm slate made of 1st class local wood including fitting and fixing with nails and painting with two coats of kircide oiling complete.	36	Sq.m.	2915.00	Rupees Two Thousand Nine Hundred Fifteen Only	1,04,940.00	
84	Providing fitting and fixing 1/3 panelled 2/3 glazed wooden shutters for doors/windows including oxidised iron butt hinges (100mm x75 mm x3.55 mm) with necessary screws including glass panes (other fittings to be measured and paid separately)						
	With Teak wood / Sissu wood.						
	40 mm thick.	120	Sq.m	6152.00	Rupees Six Thousand One Hundred Fifty Two Only	7,38,240.00	
85	Providing, fitting and fixing full panelled doors/ windows including oxidised M.S butt hinges (100mm x 75 mm x 3.55mm) with necessary screws (other fittings to be measured and paid separately)						
	With Teak wood / Sissu wood.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	40 mm thick.		Sq.m	7221.00	Rupees Seven Thousand Two Hundred Twenty One Only	0.00	
86	Providing, fitting and fixing fully glazed window with sash bars including oxidised M.S butt hinges (75mm x 60mm x 3.15mm) 2nos. on each leaf and 3nos. On single leaf (glass panes to be measured and paid separately) With Teak wood / Sissu wood.						
	40 mm thick.		Sq.m	4502.00	Rupees Four Thousand Five Hundred Two Only	0.00	
	SPECIAL DOORS						
87	Providing, fitting and fixing anodised aluminium framed glazed doors with anodised aluminium frame made of 100mm x 45mm x 2.5mm section with door style of size 88mm x 45mm x 2.5mm, top rails 50mm x 45mm x 2mm and bottom rails 100mm x 45mm x 2.5mm fitted with glazing clip, special type rubber gasket complete etc. complete as specified and directed by the department at all levels.						
	With 12 mm thick toughened glass	29	Sq.m.	15272.00	Rupees Fifteen Thousand Two Hundred Seventy Two Only	4,39,833.60	
88	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-in-charge (Door handle, lock and stopper etc.to be paid separately).	603	Sqm	4447.90	Rupees Four Thousand Four Hundred Forty Seven and Ninety Paise		26,82,403.95
89	Providing and fixing flush door shutters solid core construction with frame of 1st class hard wood with cross band and face veneered ply wood face panels conforming to relevant I.S code including oxidised iron butt hinges (100mm x 75mm x 3.5mm) with necessary wood screws. Decorative type face panels and block board core						
	35 mm thick.	570	Sqm	4750.00	Rupees Four Thousand Seven Hundred Fifty Only	27,07,101.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
90	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of shutters (over all area of door shutter to be measured) over item no. 9.20 and 9.21	570	Sqm	401.40	Rupees Four Hundred One and Forty Paise		2,28,764.28
91	Extra for providing 175 mm x 175 mm size Vision panel in door shutters including providing and fixing 4 mm thick clear glass and teak wood beading 12mm x 12mm , all along the glass edges on both sides including necessary screws etc. and painting / polishing of wooden beading complete as directed.						
	Square	12	Sqm	421.00	Rupees Four Hundred Twenty One Only	5,092.42	
92	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :						
a	2nd class teak wood						
b	50 x 20 mm	459	Meter	232.15	Rupees Two Hundred Thirty Two and Fifteen Paise		1,06,640.42
	Stainless Steel Fittings						
93	Supplying, fitting, fixing Stainless Steel fittings of approved make, reasonably smooth, free from sharp edges and corners, flaws and other defects and with counter sunk holes for screws including necessary C.P. brass screws etc. complete. (bright natural matt & satin finished)						
	Sliding Door Bolt						
a)	300mm x 16mm	36	each	372.00	Rupees Three Hundred Seventy Two Only	13,392.00	
b)	250mm x 16mm	12	each	346.00	Rupees Three Hundred Forty Six Only	4,152.00	
	Tower Bolt						
a)	300mm x 10mm	233	each	457.00	Rupees Four Hundred Fifty Seven Only	1,06,389.60	
b)	250mm x 10mm	158	each	418.00	Rupees Four Hundred Eighteen Only	66,211.20	
	Butt hinge						
a)	125mm x 50mm x 2.5mm		each	401.00	Rupees Four Hundred One Only	0.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
b)	100mm x 50mm x 2.5mm	648	each	388.00	Rupees Three Hundred Eighty Eight Only	2,51,424.00	
c)	75mm x 50mm x 2.5mm	451	each	371.00	Rupees Three Hundred Seventy One Only	1,67,395.20	
94	Providing, fitting and fixing Sleek Door Closer (Godrej make) of size 215mm x 51mm x 45mm complete as specified and directed by the department.	158	each	2293.00	Rupees Two Thousand Two Hundred Ninety Three Only	3,63,211.20	
95	Providing, fitting and fixing Architectural Range Heavy Duty Floor Spring (Model D100 of Godrej make) of size 308mm x 108mm x40.5mm complete as specified and directed by the department.	325	each	7684.00	Rupees Seven Thousand Six Hundred Eighty Four Only	24,98,836.80	
96	Providing and fixing clear sheet glass bedded in putty and fixed with/without wooden beading including necessary cutting of glass to the required size (payment for wooden bead shall be made separately)						
	4.00mm thick (Area of glass panes exceeding 400 sq.cm but less than 1200 sq.cm.)	120	Sq.m.	1307.00	Rupees One Thousand Three Hundred Seven Only	1,56,840.00	
97	Providing and fixing plain frosted glass of ordinary glazing quality bedded in putty and fixed with/without wooden beading including necessary cutting and glass to the required size (payment for wooden bead shall be made separately)						
	4.00mm thick (Area of glass panes exceeding 400 sq.cm but less than 1200 sq.cm.)	120	Sq.m.	1453.00	Rupees One Thousand Four Hundred Fifty Three Only	1,74,360.00	
98	Providing, fitting and fixing coloured anodised aluminium hollow section (Indal section 9210) of size 63.50mm x 38.10mm x 2.5mm thick for aluminium frame partition wall, with a maximum spacing of frame 1.20m for horizontal/vertical member including aluminium cleat 32mm x 50mm x 4mm thick and fixing of pre-laminated board/Nepal board/ Bhutan board with tapper cleat 20mm x 15mm x 1.2mm thick as directed by the department at all levels.						
	5mm frosted glass	60	Sq.m.	5256.00	Rupees Five Thousand Two Hundred Fifty Six Only	3,15,360.00	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
99	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / aneling,C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :						
a	For fixed portion						
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	6761	kg	456.30	Rupees Four Hundred Fifty Six and Thirty Paise		30,85,172.06
100	Providing and fixing fire resistant door frame of section 50 x 60mm on horizontal side & 35 x 60 mm on vertical sides having built in rebate made out of 1.6 mm thick GI sheet (Zinc coating not less than 120gm/m ²) suitable for mounting 120 min Fire Rated Glazed Door Shutters. The frame shall be filled with Mineral wool Insulation having density min 96Kg/m ³ . The frame will have a provision of G.I. Anchor fastners 14 nos (5 each on vertical style & 4 on horizontal style of size M10 x 80) suitable for fixing in the opening along with Factory made Template for SS Ball Bearing Hinges of Size 100x89x3mm for fixing of fire rated glazed shutter. The frame shall be finished with a approved fire resistant primer or Powder coating of not less than 30 micron in desired shade as per the directions of Engineer - in- charge . (Cost of SS ball bearing hinges is excluded).	227	metre	1512.95	Rupees One Thousand Five Hundred Twelve and Ninety Five Paise		3,43,137.06
101	Providing and fixing 60 mm thick glazed fire resistant door shutters of 120 min Fire Rating confirming to IS:3614 (Part II) or EN1634-1:1999, tested and certified as per laboratory approved by Engineer-in-charge, with suitable mounting on door frame, consisting of vertical styles, top rail & side rail 60 mm x 60 mm wide and bottom rail of 110 mm x 60 mm made out of 1.6mm thick G.I. sheet (zinc coating not less than 120gm/m ²) duly filled mineral wool insulation having density min 96 kg/m ³ and fixing with necessary stainless steel ball bearing hinges of size 100x89x3mm of approved make, including applying a coat of approved fire resistant primer or powder coating not less than 30 micron etc all complete as per direction of Engineer-in-charge (panelling to be paid for seperately).	335	sqm	8379.30	Rupees Eight Thousand Three Hundred Seventy Nine and Thirty Paise		28,05,992.95

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
102	Providing and fixing glazing in fire resistant door shutters, fixed panels & partitions etc., with G.I. beading made out of 1.6 mm thick G.I. sheet (zinc coating not less than 120 gm/m ²) of size 20 x 33 mm screwed with M4 x 38 mm SS screws at distance 75 mm from the edges and 150 mm c/c , including applying a coat of approved fire resistant primer/powder coating of not less than 30 micron on G.I. beading, & special ceramic tape of 5 x 20 mm size etc complete in all respect as per direction of Engineer-in-charge. The glass shall be clear, toughened, interlayered, non-wired fire resistant having 11 mm thickness of approved brand with 120						
	minutes of fire resistance both integrity & radiation control (EW120) and minimum 15 min of insulation (EI15) and having a sound reduction of 37dB and LT of 86%. Glass shall be compliant to class 2(B)2 category of Impact Resistance as per EN 12600. The glass should be manufactured in UL & TUV audited Facility and including UL-EU Certification.The maximum glazing size cannot be more than 1100 mm x 2200 mm (w x h) or 2.42 sq mts in total area. The test report for the complete system (Glazed Door or Partition) will be considered valid only if it contains the stamp and signature of the authorized signatory from the glass manufacturer. (Actual glass size is to be measured at site for payments).	130	sqm	39395.30	Rupees Thirty Nine Thousand Three Hundred Ninety Five and Thirty Paise		51,05,630.88
103	Providing and fixing panic bar / latch (Double point) fitted with a single body, Trim Latch & Lock on back side of the Panic Latch of reputed brand and manufacture to be approved by the Engineer- in- charge, all complete.	36	each	7134.85	Rupees Seven Thousand One Hundred Thirty Four and Eighty Five Paise		2,56,854.60
SUB HEAD-X :- STEEL WORK							
104	Providing and fixing in position collapsible M.S. shutters with vertical channels 20mmx10mmx2mm braced with flat iron diagonals 20mmx5mm size with top and bottom rails of T-iron 40mmx40mmx6mm with 38mm dia steel pulleys complete with bolts and nuts, locking arrangements, stoppers, handles including applying a priming coat of red lead paint.	17	Sq.m.	6473.00	Rupees Six Thousand Four Hundred Seventy Three Only	1,11,853.44	
105	Providing and fixing rolling shutters of approved make made of 80mm wide M.S. laths interlocked together through their entire length and jointed together at the ends by end-locks mounted on specially designed pipe shaft with bracket plates, guide channels and arrangements for inside and outside locking with push-pull operation complete including cost of wire, spring and hood cover for the shutters.	1107	Sq.m.	4883.00	Rupees Four Thousand Eight Hundred Eighty Three Only	54,04,426.27	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
106	Providing, fitting and fixing M.S. grill of required pattern for windows/ clerestory windows/ opening/ railing with M.S. flats at required spacing in frame all round, square or round M.S. bars with round headed bolts and nuts or screws. Plain grill						
	Fixed to wooden frames		Kg.	123.00	Rupees One Hundred Twenty Three Only	0.00	
107	Structural steel work in single sections including cutting, hoisting, fixing in position and applying a priming coat of red lead paint (up to 4.6m height) from plinth level including drilling holes, supplying, fitting and fixing with bolts and nuts or welding, if necessary as directed.						
	In M.S. angles, channels, Tees etc.	48	Qntl.	9251.00	Rupees Nine Thousand Two Hundred Fifty One Only	4,47,378.36	
108	Steel work riveted and/ or bolted/ riveted in built up sections, frame work including cutting, hoisting, fixing in position and applying a priming coat of red- lead paint up to 4.6m height above plinth including drilling holes, supplying, fitting and fixing with bolts and nuts or welding, if necessary as directed.						
	In trusses and trussed purlins up to 25m span and 15m overall height.	48	Qntl.	10124.00	Rupees Ten Thousand One Hundred Twenty Four Only	4,89,596.64	
109	Steel work welded in built up sections, framed work including cutting, hoisting and fixing in positions and applying priming coat of red-lead paint including drilling holes, supplying, fitting and fixing with bolts and nuts or welding, if necessary as directed.						
	In trusses and trussed purlins up to 25m span and 15m overall height.	48	Qntl.	11878.00	Rupees Eleven Thousand Eight Hundred Seventy Eight Only	5,74,420.08	
110	Supplying fitting and fixing M.S. cattle trap fabricated, welded, mitred and jointed as per relevant IS code with ISMB 250 joist spaced not more than 1800mm apart and ISA 65 x 65 x 6 spaced not more than 200mm apart and fixing the same over RCC member / Brick wall complete as specified and directed.		Sq.m.	985.00	Rupees Nine Hundred Eighty Five Only	0.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
111	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners, stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer in-charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	8220	Kg	772.00	Rupees Seven Hundred Seventy Two Only	63,46,025.28	
112	Providing and fixing M.S. tube hand rail of approved size by welding etc. to steel ladder railing, balcony railing, staircase railing and similar works, including applying priming coat of approved steel primer.	600	Kg	102.00	Rupees One Hundred Two Only	61,200.00	
SUB HEAD - XI - WATER PROOFING WORK							
113	Supplying, mixing, laying and applying the following waterproofing systems over Raft slabs, Roof slabs, Terraces etc. including curing complete as specified and directed by the Department at all levels.:						
	(i) 1mm thick single coat of Master Crete M-81 of Choksey Chemicals /Dr. Sealkit Sealcrete (Asian Chemicals)/ mixed with cement in the ratio 1:2 as a prime coat.						
	(ii) 3mm thick Polymer modified mortar -Cement sand mortar (in prop 1:3) mixed with Master Crete M-81/Dr. Sealkit Sealcrete (Asian Chemicals) @ 15% by weight of cement.						
	(iii) 1mm thick coat of Master Crete M-81 /Dr. Sealkit Sealcrete (Asian Chemicals) mixed with cement in the ratio 1:2 as final coat.						
	Using RHEOMIX 131 OF BASF	9010	Sq.m.	1730.00	Rupees One Thousand Seven Hundred Thirty Only	1,55,88,123.48	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
114	Providing, supplying, mixing and chamfering the edges along joint of wall/ parapet wall and raft/ roof slab having chamfered dimension of 150mm x 150mm with cement sand mortar (prop.1:4) mixed with Master Proof IWP-1 of Choksey Chemicals /Dr. Sealkit No. 1 of (Asian Chemicals)/ RHEOMAC 707 of BASF@ 0.2% by weight of cement over a primer coat on the area to be chamfered with a combination of 100% acrylic Polymer Master Crete M-81/Dr. Sealkit Sealcrete (Asian Chemicals)/ RHEOMAC 115 of BASF of Choksey Chemicals and cement in the ratio 1:2 to be applied by brush as specified & directed by the Department complete.	154	Sq.m.	975.00	Rupees Nine Hundred Seventy Five Only	1,50,368.40	
115	Providing and applying over sunken slab etc., two coats of waterproofing slurry prepared with neat cement, water and modified Styrene Butadiene Rubber based polymer like Sika Latex of Sika India Ltd./Dr. Sealkit Masterbond Latex (Asian Chemicals)/ RHEOMIX 141 by brush after proper surface preparation (surface preparation including thorough cleaning of surface to be measured and paid separately) as specified & directed by the Department complete.	904	Sq.m.	301.00	Rupees Three Hundred One Only	2,71,979.99	
116	Supplying, providing, mixing and laying of concrete screed of average 20mm thick or as per drawings/ requirements in proportion 1:2:4 (1cement : 2fine aggregate : 4coarse aggregate) (by volume) with 10mm and down well graded aggregates and admixed with a waterproofing plasticizer like Plastocrete Plus of Sika India Ltd./Dr. Sealkit LW Super (Asian Chemicals) /Rheomac 730 of BASF@ 0.2% by weight of cement and thereafter scoring the top surface of the concrete screed @ 200mm c/c as specified and directed by the Department.	9914	Sq.m.	116.00	Rupees One Hundred Sixteen Only	11,50,031.42	
117	15mm thick plastering of the interior surface of concrete water tanks with cement mortar in prop 1:4 admixed with modified Styrene Butadiene Rubber based polymer like Sika Latex of Sika India Ltd./Dr. Sealkit Masterbond Latex (Asian Chemicals)/Rheomix 141 of BASF @ 200gms per bag of cement as specified and directed by the department complete.	154	Sq.m.	179.00	Rupees One Hundred Seventy Nine Only	27,606.10	
118	Providing and fixing Heat Resistant Terrace Tiles (300 mm x 300 mm x 20 mm) with SRI (solar refractive index) > 78, solar reflection > 0.70 and initial emittance > 0.75 on waterproof and sloped surface of terrace, laid on 20 mm thick cement sand mortar in the ratio of 1:4 (1 cement : 4 coarse sand) and grouting the joints with mix of white cement & marble powder in ratio of 1:1, including rubbing and polishing of the surface upto 3 cuts complete, including providing skirting upto 150 mm height along the parapet walls in the same manner.	4342	Sq.m.	1627.01	Rupees One Thousand Six Hundred Twenty Seven Only	70,65,248.29	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
119	Providing and laying roof insulation with 40 mm thick impervious sprayed, closed cell free Rigid Polyurethane foam over deck insulation conforming to IS - 12432 Pt. III (density of foam being 40-45 kg/cum), over a coat of polyurethane primer applied @ 6-8 sqm per litre, laying 400 G polythene sheet over PUF spray and providing a wearing course of 40 mm thick cement screed 1:2:4 (1 cement : 2coarse sand : 4 stone aggregate 20 mm nominal size) in chequered rough finish, in panels of 2.5 m x 2.5 m and embedding with 24 G wire netting and sealing the joints with polymerized mastic, all complete as per direction of Engineer-in-Charge.	4342	Sq.m.	1451.66	Rupees One Thousand Four Hundred Fifty One and Sixty Six Paise		63,03,811.82
120	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS :1786 having minimum cross section as 23 mmx25mm and over all minimum length 263 mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	53	Each	463.05	Rupees Four Hundred Sixty Three and Five Paise		24,449.04
SUB HEAD-XII :- STRUCTURAL GLAZING, CURTAIN GLAZING, ALUMINIUM COMPOSITE PANEL WORK							
121	Providing and supplying aluminium extruded tubular and other aluminium sections as per the architectural drawings and approved shop drawings , the aluminium quality as per grade 6063 T5 or T6 as per BS 1474,including super durable powder coating of 60-80 microns conforming to AAMA 2604 of required colour and shade as approved by the Engineer-in-Charge. (The item includes cost of material such as cleats, sleeves, screws etc. necessary for fabrication of extruded aluminium frame work. Nothing extra shall be paid on this account). The weight of aluminium extruded section shall be taken for purpose of payment.	10827	Kg	370.45	Rupees Three Hundred Seventy and Forty Five Paise		40,10,908.48
122	Designing, fabricating, testing, protection, installing and fixing in position semi (grid) unitized system of structural glazing (with open joints) for linear as well as curvilinear portions of the building for all heights and all levels, including:						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	a) Structural analysis & design and preparation of shop drawings for the specified design loads conforming to IS 875 part III (the system must passed the proof test at 1.5 times design wind pressure without any failure), including functional design of the aluminum sections for fixing glazing panels of various thicknesses, aluminium cleats, sleeves and splice plates etc. gaskets, screws, toggles, nuts, bolts, clamps etc., structural and weather silicone sealants, flashings, fire stop (barrier)- cum-smoke seals, microwave cured EPDM gaskets for water tightness, pressure equalisation & drainage and protection against fire hazard including:						
	b) Fabricating and supplying serrated M.S. hot dip galvanised / Aluminium alloy of 6005 T5 brackets of required sizes, sections and profiles etc. to accommodate 3 Dimensional movement for achieving perfect verticality and fixing structural glazing system rigidly to the RCC/ masonry/structural steel framework of building structure using stainless steel anchor fasteners/ bolts, nylon seperator to prevent bimetallic contacts with nuts and washers etc. of stainless steel grade 316, of the required capacity and in required numbers.						
	c) Providing and filling, two part pump filled, structural silicone sealant and one part weather silicone sealant compatible with the structural silicone sealant of required bite size in a clean and controlled factory / work shop environment , including double sided spacer tape, setting blocks and backer rod, all of approved grade, brand and manufacture, as per the approved sealant design, within and all around the perimeter for holding glass.						
	d) Providing and fixing in position flashings of solid aluminium sheet 1 mm thick and of sizes, shapes and profiles, as required as per the site conditions, to seal the gap between the building structure and all its interfaces with curtain glazing to make it watertight.				No Rupees Only		

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	e) Making provision for drainage of moisture/ water that enters the curtain glazing system to make it watertight, by incorporating principles of pressure equalization, providing suitable gutter profiles at bottom (if required), making necessary holes of required sizes and of required numbers etc. complete. This item includes cost of all inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&P, scaffolding and other incidental charges including wastages etc., enabling temporary structures and services, cranes or cradles etc. as described above and as specified. The item includes the cost of getting all the structural and functional design including shop drawings checked by a structural designer, dully approved by Engineer-in-charge. The item also includes the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working structural glazing as specified, cleaning and protection till the handing over of the building for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge.						
	Note:- 1. The cost of providing extruded aluminium frames, shadow boxes, extruded aluminium section capping for fixing in the grooves of the curtain glazing and vermin proof stainless steel wire mesh shall be paid for separately under relevant items under this sub- head. However, for the purpose of payment, only the actual area of structural glazing (including width of grooves) on the external face shall be measured in sqm. up to two decimal places..						
	Note:- 2. The following performance test are to be conducted on structural glazing system if area of structural glazing exceeds 2500 Sqm from the certified laboratories accredited by NABL(National Accreditation Board for Testing and Calibration Laboratories), Department of Science & Technologies, India. Cost of testing is payable separately. The NIT approving authority will decide the necessity of testing on the basis of cost of the work, cost of the test and importance of the work. Performance Testing of Structural glazing system Tests to be conducted in the NBL Certified laboratories						
	6) Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml	6496	sqm	2949.30	Rupees Two Thousand Nine Hundred Forty Nine and Thirty Paise		1,91,59,463.97

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
123	Providing, assembling and supplying vision glass panels (IGUs) comprising of hermetically-sealed 6-12- 6 mm insulated glass (double glazed) vision panel units of size and shape as required and specified, comprising of an outer heat strengthened float glass 6mm thick, of approved colour and shade with reflective soft coating on surface 2 of approved colour and shade, an inner Heat strengthened clear float glass 6mm thick, spacer tube 12mm wide, dessicants, including primary seal and secondary seal (structural silicone sealant) etc. all complete for the required performances, as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer-in-Charge. The IGUs shall be assembled in the factory/ workshop of the glass processor.“(Payment for fixing of IGU Panels in the curtain glazing is included in cost of item No.26.2)“For payment, only the actual area of glass on face # 1 of the glass panels (excluding the areas of the grooves and weather silicone sealant) provided and fixed in position, shall be measured in sqm.“						
	Coloured tinted float glass 6mm thick substrate with reflective soft coating on face # 2, + 12mm Airgap + 6mm Heat Strengthened clear Glass of approved make having properties as visible Light transmittance (VLT) of 25 to 35 %, Light reflection internal 10 to 15%, light reflection external 10 to 20 %, shading coefficient (0.25- 0.28) and U value of 3.0 to 3.3 W/m2 degree K etc. The properties of performance glass shall be decided by technical sanctioning authority as per the site requirement.	6496	sqm	3250.95	Rupees Three Thousand Two Hundred Fifty and Ninety Five Paise		2,11,19,065.34
124	Extra for openable side / top hung vision glass panels (IGUs) including providing and supplying at site all accessories and hardwares for the openable panels as specified and of the approved make such as heavy duty stainless steel friction hinges, min 4 - point cremone locking sets with stainless steel plates, handles, buffers etc. including necessary stainless steel screws/ fasteners, nuts, bolts, washers etc. all complete as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer- in-Charge.	650	sqm	3163.10	Rupees Three Thousand One Hundred Sixty Three and Ten Paise		20,54,836.76

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
125	Design supply & installation of suspended Spider Glazing system designed to withstand the wind pressure as per IS 875 (Part-III). The Suspended System held with Spider Fittings of SS-316 Grade Steel of approved manufacturer with glass panel having 12 mm thick clear toughened glass held together with SS- 316 Grade Stainless steel Spider & bolt assembly with laminated glass fins 21 mm thick. The Glass fins and glass panel assembly shall be connected to Slab/beams by means of SS- 316 Grade stainless steel brackets & Anchor bolts and at the bottom using SS channel of 50x25x2mm using fastener & anchor bolts, non staining weather sealants of approved make, Teflon/ nylon bushes and separators to prevent bi-metallic contacts, all complete to perform as per specification and approved drawings. The complete system to be designed to accommodate thermal expansion & seismic movements etc. The joints between glass panels (6 to 8 mm) and gaps at the perimeter & in U channel of the assembly to be filled with non staining weather sealant, so as to make the entire system fully water proof & dust proof. The rate shall include all design, Engineering and shop drawing including approval from structural designer, labour, T&P, scaffolding, other incidental charges including wastage, enabling temporary services all fitting fixers nut bolts, washer, Buffer plates, fastener, anchors, SS channel laminated glass etc. all complete. For the purpose of payment, actual elevation area of Glazing including thickness of joints and the portion of Glass panel inside the SS channel shall be measured.	120	sqm	8130.45	Rupees Eight Thousand One Hundred Thirty and Forty Five Paise		9,75,654.00
SUB HEAD-XIII :- DISMANTLING & DEMOLISHING WORKS							
126	Demolishing lime concrete without damaging the structure and disposal of debris as directed at all levels	1426	Cum	406.00	Rupees Four Hundred Six Only	5,78,793.60	
127	Demolishing plain cement concrete including disposal of debris as directed for all levels.						
	Prop (1 : 4 : 8) or leaner mix	1102	Cum	1264.00	Rupees One Thousand Two Hundred Sixty Four Only	13,92,422.40	
	Prop (1 : 3 : 6) or richer mix	1312	Cum	1416.00	Rupees One Thousand Four Hundred Sixteen Only	18,58,075.20	
128	Demolishing RCC work including stacking of steel bars and disposal of unserviceable material as directed for all levels	1663	Cum	2004.00	Rupees Two Thousand Four Only	33,33,052.80	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
129	Demolishing RB work including stacking of steel bars and disposal of unserviceable material as directed for all levels	972	Cum	1421.00	Rupees One Thousand Four Hundred Twenty One Only	13,81,212.00	
130	Extra for cutting reinforcement in RCC or RB work at all levels (Payment to be made on cross sectional area of RCC or RB work obtained by multiplying the length of the cut reinforcement and thickness of the member).	540	sqm	819.00	Rupees Eight Hundred Nineteen Only	4,42,260.00	
131	Extra for scraping, cleaning and straightening reinforcement from RCC or RB work at all levels	216	Qntl.	379.00	Rupees Three Hundred Seventy Nine Only	81,864.00	
132	Demolishing brickwork including stacking of serviceable materials and disposal of unserviceable materials as directed for all levels	3294	Cum	1106.00	Rupees One Thousand One Hundred Six Only	36,43,164.00	
133	Demolishing stone rubble masonry including stacking of serviceable materials and disposal of unserviceable materials as directed for all levels	1663	Cum	1336.00	Rupees One Thousand Three Hundred Thirty Six Only	22,22,035.20	
134	Dismantling wood work in frames, trusses, purlins and rafters including stacking the materials as directed by the department for all levels.	896	Cum	2379.00	Rupees Two Thousand Three Hundred Seventy Nine Only	21,32,535.60	
135	Dismantling steel work in single sections (R.S. Joists, channels, angles, tees and flats etc.) including dismembering and stacking the materials as directed by the Department for all levels.	265	Qntl.	683.00	Rupees Six Hundred Eighty Three Only	1,80,721.80	
136	Dismantling steel work in built up sections in joists, angles, channels, tees, flats etc. including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking the materials as directed by the Department for all levels.	464	Qntl.	734.00	Rupees Seven Hundred Thirty Four Only	3,40,869.60	
137	Dismantling all types of corrugated/ trapezoidal sheet roofing including ridges, hips, valleys and gutters etc. and stacking the materials as directed by the department for all levels	1663	sqm	74.00	Rupees Seventy Four Only	1,23,076.80	
138	Demolishing skirting/ dado in walls/ R.C.C. & P.C.C. members without causing damage to walls/ member upto any height including disposal of debris as directed for all levels	238	Cum	823.00	Rupees Eight Hundred Twenty Three Only	1,95,544.80	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
139	Demolishing the plastering from walls/ R.C.C. and P.C.C. members without causing any damage to the wall/ member upto any height including disposal of debris as directed for all levels.	1091	Cum	8546.00	Rupees Eight Thousand Five Hundred Forty Six Only	93,21,976.80	
140	Demolishing CC floors of various thickness including top layer and base course and disposal of debris as directed for all levels.	1447	sqm	261.00	Rupees Two Hundred Sixty One Only	3,77,719.20	
141	Demolishing mosaic floor of various thicknesses, both mosaic tiles and cast-insitu type including CC base course and removal of debris as directed for all levels.	329	sqm	347.00	Rupees Three Hundred Forty Seven Only	1,14,301.80	
142	Demolishing R.C.C./ P.C.C. pile head of different diameters carefully without disturbing the remaining portion of the pile including opening out of the pile head to be demolished by excavating the earth upto required depth and clearing the debris as directed.	108	Cum	969.00	Rupees Nine Hundred Sixty Nine Only	1,04,652.00	
143	Dismantling and removing the existing door and window frame (chowkat) both wooden and steel of different sizes without damaging the walls and removing the frame and necessary repairs to the edges of the walls as directed for all levels.						
	Area of door/window up to 3.00sq.m.	70	Each	133.00	Rupees One Hundred Thirty Three Only	9,336.60	
	Area of door/window above 3.00sq.m.	35	Each	210.00	Rupees Two Hundred Ten Only	7,257.60	
144	Dismantling of existing steel windows/ steel ventilators/ steel windows and steel ventilators without damaging the walls, removing to a safe place and necessary repairs to the edges of walls.	184	sqm	228.00	Rupees Two Hundred Twenty Eight Only	41,860.80	
145	Dismantling all types of ceiling, partition and wall lining and stacking the materials as directed by the department for all levels	1652	sqm	48.00	Rupees Forty Eight Only	79,315.20	
146	Dismantling all types of CI or AC pipes with fittings, clamps etc. and stacking the materials as directed by the department for all levels	286	Rm	97.00	Rupees Ninety Seven Only	27,761.40	
147	Dismantling Barbed wire/ chain-link fencing including making rolls and stacking the materials as directed by the department.	49	Qntl.	1878.00	Rupees One Thousand Eight Hundred Seventy Eight Only	91,270.80	
CIVIL/INTERIOR WORKS SUB HEAD TOTAL						56,99,97,537.20	31,91,43,746.37

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
EXTERNAL DEVELOPMENT							
SUB HEAD-I :- EARTH WORK							
148	Earth work in excavation upto a depth of 2m below the existing ground level for foundation trenches of foundations, footings of column/ walls, retaining walls, septic tank etc. including bailing out water where necessary and removal of surplus earth with all lead and lifts as directed and specified for the following classification of soils.						
	In ordinary soil	273	Cum	179.00	Rupees One Hundred Seventy Nine Only	48,843.37	
	In hard/ dense soil	409	Cu.m.	231.00	Rupees Two Hundred Thirty One Only	94,547.38	
	In soft or laminated rock or medium shale	682	Cu.m.	358.00	Rupees Three Hundred Fifty Eight Only	2,44,214.71	
149	Earthwork in filling including necessary carriage, watering, ramming etc. complete as directed and specified.						
	Earth/ Sand filling in plinth in layers not exceeding 150mm thick						
	With earth/stone dust obtained by carriage upto 8 km	34	Cum	788.00	Rupees Seven Hundred Eighty Eight Only	26,476.80	
	With available excavated earth including breaking of clods, consolidating each layer by ramming and watering with all lead and lifts.	-51	Cum	210.00	Rupees Two Hundred Ten Only	-10,634.40	
SUB HEAD-II :- CONCRETE WORKS							
150	Plain cement concrete works with coarse aggregate of sizes 13mm to 32mm in foundation bed for footing steps, walls, brick works etc. as directed and specified including dewatering if necessary, and curing complete (shuttering where necessary shall be measured and paid separately).						
a)	In prop. 1:4:8 (1 cement:4 coarse sand : 8 coarse agg. by volume (using mixture machine)	42	Cum	5688.00	Rupees Five Thousand Six Hundred Eighty Eight Only	2,38,896.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
151	Providing and laying in position ready mixed plain cement concrete, using fly ash and cement content as per approved design mix and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for plain cement concrete work, including pumping of R.M.C. from transit mixer to site of laying and curing, excluding the cost of centering, shuttering and finishing, including cost of curing, admixtures in recommended proportions as per IS : 9103 to accelerate/ retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer-in-charge.sand and aggregate derived from natural sources.						
	Note : (1) Excess/less cement used than specified in this item is payable/ recoverable separately. (2) Fly ash conforming to grade I of IS 3812 (Part-1) only be used as part replacement of OPC as per IS : 456. Uniform blending with cement is to be ensured in accordance with clauses 5.2 and 5.2.1 of IS: 456 -2000 in the items of BMC and RMC."						
a	All works upto plinth level :						
	M-10 grade plain cement concrete (cement content considered @ 220 kg/cum)	200	Cum	7598.70	Rupees Seven Thousand Five Hundred Ninety Eight and Seventy Paise		15,17,399.60
SUB HEAD-III :- REINFORCED CEMENT CONCRETE WORK							
FORM WORK							
152	Providing form work of ordinary timber planking of thickness not less than 25mm and removal of the same for concrete members so as to give a rough finish including centering, shuttering, strutting and propping etc., for height of propping and centering of supporting floor to the soffit of the concrete member not exceeding 4.0M as specified for the following items:						
a)	Foundation, footings, bases of columns, pile cap, raft and mass concrete works etc.	167	Sqm	339.00	Rupees Three Hundred Thirty Nine Only	56,602.15	
	Providing form work of 12mm thick Plywood Board and removal of the same for concrete members so as to give a rough finish including centering, shuttering, strutting and propping etc., for height of propping and centering of supporting floor to the soffit of the concrete member not exceeding 4.0M as specified for the following items:						
b)	Vertical surface such as walls (any thickness), parapet walls, partitions and the like including attached pilasters, buttresses, plinth and string courses and the like.	3297	Sqm	514.00	Rupees Five Hundred Fourteen Only	16,94,719.68	
c)	Flat Surfaces such as soffits of suspended floors, roofs, landings, cantilever slabs, chajjas, balconies and the like.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Floors etc. upto 200mm in thickness.	664	Sqm	616.00	Rupees Six Hundred Sixteen Only	4,08,748.03	
e)	Sides and soffits of Beams, beam haunchings, cantilever girders, bressumers, lintels and horizontal ties.						
	For depth not exceeding 1.0M.	954	Sqm	429.00	Rupees Four Hundred Twenty Nine Only	4,09,363.81	
f)	Columns, Pillars, Posts & Strut of square/ rectangular/ polygonal in plan or any shape like Tee/L etc. having plane vertical face	653	Sqm	606.00	Rupees Six Hundred Six Only	3,95,567.71	
g)	Staircase with sloping or stepped soffits including risers and stringers but excluding Landing.	18	Sqm	622.00	Rupees Six Hundred Twenty Two Only	10,972.08	
h)	Edges of slabs and breaks in floors and walls.						
	Under 20cms wide	200	Meter	173.25	Rupees One Hundred Seventy Three and Twenty Five Paise		34,663.17
i)	Weather shade, chajjas, corbels etc. Including edges.	53	Sqm	521.75	Rupees Five Hundred Twenty One and Seventy Five Paise		27,867.71
	STEEL REINFORCEMENT						
153	Supplying, fitting and fixing in position reinforcement bars upto 1st floor level, conforming to relevant I.S. Code for R.C.C. work/ R.B. walling including straightening, cleaning, cutting and bending to proper shapes and length as per details, supplying and binding with 20G annealed black wire and placing in position with proper blocks, supports, chairs, spacers etc. complete. (Rates inclusive of all wastage, lappage, hooks, chairs, anchorage etc. and no measurements for the same is required)						
	From Primary Sources like TATA/ SAIL/ ESSAR/ JINDAL/ SHYAM/ RINL						
	Super Ductile (SD) TMT reinforcement bars	1547	Qtl	9,944.00	Rupees Nine Thousand Nine Hundred Forty Four Only	1,53,81,478.64	
154	Extra over item 2.8 (a, b, c) above for each subsequent floor or part thereof above first floor level.		Qtl	114	Rupees One Hundred Fourteen Only	0.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
155	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using fly ash and cement content as per approved design mix, and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying, excluding the cost of centering, shuttering, finishing and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate / retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge.						
	NOTE- (1) Cement content considered in this item is @ 330 kg/cum. Excess/ less cement used as per design mix is payable/ recoverable separately. (2) Fly ash conforming to grade I of IS 3812 (Part-1) only be used as part replacement of OPC as per IS : 456. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS:456 -2000 in the items of BMC and RMC.						
a)	All works upto plinth level	796	Cum	8365.80	Rupees Eight Thousand Three Hundred Sixty Five and Eighty Paise		66,57,336.32
b)	All works above plinth level upto floor V level	369	Cum	9769.35	Rupees Nine Thousand Seven Hundred Sixty Nine and Thirty Five Paise		36,00,347.40
SUB HEAD-IV :- BRICK WORK							
156	Brick work in cement mortar with 1st class brick including racking out joints and curing complete in sub-structure upto plinth level including dewatering if necessary as directed.						
	In proportion 1:6 (1 cement : 6 sand)	55	Cum	6996.00	Rupees Six Thousand Nine Hundred Ninety Six Only	3,86,808.84	
157	Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.	55	Sqm	8227.35	Rupees Eight Thousand Two Hundred Twenty Seven and Thirty Five Paise		4,54,766.77

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
158	Providing and laying autoclaved aerated cement blocks masonry with 150mm/230mm/300 mm thick AAC blocks in super structure above plinth level up to floor V level with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineer-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).	167	Cum	6636.95	Rupees Six Thousand Six Hundred Thirty Six and Ninety Five Paise		11,11,184.72
159	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry.	442	Sqm	80.10	Rupees Eighty and Ten Paise		35,418.30
SUB HEAD-V :- MARBLE & GRANITE WORK							
160	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.						
	Granite of any colour and shade						
a)	Area of slab upto 0.50 sqm		Sqm	4217.35	Rupees Four Thousand Two Hundred Seventeen and Thirty Five Paise		0.00
b)	Area of Slab over 0.50sqm	2	Sqm	4007.65	Rupees Four Thousand Seven and Sixty Five Paise		9,233.63
161	Providing edge moulding to 18 mm thick marble stone counters, Vanities etc., including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.						
	Granite work.	8	Meter	376.25	Rupees Three Hundred Seventy Six and Twenty Five Paise		3,155.99
162	Extra for fixing marble /granite stone, over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive, including cleaning etc. complete.	8	Meter	434.25	Rupees Four Hundred Thirty Four and Twenty Five Paise		3,642.49

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
163	Extra for providing opening of required size & shape for wash basin/kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	1	Each	734.55	Rupees Seven Hundred Thirty Four and Fifty Five Paise		881.46
SUB HEAD-VI :- WOOD AND PVC WORK							
164	Providing and fixing flush door shutters solid core construction with frame of 1st class hard wood with cross band and face veneered ply wood face panels conforming to relevant I.S code including oxidised iron butt hinges (100mm x 75mm x 3.5mm) with necessary wood screws. Decorative type face panels and block board core						
	35 mm thick.	12	Sqm	4750.00	Rupees Four Thousand Seven Hundred Fifty Only	57,456.00	
165	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of shutters (over all area of door shutter to be measured) over item no. 9.20 and 9.21	12	Sqm	401.40	Rupees Four Hundred One and Forty Paise		4,855.33
166	Extra for providing 175 mm x 175 mm size Vision panel in door shutters including providing and fixing 4 mm thick clear glass and teak wood beading 12mm x 12mm , all along the glass edges on both sides including necessary screws etc. and painting / polishing of wooden beading complete as directed.						
	Square	10	Sqm	421.00	Rupees Four Hundred Twenty One Only No Rupees Only	4,243.68	
167	Providing, fitting and fixing Sleek Door Closer (Godrej make) of size 215mm x 51mm x 45mm complete as specified and directed by the department.	5	Each	2293.00	Rupees Two Thousand Two Hundred Ninety Three Only	11,006.40	
168	Supplying, fitting, fixing anodised aluminium fittings of approved make, reasonably smooth, free from sharp edges and corners, flaws and other defects and with counter sunk holes for screws including necessary aluminium screws etc. complete. (anodised to bright natural matt & satin finished)						
	Tower Bolt						
(i)	300mm x 12mm	10	Each	290.00	Rupees Two Hundred Ninety Only	2,784.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
(ii)	100mm x 10mm	1	Each	170.00	Rupees One Hundred Seventy Only	204.00	
169	Door Handle						
(i)	150mm	10	Each	69.00	Rupees Sixty Nine Only	662.40	
(ii)	100 mm	2	Each	82.00	Rupees Eighty Two Only	196.80	
170	Providing and fixing bright finished brass 100 mm mortice latch and lock, ISI marked, with six levers and a pair of anodised (anodic coating not less than grade AC 10 as per IS : 1868) aluminium lever handles of approved quality with necessary screws etc. complete.	5	Each	748.65	Rupees Seven Hundred Forty Eight and Sixty Five Paise		3,593.52
171	Providing and fixing aluminium pull bolt lock, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws bolts, nut and washers etc. complete.	1	Each	85.95	Rupees Eighty Five and Ninety Five Paise		103.14
SUB HEAD-VII :- STEEL WORK							
172	Steel work riveted and/ or bolted/ riveted in built up sections, frame work including cutting, hoisting, fixing in position and applying a priming coat of red- lead paint up to 4.6m height above plinth including drilling holes, supplying, fitting and fixing with bolts and nuts or welding, if necessary as directed.						
	In trusses and trussed purlins up to 25m span and 15m overall height.	73	Qntl.	10124.00	Rupees Ten Thousand One Hundred Twenty Four Only	7,38,525.55	
173	Structural steel work in single sections including cutting, hoisting, fixing in position and applying a priming coat of red lead paint (up to 4.6m height) from plinth level including drilling holes, supplying, fitting and fixing with bolts and nuts or welding, if necessary as directed.						
	In M.S. angles, channels, Tees etc.	45	Qntl.	9251.00	Rupees Nine Thousand Two Hundred Fifty One Only	4,13,852.74	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
174	Providing and fixing rolling shutters of approved make made of 80mm wide M.S. laths interlocked together through their entire length and jointed together at the ends by end-locks mounted on specially designed pipe shaft with bracket plates, guide channels and arrangements for inside and outside locking with push-pull operation complete including cost of wire, spring and hood cover for the shutters.	33	Sqm	4883.00	Rupees Four Thousand Eight Hundred Eighty Three Only	1,61,724.96	
SUB HEAD VIII :- FLOORING							
175	Kota-stone slab flooring of 18 mm thick over 20mm thick base of cement plaster 1:6 (1 cement : 6 coarse sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete.						
	Slab upto 0.4sq.m. size	309	Sqm	1798.00	Rupees One Thousand Seven Hundred Ninety Eight Only	5,56,207.70	
176	Kota stone slab of 18 mm thick in riser of steps, skirting, dado and pillars laid with 10mm thick cement plaster 1:3 (1 cement : 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs including rubbing and polishing complete.						
	Slab upto 0.4sq.m. size	31	Sqm	1857.00	Rupees One Thousand Eight Hundred Fifty Seven Only	57,448.15	
177	Extra for pre finished nosing in treads of steps of Kota stone/ sand stone slabs	119	Meter	148.10	Rupees One Hundred Forty Eight and Ten Paise		17,594.28
178	Extra for Kota stone/ sand stone in treads of steps and risers using single length up to 1.05 metre .	36	Sqm	33.10	Rupees Thirty Three and Ten Paise		1,179.68

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
179	Providing VITRIFIED floor tiles of Somany/ Orient/ Nitco/ Qutone make or equivalent of approved quality of specified size, shape and thickness not less than 18mm on floors, skirting, risers and treads of steps over 15 mm thick base of cement mortar in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with Fix-A-Tile (Choksey/Sika/Pidilite/Rouf) / white cement slurry mixed with approved pigment to match shade of tiles, mixed with approved pigment to match the shade of the tiles, complete at all levels as specified and directed. (Cement plastering to be measured and paid separately). (Coloured pigment should be in conformity with colour of tiles and as approved and directed by the Department)						
	Regular range	12	Sqm	1773.00	Rupees One Thousand Seven Hundred Seventy Three Only	20,956.86	
180	Providing Ceramic Tiles of Somany/ Orient/ Nitco/ Qutone make or equivalent of approved quality, size, shape and thickness not less than 8 mm on floors, skirting, treads and risers of steps over cement mortar bed 15 mm thick in prop. 1:3 (1 cement : 3 coarse sand) including cutting where necessary finished with flush pointing with fix-A Tile Choksey/ Sika/ Pidilite/ Rouf/ White cement slurry mixed with approved pigment to match the shade of tiles, complete at all levels as specified and directed (cement plastering to be measured and paid separately).						
	Normal range (sizes 300mmx300mm and above)						
	Regular	735	Sqm	1014.00	Rupees One Thousand Fourteen Only	7,45,302.17	
SUB HEAD-IX :- FINISHING WORK							
181	10 mm thick Cement plaster in single coat on fair side of brick/concrete walls for interior plastering up to 1st floor level including arises or rounded angles not exceeding 80mm girth and finished even and smooth including curing complete as directed.						
	In cement mortar 1:4	8	Sqm	193.00	Rupees One Hundred Ninety Three Only	1,521.61	
182	15 mm thick Cement plaster in single coat on rough side of single or half brick wall for interior plastering up to 1st floor level including arises, internal rounded angles, not exceeding 80mm girth and finished even and smooth including curing complete as directed.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	In cement mortar 1:4	969	Sqm	235.00	Rupees Two Hundred Thirty Five Only	2,27,760.12	
183	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	339	Sqm	227.35	Rupees Two Hundred Twenty Seven and Thirty Five Paise		77,014.36
184	20 mm thick Cement plaster on rough side in two coats (backing coat 15 mm and finishing coat 5mm thick) on single or half brick walls for interior plastering up to 1st floor level including arises, internal rounded angles, chamfers and / or rounded angles not exceeding 80mm in girth and finished even and smooth including curing complete as directed.						
	In cement mortar 1:4	497	Sqm	323.00	Rupees Three Hundred Twenty Three Only	1,60,586.56	
185	Providing two coats of Birla White Wall Care Putty (Water Resistant White Cement based putty for concrete/ mortar walls and ceiling both internal and external) after removing all loosely adhering material from the wall surface with the help of emery stone, putty blade or wire brush and moistening the wall with sufficient quantity of clean water as specified and directed by the department. (Total thickness of two coats is maximum 1.5mm)						
	For 1.0mm thick application	1316	Sqm	492.00	Rupees Four Hundred Ninety Two Only	6,47,385.41	
186	Supplying and laying of permanent wall finish for interior and exterior walls with surface coating of Heritage Surface Texture of Bakelite Hylam Limited for all types of buildings at all levels as specified and directed by the department.						
	Roller Coat (Application by Special Roller) (RCSR)	497	Sqm	433.00	Rupees Four Hundred Thirty Three Only	2,15,275.48	
187	Painting with synthetic enamel paint, having VOC (Volatile Organic Compound) content less than 150 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.						
	Two coats.	1832	Sqm	121.55	Rupees One Hundred Twenty One and Fifty Five Paise		2,22,633.41

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
188	Distemping with oil bound washable distemper of approved brand and manufacture to give an even shade :						
	New work (two or more coats) over and including water thinnable priming coat with cement primer	1645	Sqm	153.45	Rupees One Hundred Fifty Three and Forty Five Paise		2,52,391.49
189	Providing 18mm thick Granite slab on vertical face of pedestal laid over 10 mm thick base of cement mortar in prop. 1:3 (1 cement : 3 coarse sand) jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete as directed with approved quality of shade.						
	Deluxe Quality	3264	Sqm	6204.00	Rupees Six Thousand Two Hundred Four Only	2,02,52,368.62	
SUB HEAD-X :- ALUMINIUM WORK							
190	Providing and fixing aluminum work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt etc. Aluminum sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminum snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and paneling to be paid for separately) :						
	For fixed portion						
	Powder coated aluminum (minimum thickness of powder coating 50 micron)	216	Kg	456.30	Rupees Four Hundred Fifty Six and Thirty Paise		98,560.80
191	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of PVC / neoprene gasket required (Fittings shall be paid for separately).						
	Powder coated aluminum (minimum thickness of powder coating 50 micron)	441	Kg	546.35	Rupees Five Hundred Forty Six and Thirty Five Paise		2,41,186.21

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
192	Providing and fixing glazing in aluminum door, windows, ventilator shutters and partitions etc. with PVC/ neoprene gasket etc. complete as per the architectural drawings and the directions of the Engineer-in-Charge. (Cost of aluminum snap beading shall be paid in basic item).						
a)	With float glass panes of 4.0mm thickness	88	Sqm	999.60	Rupees Nine Hundred Ninety Nine and Sixty Paise		88,254.68
b)	With float glass panes of 5.50 mm thickness		Sqm	1296.40	Rupees One Thousand Two Hundred Ninety Six and Forty Paise		0.00
193	Filling the gap in between aluminum frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.						
	Upto 5mm depth and 5 mm width	53	Meter	79.45	Rupees Seventy Nine and Forty Five Paise		4,204.49
SUB HEAD - XI - WATER PROOFING WORK							
194	Providing and laying integral cement based treatment for water proofing on horizontal surface at all depth below ground level for under ground structures as directed by Engineer-in- Charge and consisting of : (i) 1st layer of 22 mm to 25 mm thick approved and specified rough stone slab over a 25 mm thick base of cement mortar 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound conforming to IS:2645 in the recommended proportion over the leveling course (leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound. (ii) 2nd layer of 25 mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions. (iii) Finishing top with stone aggregate of 10 mm to 12 mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer.						
	For horizontal surface Using rough kota stone.	769	Sqm	1353.70	Rupees One Thousand Three Hundred Fifty Three and Seventy Paise		10,41,245.73

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
195	Providing and laying integral cement based treatment for water proofing on the vertical surface by fixing specified stone slab 22 mm to 25mm thick with cement slurry mixed with water proofing compound conforming to IS:2645 in recommended proportions with a gap of 20mm (minimum) between stone slabs and the receiving surfaces and filling the gaps with neat cement slurry mixed with water proofing compound and finishing the exterior of stone slab with cement mortar 1:3 (1 cement : 3 coarse sand) 20mm thick with neat cement punning mixed with water proofing compound in recommended proportion complete at all levels and as directed by Engineer-in-charge :						
	For vertical surface two coats Using rough Kota stone	456	Sqm	1738.00	Rupees One Thousand Seven Hundred Thirty Eight Only		7,92,814.77
196	Providing and placing in position suitable PVC water stops conforming to IS:12200 between two RCC members and fixed to the reinforcement with binding wire before pouring concrete etc complete.						
	Serrated with central bulb (225mm wide,8-11mm thick)	287	Meter	283.20	Rupees Two Hundred Eighty Three and Twenty Paise		81,344.95
197	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:						
	(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment.						
	(b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.						
	(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin-charge.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep.						
	(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge :						
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	58	Sqm	1398.50	Rupees One Thousand Three Hundred Ninety Eight and Fifty Paise		80,826.31
198	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge), including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design :						
	In 75 x75 mm deep chase	75	Meter	237.25	Rupees Two Hundred Thirty Seven and Twenty Five Paise		17,726.13
199	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	11	Each	244.05	Rupees Two Hundred Forty Four and Five Paise		2,562.53
	SUB HEAD-XII :- ROAD WORKS :						
200	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres.	3049	Sqm	156.75	Rupees One Hundred Fifty Six and Seventy Five Paise		4,77,891.56
201	Extra for compaction of earth work in embankment under optimum moisture conditions to give at least 95% of the maximum dry density (proctor density).	2896	Cum	18.20	Rupees Eighteen and Twenty Paise		52,712.89
202	Supplying and stacking at site						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a)	90 mm to 45 mm size stone aggregate	458	Cum	1840.05	Rupees One Thousand Eight Hundred Forty and Five Paise		8,41,822.88
b)	63 mm to 45 mm size stone aggregate	457	Cum	1535.65	Rupees One Thousand Five Hundred Thirty Five and Sixty Five Paise		7,02,271.94
c)	Stone screening 13.2 mm nominal size (type A)	229	Cum	1727.65	Rupees One Thousand Seven Hundred Twenty Seven and Sixty Five Paise		3,95,199.94
d)	Stone screening 11.2 mm nominal size (type A)	229	Cum	1978.50	Rupees One Thousand Nine Hundred Seventy Eight and Fifty Paise		4,52,581.88
e)	Moorum	153	Cum	807.80	Rupees Eight Hundred Seven and Eighty Paise		1,23,593.40
203	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking, rolling with 3 wheeled road/vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening/binding material to fill up interstics of coarse aggregate watering and compacting to the required density.	457	Cum	767.25	Rupees Seven Hundred Sixty Seven and Twenty Five Paise		3,50,873.02
204	Providing and laying design mix cement concrete of M-30 grade, in roads/ taxi tracks/ runways, using cement content as per design mix, using coarse sand and graded stone aggregate of 40 mm nominal size in appropriate proportions as per approved & specified design criteria, providing dowel bars with sleeve/ tie bars wherever required, laying at site, spreading and compacting mechanically by using needle and surface vibrators, levelling to required slope/ camber, finishing with required texture, including steel form work with sturdy M.S. channel sections, curing, making provision for contraction/ expansion, construction & longitudinal joints (10 mm wide x 50 mm deep) by groove cutting machine, providing and filling joints with approved joint filler and sealants, complete all as per direction of Engineer-in-charge (Item of joint fillers, sealants, dowel bars with sleeve/ tie bars to be paid separately).						
	Note:- Cement content considered in M-30 is @ 340 kg/cum. Excess/ less cement used as per design mix is payable/ recoverable separately						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Cement concrete prepared with batch mixing machine	457	Cum	8752.35	Rupees Eight Thousand Seven Hundred Fifty Two and Thirty Five Paise		40,02,559.06
205	Extra for providing and mixing hardening compound of approved quality as per manufacturer's specification in cement concrete.	3110	litre	50.85	Rupees Fifty and Eighty Five Paise		1,58,118.08
206	Providing and fixing in position pre-moulded joint filler in expansion joints.	33536	per cm depth per cm width per metre length	3.10	Rupees Three and Ten Paise		1,03,962.38
207	Providing and laying in position bitumen hot sealing compound for expansion joints etc.						
	Using grade 'A' sealing compound.	33536	per cm depth per cm width per metre length	3.30	Rupees Three and Thirty Paise		1,10,669.63
	PAINTING ROAD / RUNWAY MARKING						
208	Painting runway/taxi track/apron marking with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the Engineer-in-charge i/c cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete						
	New work (Two or more coats)	61	Sqm	150.85	Rupees One Hundred Fifty and Eighty Five Paise		9,198.08

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
209	Chequerred precast cement concrete tiles 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed with pigment to match the shade of tiles, including rubbing and cleaning etc. complete, on 20mm thick bed of cement mortar 1:4 (1 cement: 4 coarse sand).						
b)	Medium shade pigment using 50% white cement 50% Grey cement	146	Sqm	1104.25	Rupees One Thousand One Hundred Four and Twenty Five Paise		1,61,595.95
210	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M-30 grade made by block making machine with strong vibratory compaction and of approved size and design/shape laid in required colour and pattern over and including 50 mm thick compacted of coarse sand, filling the joints with coarse sand etc. all complete as per direction of engineer-in-charge.	183	Sqm	859.35	Rupees Eight Hundred Fifty Nine and Thirty Five Paise		1,57,196.60
211	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement in position to the required line , level and curvature jointed with cement mortar 1:3 (1 cement : 3 coarse sand) including making joints with or without grooves (thickness of joints except sharp curve shall not be more than 5mm) including making drainage opening wherever required complete etc. as per direction of engineer-in-charge (length of finished kerb edging shall be measured for payment).(Precast C.C. kerb stone shall be approved by engineer-in-charge).	27	Cum	8376.15	Rupees Eight Thousand Three Hundred Seventy Six and Fifteen Paise		2,29,831.09
212	Providing and fixing 10x10x7.50 cm Granite stone block hand cut and chisel dressed on top, for paving in floors, drains etc. laid over 20mm thick base mortar 1:4 (1 cement : 4 coarse sand) with joints 10mm wide filled with same mortar including ruled pointing etc. complete as per direction of engineer-in-charge.	183	Sqm	1897.95	Rupees One Thousand Eight Hundred Ninety Seven and Ninety Five Paise		3,47,182.50
213	Providing, Supplying, fitting, fixing and laying of dressed stone block walling and tile slab (Cherra/local stone block) laid on 25mm thick base cement mortar 1:3 and jointed with grey cement slurry including clearing rubbing etc. complete as directed.						
	Size 300mm x 150mm x 75mm	73	Sqm	2855.00	Rupees Two Thousand Eight Hundred Fifty Five Only	2,08,900.35	

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
214	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	69	Sqm	1933.75	Rupees One Thousand Nine Hundred Thirty Three and Seventy Five Paise		1,33,428.75
215	Providing and laying gang saw cut 30 mm thick, mirror polished pre moulded and pre polished machine cut granite stone of required size and shape of approved shade, colour and texture in footpath, flooring in road side plazas and similar locations, laid over 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) including grouting the joints with white cement mixed with matching pigment, epoxy touch ups etc. complete as per direction of Engineer-in-Charge.						
	With granite stone of area less than 0.50 sqm.	122	Sqm	4006.85	Rupees Four Thousand Six and Eighty Five Paise		4,88,635.36
216	Providing and fixing Glass mosaic tiles on finished plain wall surface of size 20 mm x 20 mm x 4 mm in all colour, design , fixing in customize design as per direction of Engineer-in- Charge. The glass mosaic tiles to be fixed on the wall surface with the help of approved adhesive applied at the rate of 2.5 kg per sqm and grouting of the same. The rate is inclusive of all operation, material and required pattern approved by Engineer-in-Charge:	427	Sqm	3250.35	Rupees Three Thousand Two Hundred Fifty and Thirty Five Paise		13,87,671.93
SUB HEAD-XIII:- HORTICULTURE & LANDSCAPING							
217	Trenching in ordinary soil up to a depth of 60 cm including removal and stacking of serviceable materials and then disposing of surplus soil, by spreading and neatly leveling within a lead of 50 m and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or/and manure before and after flooding trench with water (excluding cost of imported earth, sludge or manure).	180	Cum	68.70	Rupees Sixty Eight and Seventy Paise		12,366.00
218	Supplying and stacking of good earth at site including royalty and carriage up to 1 km (earth measured in stacks will be reduced by 20% for payment).	1198	Cum	469.50	Rupees Four Hundred Sixty Nine and Fifty Paise		5,62,509.83

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
219	Supplying and stacking at site dump manure from approved source, including carriage up to 1 km (manure measured in stacks will be reduced by 8% for payment) :						
a)	Screened through sieve of I.S. designation 20 mm	300	Cum	229.95	Rupees Two Hundred Twenty Nine and Ninety Five Paise		68,876.00
b)	Screened through sieve of I.S. designation 16 mm	300	Cum	262.05	Rupees Two Hundred Sixty Two and Five Paise		78,490.79
c)	Screened through sieve of I.S. designation 4.75 mm	300	Cum	287.75	Rupees Two Hundred Eighty Seven and Seventy Five Paise		86,188.61
220	Fine dressing of the ground	5991	Sqm	3.25	Rupees Three and Twenty Five Paise		19,469.19
221	Spreading of sludge, dump manure and / or good earth in required thickness as per direction of Officer-in-charge (Cost of sludge, dump manure and / or good earth to be paid separately).	899	Cum	46.15	Rupees Forty Six and Fifteen Paise		41,469.37
222	Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge..	899	Cum	32.10	Rupees Thirty Two and Ten Paise		28,844.35
223	Grassing with selection No.1 grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the good earth if needed shall be paid for separately).						
a)	In rows 5 cm apart in both directions	2995	Sqm	15.55	Rupees Fifteen and Fifty Five Paise		46,576.29
224	Supplying & Stacking of Selection No.1/doob grass at site fresh & free from weeds having proper roots in green including loading, unloading, carriage and all taxes paid etc.and as per direction of officer in charge.	2995	Sqm	50.80	Rupees Fifty and Eighty Paise		1,52,159.21
225	Digging holes in ordinary soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1 part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any, with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately) :						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a)	Holes 60 cm dia, and 60 cm deep.	45	Each	39.95	Rupees Thirty Nine and Ninety Five Paise		1,797.75
b)	Holes 45 cm dia, and 45 cm deep.	30	Each	17.10	Rupees Seventeen and Ten Paise		513.00
226	Providing and fixing M.S. flat iron tree guard 60 cm dia and 2 m high, above ground consisting 4 nos 25 x 6 mm, 2.25 m long and 8 nos 25 x 3 mm 2 m long verticals M.S. flats, riveted to 3 nos 25 x 6 mm M.S. flat iron rings in two halves, fixing together at site with required six numbers of 8 mm dia. and 30 mm long bolts, including painting two coats with synthetic enamel paint of approved brand and manufacture over a coat of primer. One name plate of 1 mm thick M.S. sheet of size 250x100 mm shall be welded to the tree guard near the middle height and lettered CPWD / PWD/ any other approved name. The tree guard shall be suitably fixed to the ground by embedding four legs of tree guard in pits of suitable dia and to a depth of 25 cm, refilling the pits with soil and ramming, complete in all respect as per satisfaction and direction of Officer-in-charge.	45	Each	3952.05	Rupees Three Thousand Nine Hundred Fifty Two and Five Paise		1,77,842.25
227	Providing and fixing M. S. tree guard 45 cm square in plan, height 1.20 metre above ground level and 0.40 metre below ground level. The vertical members shall consist of four nos angle iron of size 25x25x3 mm, 1.8 m long, one at each corner and 8 nos flat iron of size 25x3 mm, 1.2 m long. The vertical members shall be welded to 4 nos 25x6 mm M. S. flats placed horizontally around the vertical member of the cage. One name plate of 1 mm thick M.S. sheet of size 250x100 mm shall be welded to the tree guard near the middle height and lettered CPWD / PWD/ any other approved name. The tree guard shall be fixed to the ground by making suitable holes and by embedding four corners leg in the ground, including refilling the earth, compaction etc. complete. The tree guard shall be painted with two or more coats of synthetic enamel paint of approved brand and manufacture over a coat of primer, complete in all respect.	30	Each	1949.15	Rupees One Thousand Nine Hundred Forty Nine and Fifteen Paise		58,474.50
228	Providing Circular Cement Concrete pots of specified size, cast with cement concrete of nominal mix 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 6 mm nominal size), reinforced with 7 nos (3 nos horizontal & 4 nos vertical "U" shape) M.S. wires of 3.5 mm dia as per design, including required form work, finishing with cement punning on exposed surface, curing for specified period and stacking in required rows & height, all complete as per direction of Officer-in-charge.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Top inside dia 35 cm, outer bottom dia 25 cm, total height 35 cm with wall thickness of 25.4 mm	60	Each	215.50	Rupees Two Hundred Fifteen and Fifty Paise		12,930.00
229	Providing Square Cement Concrete pots of specified size, cast with cement concrete of nominal mix 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm nominal size), reinforced with 7 nos. (3 nos horizontal & 4 nos vertical "U" shape) M.S. wires of 3.5 mm dia as per design, including required form work, finishing with cement punning on exposed surface, curing for specified period and stacking in required rows & height , all complete as per direction of Officer-in-charge.						
	Top inner width 35 cm, outer bottom width 25 cm, total height 35 cm and wall thickness 25.4 mm	60	Each	246.30	Rupees Two Hundred Forty Six and Thirty Paise		14,778.00
230	GROUND COVERS PLANTS						
i)	Providing and Displaying of Wadelia trilobata plant,full of leaves in 15 cm size of Poly bags & as per direction of the officer-in-charge.	15	Each	15.40	Rupees Fifteen and Forty Paise		231.00
ii)	Providing and Displaying of Duranta Golden plant, having ht.15 to 20 cm bushy shape plant with fresh and healthy leaves in 20 cm size of Earthen Pot / Plastic Pot & as per direction of the officer-in-charge..	23	each	21.55	Rupees Twenty One and Fifty Five Paise		484.88
iii)	Providing and Displaying of Iresine herbstii plant, of height 20-30 cm. full of branches well developed in 15 cm size of Earthen Pot / Plastic Pot & as per direction of the officer-in-charge.	23	Each	20.50	Rupees Twenty and Fifty Paise		461.25
231	TREE PLANTS						
i)	Supply and stacking of Alstonia scholaris plant of height 150-165 cm. in bag of size 25 cm as per direction of the officer-in-charge.	30	Each	65.00	Rupees Sixty Five Only		1,950.00
ii)	Supply and stacking of Bauhinia blakeana (Kachnar) plant of height 120-150 cm. in big poly bags of size 25 cm as per direction of the officer-in-charge.	45	Each	80.00	Rupees Eighty Only		3,600.00
iii)	Supply and stacking of Bombax ceiba plant of height 150-165 cm. in big poly bags of size 25 cm as per direction of the officer-in-charge.	23	Each	70.00	Rupees Seventy Only		1,575.00
iv)	Supply and stacking of Grevillea robusta (Silver Oak) plant of height 150-165 cm. in big poly bags of size 25 cm as per direction of the officer-in-charge.	30	Each	50.00	Rupees Fifty Only		1,500.00
v)	Supply and stacking of Kigelia pinnata plant of height 150-165 cm. in big poly bags of size 25 cm as per direction of the officer-in-charge.	30	Each	80.00	Rupees Eighty Only		2,400.00
vi)	Supply and stacking of Melia azedarach plant of height 120-135 cm. in big poly bag of size 25cm as per direction of the officer-in-charge.	38	Each	45.00	Rupees Forty Five Only		1,687.50
vii)	Supply and stacking of Michelia champa (Golden Champa)plant of height 90-105 cm. in earthen pots of size 25 cm as per direction of the officer-in-charge.	23	Each	90.00	Rupees Ninety Only		2,025.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
viii)	Supply and stacking of Putranjiva roxburghii plant of height 90-105 cm. in big polybag of size 25 cm as per direction of the officer-in-charge.	23	Each	45.00	Rupees Forty Five Only		1,012.50
232	SHRUBS						
i)	Supply and stacking of plant Jatropha multifida (red colour) of height 60-75 cm. multibranching in p.bag of size 25 cm as per direction of the officer-in-charge.	53	Each	45.00	Rupees Forty Five Only		2,362.50
ii)	Supply and stacking of plant Calliandra hybrida of height 105-120 cm., well branched, bushy in big size HDPE bag as per direction of the officer-in-charge.	75	Each	90.00	Rupees Ninety Only		6,750.00
iii)	Supply and stacking of plant Gardenia jasminoides of height 45-60 cm. with 3-4 branches in earthen pots of size 20 cm as per direction of the officer-in-charge.	113	Each	50.00	Rupees Fifty Only		5,625.00
iv)	Supply and stacking of plant Nerium oleander (kaner) of height 45-60 cm. with 3-4 branches in poly bags of size 20 cm as per direction of the officer-in-charge.	120	Each	30.00	Rupees Thirty Only		3,600.00
233	CREEPER PLANTS						
i)	Supply and stacking of Clerodendrum splendens plant of height 30 cm to 45 cm. in 20 cm size of Earthen pots / Plastic pots & as per direction of the officer-in-charge.	38	Each	30.00	Rupees Thirty Only		1,125.00
ii)	Supply and stacking of Jasminum grandiflorum (chameli) plant of height 30 cm to 45 cm. in 20 cm size of Earthen pots / Plastic pots & as per direction of the officer-in-charge. .	45	Each	30.00	Rupees Thirty Only		1,350.00
EXTERNAL DEVELOPMENT WORKS SUB HEAD TOTAL						4,38,70,974.36	2,85,72,011.02
PLUMBING WORKS							
Sanitary Fixtures & C.P Brass Fittings							
234	Providing fitting and fixing Vitreous china wall hang water closet (European type W.C pan 400mm high) with seat and lead, CP brass hinges and rubber buffers, CI/MS brackets, 40 mm dia flush band with fittings including painting of fittings and brackets, required. (Flushing Cistern to be paid separately) White.						
	High	67	Each	20870.00	Rupees Twenty Thousand Eight Hundred Seventy Only	13,98,290.00	
235	Supplying, fitting and fixing concealed cistern with all internal fittings with CI brackets including fitting and fixing standard size CP flush pipe, union clamps etc. compete as directed and specified (pipes will be measured separately)						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	High	67	Each	14380.00	Rupees Fourteen Thousand Three Hundred Eighty Only	9,63,460.00	
236	Providing fitting and fixing vitreous china flat back type lipped front urinal basin of with automatic flushing cistern with standard flush pipe and CP brass spreader and brass unions, etc. complete including painting of fittings and brackets, cutting and making good the walls & floors wherever required. White.						
	High	36	Each	28127.00	Rupees Twenty Eight Thousand One Hundred Twenty Seven Only	10,12,572.00	
237	Supplying fitting and fixing glass division plate of Jaquar make including fitting and fixing compete as directed and specified.	42	Each	18429.00	Rupees Eighteen Thousand Four Hundred Twenty Nine Only	7,74,018.00	
238	Providing fitting & fixing stainless steel kitchen sink of Parryware make with CI/MS brackets, C.P. brass chain with rubber plug, PVC waste pipe etc. complete including painting the fittings, cutting & making good the walls wherever required. (Sink cock, stop cocks, waste coupling are to be paid separately).						
a	Sink bowl (24 in. x 18 in)	4	Each	5365.00	Rupees Five Thousand Three Hundred Sixty Five Only	21,460.00	
b	Sink with drain board (37 in. x 18 in)	6	Each	5833.00	Rupees Five Thousand Eight Hundred Thirty Three Only	34,998.00	
239	Supplying fitting and fixing wall mounted shower panel of Jaquar make complete with thermostatic mixer, 3 round body showers, hand shower, rain shower with extended shower arm and cast aluminium body as directed.						
	High	96	Each	82008.00	Rupees Eighty Two Thousand Eight Only	78,72,768.00	
240	Supplying fitting and fixing wall mounted / floor mounted shower enclosure of Jaquar make of following trade name complete as directed.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	High	96	Each	37951.00	Rupees Thirty Seven Thousand Nine Hundred Fifty One Only	36,43,296.00	
Soil, Waste, Vent & Rain Water Pipes							
241	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering. All work up to plinth.						
a	1:2:4 (1cement : 2 Coarse sand : 4 graded stone aggregate 20 mm nominal size)	3	Cum	6788.6	Rupees Six Thousand Seven Hundred Eighty Eight and Sixty Paise		20,365.80
242	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1mx1mx400micron, finished with 12mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	36	Each	244.05	Rupees Two Hundred Forty Four and Five Paise		8,785.80
243	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	36	Each	47.25	Rupees Forty Seven and Twenty Five Paise		1,701.00
244	Providing and fixing soil, waste and vent pipes.						
a	100 mm dia.						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	3060	Metre	1051.75	Rupees One Thousand Fifty One and Seventy Five Paise		32,18,355.00
b	75 mm dia.						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	860	Metre	859.55	Rupees Eight Hundred Fifty Nine and Fifty Five Paise		7,39,213.00
245	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts & nuts complete.						
a	100 mm dia.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	27	Each	548.60	Rupees Five Hundred Forty Eight and Sixty Paise		14,812.20
246	Providing and fixing plain bend of required degree.						
a	100 mm dia.						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	467	Each	343.90	Rupees Three Hundred Forty Three and Ninety Paise		1,60,601.30
b	75 mm dia.						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	75	Each	242.95	Rupees Two Hundred Forty Two and Ninety Five Paise		18,221.25
247	Providing and fixing heel rest sanitary bend						
a	100 mm dia.						
	Sand cast iron S&S as per IS - 3989	20	Each	432.20	Rupees Four Hundred Thirty Two and Twenty Paise		8,644.00
248	Providing and fixing double equal plain junction of required degree.						
a	100x100x100x100 mm						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	30	Each	718.55	Rupees Seven Hundred Eighteen and Fifty Five Paise		21,556.50
249	Providing and fixing single equal plain junction of required degree.						
a	100x100x100 mm						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	560	Each	571.35	Rupees Five Hundred Seventy One and Thirty Five Paise		3,19,956.00
b	75x75x75 mm						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	130	Each	316.55	Rupees Three Hundred Sixteen and Fifty Five Paise		41,151.50
250	Providing and fixing single unequal plain junction of required degree.						
a	100x100x75 mm						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	142	Each	537.90	Rupees Five Hundred Thirty Seven and Ninety Paise		76,381.80
251	Providing and fixing terminal guard.						
a	100 mm						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	116	Each	397.40	Rupees Three Hundred Ninety Seven and Forty Paise		46,098.40
b	75 mm						
	Centrifugally cast (spun) Iron S&S as per IS: 3989	53	Each	309.85	Rupees Three Hundred Nine and Eighty Five Paise		16,422.05
252	Providing and fixing shieled coupling for Hubless centrifugally cast iron pipes.						
a	100 mm dia.						
	SS 304 grade coupling with EPDM rubber gasket.	3464	Each	404.10	Rupees Four Hundred Four and Ten Paise		13,99,802.40
b	75 mm dia.						
	SS 304 grade coupling with EPDM rubber gasket.	817	Each	363.35	Rupees Three Hundred Sixty Three and Thirty Five Paise		2,96,856.95
253	Providing and fixing MS Stay clamps for sand cast iron/ centrifugally cast (spun) iron pipes of diameter.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a	100 mm dia	116	Each	126.50	Rupees One Hundred Twenty Six and Fifty Paise		14,674.00
b	75 mm dia	53	Each	78.40	Rupees Seventy Eight and Forty Paise		4,155.20
254	Providing and fixing trap of self cleansing design with screwed down or hinged with or without vent arm complete, including cost of cutting and making good the walls and floors.						
a	100 mm inlet and 100 mm outlet						
	Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	286	Each	758.65	Rupees Seven Hundred Fifty Eight and Sixty Five Paise		2,16,973.90
255	Painting sand cast iron/ centrifugally cast (spun) soil, waste, vent pipes and fittings with paint of any colour such as chocolate grey, or buff etc. over a coat of primer (of approved quality) for new work.						
a	100 mm diameter pipe	3060	Metre	64.20	Rupees Sixty Four and Twenty Paise		1,96,452.00
b	75 mm diameter pipe	860	Metre	48.85	Rupees Forty Eight and Eighty Five Paise		42,011.00
256	Providing and fixing G.I. Pipes complete with G.I. Fittings and clamps, including cutting and making good the walls etc. (Internal work)						
a	32 mm dia. nominal bore	470	Metre	529.70	Rupees Five Hundred Twenty Nine and Seventy Paise		2,48,959.00
b	40 mm dia. nominal bore	25	Metre	639.60	Rupees Six Hundred Thirty Nine and Sixty Paise		15,990.00
c	50 mm dia. nominal bore	300	Metre	786.75	Rupees Seven Hundred Eighty Six and Seventy Five Paise		2,36,025.00
257	Painting GI pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a	32 mm dia. nominal bore	470	Metre	17.05	Rupees Seventeen and Five Paise		8,013.50
b	40 mm dia. nominal bore	25	Metre	19.40	Rupees Nineteen and Forty Paise		485.00
c	50 mm dia. nominal bore	300	Metre	23.35	Rupees Twenty Three and Thirty Five Paise		7,005.00
Internal Water Supply Works							
258	Making chases up to 7.5x7.5 cm in walls including making good and finishing with matching surface after housing G.I. pipe etc.	2000	Metre	154.15	Rupees One Hundred Fifty Four and Fifteen Paise		3,08,300.00
259	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required						
a	65 mm dia	5	Each	4149.00	Rupees Four Thousand One Hundred Forty Nine Only		20,745.00
b	80 mm dia	2	Each	4842.00	Rupees Four Thousand Eight Hundred Forty Two Only		9,684.00
c	100 mm dia	2	Each	6454.00	Rupees Six Thousand Four Hundred Fifty Four Only		12,908.00
External Water Supply Works							
260	Supplying fitting and fixing CPVC Pipes with all necessary fittings of SUPREME/PRINCE/ SFMC/ FUSION brand or equivalent, in exposed or in trenches including trenching and refilling the same etc. complete as directed						
a	25 mm diameter.	100	Metre	402.00	Rupees Four Hundred Two Only	40,200.00	
b	32 mm diameter.	60	Metre	469.00	Rupees Four Hundred Sixty Nine Only	28,140.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
c	40 mm diameter.	75	Metre	545.00	Rupees Five Hundred Forty Five Only	40,875.00	
d	50 mm diameter.	75	Metre	692.00	Rupees Six Hundred Ninety Two Only	51,900.00	
e	75 mm diameter.	325	Metre	1850.00	Rupees One Thousand Eight Hundred Fifty Only	6,01,250.00	
261	Excavating trenches of required width for pipes, cables etc. including excavation for sockets and dressing of sides, ramming of bottoms, depth upto 1.5m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed, within a lead of 50m.						
a	All kinds of soil						
b	Pipes, cables etc. not exceeding 80 mm dia.	160	Metre	223.00	Rupees Two Hundred Twenty Three Only		35,680.00
262	Constructing masonry Chamber 30x30x50 cm inside, in brick work in cement mortar 1:4 (1 cement :4 coarse sand) for stop cock, with C. I. surface box 100x100 x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12mm thick, finished with a floating coat of neat cement complete as per standard design :						
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	15	Each	1582.45	Rupees One Thousand Five Hundred Eighty Two and Forty Five Paise		23,736.75

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
263	Constructing masonry Chamber 60x60x75 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :						
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	8	Each	9288.40	Rupees Nine Thousand Two Hundred Eighty Eight and Forty Paise		74,307.20
264	Constructing masonry Chamber 90x90x100 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :						
	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	1	Each	16134.15	Rupees Sixteen Thousand One Hundred Thirty Four and Fifteen Paise		16,134.15
265	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc if required will be paid separately) :						
a	80 mm dia	1	Each	6240.70	Rupees Six Thousand Two Hundred Forty and Seventy Paise		6,240.70

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
266	Providing and fixing enclosed type water meter (bulk type) conforming to IS : 2373 and tested by Municipal Board complete with bolts, nuts, rubber insertions etc. (The tail pieces if required will be paid separately) :						
a	80 mm dia nominal bore	2	Each	3576.10	Rupees Three Thousand Five Hundred Seventy Six and Ten Paise		7,152.20
267	Providing and fixing C.I. dirt box strainer for bulk type water meter with nuts, bolts, rubber insertions etc. complete conforming to IS : 2373 :						
a	80 mm dia nominal bore	2	Each	4097.90	Rupees Four Thousand Ninety Seven and Ninety Paise		8,195.80
268	Providing and laying D.I. specials of class K-12 suitable for push-on jointing as per IS : 9523 :						
a	Up to 600 mm dia	5	Quintal	17094.25	Rupees Seventeen Thousand Ninety Four and Twenty Five Paise		85,471.25
269	Providing push-on-joints to Centrifugally (Spun) Cast Iron Pipes or Ductile Iron Pipes including testing of joints and the cost of rubber gasket :						
a	100 mm dia. Pipe	25	Each	91.65	Rupees Ninety One and Sixty Five Paise		2,291.25
270	Providing and laying S&S Centrifugally Cast (Spun) / Ductile Iron Pipes conforming to IS : 8329 :						
a	100 mm dia Ductile Iron Class K-9 pipes	100	Metre	1073.50	Rupees One Thousand Seventy Three and Fifty Paise		1,07,350.00
271	Disinfecting C.I. water mains by flushing with water containing bleaching powder @ 0.5 gms per litre of water and cleaning the same with fresh water, operation to be repeated three times including getting the sample of water from the disinfected main tested in the municipal laboratory.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a	100 mm diameter C.I. pipe	100	100 M	1773.30	Rupees One Thousand Seven Hundred Seventy Three and Thirty Paise		1,77,330.00
272	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required.						
a	65 mm dia	3	Each	4149.00	Rupees Four Thousand One Hundred Forty Nine Only		12,447.00
b	80 mm dia	2	Each	4842.00	Rupees Four Thousand Eight Hundred Forty Two Only		9,684.00
Sewerage System							
273	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.						
	All kinds of soil	80	Cum	181.85	Rupees One Hundred Eighty One and Eighty Five Paise		14,548.00
274	Excavating trenches of required width for pipes, cables etc. including excavation for sockets and dressing of sides, ramming of bottoms, depth upto 1.5m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed, within a lead of 50m.						
a	All kinds of soil						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
b	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia.	290	Metre	364.20	Rupees Three Hundred Sixty Four and Twenty Paise		1,05,618.00
275	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5m, but not exceeding 3m. (Rate is over corresponding basic item for depth upto 1.5 metre).						
	Pipes, cables etc, exceeding 80mm dia but not exceeding 300mm dia	100	Metre	462.53	Rupees Four Hundred Sixty Two and Fifty Three Paise		46,253.40
276	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	20	Cum	219.65	Rupees Two Hundred Nineteen and Sixty Five Paise		4,393.00
a	Extra for every additional lift of 1.5m or part thereof in:						
b	All kinds of soil (Manhole)	80	Cum	90.40	Rupees Ninety and Forty Paise		7,232.00
277	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) all round S.W. pipes including bed concrete as per standard design.						
a	150 mm diameter	15	Metre	999.15	Rupees Nine Hundred Ninety Nine and Fifteen Paise		14,987.25
b	200 mm diameter	185	Metre	1164.80	Rupees One Thousand One Hundred Sixty Four and Eighty Paise		2,15,488.00
c	250 mm diameter	90	Metre	1346.95	Rupees One Thousand Three Hundred Forty Six and Ninety Five Paise		1,21,225.50
278	Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a	180x150 mm size P type						
b	With Sewer bricks conforming IS : 4885	12	Each	2413.65	Rupees Two Thousand Four Hundred Thirteen and Sixty Five Paise		28,963.80
279	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse1:4 (1 cement : 4 sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design :						
a	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) :						
b	With Sewer bricks conforming IS : 4885	8	Each	10915.65	Rupees Ten Thousand Nine Hundred Fifteen and Sixty Five Paise		87,325.20
280	Extra for depth for manholes :						
a	Size 90x80 cm						
b	With Sewer bricks conforming to IS : 4885	3	Metre	7533.80	Rupees Seven Thousand Five Hundred Thirty Three and Eighty Paise		22,601.40

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
281	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1 :3:6 mix (1 cement : 3 coarse sand : 6 graded 40mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design:						
282	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter confirming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :						
	With Sewer bricks conforming IS : 4885	10	Each	11033.75	Rupees Eleven Thousand Thirty Three and Seventy Five Paise		1,10,337.50
283	Extra depth for circular type manhole 0.91m internal dia (at bottom) with beyond 0.91m to 1.67m.						
	With Sewer bricks conforming IS : 4885	4	Metre	6474.15	Rupees Six Thousand Four Hundred Seventy Four and Fifteen Paise		25,896.60
284	Constructing brick masonry circular manhole 1.22m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12mm thick with cement mortar 1:3 (1 cement :3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
285	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :						
	With Sewer bricks conforming IS : 4885	3	Each	21254.90	Rupees Twenty One Thousand Two Hundred Fifty Four and Ninety Paise		63,764.70
286	Extra depth for circular type manhole 1.22m internal dia (at bottom) beyond 1.68 m to 2.29 m :						
	With Sewer bricks conforming IS : 4885	2	Metre	8402.00	Rupees Eight Thousand Four Hundred Two Only		16,804.00
287	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263 mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	84	Each	463.05	Rupees Four Hundred Sixty Three and Five Paise		38,896.20
	Storm Water Drainage System						
288	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	All kinds of soil	165	Cum	181.85	Rupees One Hundred Eighty One and Eighty Five Paise		30,005.25
289	Excavating trenches of required width for pipes, cables etc. including excavation for sockets and dressing of sides, ramming of bottoms, depth upto 1.5m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20cm in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed, within a lead of 50m.						
a	All kinds of soil						
b	Pipes, cables etc. exceeding 80mm dia but not exceeding 300mm dia.	475	Metre	364.20	Rupees Three Hundred Sixty Four and Twenty Paise		1,72,995.00
c	Pipes, cables etc, exceeding 300 mm dia but not exceeding 600 mm dia	100	Metre	568.60	Rupees Five Hundred Sixty Eight and Sixty Paise		56,860.00
290	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5m, but not exceeding 3m. (Rate is over corresponding basic item for depth upto 1.5 metre).						
a	Pipes, cables etc, exceeding 80mm dia but not exceeding 300mm dia	150	Metre	462.53	Rupees Four Hundred Sixty Two and Fifty Three Paise		69,380.10
b	Pipes, cables etc, exceeding 300 mm dia but not exceeding 600 mm dia	100	Metre	722.12	Rupees Seven Hundred Twenty Two and Twelve Paise		72,212.20
291	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	40	Cum	219.65	Rupees Two Hundred Nineteen and Sixty Five Paise		8,786.00
292	Extra for every additional lift of 1.5m or part thereof in:						
	All kinds of soil (Manhole)	165	Cum	90.40	Rupees Ninety and Forty Paise		14,916.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
293	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :						
	1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size)	17	Cum	5520.30	Rupees Five Thousand Five Hundred Twenty and Thirty Paise		93,845.10
294	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) up to haunches of S.W/RCC pipes including bed concrete as per standard design.						
a	250 mm diameter	250	Metre	861.15	Rupees Eight Hundred Sixty One and Fifteen Paise		2,15,287.50
b	300 mm diameter	225	Metre	993.65	Rupees Nine Hundred Ninety Three and Sixty Five Paise		2,23,571.25
295	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :						
a	250 mm dia. R.C.C. pipe	250	Metre	754.45	Rupees Seven Hundred Fifty Four and Forty Five Paise		1,88,612.50
b	300 mm dia. R.C.C. pipe	225	Metre	863.65	Rupees Eight Hundred Sixty Three and Sixty Five Paise		1,94,321.25
c	450 mm dia. R.C.C. pipe	100	Metre	1392.70	Rupees One Thousand Three Hundred Ninety Two and Seventy Paise		1,39,270.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
296	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1 :3:6 mix (1 cement : 3 coarse sand : 6 graded 40mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design:						
297	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter confirming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :						
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	25	Each	11038.10	Rupees Eleven Thousand Thirty Eight and Ten Paise		2,75,952.50
298	Extra depth for circular type manhole 0.91m internal dia (at bottom) with beyond 0.91m to 1.67m.						
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	5	Metre	6448.40	Rupees Six Thousand Four Hundred Forty Eight and Forty Paise		32,242.00
299	Constructing brick masonry circular manhole 1.22m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12mm thick with cement mortar 1:3 (1 cement :3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :						
b	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	5	Each	21235.65	Rupees Twenty One Thousand Two Hundred Thirty Five and Sixty Five Paise		1,06,178.25
300	Extra depth for circular type manhole 1.22m internal dia (at bottom) beyond 1.68 m to 2.29 m :						
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	2	Metre	8368.40	Rupees Eight Thousand Three Hundred Sixty Eight and Forty Paise		16,736.80
301	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263 mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	133	Each	463.05	Rupees Four Hundred Sixty Three and Five Paise		61,585.65
302	Constructing bricks masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design :						
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	40	Each	5209.10	Rupees Five Thousand Two Hundred Nine and Ten Paise		2,08,364.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
303	Extra for depth beyond 45 cm of brick masonry chamber						
	For 455x610 mm size						
304	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	5	Metre	3979.10	Rupees Three Thousand Nine Hundred Seventy Nine and Ten Paise		19,895.50
	Rain Water Harvesting						
305	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth, lead upto 50m and lift upto 1.5m, as directed by Engineer-in-Charge.						
	All kinds of soil	252	Cum	181.85	Rupees One Hundred Eighty One and Eighty Five Paise		45,826.20
306	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	62	Cum	219.65	Rupees Two Hundred Nineteen and Sixty Five Paise		13,618.30
307	Extra for every additional lift of 1.5 m or part thereof in.						
	All kinds of soil.	272	Cum	90.40	Rupees Ninety and Forty Paise		24,588.80
308	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :						
	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	9	Cum	5789.60	Rupees Five Thousand Seven Hundred Eighty Nine and Sixty Paise		52,106.40

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
309	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor five level excluding the cost of centering, shuttering, finishing & reinforcement with 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size)	9	Cum	9763.80	Rupees Nine Thousand Seven Hundred Sixty Three and Eighty Paise		87,874.20
310	Centring and shuttering including stutting, propping etc. and removal of form for:						
	Suspended floors, roofs, landings, balconies and access platform	30	Sqm	693.05	Rupees Six Hundred Ninety Three and Five Paise		20,791.50
311	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete.						
	Thermo-Mechanically Treated bars of Grade Fe-500D or More.	1080	Kg	83.50	Rupees Eighty Three and Fifty Paise		90,180.00
312	Brick work with F.P.S. bricks of class designation 75 in foundation and plinth in:						
	Cement mortar 1:6 (1 cement : 6 coarse sand)	38	Cum	6157.45	Rupees Six Thousand One Hundred Fifty Seven and Forty Five Paise		2,33,983.10
313	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS: 10910 on 12mm dia steel bar conforming to IS :1786 having minimum cross section as 23 mm x 25 mm and over all minimum length 263mm and width as 165mm with minimum 112mm space between protruded legs having 2mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and heaving manufactures permanent identification mark to be visible even after fixing " including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6: (1 cement :3 coarse sand :6 graded stone aggregate 20mm nominal size)complete as per design.	126	Each	463.05	Rupees Four Hundred Sixty Three and Five Paise		58,344.30
314	Providing and fixing in position precast RCC manhole cover and frame of required shape and approved quality.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	HD-20 circular shape 560 mm internal diameter.	9	Each	1471.50	Rupees One Thousand Four Hundred Seventy One and Fifty Paise		13,243.50
315	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer –in-charge, upto 90 metre depth below ground level.						
	All types of soil						
	400 mm dia.	180	Metre	717.20	Rupees Seven Hundred Seventeen and Twenty Paise		1,29,096.00
316	Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well casing (CM) pipe of required dia, conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer –in-charge.						
	200 mm nominal size dia.	15	Metre	1066.05	Rupees One Thousand Sixty Six and Five Paise		15,990.75
317	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS: 12818, including hire & labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer-in-charge.						
	200 mm nominal size dia.	165	Metre	1135.80	Rupees One Thousand One Hundred Thirty Five and Eighty Paise		1,87,407.00
318	Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	11	Cum	1326.55	Rupees One Thousand Three Hundred Twenty Six and Fifty Five Paise		14,592.05

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
319	Supplying, filling, spreading & levelling gravels of size range 5 mm to 10 mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	11	Cum	1326.55	Rupees One Thousand Three Hundred Twenty Six and Fifty Five Paise		14,592.05
320	Supplying, filling, spreading & levelling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer, for all leads & lifts, all complete as per direction of Engineer –in-charge.	11	Cum	1326.55	Rupees One Thousand Three Hundred Twenty Six and Fifty Five Paise		14,592.05
321	Gravel packing in tubewell construction in accordance with IS: 4097, including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineer-in-charge.	18	Cum	1497.70	Rupees One Thousand Four Hundred Ninety Seven and Seventy Paise		26,958.60
322	Development of tube well in accordance with IS : 2800 (part I) and IS: 11189, to establish maximum rate of usable water yield without sand content (beyond permissible limit), with required capacity air compressor, running the compressor for required time till well is fully developed, measuring yield of well by "V" notch method or any other approved method, measuring static level & draw down etc. by step draw down method, collecting water samples & getting tested in approved laboratory, i/c disinfection of tubewell, all complete, including hire & labour charges of air compressor, tools & accessories etc., all as per requirement and direction of Engineer-in-charge.	60	Hours	857.60	Rupees Eight Hundred Fifty Seven and Sixty Paise		51,456.00
323	Providing and fixing suitable size threaded mild steel cap or spot welded plate to the top of bore well housing/ casing pipe, removable as per requirement, all complete for borewell of:						
	200 mm dia	3	Each	280.95	Rupees Two Hundred Eighty and Ninety Five Paise		842.85
324	Providing and fixing M.S. clamp of required dia to the top of casing/ housing pipe of tubewell as per IS: 2800 (part I), including necessary bolts & nuts of required size complete.						
	200 mm clamp.	3	Each	1691.15	Rupees One Thousand Six Hundred Ninety One and Fifteen Paise		5,073.45

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	PLUMBING WORKS SUB HEAD TOTAL					1,64,83,227.00	1,25,43,834.35
	FIRE FIGHTING WORKS						
	Water Supply, Drainage Pumps & Water Treatment Equipments						
325	Providing, laying, testing & commissioning of 'B' class heavy duty G.I. pipe conforming to IS 1239 including welding, fittings like elbows, tees, flanges, tapers, nuts, bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :						
a	50 mm dia	20	Metre	859.00	Rupees Eight Hundred Fifty Nine Only		17,180.00
b	65 mm dia	35	Metre	1076.00	Rupees One Thousand Seventy Six Only		37,660.00
c	80 mm dia	45	Metre	1252.00	Rupees One Thousand Two Hundred Fifty Two Only		56,340.00
d	100 mm dia	30	Metre	1627.00	Rupees One Thousand Six Hundred Twenty Seven Only		48,810.00
326	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :						
a	40 mm dia	6	Each	3509.00	Rupees Three Thousand Five Hundred Nine Only		21,054.00
b	50 mm dia	10	Each	3671.00	Rupees Three Thousand Six Hundred Seventy One Only		36,710.00
c	65 mm dia	10	Each	4149.00	Rupees Four Thousand One Hundred Forty Nine Only		41,490.00
d	80 mm dia	5	Each	4842.00	Rupees Four Thousand Eight Hundred Forty Two Only		24,210.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
e	100 mm dia	2	Each	6854.00	Rupees Six Thousand Eight Hundred Fifty Four Only		13,708.00
327	Providing, installation, testing and commissioning of non-return valve of following sizes conforming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required						
a	40 mm dia	6	Each	5646.00	Rupees Five Thousand Six Hundred Forty Six Only		33,876.00
b	50 mm dia	6	Each	5646.00	Rupees Five Thousand Six Hundred Forty Six Only		33,876.00
c	65 mm dia	6	Each	6274.00	Rupees Six Thousand Two Hundred Seventy Four Only		37,644.00
328	Providing, installation, testing and commissioning of stainless steel Y-strainer fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.						
	100 mm dia.	2	Each	6450.00	Rupees Six Thousand Four Hundred Fifty Only		12,900.00
Fire Fighting System							
329	Supplying, installation, testing and commissioning of Electric driven Main Fire Pump suitable for automatic operation and consisting of following, complete in all respects, as required :						
	Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520.						
	Suitable HP Squirrel cage induction motor, TEFC, synchronous speed 1500 RPM, suitable for operation on 415 volts, 3 phase 50 Hz, AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	M.S. fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required.						
	Suitable cement concrete foundation duly plastered with anti vibration pads.						
	2850 LPM at 88 m Head	2	Set	450751.00	Rupees Four Lac Fifty Thousand Seven Hundred Fifty One Only		9,01,502.00
330	Supplying, installation, testing and commissioning of diesel engine driven main fire pump suitable for automatic operation and consisting of following, complete in all respects, as required : (Diesel Driven Pump)						
	Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520.						
	Suitable HP, 1500 RPM water cooled with radiator, diesel engine conforming to relevant IS standard complete with auto starting mechanism, 12 /24 volts electric starting equipment, diesel tank, exhaust pipe extended upto 10 m outside pump house duly insulated with 50 mm thick glass wool with 1.0 mm thick aluminium sheet cladding, residential silencer, instruments and protection as per standard specification, stop solenoid for auto stop in the event of fault with audio indications, painted with post office red colour etc. as required.						
	M.S. fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required.						
	Suitable cement concrete foundation duly plastered with anti vibration pads.						
331	2850 LPM at 88 m Head	1	Set	683155.00	Rupees Six Lac Eighty Three Thousand One Hundred Fifty Five Only		6,83,155.00
	Supplying, installation, testing and commissioning of electric driven pressurisation pump suitable for automatic operation and consisting of following, complete in all respects, as required : (Jockey Pump)						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Horizontal type, multistage, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS : 1520.						
	Suitable HP Squirrel cage induction motor, TEFC, synchronous speed 1500 RPM, suitable for operation on 415 volts, 3 phase 50 Hz, AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.						
	M.S. fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required.						
	Suitable cement concrete foundation duly plastered with anti vibration pads.						
	180 LPM at 88 m Head	2	Set	126235.00	Rupees One Lac Twenty Six Thousand Two Hundred Thirty Five Only		2,52,470.00
332	Fabrication, supply, Insallation testing & commissioning of Electrical control panel of cubical construction, floor mounted type, fabricated out of 2mm thick CRCA sheet, compartmentalised with hinged lockable doors, dust and vermin proof, powder coated of approved shade after 7 tank treatment process, cable alley, interconnection with suitable size copper conductor cable/solid copper strip, having switchgears and accessories, mountings and internal wiring, earth terminals, numbering etc. complete in all respect, suitable for main fire pump, pressurisation pump & diesel pump set complete as per CPWD pecification with following in coming and Outgoings, suitable for operation on 415V, 3 phase, 50Hz Ac Supply with enclosure protection class IP 42 as required :						
	Incomings						
	800A, 50kA 4 Pole MCCB, Ics=100% Icu Rating Digital Voltmeter 0-500V with selector switch Ammeter (0-800 A) with selector swtich & CTs etc. LED type RYB phase indicating lamps, ON, OFF, trip indicating lamps Set of Copper Bus Bar 800Amps						
	Outgoings						
	(Note : All outgoing feeders for pumps should have digital Ammeter with selector switches, and LED type ON, OFF, trip indicating lamps)						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Main Fire Pumps						
	250 Amp, 50kA TPN MCCB, Ics=100% Icu, with fully automatic Star/Delta starter suitable for 100 to 125 hp pump with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, to/manual/OFF operation. - 2 sets						
	Jockey Pump						
	125 Amp, 50kA TPN MCCB, Ics=100% Icu, with Suitable HP fully automatic Star/Delta starter with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation. - 2 sets						
	Diesel Engine Control						
	Control for diesel engine comprising - Automatic/Manual selector switch & 3 attempts 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						
	Designing, Supply, 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	1	Set	575711.00	Rupees Five Lac Seventy Five Thousand Seven Hundred Eleven Only		5,75,711.00
333	Providing laying, testing & commissioning of 'C' class heavy duty MS Pipe conforming to IS 1239/3589 i/c fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. in ground including welding, excavation & providing cement concrete blocks as supports, anticorrosive treatment with coaltar/asphalt tape as per IS 10221, refilling the trench etc. of following sizes complete as required.						
	150 mm. Dia	900	Metre	2376.00	Rupees Two Thousand Three Hundred Seventy Six Only		21,38,400.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
334	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :						
a	25 mm dia	4960	Metre	471.00	Rupees Four Hundred Seventy One Only		23,36,160.00
b	32 mm dia	365	Metre	527.00	Rupees Five Hundred Twenty Seven Only		1,92,355.00
c	40 mm dia	1285	Metre	651.00	Rupees Six Hundred Fifty One Only		8,36,535.00
d	50 mm dia	980	Metre	787.00	Rupees Seven Hundred Eighty Seven Only		7,71,260.00
e	65 mm dia	485	Metre	1004.00	Rupees One Thousand Four Only		4,86,940.00
f	80 mm dia	810	Metre	1122.00	Rupees One Thousand One Hundred Twenty Two Only		9,08,820.00
g	100 mm dia	545	Metre	1499.00	Rupees One Thousand Four Hundred Ninety Nine Only		8,16,955.00
h	150 mm dia	660	Metre	2064.00	Rupees Two Thousand Sixty Four Only		13,62,240.00
i	200 mm dia (wall thickness 6.3 mm)	15	Metre	2926.00	Rupees Two Thousand Nine Hundred Twenty Six Only		43,890.00
j	250 mm dia (wall thickness 6.3 mm)	10	Metre	3521.00	Rupees Three Thousand Five Hundred Twenty One Only		35,210.00
k	300 mm dia (wall thickness 7.1 mm)	10	Metre	4133.00	Rupees Four Thousand One Hundred Thirty Three Only		41,330.00
335	Providing, laying, testing & commissioning of 'B' class heavy duty G.I. pipe conforming to IS 1239 including welding, fittings like elbows, tees, flanges, tapers, nuts, bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	80 mm dia.	210	Metre	1252.00	Rupees One Thousand Two Hundred Fifty Two Only		2,62,920.00
336	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :						
	Single headed Stainless steel	42	Set	5987.00	Rupees Five Thousand Nine Hundred Eighty Seven Only		2,51,454.00
337	Supplying and fixing Single headed external yard hydrant valve with 1 No. 63 mm dia instantaneous FM Gunmetal/Stainless Steel coupling and cast iron wheel, ISI marked, conforming to IS 5290 (type A) with blank Gunmetal/Stainless Steel cap and chain as required :						
	Single headed Stainless steel	10	Set	5987.00	Rupees Five Thousand Nine Hundred Eighty Seven Only		59,870.00
338	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :						
a	50 mm dia	1	Set	3671.00	Rupees Three Thousand Six Hundred Seventy One Only		3,671.00
b	80 mm dia	56	Set	4842.00	Rupees Four Thousand Eight Hundred Forty Two Only		2,71,152.00
c	100 mm dia	8	Set	6454.00	Rupees Six Thousand Four Hundred Fifty Four Only		51,632.00
d	150 mm dia	42	Set	8699.00	Rupees Eight Thousand Six Hundred Ninety Nine Only		3,65,358.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
e	200 mm dia	2	Set	20163.00	Rupees Twenty Thousand One Hundred Sixty Three Only		40,326.00
f	250 mm dia	2	Set	20163.00	Rupees Twenty Thousand One Hundred Sixty Three Only		40,326.00
339	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm2 complete as required.	25	Each	1291.00	Rupees One Thousand Two Hundred Ninety One Only		32,275.00
340	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS:5312 complete with rubber gasket, GI bolts, nuts,washers etc.as required :						
a	80 mm dia	2	Set	7539.00	Rupees Seven Thousand Five Hundred Thirty Nine Only		15,078.00
b	100 mm dia	3	Set	10836.00	Rupees Ten Thousand Eight Hundred Thirty Six Only		32,508.00
c	150 mm dia	6	Set	17577.00	Rupees Seventeen Thousand Five Hundred Seventy Seven Only		1,05,462.00
d	250 mm dia	1	Set	45081.00	Rupees Forty Five Thousand Eighty One Only		45,081.00
341	Providing, installation, testing and commissioning of stainless steel Y-strainer fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.						
a	150 mm dia	2	Each	10659.00	Rupees Ten Thousand Six Hundred Fifty Nine Only		21,318.00
b	200 mm dia	2	Each	22052.00	Rupees Twenty Two Thousand Fifty Two Only		44,104.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
342	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :						
	Stainless Steel (Grade 304)	104	Set	4434.00	Rupees Four Thousand Four Hundred Thirty Four Only		4,61,136.00
343	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.						
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585						
	20 mm nominal internal dia gun metal globe valve & nozzle.						
	Drum and brackets for fixing the equipments on wall.						
	Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.						
	40 m	36	Set	10092.00	Rupees Ten Thousand Ninety Two Only		3,63,312.00
344	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for nstantaneous connection to interconnect hose pipe coupling as required :						
	Stainless Steel (Grade 304)	52	Set	1648.00	Rupees One Thousand Six Hundred Forty Eight Only		85,696.00
345	Supplying and fixing of fire brigade connection of cast iron body with gun metal male instantaneous inlet couplings complete with cap and chain as reqd. for suitable dia MS pipe connection conforming to IS 904 as required :						
	4 way - 150 mm dia M.S. Pipe	2	Set	13822.00	Rupees Thirteen Thousand Eight Hundred Twenty Two Only		27,644.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
346	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	10	Set	18009.00	Rupees Eighteen Thousand Nine Only		1,80,090.00
347	Providing, fixing, testing & commissioning of 15mm dia quartzoid bulb type sprinklers of rating 68 degree centigrade with required accessories :						
a	Pendent Sprinkler	1267	Each	484.00	Rupees Four Hundred Eighty Four Only		6,13,228.00
b	Upright Sprinkler	1675	Each	484.00	Rupees Four Hundred Eighty Four Only		8,10,700.00
c	Horizontal side wall sprinkler	110	Each	579.00	Rupees Five Hundred Seventy Nine Only		63,690.00
348	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	5	Each	1508.00	Rupees One Thousand Five Hundred Eight Only		7,540.00
349	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.						
a	100mm dia	4	Each	8869.00	Rupees Eight Thousand Eight Hundred Sixty Nine Only		35,476.00
b	150mm dia	20	Each	8869.00	Rupees Eight Thousand Eight Hundred Sixty Nine Only		1,77,380.00
350	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 :						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	150mm dia	2	Each	47898.00	Rupees Forty Seven Thousand Eight Hundred Ninety Eight Only		95,796.00
351	Supplying, installation, testing & commissioning of sprinkler flexible pipe (UL Listed) of stainless steel complete with 15 NPT on reducer thread with maximum working pressure of 175 PSI test pressure of 875 PSI (Burst) with branch line (Inlet) 25mm NPT male thread to sprinkler head (Outlet) 15mm NPT female thread with reducer, nipple, 2 side brackets, center bracket, stockbar of following sizes complete as required.						
	1000mm	2500	Set	1540.00	Rupees One Thousand Five Hundred Forty Only		38,50,000.00
352	Providing, installation, testing & commissioning of adjustable rosette plate for 15mm dia in white finish UL Listed or FM approved complete as required.	1267	Each	207.00	Rupees Two Hundred Seven Only		2,62,269.00
353	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.						
	25 mm	750	Metre	147.00	Rupees One Hundred Forty Seven Only		1,10,250.00
354	Supplying and installing following size of perforated pre-painted M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.						
	150 mm width x 50mm depth x 1.6 mm thickness.	50	Metre	393.00	Rupees Three Hundred Ninety Three Only		19,650.00
355	Providing and fixing in position the industrial type pressure gauges with gun metal / brass valves complete as required	76	Each	973.00	Rupees Nine Hundred Seventy Three Only		73,948.00
FIRE FIGHTING WORKS SUB HEAD TOTAL						0.00	2,16,78,731.00
ELECTRICAL WORKS							

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	POINT WIRING						
356	Wiring in looping in system with 1.5mm ² PVC wire in heavy gauge 16SWG 3/4 inch dia MS conduit pipe Including supplying and fitting of bends, tees, joints boxes etc as necessary complete with 5amp FT switch ceiling rose etc including earthing the conduit to light point.						
	(a) Long Point wiring upto 10mts						
	(i) With copper conductor	950	Each	2485.00	Rupees Two Thousand Four Hundred Eighty Five Only	23,60,750.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	350	Each	1823.00	Rupees One Thousand Eight Hundred Twenty Three Only	6,38,050.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	350	Each	1326.00	Rupees One Thousand Three Hundred Twenty Six Only	4,64,100.00	
357	Wiring as in item No. 29 Complete to a Light Plug Point when fixed elsewhere .						
	(a) Long Point wiring upto 10mts						
	(i) With copper conductor	100	Each	2882.00	Rupees Two Thousand Eight Hundred Eighty Two Only	2,88,200.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	50	Each	2137.00	Rupees Two Thousand One Hundred Thirty Seven Only	1,06,850.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	20	Each	1566.00	Rupees One Thousand Five Hundred Sixty Six Only	31,320.00	
358	Wiring as in item No.29above with 2x4Sqmm wire including supplying and fitting 15Amp 5 in 1 /SS combined with continuous earth wire to a power plug point complete.						
	(a) Long Point wiring upto 10mts						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(i) With copper conductor	80	Each	3397.00	Rupees Three Thousand Three Hundred Ninety Seven Only	2,71,760.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	45	Each	2302.00	Rupees Two Thousand Three Hundred Two Only	1,03,590.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	45	Each	1481.00	Rupees One Thousand Four Hundred Eighty One Only	66,645.00	
359	Wiring as in item No.29 above to a Ceiling Fan/ Exhaust Fan Point.						
	(a) Long Point wiring upto 10mts						
	(i) With copper conductor	10	Each	2997.00	Rupees Two Thousand Nine Hundred Ninety Seven Only	29,970.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	5	Each	2334.00	Rupees Two Thousand Three Hundred Thirty Four Only	11,670.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	5	Each	1838.00	Rupees One Thousand Eight Hundred Thirty Eight Only	9,190.00	
360	Wiring as in item No.29 above to wall Light Point						
	(a) Long Point wiring upto 10mts						
	(i) With copper conductor	10	Each	2211.00	Rupees Two Thousand Two Hundred Eleven Only	22,110.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	5	Each	1549.00	Rupees One Thousand Five Hundred Forty Nine Only	7,745.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	5	Each	1052.00	Rupees One Thousand Fifty Two Only	5,260.00	
361	Wiring as in item No.29 above to a Calling Bell/Bell Indicator Point						
	(a) Long Point wiring upto 10mts						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(i) With copper conductor	5	Each	2275.00	Rupees Two Thousand Two Hundred Seventy Five Only	11,375.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	2	Each	1451.00	Rupees One Thousand Four Hundred Fifty One Only	2,902.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	2	Each	1115.00	Rupees One Thousand One Hundred Fifteen Only	2,230.00	
362	Wiring as in item No.29 above for Stair Case/Two Way Switch Light Point Controlled by 2 Nos, 2Way 5Amp Switches						
	(a) Long Point wiring upto 10mts						
	(i) With copper conductor	50	Each	2508.00	Rupees Two Thousand Five Hundred Eight Only	1,25,400.00	
	(b) Medium Point wiring upto 6mtrs						
	(i) With copper conductor	20	Each	1843.00	Rupees One Thousand Eight Hundred Forty Three Only	36,860.00	
	(c) Short Point wiring upto 3mtrs						
	(i) With copper conductor	20	Each	1347.00	Rupees One Thousand Three Hundred Forty Seven Only	26,940.00	
363	Drawing of Main and Sub-Main Line wiring approved VIR or PVC cable 250 V Grade in Heavy Gauge 16Swg MS Conduit Pipe With all necessary accessories						
	(c) With 2x6mm ² copper wire						
	(i) With copper conductor.	400	Metre	339.00	Rupees Three Hundred Thirty Nine Only	1,35,600.00	
	(d) With 2x10mm ² copper wire						
	(i) With copper conductor.	1800	Metre	544.00	Rupees Five Hundred Forty Four Only	9,79,200.00	
364	Drawing 3 phase line 4 wire with approved VIR or PVC cable 660 V grade wire in Heavy gauge 16Swg E.T. conduit Pipe with all necessary accessories.						
	(a) With 2x2.5mm ² conductor in MS Conduit						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(i) With copper conductor.	400	Metre	322.00	Rupees Three Hundred Twenty Two Only	1,28,800.00	
	(b) With 4x4mm ² conductor in MS Conduit						
	(i) With copper conductor.	300	Metre	396.00	Rupees Three Hundred Ninety Six Only	1,18,800.00	
	(c) With 4x6mm ² conductor in MS Conduit						
	(i) With copper conductor.	800	Metre	534.00	Rupees Five Hundred Thirty Four Only	4,27,200.00	
	(d) With 4x10mm ² conductor in MS Conduit						
	(i) With copper conductor.	400	Metre	950.00	Rupees Nine Hundred Fifty Only	3,80,000.00	
	(e) With 4x16mm ² conductor in MS Conduit						
	(i) With copper conductor.	300	Metre	1437.00	Rupees One Thousand Four Hundred Thirty Seven Only	4,31,100.00	
365	Supplying & Drawing of the following size of PVC insulated Copper Wire, S/C in the existing surface/ recessed PVC/ M.S. conduit						
	2x1.5sqmm PVC Copper wire	300	Metre	52.00	Rupees Fifty Two Only	15,600.00	
	3x1.5sqmm PVC Copper wire	800	Metre	78.00	Rupees Seventy Eight Only	62,400.00	
	3x4sqmm PVC Copper wire	400	Metre	180.00	Rupees One Hundred Eighty Only	72,000.00	
366	Supplying & fixing of Load Kontaket Miniature Circuit Breakers(MCBs)						
	(b) 6-32 Amp SP MCB Capacity	840	Each	507.00	Rupees Five Hundred Seven Only	4,25,880.00	
	(d) 40-80 Amp SP with Nuetral MCB Capacity	10	Each	1779.00	Rupees One Thousand Seven Hundred Seventy Nine Only	17,790.00	
	(e) 40-80 Amp TP with Nuetral MCB Capacity	10	Each	3246.00	Rupees Three Thousand Two Hundred Forty Six Only	32,460.00	
367	Supplying fitting and fixing of Residual Current Circuit Brakes (RCCBs) with Earth Leakage protection.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(a) 16-63 Amp , 30-300m A	160	Each	6462.00	Rupees Six Thousand Four Hundred Sixty Two Only	10,33,920.00	
368	Supplying fitting and fixing of Single opening Metal Enclosure MCB Distribution Box.						
	(c) 12/16/24 Way	8	Each	2064.00	Rupees Two Thousand Sixty Four Only	16,512.00	
369	Supplying fitting and fixing of SPN/ TPN MCB Metal Enclosure Distribution Board.						
a	(b) 6 Way (8+18) Modules	16	Each	4284.00	Rupees Four Thousand Two Hundred Eighty Four Only	68,544.00	
b	(c) 8 Way (8+24) Modules	8	Each	4910.00	Rupees Four Thousand Nine Hundred Ten Only	39,280.00	
c	(d) 12 Way (8+36) Modules	10	Each	6135.00	Rupees Six Thousand One Hundred Thirty Five Only	61,350.00	
370	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.						
i)	2 Pair	400	Metre	20.00	Rupees Twenty Only		8,000.00
ii)	4 Pair	150	Metre	29.00	Rupees Twenty Nine Only		4,350.00
371	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	100	Metre	33.00	Rupees Thirty Three Only		3,300.00
372	Supply and fixing of following sizes of steel conduit alongwith the accessories in surface/recess including painting in case of surface conduit or cutting the wall and making good the same incase of recessed conduit as required.						
i)	20mm dia	50	Metre	146.00	Rupees One Hundred Forty Six Only		7,300.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
ii)	25mm dia	100	Metre	165.00	Rupees One Hundred Sixty Five Only		16,500.00
iii)	32mm dia	50	Metre	203.00	Rupees Two Hundred Three Only		10,150.00
iv)	40mm dia	50	Metre	292.00	Rupees Two Hundred Ninety Two Only		14,600.00
373	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.						
i)	20mm dia	150	Metre	84.00	Rupees Eighty Four Only		12,600.00
ii)	25mm dia	100	Metre	90.00	Rupees Ninety Only		9,000.00
iii)	32mm dia	50	Metre	92.00	Rupees Ninety Two Only		4,600.00
iv)	40mm dia	50	Metre	130.00	Rupees One Hundred Thirty Only		6,500.00
374	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.						
i)	Telephone socket outlet	5	Each	119.00	Rupees One Hundred Nineteen Only		595.00
ii)	TV antenna socket outlet	4	Each	119.00	Rupees One Hundred Nineteen Only		476.00
375	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.						
i)	1 or 2 Module (75 mmX75 mm)	9	Each	243.00	Rupees Two Hundred Forty Three Only		2,187.00
376	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.						
i)	100 mm width X 50 mm depth X 1.6 mm thickness	150	Metre	476.00	Rupees Four Hundred Seventy Six Only		71,400.00
ii)	150 mm width X 50 mm depth X 1.6 mm thickness	250	Metre	531.00	Rupees Five Hundred Thirty One Only		1,32,750.00
iii)	300 mm width X 50 mm depth X 1.6 mm thickness	100	Metre	621.00	Rupees Six Hundred Twenty One Only		62,100.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
iv)	450 mm width X 50 mm depth X 2.0 mm thickness	150	Metre	700.00	Rupees Seven Hundred Only		1,05,000.00
v)	600 mm width X 50 mm depth X 2.0 mm thickness	100	Metre	765.00	Rupees Seven Hundred Sixty Five Only		76,500.00
vi)	750 mm width X 62.5 mm depth X 2.0 mm thickness	100	Metre	1048.00	Rupees One Thousand Forty Eight Only		1,04,800.00
vii)	900 mm width X 62.5 mm depth X 2.0 mm thickness	150	Metre	1204.00	Rupees One Thousand Two Hundred Four Only		1,80,600.00
377	Supplying and installing following size of perforated painted with powder coating M.S. cable trays bends with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.						
i)	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each	808.00	Rupees Eight Hundred Eight Only		8,080.00
ii)	150 mm width X 50 mm depth X 1.6 mm thickness	20	Each	947.00	Rupees Nine Hundred Forty Seven Only		18,940.00
iii)	300 mm width X 50 mm depth X 1.6 mm thickness	10	Each	1340.00	Rupees One Thousand Three Hundred Forty Only		13,400.00
iv)	450 mm width X 50 mm depth X 2.0 mm thickness	10	Each	2089.00	Rupees Two Thousand Eighty Nine Only		20,890.00
v)	600 mm width X 50 mm depth X 2.0 mm thickness	20	Each	2582.00	Rupees Two Thousand Five Hundred Eighty Two Only		51,640.00
vi)	750 mm width X 62.5 mm depth X 2.0 mm thickness	10	Each	3327.00	Rupees Three Thousand Three Hundred Twenty Seven Only		33,270.00
vii)	900 mm width X 62.5 mm depth X 2.0 mm thickness	10	Each	3843.00	Rupees Three Thousand Eight Hundred Forty Three Only		38,430.00
378	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Tee with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.						
i)	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each	909.00	Rupees Nine Hundred Nine Only		9,090.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
ii)	150 mm width X 50 mm depth X 1.6 mm thickness	10	Each	1072.00	Rupees One Thousand Seventy Two Only		10,720.00
iii)	300 mm width X 50 mm depth X 1.6 mm thickness	20	Each	1549.00	Rupees One Thousand Five Hundred Forty Nine Only		30,980.00
iv)	450 mm width X 50 mm depth X 2.0 mm thickness	10	Each	2431.00	Rupees Two Thousand Four Hundred Thirty One Only		24,310.00
v)	600 mm width X 50 mm depth X 2.0 mm thickness	12	Each	3016.00	Rupees Three Thousand Sixteen Only		36,192.00
vi)	750 mm width X 62.5 mm depth X 2.0 mm thickness	10	Each	3887.00	Rupees Three Thousand Eight Hundred Eighty Seven Only		38,870.00
vii)	900 mm width X 62.5 mm depth X 2.0 mm thickness	12	Each	4502.00	Rupees Four Thousand Five Hundred Two Only		54,024.00
379	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Cross Member with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.						
i)	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each	909.00	Rupees Nine Hundred Nine Only		9,090.00
ii)	150 mm width X 50 mm depth X 1.6 mm thickness	20	Each	1072.00	Rupees One Thousand Seventy Two Only		21,440.00
iii)	300 mm width X 50 mm depth X 1.6 mm thickness	10	Each	1549.00	Rupees One Thousand Five Hundred Forty Nine Only		15,490.00
iv)	450 mm width X 50 mm depth X 2.0 mm thickness	12	Each	2431.00	Rupees Two Thousand Four Hundred Thirty One Only		29,172.00
v)	600 mm width X 50 mm depth X 2.0 mm thickness	10	Each	3016.00	Rupees Three Thousand Sixteen Only		30,160.00
vi)	750 mm width X 62.5 mm depth X 2.0 mm thickness	8	Each	3887.00	Rupees Three Thousand Eight Hundred Eighty Seven Only		31,096.00
vii)	900 mm width X 62.5 mm depth X 2.0 mm thickness	8	Each	4502.00	Rupees Four Thousand Five Hundred Two Only		36,016.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
380	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Reducer with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.						
i)	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each	880.00	Rupees Eight Hundred Eighty Only		8,800.00
ii)	150 mm width X 50 mm depth X 1.6 mm thickness	10	Each	1023.00	Rupees One Thousand Twenty Three Only		10,230.00
iii)	300 mm width X 50 mm depth X 1.6 mm thickness	20	Each	1505.00	Rupees One Thousand Five Hundred Five Only		30,100.00
iv)	450 mm width X 50 mm depth X 2.0 mm thickness	10	Each	2144.00	Rupees Two Thousand One Hundred Forty Four Only		21,440.00
v)	600 mm width X 50 mm depth X 2.0 mm thickness	12	Each	2600.00	Rupees Two Thousand Six Hundred Only		31,200.00
vi)	750 mm width X 62.5 mm depth X 2.0 mm thickness	10	Each	3279.00	Rupees Three Thousand Two Hundred Seventy Nine Only		32,790.00
vii)	900 mm width X 62.5 mm depth X 2.0 mm thickness	10	Each	3855.00	Rupees Three Thousand Eight Hundred Fifty Five Only		38,550.00
	SUPPLY & FIXING OF LIGHT FIXTURES & FANS						
	NOTE - ALL THE LIGHT FIXTURE SAMPLE SHALL BE APPROVED BY ARCHITECT BEFORE PROCUREMENT OF LIGHT FIXTURE. ALL THE SAMPLE SHALL BE ARRANGED BY CONTRACTOR.						
381	Supplying,fitting and fixing of LED lightings complete.						
	(b) LED Tube Light-Streak Series						
	(i) 18-22W 1200mm	8	Each	4411	Rupees Four Thousand Four Hundred Eleven Only	35,288.00	
	(c) LED Down Light						
	(vi) LED Down Light 28-39W 8"	8	Each	16631	Rupees Sixteen Thousand Six Hundred Thirty One Only	1,33,048.00	
	(g) LED panel Light						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(i) Recess Round 3-18W	4	Each	3083	Rupees Three Thousand Eighty Three Only	12,332.00	
	(iii) Flat panel(2'X2') 36-48W	8	Each	10655	Rupees Ten Thousand Six Hundred Fifty Five Only	85,240.00	
	(iv) Surface Round 6-24W	4	Each	3880	Rupees Three Thousand Eight Hundred Eighty Only	15,520.00	
	(h) LED Street Light-Rodeo Series 25-150W						
	(ii) (COB) 30W	8	Each	51962	Rupees Fifty One Thousand Nine Hundred Sixty Two Only	4,15,696.00	
	(i) LED Strip Lights	8	Each	7400	Rupees Seven Thousand Four Hundred Only	59,200.00	
	(j) LED Beam/Flood Lights-Rayon Series						
	(ii)30-60W	10	Each	33698	Rupees Thirty Three Thousand Six Hundred Ninety Eight Only	3,36,980.00	
	(k) LED Decorative and Garden Light						
	(i)Wall Light	8	Each	12912	Rupees Twelve Thousand Nine Hundred Twelve Only	1,03,296.00	
	(ii)Garden Light	8	Each	14865	Rupees Fourteen Thousand Eight Hundred Sixty Five Only	1,18,920.00	
	(iii)Bollard Light	8	Each	1927	Rupees One Thousand Nine Hundred Twenty Seven Only	15,416.00	
382	Supplying and fitting of ceiling fan AC operated type 220/250 volt. Complete with 3 Nos of blades down rod canopy hanging shackle & regulator complete with 30mm length down rod supplied with the fan by the dealer but the extra length will be charged @ Rs25.00/ mtr						
	(b) AC ceiling Fan '1200'mm sweeps	10	Each	4243	Rupees Four Thousand Two Hundred Forty Three Only	42,430.00	
	EARTHING & LIGHTNING PROTECTION SYSTEM						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
383	Supplying fitting & fixing earthing with copper earth plate 600x600mmx6mm thick including accessories & providing masonry enclosure with cover plate having locking arrangement & watering pipe etc with charcoal , salts etc complete as required	18	Sets	14915	Rupees Fourteen Thousand Nine Hundred Fifteen Only	2,68,470.00	
384	Supplying, fitting and fixing earthing with GI earth Plate 600m x 600 x 6m thick including all accessories & providing masonry enclosure with cover plate having locking arrangement & watering pipe etc complete with charcoal salt coke as required	38	Sets	5198	Rupees Five Thousand One Hundred Ninety Eight Only	1,97,524.00	
385	Supplying and laying of 15mm x 5mm GI/Copper Strip at 0.50mts, below ground.						
	(a) With 25mm x 5mm copper strip	350	Metre	880	Rupees Eight Hundred Eighty Only	3,08,000.00	
	(d) With 25mm x 6mm GI Strip	450	Metre	259	Rupees Two Hundred Fifty Nine Only	1,16,550.00	
386	Supplying fixing connection testing of 8-SWG wire along the wall, columns etc, with necessary clamping as required						
	(b) With G.I. wire	1200	Metre	106	Rupees One Hundred Six Only	1,27,200.00	
387	Supplying fitting and fixing earthing with GI pipe of 200cm length 40mm dia. Including all accessories & providing masonry enclosure with cover plate having locking arrangement etc with charcoal salt complete as required	8	Set	3933	Rupees Three Thousand Nine Hundred Thirty Three Only	31,464.00	
388	Providing and fixing 50 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required	150	Metre	412.00	Rupees Four Hundred Twelve Only		61,800.00
389	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface for connections etc. as required.	50	Metre	1844.00	Rupees One Thousand Eight Hundred Forty Four Only		92,200.00
390	Providing and fixing of lightning conductor finial, made of 25mm dia 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc., complete as required.	8	Each	448.00	Rupees Four Hundred Forty Eight Only		3,584.00
391	Fixing of lightning conductor finial (single prong) with base plate including holes etc. complete as required.	8	Each	280.00	Rupees Two Hundred Eighty Only		2,240.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
392	Jointing copper / G.I. tape (with another copper/ G I tape, base of the finial or any other metallic object) by riveting / nut bolting/sweating and soldering etc. as required.	16	Each	93.00	Rupees Ninety Three Only		1,488.00
393	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required.(For horizontal run)	180	Metre	104.00	Rupees One Hundred Four Only		18,720.00
394	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or on surface of wall for lightning conductor complete as required. (For vertical run)	280	Metre	163.00	Rupees One Hundred Sixty Three Only		45,640.00
395	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 Nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	180	Metre	102.00	Rupees One Hundred Two Only		18,360.00
396	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required	350	Metre	176.00	Rupees One Hundred Seventy Six Only		61,600.00
DISTRIBUTION CABLES							
397	Providing, Laying, Connection testing & commissioning of the following sizes of 1100V grade aluminium conductor armoured underground cable & overall PVC sheathed cable as per ISI code in trenches including the cost of digging of trenches, sand cushioning with laying etc and refilling the same in layers or by supporting them in walls and all other accessories as required.						
	(a) With 3 1/2" Core 25sq.mm	400	Metre	784.00	Rupees Seven Hundred Eighty Four Only	3,13,600.00	
	(b) With 3 1/2" Core 35sq.mm	600	Metre	904.00	Rupees Nine Hundred Four Only	5,42,400.00	
	(c) With 3 1/2" Core 50sq.mm	300	Metre	1086.00	Rupees One Thousand Eighty Six Only	3,25,800.00	
	(d) With 3 1/2" Core 70sq.mm	150	Metre	1377.00	Rupees One Thousand Three Hundred Seventy Seven Only	2,06,550.00	
	(e) With 3 1/2" Core 95sq.mm	100	Metre	1645.00	Rupees One Thousand Six Hundred Forty Five Only	1,64,500.00	
	(f) With 3 1/2" Core 120sq.mm	150	Metre	1987.00	Rupees One Thousand Nine Hundred Eighty Seven Only	2,98,050.00	

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	(h) With 3 1/2" Core 185sq.mm	100	Metre	2803.00	Rupees Two Thousand Eight Hundred Three Only	2,80,300.00	
	(j) With 3 1/2" Core 300sq.mm	800	Metre	4183.00	Rupees Four Thousand One Hundred Eighty Three Only	33,46,400.00	
398	Supplying, laying, testing & commissioning of underground cable of the following sizes of 1100volt grade, 2 core PVC aluminium cable along wall etc in ground including the cost of digging of trenches sand cushioning besides laying etc & refilling the same in layers or by supporting them on the wall						
	(c) With 6 Sq.mm	1200	Metre	480.00	Rupees Four Hundred Eighty Only	5,76,000.00	
	(d) With 10 Sq.mm	2500	Metre	536.00	Rupees Five Hundred Thirty Six Only	13,40,000.00	
399	Providing supplying including carriage testing of the following sizes Aluminium armoured underground cable and all over PVC selected as per ISI mark of 1100volt grade						
	(b) 4x6mm ²	40	Metre	607.00	Rupees Six Hundred Seven Only	24,280.00	
	(c) 4x10mm ²	250	Metre	684.00	Rupees Six Hundred Eighty Four Only	1,71,000.00	
	(d) 4x16mm ²	100	Metre	734.00	Rupees Seven Hundred Thirty Four Only	73,400.00	
400	Supplying and making indoor end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.						
	i) 3½ X 300 sq. mm (70 mm)	10	Each	936.00	Rupees Nine Hundred Thirty Six Only		9,360.00
	ii) 3½ X 240 sq. mm (62 mm)	8	Each	809.00	Rupees Eight Hundred Nine Only		6,472.00
	iii) 3½ X 185 sq. mm (57 mm)	4	Each	702.00	Rupees Seven Hundred Two Only		2,808.00
	iv) 3½ X 150 sq. mm (50 mm)	6	Each	555.00	Rupees Five Hundred Fifty Five Only		3,330.00
	v) 3½ X 120 sq. mm (45 mm)	10	Each	489.00	Rupees Four Hundred Eighty Nine Only		4,890.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
vi)	3½ X 95 sq. mm (45 mm)	12	Each	473.00	Rupees Four Hundred Seventy Three Only		5,676.00
vii)	3½ X 50 sq. mm (35 mm)	10	Each	329.00	Rupees Three Hundred Twenty Nine Only		3,290.00
viii)	3½ X 35 sq. mm (32mm)	20	Each	300.00	Rupees Three Hundred Only		6,000.00
ix)	4 X 25 sq. mm (28mm)	10	Each	250.00	Rupees Two Hundred Fifty Only		2,500.00
x)	4 X 16 sq. mm (28mm)	20	Each	250.00	Rupees Two Hundred Fifty Only		5,000.00
xi)	4 X 10 sq. mm (25 mm)	24	Each	219.00	Rupees Two Hundred Nineteen Only		5,256.00
	METER BOARD, MAIN DISTRIBUTION BOARDS , DISTRIBUTION BOARDS & RISING MAIN						
	RISING MAINS						
401	Supplying, installing by suspension on ceiling/along the wall, testing and commissioning of following capacity Sandwich Type Rising Mains for use on 3 phase 4 wire 415 V, 50Hz A.C. supply with metal clad enclosure having IP-54 rating after fixing the tap off boxes and all accessories, made of 1.6mm thick steel sheet duly powder coated in convenient sections complete with 4 Nos. aluminium bus bars having current density of 130 A/ sq. cm at nominal current rating, necessary joints, elbow joints & expansion joints and bends, fire barrier at each floor, provision of tapping at every meter, adopter box and copper flexible for joints, continuous earthing with 2 Nos. aluminium strip of suitable size (one on each side) including, G.I. clamping brackets, suspenders, angle iron bracket, steel fasteners, connecting to earthing system etc. as required.						
i)	400 A, I _{sc} = 25 kA for 1 second	40	Metre	12022.00	Rupees Twelve Thousand Twenty Two Only		4,80,880.00
ii)	630 A, I _{sc} = 50 kA for 1 second	40	Metre	13833.00	Rupees Thirteen Thousand Eight Hundred Thirty Three Only		5,53,320.00
iii)	800 A, I _{sc} = 50 kA for 1 second	10	Metre	15554.00	Rupees Fifteen Thousand Five Hundred Fifty Four Only		1,55,540.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
iv)	1000 A, Isc = 50 kA for 1 second	0	Metre	17374.00	Rupees Seventeen Thousand Three Hundred Seventy Four Only		-
402	Supplying, installation, testing & commisioning of following capacity Plug In/ tap off box on the existing Air Insulated Compact Type bus trunking/ rising mains for use on 3 phase 4 wire 415 V, 50Hz A.C. supply made with 1.6mm thick sheet steel enclosure (IP54) duly powder coated with provision of MCCB (but without MCCB) complete etc. as required						
i)	125 A, Isc = 15 kA for 1 second	12	Each	6358.00	Rupees Six Thousand Three Hundred Fifty Eight Only		76,296.00
ii)	200 A, Isc = 25 kA for 1 second	2	Each	8048.00	Rupees Eight Thousand Forty Eight Only		16,096.00
403	Supplying, installation, testing & commisioning of following capacity End Feed Unit for the existing Air Insulated Compact Type bus trunking/ rising mains for use on 3 phase 4 wire 415 V, 50Hz A.C. supply made with 1.6mm thick steel sheet enclosure (IP54) duly powder coated with provision of MCCB/ ACB (but without MCCB/ACB) complete with necessary joints including clamping brackets, angle iron bracket, steel fasteners, connecting to earthing system etc. as required						
i)	400 A, Isc = 30 kA for 1 second	0	Each	7307.00	Rupees Seven Thousand Three Hundred Seven Only		-
ii)	630 A, Isc = 50 kA for 1 second	1	Each	9344.00	Rupees Nine Thousand Three Hundred Forty Four Only		9,344.00
iii)	800 A, Isc = 50 kA for 1 second	1	Each	11017.00	Rupees Eleven Thousand Seventeen Only		11,017.00
iv)	1000 A, Isc = 50 kA for 1 second	0	Each	12328.00	Rupees Twelve Thousand Three Hundred Twenty Eight Only		-

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
404	Supplying, installing by suspension on ceiling/along the wall, testing and commissioning of following capacity Sandwich Type Bus Duct for use on 3 phase 4 wire 415 V, 50Hz A.C. supply with metal clad enclosure having IP-54 rating after fixing the tap off boxes and all accessories, made of 1.6mm thick steel sheet duly powder coated in convenient sections complete with 4 Nos. aluminium bus bars having current density of 130 A/sq. cm at nominal current rating, necessary joints, elbow joints & expansion joints and bends, fire barrier at each floor, provision of tapping at every meter, adopter box and copper flexible for joints, continuous earthing with 2 Nos. aluminium strip of suitable size (one on each side) including, G.I. clamping brackets, suspenders, angle iron bracket, steel fasteners, connecting to earthing system etc. as required						
i)	1600 A, Isc = 50 kA for 1 second (IP 67 : OUTDOOR TYPE)	50	Metre	23430.00	Rupees Twenty Three Thousand Four Hundred Thirty Only		11,71,500.00
ii)	2500 A, Isc = 50 kA for 1 second (IP 67 : OUTDOOR TYPE)	0	Metre	35688.00	Rupees Thirty Five Thousand Six Hundred Eighty Eight Only		-
	HT CABLE						
405	Laying of one number XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.						
i)	Above 120 Sqmm. and upto 400 sqmm	300	Metre	482.00	Rupees Four Hundred Eighty Two Only		1,44,600.00
406	Laying of one number additional XLPE power cable of 11 KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation, sand cushioning, protective covering and refilling the trench etc as required.						
i)	Above 120 sq. mm and upto 400 sq. mm	25	Metre	343.00	Rupees Three Hundred Forty Three Only		8,575.00
407	Laying of one number XLPE power cable of 11 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.						
i)	Above 120 Sqmm. and upto 400 sqmm	25	Metre	112.00	Rupees One Hundred Twelve Only		2,800.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
408	Laying of one number XLPE power cable of 11 KV grade of following size in the existing masonry open duct as required.						
i)	Above 120 Sqmm. and upto 400 sqmm	50	Metre	96.00	Rupees Ninety Six Only		4,800.00
409	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :						
i)	240 Sqmm	6	Each	11681.00	Rupees Eleven Thousand Six Hundred Eighty One Only		70,086.00
410	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :						
i)	240 Sqmm	5	Each	17166.00	Rupees Seventeen Thousand One Hundred Sixty Six Only		85,830.00
411	Supplying and making straight through cable jointing with heat shrinkable jointing kit complete with all accessories including ferrules suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :						
i)	240 Sqmm	2	Each	19314.00	Rupees Nineteen Thousand Three Hundred Fourteen Only		38,628.00
SAFETY EQUIPMENT							
412	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	6	Each	226.00	Rupees Two Hundred Twenty Six Only		1,356.00
413	Providing and fixing H.T. danger notice plate of 250 mm X 200 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	6	Each	244.00	Rupees Two Hundred Forty Four Only		1,464.00
FIRE DETECTION AND ALARM & PUBLIC ADDRESS SYSTEM							

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
414	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.						
i)	20 mm	1500	Metre	146.00	Rupees One Hundred Forty Six Only		2,19,000.00
ii)	25 mm	400	Metre	165.00	Rupees One Hundred Sixty Five Only		66,000.00
iii)	32 mm	3000	Metre	203.00	Rupees Two Hundred Three Only		6,09,000.00
415	Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km, network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230 ± 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories .The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications.						
	Ten Loop Panel.	1	Each	454896.00	Rupees Four Lac Fifty Four Thousand Eight Hundred Ninety Six Only		4,54,896.00
	Two Loop Panel.	1	Each	238907.00	Rupees Two Lac Thirty Eight Thousand Nine Hundred Seven Only		2,38,907.00
416	Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.	1	Each	200148.00	Rupees Two Lac One Hundred Forty Eight Only		2,00,148.00
417	Supplying, installation, testing & commissioning of repeater panel with 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.	1	Each	108572.00	Rupees One Lac Eight Thousand Five Hundred Seventy Two Only		1,08,572.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
418	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal detector complete with mounting base complete as required.	700	Each	2846.00	Rupees Two Thousand Eight Hundred Forty Six Only		19,92,200.00
419	Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.	30	Each	263.00	Rupees Two Hundred Sixty Three Only		7,890.00
420	Supplying, installation, testing & commissioning of intelligent addressable programmable sounder complete as required.	10	Each	2638.00	Rupees Two Thousand Six Hundred Thirty Eight Only		26,380.00
421	Supplying, installation, testing & commissioning of fault isolator complete with base as required.	30	Each	3257.00	Rupees Three Thousand Two Hundred Fifty Seven Only		97,710.00
422	Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed temperature thermistor complete with base as required.	50	Each	2713.00	Rupees Two Thousand Seven Hundred Thirteen Only		1,35,650.00
423	Supplying, installation, testing & commissioning of addressable fire control module complete as required.	30	Each	2990.00	Rupees Two Thousand Nine Hundred Ninety Only		89,700.00
424	Supplying, installation, testing & commissioning of addressable phone control module/ Monitor Module complete as required.	30	Each	3255.00	Rupees Three Thousand Two Hundred Fifty Five Only		97,650.00
425	Supplying, installation, testing & commissioning of addressable beam detector (range upto 100 mtrs having 4 manual & 2 auto sensitivity settings) with short circuit isolator (inbuilt or separate) complete with emitter and receiver including connections with remote test features and communicate directly with the panel without any interface module etc complete as required.	6	Each	74778.00	Rupees Seventy Four Thousand Seven Hundred Seventy Eight Only		4,48,668.00
426	Supplying, installation, testing & commissioning of intelligent addressable duct detector including suitable Photo detector complete with base as required.	30	Each	7801.00	Rupees Seven Thousand Eight Hundred One Only		2,34,030.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
427	Supplying, installation, testing & commissioning of addressable manual call point complete as required.	24	Each	3859.00	Rupees Three Thousand Eight Hundred Fifty Nine Only		92,616.00
428	Supplying, installation, testing & commissioning of addressable horn cum strobe complete as required.	24	Each	3494.00	Rupees Three Thousand Four Hundred Ninety Four Only		83,856.00
429	Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.	3	Each	5727.00	Rupees Five Thousand Seven Hundred Twenty Seven Only		17,181.00
430	Supplying, installation, testing & commissioning of intelligent interface unit BACnet/Modbus protocol i.e. Supplying communication links between building management system and fire alarm control panel complete as required.	1	Each	187732.00	Rupees One Lac Eighty Seven Thousand Seven Hundred Thirty Two Only		1,87,732.00
431	Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.	24	Each	1587.00	Rupees One Thousand Five Hundred Eighty Seven Only		38,088.00
432	Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for voice evacuation complete as required.	10	Each	126399.00	Rupees One Lac Twenty Six Thousand Three Hundred Ninety Nine Only		12,63,990.00
433	Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.	400	Each	952.00	Rupees Nine Hundred Fifty Two Only		3,80,800.00
434	Supplying, installation, testing & commissioning of 1.5/3/6W metal box ceiling/wall speakers complete as required.	50	Each	1780.00	Rupees One Thousand Seven Hundred Eighty Only		89,000.00
435	Supplying, installation, testing & commissioning of ceiling/wall mounted loud speaker, 3/1.5 Watt in ABS enclosure complete as required.	20	Each	2416.00	Rupees Two Thousand Four Hundred Sixteen Only		48,320.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
436	Supplying, installation, testing & commissioning of digital audio amplifier 75 Watt, 25V rms operating at 240 Volt AC Supply complete as required.	10	Each	145780.00	Rupees One Lac Forty Five Thousand Seven Hundred Eighty Only		14,57,800.00
437	Supplying, installation, testing & commissioning of exit point directional sound speaker (with 20 hz to 20 khz operating frequency with minimum 8 distinct sound patterns) with voice and integral audio amplifier with selectable sound pulse patterns complete as required.	20	Each	10132.00	Rupees Ten Thousand One Hundred Thirty Two Only		2,02,640.00
438	Supplying and drawing of cable Fire Retardant PVC insulated copper conductor cable in the existing surface / recessed steel conduit of following pairs, cores and size including connections and interconnections etc. as required.						
i)	Speaker cable Two pair, 2-core, 1.5 sqmm	35000	Metre	85.00	Rupees Eighty Five Only		29,75,000.00
439	Supplying and fixing 25 mm dia MS flexible pipe with PVC coating along with all ancillaries and accessories like coupler etc. as required.	4000	Metre	50.00	Rupees Fifty Only		2,00,000.00
SOLAR PHOTOVOLTIC SYSTEM							
440	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.						
i)	25 mm	4000	Metre	90.00	Rupees Ninety Only		3,60,000.00
ii)	40 mm	1500	Metre	130.00	Rupees One Hundred Thirty Only		1,95,000.00
AUDIO VISUAL SYSTEM							
441	Supplying and fixing of following sizes of medium class PVC conduit alongwith accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.						
i)	25 mm	6000	Metre	90.00	Rupees Ninety Only		5,40,000.00
ELECTRICAL WORKS SUB HEAD TOTAL						1,91,54,207.00	1,79,18,488.00
HVAC WORKS							
SUB HEAD 'B' - PIPING WORKS							

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
442	INSULATED CHILLED WATER PIPING (Inside Buildings)						
	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of chilled water piping inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with following closed cell elastometric nitrile rubber of minimum 45 Kg / m3 density, thermal conductivity 0.037 W/MK or better at 20 deg mean temperature class 'O' insulation applied by suitable adhesive complete including repairing of damage to building etc. as per specifications and as required complete in all respect.						
	Note:- The Pipes of sizes 150 mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm						
a)	200 mm dia. (32 mm thick insulation)	305	Rmt.	4367.00	Rupees Four Thousand Three Hundred Sixty Seven Only		13,31,935.00
b)	150 mm dia. (32mm thick insulation)	280	Rmt.	2915.00	Rupees Two Thousand Nine Hundred Fifteen Only		8,16,200.00
c)	125 mm dia. (32 mm thick insulation)	135	Rmt.	2590.00	Rupees Two Thousand Five Hundred Ninety Only		3,49,650.00
d)	100 mm dia.(32 mm thick insulation)	65	Rmt.	2061.00	Rupees Two Thousand Sixty One Only		1,33,965.00
e)	80mm dia. (32mm insulation)	190	Rmt.	1554.00	Rupees One Thousand Five Hundred Fifty Four Only		2,95,260.00
f)	65mm dia. (32mm insulation)	220	Rmt.	1247.00	Rupees One Thousand Two Hundred Forty Seven Only		2,74,340.00
g)	50mm dia. (32mm insulation)	535	Rmt.	1111.00	Rupees One Thousand One Hundred Eleven Only		5,94,385.00
h)	40mm dia. (32mm insulation)	695	Rmt.	919.00	Rupees Nine Hundred Nineteen Only		6,38,705.00
i)	32mm dia. (19mm insulation)	940	Rmt.	751.00	Rupees Seven Hundred Fifty One Only		7,05,940.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
j)	25mm dia. (19mm insulation)	3990	Rmt.	625.00	Rupees Six Hundred Twenty Five Only		24,93,750.00
443	Supplying, fixing, testing and commissioning of following valves, strainers, gauges in the chilled water plumbing duly insulated to the same specifications as the connected piping and adequately supported as per specifications.						
	BUTTERFLY VALVE with C I body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for chilled water circulation as specified						
a)	200 mm dia	2	Nos.	12838.00	Rupees Twelve Thousand Eight Hundred Thirty Eight Only		25,676.00
b)	150 mm dia	2	Nos.	6556.00	Rupees Six Thousand Five Hundred Fifty Six Only		13,112.00
d)	125 mm dia	36	Nos.	5861.00	Rupees Five Thousand Eight Hundred Sixty One Only		2,10,996.00
e)	80 mm dia	20	Nos.	3691.00	Rupees Three Thousand Six Hundred Ninety One Only		73,820.00
f)	65mm dia.	28	Nos.	3436.00	Rupees Three Thousand Four Hundred Thirty Six Only		96,208.00
g)	50mm dia.	32	Nos.	3167.00	Rupees Three Thousand One Hundred Sixty Seven Only		1,01,344.00
e)	40mm dia.	38	Nos.	2925.00	Rupees Two Thousand Nine Hundred Twenty Five Only		1,11,150.00
	NON - RETURN VALVE with dual plate of C I body SS plates vulcanized NBR seal flanged end & PN 16 pressure rating for chilled / hot water circulation including insulation as specified.						
a)	125 mm dia	6	Nos.	7122.00	Rupees Seven Thousand One Hundred Twenty Two Only		42,732.00
	Y - STRAINER of Ductile CI Body flanged ends with stainless steel strainer for chilled / hot water circulation including insulation as specified.						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a)	125 mm dia	12	Nos.	13912.00	Rupees Thirteen Thousand Nine Hundred Twelve Only		1,66,944.00
b)	65 mm dia.	4	Nos.	6207.00	Rupees Six Thousand Two Hundred Seven Only		24,828.00
c)	50 mm dia.	12	Nos.	5033.00	Rupees Five Thousand Thirty Three Only		60,396.00
d)	40 mm dia.	8	Nos.	3565.00	Rupees Three Thousand Five Hundred Sixty Five Only		28,520.00
	BALANCING VALVE with built in measuring facility with C I body flanged construction with EPDM Coated disc with long pitch with protded out pipe insulation & PN 16 pressure rating as specified.						
a)	125 mm dia.	6	Nos	19996.00	Rupees Nineteen Thousand Nine Hundred Ninety Six Only		1,19,976.00
444	2 way Modulating Balancing Cum Flow Control Valves						
	Supply, Installation, Testing and Commissioning of following sizes electronic, self-balancing, pressure independent type dynamic balancing valve with integrated 2 way modulating control valve in a single accepting upto 10V DC and upto 20 mA electric signal and shall be with screwed end. The actuator shall be capable of provide similar transduced feedback output to control system. Maximum close off pressure shall not be less than 6 Bar for upto 50 mm valves and 7 Bar for 65 mm & above. Valves should have pressure rating of 25 Bar minimum.						
a)	65 mm dia	4	Nos.	50405.00	Rupees Fifty Thousand Four Hundred Five Only		2,01,620.00
b)	50 mm dia	12	Nos.	32649.00	Rupees Thirty Two Thousand Six Hundred Forty Nine Only		3,91,788.00
c)	40 mm dia	8	Nos.	29785.00	Rupees Twenty Nine Thousand Seven Hundred Eighty Five Only		2,38,280.00
d)	32 mm dia	2	Nos.	16038.00	Rupees Sixteen Thousand Thirty Eight Only		32,076.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
e)	25 mm dia	12	Nos.	15084.00	Rupees Fifteen Thousand Eighty Four Only		1,81,008.00
	Providing & fixing in position the industrial type pressure gauge complete with accessories as required.	94	Nos.	1094.00	Rupees One Thousand Ninety Four Only		1,02,836.00
	Providing & fixing in position the mercury in glass industrial type thermometer complete with accessories as required.	68	Nos.	957.00	Rupees Nine Hundred Fifty Seven Only		65,076.00
445	CONDENSER WATER PIPE						
	Supplying, fixing, testing and commissioning of condenser water pipes of following sizes of MS 'C' class along with necessary clamps, vibration isolators and fittings such as bends,tees etc..but excluding valves, strainers, gauges etc. adequately.supported on rigid supports duly painted/buried in ground.excavation and refilling etc. as per specification and as required complete in all respect.						
	Note:- The Pipes size 150 mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from.minimum 7mm thick MS sheet for pipes of 400 mm dia and above.						
a)	250mm dia.	105	Rmt.	4401.00	Rupees Four Thousand Four Hundred One Only		4,62,105.00
b)	200mm dia.	35	Rmt.	3705.00	Rupees Three Thousand Seven Hundred Five Only		1,29,675.00
c)	150 mm dia.	35	Rmt.	2385.00	Rupees Two Thousand Three Hundred Eighty Five Only		83,475.00
446	Supplying, fixing, testing and commissioning of following valves, gauges and strainers for condenser water circulation as per specifications.						
	Supplying, fixing, testing and commissioning of following sizes Motorized Butter fly Valve with CI Body, SS Disc,O - ring and minimum PN-16 pressure rating , conforming to BS 5155, IS 13095, with IP-55 actuator, capable of accepting upto 10V DC , and upto 20mA electric signal and providing similar transduced feedback output to control system as required.						
a)	250 mm dia.	3	Nos	67718.00	Rupees Sixty Seven Thousand Seven Hundred Eighteen Only		2,03,154.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	BUTTERFLY VALVE with CI body SS disc nitrile sheet & O-ring & PN 16 pressure rating as specified.						
a)	200 mm dia.	18	Nos	11531.00	Rupees Eleven Thousand Five Hundred Thirty One Only		2,07,558.00
b)	80 mm dia.	3	Nos	3015.00	Rupees Three Thousand Fifteen Only		9,045.00
c)	50 mm dia.	3	Nos	2544.00	Rupees Two Thousand Five Hundred Forty Four Only		7,632.00
d)	40 mm dia.	6	Nos	2385.00	Rupees Two Thousand Three Hundred Eighty Five Only		14,310.00
	BALANCING VALVE with built in measuring facility with C I body flanged construction with EPDM Coated disc with long pitch with protded out pipe insulation & PN 16 pressure rating as specified.						
a)	200 mm dia.	6	Nos	52635.00	Rupees Fifty Two Thousand Six Hundred Thirty Five Only		3,15,810.00
	NON - RETURN VALVE with dual plate of CI body, SS plates vulcanized NBR seal flanged end & PN 16 pressure rating as specified.						
a)	200 mm dia.	3	Nos	12181.00	Rupees Twelve Thousand One Hundred Eighty One Only		36,543.00
	Y - STRAINER of Ductile CI Body flanged ends with stainless steel strainer for chilled / hot water circulation including insulation as specified.						
a)	200 mm dia.	3	Nos	28872.00	Rupees Twenty Eight Thousand Eight Hundred Seventy Two Only		86,616.00
	SUB HEAD 'C' - AIR DISTRIBUTION WORKS						
447	DUCTS						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows/bends, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.						
a)	24 G	3520	Sqm	983.00	Rupees Nine Hundred Eighty Three Only		34,60,160.00
b)	22 G	1760	Sqm	1154.00	Rupees One Thousand One Hundred Fifty Four Only		20,31,040.00
c)	20 G	785	Sqm	1273.00	Rupees One Thousand Two Hundred Seventy Three Only		9,99,305.00
d)	18 G	15	Sqm	1677.00	Rupees One Thousand Six Hundred Seventy Seven Only		25,155.00
448	Supply, installation, balancing and commissioning of fabricated at site GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.						
a)	24 G	620	Sqm	942.00	Rupees Nine Hundred Forty Two Only		5,84,040.00
b)	22 G	310	Sqm	1104.00	Rupees One Thousand One Hundred Four Only		3,42,240.00
c)	20 G	130	Sqm	1458.00	Rupees One Thousand Four Hundred Fifty Eight Only		1,89,540.00
d)	18 G	5	Sqm	1615.00	Rupees One Thousand Six Hundred Fifteen Only		8,075.00
449	AIR TERMINALS						
	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers as per specifications.	34	Sqm	8480.00	Rupees Eight Thousand Four Hundred Eighty Only		2,88,320.00
	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	127	Sqm	5507.00	Rupees Five Thousand Five Hundred Seven Only		6,99,389.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
	Supplying, fixing testing commissioning of supply air diffusers of powder coated aluminium with aluminium volume control dampers with anti smudge ring & removable core.	27	Sqm	11363.00	Rupees Eleven Thousand Three Hundred Sixty Three Only		3,06,801.00
	Supplying, fixing testing commissioning of Return air diffusers of powder coated aluminium without volume control dampers with anti smudge ring & removable core.	47	Sqm	7559.00	Rupees Seven Thousand Five Hundred Fifty Nine Only		3,55,273.00
450	Supplying, Fixing,testing and commissioning of fire dampers in supply air duct/main branch and return air path as and where required of required sizes i/c control wiring,the damper shall be motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be inbuilt mechanism and not externally mounted. The damper shall also be closed in the event of fire signal complete as required and as per specifications etc complete as required.						
a)	Fire Damper	21	Sqm	9883.00	Rupees Nine Thousand Eight Hundred Eighty Three Only		2,07,543.00
b)	Actuator	41	Nos.	9212.00	Rupees Nine Thousand Two Hundred Twelve Only		3,77,692.00
451	INSULATION						
	Thermal Insulation						
	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.						
a)	19 mm	2100	Sqm	697.00	Rupees Six Hundred Ninety Seven Only		14,63,700.00
b)	25mm	2000	Sqm	896.00	Rupees Eight Hundred Ninety Six Only		17,92,000.00
452	Acoustic Lining of Ducts						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
a)	Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m ³ , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	800	Sqm	647.00	Rupees Six Hundred Forty Seven Only		5,17,600.00
b)	Supplying, fixing acoustic lining on wall and ceiling of AHU rooms with 50mm thick, density 32 kg/cu.m resin bonded glass fiber insulation friction fixed in 610mm x 610 mm frame work made of 25X50X50X50X25 mm made out of 0.6mm thick GI sheet U shaped channel and covered with reinforced fiber glass tissue and finished with 0.80 mm perforated aluminium sheet etc. complete as required and as per specifications.	1450	Sqm	1139.00	Rupees One Thousand One Hundred Thirty Nine Only		16,51,550.00
SUB HEAD 'E'- ELECTRICAL WORK							
453	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.						
a)	2 x 1.5 sq. mm	750	Rmt.	41.00	Rupees Forty One Only		30,750.00
b)	3 x 2.5 sq. mm	300	Rmt.	75.00	Rupees Seventy Five Only		22,500.00
454	CABLE TRAY						
	Supplying and installing following size of perforated painted with powder coating M.S. cable trays bends with perforation not more than 17.5%, in convenient sections joined with connectors, suspended from the ceiling with M.S. etc. as required.suspenders including bolts & nuts, painting suspenders						
a)	100 x 50 mm x 1.6mm thick	100	Rmt.	476.00	Rupees Four Hundred Seventy Six Only		47,600.00
455	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.						
a)	25 mm Dia	150	Rmt.	90.00	Rupees Ninety Only		13,500.00
b)	32 mm Dia	50	Rmt.	92.00	Rupees Ninety Two Only		4,600.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	MSOR Amount	DSR Amount
456	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.						
a)	25 mm Dia	100	Rmt.	165.00	Rupees One Hundred Sixty Five Only		16,500.00
b)	32 mm Dia	80	Rmt.	203.00	Rupees Two Hundred Three Only		16,240.00
457	Earthing						
	Earth continuity conductor or main earthing lead fixed to wall on batten or recess or chases or buried in ground or drawn in conduit/pipe or fixed to poles or any other indicated situation for loop earthing etc. as required						
a)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	950	Rmt.	57.00	Rupees Fifty Seven Only		54,150.00
b)	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	200	Rmt.	206.00	Rupees Two Hundred Six Only		41,200.00
	SUB HEAD 'F'- IBMS WORK						
458	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.						
	20 mm	6500	RM	146.00	Rupees One Hundred Forty Six Only		9,49,000.00
459	Supplying and fixing 25 mm dia MS flexible pipe with PVC coating along with all ancillaries and accessories like coupler etc. as required.	2000	RM	50.00	Rupees Fifty Only		1,00,000.00
460	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/recessed Steel/ PVC conduit as required.						
	2 run of cable	2000	RM	82.00	Rupees Eighty Two Only		1,64,000.00
	HVAC WORKS SUB HEAD TOTAL					0.00	2,82,37,902.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
CIVIL/INTERIOR WORKS						
SUB HEAD VI :- FLOORING WORK						
1	Providing and fixing 18mm thick pre-polished granite stone strip of any colour and shade 60mm wide with one edge round moulded and polished, fixing the strip in wall above the top of dado, by cutting chase in wall and fixing the same with cement mortar 1:3 (1cement : 3 coarse sand), neatly finished and fixed such that the outer rounded edge projected 20mm beyond the surface of dado , all complete as per direction of engineer-in-charge.	1534	Metre	576.00	Rupees Five Hundred Seventy Six Only	8,83,630.94
2	Providing and fixing Arsmtrong-Athleta or equivalent make Heterogeneous vinyl sheet flooring in 4.5 mm thickness in the size of 1.80m x15m weight of 4.895kg/m2. in all respects as per manufacturer's specifications & as directed by Engineer-in-charge.	59	sqm	2837.77	Rupees Two Thousand Eight Hundred Thirty Seven and Seventy Seven Paise	1,66,801.28
3	Carpet flooring Providing & Fixing of Flocked textile floor covering of Nylon 6.6 face fiber or equivalent of approved make with 100% Nylon and completely water proof resilient backing. The flooring should be Anti static with thickness of 4.3 mm, and approximate weight of 1.8 k.g./sqm of roll form. The carpet should be completely stain resistant and of a density approx. 80 million fibers/sq.mtr (70 million fiber/sq.yd) in the width of 2 mtr .The floor covering should have Fire Test EN-13501, Appearance Retention Hexapod ISO 140-8, Friction Slip Resistance Test EN 14041 Class DS, SANITISED anti-microbial treatment, with resilient waterproof backing, anti allergic which is certified by British allergy foundation, with ten year replacement guarantee. The carpet should have permanent static control & should be fixed with powder coated aluminum angles as per detail	420	sqm	4495.47	Rupees Four Thousand Four Hundred Ninety Five and Forty Seven Paise	18,88,097.62
SUB HEAD-VII :- FINISHING WORK						
4	Providing and fixing 20 guage GI chicken wire mesh at all heights, to junctions of concrete and masonry, cleaning of surfaces with required nails etc. complete as directed by Engineer-in-charge.	2183	sqm	194.00	Rupees One Hundred Ninety Four Only	4,23,565.23

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
5	LUXALON Aluminium Panel sun louvers: Supply of luxalon plain panel sun louvers manufactured by M/S Hunter douglas india pvt ltd or any other other approved agency of approved color white or any other consisting of panel 84 mm wide x 16 mm deep x 0.6 mm thick with rounded edges panel length up to 6 mtrs coil coated on a contineous paint line double baked and roll formed from enameled corrosion resistasnce Aluminium alloy M 3005 (Al.Mg) for higher strength and good roll forming characteristics . Panel shall be clipped to baked enameled aluminium SL4 panel stringer of 33 mm wide and 96 mm deep x 0.95 mm thick and standred length of 5 mtrs made of double baked enameled aluminium alloy AA5050 (Al.mg) black with cutout to hold the panel in a module of 96 mm c/c at a distance of 1mtr.The carrier shall be fixed to a suitable structure by means of rigid fixing details. Paint finish 84R Panels shall have luxacoat exteroir paint or any other equivalent brand exteroir paint finish which will be of 3 layers.	1269	Sq.m.	6234.79	Rupees Six Thousand Two Hundred Thirty Four and Seventy Eight Paise	79,14,753.51
6	Supply and fixing of Luxalon® screen panel cladding fixed system manufactured by M/s Hunter Douglas. The Screen panels of various sizes maxing to 900mm X 4200 mm as per design requirement shall be manufactured from high corrosion resistant aluminium alloy of 3.0mm thickness which shall be fixed to a suitable and rigid substructure. Screen panels shall have customized perforation as per architects design and is to be provided to suite the design Panels. Panels shall be coated on visible side with Exterior Architectural Coating in approved colour. The panels of required length and height shall be fixed to sub structure by means of screen panel guide clamps of 20 x 43x 2mm GI (contractor’s scope). Panels shall be bending from all four sides and shall have extended flanges to accommodate clamps. Installer or Client shall provide sub frame made from Al/Steel/GI. The Panels shall be fixed to a suitable structure by means of fixing side extrusion fixed to the panel at appropriate centers to proprietary metal clamp as per the proprietary HDI design to a support system taking into account the relevant live loads and a dead load. There will be a provision for an expansion joint of 20mm between two adjacent panel ends. Installation shall be carried out as per manufacturer recommendation.	254	Sq.m.	12777.00	Rupees Twelve Thousand Seven Hundred Seventy Seven Only	32,43,952.53

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
7	Supply of G-ext High Pressure Compact Laminates (HPL), Exterior Decorative Panels meeting European norm compliance of CE mark with Electron Beam Curing (EBC) having standard dimensions of 2800 x 1300 x 6mm or 3050 x 1300 x 6mm. The product to confirm to highest quality level meeting the following values / parameters:	110	Sq.m.	3813.00	Rupees Three Thousand Eight Hundred Thirteen Only	4,20,383.25
8	Providing and fixing in position Stainless steel Grade 304 Sheets 1mm for wall lining in hairline finish including cost of SS framing with box section 40x20 mm and fixing with fasteneres complete as approved by Engineer - Incharge	420	kg	3813.00	Rupees Three Thousand Eight Hundred Thirteen Only	16,01,460.00
9	Providing and fixing of 4/6 mm thick annealed SGG Planilaque Evolution (premium GRIHA rated lacquered glass from Saint-Gobain) manufactured industrially by curtain coating process with PU lacquer (50 micron thick), opaque (if viewed against a support wall) conforming to EN 16477 standards for back painted glass , of approved color by Architect/ Client fixed with compatible SGG Glassmate Ultrafix - Neutral Alkoxy based Silicone having Shear Bond Strength (Dry, 24 hours), greater than 450 kpa and tack free time of 10 to 30 mins compatible for installation of mirror and lacquered glass / SGG Glassmate Mirror mounting tape MIRROR MOUNTING TAPE - Foam based double sided adhesive tape for instantaneous adhesion, compatible with mirror and lacquered glass having Shear bond strength (Dry, 15 mins) of 250 to 350 kpa) on a perfectly leveled 12mm thick water proof marine plywood / MDF / Mineral fibre board which is mounted on the RCC wall/any other structure. The contractor should submit test reports for backpainted glass from manufacturer - High humidity Resistance (conforms to BS EN 1036 1999); Color fastness ISO 105B02 standard & Mechanical Resistance ISO 7784 (Taber Abrasion test) ISO 2409 (Cross Hatch Test) standard The manufactured backpainted glass should be environmentally friendly (no lead, no arsenic, no copper, noformaldehyde); appropriate recycled content (12% post industrial / 6% post consumer); compressive strenght (1000 MPa) & tensile strenght (40 MPa),same as float glass.	158	sqm	6574.00	Rupees Six Thousand Five Hundred Seventy Four Only	10,35,405.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
10	Supply and installation of Tranquil Dunes Acrylic Solid Surface Winter White which is combination of PMMA, MMA, filled with ATH and other pigments, binders, UV Resistant Chemicals, additives etc. which is non porous, having seamless appearance, flexible to thermoform in many shapes, having low VOC, resistant to stains and chemicals and having Class A Flammability rating. Sheet Thickness : 12 mm.	7133	sqm	10452.00	Rupees Ten Thousand Four Hundred Fifty Two Only	7,45,58,929.08
	DRY WALL					
11	Providing and fixing partition up to ceiling height consisting of GI frame work made of special section power pressed/ roll form G.I. sheet with zinc coating of 120 gms/sqm(both side inclusive), consisting of floor and ceiling channel of 0.5 to 0.55 mm Metal Thickness ,72mm wide & having two flanges of 30mm each to the RCC Floor and Slab with Approved Fastener @600 mm C/C respectively. The wall studs 0.5 to 0.55 mm Metal Thickness, 70mm wide having one flange of 34mm another of 36 mm). These Wall studs are placed maximum distance of 610mm C/C in Floor and Ceiling channel. 50mm thick @ 48kg/cum density mineral wool Insulation to be suspended on Insulation Holder Strip positioned at 1200mm vertical centers within the stud cavity. One layer of 15 mm thick Firebloc Plasterboard on Both side is screw fixed to metal system using Self tapping 3.5 x 25 mm corrosion resistant drywall screws spaced at 150mm centers on all joints and 300 mm centers in the field of plasterboards. Screw fixing is done mechanically. Install Fixing Channel of 99mm x 0.90mm behind horizontal board joints and also shall be fixed 1.2m above the FFL. Finally, plasterboards and screw heads are to be jointed and finished to have a flush look which includes filling of tapered edge and square edges of board with Redi mix all purpose jointing compound, Paper Tape. (As per recommended practice of manufacturer). All perimeters and penetrations to be sealed with fire and acoustic sealant along with baker rod as per manufacturer's specifications. □	315	sqm	2071.00	Rupees Two Thousand Seventy One Only	6,52,365.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
12	Providing and fixing 40mm thick cladding comprising of Wooden framework using 25mx50mm sections at a maximum spacing of 600mm in any one direction (including adding members as required) covered with 12mm thick BWP ply layered with 4mm thk. veneer (Basic Rate Rs.60/-sqft) on one side pasted and pressed with adhesive to give a uniform and smooth finish, including 4mm thk. S.S. strip framework on all sides of veneer panels with wooden member surround, top moldings / margins, melamine polish etc. to finish the thickness, as shown complete in drawing. All members / ply etc. shall be treated with anti-termite solution as per norms. No extra shall be paid for making of openings, door / window frames and for making provisions for electric conduits.	315	sqm	5393.00	Rupees Five Thousand Three Hundred Ninety Three Only	16,98,795.00
13	Providing and fixing 40mm thick cladding comprising of Wooden framework using 25mx50mm sections at a maximum spacing of 600 mm in any one direction (including adding members as required) covered with 12 mm thick BWP ply layered with 1 mm thk Laminate on one side pasted and pressed with adhesive to give a uniform and smooth finish, including top mouldings / margins, melamine polish etc. to finish the thickness, as shown complete in drawing. All members / ply etc. shall be treated with anti-termite solution as per norms. No extra shall be paid for making of openings, door / window frames and for making provisions for electric conduits.	210	sqm	4322.00	Rupees Four Thousand Three Hundred Twenty Two Only	9,07,620.00
14	Providing and fixing in position Stainless steel Grade 304 Sheets 1.62 mm (16 Swg) for wall lining in hairline finish including cost of SS framing with box section 40x20 mm and fixing with fasteneres complete as approved by Engineer - Incharge	158	sqm	6173.00	Rupees Six Thousand One Hundred Seventy Three Only	9,72,247.50
SUB HEAD-VIII :- ROOFING & FALSE CEILING						
15	Providing & fixing access panel is made out of Moist Bloc (Moisture Resistant) board for opening 600 x 600mm of thickness 12.5mm. All edges of the panel are reinforced with aluminium profiles and corners are guarded with stainless steel 304 grade clips to increase strength and prevent damages. complete in all respect as directed by Engineer-in-charge.	2743	sqm	6061.00	Rupees Six Thousand Sixty One Only	1,66,26,780.67

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
16	Providing and fixing U Baffle Aluminium panel ceiling of approved woodgrain colour consisting of panel size 50 mm width X 100 mm deep using 0.6 mm thick, panel length upto 4 mtr, Coil Coated on a Continuous Paint Line, Double baked and roll formed from enamelled corrosion resistance Aluminium alloy AA 3005 (Al. Mg) for higher strength and good roll forming characteristics. Panels shall be clipped to a baked enamelled Aluminium carrier of 30 mm wide x 47 mm high x 0.5 mm thick, Black Colour coated, one leg of the carriers with cut outs to hold the panels in a module of 150 mm. Panel carrier shall be suspended by means of threaded rod at a distance of 1.8 mtr c/c. (Actual distance of threaded rod/carrier to be calculated based on the actual drawing) PAINT FINISH: Aluminium panels shall be chromatised for maximum bond between metal and paint enamelled twice under high temperature, Exposed side with a full primer and finish coat on a Continuous Paint Line.	1646	sqm	7843.00	Rupees Seven Thousand Eight Hundred Forty Three Only	1,29,09,141.14
17	Providing and Fixing of Linear Grooved Slats Sound Absorption Panels HDF based Melamine Finish Sound Absorption Panels on walls or ceiling over existing substrate. The panels are made of Fire Rated Red Color High Density Fibreboard of density about 800 kg/m ³ with low formaldehyde content. The top surface is laminated with melamine finish. Each panel is having tongue and groove structure on the long side with an additional groove to hold the clip of size 2440mmX128mmX15mm. The back of each panels is pasted with acoustic fleece of density 80kg/m ³ . The front of the panel is grooved in width of 2mm and depth of 4mm while the back is perforated with holes of dia 10mm at a distance of approximately 15mm centre to centre. The installation is to be done on a aluminium channel with galvanized steel clip system. The channel is of dimension L-2440 X W-25mm X Depth-20mm with the clips for each panel of size 43mmX40mm. Each channel is fixed at a distance of 600 mm. Once installed, the edges if open are covered with L profile of similar shade. all complete as per direction of Engineer-In-Charge.	1097	sqm	6005.00	Rupees Six Thousand Five Only	65,89,263.68
	Torsion Spring, Aluminium, Perforated, Powder Coated Plank Ceiling System size 600x1200mm:					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
18	Supply & Fixing of torsion spring Plank Ceiling System, comprising of Plank of 600mm wide and 1200mm long manufactured out of 0.9mm thick Aluminium Alloy 3105 perforated 2.5mm dia 5.5mm c/c. With 16% open area. The metal ceiling panels shall be downward accessible with a minimum of four (4) torsion springs per panel. The Plank will be manufactured on advanced CAD/CAM equipment that includes several leveling stages in the manufacturing process. Torsion Spring panel with two side legs die formed and two end legs die formed and punched to receive torsion springs (min two springs each end or side) for secure engagement into Tee Grid main runners which are factory punched to receive torsion springs. Planks will be square edged. The metal ceiling panels shall be downward accessible with a minimum of four (4) torsion springs per panel. The Plank shall be Polyester powder coated in white colour. Main Runners: 24mm deep, inverted "Tee" sections, 3m long, with factory punched flanges to receive torsion spring assembly. Main Tee on center spacing to match panel length. Cross Runners: 24 mm deep, inverted "Tee" sections designed to interlock in to web of main tee section on designated spacing. Cross tee length to match panel length. Cross tees are spaced spacing 1200mm on center maximum. Suspension System: As per manufacturer standard considering type of plenum and its height. Paint finish – The panels will be pretreated in latest nano technology process and electro statically powder coated with automatic Carona system and cured with gas catalytic technology. Acoustic Felt: Non-woven felt made of glass-reinforced fibre glued over the perforation for sound absorption. NRC- 0.7 Mode of Measurements: Measurements shall be wall to wall without any deductions for lights, diffusers, columns etc. Approved Makes : Hunter Douglas(Luxalon) - Lindner –SS Metals or Equivalent	1646	sqm	4883.47	Rupees Four Thousand Eight Hundred Eighty Three and Forty Seven Paise	80,37,923.64

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
19	Supply and Fixing Modern semi-concealed Wood Tile Ceiling consisting of wood veneer tiles mounted on a 24 mm slotted tee bar system. The tiles should be 16mm thick FR treated MDF (BS Class I) or a 16mm standard MDF (FR BS Class III) core veneered with 0.6mm thick slip/book matched veneer on the visible side. A 0.6mm compensating veneer should be adhered to the reverse of the tile. SUSPENSION should Consists of pre-punched main tee sections installed in a grid by means of inserting cross tees designed to be used with the size of tile selected. Maximum distance of rapid hangers fixing points on the main tee is 1200 mm. Main tees and cross tees will be finished standard baked enamel finish in colour. An acoustic non-woven textile of thickness 0.2mm shall be glued on reverse tile side. (Make Hunter Douglas (Luxalon), Armstrong or Equivalent)					
a)	300 x 1200 wooden tile Ceiling system etc. complete as per drawing & as directed by Engineer-in-charge.	1097	sqm	4080.11	Rupees Four Thousand Eighty and Eleven Paise	44,77,092.64
b)	600 x600 Perforated wooden tile ceiling system etc. complete as per drawing & as directed by Engineer-in-charge.	549	sqm	4867.94	Rupees Four Thousand Eight Hundred Sixty Seven and Ninety	26,70,785.33
20	Providing & Fixing of Acoustical Ceiling tiles shall be of high acoustic performance of approved make and micro edge glass fiber in size 600x600x15 mm of color white/Black. It comprises a high-density glass wool panel covered with painted glass wool tissue for decorative ceiling effect and glass wool tissue on the backside and having sealed edges. It shall have a noise reduction co-efficient of greater than 0.90, light reflection of over 85%, density of 100kg/m ³ , humidity resistance. To lay the field panel of size 600x1200mm, flush fitting 1200mm long cross tees to be interlocked between main runners at 600mm centre. Thus a grid system of 600mm X 1200mm is formed. Installation shall not begin until all wet work is completed and dry. Building shall be properly enclosed and under standard occupancy conditions (temperature of 20-40°C and not more than 70% relative humidity) before installation begins.	549	sqm	1978.81	Rupees One Thousand Nine Hundred Seventy Eight and Eighty Paise	10,85,670.23
21	Providing and making 75mm deep Suspended Feature Panel ceiling comprising of 19mm Thk. Commercial Board layered with 4mm Thk. Veneer ply including all edge mouldings, melamine polish, suspension system etc. complete as per drawing & as directed by Engineer-in-charge.	549	sqm	6141.13	Rupees Six Thousand One Hundred Forty One and Thirteen Paise	33,69,308.52

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
22	<p>Providing and fixing of Acoustical Clouds (Flat / Concave / Convex shape) - Ceiling Supply and installation of soft core construction core laminated with a 2 mm molded substrate, all covered with a specially formulated mat, edge protected with resin hardening, acoustically transparent painted finish completely covers the face and exposed edges, of 30mm thick square edge, having 100Kg/m³ density, weight 5 Kgs / m² (do not add to the structural weight and lend themselves to flexibility in design), 100 % recycled, passes flammability tests transparent to sound waves across all frequencies, light weight suspended individually with prefixed D-Rings, by using 3mm Dia black colored GI suspension wire. Wire to be first dropped from the beam / slab to desired height with G.I Cleat and metal fasteners. Clouds is then hung using D-Rings all complete as per direction of engineer in charge</p> <p>Technical Parameters</p> <ul style="list-style-type: none"> • Core - Glassfibre • Fire – Class A • Acoustics – NRC upto 0.9 • Climate (OC RH) – 49, 90 • Termite resistance – Yes • Light reflectance – 80% • Green (RC %) – 35 • Hygiene (VoC, Clean room) – Low, Class 3 • Strength, Load capacity (Kg) - Antisag 	549	sqm	15163.29	Rupees Fifteen Thousand One Hundred Sixty Three and Twenty Nine Paise	83,19,280.30

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
23	Supply & installation of Acoustic Panels , constructed of a single core construction of dimensionally stable rigid glasswool, of medium density or higher. The thickness of the panel shall be 25 mm or 50 mm as defined in the drawings. The size (length & width) of the panel should be in multiple of 600 mm, maximum size can be 1200 mm x 2400 mm or as shown on in the drawing or as approved. Square Edges shall be chemically resin hardened (with square edges only) and fabric or vinyl finish of approved colour and shade shall be applied directly to the face and edges of the panel and return to the back of the panel to provide a full finished edge. All corners are fully tailored. Acoustical wall panel should have an option to provide a tack cable surface as required by the client. This will be finalized with approval from interior designer, PMC and consultant. Acoustic wall panels shall have NRC of 0.8 - 1.05 (depends on thickness) for height in accordance with a ASTM C-423 for (type "A" mounting). All panel components shall have class "A" flame spread rating of 25 or less in accordance with ASTM E-84. Recommended vendors for all the acoustic wall panels are APS from Tranquil. Mounting shall be by adhesive, impaling clips, fasteners (i.e. nails, screw etc.) and standard continuous wall leveling angle are to be supplied by contractor and approved by consultant. The manufacturer supplies all other mounting unless otherwise noted. Work in the section will be subject to drawings, general condition, schedule, agenda and other contract documents. The extent of the acoustical panel will be shown in the drawings and in the schedules. Submit sample of each type of acoustic panel as shown in the drawing and schedule and include appropriate technical information including test data and maintenance instructions.	549	sqm	14215.59	Rupees Fourteen Thousand Two Hundred Fifteen and Fifty Eight Paise	77,99,325.28
SUB HEAD-IX :- WOOD AND PVC WORK						
24	Providing and fixing 12 mm thick frameless toughened glass partitions of approved brand and manufacturer, including providing and fixing partitions at top & bottom with aluminum channel etc. all complete as per direction of Engineer-in-charge	2568	Sqm	5257.00	Rupees Five Thousand Two Hundred Fifty Seven Only	1,34,99,634.95
25	Providing and fixing approved brand and manufacturer SS 304 grade hardware's for Doors etc.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
a)	Providing and fixing approved brand and manufacture SS 304 grade D type 1200mm Pull Handle with 32mm dia fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	4	pair	7732.00	Rupees Seven Thousand Seven Hundred Thirty Two Only	30,928.00
b)	Providing and fixing approved brand and manufacture SS 304 grade top Pivot fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	146	each	617.00	Rupees Six Hundred Seventeen Only	90,082.00
c)	Providing and fixing approved brand and manufacture SS 304 grade Top & Bottom Patch fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	536	each	5133.00	Rupees Five Thousand One Hundred Thirty Three Only	27,51,288.00
d)	Providing and fixing approved brand and manufacture SS 304 grade D type 300mm Pull Handle with 32mm dia fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	268	pair	2952.00	Rupees Two Thousand Nine Hundred Fifty Two Only	7,91,136.00
e)	Providing and fixing approved brand and manufacture SS 304 grade Glass to Glass Lock Round type with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	268	each	3697.00	Rupees Three Thousand Six Hundred Ninety Seven Only	9,90,796.00
	WOODEN					
f)	Providing and fixing approved brand and manufacture SS 304 Lever Handle D-type fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	229	pair	2920.00	Rupees Two Thousand Nine Hundred Twenty Only	6,68,680.00
g)	Providing and fixing approved brand and manufacture SS 304 grade SS 304 grade Mortice lock with key cylinder fixed fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	51	each	2800.00	Rupees Two Thousand Eight Hundred Only	1,42,800.00
h)	Providing and fixing approved brand and manufacture SS 304 grade wall mounted door buffer fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	229	each	676.00	Rupees Six Hundred Seventy Six Only	1,54,804.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
i)	Providing and fixing approved brand and manufacture SS 304 grade Door Stopper - door mounted hanging type fixed with SS screws etc. complete in all respects as per manufacturers' specifications & as directed by Engineer-in-charge.	229	each	624.00	Rupees Six Hundred Twenty Four Only	1,42,896.00
26	Providing and fixing Single Glazing 6mm thick toughened glass complete in all respects as per direction of the Engineer-in-charge. (Required properties Solar factor ≤ 0.45 , U-Value $\leq (W/sq.m-K) 5.7W /M2K$, Visible light transmittance ≥ 0.30)	200	Sq.m.	2439.00	Rupees Two Thousand Four Hundred Thirty Nine Only	4,87,800.00
27	<p>Providing and fixing of Noise Reduction Door is one of the best Products to Control Noise and Ful filling a Demand of a great way in the field of Noise Reduction.</p> <p>DOOR FRAME: - Door frame made out of good quality hard wood , section size – 100 mm x 110 mm fitted with 'D' type rubber gasket to block noise leakage from gap .</p> <p>DOOR SHUTTER:-Providing and fixing acoustic door with minimum 60 mm thickness along with fire rating and smoke Intumescent seal strip of size 10mm x 4mm for 120 minutes fire rated and STC 37dB Tested by National Physical Laboratory, Pusa Road New Delhi and having infill of 50mm thick resin bonded glasswool of 48 kg/cum density sandwiched by two 10mm thick approved quality marine grade ply and finished with 1 mm thick laminate of approved make, shade and colour and design on both sides. Further edges of shutter shall be provided with 6mm thick teak wood beading using exterior quality synthetic adhesive, headless GI nails, screws, beading finished with approved melamine polish etc. The ply shall be resistant to vermin, mould growth, minor impact, abrasion and short term water attack and with a smooth surface suitable to receive most forms of decoration. The door shall have acoustic seal in door rebates and drop dead seal at the bottom of the door including ironmongeries.HARDWARE :-The door assembly shall be fixed to the door frame with heavy duty hardware i.e. Geze/ Assa abloy/Dorma Make or equivalent make SS Hinge Size: 4"x 3"x 3mm , 600 mm SS door handle , SS Tower bolt ,Door closer , Panic Bar ,Panic trim etc.</p> <p>ACOUSTIC INSULATION: The Panels filled with Acoustic material Rock wool confirming to IS-8183 of 96 kg/m3 density, very good noise absorber for high, mid & low frequencies along with, 6 MM thick anti donning layer having Thermal Conductivity 0.037 @ 20 C as per EN ISO 8497 (DIN 52613) and 2 mm thick Sound Damping layer MTS 05-303 to achieve higher Sound STC as per site condition.</p>	8	sqm	37220.00	Rupees Thirty Seven Thousand Two Hundred Twenty Only	2,81,383.20

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
9.33	Toilet Cubical Providing and fixing Toilet Cubicle (of following standard dimension which includes 600 mm door size width) made of heat, bacteria, water, chemical, scratch, impact and anti bacterial resistant 12 mm thick solid compact laminate panels Finish of the compact laminate should be raw silk which include doors, pilasters and intermediate panels finished with approved texture/shade as per the detail drawing and as per IS 2046 (Indian Standard) and as per fire retardant BS-476/97 standard. This also includes providing and fixing in position necessary hardware made out of Stainless Steel (Grade 316) as per manufacturer's specifications and EIC instructions like (1) Door Knob, (2) Gravity Hinges, (3) Thumb turn lockset indicators, (4) Coat hooks, (5) U- Channels, (6) SS-Shoe Box Plate, (7) MS-Base Plate, (8) Rubber noise deafening tape, (9) Screws and wall Plugs.	288	sqm	9990.00	Rupees Nine Thousand Nine Hundred Ninety Only	28,79,934.18
28	Mealamine polishing on door windows by preparing the surface applying putty base course. prepare the surface smooth by sand papering and then applying mealamine polish with air compressor. Two or more coats on new works including a coat of wood filler.	263	sqm	1901.00	Rupees One Thousand Nine Hundred One Only	5,00,593.37
9.35	Supply & Installation of Crystal Glass film FROSTED (Sparkle effect). The Product can be applied to glass, acrylic, or polycarbonate substrates. Self-adhesive, bubble-free installation to be done on clean glass , by Authorized Installers only. E- Warranty for a period of 15 Years for interior application, 3 Years for exterior application to be submitted along with invoice. The product shall be supplied with shading coefficient of 0.93 %, Visible light reflectance of 12%, Visible light transmittance of 72%, Solar Heat reflectane of 10%, Solar heat transmittance of 64% and solar heat absorabnce of 26%. The Product shall be tested according to ASTM E84 and is classified as Class A as defined in NFPA 101: Life Safety Code®. The work shall be carried out as per guidance and instructions received from engineer incharge.	2568	sqm	1516.00	Rupees One Thousand Five Hundred Sixteen Only	38,92,989.65
		0				

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
29	Supply & Installation of Di-Noc Architectural Surface Finishes, Self-adhesive, bubble-free installation to be done on a smooth, dust free putty surface that has a coat of oil-based primer, by Authorized Installers only. E- Warranty for a period of 3 years for interior application, 1 year for exterior application to be submitted along with invoice (as per design and area of application). The work shall be carried out as per guidance and instructions received from Engineer/Architect incharge.	770	sqm	4932.00	Rupees Four Thousand Nine Hundred Thirty Two Only	37,99,538.82
30	Supply & installation of all glass revolving door with inside diameter : 2000 mm, clear passage height : 2200 mm, SS surface finish. Side walls curved side walls of 17 .5 mm laminated safety glass, neutral, with all-round channel-section edging trim, prepared for 24 mm wide wall-to-facade connection at door centre line. Ceiling 21.5 mm laminated safety glass, neutral. Turnstile fine-framed, rigid revolving door turnstile, panelling of 12 mm toughened safety glass, with all-round, replaceable horsehair brushes, manual floor lock prepared for single profile cylinder by others. The door has to be operated by hand. A variable-speed positioning motor installed in the floor automatically rotates the door through to its stationary home position after each usage. The door is manually operated with motor assist or, if activated by a radar detector, started at low rpm. After each uisage, the motor rotates the door automatically to its stationary home position. With mechanical speed limiter option.	2	each	6990724.00	Rupees Sixty Nine Lac Ninety Thousand Seven Hundred Twenty Four Only	1,39,81,448.00
	SUB HEAD-X :- STEEL WORK					
	Factory Made Modular SS Railing (With & Without Glass)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
31	Providing and fixing of SS Railing AISI 304 Grade Stainless Steel Knock Down (No Welding) railing system comprising of 50 mm dia Handrail containing of high grade stainless steel, bushing at every bend / jointing of railing to provide extra strength fixed by Cross-Bracket fixed on 12x72 mm S.S. Flat baluster , with the help of M5 12mm handrail clamping screws. Baluster having 125 x 125 x 8 mm thick base plate secured by Anchor Fasteners (Extra Strength SS Bolt of M10x80 Size & Anchor Sleeves of Brass M10 x 70mm) placed at maximum 1000 mm c/c along with 6mm+1.52+6mm Toughened Laminated Glass (Height up to 900 mm) at the side of baluster with fixtures. The balustrade would be fixed on Side of Steps with casted base plate. Base plate shall be concealed with suitable S.S. 304 grade cover Cap so that the mounting anchor fasteners are not visible after installation. Wall thickness of all Pipes shall be taken as 1.6 mm along with all visible components developed in High Grade S.S. and whenever required, joints to be filled with bushings for extra strength. Railing height to be taken @ 1200 mm from floor level all complete as per direction of engineer-in-charge.	286	Meter	19419.00	Rupees Nineteen Thousand Four Hundred Nineteen Only	55,50,756.09
		0				
32	Providing and Fixing PTFE Tensile Membrane and roof covering including complete structural / architectural design, and implementation at Site complete (Structural engineering, reaction loads to building, Membrane analysis, Fabric patterning , Structural steel engineering and shop drawings, Fabric and fabrication, Steel supply and fabrication, cables, Metal protection)	210	sqm	5399.00	Rupees Five Thousand Three Hundred Ninety Nine Only	11,33,790.00
		0				
	SKYLIGHT	0				

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
33	Designing, providing, installing/fixing skylight consisting of 16mm thick multiwall polycarbonate sheet "Danpalon" or equivalent in approved color (minimum 900mm wide) with standing seam on both sides & double tooth snap on locking system to ensure maximum uplift capability. The panel shall be co-extruded UV protected and antiglare/softlight to prevent glare/sun streak . The cross section of one cell should not be more than 4mmX4mm & weight of single panel shall not be less than 3250 per square metre. The system shall be fitted on purlins with spacing as specified by manufacturer with stainless steel fastener & screws and supported on MS tube framework, complete as per specification, drawing and direction of Engineer in Charge. The rate includes cost of all the operations,labour materials and tests (as applicable) for proper completion of the work except the M.S tubular framework which shall be measured and paid separately (For payment purpose the area of finished polycarbonate sheet fixed in position shall only be measured).	105	sqm	4863.00	Rupees Four Thousand Eight Hundred Sixty Three Only	5,10,615.00
		0				
SUB HEAD - XI - WATER PROOFING WORK						
Waterproofing Treatment for Landscaping Decks						
34	Polyurethane based waterproofing system for podium and landscape decks.					
	Base preparation					
	1. Compressed air cleaning has to be done so as to make the surface free of dust, debris, laitance etc. Repairing cracks by cutting and making V-groove in 25x25 mm, with SBR polymer modified mortar , filling the groove with CM(1:3) mixed with SBR latex 10% by weight of cement					
	2. Providing and making fillets at the junction of the walls and the slabs using cement mortar of 1:4 mix admixed with 5 % of SBR latex by weight of cement.					
	3. Provide and applying liquid applied,highly permanent elastic,cold applied & cold curing single component PU based waterproofing coating based on pure elastomeric hydrophobic polyurethane resins having resistance to root penetration, Apply 2 coats@1.8kg/sq.mtr to achieve an avergae thickness of 1.2 .The product must have the following technical properties: Elongation at break 400 % as per ASTM D-412, Tensile strength 4 N/mm2 as per ASTM D412, Shore hardness-65 as per ASTM 2240.The coating must be applied over the prepared substrate primed with PU Primer@180-190 gms/sq.mtr.					
	4. Providing & laying of minimum 150 gsm geotextile layer.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	5. Laying of Protection screed of average 75 mm thick in slope using 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) grade concrete over geotextile as per recommendations (supply of oncrete in scope of civil contractor)					
	FOR LANDSCAPE AREAS Supply and installation of approved make Rolled Matrix Soil Filter cum surface drainage System as per approved manufacturers specifications. consist of dimple raised, moulded polypropylene sheet bonded to a high strength polypropylene geotextile fabric This geotextile fabric composite allows passage of moisture through fabric while preventing fine soil from entering to drainage channel. all complete as specified and as directed by the Engineer-in-Charge :	926	Sq.m.	2097.22	Rupees Two Thousand Ninety Seven and Twenty One Paise	19,41,507.34
	CIVIL/INTERIOR WORKS SUB HEAD TOTAL					22,24,75,978.00
	EXTERNAL DEVELOPMENT					
	SUB HEAD-VII :- STEEL WORK					
35	Designing, providing, installing/fixing skylight consisting of 16mm thick multiwall polycarbonate sheet "Danpalon" or equivalent in approved color (minimum 900mm wide) with standing seam on both sides & double tooth snap on locking system to ensure maximum uplift capability. The panel shall be co-extruded UV protected and antiglare/softlight to prevent glare/sun streak . The cross section of one cell should not be more than 4mmX4mm & weight of single panel shall not be less than 3250 per square metre. The system shall be fitted on purlins with spacing as specified by manufacturer with stainless steel fastener & screws and supported on MS tube framework, complete as per specification, drawing and direction of Engineer in Charge. The rate includes cost of all the operations,labour materials and tests (as applicable) for proper completion of the work except the M.S tubular framework which shall be measured and paid separately (For payment purpose the area of finished polycarbonate sheet fixed in position shall only be measured).	17	Sqm	4863.00	Rupees Four Thousand Eight Hundred Sixty Three Only	80,239.50
	SUB HEAD-IX :- FINISHING WORK					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing 20 guage GI chicken wire mesh at all heights, to junctions of concrete and masonry, cleaning of surfaces with required nails etc. complete as directed by Engineer-in-charge.	123	Sqm	194.00	Rupees One Hundred Ninety Four Only	23,832.90
SUB HEAD-XII :- ROAD WORKS :						
36	Providing and laying 400 micron thick PVC Sheet on WBM Surface complete as per direction of engineer-in-charge.	2033	Sqm	65.00	Rupees Sixty Five Only	1,32,145.00
EXTERNAL DEVELOPMENT WORKS SUB HEAD TOTAL						2,36,217.40
PLUMBING WORKS						
Sanitary Fixtures & C.P Brass Fittings						
37	Wall Hung WC with seat cover Make Kohler Model No K-16817IN-SS-0 + Concealed Flushing Cistern Make Kohler Model No K-P77028IN-M-NA + Face Plate for Cistern Make Kohler Model No K-75891IN-M-0 + W.C Pan Connector Make Kohler Model No K-1046327-S. (For Hotel Room Toilets)	107	Each	66241.00	Rupees Sixty Six Thousand Two Hundred Forty One Only	70,87,787.00
38	Providing and fixing white vitreous china wash basin of approved shape and size with special fabricated brackets duly painted white, faucets as required, 32 mm C.P. brass waste.32 mm C.P. brass bottle trap & pipe to wall with rubber adopter for waste connection and C.P. brass wall flange complete in all respects including cutting and making good the walls where required.					
39	Under Counter Wash basin Make Kohler Model No K-2949T-0, 32 mm CP brass waste Make Kohler Model No K-45433IN-CP, 32 mm C.P. brass bottle trap with pipe to wall and C.P. wall flange Make Kohler Model No K-7314IN-CP. (For Hotel Room Toilets)	109	Each	13597.00	Rupees Thirteen Thousand Five Hundred Ninety Seven Only	14,82,073.00
40	Under Counter Wash basin Make Kohler Model No K-2211IN-0, 32 mm CP brass waste Make Kohler Model No K-45433IN-CP, 32 mm C.P. brass bottle trap with pipe to wall and C.P. wall flange Make Kohler Model No K-7314IN-CP. (For Others Toilets)	89	Each	7443.00	Rupees Seven Thousand Four Hundred Forty Three Only	6,62,427.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
41	Providing & Fixing vitreous china urinal basin with integrated sensor Kohler Model No.: K-16320T-M-0 with C.I. Hangers, 32 mm CP brass waste Make Kohler Model No K-45433IN-CP, 32 mm C.P. brass bottle trap with pipe to wall and C.P. wall flange Make Kohler Model No K-7314IN-CP complete including cutting and making good the walls and floors where required. (For Hotel Room Toilets)	6	Each	46726.00	Rupees Forty Six Thousand Seven Hundred Twenty Six Only	2,80,356.00
42	Providing and fixing 15mm C.P brass Single Lever Basin Mixer for Wash Basin with flow rate of 1.89 LPM @ 3 Bar Pressure with aerator complete with 1.5m braided hose pipe mounting rubber gasket including cutting and making good the walls wherever required. Make Kohler Model No K-23475IN-4-CP (For Hotel Room Toilets)	109	Each	17754.00	Rupees Seventeen Thousand Seven Hundred Fifty Four Only	19,35,186.00
43	Providing and fixing 15mm C.P brass Single Lever Basin Mixer for Wash Basin with flow rate of 1.89 LPM @ 3 Bar Pressure with aerator complete with 1.5m braided hose pipe mounting rubber gasket including cutting and making good the walls wherever required. Make Kohler Model No K-29928IN-4-CP (For Others Toilets)	89	Each	6686.00	Rupees Six Thousand Six Hundred Eighty Six Only	5,95,054.00
44	Providing and fixing 15mm C.P brass Deck Mounted Spout Sensor faucet for wash basin with Flow Rate of 1.9 LPM @ 3 Bar Pressure complete including cutting and making good the walls wherever required. Make Kohler Model No K-72867T-CP	10	Each	19241.00	Rupees Nineteen Thousand Two Hundred Forty One Only	1,92,410.00
45	Providing and fixing 15mm C.P brass Sink Cock Make Kohler Model. No. K-99483IN-4-CP for kitchen sink with swinging spout complete including cutting and making good the walls wherever required .	10	Each	5124.00	Rupees Five Thousand One Hundred Twenty Four Only	51,240.00
46	Providing and fixing C.P. brass 15 mm nominal bore two way bib cock Make Kohler Model.K-16094IN-4-CP. (For All Toilets)	174	Each	4077.00	Rupees Four Thousand Seventy Seven Only	7,09,398.00
47	Providing and fixing C.P. brass 15 mm nominal bore one way bib cock Make Kohler Model.K-16093IN-4-CP. (For All Toilets)	27	Each	2739.00	Rupees Two Thousand Seven Hundred Thirty Nine Only	73,953.00
48	Providing and fixing C.P. brass 15mm nominal bore angle valve Make Kohler Model. K-80158IN-9-CP for basin mixer and geyser points. (For All Toilets)	764	Each	1293.00	Rupees One Thousand Two Hundred Ninety Three Only	9,87,852.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
49	Providing and fixing 15mm C.P. copper connecting pipe 450mm long with C.P. brass nuts, washers complete in all respects. Make Jaquar Model. No.ALD 803AB or approved equivalent (For All Toilets)	764	Each	277.00	Rupees Two Hundred Seventy Seven Only	2,11,628.00
50	Providing and fixing health faucet with 1 m long flexible tube and wall hook including all fittings Make Kohler model No.K-12927IN-CP. (For All Toilets)	174	Each	3980.00	Rupees Three Thousand Nine Hundred Eighty Only	6,92,520.00
51	Providing and fixing C.P brass toilet paper holder Make Kohler Model. No. K-10554-CP including cutting and making good the walls wherever required. (For Hotel Room Toilets)	107	Each	3012.00	Rupees Three Thousand Twelve Only	3,22,284.00
52	Providing and fixing C.P brass toilet paper holder Make Kohler Model. No. K-5632IN-CP including cutting and making good the walls wherever required. (For Others Toilets)	67	Each	1503.00	Rupees One Thousand Five Hundred Three Only	1,00,701.00
53	Providing and fixing liquid dispenser including all fittings complete Make Kohler Model-K-10712D-CP. (For All Toilets)	198	Each	3518.00	Rupees Three Thousand Five Hundred Eighteen Only	6,96,564.00
54	Providing and fixing of C.P. brass 600 mm size towel rail Make Kohler Model. No. K-10551-CP fixed with C.P. brass screws complete in all respects. (For Hotel Room Toilets)	96	Each	3457.00	Rupees Three Thousand Four Hundred Fifty Seven Only	3,31,872.00
55	Providing and fixing of C.P. brass Soap Dish Make Kohler Model. K-10560-CP fixed with C.P. brass screws complete in all respects. (For Hotel Room Toilets)	96	Each	2801.00	Rupees Two Thousand Eight Hundred One Only	2,68,896.00
56	Providing and fixing C.P. cast brass twin coat hooks fixed to PVC rawl plug with SS screws Make Kohler model. No. 10555-CP. (For All Toilets)	174	Each	1556.00	Rupees One Thousand Five Hundred Fifty Six Only	2,70,744.00
57	Providing and fixing Grab Bar Make Kohler Model No. 10701D-CP including cutting and making good the walls wherever required	6	Each	6245.00	Rupees Six Thousand Two Hundred Forty Five Only	37,470.00
58	Providing and fixing Hand Rail Make Kohler Model No. 5166T-ST including cutting and making good the walls wherever required	6	Each	8096.00	Rupees Eight Thousand Ninety Six Only	48,576.00
59	Providing and fixing fully automatic Hand dryer Make Kohler Model No. K-5486T-B-OP including all fittings complete in all respect.	10	Each	26006.00	Rupees Twenty Six Thousand Six Only	2,60,060.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
Soil, Waste, Vent & Rain Water Pipes						
60	Painting sand cast iron/ centrifugally cast (spun) soil, waste, vent pipes and fittings with paint of any colour such as chocolate grey, or buff etc. over a coat of primer (of approved quality) for new work.					
61	150 mm diameter pipe	515	Metre	91.00	Rupees Ninety One Only	46,819.50
		0				
62	Providing and fixing soil, waste and vent pipes including all fittings and jointing system.	0				
		0				
63	150 mm dia. Hubless Centrifugally cast (spun) Iron pipes epoxi coated inside & outside S&S pipe IS: 15905	515	Metre	1905.00	Rupees One Thousand Nine Hundred Five Only	9,80,122.50
		0				
64	Providing and fixing uPVC agricultural pipes conforming to IS:4985 (6 kg/sqcm) including all fittings, e.g. couplings, tees, bends, reducers and screwed adoptors jointing with solvent cement joint as per manufacturers' recommendations. [for Rain Water Pipes]	0				
		0				
65	75 mm OD	0	Metre	355.00	Rupees Three Hundred Fifty Five Only	0.00
66	110 mm OD	21	Metre	640.00	Rupees Six Hundred Forty Only	13,440.00
67	160 mm OD	1103	Metre	1267.00	Rupees One Thousand Two Hundred Sixty Seven Only	13,96,867.50
68	200 mm OD	158	Metre	1953.00	Rupees One Thousand Nine Hundred Fifty Three Only	3,07,597.50
		0				
69	Providing and fixing of GI split pipe support clamps with EPDM rubber lining, Zinc plated for support of vertical/hanging horizontal soil, waste, vent and rain water pipes, embedded in walls with anchor fastner, including recommended size GI threaded rod of required length etc. including cost of cutting holes and making good the walls complete in all respects.	0				

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
70	For 75 mm dia Pipe (Thickness of clamp 1.7 mm)	252	Each	226.00	Rupees Two Hundred Twenty Six Only	56,952.00
71	For 100 mm dia Pipe (Thickness of clamp 2.0 mm)	572	Each	280.00	Rupees Two Hundred Eighty Only	1,60,160.00
72	For 150 mm dia Pipe (Thickness of clamp 2.0 mm)	424	Each	368.00	Rupees Three Hundred Sixty Eight Only	1,56,032.00
73	Providing and fixing cast brass floor clean out plug with suitable insert keys for opening, male threaded joint with GI threaded socket drip seal to soil / waste pipe of CI pipe as required complete as per drawing approved sample and direction of engineer in charge.					
74	100 mm dia	110	Each	1427.00	Rupees One Thousand Four Hundred Twenty Seven Only	1,56,970.00
75	150 mm dia	5	Each	2518.00	Rupees Two Thousand Five Hundred Eighteen Only	12,590.00
76	Providing and fixing in position 100x50 mm dia GI reducing elbow including fix to floor with cement mortar.	72	Each	1136.00	Rupees One Thousand One Hundred Thirty Six Only	81,792.00
77	Providing and fixing in position 125x125 mm stainless steel grating for floor trap/floor drain including fix to floor with cement mortar.	358	Each	280.00	Rupees Two Hundred Eighty Only	1,00,240.00
78	Providing and fixing 100 mm dia GI inlet fitting/ Extension Piece with 2 or 3 inlets of 32 to 50 mmdia, fixed to CI trap with lead joint and set in cement concrete as per drawing complete.	286	Each	1141.00	Rupees One Thousand One Hundred Forty One Only	3,26,326.00
79	Providing and fixing in position 110x63 mm dia uPVC balcony Drain including fix to floor with cement mortar.	2	Each	119.00	Rupees One Hundred Nineteen Only	238.00
Internal Water Supply Works						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
80	Providing and fixing Stainless Steel pipes confirming to EN 10312 (S.S.Grade-316) complete with Press Type fittings suitable for doubley secure pressing (two pressings simultaneously– one in front of the crimp and one behind it) for torsion proof and longitudinally forcelocked connection with Black EPDM Sealing Element with SC-Contur in accordance with DVGW regulation W534, DW 8501 BL 0551, DW 8511 BQ 0245) for Hot and Cold water supply capable to withstand temprature up to 110 degree centigrade and working pressure 16 bar, such as sockets, bends, elbows, tees, reducers, unions,Flanges etc. necessary adapters for GI/Copper and CP fittings. Clamps with hanger at a spacing as required including testing of joints complete as per direction of Engineer-in-charge.					
81	22 mm OD x 1.2 mm Thick Pipe	5003	Metre	1896.00	Rupees One Thousand Eight Hundred Ninety Six Only	94,86,162.00
82	28 mm OD x 1.2 mm Thick Pipe	2289	Metre	2403.00	Rupees Two Thousand Four Hundred Three Only	55,00,467.00
83	35 mm OD x 1.5 mm Thick Pipe	557	Metre	3673.00	Rupees Three Thousand Six Hundred Seventy Three Only	20,44,024.50
84	42 mm OD x 1.5 mm Thick Pipe	399	Metre	4414.00	Rupees Four Thousand Four Hundred Fourteen Only	17,61,186.00
85	54 mm OD x 1.5 mm Thick Pipe	530	Metre	5676.00	Rupees Five Thousand Six Hundred Seventy Six Only	30,09,699.00
86	76.1 mm OD x 2.0 mm Thick Pipe	536	Metre	10555.00	Rupees Ten Thousand Five Hundred Fifty Five Only	56,52,202.50
87	88.9 mm OD x 2.0 mm Thick Pipe	137	Metre	12353.00	Rupees Twelve Thousand Three Hundred Fifty Three Only	16,86,184.50
88	108 mm OD x 2.0 mm Thick Pipe	32	Metre	15039.00	Rupees Fifteen Thousand Thirty Nine Only	4,73,728.50
		0				
89	Providing and fixing forged brass ball valve of brass body with hard chrome plated steel ball inside PTFE (Teflon) seat & ring with chrome plated centre handle with female BSP threads complete in all respects.	0				
90	20 mm nominal bore	502	Each	579.00	Rupees Five Hundred Seventy Nine Only	2,90,658.00
91	25 mm nominal bore	98	Each	815.00	Rupees Eight Hundred Fifteen Only	79,870.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
92	32 mm nominal bore	58	Each	1398.00	Rupees One Thousand Three Hundred Ninety Eight Only	81,084.00
93	40 mm nominal bore	15	Each	1971.00	Rupees One Thousand Nine Hundred Seventy One Only	29,565.00
94	50 mm nominal bore	10	Each	2883.00	Rupees Two Thousand Eight Hundred Eighty Three Only	28,830.00
95	Providing and fixing Thermoflex or Kaiflex thermal insulation tubing a elastomeric flexible material having hermetic blister closed cell structure of expanded synthetic rubber over pipes of following nominal bores and thickness including all required accessories complete as per specification.					
	6 mm thick (Concealed Pipes)					
96	For 20 mm dia Pipe	900	Metre	62.00	Rupees Sixty Two Only	55,800.00
97	For 25 mm dia Pipe	305	Metre	67.00	Rupees Sixty Seven Only	20,435.00
98	For 32 mm dia Pipe	55	Metre	103.00	Rupees One Hundred Three Only	5,665.00
99	Providing and fixing Thermoflex or Kaiflex thermal insulation tubing, a elastomeric flexible material having hermetic blister closed cell structure of expanded synthetic rubber over pipes of following nominal bores and thickness including protection by wrapping with 24 gauge aluminium sheet with riveted screw joints all required accessories complete as per specification.					
	13 mm thick (Exposed Pipes)					
100	For 20 mm dia Pipe	1560	Metre	117.00	Rupees One Hundred Seventeen Only	1,82,520.00
101	For 25 mm dia Pipe	714	Metre	138.00	Rupees One Hundred Thirty Eight Only	98,532.00
102	For 32 mm dia Pipe	132	Metre	160.00	Rupees One Hundred Sixty Only	21,120.00
103	For 40 mm dia Pipe	180	Metre	169.00	Rupees One Hundred Sixty Nine Only	30,420.00
104	For 50 mm dia Pipe	216	Metre	218.00	Rupees Two Hundred Eighteen Only	47,088.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
105	For 65 mm dia Pipe	222	Metre	284.00	Rupees Two Hundred Eighty Four Only	63,048.00
106	For 80 mm dia Pipe	6	Metre	322.00	Rupees Three Hundred Twenty Two Only	1,932.00
107	Providing and fixing forged brass single acting air release valve with screwed inlet 25 mm dia.	4	Each	836.00	Rupees Eight Hundred Thirty Six Only	3,344.00
108	Providing and fixing of Single phase electrical actuator operated wafer type rubber lined butterfly valve with by pass arrangement as per drawing attached including level controller, 3 nos. normal butter fly valves,necessary control and Power cables (Maximum 10 M. Length of each type) and control panel installed on OH tank filling line near the tanks complete in all respects.					
	50 mm dia.	2	Each	31075.00	Rupees Thirty One Thousand Seventy Five Only	62,150.00
	65 mm dia.	2	Each	31848.00	Rupees Thirty One Thousand Eight Hundred Forty Eight Only	63,696.00
109	Providing and fixing threaded end brass digital water meter complete in all respect.					
110	50 mm dia.	2	Each	10944.00	Rupees Ten Thousand Nine Hundred Forty Four Only	21,888.00
111	65 mm dia.	2	Each	12031.00	Rupees Twelve Thousand Thirty One Only	24,062.00
	External Water Supply Works					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
112	Providing and fixing Stainless Steel pipes confirming to EN 10312 (S.S.Grade-316) complete with Press Type fittings suitable for doubley secure pressing (two pressings simultaneously– one in front of the crimp and one behind it) for torsion proof and longitudinally forcelocked connection with Black EPDM Sealing Element with SC-Contur in accordance with DVGW regulation W534, DW 8501 BL 0551, DW 8511 BQ 0245) for Hot and Cold water supply capable to withstand temprature up to 110 degree centigrade and working pressure 16 bar, such as sockets, bends, elbows, tees, reducers, unions,Flanges etc. complete as per direction of Engineer-in-charge. (External Works)					
113	54 mm OD x 1.5 mm Thick Pipe	60	Metre	5676.00	Rupees Five Thousand Six Hundred Seventy Six Only	3,40,560.00
114	76.1 mm OD x 2.0 mm Thick Pipe	90	Metre	10555.00	Rupees Ten Thousand Five Hundred Fifty Five Only	9,49,950.00
115	88.9 mm OD x 2.0 mm Thick Pipe	42	Metre	12353.00	Rupees Twelve Thousand Three Hundred Fifty Three Only	5,18,826.00
116	Providing and fixing forged brass ball valve of brass body with hard chrome plated steel ball inside PTFE (Teflon) seat & ring with chrome plated centre handle with female BSP threads complete in all respects.					
117	25 mm nominal bore	15	Each	815.00	Rupees Eight Hundred Fifteen Only	12,225.00
118	32 mm nominal bore	2	Each	1398.00	Rupees One Thousand Three Hundred Ninety Eight Only	2,796.00
119	40 mm nominal bore	2	Each	1971.00	Rupees One Thousand Nine Hundred Seventy One Only	3,942.00
120	50 mm nominal bore	3	Each	2883.00	Rupees Two Thousand Eight Hundred Eighty Three Only	8,649.00
	Sewerage System					
121	Providing, laying and jointing HDPE Double Wall Coil (DWC) SN-8 Grade pipes confirming to IS: 16098 including all fittings wherever required e.g., tees, bends of any degree, couplings, adapters, plugs, unions etc. and jointing as manufacturer recommondation etc. including testing of joints etc. complete.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
122	160 mm OD	18	Metre	1053.00	Rupees One Thousand Fifty Three Only	18,954.00
123	200 mm OD	222	Metre	1549.00	Rupees One Thousand Five Hundred Forty Nine Only	3,43,878.00
124	250 mm OD	108	Metre	2389.00	Rupees Two Thousand Three Hundred Eighty Nine Only	2,58,012.00
125	Supply of Grease separator ECO-JET-OD NS 04 with sludge trap capacity 400 Ltrs. according to DIN EN 1825, for free standing installation, of polyethylene, material LLD-PE, with grease storage capacity 200 liters, total wastewater capacity 830 liters, with direct suction, with connecting flange DN 65 PN 10 For local suction line R 2 1/2", with fire hose quick coupling B with 2 odour proof maintenance openings DN 350 inlet and outlet DN 100. With max dimensions:					
126	770x2000x1680mm With Inspection Windows & Filling Device.(Make : ACO Part No. 3554.64.41 or Equivalent)	1	Each	424795.00	Rupees Four Lac Twenty Four Thousand Seven Hundred Ninety Five Only	4,24,795.00
PLUMBING WORKS SUB HEAD TOTAL						5,48,03,146.00
FIRE FIGHTING WORKS						
Water Supply, Drainage Pumps & Water Treatment Equipments						
127	Supply, installation, testing & commissioning of vertical inline multistage pumping set with Stainless steel-304 body, Stainless steel-304 impeller, Stainless steel-304 casing, Stainless steel-316 shaft and C.I. base & head with mechanical seal, connected to a TEFC induction motor suitable for 415+/- 10% volts, 3 phase 50 cycles A.C. supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads under foundations, 80x40 mm I section base plate bolted to cement concrete foundations complete including CC foundation of suitable size with angle iron lining. Vendor to submit performance curves and technical catalogue of the proposed model for review and information.					
128	Raw Water Transfer Pumps to STP at Water Supply Pump Room					
	Set of Two Pumps (1 Working + 1 Standby)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Capacity 2.5 LPS					
	Head 20 M.					
	HP 1.5 HP Approx.	1	Set	146378.00	Rupees One Lac Forty Six Thousand Three Hundred Seventy Eight Only	1,46,378.00
129	Filter Feed Pump (Domestic Water) in Water Supply Pump Room					
	Set of Two Pumps (1 Working + 1 Standby)					
	Capacity 5.0 LPS					
	Head 25 M.					
	HP 3.0 HP Approx.	1	Set	175654.00	Rupees One Lac Seventy Five Thousand Six Hundred Fifty Four Only	1,75,654.00
130	Domestic Water Transfer Pump to OH Tank at Water Supply Pump Room					
	Set of Two Pumps (1 Working + 1 Standby)					
	Capacity 4.0 LPS					
	Head 60 M.					
	HP 5.0 HP Approx.	1	Set	210785.00	Rupees Two Lac Ten Thousand Seven Hundred Eighty Five Only	2,10,785.00
131	Flushing Water Transfer Pump to OH Tank at STP Pump Room					
	Set of Two Pumps (1 Working + 1 Standby)					
	Capacity 2.5 LPS					
	Head 60 M.					
	HP 3.0 HP Approx.	1	Set	175654.00	Rupees One Lac Seventy Five Thousand Six Hundred Fifty Four Only	1,75,654.00
132	Softener Feed Pump (for Cooling Tower) in STP Pump Room					
	Set of Two Pumps (1 Working+ 1 Standby)					
	Capacity 2.5 LPS					
	Head 25 M.					
	HP 1.5 HP Approx.	1	Set	146378.00	Rupees One Lac Forty Six Thousand Three Hundred Seventy Eight Only	1,46,378.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
133	Soft Water Transfer Pumps to OH Tank in STP room.					
	Set of Two Pumps (1 Working+ 1 Standby)					
	Capacity 3.0 LPS					
	Head 60 M.					
	HP 5.0 HP Approx.	1	Set	175654.00	Rupees One Lac Seventy Five Thousand Six Hundred Fifty Four Only	1,75,654.00
134	Providing, installing, testing and commissioning of variable speed (VSPS) hydropneumatic system mounted on a common base plate under cement concrete foundation with angle iron lining comprising of vertical centrifugal pumping set with Stainless steel-304 body, Stainless steel-304 impeller, Stainless steel-304 casing, Stainless steel-316 shaft and mechanical seal, shaft directly coupled to a TEFC induction motor suitable for 400/440 volts, 3 phase, 50 cycles AC supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads under foundation, one No. microprocessor based controller, dedicated variable frequency drive for each pump, one No.remote sensors, pressure transducers, sequence running cotroller, dry running Protection, motor control centre, necessary power and control cabling from MCC to pumps including required rating of MCB, one No. 100 litre capacity M.S diaphragam tank with interchangeable butyl rubber membrane or as per manufacturer calculation,complete in all respe only be measured).shings for extra strength.					
	including stainless steel grade 316 pipe suction and delivery headers and isolation/ control valves(ball valves/butterfly valves/ Non return valves/ vibration eliminators etc as required) , power box, equipped with fuses/ isolators/circuit breakers as required.					
	The entire Hydropneumatic system shall be factory fitted.					
135	Hydropneumatic System for Irrigation Water Supply at STP Pump Room					
	Set of Two Pumps (1 Working + 1 Standby)					
	Capacity 4.0 LPS					
	Head 40-45 M.					
	HP 5.0 HP Approxi.	1	Set	474266.00	Rupees Four Lac Seventy Four Thousand Two Hundred Sixty Six Only	4,74,266.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
136	Supply, installing, testing and commissioning of fixed speed hydropneumatic system mounted on a common base plate comprising of vertical inline multistage pumping set with Stainless steel-304 body, Stainless steel-304 impeller, Stainless steel-304 casing, shaft of Stainless steel-316 and C.I. base & head with mechanical seal, shaft directly coupled to a TEFC induction motor suitable for 400/440 volts, 3 phase, 50 cycles AC supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads under foundation, dry running Protection, motor control centre, necessary power and control cabling from MCC to pumps including required rating of MCB, one No. 100 litre capacity M.S diaphragm tank with interchangeable butyl rubber membrane, dual type pressure switch, complete in all respects including suction and delivery headers of Stainless steel-316 grade pipe of required dia, isolation valves, NRV of PN-16 grade & vibration eliminators on both suction & delivery side of pumps, power box, equip only be measured). "A" flame spread rating of 25 or le					
137	For Domestic Water Supply at Terrace Level (for Hotel)					
	Set of Two Pumps (1 Working + 1 Standby)					
	Capacity 5.0 LPS					
	Head 25 M.					
	HP 3.0 HP Approx.	1	Set	322032.00	Rupees Three Lac Twenty Two Thousand Thirty Two Only	3,22,032.00
138	Supply, installing, testing and commissioning of submersible dewatering single stage single entry pumps with C.I. body and C.I. two vane enclosed type impeller, SS-304 shaft connected to TEFC submersible motor for 415 ± 10% volts, 3 phase, 50 cycles A.C. power supply with mechanical seal, pump connector unit with rubber diaphragm and bend, vertical discharge pipe, guide pipe and chain in built level controller, sequence running controller, arrangement for both pumps running together in case of emergency, audible hooter for failure or flooding, dry running Protection complete in all respects.					
	(Pumps shall be installed in a set of two pumps One working and One standby)					
139	Pump Room and Basement Drainage Pumps					
	(Pumps to be suitable to handle solids upto 30 mm size)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Capacity - 4.0 LPS (Each)					
	Head - 15 M					
	H.P. - 3.0 HP Approx.	2	Set	181509.00	Rupees One Lac Eighty One Thousand Five Hundred Nine Only	3,63,018.00
140	Sewage Sump Pumps					
	(Pumps to be suitable to handle solids upto 40 mm size)					
	Capacity - 4.0 LPS (Each)					
	Head - 15 M					
	H.P. - 3.0 HP Approx.	1	Set	181509.00	Rupees One Lac Eighty One Thousand Five Hundred Nine Only	1,81,509.00
141	Supply Installation, Testing & Commissioning of vertical self supporting Filter fabricated from MS sheet as per IS: 2825, (minimum thickness of shall 6 mm and dished end 8 mm)) pressure gauges, sample cock, GI class 'C' face piping, CI butterfly valves and all accessories , with initial charge of filter media including anthracite, painting inside with epoxy paint and outside with two coat of red oxide primer and two or more coat of synthetic enamel paint, testing and commissioning complete including CC foundation of suitable size.					
142	Dual Media Filter For Domestic Water Supply					
	Capacity- 18000 LPH					
	Filtration rate- 14000 LPH/Sqm.					
	Filter dia approx. - 1200 MM					
	Working pressure: 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm	1	Each	210785.00	Rupees Two Lac Ten Thousand Seven Hundred Eighty Five Only	2,10,785.00
143	Activated Carbon Filter For Domestic Water Supply					
	Capacity- 18000 LPH					
	Filtration rate- 14000 LPH/Sqm.					
	Filter dia approx. - 1200 MM					
	Working pressure: 3.0 Kg/sq cm.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Test pressure : 4.5 Kg/sq cm	1	Each	234205.00	Rupees Two Lac Thirty Four Thousand Two Hundred Five Only	2,34,205.00
144	Providing and fixing ultra-violet steriliser comprising of SS 316 housing, quartz jacket and energy efficient UV lamp working on spiral flow of water. The units to have complete electrical gear as required. Capacity of Unit: 20 CuM / Hr Power rating : 512 Watts					
	E. Coli after Treatment: Zero	1	Each	155161.00	Rupees One Lac Fifty Five Thousand One Hundred Sixty One Only	1,55,161.00
145	Supply Installation, Testing & Commissioning of Water Softener fabricated from MS plate as per IS: 2825 (minimum thickness of shall 6 mm and dished end 8 mm) complete with initial charge of resins , GI class 'C' face piping, CI butterfly valves, pressure gauge, hydraulic brine injector, accessories, painting inside with epoxy paint, including 500 liters capacity PVC / HDPE brine tank suitable for 2 regeneration capacity, testing and commissioning complete with resins of approved quality and make complete in all respects including CC foundation of suitable size.					
146	For Cooling Tower Water Supply in STP Room Hardness- Inlet- 500-600 PPM Outlet- Less than 30 PPM Capacity- 9000 LPH Regeneration period 12 hrs. Quantity of soft water between two regenerations = 108000 lit Working pressure: 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm	1	Each	175654.00	Rupees One Lac Seventy Five Thousand Six Hundred Fifty Four Only	1,75,654.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
147	Supply Installation,Testing & Commissioning of metering pump type chemical doser with 200 lits. HDPE chemical grade solution tank,injection fitting assembly,suction and delivery hose upto the point of injection, capacity 0-12 lph, complete in all respects.					
148	Chlorination of Domestic Water	1	Each	32203.00	Rupees Thirty Two Thousand Two Hundred Three Only	32,203.00
149	Design, manufacture, supplying, fixing in position, testing and commissioning of the following front operated cubicle type, front access 2mm thick mild steel sheet, free standing, dust and vermin proof, switchboard with IP42 protection with hinged and lockable doors complete with interconnections, tinned copper crimping lugs, bonding to earth and painting, suitable for use at 415 volts, 3 phase 4 wire 50 Hz system and suitable for a fault level of 25 MVA symmetrical at 415 volts.					
	All switchboards shall have provision for entry of cables from the top or bottom as required.					
	All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be lockable in OFF position.					
150	Electric Panel For Water Supply Pumps at Water Supply Pump Room					
	INCOMING					
	1 No. 125 amps TP + NL MCCB with the following accessories:					
	1 No. square flush mounting 0-500 volts scaled voltmeter with three way and OFF switch.					
	Three phase indicating lights.					
	Electrolytic high conductivity three phase and neutral tinned alluminium bus bar rated at 150 amps having a current density of 1 amp per Sqmm suitable to with stand symmetrical fault level of 25 MVA at 415 volts. The neutral bus bar is to be of 100% capacity.					
	OUTGOING UNITS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	4 Nos 25 Amp. TPN MCB of breaking capacity 10KA					
	4 Nos 32 Amp. TPN MCB of breaking capacity 10KA					
	8 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 2.0 to 5.0 HP pumps.					
	8 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	8 Nos.cyclic relay for automatic duty changeover of pumps.					
	8 Nos. single phase preventors.					
	8 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	Space for 4 Nos. Level Controllers.					
	Switchgear shall be suitable for the HP of various motors.					
	2 Nos.25 Amp. TPN MCB Spare.					
	2 Nos. 32 Amp. TPN MCB Spare.					
	The motor control panel shall be prewired with colour coded wires with identification labels complete in all respects as required.	1	Set	216640.00	Rupees Two Lac Sixteen Thousand Six Hundred Forty Only	2,16,640.00
151	Electric Panel For Water Supply Pumps at STP Pump Room					
	INCOMING					
	1 No. 125 amps TPN MCCB with the following accessories:					
	1 No. square flush mounting 0-500 volts scaled voltmeter with three way and OFF switch.					
	Three phase indicating lights.					
	Electrolytic high conductivity three phase and neutral tinned alluminium bus bar rated at 150 amps having a current density of 1 amp per Sqmm suitable to with stand symmetrical fault level of 25 MVA at 415 volts. The neutral bus bar is to be of 100% capacity.					
	OUTGOING UNITS					
	4 Nos 25 Amp. TPN MCB of breaking capacity 10KA					
	4 Nos 32 Amp. TPN MCB of breaking capacity 10KA					
	1 No. TPN MCB of 40 A with 10 KA service breaking capacity for Irrigation & flushing water hydropneumatic pumps. (Only connection to inbuilt panel of Irrigation system)					
	8 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 2.0 to 5.0 HP pumps .					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	8 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	8 Nos.cyclic relay for automatic duty changeover of pumps.					
	8 Nos. single phase preventors.					
	8 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	Space for 4 Nos. Level Controllers.					
	Switchgear shall be suitable for the HP of various motors.					
	2 Nos. 25 Amp. TPN MCB Spare.					
	2 Nos. 32 Amp. TPN MCB Spare.					
	The motor control panel shall be prewired with colour coded wires with identification labels complete in all respects as required.	1	Set	216640.00	Rupees Two Lac Sixteen Thousand Six Hundred Forty Only	2,16,640.00
152	Electric Panel For Drainage Sump Pump					
	One incoming main MCCB unit of 63 amps rating.					
	Alluminium bus bar is separate chamber fully taped of 100 amps capacity.					
*	Two MCB units of 25 amps					
	Two fully automatic DOL starters with push buttons and on/off indicating lights.					
	One rotary duty selector switch					
	Two manual/auto/off switches.					
	Two single phasing presenters.					
	One panel type voltmeter with rotary selector switch for reading voltage between phases.					
	Two ampere meters one for each motor.					
	Three neon phase indicating lights on the incoming mains.					
	Space for one liquid level controllers.					
	All internal wiring colour coded from incoming mains to various switchgear, starters, meters, indicating lamps and bus bar with a changeover facility to run each pump alternatively with an alarm bell in case of both pump's running at one time. Switchgear offered must be compatible with the HP of the motors offered.					
	Motor control centre as described above	1	Set	42157.00	Rupees Forty Two Thousand One Hundred Fifty Seven Only	42,157.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
153	Supplying, installing, testing and commissioning controllers with low voltage relays, stainless steel probes and PVC shroud wiring from tank top to probes.					
154	For Water Supply Pump:					
	To start pump when water level is low in Domestic Water U.G. tank and shut off pump when Domestic Water U.G. tank is full. Also to stop when water level is low in raw water underground tank.	8	Each	6616.00	Rupees Six Thousand Six Hundred Sixteen Only	52,928.00
155	For Sump Pumps:					
	To start pump when water level is high in sump and shut off pump when sump is empty. Both pumps are start when sump is over flowing.	3	Each	6616.00	Rupees Six Thousand Six Hundred Sixteen Only	19,848.00
156	Providing and fixing resilient rubber neoprene lined style arch vibration eliminators suitable for raw water upto 45 deg.C. Temperature working pressure upto 25 Kg/Sqcm.					
157	40 mm dia.	12	Each	3616.00	Rupees Three Thousand Six Hundred Sixteen Only	43,392.00
158	50 mm dia	12	Each	3942.00	Rupees Three Thousand Nine Hundred Forty Two Only	47,304.00
159	65 mm dia	6	Each	4726.00	Rupees Four Thousand Seven Hundred Twenty Six Only	28,356.00
160	Providing and fixing heavy duty armoured cables 1.1 KVA grade including necessary support clamps at ceiling level and connection lugs complete in all respects.					
161	Power cable 3 core 6 sqmm	60	Metre	215.00	Rupees Two Hundred Fifteen Only	12,900.00
162	Power cable Copper 3 core 4 sq.mm	180	Metre	156.00	Rupees One Hundred Fifty Six Only	28,080.00
163	Control cable copper 2 core 1.5 sq.mm	360	Metre	71.00	Rupees Seventy One Only	25,560.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
164	Supplying, installation, testing and commissioning of skid mounted fully automatic Reverse Osmosis System of output capacity 500 litres / hour designed at a minimum Flux at inlet complete as required with the following items:					
	Garnet Filter (GF) - 1 No.					
	Media for GF - 1 LOT					
	Antiscalant Dosing System with level sensors - 1 Lot					
	Cartridge Filter - 1 No.					
	High pressure pump - 2 Nos (1W + 1St).					
	R.O. Block - 1 No.					
	Membranes - As per manufacturer design					
	Pressure Tubes - 1 No.					
	RO skid - 1 No.					
	pH correction system - 1 No.					
	Necessary instruments - 1 Lot					
	Interconnecting pipe with necessary valve work - 1 Lot					
	PVC (upto HP Pump) - 1 Lot					
	SS (HP Pump to Membrane) - 1 Lot					
	Pressure gauges - 5 Nos.					
	Rotameter - 2 Nos.					
	PPLC cum instrument panel - 1 No.					
	Conductivity Indicator - 1 No.					
	Level sensors (Antiscalant Tank) - H/L					
	Level sensors (Permeate Tank) - H/L					
	Solenoid Valve (Inlet) to R.O. tank - 1 No.					
	Solenoid Valve (Reject) - 1 No.					
	The reverse osmosis block shall be duly supplemented with adequate pretreatment and post treatment equipmnet such as filter sodium metabisulphate dosing, anti-scalant dosing and post RO treatment pH correction dosing etc. in line with the raw water characteristics and the required treated water parameters. The plant should consist of the following automation:					
	The plant starts when the level at R.O. water storage tank is low and stops when the level at R.O. water storage tank is high.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	When the level is low, the raw water pump starts. High pressure pumps starts after two minutes of starting of raw water pump.					
	The reject valve closes after 1 minute of starting of high pressure pump.					
	If the pressure at high pressure pumps suction is low / high, the plant trips.					
	When the plant stops due to high level, first the high pressure pump stops and the dump valves opens, after two minutes the raw water pumps and dosing pump stops.					
	When the connectivity is high an alarm is given.					
	The MIMIC provides indications for all the I/Ps and the respective O/Ps.					
	R.O. plant as described above	1	Set	450845.00	Rupees Four Lac Fifty Thousand Eight Hundred Forty Five Only	4,50,845.00
165	Providing and fixing vertical storage type hot water heater fixed to wall with anchor bolts & nuts, 15mm CP brass angle stop cock and 15mm CP brass non-return valve complete including making connections with 15mm dia CP connecting pipes on inlet and outlet, suitable length of power cable and 15 amps plug (Venus or approved equivalent).					
166	Capacity 25 Litres	5	Each	9720.00	Rupees Nine Thousand Seven Hundred Twenty Only	48,600.00
Sewage Treatment Plant (MBR Technology)						
167	Design, Supplying, installing, testing & commissioning of fully automatic Sewage Treatment Plant of 125 KLD for the following duty:					
	Nature of effluent - Domestic Sewage from toilet, kitchen waste water, domestic Laundry waste (if any) shall be discharged into the STP. Design to take consideration of same.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	INLET EFFLUENT CHARACTERSTICS					
	pH - 6.5 – 8.5					
	BOD - 500 Mg/L					
	S. Solids - 250 Mg/L					
	COD - 750 Mg/L					
	Oil & Grease - 50 Mg / L (after oil and grease trap)					
	DISCHARGE EFFLUENT CHARACTERSTICS AFTER TREATMENT					
	pH - 6.0 – 8.0					
	BOD - Less than 5 Mg/L					
	S. Solids - Less than 50 Mg/L					
	COD - Less than 20 Mg/L					
	Oil & Grease - below detectable level					
	Turbidity - Less than 1 NTU					
	E coli Removal - below detectable level					
	STP Cap 125 KLD Electrical & Mechanical Works					
	Design, supplying, installing, testing & commissioning of 125 KLD Sewage Treatment Plant for Domestic Waste/Kitchen (excluding all Civil & construction work) for the following duty:-					
	Supply, installation, testing & commissioning of 2 Nos. Stainless Steel-316 Perforated Corrugated Screen of size 800mm x 800mm fabricated through 5mm thick plate having holes of 8 mm at a distance of 10 mm with suitable lifting arrangement. This is to slide in the fixed ss channels fixed on the side walls. Set-1					
	Supply and installation of MS Class 'C' with hot dip galvanized puddle flange 25 to 150 mm dia. in accordance to relevant IS pipe standards as required to be provided (in the structural slab & wall) of various diameter. Puddle flanges shall be provided for all the structural component of the STP. Lot-1					
	Supply and fixing of mechanical punched hole fine screen for 2-3 mm size complete as required MOC- SS 304. Set-1					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply and fixing of mechanical belt type oil skimmer basin MS housing with 500 liter HDPE tank for 1/2 Lph flow rate capacity complete in all respect. Set-1					
	Supply and fixing of electronic type level indicator and controller for automatic operation of the system with high/low level alarm complete with auxillary NO/NC contacts for each tank. Lot-1					
	Supply and fixing of sight tube (of 3.5 to 4.5 m length) with isolation valve at top/bottom, demarcation on tube & for making the installation complete. Lot-1					
	Supplying and fixing of fully submersible, centrifugal non-clog sewage handling type pump for raw sewage transfer from equalization tank to Anoxic Tanks. The pump shall have CI casing, CI impeller and SS 304 shaft, TEFC induction motor suitable for 415+10%Volt, 3 Phase, 50 Cycles AC Power supply, Mechanical seal, Pump connector unit with rubber diaphragm and bend including pressure gauge, lifting arrangement/lifting device of pull chain/guide rail for the pump, sequence running controller, dry running protection, level controller complete with probs complete in all respect including delivery header & delivery pipe (interconnecting piping) with GI 'C' class pipe of required dia, isolation valves, NRV & vibration eliminators on delivery side of Pumps. Set-1					
	Equilisation Transfer Pump					
	Capacity/Flow rate - 8 m3/h					
	Pumping Head - 8-10 Mtr					
	Solid Handling: 45 mm					
	Set of 2 Nos. Pumps (1 Working +1 Standby)					
	Supply and fixing of 2 Nos. twin type rotary air blowers (1W + 1S) capable of delivering 200 cum/hr of free air at 0.5 kg/cm2 for Aeration Tank and Equilisation tank. driven through "V" belt or directly coupled through flexible coupling to a TEFCmotor of suitable HP Suitable for 415 ± 10% volts, 3 phase, 50 cycles A/C supply.1225 RPM with all accessories complete in all respects. Set-1					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply and fixing Disc type, EPDM membrane based, non clog type air dispersion system capable of handling 3-5 cfm of air with oxygen transfer efficiency of 3-4% per/meter water depth. Air dispersion grid shall be assembled in modular form so that they can be replaced / repaired easily from plat form at the top. (Imported fine bubble membrane diffusers for equalisation tank, aeration tank & sludge holding tank) Lot-1					
	Supply and fixing Tube type, silicon membrane based, non clog type air dispersion system capable of handling 3-5 cfm of air with oxygen transfer efficiency of 3-4% per/meter water depth. Air dispersion grid shall be assembled in modular form so that they can be replaced / repaired easily from plat form at the top. (Imported fine bubble membrane diffusers for MBR tank) Lot-1					
	Note : Air dispersion system shall be provided for Equalisation tank, Aeration tank, MBR tank and Sludge holding tank.					
	Providing, Laying, testing & Commissioning of "C" Class Heavy duty MS Pipe 32 to 150 mm dia as required conforming to IS: 1239 including fittings like elbows, tees, flanges, nut bolts, gaskets with suitable clamps & painting with Two or more coats of synthetic enamel paint of required shade over a coat of steel primer complete as required. For Interconnecting Lines and Air Lines. Lot-1					
	Providing, Laying, testing & Commissioning of stainless steel grade-304 schedule-10, 25 to 80 mm dia. as required including fittings like elbows, tees, flanges, nut bolts, gaskets with suitable clamps. Lot-1					
	Providing & fixing butterfly valve tested to a pressure not less than 15 Kg/Sq.cm. 50 to 150 mm dia as required Including rubber gasket, 2 nos. table-E flanges, nuts, bolts, washers & painting complete as required. Lot-1					
	Providing & fixing dual plate CI wafer type check valve 50 to 150 mm dia. as required tested to a pressure of 10 Kg/sqcm. Including rubber gasket, 2 nos. table-E flanges, union, nuts, bolts, washers & painting complete as required. Lot-1					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing forged brass ball valve with SS ball suitable for test pressure of not less than 15 kg / sq.cm of the 25 to 40 mm dia. Lot-1 :					
	Supply, installation, testing & commissioning of MBR modules of hollow fibre reinforced filtration membranes with SS – 316 skid for housing the membrains & air grid for scouring the sludge, permeate S.S piping etc. complete in all respect as required.					
	Membrane Tank of RCC - Membrane Accessories, Valve, Instrument, Permeate Collection and air distribution header piping etc. Backwash tank of FRP, Permeate pump with VFD : CI 1w+1s capacity : 8 m3/hr, backwash pump with VFD : CI 1w+1s capacity : 8 m3/hr , Membrane blower without acoustic hood MOC : CI 1w +1S capacity : 150 Nm3/hr, Type : Twin lobe type, Chemical dosing system : 1W, * Membrane shall have max pore size of 0.04 micron. Membrane shall have 2 year full replacement cliff warrenty. Lot-1					
	Supply and fixing of ultraviolet dis-infection unit. The unit shall have over 99.9 % bacterial reduction from inlet to outlet. The dis-infection chamber shall be constructed of SS 316L on all weltd parts. The UV lamp shall be of low pressure mercury vapour type with hard glass enclosure, the sockets shall be water tight & vibration resistant. The lamp life shall be rated for 6000 hours. The unit shall be complete with temperature safety control, lamp out alert circuit & UV radiometer with 4 – 20 mA output as of manufacturers recomendation in all respects. The UV unit shall have with reactor, cabinet housing, cabinet cooling, treatment chamber, electrical panel, temperature safety control, lampout alert, UV radiometer along with UV monitoring system and UV monitoring readout panel. The UV Dosage should be > 60,000 uW – Sec / sq.cm. The lamps should be selected based upon the flow requirement of respective unit. as recomended by manufacturer complete in all respects.					
	Flow Rate :6 M3/hr Set-1					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply and fixing of horizontal, centrifugal Sludge disposal pump for the disposal of sludge from tube settler to sludge holding tank. The pumps shall have CI casing, CI/bronze Impeller & SS 304 shaft & sleeve with mechanical rotary shaft seal connected by a flexible tier type coupling to TEFC induction motor suitable for 415+10% Volts, 3 Phase, 50Hz, AC Power Supply mounted on a common channel base-plate with coupling guard, 150 mm dia pressure gauge with GM isolation cock, suitable vibration eliminator pads under foundation of approved design, dry running protection including all necessary piping, valves, level controller complete with probs and other accessories complete as required. Set-1					
	Sludge Recycling Pump					
	Capacity/Flow rate - 20 M3/h					
	Pumping Head - 8-10 Mtr					
	(Solid handling size for this pump shall be 7-10 mm)					
	Set of 2 Nos. Pumps (1 Working +1 Standby)					
	Supply and fixing of basket/Screw/Solid bowl type centrifuge with top discharge of suitable for 3 batches in a day with interconnecting piping, lifting arrangement, pump and poly dosing system. The basket shall be in SS 304 construction complete in all respects. Set-1					
	Supply and fixing of Centrifuge Feed pump of suitable capacity with CI body, SS-Impeller and Shift complete (Screw Type) - 2 Nos. (1working+1standby) Set-1					
	Supply and fixing of following instrument for the auto operation of System and safety of MBR modules.					
	2 Nos. Electro-magnetic flow meter cum totalizer at the sewage inlet and outlet of membrane suction pump of suitable size.					
	1 No. pH Meter at membrane suction pump outlet for measurement of pH.					
	1 Set Differential pressure switch transmitter and for pressure alarm high and low, flow switch for flow alarm high and low.					
	1 Set Online rotameter for checking the air flow to the MBR module.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	1 Set Air Rotameter for Biological Air supply and Air scouring					
168	STP As Describe Above	1	Set	7611673.00	Rupees Seventy Six Lac Eleven Thousand Six Hundred Seventy Three Only	76,11,673.00
169	ELECTRICAL WORKS					
	Supply and fixing of the following front operated cubicle type compartmentalition, front access totally enclosed sheet steel clad, free standing, dust and vermin proof, switchboards with IP 42 protection with hinged, gasketed and lockable doors including interconnections, copper crimping lugs, brass glands, bonding to earth and painting, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and with 25 kA rupturing capacity at 415 volts complete as per specifications, as required and as below.					
	All switchboards shall have provision for entry of cables from the top or bottom as required.					
	All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be locakble in OFF position.					
	INCOMING					
	1 No. 250 Amp 25 kA TPN MCCB with Thermal over load and magnetic short circuit release site settable					
	INDICATING PANEL					
	The incomers shall have the following indicating panel					
	Square flush mounting 0-150 amp scaled ammeter with 3 way and OFF selector switch					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	3 nos. Cast resin current transformers of 150/5 ratio Class 1.0, 15 VA burden for metering					
	Three phase indicating lamps					
	Square flush mounting voltmeter scaled 0-500 volt with 3 way and OFF selector switch					
	BUSBAR					
	Electrolytic high conductivity aluminium three phase and neutral busbars rated at 300 amps having a maximum current density of 1 amp per sq mm suitable to with stand symmetrical fault level of 25 kA at 415 volts for 1 second. The neutral busbar is to be of 50% capacity.					
	OUTGOING UNITS					
	2 Nos 63 Amp. TPN MCCB of breaking capacity 10KA (For 10 KW Air Blowers for EQT, AT & SHT)					
	2 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 10 KW Air Blower .					
	2 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	2 Nos. single phase preventors.					
	2 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	Space for 1 no Level Controllers.					
	2 Nos 63 Amp. TPN MCCB of breaking capacity 10KA (For 10 KW Air Blowers for MBR Tank)					
	2 Nos. fully automatic Star Delta starters with push buttons and ON/OFF indicating lights and overload relays for 10 KW Air Blower .					
	2 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	2 Nos. single phase preventors.					
	2 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	Space for 1 no Level Controllers.					
	2 Nos 40 Amp. TPN MCB of breaking capacity 10KA (For 3 Kw, centrifuge feed pumps)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	2 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 2.0 KW pump .					
	2 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	2 Nos. single phase preventors.					
	2 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	Space for 1 no Level Controllers.					
	10 Nos 32 Amp. TPN MCB of breaking capacity 10KA (For 2 to 5 Kw, Eq. transfer, MBR suction, sludge feed, MBR permeate, MBR backwash pumps)					
	10 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 2.0 KW pump .					
	10 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	10 Nos. single phase preventors.					
	10 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	Space for 5 nos Level Controllers.					
	2 Nos 25 Amp. TPN MCB of breaking capacity 10KA (For 0.5 Kw, Hydro dosing solution pump and citric solution dosing pump)					
	2 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 0.5 KW pump .					
	2 Nos. selector switch for selecting mode of operation i.e. auto/manual/off.					
	2 Nos. single phase preventors.					
	2 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.					
	2 No. 63 Amp. TPN MCCB Spare.					
	2 No. 40 Amp. TPN MCB Spare.					
	2 Nos. 32 Amp. TPN MCB Spare.					
	The Switchboard shall be complete with all interconnections, risers, internal wiring, labels etc complete as required					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supplying & laying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables required size & length as per specification in existing trenches, cable trays, ducts, clamped to wall with suitable clamps including providing and fixing of all fixing accessories, connecting, testing and commissioning. 1 Lot					
170	Electrical Work as Describe Above	1	Set	292757.00	Rupees Two Lac Ninety Two Thousand Seven Hundred Fifty Seven Only	2,92,757.00
	Fire Fighting System					
171	Providing laying, testing & commissioning of 'C' class heavy duty MS Pipe conforming to IS 1239/3589 i/c fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. in ground including welding, excavation & providing cement concrete blocks as supports, anticorrosive treatment with coaltar/asphalt tape as per IS 10221, refilling the trench etc. of following sizes complete as required.					
172	80 mm dia.	90	Metre	1065.00	Rupees One Thousand Sixty Five Only	95,850.00
173	100 mm dia.	60	Metre	1521.00	Rupees One Thousand Five Hundred Twenty One Only	91,260.00
174	Providing and fixing of Weather proof hose cabinets fabricated from 14 g M.S. Sheet with full glass door and mortise locking arrangement , suitable to accommodate one Hydrant landing valve, 2 nos. 15 M long hose and 1 No branch pipe. The cabinet shall be painted with one coat of primer and finished stove enamelled "Fire Red", "Fire Hose" written on front including suitably mounted on a raised masonry platform as required. (Approx 0.75mx0.6 m x 0.25 m).	16	Each	7639.00	Rupees Seven Thousand Six Hundred Thirty Nine Only	1,22,224.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
175	Providing and fixing MS partly glazed single/double hung lockable shutter fabricated from MS section as required with 5 mm thick glass for fire station complete including stove enamelled painting of door and frame and words "Fire Hydrant" written on glass, suitable to accommodate 2 Hydrant landing valves, 1 fire hose reel, 2 nos.15m long 63 mm dia hose,1-branch pipe, 1no. fire man's axe, fire extinguishers 2 nos, including suitably mounted on a raised masonry platform as required. (Approx.size 0.90 m x 2.1m)	36	Each	7005.00	Rupees Seven Thousand Five Only	2,52,180.00
176	Providing and fixing in position the industrial type pressure gauges with gun metal / brass valves complete as required	76	Each	973.00	Rupees Nine Hundred Seventy Three Only	
177	Providing and fixing resilient rubber neoprene lined single arch vibration eliminators with unit control suitable for raw water upto 45°C temperature working pressure 25 kg and test pressure 37.5 kg/cm ² .					
178	80 mm dia.	4	Each	5086.00	Rupees Five Thousand Eighty Six Only	20,344.00
179	100 mm dia	3	Each	6605.00	Rupees Six Thousand Six Hundred Five Only	19,815.00
180	150 mm dia	3	Each	7979.00	Rupees Seven Thousand Nine Hundred Seventy Nine Only	23,937.00
181	Providing and fixing heavy duty PVC insulated, PVC armoured conductor cables 1100 V grade including necessary support clamps and connection lugs complete in all respects.					
182	Power cable 3.5 core 150 sq mm aluminium conductor armoured cable	75	Metre	670.00	Rupees Six Hundred Seventy Only	50,250.00
183	Power cable 3 core 16 sq mm aluminium conductor armoured cable.	35	Metre	118.00	Rupees One Hundred Eighteen Only	4,130.00
184	Control cable copper 2 core 1.5 sq.mm	750	Metre	71.00	Rupees Seventy One Only	53,250.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
185	Supply, Installation, Testing & Commissioning of double flanged vertical air vessel fabricated shell from 10 mm thick & dished ends 12 mm thick M.S.plate, suitable for working pressure of 18 kg/cm ² and test pressure of 27 kg/cm ² , 450 mm dia and 2.00 m high for fire pumps complete with four nos dual setting pressure switches to operate jockey and main pumps at drop of pressure as given in the specifications.	2	Each	48598.00	Rupees Forty Eight Thousand Five Hundred Ninety Eight Only	97,196.00
186	Providing & fixing 150 mm diameter MS Class 'C' for diesel engine exhaust pipe (including all fittings, clamps, steel support) of suitable dia for the diesel engine. The pipe shall be provided insulation with fibre glass wool and wrapped with 24g. aluminium sheet complete with all respect.	75	Metre	2559.00	Rupees Two Thousand Five Hundred Fifty Nine Only	1,91,925.00
187	Providing and fixing of gun metal fire Brigade Suction Hose coupling (Draw-out Connection) with nut for female coupling as per IS:902- 1974 complete with 100 mm dia. G.I. Suction pipe and 100 mm dia. 1No. C.I. Foot valve flanged (to be connected to static water tank).	1	Each	12044.00	Rupees Twelve Thousand Forty Four Only	12,044.00
188	Providing and fixing carbon-di-oxide type fire extinguishers consisting of pressure tested single cast cylinder with rotary discharge valve and high pressure discharge tube of minimum 1 m length, discharge horn, suspension bracket conforming to IS:15683 finished externally with red enamel paint and fixed to wall with brackets complete with internal charge (Halon Free Gas)					
189	Capacity 4.5 Kg.	42	Each	9162.00	Rupees Nine Thousand One Hundred Sixty Two Only	3,84,804.00
190	Providing and fixing carbon-di-oxide fire extinguishers trolley mounted with all accessories internal discharge tube,high pressure discharge hose,discharge nozzle, ISI marked as per IS:2878 finished externally with red enamel paint. (Halon Free Gas)					
191	Capacity 22.5 kg.	2	Each	23579.00	Rupees Twenty Three Thousand Five Hundred Seventy Nine Only	47,158.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
192	Providing and fixing ABC Powder type fire extinguishers consisting of welded M.S. cylindrical body, squeeze lever discharge valve fitted with pressure indicating guage internal discharge tube 30 cms long high pressure discharge hose, discharge nozzle, suspension bracket conforming to IS:15683 finished externally with red enamel paint and fixed to wall with brackets complete with internal charge. (Halon Free Gas)					
193	Capacity 6.0 Kg.	42	Each	4147.00	Rupees Four Thousand One Hundred Forty Seven Only	1,74,174.00
194	Providing and fixing 25 mm dia inspecting & testing assembly with drain valve built in bye pass arrangement and connection to drain line. (Giocomini)	24	Each	5153.00	Rupees Five Thousand One Hundred Fifty Three Only	1,23,672.00
Hot Water System						
195	Supply, installation , testing & commissioning of Micro Processor Controlled air cooled Heat pump delivering actual capacity as per the following parameters duly installed at site.					
	Heat pumps shall be rated at 6.02 KW of input power and 19.8 KW of output power. Refrigerant used should be environment friendly R-410a. Heat pump should heat water upto 55°C on heat pump mode. It shall have silent operation and the sound level should not exceed 65 dB.					
	Refrigerent					
	R-410a/6.2 kg (Refrigerant)					
	Heat Pump as described above					
	Nominal Input Power - 6.02 KW					
	Output Heating capacity - 19.8 kW					
	Heat pump shall have LCD display control panel with built in diagnostic and troubleshooting information					
	Heat pump should have an inbuilt cycle for defrosting in case icing occurs on evaporator.					
	with inbuilt tube in tube type heat exchanger.					
	All other mounting ,fitting and controls					
	Suitable for electric supply of 380 +/- 10 % volts & 3N~ 50 hz					
	All interconnecting wiring/cabling between heat pump and electric panel & control valves, NRV, Piping etc complete.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	The heat pump shall have an in-built facility to start /stop depending on variation in demand at different periods.	1	Set	485976.00	Rupees Four Lac Eighty Five Thousand Nine Hundred Seventy Six Only	4,85,976.00
196	Supply , installation , testing & commissioning of Micro Processor Controlled air cooled Heat pump delivering actual capacity as per the following parameters duly installed at site.					
	Heat pumps shall be rated at 10.3 KW of input power and 38 KW of output power. Refrigerant used should be environment friendly R-410a. Heat pump should heat water upto 55°C on heat pump mode. It shall have silent operation and the sound level should not exceed 65 dB. (Make: AO Smith)					
	Refrigerent					
	R-410a/6.2 kg (Refrigerant)					
	Heat Pump as described above					
	Nominal Input Power - 10.3 KW					
	Output Heating capacity - 38 kW					
	Heat pump shall have LCD display control panel with built in diagnostic and troubleshooting information					
	Heat pump should have an inbuilt cycle for defrosting in case icing occurs on evaporator.					
	with inbuilt tube in tube type heat exchanger.					
	All other mounting ,fitting and controls					
	Suitable for electric supply of 380 +/- 10 % volts & 3N~ 50 hz					
	All interconnecting wiring/cablng between heat pump and electric panel & control valves, NRV, Piping etc complete.					
	The heat pump shall have an in-built facility to start /stop depending on variation in demand at different periods.	2	Set	614789.00	Rupees Six Lac Fourteen Thousand Seven Hundred Eighty Nine Only	12,29,578.00
197	Design, Supply, installation, testing & commissioning of SS 316 horizontal hot water storage tank with 4 mm thicness suitable for minimum 5 Kg /Sqm working pressure. Tank shall be provided with water flow meter at inlet (approved by department of weights and measures), inlet / outlet, overflow / drain connection with MH cover 6 mm thick SS tank, pressure relief valves, pressure gauge at inlet / outlet with isolation cock, thermometer at inlet / outlet. All the valves & accessories shall be suitable for an operating pressure of 5 Kg/sq.cm.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Tank shall be insulated with 100 mm thick glass wool / rock wool insulation including 24 gauge aluminium cladding. Tank shall provided with 15 mm dia testing spout with valve (inlet temperature to hot water storage tank 60-65 deg.C). The flanges shall be machined from SS304 sheets with dimensions confirming to ANSI, B 16.5 No. 150. The nozzles shall be SS pipes. (Tank shall be fabricated as per unfired pressure vessel code IS 2825-1969, IS 226 / IS 2062). (Note : Electric heating element of 9 KW for every 1000 ltr shall be provided in the hot water storage tank in case of failure of heat pump for emergency purpose)					
198	Capacity 3000 Litre	2	Each	245916.00	Rupees Two Lac Forty Five Thousand Nine Hundred Sixteen Only	4,91,832.00
199	Capacity 2000 Litre	1	Each	187364.00	Rupees One Lac Eighty Seven Thousand Three Hundred Sixty Four Only	1,87,364.00
200	Providing, installation, testing and commissioning of following pumps suitable for 415 Volts connected with T.E.F.C. induction motor, M.S.channel, base plate complete with vibration isolators, isolating valve on suction and discharge, non return valve on discharge, pressure gauges with stop cock and dial type thermometer on suction or discharge. The pump shall have mechanical seal. The pump shall be SS 304 casing, SS 304 impeller, SS 304 shaft and CI (Epoxy coated) base & EPDM Mechanical seal (suitable for hot water temperature up to 85 deg C.) including Valves, NRV, Strainers, Pressure Gauge, Thermometer & Cabling etc. complet in all respects.					
201	Hot Water circulation Pumps in Heat pump and tank. (For 38 KW Heat Pump)					
	Pump (2 Nos. 1W+1SB)					
	Flow - 6.5m3/hr					
	Head - 25 mtrs	2	Set	74946.00	Rupees Seventy Four Thousand Nine Hundred Forty Six Only	1,49,892.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
201	Hot Water circulation Pumps in Heat pump and tank. (For 19.8 KW Heat Pump)					
	Pump (2 Nos. 1W+1SB)					
	Flow - 3.5m ³ /hr					
	Head - 25 mtrs	1	Set	58551.00	Rupees Fifty Eight Thousand Five Hundred Fifty One Only	58,551.00
202	Hot Water Return Pumps					
	Pump (2 Nos. 1W+1SB)					
	Flow - 1 LPS					
	Head - 18-20 mtrs	2	Set	76117.00	Rupees Seventy Six Thousand One Hundred Seventeen Only	1,52,234.00
FIRE FIGHTING WORKS SUB HEAD TOTAL						1,68,36,656.00
ELECTRICAL WORKS						
POINT WIRING						
203	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, armored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.					
i)	10 Pair	100	Metre	186.00	Rupees One Hundred Eighty Six Only	18,600.00
ii)	20 Pair	150	Metre	285.00	Rupees Two Hundred Eighty Five Only	42,750.00
iii)	30 Pair	250	Metre	383.00	Rupees Three Hundred Eighty Three Only	95,750.00
204	Supply installation and testing and commissioning of following size of Telephone distribution board in a M.S. box with hinged cover/ door complete with krone type tag block with double jumpering facility mounted on a bakelite sheet etc. including terminations of cable as required.					
i)	10 Pair telephone distribution board	4	Each	261.00	Rupees Two Hundred Sixty One Only	1,044.00
ii)	20 Pair telephone distribution board	4	Each	318.00	Rupees Three Hundred Eighteen Only	1,272.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
iii)	30 Pair telephone distribution board	2	Each	352.00	Rupees Three Hundred Fifty Two Only	704.00
iv)	100 Pair telephone distribution board	1	Each	567.00	Rupees Five Hundred Sixty Seven Only	567.00
205	Supply and laying of coaxial cable RG-59 in existing conduit complete as required.	100	Metre	36.00	Rupees Thirty Six Only	3,600.00
206	Supply, erection, testing & commissioning of following sizes of splitters of aluminium die cast body.					
i)	6 Way	4	Each	159.00	Rupees One Hundred Fifty Nine Only	636.00
207	Supply and fixing of following modular switch socket on the existing modular plate & switch box including connection but excluding modular plate and Modular box etc as required.					
i)	32 Amp DP Switch	4	Each	2269.00	Rupees Two Thousand Two Hundred Sixty Nine Only	9,076.00
ii)	25 Amp Socket Outlet	4	Each	2836.00	Rupees Two Thousand Eight Hundred Thirty Six Only	11,344.00
208	Supply and fixing of universal shaver socket unit (vertical) with dual voltage sockets (230 Volts & 110 Volts), inbuilt Isolation transformer with safety overload protection with reset feature, automatic switch ON/OFF on inserting / removal of plug, indicating light for power ON status with safety shutters complete with Modular base and cover plate and GI Box.	1	Set	2042.00	Rupees Two Thousand Forty Two Only	2,042.00
209	Supply of following sizes complete with all accessories including junction box with 3 mm thick cover plate, neoprene gasket in joints, cutting the floor and jamming the raceway with all necessary hardware (including civil works) as required.					
i)	100 x 38 x 1.6mm	150	Metre	397.00	Rupees Three Hundred Ninety Seven Only	59,550.00
ii)	200 x 38 x 1.6 mm	100	Metre	681.00	Rupees Six Hundred Eighty One Only	68,100.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
210	Providing and fixing of fire retardant sealant on wall / floor crossings	10	Metre	6240.00	Rupees Six Thousand Two Hundred Forty Only	62,400.00
SUPPLY & FIXING OF LIGHT FIXTURES & FANS						
NOTE - ALL THE LIGHT FIXTURE SAMPLE SHALL BE APPROVED BY ARCHITECT BEFORE PROCUREMENT OF LIGHT FIXTURE. ALL THE SAMPLE SHALL BE ARRANGED BY CONTRACTOR.						
211	Supply, Installation, Testing & Commissioning of Surface Mounted Round 20W, diecast aluminium body & CRCA, PMMA diffuser with integral electronic driver ,IP-20, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 1400 lmwith CRI >80 , Dia-202mm,H-48.5mm(Legero make:LRS 3120)	804	Each	1244	Rupees One Thousand Two Hundred Forty Four Only	10,00,176.00
212	Supply, Installation, Testing & Commissioning of Surface Mounted Round COB Downlight 30W, diecast aluminium body , PC integral electronic driver ,IP-20, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 2400 lm with CRI >80 , 50 deg beam angle , Dia-150mm,H-130mm	119	Nos	3446	Rupees Three Thousand Four Hundred Forty Six Only	4,10,074.00
213	Supply, Installation, Testing & Commissioning of Recessed Mounted Round 18W, diecast aluminium body housing, PMMA diffuser with integral electronic driver ,IP-20, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 1530 lmwith CRI >80 , Dia-180mm,H-30mm(Legero make:LRS 4018)	335	Nos	811	Rupees Eight Hundred Eleven Only	2,71,685.00
214	Supply, Installation, Testing & Commissioning of Panel lights 2X2, CRCA housing, PMMA diffuser in opal finish with integral electronic driver ,IP-40, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 110lm/W with CRI >80 ,L-595mm,W-595mm,L-87mm(Legero make:LER 2636)	42	Nos	2425	Rupees Two Thousand Four Hundred Twenty Five Only	1,01,850.00
215	Supply, Installation, Testing & Commissioning of Ceiling Mounted 25W, housing in PC with integral electronic driver ,IP-65, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 2625 lm with CRI >80 , L-1200mm,W-123mm	338	Nos	2948	Rupees Two Thousand Nine Hundred Forty Eight Only	9,96,424.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
216	Supply, Installation, Testing & Commissioning of Bulk Head 12W, housing in die cast aluminium with integral electronic driver ,IP-65, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 780 lm with CRI >80 ,L-109mm,W-66.5mm,H-189mm	100	Nos	1034	Rupees One Thousand Thirty Four Only	1,03,400.00
217	Supply, Installation, Testing & Commissioning of Ceiling Mounted 40W, housing in PC with integral electronic driver ,IP-65, CCT-3000K/4000K/6000K, PF>0.95, THD<10%, rated life of L-70@ 50,000 hours 4200 lm with CRI >80 , L-1200mm,W-123mm	70	Nos	3638	Rupees Three Thousand Six Hundred Thirty Eight Only	2,54,660.00
218	Supply, Installation, Testing & Commissioning of Integral LED aviation light comprising of aluminium housing with polycarbonate enclosure with flasher suitable for 230V AC complete with fitting including photochromatic switch for automatic ON/OFF of Aviation lights complete as per bajaj make or approved equivalent.	4	Nos	14040	Rupees Fourteen Thousand Forty Only	56,160.00
INVERTER						
219	Supply, Installation, Testing Commissioning of Sine Wave INVERTER, fully digital type and shall be based on PWM technique with following key features –					
	Wide input voltage range 230V - 20% + 15 % and wide frequency 50Hz + 10%.					
	Single Phase input / Single Phase output.					
	INVERTER shall be static without any moving parts.					
	Input supply shall be single phase, three wire system.					
	PWM technique shall be used for producing AC output from DC input.					
	Efficiency of the Inverter shall be greater than 85%.					
	Output wave form shall be pure sine Wave with harmonic distortion less than 3%.					
	Inverter shall be suitable for maximum ambient temperature of 60°C and acoustic noise at 1 Mtr shall be less than 55dB.					
	Inverter shall have minimum of IP20 protection.					
	The Inverter shall be complete with 90 minutes power backup on full load.					
	Battery shall be sealed maintenance free type with suitable rack and connectors.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
i)	1.0 KVA	0	Set.	30633.00	Rupees Thirty Thousand Six Hundred Thirty Three Only	-
ii)	1.5 KVA	0	Set.	45383.00	Rupees Forty Five Thousand Three Hundred Eighty Three Only	-
i)	2.0 KVA	1	Set.	59565.00	Rupees Fifty Nine Thousand Five Hundred Sixty Five Only	59,565.00
ii)	5.0 KVA	1	Set.	113457.00	Rupees One Lac Thirteen Thousand Four Hundred Fifty Seven Only	1,13,457.00
	METER BOARD, MAIN DISTRIBUTION BOARDS , DISTRIBUTION BOARDS & RISING MAIN					
220	MAIN LIGHTING & POWER PANEL	1	Set	153394.00	Rupees One Lac Fifty Three Thousand Three Hundred Ninety Four Only	1,53,394.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 500Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	1 No. 400Amp Four Pole Moulded Case Circuit Breaker of 35 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	1 No. 500 Volt voltmeter 96mm x 96mm with selector switch.					
	1 No. 400 Amp Ammeter 96mm x 96mm with selector switch and CT's .					
	1 Set of phase indicating lamps with single pole MCB.					
	1 Set of Breaker 'ON' & 'OFF' indicating lamps.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 500 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	Providing and fixing of 6 Nos. 40-63 Amp TPN MCB of 10KA (Ics value) with Protection.					
	Providing and fixing of 2 No. 160 Amp TPN Moulded Case Circuit Breaker of 25KA (Ics value) with Thermal Magnetic release for Protection (O/L & S/C).					
221	<u>BASEMENT L & P PANEL</u>	1	Set	113457.00	Rupees One Lac Thirteen Thousand Four Hundred Fifty Seven Only	1,13,457.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 150Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	1 No. 125 Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	1 No. 500 Volt voltmeter 96mm x 96mm with selector switch.					
	1 No. 125 Amp Ammeter 96mm x 96mm with selector switch and CT's .					
	1 Set of phase indicating lamps with single pole MCB.					
	1 Set of Breaker 'ON' & 'OFF' indicating lamps.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 150Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	Providing and fixing of 8 Nos. 40-63 Amp Four Pole MCB of 10KA (Ics value) with Protection.					
	Providing and fixing of 4 Nos. 40-63 Amp Double Pole MCB of 10KA (Ics value) with Protection.					
222	LIFT PANEL - TYPE - I	4	Set	241891.00	Rupees Two Lac Forty One Thousand Eight Hundred Ninety One Only	9,67,564.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 160Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 100Amp Auto Change Over with By pass provision					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	1 No. 100 Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	1 No. 500 Volt voltmeter 96mm x 96mm with selector switch.					
	1 No. 100 Amp Ammeter 96mm x 96mm with selector switch and CT's .					
	1 Set of phase indicating lamps with single pole MCB.					
	1 Set of Breaker 'ON' & 'OFF' indicating lamps.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 160Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	Providing and fixing of 3 Nos. 63 Amp Four Pole Moulded Case Circuit Breaker of 25KA (Ics value) with Thermal Magnetic release for Protection (O/L & S/C).					
	Providing and fixing of 2 Nos. 40-63 Amp Double Pole MCB of 10KA (Ics value) with Protection.					
	Providing and fixing of 3 Nos. 63 Amp Four Pole Moulded Case Circuit Breaker of 25KA (Ics value) with 63 Amp Four Pole RCCB 100mA with Thermal Magnetic release for Protection (O/L & S/C).					
223	UPS INCOMING PANEL - TYPE I	1	Set	82824.00	Rupees Eighty Two Thousand Eight Hundred Twenty Four Only	82,824.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 150Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	01 No. 125 Amp FP Moulded Case Circuit Breaker.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBAR					
	160 Amp FP aluminium busbar with coloured heat shrinkable sleeve.					
	OUTGOING					
	03 Nos. 63 Amp FP Moulded Case Circuit Breaker.					
	Panel described as above					
224	UPS OUTGOING PANEL - TYPE I	1	Set	143637.00	Rupees One Lac Forty Three Thousand Six Hundred Thirty Seven Only	1,43,637.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 150Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	02 Nos. 63 Amp FP Moulded Case Circuit Breaker.					
	02 Set of phase indicating lamps with Single Pole MCB.					
	02 Set of ON / OFF indicating lamps with Single Pole MCB.					
	02 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBAR					
	125Amp FP copper busbar with coloured heat shrinkable sleeve.					
	OUTGOING					
	08 No. 63 Amp TPN Miniature Circuit Breaker.					
	06 No. 25 Amp DP Miniature Circuit Breaker.					
	Panel described as above					
225	EMERGENCY PANEL	1	Set	48673.00	Rupees Forty Eight Thousand Six Hundred Seventy Three Only	48,673.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 150Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	01 No. 40 Amp DP Moulded Case Circuit Breaker.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	BUSBAR					
	63Amp FP copper busbar with coloured heat shrinkable sleeve.					
	OUTGOING					
	02 No. 63 Amp DP Miniature Circuit Breaker.					
	16 No. 32 Amp DP Miniature Circuit Breaker.					
	Panel described as above					
226	METER BOARD - GROUND FLOOR - TYPE I	0	Set	102111.00	Rupees One Lac Two Thousand One Hundred Eleven Only	-

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 160Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 125Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 160 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	3 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 3 Nos. 0-63 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing of 1 No. 32 Amp 4P MCB of 10KA.					
	Providing and fixing of 3 Nos. 25 Amp 4P MCB of 10KA.					
227	METER BOARD - GROUND FLOOR - TYPE II	0	Set	96439.00	Rupees Ninety Six Thousand Four Hundred Thirty Nine Only	-
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 125Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 100Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 125 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	1 No. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing & fixing of 1 No. 0-40 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 5 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 2 Nos. 25 Amp 4P MCB of 10KA.					
228	METER BOARD - GROUND FLOOR - TYPE III	0	Set	226914.00	Rupees Two Lac Twenty Six Thousand Nine Hundred Fourteen Only	-
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 160Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 125Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 160 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	20 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 20 No. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 1 No. 32 Amp 4P MCB of 10KA.					
	Providing and fixing of 4 Nos. 25 Amp 4P MCB of 10KA.					
229	METER BOARD - FIRST FLOOR - TYPE I	1	Set	226914.00	Rupees Two Lac Twenty Six Thousand Nine Hundred Fourteen Only	2,26,914.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	26 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 25 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing & fixing of 01 No. 0-32 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 25 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 1 No. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
230	METER BOARD - FIRST FLOOR - TYPE II	1	Set	249606.00	Rupees Two Lac Forty Nine Thousand Six Hundred Six Only	2,49,606.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	25 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 25 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 25 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing of 3 Nos. 32 Amp 4P MCB of 10KA.					
231	METER BOARD - FIRST FLOOR - TYPE III	0	Set	238260.00	Rupees Two Lac Thirty Eight Thousand Two Hundred Sixty Only	-
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 160Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 125Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 160 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	22 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 22 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing of 22 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 2 Nos. 32 Amp 4P MCB of 10KA.					
232	METER BOARD - SECOND FLOOR - TYPE I	1	Set	158840.00	Rupees One Lac Fifty Eight Thousand Eight Hundred Forty Only	1,58,840.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	27 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 27 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing & fixing of 01 No. 0-40 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 27 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 3 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 5 Nos. 25 Amp 4P MCB of 10KA.					
233	METER BOARD - SECOND FLOOR - TYPE II	1	Set	170186.00	Rupees One Lac Seventy Thousand One Hundred Eighty Six Only	1,70,186.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	27 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 27 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 12 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 5 Nos. 25 Amp 4P MCB of 10KA.					
234	METER BOARD - SECOND FLOOR - TYPE III	0	Set	260951.00	Rupees Two Lac Sixty Thousand Nine Hundred Fifty One Only	-
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 160Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	INCOMING					
	1 No. 125Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 160 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	25 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 25 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 25 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 1 No. 32 Amp DP MCB of 10KA.					
235	METER BOARD - THIRD FLOOR - TYPE I	1	Set	102111.00	Rupees One Lac Two Thousand One Hundred Eleven Only	1,02,111.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	8 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 8 Nos. 0-40 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 8 Nos. 40 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing of 5 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 1 No. 25 Amp 4P MCB of 10KA.					
236	METER BOARD - THIRD FLOOR - TYPE II	1	Set	147494.00	Rupees One Lac Forty Seven Thousand Four Hundred Ninety Four Only	1,47,494.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 250Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 200Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 250 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	9 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing & fixing of 9 Nos. 0-40 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 9 Nos. 40 Amp DP MCB of 10KA.					
	Providing and fixing of 3 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 4 Nos. 32 Amp 4P MCB of 10KA.					
237	METER BOARD - THIRD FLOOR - TYPE III	0	Set	96439.00	Rupees Ninety Six Thousand Four Hundred Thirty Nine Only	-
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 125Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 100Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	TPN Aluminium busbars of minimum of 125 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	2 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 2 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 2 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 4 Nos. 25 Amp 4P MCB of 10KA.					
238	METER BOARD - FOURTH FLOOR - TYPE I	1	Set	147494.00	Rupees One Lac Forty Seven Thousand Four Hundred Ninety Four Only	1,47,494.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	25 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 24 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing & fixing of 1 No. 0-40 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 25 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 6 No. 25 Amp TPN MCB of 10KA.					
239	METER BOARD - FOURTH FLOOR - TYPE II	1	Set	158840.00	Rupees One Lac Fifty Eight Thousand Eight Hundred Forty Only	1,58,840.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	26 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 24 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing & fixing of 2 Nos. 0-63 Amp. Three Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 24 Nos. 32 Amp DP MCB of 10KA.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 5 Nos. 25 Amp 4P MCB of 10KA.					
240	METER BOARD - FOURTH FLOOR - TYPE III	0	Set	164513.00	Rupees One Lac Sixty Four Thousand Five Hundred Thirteen Only	-
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 160Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 125Amp Four Pole Moulded Case Circuit Breaker of 25 KA (Ics Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 160 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	17 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 17 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 17 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 40 Amp 4P MCB of 10KA.					
	Providing and fixing of 4 Nos. 25 Amp 4P MCB of 10KA.					
241	METER BOARD - FIFTH FLOOR - TYPE I	1	Set	90766.00	Rupees Ninety Thousand Seven Hundred Sixty Six Only	90,766.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	23 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 3 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 23 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 5 Nos. 32 Amp 4P MCB of 10KA.					
242	METER BOARD - FIFTH FLOOR - TYPE II	1	Set	96439.00	Rupees Ninety Six Thousand Four Hundred Thirty Nine Only	96,439.00
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 200Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	INCOMING					
	1 No. 160Amp Four Pole Moulded Case Circuit Breaker of 25 KA (lcs Value) with Thermal Magnetic release for O/L & S/C Protection.					
	01 Set of phase indicating lamps with Single Pole MCB.					
	01 Set of ON / OFF indicating lamps with Single Pole MCB.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	01 Set of Three Phase Digital KWH including Amp, Voltage, Frequency, Power Factor and Maximum Demand Recording and inbuilt selector switch with RS 485 port & CT's etc.					
	BUSBARS					
	TPN Aluminium busbars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
	OUTGOING					
	23 Nos. meter chamber each of size 250mm x 250mm having 6mm thick bakelite sheet and each meter chamber consisting of following :-					
	Providing & fixing of 23 Nos. 0-32 Amp. Single Phase Dual Source KWH Meter (Electronics type) including terminations / connections.					
	Providing and fixing of 23 Nos. 32 Amp DP MCB of 10KA.					
	Providing and fixing of 2 Nos. 63 Amp 4P MCB of 10KA.					
	Providing and fixing of 4 Nos. 32 Amp 4P MCB of 10KA.					
243	MCCB BOXES					
	Supply, installation, testing & commissioning of MCCB in Sheet Steel enclosure made out of 2 mm thick CRCA sheet suitable for 3 phase 4 wire 50Hz AC system complete with four pole Moulded Case Circuit Breaker (ICS = 35KA) suitable for incoming & outgoing termination including power coating etc. complete as per specification & as required.					
(i)	400 Amp FP MCCB	1	Set	34037.00	Rupees Thirty Four Thousand Thirty Seven Only	34,037.00
(ii)	200 Amp FP MCCB	1	Set	22691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	22,691.00
(iii)	125 Amp FP MCCB	2	Set	16224.00	Rupees Sixteen Thousand Two Hundred Twenty Four Only	32,448.00
(iv)	63 Amp FP MCCB	4	Set	15090.00	Rupees Fifteen Thousand Ninety Only	60,360.00
244	FEEDER PILLARS (IP 65)					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 100Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-	2	Set	82029.00	Rupees Eighty Two Thousand Twenty Nine Only	1,64,058.00
(A)	INCOMING					
	• 1 Nos. 63 Amp FP Moulded Case Circuit Breaker of 25KA (Ics=Icu upto 433 Volt) breaking capacity with Thermal Magnetic release, O/L & S/C protection and neutral link.					
	• 1 Set of 3 pole 70 Amp power contactor , Astronomical Timer switch DIN mounting & Toggle switch for auto / manual operation of Road lighting complete as required.					
(B)	INSTRUMENTS WITH INCOMER					
	• 1 No. 0 to 500Volt voltmeter with selector switch.					
	• 1No. 0 to 63Amp ammeter with selector switch & CT's.					
	• 1 Sets of ON / OFF indicating lamps					
	• 1 Sets of RYB indicating lamps with SP MCB.					
	• 1 No. 96mm x 96mm Digital Kilowatt hour meter.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
C)	BUSBARS					
•	TPN Copper busbars of minimum of 100 Amps capacity with heat shrinkable coloured sleeves and i/c DMC / SMC busbars supports at required.					
D)	OUTGOING					
•	12 Nos. 10-32 Amp Double pole Miniature Circuit Breaker (10KA).					
	HT CABLE					
245	Supply of following sizes of 11KV XLPE grade multicore stranded aluminium conductor (Earthed), XLPE insulated & PVC sheathed armoured cable conforming to IS: 7098 (Part-I) 1988 complete as required and as per specification enclosed.					
(ii)	3 Core, 240 Sq.mm	400	Metre	1932.00	Rupees One Thousand Nine Hundred Thirty Two Only	7,72,800.00
	UPS					
246	Supply, installation, testing & commissioning of 20 KVA (2 Nos.) UPS in paralleling mode at 0.99 input power factor with SNMP card, compatible for BMS connectivity on backnet/MODBUS, inbuilt / external isolation transformer as per specification given in the document with following broad features.					
	THD(i) shall be less than 3% in the entire loading range.					
	Input power factor shall be more than 0.95. from 25% to 100% load.					
	UPS shall carry design output at 40 deg.					
	Shall have soft start and hold of for incoming supply.					
	Inverter capability to supply 150% load for 5 sec.					
	Three Phase Input and Three Phase Output. (Input - 340V - 470V, Three Phase, 4 wire. / Output - 400-415 Volt, Three Phase, 4 Wire.)					
	Shall not allow deep discharge of the battery and shall not go to 10.5 volts in case of 12 volt cells.					
	Battery shall be external type with rack and suitable for 30 minute backup on 100% load.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	UPS shall be compatible for minimum 2 nos unit in parallel operation. (Synchronize). Parallel operation kit shall be supplied with UPS.					
	UPS described as above	1	Set.	907657.00	Rupees Nine Lac Seven Thousand Six Hundred Fifty Seven Only	9,07,657.00
SAFETY EQUIPMENT						
247	Supply & fixing of Rubber hand gloves 11 KV Tested.	2	Set.	1588.00	Rupees One Thousand Five Hundred Eighty Eight Only	3,176.00
248	Supply & fixing of glass framed shock treatment chart both in Hindi & English for treating person suffering due to electric shock mounted on wall hooks.	10	Set.	511.00	Rupees Five Hundred Eleven Only	5,110.00
249	Providing & fixing of Carbon dioxide (CO2) type fire extinguishers conforming to IS 2878-1976 and cylinder fully charged of 4.5 Kg capacity hanged on wall with bracket component as required.	2	Each	4084.00	Rupees Four Thousand Eighty Four Only	8,168.00
250	Supply and fixing safety instruction chart in word duly framed with 5mm thick glass required. (Approx Front area 1.20 sq.mt.)	2	Each	1021.00	Rupees One Thousand Twenty One Only	2,042.00
251	Providing of set of 4 Nos. 9.5 Litre capacity GI bucket painted in post office red colour with prior coat of red - oxide paint and written with white paint 'Fire' and mounted on MS angle iron frame with bracket of appropriate size and capacity including filling sand etc.	2	Set	5106.00	Rupees Five Thousand One Hundred Six Only	10,212.00
252	First Aid box as approved by St. John Ambulance Brigade / Indian red Cross conforming to IS 2217 - 1963	4	Each	1248.00	Rupees One Thousand Two Hundred Forty Eight Only	4,992.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
253	Supply & fixing of fire retardant/ extinguishing Electrical insulated synthatic mat of 2.0 mm thick +/- 10% confirming to BIS: DOC NO. ET-02 (5440) meeting requirments of IS: 15652 :2006 (with upto date amendment), suitable for all voltages not exceeding 3.3 KV and having minimum width of 1000 mm +/- 20mm and including supply of required quantity of adhensive/ compound and fixing the same at size as per site requirments.	40	Each	318.00	Rupees Three Hundred Eighteen Only	12,720.00
254	Supply & fixing of fire retardant/ extinguishing Electrical insulated synthatic mat of minimum 3.0 mm thick +/- 10% confirming to BIS: DOC NO. ET-02 (5440) meeting requirments of IS: 15652 :2006 (with upto date amendment),, suitable for all voltages not exceeding 11 KV and having minimum width of 1000 mm +/- 20mm and including supply of required quantity of adhensive/ compound and fixing the same at size as per site requirments.	40	Each	522.00	Rupees Five Hundred Twenty Two Only	20,880.00
11KV H.T. METERING, SUBSTATION, HT & LT PANEL						
255	11KV H.T. METERING PANEL (INDOOR TYPE):	1	Job	113457.00	Rupees One Lac Thirteen Thousand Four Hundred Fifty Seven Only	1,13,457.00
	Supplying, Installation, Testing & Commissioning of indoor type floor mounted, dust, damp and vermin proof, cubicle HT. Metering Panel made out of 14 gauge CRCA sheet steel complete with 5Amp electronic trivector meter, C.T.'s of 120/5Amp, 0.5 Class, 10VA Burden, and P.T.'s of 11KV/ /3, 110V/ /3, 100 VA conforming to relevant IS Standards and complete as required. H.T. Metering cubicle along with C.T.'s, P.T.'s and trivector meter shall be got tested and approved from local electricity supply authority. The GA drawing shall be got approved by state electricity board authorities before procurement.					
256	11 KV HT PANEL BOARD (SINGLE BREAKER)					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supplying, installation, testing & commissioning of indoor type floor mounted metal clad, 11 KV VCB panel with 1 No. VCBs, totally enclosed & fully interlocked, horizontal drawout horizontal/ vertical isolation type breaker as per IS 13118, as amended up to date and additional specifications, having capacities as mentioned below, single break, trip free mechanism, manually charged and auto/ manually closing breaker suitable for use on 11 KV, 3 Phase, 50 Hz A.C. supply with short circuit fault level of 500 MVA, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 630Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO+4NC and equipped with following switchgears and accessories i/c connections suitable for 3x300sq. mm. XLPE 11 KV cable (cable entry from bottom/ top/ side) end termination with head shrinkable jointing material etc. as required. (Note - Cost of end termination not included in this item)					
A)	INCOMERS - 1 NO.					
	Each feeder shall consist of :					
i)	630 Amps., 11KV horizontal draw out type VCB with motorized spring charge mechanism and required safty switchgears complete.					
ii)	11 KV / 110 volt PT of class 38/1 accurancy & 100 VA burden.					
iii)	Set of dual core dual ratio CTs of 120 / 60 /5/5 Amps. of 15 VA burden & accurancy class 0.5 for metering and class 5 P 10 for protection.					
iv)	96mm x 96mm type 600 Amp Digital Type ammeter with inbuilt ASS					
v)	96mm x 96mm type Digital Type Voltmeter protected by HRC fuses / MCBs with inbuilt VSS					
vi)	Digital tri-vector Meter (Smart Controller) having 30 days memory Class -1.0 with MDI & RS 485 port.					
vii)	Frequency meter					
viii)	Micro processor based feeder protection numerical relay with adjustable O/L, E/F and short circuit protection with communication port. (O/L Setting 50-200% and E/F setting 20-80%)					
ix)	Set of LED indication lamp protected by MCB for RYB Phases, trip, ON & OFF, spring charge, auto trip / trip healthy of breaker complete.					
vi)	Annunciator window (with minimum 4 window) for feeder alarm / tripping annunciations with electronic hooter.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
x)	Master trip & trip circuit supervision relay, Antipumping Relay, Auxiliary Relay complete.					
xi)	Limit switch for tests & service position, circuit breaker control switch (T/N/C)					
xii)	Trip coil operation at 24 Volts DC through battery bank					
B)	BUSBARS					
i)	630A TP Copper bus bar					
	11 KV MAIN HT PANEL BOARD (TOTAL OF A TO B ABOVE)	1	Job.	453828.00	Rupees Four Lac Fifty Three Thousand Eight Hundred Twenty Eight Only	4,53,828.00
257	11KV HT PANEL BOARD (THREE BREAKER)					
	(One incomers, and Two out goings)					
	Supplying, installation, testing & commissioning of indoor type floor mounted metal clad, 11 KV VCB panel with 3 No. VCBs, totally enclosed & fully interlocked, horizontal drawout horizontal/ vertical isolation type breaker as per IS 13118, as amended up to date and additional specifications, having capacities as mentioned below, single break, trip free mechanism, manually charged and auto/ manually closing breaker suitable for use on 11 KV, 3 Phase, 50 Hz A.C. supply with short circuit fault level of 500 MVA, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 630Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO+4NC and equipped with following switchgears and accessories i/c connections suitable for 3x300sq. mm. XLPE 11 KV cable (cable entry from bottom/ top/ side) end termination with head shrinkable jointing material etc. as required. (Note - Cost of end termination not included in this item)					
A)	Incomers - 1 Set.					
A1)	Each feeder shall consist of :					
i)	630 Amps.,11KV horizontal draw out type VCB with motorized spring charge mechanism and required safty switchgears complete.					
ii)	11 KV / 110 volt PT of class 1.0 accuracy & 100 VA burden.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
iii)	Set of dual core dual ratio CTs of 120/60/5/5 Amps. of 15 VA burden and accurancy class 1.0 for metering and class 5 P 10 for protection.					
iv)	96mm x 96mm type 600 Amp Digital Type ammeter with inbuilt ASS					
v)	96mm x 96mm square Digital type Voltmeter protected by HRC fuses / MCBs with inbuilt VSS					
vi)	Digital Trivector Meter (Smart Controller) having 30 days memory, Class 0.5 with MDI & RS 485 port.					
vii)	Frequency meter					
viii)	Set of LED indication lamp protected by MCB for RYB Phases, trip, ON & OFF, spring charge, auto trip / trip healthy of breaker complete.					
ix)	Master trip & trip circuit supervision relay, Antipumping Relay, Auxiliary Relay etc.					
x)	Limit Switch for tests and service position, circuit breaker control switch (T/N/C).					
xi)	Trip coil operation at 24 Volts DC through battery bank.					
xii)	Limit switch for tests & service position, circuit breaker control switch (T/N/C)					
xiii)	Trip / Closing coil operation at 24 Volts DC through battery bank					
B)	Busbar					
i)	630A TP Copper bus bar					
C)	OUT GOING - 2 Sets					
	Each feeder shall consist of :					
i)	630 Amps.,11KV horizontal draw out type VCB with motorized spring charge mechanism and required safty switchgears complete.					
ii)	Set of dual core CTs of 60/ 5 Amps.CT for 1000 KVA TRF, of 15 VA burden & accurancy class 1.0 for metering and class 5 P 10 for protection.					
iii)	96mm x 96mm square Digital Ammeter with inbuilt ASS					
iv)	Micro processor based feeder protection numerical relay with adjustable O/L, E/F and short circuit protection with communication port. (O/L Setting 50-200% and E/F setting 20-80%)					
v)	Set of LED indication lamp protected by MCB for RYB Phases, trip, ON & OFF, spring charge, auto trip / trip healthy of breaker complete.					
vi)	Annunciator window (with minimum 6 window) for feeder alarm / tripping annunciations with electronic hooter.					
vii)	Master trip & trip circuit supervision relay, Antipumping Relay, Auxiliary Relay complete.					
viii)	Limit switch for tests & service position, circuit breaker control switch (T/N/C)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
ix)	Trip coil operation at 24 Volts DC through battery bank					
	HT PANEL BOARD (TOTAL OF A TO C ABOVE)	1	Job	1361485.00	Rupees Thirteen Lac Sixty One Thousand Four Hundred Eighty Five Only	13,61,485.00
258	DISTRIBUTION TRANSFORMERS (Cast Resin Dry Type)					
	Supply, installation, testing and commissioning of Cast Resin Dry Type, 11 / 0.433KV, 3 phase, 50 Hz, DYn -11, vector group copper wound, Class F insulation associated with winding temperature indicator / controller actuated by means of resistance temperature detector embedded in LV winding, indoor type transformer with approximately impedance as per IS (6.25% / 5%) tapping for OFF load operation on HV side in steps of 2.5% for + 5% to - 10% having cable end boxes on HV side suitable for 3 core x 240 Sq.mm XLPE cable of 11 KV grade and 1600 Amp bus trunking arrangement on LV side with neutral brought out separately including supplying and laying of copper conductor multicore control cable from transformer to HT breaker for safety tripping suitably mounted on MS channel including supplying and grouting of suitable MS channels with all accessories and conforming to IS: 11171: 1985 with upto date ammendments & as per Technical specifications complete in all respect.					
i)	1000 KVA Transformer (Level 3)	2	Each	2496056.00	Rupees Twenty Four Lac Ninety Six Thousand Fifty Six Only	49,92,112.00
259	MAIN L.T. PANEL					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A. Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 2000Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
	Main LT Panel and be suitable for Synchronizing of 2 Nos DG Set with Microprocessor Power command controllers PC 3.3 of cumins or equivalent (Power command controllers shall form part of DG Set supply item) and PLC mounted in the Panel shall ensure auto start / Auto stop of DG Sets, Auto changeover of Grid DG Supply breakers, Bus coupler switching & Load Management, interlocking and ensure the Panel as compatible with Power command controller cumins PC 3.3 or equivalent, metering , protection, battery charger, transducer, UPS and PLC of Allen Bradley or equivalent make complete as per the drawing and specifications. Main L.T. Panel shall conform to "Form 4b" construction. (All software & hardware required to achieve the operation of Main LT Panel including Synchronizing, Load Management shall deemed to be included in the quoted rate of Main LT Panel (TOTAL OF A TO F).					
A)	INCOMERS					
i)	1600 Amp FP EDO Air Circuit Breaker (of 50KA Ics Value) with microprocessor release for O/L, S/C & E/F protection complete with interlocking with I/C & Bus coupler Breaker as required. (from Transformer Incomer) - 2 Nos.					
ii)	800 Amp FP EDO Air Circuit Breaker (of 50KA Ics Value) with microprocessor release for O/L, S/C & E/F protection complete with interlocking as required. (from DG Set Incomer) - 1 No.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
iii)	630 Amp FP EDO Air Circuit Breaker (of 50KA Ics Value) with microprocessor release for O/L, S/C & E/F protection complete with interlocking as required. (from DG Set Incomer) - 1 No.					
B)	SCNCHRONIZING & LOAD MANAGEMENT					
	PLC & Power Command controller of DG Set shall ensure Synchronizing & Load Management including but not limit to achieving following functions.					
	<ul style="list-style-type: none"> Auto Start / Auto Stop of DG Set. Auto Changeover of Grid / DG Supply by auto operation of incoming breakers of Grid supply & DG Supply incomer breaker. Load management & Buscoupler switching. Synchronizing of DG Set output prior to closing of incomer breaker of DG Sets. Interlocking of incomer and bus coupler breakers. 					
	<ul style="list-style-type: none"> Necessary hardware shall be provided to achieve above functions including PLC with real time clock, digital inputs / outputs, MMI with 2 line display, power supply, auxiliary relays, push buttons, LED indication lamp, window annunciation fascia etc. & software for the above. All items required for complete operation whether or not list in BOQ shall be deemed to be included in quoted rates. Automatic system shall be user friendly and shall have manual over ride. 					
C)	BUSCOUPLER					
i)	1600Amp FP EDO Air Circuit Breaker (of 50KA Ics Value) as buscoupler with interlocking arrangement with incomers.- 1 Nos.					
D)	BUSBARS					
i)	2000 Amp TPN Aluminium Busbars. - 2 Sets.					
E)	OUTGOING					
	Each following out going feeder shall be with Neutral links, 96mm x 96mm Square type digital Ammeter with inbuilt ASS & set of CT's w.r.t. feeder rating and LED ON Indication lamp protected by MCB:					
i)	1000 Amp 4P MDO Air Circuit Breaker (of 50KA Ics Value) with microprocessor release for O/L, S/C & E/F protection complete as required - 4 Nos.					
ii)	800 Amp TPN Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 5 Nos.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
iii)	630 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 2 Nos.					
iv)	400 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 4 Nos.					
v)	250 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 2 Nos.					
vi)	200 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 2 Nos.					
vii)	160 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 2 Nos.					
viii)	125 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 2 Nos.					
ix)	100 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 12 Nos.					
x)	63 Amp 4P Moulded Case Circuit Breaker of 35 KA (Ics Value) complete with microprocessor release for O/L, S/C & E/F protection - 5 Nos.					
F)	INSTRUMENTS ON EACH INCOMER BREAKERS					
i)	Digital voltmeter (96mm x 96mm) with VSS.					
ii)	Digital ammeter (96mm x 96mm) with CT's & ASS.					
iii)	Set of LED indication lamp protected by mcb for RYB phases,feeder ON / OFF indication.					
iv)	Electronic type Digital Multifunction Meter having 30 day memory and parameters of voltage, current, active power (kW), reactive power (KVA _r), apparent power (KVA), power factor, phase angle, frequency, power demand, active energy (kWh), reactive energy (KVA _r h), apparent energy (KVAh), voltage & current harmonic etc compatible with PC through RS 485 communication cable.					
v)	Master trip relay.					
vi)	Auxilliary relay.					
vii)	Trip circuit supervision relay.					
viii)	Phase Sequence Relay (Transformer Incomer)					
ix)	Reverse Power Relay (DG Set Incomer)					
G)	INSTRUMENTS ON EACH OUTGOING BREAKERS/MCCB					
i)	Digital ammeter (96mm x 96mm) with CT's & ASS.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
ii)	Set of LED ON/OFF indication lamp protected by MCB for breakers.					
		1	Set	14509123.00	Rupees One Crore Forty Five Lac Nine Thousand One Hundred Twenty Three Only	1,45,09,123.00
TOTAL OF A TO G AS ABOVE						
260	Thyristor switched APFC panel (400 KVAR)					
	Supply, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system having front surface area as per G.A. Drawing, fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland, plates i/c cleaning & finishing complete with 9 tank process for powder coating in approved shade, having 1000Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm X 50 mm x 5 mm thick, fabrication shall be done in transportable sections entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-					
A)	INCOMING					
i)	800 Amp FP MDO Air Circuit Breaker (of 50KA Ics Value) with microprocessor release for O/L, S/C & E/F protectio with RS 485 communication port complete.					
B)	BUSBARS					
i)	1000 Amp TPN Aluminium busbar.					
C)	INSTRUMENTS					
i)	96mm x 96mm Digital type ammeter with CTs (800/5A) & inbuilt ASS					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
ii)	96mm x 96mm Digital type Voltmeter protected by MCBs with inbuilt VSS					
iii)	10 stepped Automatic Power Factor Correction (APFC) relay with inbuilt PF parameter.					
iv)	Set of LED indication lamp protected by MCB for RYB Phases, ON & OFF & trip indication on incommer.					
v)	Switch for auto / manual operation.					
D)	Outgoing					
	Switch gear & capacitor bank rating					
i)	125A TP MCCB , 25KA with contactor and 50KVAR capacitor bank - 6 sets					
ii)	63A TP MCCB , 25KA with contactor and 25KVAR capacitor bank - 4 sets					
	Note:-					
1	Each bank connected to outgoing switchgear shall consists of Thyristor switch module, single phase Electronic switch, MPP-H (heavy duty) capacitor with 7% detuned harmonic Reactors suitable for 3Phase, 440 V A.C. ±10 %, 50Hz ± 3 % low loss with pressure tear off fuse, Capacitor voltage shall be 525V, suitable rating shall be used to get actual KVAR at 440V, Total dielectric losses < 0.45 KW/ KVAR, switching operation > 10000 and life of Capacitor shall be >150000 Hrs at class D & inrush current > 450 Ir, TP Fuse Base with semiconductor protection Fuse Link, ON/OFF Push Button, ON/OFF LED Indication Lamps protected by MCB, Auxiliary Relay complete.					
2	All capacitor shall be placed below compartment of panel with ventilations arrangement as required.					
	APFC PANEL (TOTAL OF A TO D ABOVE)	2	Set.	1285129.00	Rupees Twelve Lac Eighty Five Thousand One Hundred Twenty Nine Only	25,70,258.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
FIRE DETECTION AND ALARM & PUBLIC ADDRESS SYSTEM						
261	Supplying, installation, testing & commissioning of Addressable High Sensitivity Photo Detector with sensitivity level of 0.02% to 2% Obs/Feet. The detector shall have the optic block to amplify signals from smoke, but diminish stray internal reflections that can cause false alarms. The detector shall have twin bi-colour LED for 360 deg viewing. Addressing shall be with user friendly rotary decimal switches. Designed to meet UL268, 7th Edition complete as required.	100	Each	34037.00	Rupees Thirty Four Thousand Thirty Seven Only	34,03,700.00
262	Supplying, installation, testing & commissioning of Addressable Multicriteria (Smoke + Heat + CO + IR) Detector. The detector shall have four sensing elements viz. Photo electric smoke, Heat, Carbon Monoxide & Infra Red Flame detection combined in a single detector. The detector shall have twin bi-colour LED for 360 deg viewing. Addressing shall be with user friendly rotary decimal switches. The internal CO Sensor should be replaceable upon EOL. It should be possible to generate 2 distinctive tones if the CO concentration reaches 2 definite user defined levels complete as required.	20	Each	13615.00	Rupees Thirteen Thousand Six Hundred Fifteen Only	2,72,300.00
263	Supply & Fixing 2 Core 1.5 sq. mm. 600V Mineral Insulated Copper Cable with seamless outer copper sheath Fire Survival type, which can withstand 1010 Deg C for two hours as per UL standards and shall also withstand CWZ test on one single Cable as per UL 2196. The cable shall be approved by UL, and the outer sheath of the cable shall be seamless in construction ,The cable should be supplied and installed including Glands & Seals for this cable with all accessories as per UL Standards. Make: PYROTENAX/nVent/TYCO/ CAVICEL.	110000	Metre	610.00	Rupees Six Hundred Ten Only	6,71,00,000.00
SURVILLANCE & SECURITY						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
264	Supply, Installation, Testing & Commissioning of IP Network TDN Low-Light IR Dome Camera, 1/2.8" CMOS, 2 MP @ 60fps or better, Four individual streams @H.264,2MP,25 FPS, Min. Illumination required Color: 0.1 lux at 50 IRE, F1.8, 120dB True WDR, 3.5–8 mm motorized focus & zoom lens, Shutter time 1/66500 s to 2 s,P-Iris, 3DNR, Privacy Mask, Optimized IR with upto 40m IR distance, Dual channel Audio G.711a/G.711u/AAC, 128GB SD card support, Alarm: 1 In/ 1out, PoE, H.264 /H.265 High Profile and MJPEG, Camera support dynamic GOP and Dynamic fps for to save BW and Storage, PoE Class 3 /12V DC, Having Operating temp range : 0°C to 50° C.Memory 1024 MB RAM, 512 MB Flash,PVC free,Support for Session Initiation Protocol (SIP) for integration with Voice over IP (VoIP) systems,Block any un-authorized firmware installation and camera should check anauthenticity of firmware installed in camera every time it reboot . Certifications: ONVIF Profile S , Profile G & Profiel T compliant, UL,FCC,CECamera should not support GB/T 28281 and there should not be any option to activate /deactivate this protocol through web browser or camera firmware.Camera provided by bidder should not be made by high silicon chip .Camera should support 3rd party edge based analytics .Complete with mounting bracket and all necessary accessories, civil, electrical works & peripheral items, as required.	50	Each	51056.00	Rupees Fifty One Thousand Fifty Six Only	25,52,800.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
265	Supply, Installation, Testing & Commissioning of IP Network TDN Low-Light IR bullet Camera, 1/2.8" CMOS, 2 MP @ 60fps or better, Four individual streams @H.264,2MP,25 FPS, Min. Illumination required Color: 0.3 lux at 50 IRE, F1.8, 120dB True WDR, 3–10 mm motorized focus & zoom lens, Shutter time 1/66500 s to 2 s,P-Iris, 3DNR, Privacy Mask, Optimized IR with upto 30m IR distance, 128GB SD card support, Alarm: 1 In/ 1out, PoE, H.264 /H.265 High Profile and MJPEG, Camera support dynamic GOP and Dynamic fps for to save BW and Storage . PoE Class 3 /12V DC, Having Operating temp range : -30°C to 55° C, Humidity - 10% to 100% (RH Condensing) ,Memory 512 MB RAM, 256 MB Flash,PVC free,,Block any un-authorized firmware installation and camera should check anauthenticity of firmware installed in camera every time it reboot . Certifications: ONVIF Profile S , Profile G & Profiel T compliant, UL,FCC,CE, Camera should not support GB/T 28281 and there should not be any option to activate /deactivate this protocol through web browser or camera firmware.Camera provided by bidder should not be made by high silicon chip .Camera should support 3rd party edge based analytics .Complete with mounting bracket and all necessary accessories, civil, electrical works & peripheral items, as required.	10	Each	47652.00	Rupees Forty Seven Thousand Six Hundred Fifty Two Only	4,76,520.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
266	Supply, Installation, Testing & Commissioning of IP Network TDN Low-Light IR PTZ Camera, 1/2.8" CMOS, 2 MP @ 60fps or better, Four individual streams @H.264,2MP,25 FPS, Min. Illumination required Color: 0.3 lux at 50 IRE, F1.6, 120dB True WDR, 4.3-129 mm motorized focus & zoom lens, Shutter time 1/10000 s to 1 s,Pan: 360° endless, 0.05°–700°/s,Tilt: +20 to -90°, 0.05°–500°/s, 3DNR, Privacy Mask, Optimized IR with upto 200m IR distance, 128GB SD card support, High PoE, H.264 /H.265 High Profile and MJPEG,Camera support dynamic GOP and Dynamic fps for to save BW and Storage . High PoE Class /12V DC, HavingOperating temp range : -30°C to 55° C, Humidity - 10 to 100% (RH Condensing),electronic image stabilization,Memory 1 RAM, 512 MB Flash,PVC free,,Block any un-authorized firmware installation and camera should check authenticity of firmware installed in camera every time it reboot .Camera should have wiper or any other feature to clean water from camera . Certifications: ONVIF Profile S , Profile G & Profile T compliant, UL,FCC,CE,Camera should not support GB/T 28281 and there should not be any option to activate /deactivate this protocol through web browser or camera firmware.Camera provided by bidder should not be made by high silicon chip .Camera should support 3rd party edge based analytics .Complete with mounting bracket and all necessary accessories, civil, electrical works & peripheral items, as required.	10	Each	192877.00	Rupees One Lac Ninety Two Thousand Eight Hundred Seventy Seven Only	19,28,770.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
267	Supply, installation, testing and commissioning VMS server for Support live view and recording of at least 65 network video sources, in H.264, MPEG-4 Part 2 or Motion JPEG.,The software client can be installed on any computer, enabling remote viewing and control from anywhere on the corporate network or the Internet. The setup wizard with automatic camera discovery has the system up and running within minutes. The user interface features flexible live-view layout, site maps, powerful event configuration, alarm management and PTZ control. Timeline visualization and efficient video search enable quick investigation and retrieval of evidence for export ,Multiple user access levels with password protection using Windows domain users (Active directory) ,Failover recording in cameras with SD card when contact with storage location is suddenly lost ,Alarm, event and audit logs ,multi-screen support,Supports all camera resolutions up to 20 megapixels including 4K Ultra HD,Support Flexible live view configuration,Corridor Format, multiple monitors, hot spot, camera/view sequence, site maps, web page, digital PTZ, dewarp ,Search for recordings based on camera, date and timeline visualization, smart search, video scrubbing, bookmarks, locking of prioritized recordings Up to 64x or frame by frame Up to 36 cameras synchronized playback Manual and scheduled export Single images in JPEG format, Video in ASF format Digital signature on exported recordings, standalone player. Server Hardware: Intel Core i7, such as Intel Core i7-4770 Quad Core 3.4Ghz, 8 GB DDR3-1600 RAM, 1 Gbit/s Network, Hard drive SATA 6 Gbit/s 7200 RPM Enterprise Class – Up to 48 Mbps per drive for optimal performance.	2	Set	2269142.00	Rupees Twenty Two Lac Sixty Nine Thousand One Hundred Forty Two Only	45,38,284.00
268	Supply Installation Testing & Commissioning of Network Storage (NAS/SAN) for recording of camera at full resolution and FPS for 30 days with RAID levels: 0, 1, 5, 6, 10 support ,Hot swappable.	2	Set	1361485.00	Rupees Thirteen Lac Sixty One Thousand Four Hundred Eighty Five Only	27,22,970.00
269	Supply, Installation, Testing & Commissioning of Poles for mounting PTZ cameras complete in all respect.	10	Each	14749.00	Rupees Fourteen Thousand Seven Hundred Forty Nine Only	1,47,490.00
270	Supply, Installation, Testing & Commissioning of PTZ Joystick complete in all respect.	1	Each	49921.00	Rupees Forty Nine Thousand Nine Hundred Twenty One Only	49,921.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
271	Supply, Installation, Testing & Commissioning of Workstation with Client Licence which shall have the the following specifications - Processor Inte I I7 with internal memory of 8 GB RAM . Operating system Windows 7 , 64 bit version . Video graphics card 1GB . Resolution support for cameras 2560 x 1600 display resolution capable and directX true colour 32 bit . Dual Link VDI outputs . Client software shall support Dual monitors . A maximum of 64 cameras viewing per workstation at a time programmable to sequence.	10	Each	312007.00	Rupees Three Lac Twelve Thousand Seven Only	31,20,070.00
272	Supply, Installation, Testing & Commissioning of industrial garde 24 X 7 working , 40" LED Display Monitor , mouse, keypad accessories as required as per specification complete in all respect.	5	Each	96439.00	Rupees Ninety Six Thousand Four Hundred Thirty Nine Only	4,82,195.00
273	Supply, Installation, Testing & Commissioning of Managed Ethernet switches as required as per specification complete in all respect.					
i)	Supply, installation, testing & commissioning of 24 Port Layer 2 Access POE switch with 24 x 10/100/1000 Base T with additional 4x 1G SFP slots, equipped with power supply and POE Budget of 185W or more. Should have Switching fabric of 56 Gbps and 41 MPPS or more.Should support 8K MAC address. Operating Temp: 0° C to +45° C	12	Each	113457.00	Rupees One Lac Thirteen Thousand Four Hundred Fifty Seven Only	13,61,484.00
ii)	Supply of 16 Port Layer 2 Access POE switch with 16 x 10/100/1000 Base T with additional 2x 1G SFP slots, equipped with power supply and POE Budget of 185W or more. Should have Switching fabric of 32 Gbps and 23.50 MPPS or more.Should support 8K MAC address. Operating Temp: 0° C to +45° C with all acessories like patch panel,SFP etc	10	Each	96439.00	Rupees Ninety Six Thousand Four Hundred Thirty Nine Only	9,64,390.00
iii)	Supply, installation, testing & commissioning of 24 Port Layer 3 Core switch with 24 x 10/100/1000 Base X with additional 4x 10G SFP+ slots, equipped with power supply. Should be capable of operating in Active-Active redundancy with stacking bandwidth of 40Gbps. Should have Switching fabric of 128 Gbps and 95 MPPS or more.Should support 16K MAC address. Operating Temp: 0° C to +45° C Along with network Digonistics software for all the network switches .	2	Each	510557.00	Rupees Five Lac Ten Thousand Five Hundred Fifty Seven Only	10,21,114.00
Network Accessories						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
274	Supply, Installation, Testing and Commissioning of following Category 6 IDC patch panel for IP CCTV Camera, prepackaged with wiring block with legs insert labels, label holders, jumper troughs, patch chords, wire manager, LIU, metal back panel, duct assembly, screws, washers and an instruction sheet for termination of incoming pairs etc as required.					
i)	24 port jack panel	8	Each	22691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	1,81,528.00
ii)	16 port jack panel	4	Each	17019.00	Rupees Seventeen Thousand Nineteen Only	68,076.00
275	Supplying and installation of Wall-mount rack supports 9U. 19"W.Material should be of Aluminum Alloy.	8	Lot	24961.00	Rupees Twenty Four Thousand Nine Hundred Sixty One Only	1,99,688.00
276	Supplying and installation of Floor-mount rack supports 42U. 19"W.Material should be of Aluminum Alloy.	2	Lot	73747.00	Rupees Seventy Three Thousand Seven Hundred Forty Seven Only	1,47,494.00
277	Supply Installation Testing & Commissioning of following sizes Patch Cord.					
i)	3 feet	80	Each	170.00	Rupees One Hundred Seventy Only	13,600.00
ii)	7 feet	20	Each	340.00	Rupees Three Hundred Forty Only	6,800.00
278	Single mode 6 core Multimode Fibre optic cable , Indoor armoured with required conduit pipe ,terminations, Junction Box, Connectors, Cable tie`s & Tags, slicing and other accessories as required .	1000	Metre	250.00	Rupees Two Hundred Fifty Only	2,50,000.00
	Boom Barrier					
279	Supply, Installation testing and Commissioning of Boom barriers as per technical specifications with inbuilt electronic controller for operating the barrier and suitable for interfacing to access controller; safety sensor for detecting the objects below the barrier. Barrier length=4.5 Mts. (For Cars, Vans), with suitable accessories like poles, enclosures and all necessary hardware, accessories as required for complete installation.	4	Each	136149.00	Rupees One Lac Thirty Six Thousand One Hundred Forty Nine Only	5,44,596.00
XIII	ACCESS CONTROL SYSTEM					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
280	Supply, installation, testing & commissioning of door controllers (2 doors) complete with enclosure and all accessories as per the specification.	8	Each	51056.00	Rupees Fifty One Thousand Fifty Six Only	4,08,448.00
281	Supply, installation, testing & commissioning of proximity card readers complete with enclosure and all accessories as per the specification.	40	Each	7375.00	Rupees Seven Thousand Three Hundred Seventy Five Only	2,95,000.00
282	Supply of proximity cards as per the specifications including the cost of printing.	80	Each	284.00	Rupees Two Hundred Eighty Four Only	22,720.00
283	Supply, Installation, Testing and Commissioning of Magnetic door locks of 600 lb holding force for double leaf door (Qty specified is the no. of doors)	16	Each	3404.00	Rupees Three Thousand Four Hundred Four Only	54,464.00
284	Supply, installation, testing and commissioning of Magnetic Door Contact.	16	Each	8509.00	Rupees Eight Thousand Five Hundred Nine Only	1,36,144.00
285	Supply, Installation, Testing & Commissioning panic buttons (emergency push buttons) for specific sensitive locations for raising a locally silent alarm at the control room complete with all accessories.	16	Each	1702.00	Rupees One Thousand Seven Hundred Two Only	27,232.00
286	Supply, Laying, Termination, Testing and Commissioning of 8 core 1.5 sq.mm shielded cable.	800	Metre	200.00	Rupees Two Hundred Only	1,60,000.00
287	Supply, Laying, Termination, Testing and Commissioning of 2 core 1 sq. mm shielded cable.	800	Metre	37.00	Rupees Thirty Seven Only	29,600.00
288	Supply, installation, testing and commissioning of Layer 2 Power on ethernet base switch with 16 port, fibre port and as per specification complete as required.	4	Each	39710.00	Rupees Thirty Nine Thousand Seven Hundred Ten Only	1,58,840.00
289	Supply, installation, testing and commissioning of Access Control System Software Access Professional Edition - Basic License with 1 Clients, Readers, 2000 Card holder license with features like:	4	Each	283643.00	Rupees Two Lac Eighty Three Thousand Six Hundred Forty Three Only	11,34,572.00
HSD STORAGE AND SUPPLY SYSTEM						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
290	Supplying, installing, testing and commissioning of underground Horizontal cylindrical HSD storage tank (6mm thick shell and 8 mm thick plain ends) installation including the following :					
	Inlet and outlet connections.					
	Vent pipe with flame arrester.					
	Dip pipe assembly with calibration chart, complete with cap with locking arrangement with dip stick engraving in it.					
	550 mm internal dia manhole with cover.					
	Cleats for anchoring (4 Nos.)					
	<u>Lifting lugs :-</u>					
	(The design, fabrication, pressure testing, corrosion protection, anchoring, earthing etc. will be done strictly as per IS:10987-1992 and duly approved by 'CCOE' suitable for underground installation.)					
	15 KL capacity HSD tank size (approx.) 1950 mm dia (shell outside diameter) & 5500 mm long (overall length).	1	Set	340371.00	Rupees Three Lac Forty Thousand Three Hundred Seventy One Only	3,40,371.00
291	Supply, installation, testing & commissioning of flame proof electrical driven rotary gear pumps suitable for pumping of HSD consisting of following & as per IS 2148. (Pump shall be suitable for automatic/manual operation as required) Self priming gear pump with weather protection cover for motor. [Location : HSD Yard].					
	Horizontally mounted single stage capable of delivering 35 LPM at 30 Mtr. Head while running at required 1440 RPM, complete with proper connection to suction and delivery line, bypass arrangement against over pressure.					
	Flame proof motor suitable for 415 + 10% V, 3 phase, 50 Hz AC supply and of suitable HP for the above pumps.					
	Flame proof on-off push button station of required rating suitable for the above motor without no volt coil including connection, interconnection in switch board.					
	Common base plate of required strength manufactured out of cast iron.					
	Suitable RCC foundation and anti vibration damping arrangement with cushy foot or similar mounting arrangement.					
	Coupling and coupling guard for direct coupling of pump and motor.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Pressure gauge with valve on the delivery side.					
	Strainer at inlet - 32 mm dia					
	The pump set as described above (1w + 1 standby)	2	Set	36306.00	Rupees Thirty Six Thousand Three Hundred Six Only	72,612.00
292	Providing, fixing, testing & commissioning of M.S. class `C' (heavy duty) exposed pipes conforming to IS : 1239 and fittings like tees, elbows, junctions, unions, bends, plugs, flanges etc. clamps, structural supports as required/ directed at site including cutting & making good the walls, floors, RCC work etc. cutting chases & filling the same with cement concrete 1:3:6 (1 cement :3 coarse sand :6 graded stone aggregate 20 mm nominal size) or cement mortar 1:4 (1 cement :4 coarse sand) as required including painting the pipes with desired shade of enamel paint over a coat of primer.					
i)	25 mm dia	50	Metre	91.00	Rupees Ninety One Only	4,550.00
ii)	32 mm dia	50	Metre	130.00	Rupees One Hundred Thirty Only	6,500.00
iii)	40 mm dia	100	Metre	182.00	Rupees One Hundred Eighty Two Only	18,200.00
iv)	50 mm dia	50	Metre	216.00	Rupees Two Hundred Sixteen Only	10,800.00
v)	65 mm dia	500	Metre	250.00	Rupees Two Hundred Fifty Only	1,25,000.00
293	Supply, installation, testing and commissioning of MS class C (heavy duty) pipe in trenches including fittings like tees, elbows, unions, bends plugs etc. for fuel oil piping including provision of supports etc. Provision of 6 mm Pypcoat anticrossive treatment to the pipe					
i)	40 mm dia	30	Metre	340.00	Rupees Three Hundred Forty Only	10,200.00
ii)	50 mm dia	30	Metre	397.00	Rupees Three Hundred Ninety Seven Only	11,910.00
294	Supply, installation, testing & commissioning of CI plug valve of the following sizes suitable for pressure of 10 Kg / Sqcm complete with all necessary fittings (Audco)					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
i)	25 mm dia	2	Nos	182.00	Rupees One Hundred Eighty Two Only	364.00
295	Supply, installation, testing & commissioning of GM non-return valves of the following sizes G.M. suitable for pressure of 10 Kg / Sqcm complete with all necessary fittings. (Audco)					
i)	40 mm dia	2	Nos	250.00	Rupees Two Hundred Fifty Only	500.00
296	Supply, installation, testing & commissioning of gun metal float valve with copper float ball and brass rod of required length suitable for pressure of 10 Kg / sqcm complete as required.					
i)	32 mm dia	4	Nos	408.00	Rupees Four Hundred Eight Only	1,632.00
297	Providing and fixing level controller for day oil storage tanks, including wiring, cabling, probes, solenoid valve suitable for HSD fuel and with all other accessories ready for automatic operation of fuel oil pump complete as required.	2	Set	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	11,346.00
298	Providing and fixing Y strainer for oil supply line					
i)	40 mm dia	2	Nos	3404.00	Rupees Three Thousand Four Hundred Four Only	6,808.00
ii)	50 mm dia	2	Nos	3971.00	Rupees Three Thousand Nine Hundred Seventy One Only	7,942.00
iii)	65 mm dia	2	Nos	4765.00	Rupees Four Thousand Seven Hundred Sixty Five Only	9,530.00
299	Supply, installation, testing and commissioning of 990 litres capacity day oil storage tank fabricated from 4 mm thick MS plates. Cost of Tank shall include provision of 450 mm ID Manhole cover, level indicator & flanged connection for inlet, outlet, overflow, vent, drain, boiler return and provision for installing probes of level controller Tank shall be mounted on 2m high steel structure support with access ladder (painted with 2 coats of Red Oxide Primer)	4	Set	14749.00	Rupees Fourteen Thousand Seven Hundred Forty Nine Only	58,996.00
300	On 80 mm dia Fuel line [For unloading] with 50 mm dia Oil flow meter, 3 Nos. 80 mm dia valve, 1 No. basket strainer (suitable for 15000 Ltr. Per Hr. flow)	2	Set	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	11,346.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
301	Providing and fixing rubber hose suitable for HSD service at unloading point 3 Mtr. Length with coupling joints.					
i)	65 mm dia	2	Nos	2836.00	Rupees Two Thousand Eight Hundred Thirty Six Only	5,672.00
302	Tank Anchorage & Earthing Work :					
	Underground H.S.D. tank anchorage by means of steel flats of round bars having adequate cross section to resist the uplift at a stress level of 137.00 Mpa (1400 Kgf/cm ²).					
	HSD tank earthing as per clause/para 11.5.4 of IS : 10987-1992 and fuel pipe line earthing as per IPR-1972.	1	LS	4538.00	Rupees Four Thousand Five Hundred Thirty Eight Only	4,538.00
303	Supply, installation, testing & commissioning of automatic level controller with low level & high level cut off and alarm indication including all fitting, control cabling and accessories.					
i)	HSD Buffer tank	1	Set	14749.00	Rupees Fourteen Thousand Seven Hundred Forty Nine Only	14,749.00
ii)	HSD Over flow tank	1	Set	14749.00	Rupees Fourteen Thousand Seven Hundred Forty Nine Only	14,749.00
304	Providing, fixing, testing & commissioning of approved quality GM float with copper ball float and brass rod required length of following sizes :-					
i)	40 mm dia	1	Each	250.00	Rupees Two Hundred Fifty Only	250.00
	FIRE PROTECTION EQUIPMENTS:					
305	Providing & fixing of Fire Buckets (6 nos.) with stand having capacity of 9 liters conforming to relevant BIS specifications.	2	Each	3971.00	Rupees Three Thousand Nine Hundred Seventy One Only	7,942.00
306	Providing & fixing Fire Extinguishers mechanical foam type having capacity of 9 liters (for fighting oil fires) in accordance with OISD standard - 117	4	Each	13048.00	Rupees Thirteen Thousand Forty Eight Only	52,192.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
307	Providing & fixing of 'No Smoking' and 'No Unauthorized Entry' signboards in English and Hindi, as per IPR- 1970.	2	Each	250.00	Rupees Two Hundred Fifty Only	500.00
	BUFFER TANK :					
308	Supply, installation testing & commissioning 990 Ltr. Cap. Buffer Tank for HSD to be installed in DG room & Boiler Room. The tank shall be fabricated from 5 mm thick MS plates. Tank shall be provided with all necessary nozzles for inlet, out let, vent, drain, overflow and 450 mm dia manhole for easy access for cleaning & maintenance. Tank shall be provided with float & Board type level Indicator.					
	HSD Buffer Tank 990 Ltrs. capacity (1000x1000x1000 mm deep) with all accessories.	1	Set	14749.00	Rupees Fourteen Thousand Seven Hundred Forty Nine Only	14,749.00
	OVER FLOW TANK:					
309	Supply, installation, testing & commissioning of 990 Ltrs. Capacity overflow tank for HSD overflowing from day oil tanks installed in the DG room & Boiler Room. The tank shall be fabricated from 5 mm thick M.S. plates. Tank shall be having necessary nozzles for inlet, outlet, vent, drain, overflow and a manhole of 550mm dia for easy access to all equipments/instruments inside the tank and shall also include float operated level indicator. Tank shall be placed at 450 mm below finished floor level inside plant room. All equipments/instruments inside or near this tank to be of flameproof construction.					
	HSD overflow tank 990 litres capacity (1000 x 1000 x 1000 mm deep) with all accessories as above.	1	Set	14749.00	Rupees Fourteen Thousand Seven Hundred Forty Nine Only	14,749.00
310	Structural Steel platform for Buffer tank fabricated from beams, Channels, angles, plates, chequered plates etc. of suitable heights to be erected in DG room.	525	Kg	91.00	Rupees Ninety One Only	47,775.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
311	Providing, Installing, testing & commissioning of ultrasonic level transmitter (siemens make) in undergrounding HSD storage tanks. The level indicator shall be provided in electrical control panel. Cost of electrical cabling from level transmitter to level indicator to be included in this item.	1	Set	4538.00	Rupees Four Thousand Five Hundred Thirty Eight Only	4,538.00
	Note : Starts/stop, level indication shall be interface with BMS. necessary potential free contacts shall be provided in local control station, panels.					
312	Providing, Fixing testing & commissioning of CI Foot valve including all fitting & accessories.					
i)	50 mm dia	2	Each	567.00	Rupees Five Hundred Sixty Seven Only	1,134.00
DG SETS WORKS						
313	DG SET (500 KVA)					
	Providing, Installing, Testing and Commissioning of 'Standard Type' Diesel Generating with Accoustic Enclosure set alongwith having Prime Power Rating of 500 KVA, 415 volts at 1500 RPM, 0.8 lagging power factor at 415V suitable for 50 Hz, 3 phase system and consisting of the followings: (Total of a to h).	1	Set.	5672856.00	Rupees Fifty Six Lac Seventy Two Thousand Eight Hundred Fifty Six Only	56,72,856.00
a)	Diesel Engine:					
	Diesel engine 4 stroke radiator cooled, without heat exchanger type electric start, of suitable BHP at 1500 RPM suitable for above output of alternator at 40 Degree C, 50% RH & at 1000 Meter MSL and conforming to BS 5514, BS 649, IS 10000, capable of taking 10% over loading for one hour after 12 hours of continuous operation. The engine will be fitted complete with all required accessories.					
b)	Engine mounted Instrument Panel fitted with and having digital display for following:					
i)	Start-stop switch with key.					
ii)	Lubrication oil pressure indication.					
iii)	Lubrication oil temperature indication.					
iv)	Battery charging indication.					
v)	RPM indication.					
vi)	Over speed indication.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
vii)	Low lub. Oil trip indication.					
viii)	Engine Hours indication.					
c)	Alternator:					
	Synchronous alternator rated at 500 KVA, 415 volts at 1500 RPM, 3 phase 50 Hz, AC Supply with 0.8 lagging power factor at 40 Degree C, 50% RH & AT 1000 Meter MSL. The alternator shall be having SPDP enclosure, brushless, continuous duty, self-excited and self - regulated through AVR conforming to IS: 4722/BS 2613 Suitable for tropical conditions and with class - H insulation.					
d)	Base Frame & Foundation:					
	Both the engine and alternator shall be mounted on suitable base frame made of MS channel with necessary reinforcement which shall be installed on suitable cement concrete foundation and vibration isolation arrangement as per recommendations of manufacturer.					
e)	Fuel Tank:					
i)	Daily service fuel tank of 990 litres capacity fabricated out of 3 mm thick M.S. Sheet complete with all standard accessories and fuel piping between fuel tank and diesel engine with MS class 'C' pipes of suitable dia. Complete with valves, level indications & accessories as required as per specifications.					
f)	Exhaust System:					
	Dry exhaust manifold with exhaust silencer.					
g)	Starting System:					
	24V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with 2 nos. of batteries (180 Amp. Hour capacity lead acid type) as required as per specifications.					
h)	Accoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air in to the atmosphere as per specifications.					
314	DG SET (250 KVA)					
	Providing, Installing, Testing and Commissioning of 'Standard Type' Diesel Generating with Accoustic Enclosure set alongwith having Prime Power Rating of 250 KVA, 415 volts at 1500 RPM, 0.8 lagging power factor at 415V suitable for 50 Hz, 3 phase system and consisting of the followings: (Total of a to h).	1	Set.	2836428.00	Rupees Twenty Eight Lac Thirty Six Thousand Four Hundred Twenty Eight Only	28,36,428.00
a)	Diesel Engine:					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Diesel engine 4 stroke radiator cooled, without heat exchanger type electric start, of suitable BHP at 1500 RPM suitable for above output of alternator at 40 Degree C, 50% RH & at 1000 Meter MSL and conforming to BS 5514, BS 649, IS 10000, capable of taking 10% over loading for one hour after 12 hours of continuous operation. The engine will be fitted complete with all required accessories.					
b)	Engine mounted Instrument Panel fitted with and having digital display for following:					
i)	Start-stop switch with key.					
ii)	Lubrication oil pressure indication.					
iii)	Lubrication oil temperature indication.					
iv)	Battery charging indication.					
v)	RPM indication.					
vi)	Over speed indication.					
vii)	Low lub. Oil trip indication.					
viii)	Engine Hours indication.					
c)	Alternator:					
	Synchronous alternator rated at 250 KVA, 415 volts at 1500 RPM, 3 phase 50 Hz, AC Supply with 0.8 lagging power factor at 40 Degree C, 50% RH & AT 1000 Meter MSL. The alternator shall be having SPDP enclosure, brushless, continuous duty, self-excited and self - regulated through AVR conforming to IS: 4722/BS 2613 Suitable for tropical conditions and with class - H insulation.					
d)	Base Frame & Foundation:					
	Both the engine and alternator shall be mounted on suitable base frame made of MS channel with necessary reinforcement which shall be installed on suitable cement concrete foundation and vibration isolation arrangement as per recommendations of manufacturer.					
e)	Fuel Tank:					
i)	Daily service fuel tank of 990 litres capacity fabricated out of 3 mm thick M.S. Sheet complete with all standard accessories and fuel piping between fuel tank and diesel engine with MS class 'C' pipes of suitable dia. Complete with valves, level indications & accessories as required as per specifications.					
f)	Exhaust System:					
	Dry exhaust manifold with exhaust silencer.					
g)	Starting System:					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	24V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with 2 nos. of batteries (180 Amp. Hour capacity lead acid type) as required as per specifications.					
h)	Accoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air in to the atmosphere as per specifications.					
315	EXHAUST PIPING					
	Supply and fixing Exhaust piping for DG Set's with following sizes of MS pipes conforming to IS -3589 with bends, tees, reducers, flexible connection etc. providing & fixing suitable self supporting arrangement duly painted at suitable intervals, supplying & fixing of 150 mm thick Rock wool matrix (3x50 mm. thick) insulation of density 150 Kg per cubic metre on all sides of Exhaust pipe with chicken mesh wrapping and 22 SWG aluminium sheet cladding , suitable for outdoor installation, guide support, expansion joint, SS bellows complete as required and as per specification.					
i)	350 mm dia MS pipe (5.20 mm thick)	90	Metre	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	5,10,570.00
ii)	200 mm dia MS pipe (5.20 mm thick)	100	Metre	3404.00	Rupees Three Thousand Four Hundred Four Only	3,40,400.00
316	MS STRUCTURE					
	Fabrication, supply & erection of MS support for fixing of exhaust piping (Heavy Duty) and MS structure including Angle / channels / flats / beam as per approved drawings for supporting of DG exhaust stack from ground. floor level and above terrace level complete in all respect.	4	Ton	65805.00	Rupees Sixty Five Thousand Eight Hundred Five Only	2,63,220.00
	AUTOMATIC CLEAN AGENT NOVEC-1230 FIRE SUPPRESSION SYSTEM					
	Providing pre-engineered Automatic Clean Agent 3M Novec 1230 Direct Release Low Pressure (DLP) LPCB approved System Complete With DOT Approved Cylinder Fitted With Automatic Valve, Pressure Gauge, Slip-on Push-in tube connector, Clean Agent Novec1230 filled in UL/CCOE Approved Plant, Mounting Bracket, Following Capacity For LT, FIRE FIGHTING Panel, Ventilation Panel & HT Panel.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
317	Supply, installation, test and commissioning of 10LB.(Novec-1230 DLP Assembly with automatic valve mounted on DOT approved cylinder , push in connector for tube, 10LB (Novec 1230 gas, Mounting bracket, low pressure switch for monitoring system activation with LPCB approval.	8	Nos.	1,73,644.00	Rupees One Lac Seventy Three Thousand Six Hundred Forty Four Only	13,89,152.00
318	Supply, installation, test and commissioning of 05 LB.(Novec-1230 DLP Assembly with automatic valve mounted on DOT approved cylinder , push in connector for tube, 05 LB (Novec 1230 gas, Mounting bracket, low pressure switch for monitoring system activation with LPCB approval.	8	Nos.	1,59,158.00	Rupees One Lac Fifty Nine Thousand One Hundred Fifty Eight Only	12,73,264.00
319	Supply, installation, test and commissioning of Flexible Linear Pneumatic Heat Detection Tube (I.D. Dia. 4mm & O.D. Dia. 6mm Dia. Operated Temp. At 100 Degree Centigrade, Colour-Red) For Automatic Fire Detection & Suppression System. (UL Listed)	900	Mtr.	2,201.00	Rupees Two Thousand Two Hundred One Only	19,80,900.00
320	Supply, installation, test and commissioning of End of Line Adapter With Pressure Gauge For Charging & Monitoring.	24	Nos.	4,003.00	Rupees Four Thousand Three Only	96,072.00
321	Supply, installation, test and commissioning of Tee-Connection as required.	20	Nos.	3,336.00	Rupees Three Thousand Three Hundred Thirty Six Only	66,720.00
322	Supply, installation, test and commissioning of of End Plug as required.	20	Nos.	2,134.00	Rupees Two Thousand One Hundred Thirty Four Only	42,680.00
323	Supply, installation, test and commissioning of Audio Visual Alarm with wiring to make complete system operational.	10	Nos.	13,343.00	Rupees Thirteen Thousand Three Hundred Forty Three Only	1,33,430.00
	EXTERNAL LIGHTING WORKS					
324	POLES					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
i)	Supplying,installation,testing and commissioning of 6.0 meter Height hot dip galvanised continuously tapered (bolt fixing type) octagonal Pole including 60 watt LED Fixture, colour cool white , integral driver, protection IP 65, CLASS I with top 70 mm dia and bottom 130 mm dia made of 3 mm thick H T sheet Steel conforming to grade S 355 complete with G I base plate of size 220 mm (L) X 220 mm (B) X 12 mm thickness welded at bottom of pole complete with 4 Nos 20 mm dia 750 mm long foundation bolts conforming to EN 8 grade, inbuilt / Vandal resistance, weathproof electrical junction box having terminal block, MCB etc. mounted on bakelite sheet for looping in /looping out of cables, with flush door having locking arrangement, earthing arrangement (at atleast 0.5 m height) and mounted on RCC foundation of size 450 mm x 450 mm x 800 mm in ground and 200 mm above ground level with foundation bolt duly embeded before casting and supply and embedding of suitable size HDPE pipe sleeve for cable entry. complete including erection of Pole complete in all respect as required.	24	Each	9871.00	Rupees Nine Thousand Eight Hundred Seventy One Only	2,36,904.00
ii)	Supplying,installation,testing and commissioning of 7.5 meter Height hot dip galvanised continuously tapered (bolt fixing type) octagonal Pole including 90 watt LED Fixture, colour cool white , integral driver, protection IP 65, CLASS I with top 70 mm dia and bottom 130 mm dia made of 3 mm thick H T sheet Steel conforming to grade S 355 complete with G I base plate of size 220 mm (L) X 220 mm (B) X 16 mm thickness welded at bottom of pole complete with 4 Nos 20 mm dia 750 mm long foundation bolts conforming to EN 8 grade, inbuilt / Vandal resistance, weathproof electrical junction box having terminal block, MCB etc mounted on bakelite sheet for looping in /looping out of cables, with flush door having locking arrangement, earthing arrangement (at atleast 0.5 m height) and mounted on RCC foundation of size 450 mm x 450 mm x 1000 mm in ground and 200 mm above ground level with foundation bolt duly embeded before casting and supply and embedding of suitable size HDPE pipe sleeve for cable entry. complete including erection of Pole complete in all respect as required.	24	Each	11913.00	Rupees Eleven Thousand Nine Hundred Thirteen Only	2,85,912.00
325	LIGHTING FIXTURE					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
i)	Supply Installation , Testing & Commissioning of IP66 LED street light fitting having system lumen output not less than 7000, efficacy better than 95 lumens per watt and life expectancy of 50000 burning hours@ L70, Power Factor > 0.90 & THD <20%, CRI better than 70,neutral white light and made of pressure die cast / extruded Aluminium housing with separate optics and control gear compartment, toughened glass protector, permanently sealed and a removable control gear plate , mounting spigot suitable for horizontal mounting (Ø 32 – 42mm) with tilt flexibility of (+)(-) 10 degrees, suitable for operation on 230 V +/- 10 % single phase 50 Hz AC Supply , surge protection of 3KV and driver efficiency more than 85%(LED shall be of Cree/Lumileds/Nichia complete in all respect i/c connections etc as reqd.	48	Each	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	2,72,304.00
ii)	Supply, Installation, testing and commissioning of 500mm long Single arm bracket of approved design and shape made up of MS metal with hot dip galvanised suitable for pole top of 70mm dia complete with fixing arrangement as required	38	Each	1872.00	Rupees One Thousand Eight Hundred Seventy Two Only	71,136.00
iii)	Supply, Installation, testing and commissioning of LED flood light fixture suitable for Surface / Wall type mounting with Epoxy powder coated die -cast aluminium housing with heat Sink, toughened glass, complete with inbuilt electronics driver, mounting bracket, 90 Lumen /watt efficacy, min 7000 Lumen output, THD<10%, P.F. >0.95, IP 65 rated as required	10	Each	3177.00	Rupees Three Thousand One Hundred Seventy Seven Only	31,770.00
iv)	Supply, Installation Testing & Commissioning of Flexible LED Strip Light (IP-65) with double tape on backside suitable for Mounting in cove with all accessories including connections etc as required. Wattage 14.4 Watt / Meter.	10	Metre	737.00	Rupees Seven Hundred Thirty Seven Only	7,370.00
v)	Supply, Installation Testing & Commissioning of 78 Watt (IP-65) external LED driver in suitable weather proof enclosure for flexible LED Strip light complete including connection etc as required.	5	Each	3177.00	Rupees Three Thousand One Hundred Seventy Seven Only	15,885.00
LIFTS & ESCALATORS						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
326	Design, manufacture, supply, transportation, installation, testing, commissioning, approvals (All local/ State/ Central statutory bodies) and handing over in satisfactory working conditions of Elevators meeting in all respects the intents of specifications & drawings complete with a) Scaffolding & minor civil, mechanical and electrical works b) Steel items with directional control of cars (as required) with ACVVVF control with scratch proof -textured stainless steel sheet enclosures, automatic centre opening car & landing doors, hard wood flooring with 25mm recess including the cost of providing 2 weeks satisfactory trial operation and testing at full design load and safety checks for sudden breaks, speed, etc. as directed and including the cost of providing free comprehensive maintenance service during Defect Liability Period of 12 months after Virtual completion and satisfactory handover, complete as per specifications as required and as below: Note: All the passenger elevators shall be with vision panel of size 200x300mm on CAR and lobby doors.					
i)	Elevator in Shaft of dimensions 2400 mm x 2400 mm (W x D) for minimum payload carrying capacity of 16 passenger/ 1088 kg (Duplex Control) having a travel speed of 1.50 metre/ sec and travel height of 24.0 Mtrs. (approx.) with 6 Stops and Microprocessor based control suitable for operation on 415 V, 50 Hz, 3 phase A.C. electric supply complete as per specifications. (Ground - 5th Floor)	4	Each	3403713.00	Rupees Thirty Four Lac Three Thousand Seven Hundred Thirteen Only	1,36,14,852.00
ii)	Elevator in Shaft of dimensions 2300 mm x 2350 mm (W x D) for minimum payload carrying capacity of 1000 kg Goods Lift (Duplex Control) having a travel speed of 0.50 metre/ sec and travel height of 24.0 Mtrs. (approx.) with 6 Stops and Microprocessor based control suitable for operation on 415 V, 50 Hz, 3 phase A.C. electric supply complete as per specifications. (Ground - 5th Floor)	2	Each	3120071.00	Rupees Thirty One Lac Twenty Thousand Seventy One Only	62,40,142.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
iii)	Supply, Installation, testing and commissioning of reversible escalators 13 Meter (approx. length) having capacity of 9000 passengers per hour at an operating speed of 30 linear meter per minute, having width not less than 1000mm between exterior panel, suitable for following rise from floor to floor with electric motor, control, latest safety devices, control panel i/c stainless steel cladding etc. for operation on 415V, 3 phase, 50Hz, AC supply system as specified and as required at site with auto start and auto stop Travel rise from floor to floor (a) 4.0 mtrs. (approx.)	4	Each	4765199.00	Rupees Forty Seven Lac Sixty Five Thousand One Hundred Ninety Nine Only	1,90,60,796.00
SOLAR PHOTOVOLTIC SYSTEM						
327	Fabrication, Supplying installation, testing & commissioning of Rooftop Solar Photovoltaic system Power generation plant having following generation capacity using minium 250 Wp rating Multi/mono crystalline Silicon Pvcells / Modules & accessories conforming to IEC 61215 & IEC 61730, Module Mounting Structure mounting Clips & conforming to other standard as per technical specifications and guide line of MNRE i/c Array boxes, connection inter connection, Module mounting struture, fixing arrangement on the GI / steel structure, intergation with grid & handing over, etc complete as required.					
i)	30 KWp	1	Job	1248028.00	Rupees Twelve Lac Forty Eight Thousand Twenty Eight Only	12,48,028.00
ii)	70 KWp	2	Job	2722971.00	Rupees Twenty Seven Lac Twenty Two Thousand Nine Hundred Seventy One Only	54,45,942.00
iii)	148 KWp	2	Job	5672856.00	Rupees Fifty Six Lac Seventy Two Thousand Eight Hundred Fifty Six Only	1,13,45,712.00
328	Supply installation testing and commissioning of Power Conditioning Unit (PCU) consists of an electornic / string inverter (> 25 KW) 3 phase 4 wire as per following ratings.					
i)	30 KWp	1	Job	158840.00	Rupees One Lac Fifty Eight Thousand Eight Hundred Forty Only	1,58,840.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
ii)	70 KWp	2	Job	363063.00	Rupees Three Lac Sixty Three Thousand Sixty Three Only	7,26,126.00
iii)	148 KWp	2	Job	771508.00	Rupees Seven Lac Seventy One Thousand Five Hundred Eight Only	15,43,016.00
	LT SYSTEM					
329	Supplying and laying the following sizes of FRLS PVC insulated copper conductor, XLPE armoured Single core cable in the existing surface / recessed steel / PVC conduit as required.					
i)	1C X 4 Sq.mm (Red & Black) DC Cable side String to AJB.	4000	Metre	125.00	Rupees One Hundred Twenty Five Only	5,00,000.00
ii)	1C X 16 Sq.mm Copper Flexible	1500	Metre	397.00	Rupees Three Hundred Ninety Seven Only	5,95,500.00
330	Supply, installation testing & commissioning of array Junction Box (Complete with Fuse base and fuse, Surge Protection Device, Blocking Diodes, String Monitor, Connectors wiring and proper glands).					
i)	2 Input s and 1 Output 20 to 25 KW	14	Each	31768.00	Rupees Thirty One Thousand Seven Hundred Sixty Eight Only	4,44,752.00
ii)	4 Input s and 1 Output 20 to 25 KW	14	Each	41979.00	Rupees Forty One Thousand Nine Hundred Seventy Nine Only	5,87,706.00
331	Supply, Installation, Testing and commisioning of Maintenance free and Environment Friendly Earth Electrode set comprising of 17.2 mm dia 3 mtrs long solid rod of Low carbon steel , molecular Copper Bonded for a thickness of 250 microns, highly conductive ANSI NSF STD 60 Certified, environment friendly carbon based backfill compound , Loresco powerfill (each bag shall contain 20 pounds) or Equivalent , according to BS 7430 & IEEE 80 and suitable Clamp. The backfill compound should not corrode the electrode. The earth enhancement compound shall have resistivity of less than 0.12 OHM MTR as per requirements of IEEE 80 clause 14.5d. One set : Electrode 1 No of 17.2 mm dia. Power fill compound - 2 Bags (20 Pounds / 9 Kgs Each)	20	Set	20422.00	Rupees Twenty Thousand Four Hundred Twenty Two Only	4,08,440.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	DATA NETWORKING SYSTEM					
332	Supply, Installation, Testing & Commissioning of 12 Bay (each bay upto 12TB) Rackmount NAS, Intel® Xeon E3-1245v5 Quad Core Hyper Thread 3.5GHz Max Turbo 3.9GHz, 16GB DDR4 ECC RAM expandable upto 64GB DDR4, 2xUSB3.0, 1xUSB2.0, 4x1G Ethernet Port, 2x10G Ethernet Port with 5 years of Hardware replacement warranty and 24x7 support on call warranty etc complete as per specifications and as required.	1	No.	1272088.00	Rupees Twelve Lac Seventy Two Thousand Eighty Eight Only	12,72,088.00
333	Supply, Installation, Testing & Commissioning of 10 G core switch 1/10G, L3, 48 port (24 Copper + 24 Fiber) Stackable switch with RPS with True Lifetime warranty etc complete as per specifications and as required.	6	No.	1260215.00	Rupees Twelve Lac Sixty Thousand Two Hundred Fifteen Only	75,61,290.00
334	Supply, Installation, Testing & Commissioning of L3 POE plus switch with 2.5G x 8 ports, 10G x 2 ports, L3, PoE+(240W) switch with True Lifetime warranty etc complete as per specifications and as required.	21	No.	183181.00	Rupees One Lac Eighty Three Thousand One Hundred Eighty One Only	38,46,801.00
335	Supply, Installation, Testing & Commissioning of Dual Band 11 AC Access Point (WAVE2, MU MIMO, 802.11ac (4x4)), works only with Wireless Controller with True Lifetime warranty etc complete as per specifications and as required.	50	No.	93287.00	Rupees Ninety Three Thousand Two Hundred Eighty Seven Only	46,64,350.00
336	Supply, Installation, Testing & Commissioning of 10 access point licence with only one time costing and same from the access point OEM for virtual and user management of the network etc complete as per specifications and as required.	23	No.	37315.00	Rupees Thirty Seven Thousand Three Hundred Fifteen Only	8,58,245.00
337	Supply, Installation, Testing & Commissioning of 10G Single Mode SFP+ Module etc complete as per specifications and as required.	22	No.	59364.00	Rupees Fifty Nine Thousand Three Hundred Sixty Four Only	13,06,008.00
338	Supply, Installation, Testing & Commissioning of 1M 10G DAC Cable etc complete as per specifications and as required.	20	No.	15265.00	Rupees Fifteen Thousand Two Hundred Sixty Five Only	3,05,300.00
339	Supply, Installation, Testing & Commissioning of Security firewall with 5 Yrs Licence and all required software as per the networking devices for 2500 users etc complete as per specifications and as required.	1	No.	2120146.00	Rupees Twenty One Lac Twenty Thousand One Hundred Forty Six Only	21,20,146.00
340	Supply, Installation, Testing & Commissioning of fibre cable single mode etc complete as per specifications and as required.	2000	mtrs	136.00	Rupees One Hundred Thirty Six Only	2,72,000.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
341	Supply, Installation, Testing & Commissioning of CAT 6 cable etc complete as per specifications and as required.	5000	Mtrs	119.00	Rupees One Hundred Nineteen Only	5,95,000.00
342	Supply, Installation, Testing & Commissioning of RJ 45 connectors for termination of the connection and wires etc complete as per specifications and as required.	1	lot	254417.00	Rupees Two Lac Fifty Four Thousand Four Hundred Seventeen Only	2,54,417.00
343	Supply, Installation, Testing & Commissioning of 9U rack complete with all accessories etc complete as per specifications and as required.	15	No.	16961.00	Rupees Sixteen Thousand Nine Hundred Sixty One Only	2,54,415.00
344	Supply, Installation, Testing & Commissioning of 42U rack complete with all accessories etc complete as per specifications and as required.	5	No.	89894.00	Rupees Eighty Nine Thousand Eight Hundred Ninety Four Only	4,49,470.00
345	Supply, Installation, Testing & Commissioning of Secure Network Server with Authorisation and authentication requests and Queries to identity stores such as Active Directory and LDAP databases and Reporting etc complete as per specifications and as required.	1	No.	1102475.00	Rupees Eleven Lac Two Thousand Four Hundred Seventy Five Only	11,02,475.00
346	Supply, Installation, Testing & Commissioning 2*14 core , 512 GB RAM, 17 TB SSD HDD populated with Min. Five Nos. SSD DISK, Min 2 x 10 Gbpe SFP+ network ports, License of virtualization software (VMware / V Centre latest version) etc complete as per specifications and as required.	1	No.	2836428.00	Rupees Twenty Eight Lac Thirty Six Thousand Four Hundred Twenty Eight Only	28,36,428.00
AUDIO VISUAL SYSTEM						
347	Supply ,installation ,testing and commissioning of 1-chip DLP LASER Phosphor Multimedia Projection system having, 8000 Lumens 20000 hours lamp life, 1920 x 1200 WUXGA Native Resolution, 6000:1 Contrast Ratio, inputs: HDBaseT,HDMI, DVI-D, alongwith short throw lens & projector mountin bracket etc. complete with installation as per the site requirement.	6	No.	794200.00	Rupees Seven Lac Ninety Four Thousand Two Hundred Only	47,65,200.00
348	Supply , installation , testing and commissioning of 5,300 ISO lumens, WUXGA resolution and 3,000,000:1 on/off contrast ratio Complete with standard accessories as per tender specification.	11	No.	487866.00	Rupees Four Lac Eighty Seven Thousand Eight Hundred Sixty Six Only	53,66,526.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
349	Supply ,installation ,testing and commissioning of 1 chip DLP projector with 12000 lumens brightness or better at native WUXGA Resolution complete with standard accessories as per tender specifications.	1	No.	1134571.00	Rupees Eleven Lac Thirty Four Thousand Five Hundred Seventy One Only	11,34,571.00
350	Supply ,installation ,testing and commissioning of projector lens for required throw distance for above said projector complete with standard accessories as per tender specifications.	1	No.	453828.00	Rupees Four Lac Fifty Three Thousand Eight Hundred Twenty Eight Only	4,53,828.00
351	Supply ,installation ,testing and commissioning of 16:10, 280-320" motorised projection screen with IR remote and low Voltage Control Module complete with standard accessories as per tender specifications.	1	No.	283643.00	Rupees Two Lac Eighty Three Thousand Six Hundred Forty Three Only	2,83,643.00
352	Supply ,installation ,testing and commissioning of 16:10, 283" motorised projection screen with IR remote and low Voltage Control Module complete with standard accessories as per tender specifications.	6	No.	283643.00	Rupees Two Lac Eighty Three Thousand Six Hundred Forty Three Only	17,01,858.00
353	Supply ,installation ,testing and commissioning of 16:10, 120-150" motorised projection screen with IR remote and low Voltage Control Module complete with standard accessories as per tender specifications.	11	No.	170186.00	Rupees One Lac Seventy Thousand One Hundred Eighty Six Only	18,72,046.00
354	Supply ,installation ,testing and commissioning of Custom projector mount kit for projector complete with standard accessories as required.	18	No.	15657.00	Rupees Fifteen Thousand Six Hundred Fifty Seven Only	2,81,826.00
355	Supply ,installation ,testing and commissioning of interactive white board 4:3 and 16:10 resolution with a cite area of 78 inches or better complete with standard accessories as per tender specifications.	13	No.	45383.00	Rupees Forty Five Thousand Three Hundred Eighty Three Only	5,89,979.00
356	Supply ,installation ,testing and commissioning of 7" A space-saving wall, lectern, tabletop, or rack mount touch screen featuring a clean, contemporary appearance with edge-to-edge glass Touch panel to control all the controls provided in system for hassel free operation complete with standard accessories as per tender specifications.	18	No.	184708.00	Rupees One Lac Eighty Four Thousand Seven Hundred Eight Only	33,24,744.00
357	Supply ,installation ,testing and commissioning of Twisted Pair receiver . Input - Twisted Pair, Output - HDMI, Resolution support UPTO 4K or better, Distance of Transmission 100 meters or more. Should be compatible with HDCP and EDID complete with standard accessories as per tender specifications.	20	No.	87362.00	Rupees Eighty Seven Thousand Three Hundred Sixty Two Only	17,47,240.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
358	Supply ,installation ,testing and commissioning of wall plate transmitter Input :1 VGA with audio, 1 HDMI, Output: 1 twisted pair for transmitting VGA, HDMI. Video Resolution supports Up to 4K or better, Twisted Pair Transmission Distance Minimum 100 Meters complete with standard accessories as per tender specifications.	38	No.	174724.00	Rupees One Lac Seventy Four Thousand Seven Hundred Twenty Four Only	66,39,512.00
359	Supply ,installation ,testing and commissioning of Multi Format Presentation switcher With Control Processor and Advanced Windowing, DSP, AFS etc. complete with standard accessories as per tender specifications.	17	No.	567286.00	Rupees Five Lac Sixty Seven Thousand Two Hundred Eighty Six Only	96,43,862.00
360	Supply ,installation ,testing and commissioning of All In One 8x2 Seamless 4K / UHD Scaling Presentation Matrix Switcher. Should have Inputs: 2x twisted pair, min 4 or more HDMI. Output: 2 or more HDMI, 1 twisted pair. Should have built in control processor with min 3x RS232, 2 or more IR, 2 or more Relay. Also should have 100 watt 4/8 ohm amplifier to drive wall speakers complete with standard accessories as per tender specifications.	1	No.	1375596.00	Rupees Thirteen Lac Seventy Five Thousand Five Hundred Ninety Six Only	13,75,596.00
361	Supply ,installation ,testing and commissioning of BYOD Wireless Presentation devices Should support up to 32 or more Simultaneous Users, Should have audio Output Signal Types: HDMI, analog stereo Formats, Analog: Stereo balanced/unbalanced complete with standard accessories as per tender specifications.	18	No.	199685.00	Rupees One Lac Ninety Nine Thousand Six Hundred Eighty Five Only	35,94,330.00
362	Supply ,installation ,testing and commissioning of Document Camera Full HD 1080p output resolution,High speed 30fps dynamic image,VGA and HDMI output,Professional 20x zoom,The internal memory stores up to 240 images,A built-in backlight for X-rays, film, and slides,Built-in microphone,Dual gooseneck side lamps for anti-reflection,Compatible with USB flash drives, expandable to 4TB ,One-Touch synchronous audio/ video recording. complete with standard accessories as per tender specifications.	17	No.	158840.00	Rupees One Lac Fifty Eight Thousand Eight Hundred Forty Only	27,00,280.00
363	Supply , installation , testing and commissioning of Smart Podium, with an inbuilt 19" Interactive Panel, HDMI,VGA input Switcher and Gooseneck Microphone output with required accessories complete with standard accessories as per tender specification.	17	No.	283643.00	Rupees Two Lac Eighty Three Thousand Six Hundred Forty Three Only	48,21,931.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
364	Supply, installation, testing & Commissioning of Full High Definition Video Conferencing System Full HD 1080p Point to point Video conferencing with 12X optical zoom full HD integrated camera, RF remote control and 1 No. omni directional microphone as per tender specs	1	No.	992872.00	Rupees Nine Lac Ninety Two Thousand Eight Hundred Seventy Two Only	9,92,872.00
365	Supply, installation, testing & Commissioning of Partner Premier includes, Software upgrades and updates; Advance parts replacement' Telephone technical support during business hours.Optional uplift to onsite support	1	No.	85252.00	Rupees Eighty Five Thousand Two Hundred Fifty Two Only	85,252.00
366	Supply ,installation ,testing and commissioning of VC Camera with HDMI video output interface standard accessories as per tender specifications.	1	No.	192877.00	Rupees One Lac Ninety Two Thousand Eight Hundred Seventy Seven Only	1,92,877.00
367	Supply, installation, testing & Commissioning of 8 participants on Group 700 Support for H.239 content sharing technology from any endpoint in the call;1080p License Key provides;Up to 1080p60 with Group Series.	1	No.	144376.00	Rupees One Lac Forty Four Thousand Three Hundred Seventy Six Only	1,44,376.00
368	Supply, installation, testing & Commissioning of extend cameras up to 100m from the codec via customer provided Cat 5e cable. Includes: transmitter, receiver and 1m HDCI/mini-HDCI digital cable.,Connector cable - 3.28ft;Used with Cat5e cable	2	No.	210622.00	Rupees Two Lac Ten Thousand Six Hundred Twenty Two Only	4,21,244.00
369	Supply, installation, testing & Commissioning of 55 inches UHD 3840 x 2160 (16:9) Edge-lit LED 400 nits (cd/m2) typical with viewing angle 178° h/v embedded in the wall next to all 6 doors (entry / exit) of the auditorium complete as tender specifications	1	No.	170186.00	Rupees One Lac Seventy Thousand One Hundred Eighty Six Only	1,70,186.00
370	SITC of 65 inches UHD 3840 x 2160 (16:9) Edge-lit LED 400 nits (cd/m2) typical with viewing angle 178° h/v complete as tender specifications	4	No.	272297.00	Rupees Two Lac Seventy Two Thousand Two Hundred Ninety Seven Only	10,89,188.00
371	Supply, Installation, testing and commissioning of wall mount bracket for the Display panel complete with standard accessories as required	5	No.	11346.00	Rupees Eleven Thousand Three Hundred Forty Six Only	56,730.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
372	USB Based VC Camera with HDMI inputs USB 3.0 and HDMI video output interface, Supports USB 3.0 / 2.0 plug & play, 12 Megapixel image sensor, Panoramic 120° viewing angle, Maximum 3x sensor zoom, and 8x digital zoom, ePTZ, Remote control, Supports 64 preset positions, Built-in microphone, Built-in TV mount.	1	No.	85093.00	Rupees Eighty Five Thousand Ninety Three Only	85,093.00
373	USB Boundary Microphone (Omni-Directional), Plug-and-play operation on Mac OS and Windows, 16-Bit, 44.1- 48kHz sample rates, 10-foot USB cable included,	1	No.	17019.00	Rupees Seventeen Thousand Nineteen Only	17,019.00
374	This USB 2.0 extension adapter can connect USB device to your computer at a distance of up to 150 feet with the help of a Cat5/ Cat5e/ Cat6 patch cable (NOT included). This adapter will allow USB cameras, printers, web cams, keyboard/ mouse extensions or any other USB device exactly where you want it without having to move around your computer	1	No.	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	5,673.00
375	Four USB ports in which you can simultaneously plug-in your multiple mass storage devices, such as, external hard drives, thumb memory sticks, SD card readers etc. and access the stored data in these devices on your laptop PC	1	No.	4538.00	Rupees Four Thousand Five Hundred Thirty Eight Only	4,538.00
376	Supply , installation , testing and commissioning of Cable Management System Cable Cubby , Black, No AC, Series/2 AC Module, Multi-Region, Cable Retraction System for Cable Cubby Enclosures - Network CAT 6, Cable Retraction System for Cable Cubby Enclosures - HDMI and VGA complete with standard accessories as per tender specifications.	5	No.	262086.00	Rupees Two Lac Sixty Two Thousand Eighty Six Only	13,10,430.00
377	Supply , installation , testing and commissioning of Media Player to play the videowall content by built in software as per the tender specifications.	3	No.	56729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	1,70,187.00
378	Supply , installation , testing and commissioning of Software to play the videowall content by built in software as per the tender specifications.	1	No.	56729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	56,729.00
379	Supply , installation , testing and commissioning of Intel 8th Generation Core i3-8100 (6M Cache, 3.60 GHz); Ubuntu ;4GB, DDR4, (4GBx1) up to 32GB ; Intel HD Graphics 1x1 802.11bgn/ac + Bluetooth v4.0 +LE 10/100/1000 RJ-45 Ethernet	1	No.	56729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	56,729.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
380	Supply , installation , testing and commissioning of 08 port POE Lan Switch for (Cafeteria) complete with standard accessories as per tender specifications.	1	No.	22691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	22,691.00
381	Supply ,installation ,testing and commissioning of four input Scaling Auto-Switcher & Extender System surface mount transmitter and receiver, which connect together over a single CATx cable at up to 230 ft (70 m) complete with standard accessories as per tender specifications.	1	No.	162244.00	Rupees One Lac Sixty Two Thousand Two Hundred Forty Four Only	1,62,244.00
382	Supply , installation , testing and commissioning of All Required UL Listed connectors and other components. complete with standard accessories as per tender specifications. (For Dean's Office, Cafeteria and 90 Seater Demonstration Room)	11	Lot	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	62,403.00
383	Supply, Installation, testing and commissioning 4 zone lighting control system with capacity of 2300 watts complete with standard accessories as per the tender specifications.	17	No.	107784.00	Rupees One Lac Seven Thousand Seven Hundred Eighty Four Only	18,32,328.00
384	Supply , installation , testing and commissioning of VGA Micro HR with Audio Cable: 15-pin HD Male to Male Low-Profile Molded + 3.5mm Stereo Mini Plug Male to Male - 6' (1.8 m) complete with standard accessories as per tender specifications.	72	No.	4992.00	Rupees Four Thousand Nine Hundred Ninety Two Only	3,59,424.00
385	Supply , installation , testing and commissioning of 4K Premium High Speed HDMI Ultra-Flexible Cable - 1.5' (45 cm)complete with standard accessories as per tender specifications.	68	No.	4084.00	Rupees Four Thousand Eighty Four Only	2,77,712.00
386	Supply , installation , testing and commissioning of 4K Premium High Speed HDMI Ultra-Flexible Cable - 3' (90 cm)complete with standard accessories as per tender specifications.	146	No.	4992.00	Rupees Four Thousand Nine Hundred Ninety Two Only	7,28,832.00
387	Supply , installation , testing and commissioning of 4K Premium High Speed HDMI Ultra-Flexible Cable - 6' (1.8 m) complete with standard accessories as per tender specifications.	74	No.	6354.00	Rupees Six Thousand Three Hundred Fifty Four Only	4,70,196.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
388	Supply , installation , testing and commissioning of Shielded Digital Twisted Pair Cable for XTP & DTP products - Non-Plenum, 1000' (305 m) spool complete with standard accessories as per tender specifications.	4040	Mtrs	295.00	Rupees Two Hundred Ninety Five Only	11,91,800.00
389	Supply , installation , testing and commissioning of Microphone Cable - 1,000' (305 m) spool complete with standard accessories as per tender specifications.	4170	Mtrs	113.00	Rupees One Hundred Thirteen Only	4,71,210.00
390	Supply , installation , testing and commissioning of 4SQMM Speaker Cable - 1,000' (305 m) spool complete with standard accessories as per tender specifications.	3000	Mtrs	227.00	Rupees Two Hundred Twenty Seven Only	6,81,000.00
391	Supply , installation , testing and commissioning of 2.5SQMM Speaker Cable - 1,000' (305 m) spool complete with standard accessories as per tender specifications.	2115	Mtrs	102.00	Rupees One Hundred Two Only	2,15,730.00
392	Supply , installation , testing and commissioning of 16 AWG Speaker Cable - 1,000' (305 m) spool complete with standard accessories as per tender specifications.	2200	Mtrs	102.00	Rupees One Hundred Two Only	2,24,400.00
393	Supply , installation , testing and commissioning of 14 AWG Speaker Cable - 1,000' (305 m) spool complete with standard accessories as per tender specifications.	100	Mtrs	102.00	Rupees One Hundred Two Only	10,200.00
394	Supply , installation , testing and commissioning of Cat X Cable complete with standard accessories as per tender specifications.	2785	Mtrs	45.00	Rupees Forty Five Only	1,25,325.00
395	Supply , installation , testing and commissioning of All Required UL Listed connectors and other components. complete with standard accessories as per tender specifications. (For Auditorium)	1	Lot	56729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	56,729.00
396	Supply , installation , testing and commissioning of XLR connector plate with Required Mic Inputs and Outputs to mount on Stage floor for Mics with standard accessories as per tender specifications.	3	No.	17019.00	Rupees Seventeen Thousand Nineteen Only	51,057.00
397	Supply , installation , testing and commissioning of All Required UL Listed connectors and other components. complete with standard accessories as per tender specifications. (For Multi-purpose Hall and 180 Pax Lecture Theater)	6	Lot	17019.00	Rupees Seventeen Thousand Nineteen Only	1,02,114.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
398	Supply , installation , testing and commissioning of All Required UL Listed connectors and other components. complete with standard accessories as per tender specifications. (College Council Room)	1	Lot	22691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	22,691.00
399	Supply , installation , testing and commissioning of All Required UL Listed connectors and other components. complete with standard accessories as per tender specifications. (For Audio-Visual Room)	1	Lot	11346.00	Rupees Eleven Thousand Three Hundred Forty Six Only	11,346.00
400	Supply , installation , testing and commissioning of 36 U Equipment rack to house all rack mountable equipment, with internal wiring, front glass door,heat dissipation fans,power distribution units etc.complete with standard accessories as per tender specifications.	3	No.	56729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	1,70,187.00
401	Supply , installation , testing and commissioning of 12U Equipment rack to house all rack mountable equipment, with internal wiring, front glass door,heat dissipation fans,power distribution units etc.complete with standard accessories as per tender specifications.	10	No.	17019.00	Rupees Seventeen Thousand Nineteen Only	1,70,190.00
402	Supply , installation , testing and commissioning of 24U Equipment rack to house all rack mountable equipment, with internal wiring, front glass door,heat dissipation fans,power distribution units etc.complete with standard accessories as per tender specifications.	5	No.	40845.00	Rupees Forty Thousand Eight Hundred Forty Five Only	2,04,225.00
403	Supply , installation , testing and commissioning of 08 Port POE Switch for System Interconnectivity	18	No.	17019.00	Rupees Seventeen Thousand Nineteen Only	3,06,342.00
404	Supply , installation , testing and commissioning of Wifi Router for integrating wireless media Presenter	18	No.	6807.00	Rupees Six Thousand Eight Hundred Seven Only	1,22,526.00
405	Supply , installation , testing and comissioning of Digital Sound Processor with 8 Mic/Line inputs & 8 analog outputs,RS-232 and Ethernet Port for third party Control and Monitoring; inbuilt DSP features like Input Equalizers, Router, Band Pass filter, Output Equalizer, Delay, Limiters, gates , Source selectors etc. complete with standard accessories as per tender specifications.	10	No.	308796.00	Rupees Three Lac Eight Thousand Seven Hundred Ninety Six Only	30,87,960.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
406	Supply , installation , testing and comissioning of AEC capable Digital Audio Conferencing Processor with at least 12 AEC Mic/Line inputs & 8 analog outputs, 24 Bit A-D and D-A Convertors;. inbuilt DSP features complete with standard accessories as per tender specifications.	1	No.	350537.00	Rupees Three Lac Fifty Thousand Five Hundred Thirty Seven Only	3,50,537.00
407	Supply, Installation, testing and commissioning of wireless handheld microphone with receiver (UHF),12 Channel Pre-set or better , Display on Transmitter and Receiver , RF Power output 50mW or Better , Polar Pattern :- Cardioid , Carrier frequency range 500Mhz to 865Mhz Frequency response 20Hz to 20Khz , Mute Button on Transmitter , Battery Operation time Minimum 8hr , Should have Charging Contact in Transmitter , Receiver dynamic range / SNR 80 dB (A-weighted) Or better , switching bandwidth Minimum 30 Mhz Or better.	20	No.	73634.00	Rupees Seventy Three Thousand Six Hundred Thirty Four Only	14,72,680.00
408	Supply, Installation, testing and commissioning of wireless Lapel microphone with receiver (UHF),12 Channel Pre-set or better , Display on Transmitter and Receiver , RF Power output 50mW or Better , Polar Pattern :- Cardioid / omnidirectional or better , Carrier frequency range 500Mhz to 865Mhz , Frequency response 20Hz to 20Khz , Mute Button on Transmitter , Battery Operation time Minimum 8hr , Should have Charging Contact in Transmitter , Receiver dynamic range / SNR 80 dB (A-weighted) Or better , switching bandwidth Minimum 30 Mhz Or better.	20	No.	78626.00	Rupees Seventy Eight Thousand Six Hundred Twenty Six Only	15,72,520.00
409	Supply, Installation, testing and commissioning of Highest audio quality;gooseneck Microphone with 500mm in Length; RFI-proof due to Scudio technology; High sensitivity; Excellent high gain before feedback; Unobtrusive due to small dimensions; Non-glare surface; shock mount for gooseneck microphones providing maximum isolation from physical vibration.	17	No.	56729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	9,64,393.00
410	Supply, installation, testing & Commissioning of wired dynamic handheld vocal microphone complete with standard accessories as per tender specifications.	6	No.	9077.00	Rupees Nine Thousand Seventy Seven Only	54,462.00
411	Supply , installation , testing and commissioning of Microphone control unit/processor for Connection of microphone units in two lines or a ring using standard computer Cat5e cables . A maximum of 100 microphone unit can be connected (50 per line) without redundancy or a maximum of 50 microphone units in a ring with redundancy for maximum as per the tender specifications.	1	No.	209896.00	Rupees Two Lac Nine Thousand Eight Hundred Ninety Six Only	2,09,896.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
412	Supply , installation , testing and commissioning of Delegate Unit with a soft touch button with tactile feedback for turning the microphone on/off for conferencing system complete with standard accessories as per tender specification.	7	No.	62401.00	Rupees Sixty Two Thousand Four Hundred One Only	4,36,807.00
413	Supply , installation , testing and commissioning of chairman Unit for conferencing system. the microphone unit shall be provided with three soft touch buttons with tactile feedback for turning the microphone on/off, for clearing all active delegate microphone units and for the priority as per the tender specifications.	1	No.	63536.00	Rupees Sixty Three Thousand Five Hundred Thirty Six Only	63,536.00
414	Supply , installation , testing and commissioning of System cable CAT5 with RJ45 Connector 2m as per the tender specifications.	10	No.	2269.00	Rupees Two Thousand Two Hundred Sixty Nine Only	22,690.00
415	Supply , installation , testing and commissioning of System cable CAT5 with RJ45 Connector 20m as per the tender specifications.	2	No.	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	11,346.00
416	Supply , installation , testing and commissioning of 16 Inch condenser gooseneck microphone (electret) with cardioid polar pattern The two flexible goosenecks (8 mm bottom, 6 mm top) shall have a rigid tube in between Pressure gradient Frequency response Close miking: 40 - 13,000 Hz Distant miking (distance 1 m): 200 - 13,000 Hz as per the tender specifications.	8	No.	10211.00	Rupees Ten Thousand Two Hundred Eleven Only	81,688.00
417	Supply , installation , testing and commissioning of 8 channel class D Power amplifier with a Max Output Power of 8x500W@8 ohms, or bridged mode output power of 4x 1000W @ 8/4 ohms Built in DSP for Matrix routing, Speaker equalization, Delays, Array EQs etc complete with Ethernet/USB Port for programming and monitoring. complete with standard accessories as per tender specifications.	7	No.	538921.00	Rupees Five Lac Thirty Eight Thousand Nine Hundred Twenty One Only	37,72,447.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
418	Supply, Installation, testing and commissioning of 4 channel class D Power amplifier with a Max Output Power of 4x500W@8 ohms, or bridged mode output power of 2 x 100W @ 8/4 ohms. 20Hz - 20 KHz, SNR of 102dB and THD + N of <0.4% with built in protection such as Limiters, Temperature, Peak Current Limiters, Turn on delay etc. Built in DSP for Matrix routing, Speaker equalization, Delays, Array EQs etc complete with standard accessories as required.	3	No.	310054.00	Rupees Three Lac Ten Thousand Fifty Four Only	9,30,162.00
419	Supply, Installation, testing and commissioning of 4 channel class D Power amplifier with a Max Output Power of 4x250W@8 ohms, or bridged mode output power of 2 x 500W @ 8/4 ohms. 20Hz - 20 KHz, SNR of 102dB and THD + N of <0.4% with built in protection such as Limiters, Temperature, Peak Current Limiters, Turn on delay etc. Built in DSP for Matrix routing, Speaker equalization, Delays, Array EQs etc complete with standard accessories as required.	1	No.	284791.00	Rupees Two Lac Eighty Four Thousand Seven Hundred Ninety One Only	2,84,791.00
420	Supply, installation, testing & Commissioning of Class D or equivalent configurable amplifier with total 600W output power or better across 2 outputs, 4/8ohms, 70/100 Volt as per the tender specifications complete with standard accessories as per tender specifications.	9	No.	156004.00	Rupees One Lac Fifty Six Thousand Four Only	14,04,036.00
421	Supply, Installation, testing and commissioning of high impedance Class D Dual zone amplifier with output power of upto 2x120W @ 70/100V. frequency response of 55 Hz - 20 kHz (+0/-3 dB, @ 1 W reference 1 kHz); THD <0.5% or better at rated power.	1	No.	79236.00	Rupees Seventy Nine Thousand Two Hundred Thirty Six Only	79,236.00
422	Supply , installation , testing and commissioning of 14 - 16 Watts Ceiling Speaker complete with standard accessories as per tender specification.	12	No.	11913.00	Rupees Eleven Thousand Nine Hundred Thirteen Only	1,42,956.00
423	Supply , installation , testing and commissioning of integrated Stereo Class D amplifier with output of 2 X 50 W @ 4 Ohms, 2 X 25 @ 8 Ohms; frequency response of 40Hz to 20kHz; THD <0.5% or better.	1	No.	66940.00	Rupees Sixty Six Thousand Nine Hundred Forty Only	66,940.00
424	Supply, Installation, testing and commissioning of integrated high impedance Class D or equivalent zone amplifier with output power of upto 90W @ 70/100V. frequency response of 50Hz to 20kHz; THD <0.5%;	1	No.	55027.00	Rupees Fifty Five Thousand Twenty Seven Only	55,027.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
425	Supply, Installation, testing and commissioning of 35-40W Analog Speaker line vol controller.	4	No.	4538.00	Rupees Four Thousand Five Hundred Thirty Eight Only	18,152.00
426	Supply , installation , testing and commissioning of Compact Indoor type wall mount Music Loudspeaker: Power handling of 60 Watt or better peak; Nominal dispersion of 120 H X 120 V; Transformer with tap settings of 10W @ 100V. with ; Brackets with pitch/yaw adjustment included complete with standard accessories as per tender specifications.	4	No.	17631.00	Rupees Seventeen Thousand Six Hundred Thirty One Only	70,524.00
427	Supply, installation, testing & Commissioning of Ethernet Based programmable Audio DSP controller with Display and programmable encoder knobs. Multiple programmable settings configurable over Ethernet. Source Selection and Volume Controls ; Shall include any accessory to make the system functional.	1	No.	79903.00	Rupees Seventy Nine Thousand Nine Hundred Three Only	79,903.00
428	Supply, Installation, testing and commissioning of stackable Wall Mount multi driver (8 or better) full range Column Array loudspeaker with free field frequency range (-10dB) of 80Hz to 16kHz; RMS continuous power handling of 100W - 150W Continuous or better; Nominal dispersion of 120 H X 20 V; full range Sensitivity of 87 dB SPL; Max SPL of 109 dB SPL (115dB peak); Nominal Impedance of 8 ohms; Rugged enclosure with grille. Optional 70/100V OEM transformer module with tap settings of 100/50W shall be available.	4	No.	185278.00	Rupees One Lac Eighty Five Thousand Two Hundred Seventy Eight Only	7,41,112.00
429	Supply , installation , testing and commissioning of 2way 5.25" IP55 rated Indoor Surface mount Music Loudspeaker Nominal Impedance 8 Ohms; Integral multi-tap Transformer with tap settings of 25W - 100W @ 100V. Shall include necessary standard hardware for Surface install complete with standard accessories as per tender specifications.	22	No.	60586.00	Rupees Sixty Thousand Five Hundred Eighty Six Only	13,32,892.00
430	Supply, installation, testing & Commissioning of High output, 2 Way Biamp/Triamp, 2x12" or Single 15" trapezoidal box type speaker with at least 1.75" HF, 2" MF transducers. The speaker must have free field operating frequency Range of 42Hz – 18 kHz, free field axial sensitivity (LF) >= 90 dB (1W/1m). Continuous power handling of (LF Driver) >300W . Nominal Dispersion of 90x40 or better with a max continuous SPL of (LF Driver) 120dB (126dB Peak) or better. Baltic Birch braced plywood construction with at least 16 rigging / suspension points (4 on each side)	4	No.	397100.00	Rupees Three Lac Ninety Seven Thousand One Hundred Only	15,88,400.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
431	Supply, installation, testing & Commissioning of 2 x 15" - 18" arrayable high-excursion woofer with 3" - 4" (102 mm) voice-coil and 1000W or better long-term power rating provides high SPL with fast transient response; Frequency Response (+/-3 dB) 40 Hz - 280 Hz; Frequency Range (-10 dB) 36 Hz - 290 Hz; Maximum SPL @ 1 m 123 dB SPL (129 dB SPL peak); ; Sensitivity (SPL / 1 W @ 1 m) 94 dB SPL or better, etc. complete with standard accessories as per tender specifications.	6	No.	380056.00	Rupees Three Lac Eighty Thousand Fifty Six Only	22,80,336.00
432	Supply, installation, testing & Commissioning of customized ceiling mount bracket for above loudspeakers and subwoofers	16	No.	17019.00	Rupees Seventeen Thousand Nineteen Only	2,72,304.00
433	Supply, installation, testing & Commissioning of Dual 10" or better, Bi-amplified 2 or 3 Way Line array system, with Individual Module free field Frequency Range (-10dB) of 87Hz - 18kHz or better & Continuous Power Handling of >= 400W LF + 50W MF/HF. The Loudspeaker shall have a free field Max. SPL (Peak) of 136 dB or better. It should have Horizontal near dispersion pattern of 90° or better, vertical dispersion of the array shall be 60 degrees or better (at least 4 array modules or more). The individual vertical dispersion of each array loudspeaker should not more than 15 deg.	1	Set	1577054.00	Rupees Fifteen Lac Seventy Seven Thousand Fifty Four Only	15,77,054.00
434	Supply, installation, testing and commissioning of Original Array Speaker OEM Rigging Frame & hanging arrangement for Right & Left Line Array Speaker System including subwoofers with a safety factor of 8:1 or better.	2	No.	340371.00	Rupees Three Lac Forty Thousand Three Hundred Seventy One Only	6,80,742.00
435	Supply, installation, testing and commissioning of Subwoofer for right & Left arrays with Dual 15 inch high excursion LF Drivers with 3 inch voice coils. Operating Frequency Range of 53 Hz - 200 Hz or better; and Nominal Impedance as 4 Ohms or better with Long-Term Power Handling of 800W - 1000W Continuous / 3200W peak in total and for Per woofer: free field Maximum SPL of 127dB @ 1 m in Array Position (133 dB SPL peak).	2	No.	560459.00	Rupees Five Lac Sixty Thousand Four Hundred Fifty Nine Only	11,20,918.00
436	Supply, installation, testing and commissioning of hanging/flying kit arrangement for bass units.	2	No.	79420.00	Rupees Seventy Nine Thousand Four Hundred Twenty Only	1,58,840.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
437	Supply, Installation, Testing and Commissioning of stage monitor loudspeaker with frequency response of 90 Hz to 16 Khz or better; horizontal nominal dispersion: 90 - 100 degree horizontal and 50 - 60 degree vertical or better; Sensitivity (SPL /1 w @ 1m) of 92 dB SPL or better . Continous power of 200 watt or better; impedance of 8 ohm; max SPL @ 1 mtr (Cont.) of 120 dB SPL or better; transducers / drivers of HF: 1 x 1" - 1.5" or better; LF: 1x8" or better complete with standrad accessories and wall bracket.	4	No.	118768.00	Rupees One Lac Eighteen Thousand Seven Hundred Sixty Eight Only	4,75,072.00
438	Supply, Installation, Testing and Commissioning of Compact Front Fill loudspeaker with frequency range of 90 Hz to 16 Khz or better; horizontal nominal dispersion: 90 degree horizontal x 90 degree vertical or better; Sensitivity (SPL /1 w @ 1m) of 86 dB - 90 dB SPL or better . Continous power of 150 watt or better; impedance of 8 /16 ohm; max SPL @ 1 mtr (Cont.) of 108 SPL or better; transducers / drivers of HF: 1 x 1" - 1.5" or better; LF: 1x5" or better complete with standrad accessories and wall bracket.	20	No.	66510.00	Rupees Sixty Six Thousand Five Hundred Ten Only	13,30,200.00
439	Supply, installation, testing & Commissioning of delay/balcony fill loudspeaker System - Small format sound reinforcement loudspeakers with 8" or 12" LF Drivers; Long term Power handling capacity: 250W or better;Nominal Impedance : 8 Ω; complete with standard accessories as per tender specifications.	20	No.	1,47,272.00	Rupees One Lac Forty Seven Thousand Two Hundred Seventy Two Only	29,45,440.00
ELECTRICAL ENERGY MONITORING SYSTEM						
440	Design, manufacture, supply,transportation, installation, testing, commissioning of Fire power monitor Panel, 4 loop with maximum of 128 voltage or voltage/current sensors connected on each loop. Maximum loop distance 2000m. Alarming time shall be less than 100 second. Inbuilt 10000 event logs. Shall have IP 30 ratings. Brand: System Sensor Model : XSS-F1	1	Each	11,34,571.00	Rupees Eleven Lac Thirty Four Thousand Five Hundred Seventy One Only	11,34,571.00
441	Design, manufacture, supply,transportation, installation, testing, commissioning of Power Supply station with capacity to power 32 voltage/current sensors. Brand: System Sensor Model : XSS-FQ	1	Each	22,691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	22,691.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
442	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for single phase AC voltage, measurement range AC 36V~420V. Brand: System Sensor Model : XSS-V	5	Each	11,346.00	Rupees Eleven Thousand Three Hundred Forty Six Only	56,730.00
443	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for Single phase AC voltage and current, measurement range AC 36V~420V / 100mA~5A . Brand: System Sensor Model : XSS-VA	6	Each	13,615.00	Rupees Thirteen Thousand Six Hundred Fifteen Only	81,690.00
444	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for Three-phase two-circuit AC voltage with null line, measurement range AC 36V~420V. Brand: System Sensor Model : XSS-VN3	6	Each	17,019.00	Rupees Seventeen Thousand Nineteen Only	1,02,114.00
445	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for Three-phase two-circuit AC voltage without null line, measurement range AC 36V~420V. Brand: System Sensor Model : XSS-V3	4	Each	20,422.00	Rupees Twenty Thousand Four Hundred Twenty Two Only	81,688.00
446	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for Three-phase one-circuit AC voltage and current with null line, measurement range AC 36V~420V / 100mA~5A Brand: System Sensor Model : XSS-VAN3	5	Each	22,691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	1,13,455.00
447	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for Three-phase one-circuit AC voltage and current without null line, measurement range AC 36V~420V / 100mA~5A . Brand: System Sensor Model : XSS-VA3	6	Each	24,961.00	Rupees Twenty Four Thousand Nine Hundred Sixty One Only	1,49,766.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
448	Design, manufacture, supply, transportation, installation, testing, commissioning of Fire Power Monitor Sensor for Single-phase DC voltage and current, measurement range DC20V~220V / 1A~100A. Brand: System Sensor Model : XSS-DVA	4	Each	28,364.00	Rupees Twenty Eight Thousand Three Hundred Sixty Four Only	1,13,456.00
449	Design, manufacture, supply, transportation, installation, testing, commissioning of Electrical Fire Monitoring Panel with 5 loop system with maximum communication distance of 1200 meters per loop and 255 detectors per loop. Communication mode RS-458 Bus. Residual Current Alarm Value 30-999mA continuous adjustable: adjusting precision 1mA . 10000 inbuilt event log. Inbuilt thermal printer. Brand: System Sensor Model : SSDH-J620	1	Each	17,01,857.00	Rupees Seventeen Lac One Thousand Eight Hundred Fifty Seven Only	17,01,857.00
450	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Detector with Maximum of 4nos each of Residual Current transformer & Temperature Sensing Probe can be connected per detector Maximum distance between RCT & Monitoring detector is 3 meter . Alarm action value Threshold: 30- - 999mA adjustable, Temperature: 80 degrees centigrade. Liquid Crystal Digital Tube to display real time leakage in current or temperature change. Brand: System Sensor Model : SSDH-S618	1	Each	4,53,828.00	Rupees Four Lac Fifty Three Thousand Eight Hundred Twenty Eight Only	4,53,828.00
451	Design, manufacture, supply, transportation, installation, testing, commissioning of Heat Sensor Sensor Range:55°C~140°C Brand: System Sensor Model: SSDH-C1	6	Each	22,691.00	Rupees Twenty Two Thousand Six Hundred Ninety One Only	1,36,146.00
452	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 40mA Current Rating- Cable Thickness- 42.3*33.3mm Brand: System Sensor Model : SSDH-SY40	5	Each	28,364.00	Rupees Twenty Eight Thousand Three Hundred Sixty Four Only	1,41,820.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
453	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 60mA Current Rating- Cable Thickness- 63.0*53.0mm Brand: System Sensor Model : SSDH-SY60	5	Each	34,037.00	Rupees Thirty Four Thousand Thirty Seven Only	1,70,185.00
454	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 80mA Current Rating- Cable Thickness- 73*56mm Brand: System Sensor Model : SSDH-SY80	5	Each	39,710.00	Rupees Thirty Nine Thousand Seven Hundred Ten Only	1,98,550.00
455	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 160mA Current Rating- Cable Thickness- 93*56mm Brand: System Sensor Model : SSDH-SY160	6	Each	45,383.00	Rupees Forty Five Thousand Three Hundred Eighty Three Only	2,72,298.00
456	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 250mA Current Rating- Cable Thickness- 114*56mm Brand: System Sensor Model : SSDH-SY250	5	Each	51,056.00	Rupees Fifty One Thousand Fifty Six Only	2,55,280.00
457	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 400mA Current Rating- Cable Thickness- 128*56mm Brand: System Sensor Model : SSDH-SY400	4	Each	56,729.00	Rupees Fifty Six Thousand Seven Hundred Twenty Nine Only	2,26,916.00
458	Design, manufacture, supply, transportation, installation, testing, commissioning of Residual current Monitor Sensor for 1000mA Current Rating- Cable Thickness- 225*56mm Brand: System Sensor Model : SSDH-SY1000	6	Each	62,401.00	Rupees Sixty Two Thousand Four Hundred One Only	3,74,406.00
LIGHTING DIMMING SYSTEM AND SENSORS						

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
459	SITC of Gateway Unit which is a Lighting management control hub working over 2.4GHz communication to control and sensor devices, WiFi capability and ethernet connectivity to server, BACnet compatible device powered by 230V ac supply similar to HON-GW-0A0-B	4	Nos.	1,12,281.00	Rupees One Lac Twelve Thousand Two Hundred Eighty One Only	4,49,124.00
460	SITC of Repeater unit working over 2.4GhZ Range as an extender for gateway units and sensor devices and for carrying communication signal to farther devices for faster action similar to HON-RP-0A0-B	24	Nos.	18,607.00	Rupees Eighteen Thousand Six Hundred Seven Only	4,46,568.00
461	SITC of Wireless Occupancy Sensor with the Extended Coverage of 600 sqft, working on Passive infrared technology with Frequency 2.4GHz. The sensor should be Battery-powered, and having detection area of 600 sqft for 9 ft ceiling and Wireless range up to 50ft with Battery life of 11 years similar to HON-MS-EZ-0A0-B/W	36	Nos.	16,041.00	Rupees Sixteen Thousand Forty One Only	5,77,476.00
462	SITC of Hard Wired Lighting Control Module (02 Channel Type), for lights and Dali dimming output for ballast dimmer control and able to interact with system components like lux, PIR sensor, Gateway and pad wirelessly. Current Rating: 2A similar to Honeywell HON-LCD-0A0-B	48	Nos.	57,744.00	Rupees Fifty Seven Thousand Seven Hundred Forty Four Only	27,71,712.00
463	SITC of Switching Light controller having Individual control of two set of Ballasts capable of wireless communication to occupancy sensor and ambient sensor and gateway units, working over RF Frequency of 2.4GHz and operates on 230v AC supply similar to HON-LCA-0A0-B	36	Nos.	32,903.00	Rupees Thirty Two Thousand Nine Hundred Three Only	11,84,508.00
464	SITC of Linux Server: Third Party	1	Nos.	1,70,186.00	Rupees One Lac Seventy Thousand One Hundred Eighty Six Only	1,70,186.00
465	SITC of Monitoring and control Software to manage the lighting management system across the control system devices at each floor	1	Nos.	6,80,743.00	Rupees Six Lac Eighty Thousand Seven Hundred Forty Three Only	6,80,743.00
466	SITC of Compatible android Tab	36	Nos.	28,364.00	Rupees Twenty Eight Thousand Three Hundred Sixty Four Only	10,21,104.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	DIGITAL CONFERENCE SYSTEM					
467	SITC of Digital Delegate Unit for Members					
	Table top unit with following features					
	SITC of wired delegate unit with microphone selection button and volume control button.					
	Super cardioid non pluggable microphone on adjustable stem with built in windshield, Red or Green Illuminator for indicating Microphone Active, Request to speak.					
	Super cardioid microphone with adjustable stem, stem 15" to 16" length with RED /GREEN Led for active/request status.					
	Built in twin / dual loudspeaker automatically muted if a microphone is on					
	Microphone 'on/off' or 'request-to-speak' button					
	Tri-color indicator above the microphone button					
	Red microphone on indicator					
	Green 'Request-to-speak' confirmation indicator					
	Volume control buttons.					
	2 Headphone sockets.					
	Built in DSP limiter					
	THD : 0.03% or less					
	Conenctivity over RJ45 / CAT5 / CAT6					
	Table top unit can be flush mountable from adding standard kit					
467	Make : Sennheiser (ADN D1)	100	Nos.	1,04,778.00	Rupees One Lac Four Thousand Seven Hundred Seventy Eight Only	1,04,77,800.00
468	SITC of Digital Chairman unit with following features					
	Table top unit with following features					
	SITC of wired chairman unit with non pluggable microphone two number control key and one number request to speak button and volume rotary key.					
	Super cardioid non pluggable microphone on adjustable stem with built in windshield, Red or Green Illuminator for indicating Microphone Active, Request to speak.					
	Super cardioid microphone with adjustable stem, stem 15" to 16" length with RED /GREEN Led for active/request status.					
	Built in twin / dual loudspeaker automatically muted if a microphone is onis on					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Microphone 'on/off' and two number control key button					
	Color indication in button and microphone					
	Red microphone on indicator					
	Volume control rotary key.					
	Headphone sockets.					
	Built in DSP limiter					
	THD : 0.03% or less					
	Conenctivity over RJ45 / CAT5 / CAT6					
	Table top unit can be flush mountable from adding standard kit					
468	Make : Sennheiser (ADN C1)	5	Nos.	1,04,778.00	Rupees One Lac Four Thousand Seven Hundred Seventy Eight Only	5,23,890.00
469	SITC of Central Control Unit for control of all microphones					
	One unit capable of controlling minimum 395 wired delegates & can be capable to connect wireless conference units also					
	THD : <0.01%					
	Built in USB recording option					
	Electronically balanced XLR In and Ouput					
	Open Media Control Protocol over Ethernet					
	Permanent malfunction monitoring and error diagnostics					
	Integrated PC with pre-installed control software					
	Make : Sennheiser (ADN CU1)	5	Nos.	5,67,286.00	Rupees Five Lac Sixty Seven Thousand Two Hundred Eighty Six Only	28,36,430.00
470	SITC of Accessories & Cables					
	Shielded-Twisted-Pair, AWG24, Gold-plated connectors in conference connecting CAT5 / RJ45 / CAT6 cable 20mtr					
	Make : Sennheiser (SDC CBL-RJ45-20)	5	Nos.	22,930.00	Rupees Twenty Two Thousand Nine Hundred Thirty Only	1,14,650.00
471	Shielded-Twisted-Pair, AWG24, Gold-plated connectors in conference connecting CAT5 / RJ45 / CAT6 cable 2mtrh					
	Make : Sennheiser (SDC CBL-RJ45-2)	100	Nos.	6,910.00	Rupees Six Thousand Nine Hundred Ten Only	6,91,000.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
472	SITC of Speakers					
	Grill less design speaker, Twist Flix technology & two-way speaker, Multi tap Fastcon connectivity, Line Transformer Tappings : 24watt - 12watt, Conical Dispersion : 150° or more, Sound Pressure : 103 Db, Impedance : 8 Ω, Sensitivity (1W/1m) : 88 dB, Make : AUDAC (CIRA7)	20	Nos.	2,666.00	Rupees Two Thousand Six Hundred Sixty Six Only	53,320.00
473	SITC of Amplifier					
	240watt@100V, THD+N : < 0.5%, Technology : Class-D, Protection : DC Short circuit, Over heating, Over load, Signal limiting, Convection cooled cooling system, Frequency Response : 20 Hz - 20 kHz, Inputs : Remote mic (Priority mic + chime), Tele-paging (Priority line), Priority mute contact, Voltage / Impedance : 100 V / 4 Ω, Microphone Inputs : 4 x Balanced Mic./Line (2 x XLR/Jack Combo & 2 x XLR), 1 x Balanced Mic./Line (6.3 mm Jack), 1 x Stereo Unbalanced Line (RCA), Crosstalk : > 70 dB, Signal / Noise : > 90 dB, Make : AUDAC (COM24)	5	Nos.	25,868.00	Rupees Twenty Five Thousand Eight Hundred Sixty Eight Only	1,29,340.00
	SITC of Microphones					
	Podium Microphone					
474	Polar Pattern : Lobar, Gold plated contact points, Highly directional mini shotgun microphone, Frequency response : 40Hz - 20 kHz, Impedance : 50ohm or better, Maximum sound pressure level : 130dB, Gooseneck : less than 150mm, Make : Sennheiser (ME 36 + MZH 3015)	10	Nos.	12,480.00	Rupees Twelve Thousand Four Hundred Eighty Only	1,24,800.00
	Wireless digital Microphone Lapel					
475	Polar pattern : Omni-directional, Frequency range : 1880 MHz to 1930MHz, Channel : 18 or more, RF power : 100mW or more, Connectivity : RJ45, Dante enable : Yes, Make : Sennheiser (SL Lavalier set)	5	Nos.	42,456.00	Rupees Forty Two Thousand Four Hundred Fifty Six Only	2,12,280.00
	Wireless digital Microphone Handheld					
476	Polar pattern : Super cardioid, Frequency range : 1880 MHz to 1930MHz, Channel : 18 or more, RF power : 100mW or more, Connectivity : RJ45, Dante enable : Yes, Make : Sennheiser (SL Lavalier set)	5	Nos.	42,456.00	Rupees Forty Two Thousand Four Hundred Fifty Six Only	2,12,280.00
477	SITC of Equipment Rack	5	Nos.	2,26,914.00	Rupees Two Lac Twenty Six Thousand Nine Hundred Fourteen Only	11,34,570.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	SITC of Floor mountable Equipment rack with openable door and power strip suitable for control equipments. Along with inbuilt fire suppression system consisting of 05 LB.(Novec-1230 DLP Assembly with automatic valve mounted on DOT approved cylinder, push in connector for tube, 05 LB (Novec 1230 gas, Mounting bracket, low pressure switch for monitoring system activation.					
	SITC of Cable & Conduits					
478	PVC Pipe 25 mm	1000	RM	119.00	Rupees One Hundred Nineteen Only	1,19,000.00
479	2x1.5 sq mm speaker cable	1000	RM	177.00	Rupees One Hundred Seventy Seven Only	1,77,000.00
	SCANNERS & PARKING SYSTEM					
480	Supply, installation, testing and comissioning of Driver Face and Automatic Number Plate Recognition system/ Recording system (ANPR) including all necessary cameras, lens, IR Illuminator, camera housing and processing unit etc. complete with standard accessories as per tender specifications.	4	Set	822564.00	Rupees Eight Lac Twenty Two Thousand Five Hundred Sixty Four Only	32,90,256.00
481	Supply, installation, testing and comissioning of Baggage scanner Big: computer based multi energy X-Ray Baggage Inspection System capable of passing through bags/parcels of dimension 940mm (W) x 640mm (H) with Belt Height – 750mm –850mm with 22"/24" LCD Monitor, Input/ Output rollers with frames etc. complete with standard accessories as per tender specifications.	2	Set	3970999.00	Rupees Thirty Nine Lac Seventy Thousand Nine Hundred Ninety Nine Only	79,41,998.00
482	Supply, installation, testing and comissioning of 20 zone or above Door frame Metal detector nominal Size: 760 mm (W) x 2050 mm (H) x 700 mm (D) loaded with necessary software etc. complete with standard accessories as per tender specifications.	6	Set	397100.00	Rupees Three Lac Ninety Seven Thousand One Hundred Only	23,82,600.00
483	Supply, installation, testing and comissioning of Sensor based car parking system with controller, display etc. as required. (Cost based on minimum car quantity of 250 cars) etc. complete with standard accessories as per tender specifications.	1	LOT	1701857.00	Rupees Seventeen Lac One Thousand Eight Hundred Fifty Seven Only	17,01,857.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	ELECTRICAL WORKS SUB HEAD TOTAL					37,10,39,886.00
	HVAC WORKS					
	SUB HEAD 'A' - CHILLED WATER SYSTEM					
	CHILLER					
	Water Cooled Chiller					
485	Supply, installation, testing & commissioning of AHRI Certified screw type water cooled water chilling machines with VFD each having minimum actual capacity of 200 TR at chilled water inlet/ outlet temperature of 56 Deg F / 44 Deg F having evaporator fouling factor of 0.0005 FPS unit & chilled water circulation rate of 400 USGPM and condenser water inlet temperature of 95.5 Deg F and leaving condenser water temperature 88Deg F with fouling factor of 0.001 FPS unit and circulation rate of 800 USGPM suitable for operation with refrigerant R-134A. IKW/TR at full load 0.69 max, NPLV 0.4 max, Minimum COP 6.3 and IPLV 0..39 max or as per supper ECBC-2017 . OEM provided software selection sheet in accordance with ARI 550/590 at above mentioned parameters shall be submitted with the bid. The Water Side Pressure Drop in Chiller & Condenser should not exceed 8 mtrs and 8 mtrs respectively. (2w+1s)	3	Nos.	4396463.00	Rupees Forty Three Lac Ninety Six Thousand Four Hundred Sixty Three Only	1,31,89,389.00
	Twin / Mono screw type compressor in semi hermetic construction, complete with automatic stepless type capacity control, safety switches, forced feed lubrication system etc, as per specifications. Efficient working at 1600m height from sea level					
	Squirrel cage induction motor with class 'F' insulation suitable for operation on 415 volts $\pm 10\%$, 50 Hz, A.C. supply.The unit shall have with suitable capacity Air Cooled VFD starter suitable for compressor motor complete with ammeter, over load protection, under voltage protection, protection against phase reversal & independent single phase preventors etc complete as required. The VFD shall be installed inside the panel/ in case VFD is installed seperately the same shall be IP 54 rated & necessary drive arrangement					
	Matching shell and tube water cooled condenser of M.S. shell and integrally finned copper tubes having max. two passes.					
	Matching shell & tube flooded type chiller of MS shell and integrally finned copper tubes . The chiller shall be duly insulated with 19 mm thick elastomeric nitrile insulation at factory.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Refrigerant piping fittings, valves, level sensing electronic expansion valves and accessories to inter connect compressor, condenser, chiller and electronic expansion valve.					
	1 Set - Microprocessor based control panel comprising of Controls including sensors, start up and shut down leaving chilled water temperature Control, Electronic Expansion Valve modulation, anti re-cycle logic, automatic Compressor and load limiting shall be function tested . it shall also be equipped with the following protection and monitoring devices.					
	High (Condenser) & Low (Evaporator) pressure protection.					
	Low oil level & pressure protection.					
	Chilled/Condenser Water flow loss.					
	Chiller Water Freeze protection.					
	Sensor error protection.					
	Motor load control and overload.					
	High motor temperature protection.					
	High oil temperature protection.					
	Chiller inlet and outlet Water temperature.					
	Condenser inlet / Outlet water temperature					
	Suction and discharge Compressor pressure.					
	Microprocessor based control panel shall have suitable hardware & software so that it can be integrated directly to with standard communication open protocol using backnet / Modbus as well as open IP. The display shall be minimum 10 inch coloured graphical display.					
	DP switches at inlet and outlet of condenser & chiller, water drain & air purge valves, cable termination box, wherever required.					
	Lot- suction line and chiller insulation with minimum 19 mm thick polyvinyl nitrile rubber insulation					
	Lot-frame work for mounting the above condenser, chiller, compressor and motor with base plate complete with antivibration pads/ springs.					
	Initial/ first charge of refrigerant gas & compressor oil duly charged at factory.					
	The testing of single chiller at 100% load on AHRI certified test bed.					
	AIR SOURCE HEAT PUMP					
486	Heat pump should be AIR to WATER very high efficiency Inverter / On-off type for producing Hot water for heating in Winter Application. (1600m from sea level)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, Installation, Testing and Commissioning of air cooled heat pumps Complete with multiple hermetic scroll Compressors with independent refrigerant circuits, shell and tube type evaporator, expansion device, air cooled condenser with copper tubes and aluminium fins. The Motor suitable for 400 + 10% volts, 50 Hz, 3 Phase Power Supply, DOL Starter, Microprocessor Based Control Panel, charged R410a Refrigerant and Oil, Suitable Capacity Control					
	Design Conditions:- Hot water IN 113°F Hot water OUT 122°F Winter Ambient temp.:38°F Chiller Fouling Factor 0.0005FPS					
	Minimum COP at AHRI condition: 2.8 IKW/TR max at design- 1.48 Minimum Heating Capacity - 400 KW (2w+1s) 1600m height from sea level	3	Nos	4538285.00	Rupees Forty Five Lac Thirty Eight Thousand Two Hundred Eighty Five Only	1,36,14,855.00
	PLANT MANAGER					
487	Supplying installation testing & commissioning of The intelligent plant automation controller shall be designed for a Water cooled chiller plant. The logic controller shall be specifically designed to control up to 4 water cooled chillers (3 X 250TR Chiller/3x450kw heat pump), up to 3 primary pump, up to 6 cooling towers fans constant speed drives, up to 3 cooling tower isolation valves, up to 3 condenser pumps, up to 3 variable speed secondary pumps, up to 3 chiller isolation valves, 2 system by-pass valve to maintain minimum flow and up to 2 zone demand sensors (which can either be differential pressure or temperature sensors). The controller shall include a 10.4 inch backlit touch screen, shall have a lockable IP54 cabinet.					
	The controller shall be able to communicate to BMS with Modbus/ BACnet/ Lonworks/ IP protocol. The quantity of chillers, pumps, valves and demand sensors to be controlled shall be independently configurable on-site at the graphic user interface by selection from pull down menus, without requiring reprogramming or software download. Plant controller shall come with Remote plant diagnostics & health monitoring system. The rate quoted shall include above all sensors & cabling complete as required					
	features (Plant Manager shall be procured either from quoted Pump or Chiller manufacturer)	1	Nos	1418214.00	Rupees Fourteen Lac Eighteen Thousand Two Hundred Fourteen Only	14,18,214.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	COOLING TOWER					
488	Supply, installing, testing and commissioning of Twin cell Induced Draft FRP CTI certified 220 Tr Cooling tower of heat rejection capacity 819280 Kcl/hr with FRP Water basin , PVC Filling with integral louvers and drift eliminators complete with spray nozzles or having self rotating sprinklers, statically and dynamically balanced axial flow type fan, make-up quick fill arrangement, overflow and drain connections with necessary valves and suitable inspection ladder, access arrangement for cooling tower interior, fan motor with vfd complete as per technical specifications and as required.					
	Entering water temperature : 88 Deg F , Leaving water temperature : 95.5 deg F.) ambient wet bulb 83 deg F (2w+1s)	3	Nos.	496375.00	Rupees Four Lac Ninety Six Thousand Three Hundred Seventy Five Only	14,89,125.00
	PUMPS					
489	Supply, installation, testing and commissioning of Inline Pump Vertical/Horizontal split casing, back pull out flexible coupled End Suction Pump mounted on a common base with electric motor for re-circulation of water for the central air conditioning system. The pumps shall be flexible coupled protected by OSHA complaint coupling guard, with CI casing, SS (CF8)/bronze impeller, high strength steel shaft (preferably SS304) and MSfabricated baseplate.The pump motor shall be suitable for415±10% volts,50 cycles,3 phase AC power supply of (IE3) efficiency class. Motor shall be squirrelcage, Class Finsulation, 1500RPM (Max.) . Pump, base, coupling and motor shall be factory assembled. adjustable & pump motor shall be with VFD as per following requirements. complete in all respect.					
	The capacity of motor shall be at least 10% in excess of BHP requirement of pump.					
	The internal components of pumps including mechanical seal shall be suitable to sustain a temperature of 122 degree Fahrenheit. Minimum efficiency of pump shall be as mentioned below.					
	Cost for pump foundation, suitable support/Mounting Arrangement including making connection of inlet & outlet with fittings including nut, bolts, packing etc.) with plaster.					
	Pumps Shall be BMS & VFD compatible.					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Suction guide to be provided by pump manufacturer for unit responsibility. Contractor to submit proposed pump model with duty curve.					
	Pump rating shall be PN 16					
	The entire work shall be complete as per specifications & as per directions of Engineer-in-charge.					
	The Chilled/Hot Water pumps shall also include the cost of thermal insulation. Secondary Chilled/Hot Water pumps shall be suitable for operation on variable frequency drives & conforming to the specifications of variable speed pumping system. The capacity of motor shall be at least 10% in excess of BHP requirement of pump.					
	Secondary Chilled Water pumps (Plant Room)					
490	Water flow rate : 400 USGPM					
	Head : 24m					
	Pumps complete in all respect (2 working+1 standby)	3	No.	226914.00	Rupees Two Lac Twenty Six Thousand Nine Hundred Fourteen Only	6,80,742.00
	Secondary Hot Water pumps (Plant Room)					
491	Water flow rate : 320 USGPM					
	Head : 22m					
	Pumps complete in all respect (2 working+1 standby)	3	No.	177277.00	Rupees One Lac Seventy Seven Thousand Two Hundred Seventy Seven Only	5,31,831.00
	Condenser Water pumps Plant Room					
492	Water flow rate : 800 USGPM (Constant speed without VFD)					
	Head : 22m					
	Pumps complete in all respect (2 working+1 standby)	3	No.	276552.00	Rupees Two Lac Seventy Six Thousand Five Hundred Fifty Two Only	8,29,656.00
	Primary chilled Water pumps Plant Room					
493	Water flow rate : 400 USGPM					
	Head : 14m					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Pumps complete in all respect (2working+1 standby)	3	No.	184368.00	Rupees One Lac Eighty Four Thousand Three Hundred Sixty Eight Only	5,53,104.00
	Primary Hot Water pumps Plant Room					
500	Water flow rate : 320 USGPM					
	Head : 14m					
	Pumps complete in all respect (2working+1 standby)	3	No.	156004.00	Rupees One Lac Fifty Six Thousand Four Only	4,68,012.00
	Secndry Pump Controller					
501	Supply, installing, testing and commissioning of VARIABLE SPEED PUMPING SYSTEM consisting of variable speed secondary chilled water pumps as above with matching VFDs , one dedicated microprocessor based pump controller with parallel pumping software duly installed. Logic controller should be external to the drives used in the system. Multi Pump Controller shall have programs to safeguard the system against the following conditions Pump flow surges, System Hunting, End of curve protection. Multi Pump Controller shall have program function to accept the pump curve data for optimizing the system performance in terms of energy consumption. Multi Pump Controller shall be capable of controlling up to six pumps in parallel, be compatible with BMS system					
	Price for vfd and controls for all secndry pump set	2	set	276552.00	Rupees Two Lac Seventy Six Thousand Five Hundred Fifty Two Only	5,53,104.00
	Closed Type Pressurized Expansion Tank					
502	Supply, installation, testing and commissioning of closed expansion tank system. Tank will be of M.S. construction with interchangeable EPDM-BUTYL rubber membrane. The expansion tank shall be complete with safety relief valve and pressure gauge. The tank will be of pressure rating to suit the system pressure and will be sized to adequately compensate for water expansion due to operating temperature variations. the tank shall be fabricated as per ASME boiler section-8. For chilled water application, it will be insulated with 50 mm thick insulation to the specifications and clad with 26G-aluminum cladding.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
a)	The capacity of tank shall be 500 Liters	2	Set	198550.00	Rupees One Lac Ninety Eight Thousand Five Hundred Fifty Only	3,97,100.00
503	The expansion tank shall be supplied along with pressurization unit. The pressurization unit shall consist of two nos.(1 working+1 stand-by) high pressure pumps of suitable pressure rating mounted on M.S. frame, complete with interconnecting piping, isolation valves, NRV, Y-strainer, Pressure gauge, pressure transmitter, auto-logic panel (IP 55) with dry-run protection, electrical MCB and interconnecting wiring suitable for single phase power supply.The unit shall be housed in powder-painted canopy suitable for external installation, if required.					
a)	Flow 2CMH (25m Head)	2	Set	141821.00	Rupees One Lac Forty One Thousand Eight Hundred Twenty One Only	2,83,642.00
504	AIR/ SEPARATOR					
	Supply installation testing and commisioning of Deaerator-dirt separator. Flanged connections, complete with Brass drain valve 1" F (from DN 50 to DN 150), 2" F (from DN 200 to DN 300). complete with a set of concentric metal mesh surfaces to create the swirling motion required to facilitate the release of micro-bubbles and dirt to the surfaces. Epoxy resin coated steel body. Brass automatic air vent valve body. Stainless steel internal element. PP float. Brass float guide and stem. Stainless steel float lever and spring. EPDM hydraulic seals. Medium water and non-hazardous glycol solutions excluded from the guidelines of EC directive 67/548; maximum percentage of glycol 50%. Maximum working pressure 10 bar. Working temperature range 0–110°C. Particle separation rating down to 5µ. Working temperature range 0–100°C. Floor brackets as per site requirement.					
a)	Connection size 125 mm PN-16	3	Set	319098.00	Rupees Three Lac Nineteen Thousand Ninety Eight Only	9,57,294.00
	FLOOR MOUNTED AHU					
505	Supply, Installation, testing and commissioning of factory fabricated double skin type AHRI/Eurovent certified Air Handling Units (BMS compatible) for Waiting & Public areas as per specifications given below:-					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	AHU Construction:-It shall be made out of 0.8 mm pre -coated Galvanized steel sheet outside & 0.8 mm plain steel sheet inside with 40 mm thick PUF insulation factory injected between them by injection moulding m/c, with density not less than 40 kg/Cumbetween them. Drainpan(made out of 1.2 mm stainless steel (SS Grade 304) sheet insulated with 19 mm thick closed cell insulation nitrile rubber with thermal brake profile. AHUs Inner skin of panels & all parts which comes with air contact shall be minimum 22 G anodized aluminum.					
	Necessary foundation required & anti vibration pads shall be provided & cost for the same shall be included in this item.					
	1) Filter section consisting of pre filter & fine filter in aluminum casing .Pre-filter section shall be with non woven synthetic media of 10 micron particle size with an efficiency of 90%, fine/microvee filter section will be with filters of non woven synthetic media of 3 micron particle size of efficiency 99%.The quoted price shall also include VCD, pressure differential indicator across Fine filters with audible and visual alarms.					
	2) Plug Fans with aerofoil profile blade (with min. 70% efficiency) with motor (VFD compatible) ,volume control damper and duct flexible connection. The supply fan shall be provided with variable frequency drive and input / output signal compatible to BMS system. Squirrel cage induction motors suitable for 415 ± 10% volts, 50 Hz, AC supply & high efficiency (IE-3 Efficiency), H.P of motor shall be as per actual selection meeting other technical requirements.					
	3) 4-6 Row Deep Cooling Coil & 2-3 row deep heating coil, with aluminum fins as per following mentioned AHU requirements					
	4) Discharge Plenum Section.dampers & mixing box as per GFC drawings					
	COIL- Copper tubes and Aluminum fins 12-13 fin./inch, Coil size shall be selected for air velocity of 500 ft./minute & velocity across filters at 500 ft./minute.					
	Sound level 65 db. at the distance of 2 mtr.(maximum)					
	Necessary potential free contacts shall be provided for BMS operation. CS ahu shall be with spring vibration isolators.					
	Floor mounted Type					
a)	8000 CFM 18TR S.Pr-50mm WC 4RD	2	Set	242515.00	Rupees Two Lac Forty Two Thousand Five Hundred Fifteen Only	4,85,030.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
b)	8000 CFM 14TR S.Pr-50mm WC 4RD	2	Set	242515.00	Rupees Two Lac Forty Two Thousand Five Hundred Fifteen Only	4,85,030.00
c)	10000 CFM 20TR S.Pr-50mm WC 4RD	4	Set	385754.00	Rupees Three Lac Eighty Five Thousand Seven Hundred Fifty Four Only	15,43,016.00
d)	15000 CFM 30TR S.Pr-50mm WC 4RD	2	Set	510557.00	Rupees Five Lac Ten Thousand Five Hundred Fifty Seven Only	10,21,114.00
e)	17000 CFM 35TR S.Pr-50mm WC 4RD	2	Set	546012.00	Rupees Five Lac Forty Six Thousand Twelve Only	10,92,024.00
	Ceiling Suspended Type					
a)	3000 CFM 6.0TR S.Pr-45mm WC 4RD	2	Set	167420.00	Rupees One Lac Sixty Seven Thousand Four Hundred Twenty Only	3,34,840.00
b)	4000 CFM 8.0TR S.Pr-45mm WC 4RD	2	Set	184504.00	Rupees One Lac Eighty Four Thousand Five Hundred Four Only	3,69,008.00
506	Supply installation testing and commissioning of VFD designed for fan motor applications with built-in PID controller, control panel (keypad & display) ,IP-65 rating VFD for use on standard centrifugal fans. The display should be in alpha-numeric characters and programming facility should be in user-friendly HVAC terminology. VFD's shall have built-in harmonic filters. the inter connecting wires between driver and MCC shall be included.All VFD shall have by pass circuit.					
a)	1.5 KW VFD	2	Nos	55937.00	Rupees Fifty Five Thousand Nine Hundred Thirty Seven Only	1,11,874.00
b)	2.2 KW VFD	2	Nos	65293.00	Rupees Sixty Five Thousand Two Hundred Ninety Three Only	1,30,586.00
c)	5.5 KW VFD	8	Nos	80814.00	Rupees Eighty Thousand Eight Hundred Fourteen Only	6,46,512.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
d)	7.5 KW VFD	4	Nos	102111.00	Rupees One Lac Two Thousand One Hundred Eleven Only	4,08,444.00
Chilled Water Fan Coil Unit						
507	Supply, installation, testing and commissioning of GI powder coated horizontal ceiling suspended single skin chilled & hot water fan coil units complete with fan, 3 speed motor, 3 row deep cooling coil & 1 row deep heating coil, aluminium filters (MERV-8) with filter box, double sandwiched insulated tray, copper connection, rotary switch, supporting arrangement, electrical wiring etc. The thickness of GSS sheet should be 1.25 mm. The fan shall be selected for 5 -8mm external static pressure. The unit shall have double sandwiched insulated extended tray to accommodate all FCU valves within extended tray. Tray shall be duly insulated with nitrile rubber as specified for pipe insulation. The complete fan coil unit shall be in line with the standard specification. The capacity of fan coil units shall be as follows. Proper supporting system for FCU to be provided & will be in contractor's scope.					
a)	400 CFM (1.0 TR)	165	Nos	40419.00	Rupees Forty Thousand Four Hundred Nineteen Only	66,69,135.00
b)	600 CFM (1.5 TR)	37	Nos	44674.00	Rupees Forty Four Thousand Six Hundred Seventy Four Only	16,52,938.00
c)	1200 CFM (3.0 TR)	1	Nos	88638.00	Rupees Eighty Eight Thousand Six Hundred Thirty Eight Only	88,638.00
CHILLED WATER CASSETTE UNIT						
508	Supplying, installing, testing and commissioning of ceiling mounted type chilled water 4way cassette unit each complete with minimum 2 row deep of coil of copper tubes aluminium fins, centrifugal fan. 3 speed motor, filters insulated drain pan with drain connection, high performance drain pump, water piping connections, decorative panel, electrical wiring for 220v 1ph, required as per specification & drawings with the following capacities:-					
a)	1.0 TR	5	Set	42546.00	Rupees Forty Two Thousand Five Hundred Forty Six Only	2,12,730.00
FCU Kit (Valves Station)						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
509	Connection and regulation kit for HVAC fan coil units in heating and cooling systems. Complete with: pressure independent control valve with proportional linear actuator, three-way shut-off valves, integrated by-pass, Venturi device with pressure test ports (only for dedicated versions), filtering cartridge and pre-formed shell insulation made of PPE. Sizes DN 15, DN 20 and DN 25. Linear or equipotential flow rate adjustment characteristic, which can be set up by actuator depending on the characteristics of the terminal unit. Maximum working pressure 25 bar. Maximum differential pressure with actuator installed: 5 bar. Nominal operation Δp range 25–400 kPa. Working temperature range -10–120°C. Ambient temperature range 0–50°C. Strainer mesh size 800 μm. Medium: water and glycol solutions; maximum percentage of glycol 50%. Dezincification resistant alloy body and adjustment headwork; stainless steel strainer mesh; EPDM diaphragm, obturator and seals.					
a)	20 mm dia	202	Nos	21273.00	Rupees Twenty One Thousand Two Hundred Seventy Three Only	42,97,146.00
b)	25 mm dia	1	Nos	25528.00	Rupees Twenty Five Thousand Five Hundred Twenty Eight Only	25,528.00
	Thermostat					
510	Supply, installation, testing and commissioning of automatic control for Units for 4 pipe system (heating & cooling type) consisting of Modulating thermostat, It shall include all accessories, mountings, wiring & unit, terminations etc. (BMS Compatibility to be provided).	224	Nos	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	12,70,752.00
511	SITC of Anti Fouling Condenser System Upto 4Nos Chillers Max, (1:3) Common Skid shall include 7" Touch Screen Graphical PLC, one injection/collection pump, motorized valves and complete with all accessories and Low side activities of piping connections from Ball traps to Ball collectors and Chillers. The motorized valve shall give signals to PLC of their functioning and all process of injection and collection should be shown on the PLC while in operation. The Common Skid piping, Ball Trap to suit chiller capacity requirement & Ball Collector Shall be Galvanized.	1	Nos	2127321.00	Rupees Twenty One Lac Twenty Seven Thousand Three Hundred Twenty One Only	21,27,321.00
	SUB HEAD 'B' - PIPING WORKS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
512	Providing & fixing in position TEST point complete with all accessories as required.	8	Nos.	567.00	Rupees Five Hundred Sixty Seven Only	4,536.00
513	BALL VALVE set with Y-STAINER duly insulated of the following sizes as per specifications and drawings.					
a)	32mm dia.	10	Nos.	2496.00	Rupees Two Thousand Four Hundred Ninety Six Only	24,960.00
b)	25mm dia.	9	Nos.	2156.00	Rupees Two Thousand One Hundred Fifty Six Only	19,404.00
514	Ball Valve duly insulated of the following sizes as per specifications and drawings.					
a)	32mm dia.	10	Nos.	1997.00	Rupees One Thousand Nine Hundred Ninety Seven Only	19,970.00
b)	25mm dia.	7	Nos.	1437.00	Rupees One Thousand Four Hundred Thirty Seven Only	10,059.00
515	Providing and fixing of PVC drain pipe of 6 Kg /cm2 pressure rating complete with 6mm thick closed cell nitrile rubber insulation, fittings, supports, valves as per specifications & drawings.					
a)	25 mm dia	1075	Rmt	213.00	Rupees Two Hundred Thirteen Only	2,28,975.00
b)	32 mm dia	315	Rmt	255.00	Rupees Two Hundred Fifty Five Only	80,325.00
	CONDENSER WATER PIPE					
516	Supplying, fixing, testing and commissioning of condenser water pipes of following sizes of MS 'C' class along with necessary clamps, vibration isolators and fittings such as bends,tees etc..but excluding valves, strainers, gauges etc. adequately.supported on rigid supports duly painted/buried in ground.excaavation and refilling etc. as per specification and as required complete in all respect.					
	Note:- The Pipes size 150 mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
d)	80 mm dia.	35	Rmt.	1276.00	Rupees One Thousand Two Hundred Seventy Six Only	44,660.00
e)	40 mm dia.	35	Rmt.	766.00	Rupees Seven Hundred Sixty Six Only	26,810.00
	POT - STRAINER of MS fabricated flanged ends with stainless steel strainer as specified.					
a)	250 mm dia.	1	Nos	210605.00	Rupees Two Lac Ten Thousand Six Hundred Five Only	2,10,605.00
	Expansion Below					
	Supply, Installation, testing and commissioning Bellows type rubber expansion joints for water piping located at Pump inlet & exit. Complete with double bellows, tie rods, MS flanges, necessary hardware and gaskets etc., with insulation of following sizes:					
a)	200 mm dia.	12	Nos	8679.00	Rupees Eight Thousand Six Hundred Seventy Nine Only	1,04,148.00
517	Supply, Installation, testing and commissioning of Flow Switch with accessories as required.	9	Nos	1560.00	Rupees One Thousand Five Hundred Sixty Only	14,040.00
518	Automatic air vent minical with Shutoff valve. Threaded connections 3/8" M (or 1/2" M). Complete with Brass body and cover, PP float, brass obturator stem, EPDM O-Ring seals. Medium: water and glycol solutions. Max. percentage of glycol 30 %. Maximum working pressure 10 bar . Maximum working temperature 120 °C. attached With antisuction valve.	20	Nos	2836.00	Rupees Two Thousand Eight Hundred Thirty Six Only	56,720.00
	SUB HEAD 'C' - AIR DISTRIBUTION WORKS					
519	Supply, installation, balancing and commissioning of MS welded rectangular ducting complete with, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.					
a)	16 G	60	Sqm	1985.00	Rupees One Thousand Nine Hundred Eighty Five Only	1,19,100.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	AIR TERMINALS					
520	Supply, installation, testing and commissioning of Low leakage Air volume control duct damper complete with neoprene rubber gaskets,nuts, bolts, screws linkages, flanges etc., as per specifications.	111	Sqm	9218.00	Rupees Nine Thousand Two Hundred Eighteen Only	10,23,198.00
521	Supplying, installing and testing of extruded aluminium Air louvers with bird screen in accordance with approved shop drawings and specifications complete as required.	26	Sqm	6382.00	Rupees Six Thousand Three Hundred Eighty Two Only	1,65,932.00
522	Supply, installation, testing & commissioning of Constant Volume Flow Limiters , Mechanically System Powered with High-quality plastic control damper and casing stainless steel, leaf spring & silicon free oscillation damper. It should be Factory Calibrated and can be Adjusted at Site with Independent of orientation in installation. Control range should be $\pm 10\%$ of Set Flow. complete as per specifications. etc complete as required.					
a)	100CFM	100	Each	3404.00	Rupees Three Thousand Four Hundred Four Only	3,40,400.00
	For Fresh Air					
523	Supply, installation, Testing & Commissioning of IAQ system for outdoor air areas, heavy gauge extruded aluminium of 1.5 mm nominal thickness complete with ultra low leakage (aerofoil construction) extruded aluminium profile volume control damper, Rapid Average Pitot tube; Air Flow Straightner (Honey-comb Patterned) with Motorized Assembly for Dampers with programmable, DCV Controller that Communicates on Bacnet over MS/TP; differential pressure sensor; & step down transformer of 24V.					
a)	IAQ device with integral AFMS	12	Sqm.	31000.00	Rupees Thirty One Thousand Only	3,72,000.00
b)	Controller for IAQ Station	6	Each	24500.00	Rupees Twenty Four Thousand Five Hundred Only	1,47,000.00
c)	Integrator for BMS communication	6	Each	85000.00	Rupees Eighty Five Thousand Only	5,10,000.00
d)	Actuator & CO2 sensor.	60	Each	21673.00	Rupees Twenty One Thousand Six Hundred Seventy Three Only	13,00,380.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
e)	DP sensor for TFA	20	Each	5187.00	Rupees Five Thousand One Hundred Eighty Seven Only	1,03,740.00
f)	CAT-5 cable	600	Metre	59.00	Rupees Fifty Nine Only	35,400.00
g)	2 core x 1 sqmm	1200	Metre	44.00	Rupees Forty Four Only	52,800.00
524	Supply, Installation and testing of AL back draft gravity damper for fan in accordance with the approved shop floor drawings and specifications, and shall also confirm to the BIS specifications.	15	Sqm	5673.00	Rupees Five Thousand Six Hundred Seventy Three Only	85,095.00
3	Supply, fabrication, installation and testing the non-porous 300mm dia flexible connections constructed of fire resistance flexible, double canvas connection with resistoflex material as per the approved shop drawings.	10	Metre	2553.00	Rupees Two Thousand Five Hundred Fifty Three Only	25,530.00
	SUB HEAD 'D' - VENTILATION					
	AXIAL FLOW FANS					
525	Supply, installation, testing and commissioning of AMCA certified for sound and air performance (FEG) Tube Axial fan complete with tube casing in MS standard construction powder coated, aluminium impeller with adjustable blade angles, vibration isolator and directly coupled to TEFC Sq.cage induction motor, suitable for 415V±10%, 50 Hz. 3 phase electric supply complete with required hardware etc. The complete fan assembly shall be BSEN-1210-3-2002/UL listed for 250 Deg C 2 hours in accordance with power ventilator for smoke control systems etc as per specification complete as required.					
	Air Quantity : 24000 CFM					
526	Static Pressure : 25 mm wg	4	No.	140403.00	Rupees One Lac Forty Thousand Four Hundred Three Only	5,61,612.00
	Air Quantity : 19000 CFM					
527	Static Pressure : 25 mm wg	8	No.	137850.00	Rupees One Lac Thirty Seven Thousand Eight Hundred Fifty Only	11,02,800.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Air Quantity : 14500 CFM					
528	Static Pressure : 25 mm wg	4	No.	127639.00	Rupees One Lac Twenty Seven Thousand Six Hundred Thirty Nine Only	5,10,556.00
	Air Quantity : 13500 CFM					
529	Static Pressure : 25 mm wg	4	No.	121257.00	Rupees One Lac Twenty One Thousand Two Hundred Fifty Seven Only	4,85,028.00
	Air Quantity : 12500 CFM					
530	Static Pressure : 25 mm wg	2	No.	114875.00	Rupees One Lac Fourteen Thousand Eight Hundred Seventy Five Only	2,29,750.00
	Air Quantity : 9000 CFM					
531	Static Pressure : 25 mm wg	6	No.	113457.00	Rupees One Lac Thirteen Thousand Four Hundred Fifty Seven Only	6,80,742.00
	Air Quantity : 7000 CFM					
532	Static Pressure : 25 mm wg	4	No.	92184.00	Rupees Ninety Two Thousand One Hundred Eighty Four Only	3,68,736.00
	Air Quantity : 2000 CFM					
533	Static Pressure : 25 mm wg	2	No.	42546.00	Rupees Forty Two Thousand Five Hundred Forty Six Only	85,092.00
	TREATED FRESH UNIT WITH HEAT RECOVERY WHEEL:					
534	Supply, installation, testing & commissioning of DOUBLE SKIN, FLOOR					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	MOUNTED, sectionalized construction, draw through type, THERMAL BREAK DESIGN of 50 mm thick panels air handling unit (AHU) as per specifications & complete with the following:					
	Pre-filter section with MERV-7 filters. (Synthetic fibre pre-filter) (for fresh air)					
	Fine Filter section with MERV-13 filters. (for fresh air)					
	Ultra-Violet Germicidal irradiation (UVGI) Rod					
	Heat Recovery Wheel section with molecular sieve desiccant motor and its geared motor & drive package. The heat recovery section shall have wheel recovery wheel and shall have minimum recover of 75% and above with a depth of 200 mm. The rotor media shall be coated adsorbent Molecular Sieve 3Å desiccant to recover sensible heat and latent heat to a very high degree. The wheels shall be of proven design along with drive set. The rotor shall rotate at a lower rpm of 20-25 RPM. The motor shall be compatible with 415V/3P/50 Hz power supply.					
	Supply air Fan section with EC - Plug Fan, AMCA certified high efficiency fan, with fire retardant flexible connection at fan outlet.					
	Exhaust air Fan section with EC - Plug Fan, AMCA certified high efficiency fan, with fire retardant flexible connection at fan outlet.					
	High efficiency 'EF1, IE2' squirrel cage induction motors suitable for 415±10% volts, 50±3%Hz, 3 phase AC supply. Motor shall be suitable for VFD operation.					
	Fan & motors shall be mounted on a common base frame with motor sliding rails & complete base frame mounted on the AHU casing with vibration isolation spring isolators.					
	Dampers for fresh air intake, supply air and return/exhaust air.					
	Unit mounted Electrical Control Panel in IP 55, weather proof design with incomer disconnect switch/MCCB, VFD for supply air fan, exhaust air fan & wheel motor and complete in all respects including safeties, interlocks, metering & indication, fully BMS compatible and as approved.					
a)	The Unit selection shall be :					
	Fresh Air Conditions:					
	Summer - 84 deg F & 50% RH					
	Monsoon - 74Deg F & 82 % RH					
	Return Air Conditions:					
	76° F DB & 60% RH					
	Supply Air Fan:					
	17000 80 mm Wg Total SP					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Exhaust Air Fan:					
	17000 CFM, 80 mm Wg Total SP					
	TFA cum HRW AHU Unit - as discussed above.	1	Nos.	751653.00	Rupees Seven Lac Fifty One Thousand Six Hundred Fifty Three Only	7,51,653.00
b)	The Unit selection shall be :					
	Fresh Air Conditions:					
	Summer - 84 deg F & 50% RH					
	Monsoon - 74Deg F & 82 % RH					
	Return Air Conditions:					
	76° F DB & 60% RH					
	Supply Air Fan:					
	20000 CFM 70 mm Wg Total SP					
	Exhaust Air Fan:					
	20000 CFM, 70 mm Wg Total SP					
	TFA cum HRW AHU Unit - as discussed above.	1	Nos.	879293.00	Rupees Eight Lac Seventy Nine Thousand Two Hundred Ninety Three Only	8,79,293.00
	AIRWASHER					
535	Supplying, Installing, Testing and Commissioning of CELDEK FILL package type air cooling unit with minimum 90% saturation efficiency. Air cooling unit shall be factory assembled and complete with double skin casing 0.8mm Inner / outer pre-coated GI sheets, DIDW forward curved fans with TEFC, sq. cage, induction motors 1440 RPM (IE-3) with IP-55 Protection. Suitable for operation on 415 ± 10% voltage, 50 Hz 3 phase AC supply, drive package including multi sheave pulleys and belts for fans and motors, 1.2mm thick tank & pad section in SS Construction, vibration isolators, wire mesh pre-filters, 200 mm thick CELDEK FILL, Water Circulation Pump (1W+1S), internal PVC piping, valves and fittings, 4-bend PVC eliminator. The Unit shall be following capacities complete as required.					
a)	3600 cfm capacity with 45 mm static pressure for kitchen	1	Nos.	87929.00	Rupees Eighty Seven Thousand Nine Hundred Twenty Nine Only	87,929.00
	DRY SCRUBBER					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supply, Installation, Testing and Commissioning of dry type scrubber comprising of electrostatic section with auto wash with multiple cells to suit total volume, the housing shall be 16 gauge zinc coated steel sheet with gasketed access door, electrical interlocked, and bottom drain pan shall have integral washing system. The unit can be floor mounted or ceiling suspended. The cell wash module shall have a set of metal mesh filters. The electronic air cleaner shall be the two- stage dual voltage plate type cells and efficiency of 90% as per ASHRAE test Standard for dry particulate. Ionizing- collecting cell shall be of one-piece construction . Power supply shall be 100% solid state. on 200 to 240 VAC, 50HZ, 1Phase input with an LED light indicating the performance status.					
a)	4000 cfm capacity for kitchen	1	Nos.	241096.00	Rupees Two Lac Forty One Thousand Ninety Six Only	2,41,096.00
	SISW KITCHEN EXHAUST FAN FOR SCRUBBER					
536	Supply, installation, testing and commissioning of Suitable SISW Backward Curved Kitchen Exhaust Air Fan in double skin construction complete with TEFC Induction Motor, Drive Assembly, Base Frame, Vibration Isolators and other accessories etc as per specification complete as required.					
a)	Capacity - 4000 CFM, 30 mm St. Pr.	1	Nos.	78002.00	Rupees Seventy Eight Thousand Two Only	78,002.00
	SUB HEAD 'E'- ELECTRICAL WORK					
	Electrical Work					
537	Design, fabrication, supply, installation, testing and commissioning of LT Panel / Sub-distribution panels fabricated out of 2mm thick for structural members and 1.6mm thick for door and covers CRCA sheet in cubicle compartmentalize free standing floor mounted, dust and vermin proof Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before painting as per specifications 2 Nos. earthing terminals shall be provided for all distribution panels. Panels shall be suitable for 415V, 3-phase, 4-wire, 50Hz supply system and lifting hooks shall also be provided in case of large panels. Degree of ingress protection of IP-54.					
	HVAC Plant Room Panel					
	INCOMING:					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	2 No. of 800 A 4P EDO Type ACB (50 KA) with microprocessor based release.					
	METERING & INDICATION					
	2 Sets-Digital Multi-Function Meter (showing harmonics alongwith all other electrical parameters such as Voltage, Current, Hz, KW, KWHr, PF.) with RS 485 port with matching cast resin CT's- It should be BMS compatible.					
	2 Sets - 0-500 V, 96 sqmm Voltmeter with selector switch, 2 No. phase indicating LED lamp to show the incoming power with control SP MCB.					
	2 Sets Indicating LED lamps for ACB ON/OFF/ TRIP with protective SP MCB's,					
	2 Sets Indicating LED lamps R, Y, B Phase with protective SP MCB's,					
	2 Sets of CTs of the ratio 800/ 5A with class 0.5 Accuracy for Metering, burden 15 VA					
	BUSBAR					
	2 Sets of 1000 A TPN Aluminium Bus Bar with colour coded PVC Sleeves					
	BUS COUPLER:					
	1 No. of 1000 A 4P EDO Type ACB (50 KA) with microprocessor based release.					
	OUTGOING FEEDERS:					
	3 No. 400 A 4P MCCB , 36 kA breaking capacity for Heat pump (2w+1s)					
	3 No. 320 A, 4P MCCB ,36 kA breaking capacity for Chillers(2w+1s)					
	12 Nos. 4 Pole MPCB DOL Starter for 5.5 KW , ON/OFF indication lamps and Start/ Stop Push Puttns, Digital Ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required. CT , HPP,PP					
	3 Nos. 4 Pole MPCB SD Starter for 11KW, Secondary Chilled Water Pumps , ON/OFF Indication Lamps and Start/ Stop Push Puttns, Digital Ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required.					
	3 Nos. 4 Pole MPCB SD Starter for 15KW,condenser Water Pumps , ON/OFF Indication Lamps and Start/ Stop Push Puttns, Digital Ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required.					

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	3 Nos. 4 Pole MPCB DOL Starter for 7.5 KW , ON/OFF indication lamps and Start/ Stop Push Puttons, Digital Ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required. HSP					
	2Nos. 4 Pole MPCB DOL Starter for 5.5 KW , ON/OFF Indication Lamps and Start/ Stop Push Puttons, Digital Ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required. Vent.					
	2 No. 40 A 4P MCCB , 36 kA breaking capacity Spare	1	Set	1772767.00	Rupees Seventeen Lac Seventy Two Thousand Seven Hundred Sixty Seven Only	17,72,767.00
	Kitchen starter Panel(5th floor)					
	Incomer (1 No.):					
	32A, 4 pole MCCB (15 KA)					
	Metering:					
	0-500 Volts, digital Voltmeter and shall be protected by 2Amps MCBs.					
	0-32Amps digital Ammeter and 32/5A, 10VA, CL-1 CTs and selector switch. Phase indicating lamps and shall be protected by 2Amps MCBs.					
	Bus Bars:					
	63Amps TP Aluminium busbars, colour coded with heat shrinkable insulation sleeves					
	Out Goings					
	(2) Nos. 4 pole MPCB DOL starter for 2.2kw ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)					
	2 no Toggle switch					
	2 nos MCB	1	Set	31201.00	Rupees Thirty One Thousand Two Hundred One Only	31,201.00
	Pressurization & HRV starter Panel (Terrace)					
	Incomer (1 No.):					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	150A, 4 pole MCCB (15 KA)					
	Metering:					
	0-500 Volts, digital Voltmeter and shall be protected by 2Amps MCBs.					
	0-150Amps digital Ammeter and 150/5A, 10VA, CL-1 CTs and selector switch. Phase indicating lamps and shall be protected by 2Amps MCBs.					
	Bus Bars:					
	200Amps TP Aluminium busbars, colour coded with heat shrinkable insulation sleeves					
	Out Goings					
	(2) Nos. 4 pole MPCB SD starter for 11.0 kw ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)					
	(4) Nos. 4 pole MPCB DOL starter for 5.5 kw ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)					
	(2) Nos. 4 pole MPCB DOL starter for 3.7 kw ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)					
	(2) Nos. 4 pole MPCB DOL starter for 2.2 kw ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)					
	2 No. 40 A 4P MCCB , 36 kA breaking capacity Spare	2	Set	269461.00	Rupees Two Lac Sixty Nine Thousand Four Hundred Sixty One Only	5,38,922.00
	Ventilation panel (2nd & 4th floor)					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	(1) Nos. 4 pole MPCB DOL starter for 5.5 kw motor ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)	8	Set	24110.00	Rupees Twenty Four Thousand One Hundred Ten Only	1,92,880.00
	Ventilation panel(GF,3rd&5th floor)					
	(1) Nos. 4 pole MPCB DOL starter for 7.5 kw ON/OFF indication lamps and push buttons, Digital ammeter with CTs and selector switch, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for signal.2no+2nc (FAN)	10	Set	25528.00	Rupees Twenty Five Thousand Five Hundred Twenty Eight Only	2,55,280.00
	CABLES					
542	Supplying & laying of following 1100 volt grade XLPE insulated PVC sheathed copper conductor armoured cables including , clamped includes anchor fastners wall with suitable clamps, saddles fixing bolts including connecting testing and commissioning etc as per specification complete as required.					
a)	3.5core 185 sqmm	150	Rmt.	6781.00	Rupees Six Thousand Seven Hundred Eighty One Only	10,17,150.00
b)	4core 16 Sq mm	300	Rmt.	630.00	Rupees Six Hundred Thirty Only	1,89,000.00
c)	4 core 10 Sq mm	500	Rmt.	437.00	Rupees Four Hundred Thirty Seven Only	2,18,500.00
d)	4 core 6 Sq mm	500	Rmt.	272.00	Rupees Two Hundred Seventy Two Only	1,36,000.00
e)	4 core 4 Sq mm	100	Rmt.	195.00	Rupees One Hundred Ninety Five Only	19,500.00
	SUB HEAD 'F'- IBMS WORK					
	CENTRAL CONTROL STATIONS					
543	Supplying, Installing, Testing & Commissioning of the Central Control Stations consisting of the following :					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
a)	Supply, installation, testing and commissioning of Intel Core i7 (I-7 Processor (Latest Generation), - 8 GB RAM, 1 TB hard disc, -3½” disc drive, DVD writer, compatible CDROM, Windows 10 and shall have MS-Office installed, As per specification, Mouse, Key board	1	No	95000.00	Rupees Ninety Five Thousand Only	95,000.00
b)	Colour Laser Printer (A4 size)	1	No	42000.00	Rupees Forty Two Thousand Only	42,000.00
c)	UPS 6KV for DDC Panel	1	No	70000.00	Rupees Seventy Thousand Only	70,000.00
SOFTWARE						
544	(1 Set)BMS System Software : Web Based Graphical Software meeeting the requirements in the Given I/O Summary and technical specifications including configuration and facility to create / provide the graphic mapping for all I/O Summary points , animate the Graphics, Navigation between pages, display of logs, changing the time zones, popup alarms, configurable password protection for Building Management System as per Specifications. Software shall be able to communicate with Lonworks, Bacnet, Modbus devices simultaneously, with unlimited user capacity. Same software can be utilized as programming / commissioning software of DDC, NAC etc. (All required Software with original license competent with BMS software)					
	(1 Set)Web Based Router / Network Area Controller interfacing the DDC controllers and Integrators for the system with PC. It has capacity to store trends & program backup. It should be BTL & UL Listed and shall be of the same make as DDCs					
	(1 LOT) Supplying, Testing & Commissioning of the interface for MODBUS RTU / Bacnet for 3rd Party Devices. Device should have hybrit port for MSTP & RS485. The price shall include the necessary integrator / gateway, software required for integration as per I/O point Summary.					
	1Set Chillers/heat pump	1	Set	1186400.00	Rupees Eleven Lac Eighty Six Thousand Four Hundred Only	11,86,400.00
	1Set Fire Alarm					
	1Set Secondary Pum Controller					
	1Set Lifts					
	1Set UPS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	1Set Energy Meters					
	CONTROLLERS					
545	UL and BTL Automation stations / DDC Controller. The controllers shall be 32 bit microprocessor based standalone with real time clock. The DDC's shall be capable of peer to peer communication with other DDCs and then to router Also with locable MS mounting cabinets duly powder coated connector strip, internal wiring and space to house controller & relays, connector strip current transformer, MCB, internal wiring. (Contractor shall confirm his I/O provision w.r.t requirement on basis of data point). DDCs requiring more than 2 additional Plug in type IO Module cards or expansion modules to suffix the requirement of required inputs/outputs are not acceptable. Use of AI to DI multiplexer is also not acceptable. DDCs shall be compact factory fitted with IO Points.					
	DDC for Chiller Plant (Chiller, Pry. Pumps, Sec. Pump, HP, HW Pump, Cooling Tower)	1	LOT	358634.00	Rupees Three Lac Fifty Eight Thousand Six Hundred Thirty Four Only	3,58,634.00
	DDC for AHU's Floor Mounted / Ceiling Suspended AHU's & TFA (max 2 AHU/DDC)	1	LOT	685000.00	Rupees Six Lac Eighty Five Thousand Only	6,85,000.00
	DDC for Ventilation Fan & Lift Pressurization (max 4 Fan/DDC)	1	LOT	450000.00	Rupees Four Lac Fifty Thousand Only	4,50,000.00
	DDC for Air Washer & Scrubber	1	LOT	75000.00	Rupees Seventy Five Thousand Only	75,000.00
	DDC for Electrical System	1	LOT	58650.00	Rupees Fifty Eight Thousand Six Hundred Fifty Only	58,650.00
	DDC for WTP, STP PUMPS & Fir pump	1	LOT	150000.00	Rupees One Lac Fifty Thousand Only	1,50,000.00
	DDC for DG SYSTEM	1	LOT	58653.00	Rupees Fifty Eight Thousand Six Hundred Fifty Three Only	58,653.00
	SENSORS & FIELD DEVICES					
546	Supply, installation, testing & commissioning of the following Sensors :					
	Immersion Temp sensor	8	Nos	5827.00	Rupees Five Thousand Eight Hundred Twenty Seven Only	46,616.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	DP switch, air - blower & Filter	60	Nos	4700.00	Rupees Four Thousand Seven Hundred Only	2,82,000.00
	Duct Temp. Sensor	45	Nos	3870.00	Rupees Three Thousand Eight Hundred Seventy Only	1,74,150.00
	Water flowmeter	4	Nos	38000.00	Rupees Thirty Eight Thousand Only	1,52,000.00
	Outdoor Combined temp & RH sensor	1	Nos	22000.00	Rupees Twenty Two Thousand Only	22,000.00
	Current Relay	60	Nos	10000.00	Rupees Ten Thousand Only	6,00,000.00
	Water Level Switch	14	Nos	7000.00	Rupees Seven Thousand Only	98,000.00
	Flame Proof Water Level Switch	6	Nos	15800.00	Rupees Fifteen Thousand Eight Hundred Only	94,800.00
	Voltage Transducer	6	Nos	10000.00	Rupees Ten Thousand Only	60,000.00
	CO2 sensor	25	Nos	7500.00	Rupees Seven Thousand Five Hundred Only	1,87,500.00
	CABLING & CONDUTING					
547	Supply, Installation, Testing & Commissioning of the following cables as per the specifications:					
	Unshielded Twisted pair Signal Cables, 2 C X 1.0 Sq.mm.	5200	RM	79.00	Rupees Seventy Nine Only	4,10,800.00
	Shielded Twisted Pair Communication Cables, 2 C X 1.5 Sq.mm.	5200	RM	89.00	Rupees Eighty Nine Only	4,62,800.00
	ELECTRICAL WORKS SUB HEAD TOTAL					7,93,17,013.00
	FURNITURE					
A	TABLES					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
548	<p>TABLE-2100X2250X750</p> <p>Primary Work Surface- Made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Made of 25mm thick MDF one side pre- laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Secondary Work Surface- Made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Modesty Panel- Made of 25mm thick MDF one side pre- laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Understructure- 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>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. 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</p> <p>Pedstal construction is BOX-BOX-FILE type which Uses powder coated 400 MM long metal Panel Drawer Slides. Drawer extension is 325 MM.</p> <p>Drawers have a soft closing & anti slam mechanism.</p> <p>Handles are provided for ease of opening.</p> <p>Pedestal is provided with lock for security.</p> <p>.BACK UNIT-1800x500x1150</p> <p>Top Panel-Made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.Slide Door Unit-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 for body panels like side, bottom,back and shelves.</p> <p>Shutters are made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top. Shutters have a soft</p>	2	Each	136218.02	Rupees One Lac Thirty Six Thousand Two Hundred Eighteen and Two Paise	2,72,436.04

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
549	<p>TABLE-1800X2100X750</p> <p>Primary Work Surface- Made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Made of 25mm thick MDF one side pre- laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Secondary Work Surface- Made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Modesty Panel- Made of 25mm thick MDF one side pre- laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.</p> <p>Understructure- 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>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. 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</p> <p>Pedstal construction is BOX-BOX-FILE type which Uses powder coated 400 MM long metal Panel Drawer Slides. Drawer extension is 325 MM.</p> <p>Drawers have a soft closing & anti slam mechanism.</p> <p>Handles are provided for ease of opening.</p> <p>Pedestal is provided with lock for security.</p> <p>.BACK UNIT-38985</p> <p>Top Panel-Made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top.Slide Door Unit-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 for body panels like side, bottom,back and shelves.</p> <p>Shutters are made of 25mm thick MDF one side pre-laminate board confirming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top. Shutters have a soft</p>	15	Each	116398.74	Rupees One Lac Sixteen Thousand Three Hundred Ninety Eight and Seventy Four Paise	17,45,981.10

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
550	<p>Mayfair Main Desk size shall be 1200 Width x 600 Depth x 750 Height. The Top shall be in white cedar and black and shall be 18 mm PLB with PVC lipping. The side panels shall be 18 mm thick PLT with PVC . The Modesty panel shall be 18 mm thick PLT. The Modesty panel shall be in a combination of black & white cedar.</p> <p>Mayfair ERU size shall be 900 Width x 450 Depth x 750 Height. The top of ERU shall be 18 mm thick PLT with PVC lipping. The feature of ERU shall be that is common for both LHS and RHS. The colour of ERU top shall be white cedar , side panels shall be in black and the Modesty panel shall be a combination of black & white colour.</p> <p>Mayfair Pedestal size shall be 390 Width x 435 Depth x 529 Height. The top is 18 mm thick PLB . The two drawer mobile pedestal is available in one size . The top and drawer fronts shall be in white cedar while the other components shall be in black.</p>	20	Each	28615	Rupees Twenty Eight Thousand Six Hundred Fifteen Only	5,72,300.00
551	<p>Work - 5026 size shall be 1500 Width x 750 Depth x 740 Height . The top shall be made from 25 mm thick pre- laminated board . All the edges are sealed with 2 mm thick PVC edge band all around . Side panels shall be made from 25 mm thick pre-laminated particle board . All the edges are sealed with 2 mm thick PVC edge band on the user side and 0.8 mm on the top and bottom side . The side panels have 2 glide screws each for levelling of the desk. Modesty panel shall be made from 18 mm thick pre- laminated particle board . All the edges are sealed with 0.8 mm thick PVC edge band all around. Freestanding Pedestal shall be made from 18 mm pre-laminated particle board with a combination of 2 mm and 0.8 mm PVC edge band on all the exposed surfaces as per requirement . The drawers are provided with suitable slides for smooth operation . All the pedestal drawers are centrally locked with a single key .</p>	10	Each	22969.88	Rupees Twenty Two Thousand Nine Hundred Sixty Nine and Eighty Eight Paise	2,29,698.80
552	<p>Trident Junior 2 Main Desk size shall be 1500 Width x 750 Depth x 743 Height. Top shall be of 18 mm thickness made of PLT board with 2 mm Edge banding. Wenge and savannah Maple PLT board shall be used. The Understructure shall be in pre-laminated panels made with PLT boards . 2- Drawer and 3 - Drawer storage units with different combinations to support tops made with 18 mm PLT boards of different colours. Modesty and back panels made with 18 mm PLT boards. The pedestals / storages shall be fitted with necessary locks.</p>	20	Each	20071.8	Rupees Twenty Thousand Seventy One and Eighty Paise	4,01,436.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
553	Time Out 4 Seater PU Coated size shall be 1135 Width mm x 1175 Depth mm x 750 Height mm . Top shall be 25 mm thick base material shall be 25 mm MDF board . On top PU painting of minimum 2H hardness with 75% glass as per color chart .Combination color graphics on the centre . Brown Laminate on bottom specially profiled edges for comfort . The Understructure shall be having bend pipe structure of MS powder coated . Pipe dia 38 mm , 2 mm thick and it shall be fitted with top by SS machine screws . Legs shall be of MS powder coated and 38 mm dia. pipe legs are fixed with inderstructure and table top . Glide shall be of Plastic fixed at the understructure to prevent the damage of table top during stacking .	50	Each	17761.36	Rupees Seventeen Thousand Seven Hundred Sixty One and Thirty Six Paise	8,88,068.00
554	Supply and placing of Reading Hall 6 Seater having following specifications Worktop size shall be 25 mm Thick PLB Tops with 2mm Thick PVC. The understructure must be having C-Frames having specifiacion 1.6 mm thick M.S C-Frame Supporting the Top and Legs should have specifications of Dia 38.1 x 1.6mm M.S ERW tube.	50	Each	11291.42	Rupees Eleven Thousand Two Hundred Ninety One and Forty Two Paise	5,64,571.00
556	Overall Size :Width : 110cm Depth : 60cm Height : 50cmTABLE LEGS METERIALS & SIZE : OVAL METAL TUBE ,THICK 1.5 mm , Color : SILVER POWER COATING . TABLE TOP MATERIALS & SIZE : (DENSITY / TYPE):L X W X T:1100 X 600 X 8 MM , Color : PARTIAL BLACK TEMERED GLASS TOP FULL BLACK TEMPERED GLASS . TABLE BOTTOM MATERIALS & SIZE : (DENSITY / TYPE) : L X W X T:1100 X 600 X 6 MM , Color :FULL BLACK TEMPERED GLASS	25	Each	10447.72	Rupees Ten Thousand Four Hundred Forty Seven and Seventy Two Paise	2,61,193.00
557	Stylo size shall be 1200 Width mm x 600 Depth mm x 750 Height mm . Table top shall be 18 mm PPB with 35 KGS , shelf shall be 12.5 KGS drawer shall be 506 KGS. The table top shall be 18 mm prelam particle board , 3 mm prelam MDF board. Metal parts shall be BM Slide For Keyboard plus castor mounting table plus locking bracket plus angle clit . Hardware shall be Screw , KD fitting , Wooden Dowel , PVC ibserts. Construction shall be KD fitting , Wooden dowel & Angle Clit.	20	Each	12080.84	Rupees Twelve Thousand Eighty and Eighty Four Paise	2,41,616.80

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
558	Providing and placing in position panel based modular partition system of sizes 1650mm (L) x 1500mm (D) with return unit of with overall thickness of 52.4mm (50 mm Minimum) and 1200mm (1190 mm Minimum) height. The panel thickness comprises of 38mm (35 mm Minimum) thick paper honeycomb + 3mm MDF on each sides + 0.6mm decorative laminate or fabric on both sides. The fabric is upholstered with. Particle board framing is used on outer boundary of these blocks as well as intermediately at certain locations forming conduit for passing cables. These blocks are located in the mid segment of the panels and can be provided with cutouts for mounting switch boxes (above or below the worktops) Fabricated bottom frame for 52.4mm (50mm Minimum) panel comprises of L-channels made of 2mm thick CRCA steel (IS: 513), formed plates of 3mm thick HR steel (IS: 2062) & ERW steel tube of size 35 mm (30 mm Minimum) x15 mm (10mm Minimum)x1.6mm thick in oval cross section (IS: 7138) welded together. This frame is bolted to the uprights with M6 screws. Top tiles can be offered in variety of combinations.	40	Each	48631.34	Rupees Forty Eight Thousand Six Hundred Thirty One and Thirty Four Paise	19,45,253.60
559	Table shall be 1800 Width mm x 900 Depth mm x 740 Height mm . The top shall be 25 mm thick PLB with 2 mm thick PVC Edge Beading plus the Understructure shall be having C - Frames 1.6 mm thick MS supporting the top . The Legs shall be of dia. 38.1 x 1.6 mm thick MS ERW tube .	9	Each	12377.02	Rupees Twelve Thousand Three Hundred Seventy Seven and Two Paise	1,11,393.18
560	Supplying and placing in position Multipurpose table of the following specifications. Table size shall be 1500 Width mm x 894 Depth mm x 750 Height mm . Top shall be made of 25 mm thick Pre- Laminated board with 2 mm thick . PVC edge beading . The Understructure shall be having leg tube made from MS ERW also the top support shall be made from MS ' U ' brackets (3 nos.) welded to 63.5 mm dia. x 1.6 mm thick MS ERW tube . This is a fixed on top of the wooden Top using self - tapping screws , Finish - powder coated (avg . thick 40 microns) . Base : Made from MS ERW tubes , formed at one end & welded at other with MS ERW tube . This is a fixed at the bottom of the level adjustment facility has been provided .Finish shall be of Chromium (0.2 - 0.5 microns) over nickel plating (10-15 microns) . The Modesty shall be Pre- Laminated Particle boards with matching PVC lipping of 1 mm thick along edges .	13	Each	20540.26	Rupees Twenty Thousand Five Hundred Forty and Twenty Six Paise	2,67,023.38
561	Size: 900mm x 590mm x 745mm. Table Top Load bearing capacity 40 Kg. Table Top made up of Pre Laminate Board 25mm thickness and 2mm PVC lipping. Understructure Metal parts- MS ERW tubes, MS CRCA Sheet and MS Bright Bar. Powder Coated 35 microns min. Construction- Knock Down.	12	Each	7509.52	Rupees Seven Thousand Five Hundred Nine and Fifty Two Paise	90,114.24

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
562	Enterprise 1200 Table without CPU Hanger size shall be 1200 Width mm x 600 Depth mm x 728 Height mm. Top shall be 18 mm thick Pre laminated particle board all work surface edges shall be having duly sealed with 2 mm thick PVC edgebanding. Understructure Modesty Panel 18 mm thick Pre laminated particle board . The Rectangular frame shall be fabricated component in 1.2 mm thick CRCA , Finish : powder Coat(epoxy polyster) . Leg shall be fabricated component in 38 mm x 25 mm 1.2 mm thick MS ERW ATube ,finish powder coat (epoxy polyster).The plastic cap for cable travel shall be injection moulded polypropylene and leveler glide for shall be nylon 6 & MS bolt. The storage shall be having shell and drawer tray 0.6 mm thick CRCA Finish powder coat (epoxy polyster) plus the drawer front shall be 0.8 mm thick CRCA Finish powder coat (epoxy polyster) plus lock with 10 lever and handle and leveller. The wire management shall be horizontal wire carrier 0.7 mm thick CRCA Finish powder coat (epoxy polyster) and vertical wire carrier 0.8 mm thick CRCA Finish powder coat (epoxy polyster) .	6	Each	16641.54	Rupees Sixteen Thousand Six Hundred Forty One and Fifty Four Paise	99,849.24
563						
	Encarta Conference Table size shall be seats (1) 675 Width mm x 600 D epth mm x 750 Height mm , seats (2) 1350 Width mm x 600 Depth mm x 750 Height mm . Top shall be 25 mm PLB thick With PVC beading all over . In Understructure legs shall be made from 18 mm thick PLT having curved profile plus Modesty shall be made from PLT (pre - laminated twin) boards 18 mm thick in two shades . Wire manager shall be running along the width of desk fitted on the modesty panel from inside.	48	Each	6456.96	Rupees Six Thousand Four Hundred Fifty Six and Ninety Six Paise	3,09,934.08
	Encarta Conference Table size shall be seats (1) 675 Width mm x 600 D epth mm x 750 Height mm , seats (2) 1350 Width mm x 600 Depth mm x 750 Height mm . Top shall be 25 mm PLB thick With PVC beading all over . In Understructure legs shall be made from 18 mm thick PLT having curved profile plus Modesty shall be made from PLT (pre - laminated twin) boards 18 mm thick in two shades . Wire manager shall be running along the width of desk fitted on the modesty panel from inside.	60	Each	6456.96	Rupees Six Thousand Four Hundred Fifty Six and Ninety Six Paise	3,87,417.60

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	Supplying and placing in position Conference table of the following specifications. Conference Table With Wire Manager size shall be Single seater 760 Width mm x 600 Depth mm , Two seater 1360 Width mm x 600 Depth mm , Half Round (2 Seater) R 713 + Quarter Round (1 Seater) R 713 . The top shall be 31.6 mm thick (18 mm + 12 mm + 0.6 mm DL (both sides) + 0.4 mm Membrane) Edge Profile shall be waterfall edge 10 mm radius on top edge and 5 mm at bottom . In Understructure the Legs shall be made from 25 mm PPB having a straight profile with half round edges and clad with 0.6 mm thick post Forming laminate . Overall thickness of leg shall be 26.2 mm The modesty panel in understructure shall be mae from PLT (Pre laminated twin) boards of 18 mm thick . There shall be Wire Management wire carrier shall be made from 0.6 mm thick CRCA painted and carrier cover shall be made of 12 mm thick MDF painted all over.	72	Each	6456.96	Rupees Six Thousand Four Hundred Fifty Six and Ninety Six Paise	4,64,901.12
564	Supplying and placing in position Reception table of the following specifications. Top shall be 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 Frostered 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 Worksurface : 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	6	Each	63695.22	Rupees Sixty Three Thousand Six Hundred Ninety Five and Twenty Two Paise	3,82,171.32
B	CHAIRS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
565	<p>seat/back assembly: the cushioned seat should be made of injection molded plastic outer & inner. plastic inner should be upholstered with stitched cover and moulded high resilience polyurethane foam of density 45±2 kg/m³, and hardness load 16 ± 2 kgf for 25% compression. the stitched cover should be made from spacer fabric and leatherette. cushioned back should be made of pu foam with insitu molded ms e.r.w round tube of size 1.9±0.03cm x 0.16 ±0.0128cm. it upholstered with spacer fabric and leatherette. seat size : 47.0 cm. (w) x 48.0 cm. (d) back size : 45 cm. (w) x 75.5 cm. (d) armrests the armrest top should be moulded from polyurethane (pu) and mounted on to a drop lift adjustable type tubular armrest support made of 03.81±0.03 cm x 0.2±0.01 cm thk ms e.r.w tube. the armrest height adjustable up to 6.5±0.5cm in 5 steps. the armrest structure should be powder coated (dft 40-60 micron). active bio-synchro mechanism (fu3401/3402): the adjustable tilting mechanism should be designed with the following features:</p> <ul style="list-style-type: none"> • 360° revolving type. • front-pivot for tilt with feet resting on ground and continuous lumbar support ensuring more comfort. • tilt tension adjustment can be operated in seating position. • 5-position tilt limiter giving option of variable tilt angle to the chair. • seat/back tilting ratio of 1: 2 • the mechanism housing should be made up of hpdc aluminium black powder coated. seat depth adjustment seat depth adjustment should be integrated in the seat through a sliding mechanism. seat depth adjustment range should be of 6.0±0.5 cm. adjustable back support back frame should be connected to the up/dn mechanism housed in plastic t spine. it can be adjusted in the range of 7.42±0.5 cm for the comfortable back support to suit individual need. pneumatic ht. adjustment the pneumatic ht adjustment has an adjustment stroke of 10.0±0.3 cm. 9) twin wheel castor : 5 nos. twin wheel castors should be injection moulded in plastic having 6.0±0.1cm wheel diameter and assembled to pedestal. (D) <p>Overall Dimensions of Chair Seat Height - 44.4-54.4cm. Height - 113.6-131.1cm. Width-76.1 cm and Depth-76.1 cm</p>	2	Each	14187.14	Rupees Fourteen Thousand One Hundred Eighty Seven and Fourteen Paise	28,374.28

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
567	<p>seat/back assembly: the seat and back should be made up of 1.2 ±0.1cm. thick hot pressed plywood and upholstered with fabric and moulded polyurethane foam with pvc lipping all around. the back foam should be designed with contoured lumbar support for extra comfort. back size 49.0 cm. (w) x 47.0 cm. (h) seat size 49.0 cm. (w) x 44.0 cm.(d) high resilience (hr) polyurethane foam: the hr polyurethane foam should be moulded with density = 45 ±2 kg/m³ and hardness load 16 ± 2 kgf for 25% compression. armrests: the armrest tops should be injection moulded from black polypropylene. they should be fitted to tubular armrest supports made of ø2.54 ±0.03cm. x 0.16 ±0.0128cm.thk. m.s. e.r.w. tube and black powder coated (dft 40-60 microns). the tubular armrest supports hold together the seat and back. tubular frame: the tubular frame should be cantilever type & made of ø2.54 ±0.03cm. x 0.2 ±0.016cm.thk. m.s. e.r.w. tube and black powder coated (dft 40-60 microns). Overall Dimensions of Chair Seat Height - 43.0 Height - 80.0cm. Width & Depth of Chair as measured from pedestal - Width-55 cm and Depth-61.0 cm.</p>	6	Each	5466.94	Rupees Five Thousand Four Hundred Sixty Six and Ninety Four Paise	32,801.64

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
568	<p>. SEAT/BACK ASSEMBLY: The seat & back is made up of 1.2 ± 0.1cm thk. hot pressed plywood measured as per QA method described in OCP-QLTA-PL14-18 ; upholstered with synthetic leather over moulded High Resilience Polyurethane foam.</p> <p>* HIGH BACK SIZE: 51.8 cm. (W) x 75.2 cm. (H)</p> <p>* SEAT SIZE: 49.0 cm. (W) x 51.4 cm. (D)</p> <p>HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam is moulded with density =55+/-2 kg/m³ and hardness 16 ± 2 kgf as per IS:7888 for 25% compression.</p> <p>. ARMRESTS: The adjustable armrest is designed with the following features :</p> <ul style="list-style-type: none"> • Up-Down adjustment– 8 steps (8.0±0.5cm range) • Height adjustable armrest structure which is chrome plated & fitted with an armrest top. • Fixed Armrest Top is PU moulded over metal insert. <p>. (A) FRONT PIVOT SYNCHRO MECHANISM: The adjustable tilting mechanism is designed with the following features.</p> <ul style="list-style-type: none"> • 360° revolving type. • Single point control. • Front-pivot for tilt with feet resting on ground ensuring more comfort. • Tilt tension adjustment. • 4-position locking with anti-shock feature. • Seat/back tilting ratio of 1:2. <p>(B) BACK HEIGHT ADJUSTABILITY: Back can be adjusted in 5 positions by manually. Stroke of height adjustable spine is 7 cm. Back height adjustability is applicable for for High back and Mid back chair.</p> <p>. PNEUMATIC HEIGHT ADJUSTMENT: The pneumatic height adjustment has an adjustment stroke of 10.0 ± 0.3 cm.</p> <p>. PEDESTAL ASSEMBLY WITH CASTORS: The pedestal is High Pressure Die cast</p>	10	Each	12866.72	Rupees Twelve Thousand Eight Hundred Sixty Six and Seventy Two Paise	1,28,667.20

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
569	<p>. SEAT/BACK ASSEMBLY: The seat & back is made up of 1.2 ± 0.1cm thk. hot pressed plywood measured as per QA method described in OCP-QLTA-PL14-18 ; upholstered with synthetic leather over moulded High Resilience Polyurethane foam.</p> <p>* MID BACK SIZE: 51.6 cm. (W) x 65.7 cm. (H) * SEAT SIZE: 49.0 cm. (W) x 51.4 cm. (D)</p> <p>HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam is moulded with density =55+/-2 kg/m³ and hardness 16 ± 2 kgf as per IS:7888 for 25% compression.</p> <p>. ARMRESTS: The adjustable armrest is designed with the following features : • Up-Down adjustment– 8 steps (8.0±0.5cm range) • Height adjustable armrest structure which is chrome plated & fitted with an armrest top. • Fixed Armrest Top is PU moulded over metal insert.</p> <p>(A) FRONT PIVOT SYNCHRO MECHANISM: The adjustable tilting mechanism is designed with the following features. • 360° revolving type. • Single point control. • Front-pivot for tilt with feet resting on ground ensuring more comfort. • Tilt tension adjustment. • 4-position locking with anti-shock feature. • Seat/back tilting ratio of 1:2.</p> <p>(B) BACK HEIGHT ADJUSTABILITY: Back can be adjusted in 5 positions by manually. Stroke of height adjustable spine is 7 cm. Back height adjustability is applicable for for High back and Mid back chair.</p> <p>. PNEUMATIC HEIGHT ADJUSTMENT: The pneumatic height adjustment has an adjustment stroke of 10.0 ± 0.3 cm.</p> <p>PEDESTAL ASSEMBLY WITH CASTORS: The pedestal is High Pressure Die cast polished Aluminium and fitted with 5 nos. twin wheel castors. The pedestal is 65.0 ±</p>	20	Each	12011.22	Rupees Twelve Thousand Eleven and Twenty Two Paise	2,40,224.40

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
570	<p>seat assembly: the seat assembly should be made up of 1.2 ±0.1cm. thick hot-pressed plywood , upholstered with fabric upholstery covers and moulded polyurethane foam. seat size: 47.0 cm. (w) x 48.0 cm. (d)back assembly: the back assembly should be made of powder coated (oft 40-60 microns)tubular frame of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. ms erw tube designed with contoured lumbar support for extra comfort. the back should be upholstered using double layer spacer mesh fabric with high tenacity yarn.</p> <p>back size : 46.5 cm (w) x 60.5 cm (h)high resilience (hr) polyurethane foam: the hr polyurethane foam should be moulded with density =45+/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression.armrests: the one-piece armrests should be injection moulded from black co-polymer polypropylene. Centre-tilt mechanism: the mechashould be m should be designed with the following features:</p> <ul style="list-style-type: none"> • 360° revolving type. • 17° ±2° maximum tilt on pivot at centre • upright position locking. <p>tilt tension adjustment. .pneumatic height adjustment: the pneumatic height adjustment has an adjustment stroke of 11.0 ±0.3cm.elescopic bellow assy: the bellow should be 3 piece telescopic type and injection moulded in black polypropylene.pedestal assembly: the pedestal should be injection moulded in black 33% glass-filled nylon66 and fitted with 5 nos. twin wheel castors. the pedestal should be 66.3 ±0.5cm. pitch-center dia. (76.3 ±1.0cm with castors.)twin wheel castors: the twin wheel castors should be injection moulded in black nylonOverall Dimensions of Chair</p> <p>Seat Height - min 43.3 to max 54.3cm. Height - min 89.5 to max 100.5cm. Width & Depth of Chair as measured from pedestal - Width-76.3 cm and Depth-76.3 cm.</p>	30	Each	7496.54	Rupees Seven Thousand Four Hundred Ninety Six and Fifty Four Paise	2,24,896.20

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
571	<p>seat/back assembly: the seat made from 1.2 ±0.1cm. thk. hot pressed plywood measured as per qa and back should be injection moulded from black co-polymer polypropylene upholstered with fabric and moulded polyurethane foam together with seat and back covers. the back foam should be designed with contoured lumbar support for extra comfort. seat size: 45.0cm(w) x 42.0cm.(d) back size: 39.0cm(w) x 38.0cm.(h) seat i back covers: the seat and back covers should be injection moulded in black co-polymer polypropylene. high resilience (hr) polyurethane foam: the hr polyurethane foam should be moulded with density = 45 +/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression. armrest assembly (for 7044t): the armrests should be made of black integral skin polyurethane with 50-70 shore 'a' hardness and reinforced with m.s. insert. the p.u. armrests should be then fixed to black powder-coated (oft 40-60 microns) armrest brackets made of of 0.5 ± 0.05 cm. thk. hr steel and fitted with claddings made of injection moulded polypropylene. fixed type mechanism: the fixed type mechanism should be without back tilt. tubular frame: the tubular frame should be made up of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. m.s. e.r.w. tube and black powder coated (dft 40-60 microns Overall Dimensions of Chair Seat Height -49.5cm. Height -88.5cm. Width & Depth of Chair as measured from pedestal - Width-56.0 cm and Depth-54.0 cm.</p>	40	Each	4602	Rupees Four Thousand Six Hundred Two Only	1,84,080.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
572	<p>seat/back assembly: the seat and back should be made from 1.2 ±0.1 cm.. thk. hot pressed plywood method described in. and upholstered with fabric and moulded polyurethane foam together with seat and back covers. the back foam should be designed with contoured lumbar support for extra comfort.</p> <p>* seat size: 45.0cm(w) x 42.0cm.(d) back size: 40.0cm(w) x 47.0cm.(h). seat /,back covers: the seat and back covers should be injection moulded in black co-polymer polypropylenehigh resilience (hr) polyurethane foam : the hr polyurethane foam should be moulded with density = 45 +/-21(g/neand_hardness load 16_± 2 kgf for 25%_compression armrest assembly (for 7046r): the one-piece armrests should be injection moulded from black nylon. the armrests should be fitted to the seat with armrest connecting brackets made of 0.5 ± 0.05 cm. thk. hr steel.permanent contact mechanism: the permanent contact mechanism should be designed with the following features• 360° revolving type.• 14° ±2°maximum-back-tilt-only.• upright position locking.• tilt tension adjustment pneumatic height adjustment: the pneumatic height adjustment has an adjustment stroke of 11.0 ±0.3cm telescopic bellow assembly: the bellow should be .3 piece telescopic type and injection moulded in black polypropylene pedestal assembly: the pedestal should be injection moulded in black 30% glass-filled nylon and fitted with 5 nos. twin wheel castors. the pedestal should be 62.0 ±0.5cm. pitch-centre dia. (72.0 ±1.0cm with castors). twin wheel castors: the twin wheel castors should be injection moulded in black nylon.Overall Dimensions of Chair Seat Height - min 43.0 to max 54.0cm. Height - min87.5 to max 98.5cm. Width & Depth of Chair as measured from pedestal - Width-71.0 cm and Depth-71.0 cm.</p>	100	Each	5929.5	Rupees Five Thousand Nine Hundred Twenty Nine and Fifty Paise	5,92,950.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
573	<p>seat/back assembly: the seat made from 1.2 ±0.1cm. thk. hot pressed plywood measured as per qa and back should be injection moulded from black co-polymer polypropylene upholstered with fabric and moulded polyurethane foam together with seat and back covers. the back foam should be designed with contoured lumbar support for extra comfort. seat size: 45.0cm(w) x 42.0cm.(d) back size: 39.0cm(w) x 38.0cm.(h) seat i back covers: the seat and back covers should be injection moulded in black co-polymer polypropylene. high resilience (hr) polyurethane foam: the hr polyurethane foam should be moulded with density = 45 +/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression. armrest assembly (for 7044t): the armrests should be made of black integral skin polyurethane with 50-70 shore 'a' hardness and reinforced with m.s. insert. the p.u. armrests should be then fixed to black powder-coated (oft 40-60 microns) armrest brackets made of 0.5 ± 0.05 cm. thk. hr steel and fitted with claddings made of injection moulded polypropylene. fixed type mechanism: the fixed type mechanism should be without back tilt. tubular frame: the tubular frame should be made up of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. m.s. e.r.w. tube and black powder coated (dft 40-60 microns Overall Dimensions of Chair Seat Height -49.5cm. Height -88.5cm. Width & Depth of Chair as measured from pedestal - Width-56.0 cm and Depth-54.0 cm.</p>	50	Each	4602	Rupees Four Thousand Six Hundred Two Only	2,30,100.00
574	<p>The seat and back shall be one piece injection moulded in high impact strength polypropylene. The dimensions of seat shall be 52.5 cm (W) X 53.2 cm (D) and of back shall be 51.6 cm (W) X 40.5 cm (H). The Tubular welded frame is made from Dia 2.22 ± 0.03 x 0.12 ± 0.0128 cm and 3.5 ± 0.03 cm x 1.5 ± 0.03 cm x 0.12 ± 0.0128 cm SS 202 grade tube. The tubes are buff polished to give shiny finish. Overall Dimensions of Chair shall be Seat Height - 45.0 cm, Height - 84.5cm, Width & Depth of Chair as measured from pedestal - Width-52.5cm and Depth-55.8 cm.</p>	400	Each	2977.14	Rupees Two Thousand Nine Hundred Seventy Seven and Fourteen Paise	11,90,856.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
575	<p>1)seat/back assembly: the seat and back should be made from 1.0±0.1cm. thk. hot pressed moshould be ture resistant tant.commercial plywood and upholstered with p.u. foam and fabric.</p> <p>back size: 42.0cm. (w) x 26.5cm. (h) seat size: 42.0cm. (w) x 42.0cm. (d)</p> <p>2)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.</p> <p>3)understructure assembly: the understructure assembly should be a cantilever type mainframe made of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. m.s. e.r.w. tube and black powder coated--(dft 40-60 microns)</p> <p>Overall Dimensions of Chair Seat Height - 45.5 cm. Height - 78.5cm. Width & Depth of Chair as measured from base - Width-52.0cm and Depth-60.5 cm.</p>	50	Each	3790.16	Rupees Three Thousand Seven Hundred Ninety and Sixteen Paise	1,89,508.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
576	<p>seat/back assembly: the seat and back should be made up of 1.2 ±0.1cm. thick hot-pressed plywood and upholstered with fabric upholstery covers and moulded polyurethane foam. the back foam should be designed with contoured lumbar support for extra comfort. the seat has extra thick foam on front edge to give comfort to popliteal area back size 47.5 cm. (w) x58.0 cm (h)seat size 47.0 cm. (w) x 48.0 cm. (d) high resilience (hr) polyurethane foam: the hr polyurethane foam should be moulded with density = 45±2 kg/m³ and hardness load 16 ± 2 kgf for 25% compression. armrests :the one-piece armrests should be injection moulded from black co-polymer polypropylene. center tilt synchro mechanism: the mechanism should be designed with the following features:</p> <ul style="list-style-type: none"> • 360° revolving type. • upright-position locking • tilt tension adjustment • seat/back tilting ratio of 1:3. <p>pneumatic height adjustment: the pneumatic height adjustment has an adjustment stroke of 12.0 ±0.3cm.telescopic bellow assemblythe bellow should be 3 piece telescopic type and injection moulded in black polypropylene. pedestal assembly:the pedestal should be injection moulded in black 33% glass-filled nylon-66 and fitted with 5 nos. twin wheel castors. the pedestal should be 66.3 ±0.5cm. pitch-center dia. (76.3 ±1.0cm with castors).</p> <p>8.twin wheel castors:the twin wheel castors should be injection moulded in black nylon.Overall Dimensions of Chair Seat Height - min 42.5 to max 54.5cm. Height - min85.5 to max 97.5cm. Width & Depth of Chair as measured from pedestal - Width-76.3 cm and Depth-76.3 cm.</p>	25	Each	8612.82	Rupees Eight Thousand Six Hundred Twelve and Eighty Two Paise	2,15,320.50
578	<p>seat/back assembly (ch-8): the seat and back should be made from seasoned wood and plywood. the same should be upholstered with black synthetic leather and polyurethane foam.</p> <p>back size: 38.5cm. (w) x 27.0cm. (h) seat size: 38.5cm. (w) x 39.5cm. (d)</p> <p>2)understructure assembly (ch-7b18): the understructure assembly should be a cantilever type frame made of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. m.s. e.r.w. tube and powder coated (dft 40-60 microns)Overall Dimensions of Chair Seat Height - 48.0 cm. Height - 87.5cm. Width & Depth of Chair as measured from base - Width-43.5 cm and Depth-56.5 cm.</p>	13	Each	3497.52	Rupees Three Thousand Four Hundred Ninety Seven and Fifty Two Paise	45,467.76

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
579	SEAT/ASSEMBLY: The seat and Back should be made up of 1.2 ± 0.1 cm thick hot-pressed plywood measured as per QA method described in OCP-QLTA-P14-18 and upholstered with fabric or synthatic leather and moulded Polyurethane foam. The back foam should be designed with contoured lumbar support for extra comfort. HIGH RESILENCE (HR) POLYURETHANE FOAM: The HR Polyurethane foam is moulded with density = 45 ± 2kg/m3 and Hardness load 16± 2 kgf as per IS:7888 for 25% compression. Understructure Assembly: The assembly should be welded understructure made of 3.5±0.03 cm x 1.± 0.02cmx 0.16±0.0128 cm thk MS ERW OBLONG tube and black powder coated (DFT 40-60 microns)	25	Each	4416.74	Rupees Four Thousand Four Hundred Sixteen and Seventy Four Paise	1,10,418.50
580	The seat shall be made from 1.2 ±0.1cm. thk. hot pressed plywood measured as per QA method described in OCP-QLTA-P14-18 and back seat shall be injection moulded from black Co-polymer Polypropylene upholstered with fabric and moulded Polyurethane foam together with seat and back covers. The back foam seat shall be designed with contoured lumbar support for extra comfort. The dimensions of Seat shall be 45.0cm(W) x 42.0cm.(D) and of back seat shall be 39.0cm(W) x 38.0cm.(H). The seat and back covers seat shall be injection moulded in black Co-polymer Polypropylene. The HR polyurethane foam seat shall be moulded with density=45±2kg/m3 and Hardness.load 16-±2kgf-as-per IS:7888 for 25% compression. The one-piece armrests seat shall be injection moulded from black Nylon. The armrests seat shall be fitted to the seat with armrest connecting brackets made of 0.5 ± 0.05 cm. thk. HR steel. The permanent contact mechanism seat shall be designed with 360 degree revolving, 14 +/-2 degree maximum back tilt, Tilt tension adjustment, Upright position locking. The pneumatic height adjustment shall has an adjustment stroke of 11.0 ±0.3cm. The bellow shall be 3 piece telescopic type and injection moulded in black Polypropylene. The pedestal shall be injection moulded in black 30% glass-filled Nylon and fitted with 5 nos. twin wheel castors. The pedestal shall be 62.0 ±0.5cm. pitch-centre dia. (72.0 ±1.0cm with castors). The twin wheel castors shall be injection moulded in Black Nylon. Overall Dimensions of Chair shall be Seat Height - min 43.0 to max 54.0cm, Height - min 81.5 to max 92.5cm, Width & Depth of Chair as measured from pedestal - Width-71.0 cm and Depth-71.0 cm.	12	Each	5764.3	Rupees Five Thousand Seven Hundred Sixty Four and Thirty Paise	69,171.60

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
581	<p>Lounge seating system standing on connecting beam and leg structure. Seat and Back Frame Assembly- These are made of 0.1+-0.012 cm thick CR steel perforated sheets which are welded to a seat/back frame assembly made of 1.9+-0.02cm x 0.16 +-0.0128 cm thk MS ERW tube. Connecting strips made of 0.5cm thick HR steel are welded to the structure. The mounting base subassembly made up of 1.9 +-0.02cm x 0.16 +- 0.0128 cm thk and C Channel made of 0.315+-0.022cm HR steel welded to connecting strip for assembly with the connecting beam.</p> <p>Seat Size- 39.2cm (W) x 41.5cm (D) approx Back Size- 39.5cm (W) x 21.5cm (H)approx</p> <p>Connecting Beam Assembly- It is made up of 5.0 +-0.03cm x 5.0 +-0.03cm x 0.16+-0.0128cm thk MSERW Square tube. The connecting beam is powder coated (DFT 40-60 microns). The ends of the beam are closed with L Shaped plastic end cap made from PP material. The connecting beam assembly is powder coated (DFT 40-60 microns).</p> <p>Leg Assembly- It is made up of 5.0 +-0.03cm x 5.0+-0.03cm x 0.16 +-0.0128cm thk. MSERW Square tube. and 3.175+-0.03 cm x 0.2+-0.016 cm thk MSERW tube welded together to C Channel made of 0.2+-0.018cm thk CR steel. Plastic End caps are fitted to legs. The leg assembly is powder coated (DFT 40-60 microns).</p> <p>Overall width: 102 cm x 57.5 cm Depth x 77.5 cm Height, Seat height- 44.5 cm.</p>	750	Each	8024	Rupees Eight Thousand Twenty Four Only	60,18,000.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
582	<p>Lounge seating system standing on connecting beam and leg structure. Seat and Back Frame Assembly- These are made of 0.1+-0.012 cm thick CR steel perforated sheets which are welded to a seat/back frame assembly made of 1.9+-0.02cm x 0.16 +-0.0128 cm thk MS ERW tube. Connecting strips made of 0.5cm thick HR steel are welded to the structure. The mounting base subassembly made up of 1.9 +-0.02cm x 0.16 +- 0.0128 cm thk and C Channel made of 0.315+-0.022cm HR steel welded to connecting strip for assembly with the connecting beam.</p> <p>Seat Size- 39.2cm (W) x 41.5cm (D) approx Back Size- 39.5cm (W) x 21.5cm (H)approx</p> <p>Connecting Beam Assembly- It is made up of 5.0 +-0.03cm x 5.0 +-0.03cm x 0.16+-0.0128cm thk MSERW Square tube. The connecting beam is powder coated (DFT 40-60 microns). The ends of the beam are closed with L Shaped plastic end cap made from PP material. The connecting beam assembly is powder coated (DFT 40-60 microns).</p> <p>Leg Assembly- It is made up of 5.0 +-0.03cm x 5.0+-0.03cm x 0.16 +-0.0128cm thk. MSERW Square tube. and 3.175+-0.03 cm x 0.2+-0.016 cm thk MSERW tube welded together to C Channel made of 0.2+-0.018cm thk CR steel. Plastic End caps are fitted to legs. The leg assembly is powder coated (DFT 40-60 microns).</p> <p>Overall width: 160 cm x 57.5 cm Depth x 77.5 cm Height, Seat height- 44.5 cm.</p>	300	Each	10006.4	Rupees Ten Thousand Six and Forty Paise	30,01,920.00
STORAGES & LOCKERS						

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
583	<p>STACKABILITY / REVERSIBILITY /CONNECTIVITY : Units Can be stacked with any of the reserve range of storages.Unit can be stacked such that its front door is opposite to that of other units.End units with shared units inbetween can be joined/ stacked adjacent to each other. The leg units can be offered with Wish system whereas the Skirting units can be connected with spacio+ with Flat trims & stallion+ with Flat trims partition systems only.</p> <p>UNIT - SIZE- Width: 450 / 600 / 650 / 750 / 800 / 900 / 950 / 1000 / 1050 / 1200.Height (For Leg Unit) : 750 / 1200 / 1353. Height (For Skirting Unit) : 750 / 1190 / 1343. Refer sheet 3 & 4 for all the available options.</p> <p>CONSTRUCTION & MATERIAL- Construction is a knockdown construction of 25mm thk and 18mm thk Pre-Laminated boards with metal cladding of 0.8mm thk C.R.C.A (as per IS:513) from outside. Side metal cladding is coated with Epoxy polyester powder of 50±10 microns thickness.</p> <p>TOP OPTIONS- In case of 2.5feet Height Storage units, wooden top is provided which is made of 25mm thick Pre-laminated board whereas 4.0feet and 4.5feet height Storage units are provided with 11mm thk bent metal tops made of 0.8mm thk C.R.C.A (as per IS:513). The metal tops are coated with Epoxy polyester powder of 50± 10 microns thickness.</p> <p>DOOR & DOOR OPE NING- Single door opening for 450 & 600w units whereas two door opening for all other width options(i.e; 650 /750/ 800/ 900/ 950/ 1000/ 1050/ 1200W).The doors are made of 18mm thk Pre-laminated boards with decorative laminate on one side and backing laminate on the other side.</p> <p>SHELVING-</p>	10	Each	15054.44	Rupees Fifteen Thousand Fifty Four and Forty Four Paise	1,50,544.40

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
584	Overall size of 4 - Door PLU - Lkr (Base) shall be 380mm(W)x450mm(D)x1830mm(H). DMX Drg.- PL 13-A4-33797,R1 - 4 Sheets(Cam Lock) DMX Drg.- PL-13-A4-36467,R1-4 Sheets(Hasp.) Stackability shall have add - on units that can be stacked width wise to form bank of lockers having common side panel. Locking shall have 10 Lever cam lock with lock lever plus option of hasp arrangement . Material shall be CRCA 0.6 mm thickness . Construction shall be Rigid Knockdown construction , shelf shall be uniformly distributed load capacity per each shelf level is 35 Kg maximum . Finish shall be epoxy polyester powder coated to the thickness of 50 microns . Handle/Label holder shall be Aesthetically appealing Snap fit ABS plastic handle . Ventilation shall be attractive punched pattern for ventilation .	20	Each	14936.44	Rupees Fourteen Thousand Nine Hundred Thirty Six and Forty Four Paise	2,98,728.80
585	Overall Dimensions of Single Sided Wood & Steel Book Rack Base Unit shall be 925mm(W)x300mm(D)x1890mm(H). Rigid Knockdown construction . Back panel up to the bottom of third rack for additional rigidity . Racks, Back panel & Skirting : CRCA 0.8 mm thickness . Side panels : 25 mm thick pre laminated particle board (PLB) with laminate on both sides . Stackability shall have add-on units width wise to form a bank of racks having common side panel . Bottom plus four fixed racks plus five storage levels . Each rack is provided with stiffener at bottom for strength . Uniformly distributed load capacity per each full shelf is 80 Kg maximum . Rack back stiffener shall be there at the rear side of the racks back stiffener s are provided . These are to support books on the rear side . Label Holder on each main unit to insert labels for identification . Finish shall be Epoxy polyester powder coated to the thickness of 50 microns .	20	Each	14080.94	Rupees Fourteen Thousand Eighty and Ninety Four Paise	2,81,618.80
586	Supply and placing of Slotted Angle Rack of single set dimension of 1980mm H x 915 mm W x 457 mm D	10	Each	8142	Rupees Eight Thousand One Hundred Forty Two Only	81,420.00
587	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 fullsize 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 .	10	Each	20331.4	Rupees Twenty Thousand Three Hundred Thirty One and Forty Paise	2,03,314.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
588	Glass Door Storwel shall have an overall size of 916mm(W)x486mm(D)x1980mm(H) with welded construction. It should have 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 glass door storwel shall have a brass handle and a 2 way locking mechanism with shooting bolt . 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.	10	Each	27951.84	Rupees Twenty Seven Thousand Nine Hundred Fifty One and Eighty Four Paise	2,79,518.40

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
589	<p>Overall Dimensions of LD - 4 Single Last Drive Unit 4 Bay(U/C + Fittings + Cover) shall be 3660mm(W)x457mm(D)x2080mm(H) (Height with undercarriage and rails in mm: 1980+65+35=2080).The Construction shall be Welded Construction sheet tickness is 0.8 mm for back & shelves and 0.9 mm for sides & top. Finish shall be Epoxy polyester powder coated thickness of 40 microns . Shelf construction shall be made from CRCA steel 0.8 mm thick IS :513 .Uniformly distributed load capacity of 80 Kg . Undercarriage shall have construction in welded frame made of HR sheet 3.15 mm thick conforming to IS : 10748 . Finish shall be epoxy polyester powder coat of approved color & shade with a dry film thickness of minimum 40 microns .The Movements shall be Drive Type configuration : In case of D4 movement of units is achieved mechanically through a Drive Wheel and 2 stage Sprocket -Chain-Tensioner arrangement mounted rigidly onto body size .For D4 each movable undercarriage shall be provided with 3 rollers on the shaft for driving , 3 antifricion ball bearing for rolling and 4 antifricion ball bearing for guiding between rail . Fittings shall be centralized locking arrangement through locking stiffener mounted onto back of single last unit so that it gets locked on channels when all the units are brought together . The Recess handle lock is of Godrej make & placed at suitable height . This arrangement occupies a space of 90.0 mm . When the last unit is twin movable , hinged doors are provided for the end bodies, so in this case locking stiffener is mounted onto drive unit cover ; and with tile fascia option , it will be mounted in the recess of vertical trim . Each Drive Type units shall have Locking Knob near the drive wheel for manual locking of individual units when a person is using those units . Knob shall be rotated to unlock position when units are to be moved . End stoppers shall be provided to prevent derailment . Door locking shall be having hinged doors of recessed die cast handle cum lock giving 3 way locking through a lever & shooting bolts . Guide channels shall have 'J' section 2 mm thick HR & 25 mm Square bright bar . Easteners shall be galvanized/blackodized/Zn plated .The label holder shall be made from 2 mm thick clear transparent acrylic sheet . Also total no. of loading levels per understructure shall be 20 for LD4. Fascia(tiling) 3 tile pattern fascia option on drive side panel plus 3 tile pattern fascia on non-drive side panel plus 3 tile pattern fascia option on back panel of single last plus 3 tile pattern fascia option on back panel of single static . The tiles are held together by stiffeners & fasteners in 2 vertical metal trims.</p>	1	Each	116212.3	Rupees One Lac Sixteen Thousand Two Hundred Twelve and Thirty Paise	1,16,212.30

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
590	<p>Overall Dimensions of SD - 4 Single Static Drive Cover Unit 4 Bay(U/C + Fittings + Cover) shall be 3660mm(W)x457mm(D)x2080mm(H) (Height with undercarriage and rails in mm: 1980+65+35=2080). The Construction shall be Welded Construction sheet tickness is 0.8 mm for back & shelves and 0.9 mm for sides & top . Finish shall be Epoxy polyester powder coated thickness of 40 microns . Shelf construction shall be made from CRCA steel 0.8 mm thick IS :513 .Uniformly distributed load capacity of 80 Kg . Undercarriage shall have construction in welded frame made of HR sheet 3.15 mm thick conforming to IS : 10748 . Finish shall be epoxy polyester powder coat of approved color & shade with a dry film thickness of minimum 40 microns .The Movements shall be Drive Type configuration : In case of D4 & D5 movement of units is achieved mechanically through a Drive Wheel and 2 Stage Sprocket -Chain-Tensioner arrangement mounted rigidly onto body size .For D4 each movable undercarriage shall be provided with 3 rollers on the shaft for driving , 3 antifricion ball bearing for rolling and 4 antifricion ball bearing for guiding between rail . Fittings shall be centralized locking arrangement through locking stiffener mounted onto back of single last unit so that it gets locked on channels when all the units are brought together . The Recess handle lock is of Godrej make & placed at suitable height . This arrangement occupies a space of 90.0 mm . When the last unit is twin movable , hinged doors are provided for the end bodies, so in this case locking stiffener is mounted onto drive unit cover ; and with tile fascia option , it will be mounted in the recess of vertical trim . Each Drive Type units shall have Locking Knob near the drive wheel for manual locking of individual units when a person is using those units . Knob shall be rotated to unlock position when units are to be moved . End stoppers shall be provided to prevent derailment . Door locking shall be having hinged doors of recessed die cast handle cum lock giving 3 way locking through a lever & shooting bolts . Guide channels shall have 'J' section 2 mm thick HR & 25 mm Square bright bar . Easteners shall be galvanized/blackodized/Zn plated .The label holder shall be made from 2 mm thick clear transparent acrylic sheet . Also total no. of loading levels per understructure shall be 20 for SD4. Fascia(tiling) 3 tile pattern fascia option on drive side panel plus 3 tile pattern fascia on non-drive side panel plus 3 tile pattern fascia option on back panel of single last plus 3 tile pattern fascia option on back panel of single static . The tiles are held together by stiffeners & fasteners in 2 vertical metal trims.</p>	1	Each	91134.94	Rupees Ninety One Thousand One Hundred Thirty Four and Ninety Four Paise	91,134.94

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
	<p>Overall Dimensions of TD - 4 Twin Mobile Drive Unit 4 Bay(U/C+Fittings+Drive+Cover) shall be 3660mm(W)x915mm(D)x2462mm(H) (Height with undercarriage and rails in mm: 2362+65+35=2462). The Construction shall be Welded Construction sheet tickness is 0.8 mm for back & shelves and 0.9 mm for sides & top . Finish shall be Epoxy polyester powder coated thickness of 40 microns . Shelf construction shall be made from CRCA steel 0.8 mm thick IS :513 .Uniformly distributed load capacity of 80 Kg . Undercarriage shall have construction in welded frame made of HR sheet 3.15 mm thick conforming to IS : 10748 . Finish shall be epoxy polyester powder coat of approved color & shade with a dry film thickness of minimum 40 microns .The Movements shall be Drive Type configuration : In case of D4 movement of units is achieved mechanically through a Drive Wheel and 2 stage Sprocket -Chain-Tensioner arrangement mounted rigidly onto body size .For D4 each movable undercarriage shall be provided with 3 rollers on the shaft for driving , 3 antifriction ball bearing for rolling and 4 antifriction ball bearing for guiding between rail . Fittings shall be centralized locking arrangement through locking stiffener mounted onto back of single last unit so that it gets locked on channels when all the units are brought together . The Recess handle lock is of Godrej make & placed at suitable height . This arrangement occupies a space of 90.0 mm . When the last unit is twin movable , hinged doors are provided for the end bodies, so in this case locking stiffener is mounted onto drive unit cover ; and with tile fascia option , it will be mounted in the recess of vertical trim . Each Drive Type units shall have Locking Knob near the drive wheel for manual locking of individual units when a person is using those units . Knob shall be rotated to unlock position when units are to be moved . End stoppers shall be provided to prevent derailment . Door locking shall be having hinged doors of recessed die cast handle cum lock giving 3 way locking through a lever & shooting bolts . Guide channels shall have 'J' section 2 mm thick HR & 25 mm Square bright bar . Easteners shall be galvanized/blackodized/Zn plated .The label holder shall be made from 2 mm thick clear transparent acrylic sheet . Also total no. of loading levels per understructure shall be 48 for TD4. Fascia(tiling) 3 tile pattern fascia option on drive side panel plus 3 tile pattern fascia on non-drive side panel plus 3 tile pattern fascia option on back panel of single last plus 3 tile pattern fascia option on back panel of single static . The tiles are held together by stiffeners & fasteners in 2 vertical metal trims.</p>	2	Each	167305.12	Rupees One Lac Sixty Seven Thousand Three Hundred Five and Twelve Paise	3,34,610.24
D	SOFAS					

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
591	<p>Sofa 3 Seater- Seat Foam: The seat is made up of PU foam in density 28+-2 kg/cu mtr with an additional top layer of supersoft PU foam in density 32+-2 kg/cu, upholstered with fabric or leatherite.</p> <p>Back Foam- The back is made up of PU foam in Density 28+-2 kg/cu mtr with two additional top layer of super soft foam of density 32+-2 kg/cu mtr, upholstered with fabric or leatherite.</p> <p>Understructure- Understructure is made up of 1.2+-0.1cm thick hot pressed plywood (moisture resistance and termite proof as per IS: 303 and pinewood of cross sections devoid of major knots and surface defects and 6 nos. per seat and 3.8mm dia zigzag spring assembly is mounted over understructure for cushioning purpose.</p> <p>Leg Assembly- It is a welded assembly made in stainless steel (grade SS 202) tube and plate with plastic endcap.</p>	20	Each	35187.6	Rupees Thirty Five Thousand One Hundred Eighty Seven and Sixty Paise	7,03,752.00
FURNITURE SUB HEAD TOTAL						2,42,78,968.46
SIGNAGES						
592	<p>Supplying & fixing of retro reflective sign board of size 1800 mm x 1200 mm. The board made of High intensity prismatic grade type IV retro reflective sheeting of 3M /Avery Denison or equivalent make approved by I.R.C. / M.O.S.T. with message and graphics to be overlay film of same make duly plotter cut, letters written (both side) in white colour, to be pasted on 3mm thick ACP sheet of make Alstone / Alstrong / Eurobond / Alucobond or equivalent. Frame made of 38mm dia pipe & 2nos. 63mm diavertical posts, 3 Mtr. high, all made of 304 series (Jindal or equivalent) stainless steel. Pipe fixed on ground including necessary excavation and sign board fixed with in ground in 600 mm depth with all excavation & cement aggregate concrete 1 : 2 : 4 {1 cement : 2 coarse sand : 4 graded stone 20 mm nominal size) as per direction of Unit Incharge.</p>	3	Each	60508.00	Rupees Sixty Thousand Five Hundred Eight Only	1,81,524.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
593	Supplying & fixing of retro reflective sign board of size 900 mm x 600 mm. The board made of High intensity prismatic grade type IV retro reflective sheeting of 3M / Avery Denison or equivalent make approved by I.R.C. / M.O.S.T. with message and graphics to be overlay film of same make duly plotter cut, letters written (both side) in white colour, to be pasted on 3mm thick ACP sheet of make Alstone / Alstrong / Eurobond / Alucobond or equivalent. Frame made of 38mm dia pipe & 2nos. 63mm diavertical posts, 1.80 Mtr. high, all made of 304 series (Jindal or equivalent) stainless steel. The pipe shall be standing on hard concrete surface with the help of SS holdfast/ Hilti or equalent flush anchor (Fastners) of as per reuired size and numbers and thickness and nut bolts on 02 Nos.5 mm thick 200mm x 200 mm size SS plate welded with 63mm dia SS pipe as per direction of Unit Incharge.	12	Each	29582.00	Rupees Twenty Nine Thousand Five Hundred Eighty Two Only	3,54,984.00
594	Supplying & fixing of retro reflective sign plates of required size. The plate made of High intensity prismatic grade type IV retro reflective sheeting of 3M / Avery Denison or equivalent make approved by I.R.C. / M.O.S.T. with message and graphics to be overlay film/High intensity prismatic grade type IV retro reflective sheeting of 3M / Avery Denison or equivalent make approved by I.R.C. / M.O.S.T Reflective tape of same make duly plotter cut, of approved color, letters (both side) in white colour, to be pasted on 3mm thick ACP sheet of make Alstone / Alstrong / Eurobond / Alucobond or equivalent etc. as per drawings. The sign boards shall fixeed on wall/ roof duly fixed with rawls plugs stainless steel srew/ double side tape 3M make/ SS chain of required size of required nos of holes, wherever required complete as per direction of Unit Incharge	375	Sqft	1279.00	Rupees One Thousand Two Hundred Seventy Nine Only	4,79,625.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
596	Supplying & fixing of retro reflective sign plates of required size. The plate made of High intensity prismatic grade type IV retro reflective sheeting of 3M / Avery Denison or equivalent make approved by I.R.C. / M.O.S.T. with message and graphics to be overlay film/High intensity prismatic grade type IV retro reflective sheeting of 3M / Avery Denison or equivalent make approved by I.R.C. / M.O.S.T Reflective tape of same make duly plotter cut, of approved color, letters (single side) in white colour, to be pasted on 3mm thick ACP sheet of make Alstone / Alstrong / Eurobond / Alucobond or equivalent etc. as per drawings. The sign boards shall fixed on wall/ roof duly fixed with rawls plugs stainless steel screw/ double side tape 3M make/ SS chain of required size of required nos of holes, wherever required complete as per direction of Unit Incharge	1200	Sqft	875.00	Rupees Eight Hundred Seventy Five Only	10,50,000.00
597	Supply and fixing of 20 gauge Stainless Steel brass coating plates with water jet cutting of grade 304 etching (engraved) signage plate of required size and letters duly bordred . Engraved portion painted of as per required colour/ approved colour (DUCO) of approved brand and filling with required matt/ mirror finish polish on base and border with shining polish of required shade and colour and duly fixed with required nos of rawls plugs stainless steel screw/ double side tape of 3M make/ nut bolt/ spacer required nos of holes, wherever required complete as per direction of Unit Incharge. (make Jindal or Equivalent)	60000	Sq Inch	26.00	Rupees Twenty Six Only	15,60,000.00
598	Supply and fixing of Powder coated Aluminum Panel for directory of size 900mm x 750mm with partition of required Nos supported on aluminum channel 2 nos backside with ACP sheet .Matter will Be digital print, matter covered with transparent polycarbonate sheet 0.5 mm wherever required complete and duly fixed with required nos of rawls plugs stainless steel screw/ spacer required nos of holes, wherever required complete as per direction of Unit Incharge	8	Nos.	32272.00	Rupees Thirty Two Thousand Two Hundred Seventy Two Only	2,42,040.00
599	Supply and fixing of Amuminium Silver powder coated signage of reqired size complete with message. Matter will be digital print written single sides, matter covered with transparent polycarbonate sheet 0.5mm. and duly fixed with required nos of rawls plugs stainless steel screw/ double side tape of 3M make/ screw required nos of holes, wherever required complete as per direction of Unit Incharge	7500	SQ INCH	37.00	Rupees Thirty Seven Only	2,77,500.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
600	Supply and fixing of Aluminium Silver powder coated signage two plates (vertical type) of required size complete with message. Matter will be digital print written both sides, matter covered with transparent polycarbonate sheet 0.5mm. and duly fixed with required nos of rawls plugs stainless steel srew/ double side tape of 3M make/ screw required nos of holes, wherever required complete as per direction of Unit Incharge	4500	SQ INCH	60.00	Rupees Sixty Only	2,70,000.00
601	Providing and fixing 800 mm dia Convex Mirror made of PC front and ABS/metal back supported on Nut & Bolts supported on 75 mm dia 1 No post 1.50 long The pipe shall be standing on hard concrete surface with the help of SS holdfast/ Hilti or equivalent flush anchor (Fastners) of as per required size and numbers and thickness and nut bolts on 01 Nos. 5 mm thick 200mm x 200 mm size SS plate welded with 75mm dia SS pipe as per direction of Unit Incharge.	6	Nos.	20170.00	Rupees Twenty Thousand One Hundred Seventy Only	1,21,020.00
602	Supplying & fixing of flexible polythene spring post pedestal 200mm dia and height 600 mm and to be bolts size 8mm dia 11cm long with two rounds of special soft high reflective tape . For spring post fixing firstly clean the surface, grout as per requirement & filled with epoxy & nut & bolts. as per direction of Unit Incharge.	60	Nos.	3362.00	Rupees Three Thousand Three Hundred Sixty Two Only	2,01,720.00
603	Providing & fixing ABS Interlocking chain of required size as per direction of Unit Incharge.	150	Rft	60.00	Rupees Sixty Only	9,000.00
604	Providing/Laying 2.5 mm thick road marking strips (Retro reflecting) or Road marking paints with applied thermo plastic compound with reflectorized glass beads on bituminous surface, providing and laying of hot applied thermo plastic compound 2.5 mm thick including reflectorizing glass beads @ 250gm per sq. mtr. area thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC – 35. The finished surface should be level, uniform and free from streaks and holes as per relevant clauses of section 800 in addition where arrows or letters are to be provided thermo plastic compound may be hand sprayed. The colour of the compound shall be white or yellow (IS Colour No. 356) as specified in the drawings or directed by the Unit Incharge. 15cm widths on bituminous surface/ Concrete, complete all as specified.	600	Sqm	942.00	Rupees Nine Hundred Forty Two Only	5,65,200.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
605	Supply and installation of Raised pavement marker(RPM) with polycarbonate lens electronically welded with the RPM body. Marker shall be scratch proof and abrasion resistant microprismatic polycarbonate lens with polycarbonate Reflective panels with dual prismatic cubes capable of providing total internal reflection. Dimensions: Dimensions of the marker is Height: 15.88 ,Width: 101.6 ,Length: 89.2 .The marker conforms to ASTM D4280 and is in accordance with MOSRTH Circular Ref No. RW/NH 33023/10/97-DO III Dated 11th june 1997. Markers shall be fixed with adhesives and no nails shall be used to affix the marker and shall be marked with manufacturers name, complete all as specified. Make 3M/ Avery Dennison C-8 Series/Simsonite or equivalent.	450	Nos	404.00	Rupees Four Hundred Four Only	1,81,800.00
606	Providing and fixing rubberised car parking stopper of size 500mm 80 mm 100mm. clean the surface, grout as per requirment & filled with epoxy & nut & bolts. as per direction of Unit Incharge.	810	Nos.	1279.00	Rupees One Thousand Two Hundred Seventy Nine Only	10,35,990.00
607	Providing & fixing of emergency sign boards single side of required size made of Photo luminescent film having glow power of 4 hours with message and graphics to be screen printing / vinyl cut film of 3M / Avery Denison / LG / Oracle or equivalent make to be pasted on 3mm thick Sun Board sheet all complete and duly fixed with required numbers of rawls plugs stainless steel srew/ double side tape of 3M make required nos of holes, wherever required complete as per direction of Unit Incharge	60000	Sq Inch	13.00	Rupees Thirteen Only	7,80,000.00
608	Supply & Fixing Key ring holder stand of size 900mm x 600mm. Front door covered with transparent acyrlc shhet and locking arrangment. Fixed with required numbers of rawls plugs stainless steel srew as per direction of Unit Incharge.	9	Each	20170.00	Rupees Twenty Thousand One Hundred Seventy Only	1,81,530.00
609	Supplying and fixing of 18 gauge Stainless Steel Key Rings 1.245 mm thick (18 gauge) Stainless Steel plates of grade 304 etching (engraved)signage plate of Size 50mm x 38mm of and letters duly bordred as per sample approved and all as per sample. Engraved portion painted of as per required colour/ approved colour (DUCO) of approved brand written bth sides and filling with required matt/ mirror finish polish on base and border with shining polish of required shade and colour as per direction of Unit Incharge	900	Nos.	162.00	Rupees One Hundred Sixty Two Only	1,45,800.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
610	Supply & placing of Stainless Steel 304 series Dustbin of size 300 x 175 as per direction of Unit Incharge.	150	Nos.	942.00	Rupees Nine Hundred Forty Two Only	1,41,300.00
611	Supply & placing of Stainless Steel 304 series Dustbin with foot operated of size 356 mm x 584 mm with plastic bucket as per direction of Unit Incharge.	30	Nos.	8068.00	Rupees Eight Thousand Sixty Eight Only	2,42,040.00
612	Supply & place Road side bin moon (90 LTR PLASTIC) with SS stand as per direction of Unit Incharge. (Make Sheetal / Sintex or equivalent)	60	Nos	18825.00	Rupees Eighteen Thousand Eight Hundred Twenty Five Only	11,29,500.00
613	Supply and fixing of Solar Studs of width 122.5mm, length 132.5 mm height with stump 55.00 mm, stump dia 26.00 mm electronically operated with solar cell LEDS pcs. Battery NI-cd 1400 AE Main Frame Aluminium, Bottom Frame Aluminium, Reflective.The studs shall be fixed to the Road surface using the adhesive conforming to IS, as per procedure recommended by the manufacturer complete and as per direction of Unit Incharge. For Solar stud fixing firstly clean the surface, grout as per requirment & filled with epoxy. Make 3M/ Avery Denson/ Dark eye/ or equivalent.	45	Nos.	5916.00	Rupees Five Thousand Nine Hundred Sixteen Only	2,66,220.00
614	Supplying of Q Manager made of hollow stainless steel pipe of 18 gauge and 900 mm high including 1.30 mtr and 50mm width long ribbon etc. all complete as per direction of Unit Incharge.	45	Nos.	5110.00	Rupees Five Thousand One Hundred Ten Only	2,29,950.00
615	Supply & Fixing yellow and Black Plastic rumble strip made of ABS Material. welded with ABS Plate through ultrasonic welding process Size of the srumble strip is length 500 mm, width 75 mm and 10 MM height at the center.Fixing with required numbers of nails & Filled with epoxy as per direction of Unit Incharge.	150	RM	2421.00	Rupees Two Thousand Four Hundred Twenty One Only	3,63,150.00
616	Providing and fixing transparent logos/ Letters made out of etching tape 3M sparkle type on the lean glass surface with plain water, scraping glass before fixing film with blade, spray soap solution on glass squeeze excess water and air bubbles. All as directed of approved shape and sizes etc fixed with of required size as required as per direction of Unit Incharge. Make 3M/ Avery Denson or equivalent	150	Sqm	2555.00	Rupees Two Thousand Five Hundred Fifty Five Only	3,83,250.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
617	Supply & Fixing signages for exit of size 375mm x 200mm x 8mm in acrylic sheet LED light with battery backup	300	Each	7395.00	Rupees Seven Thousand Three Hundred Ninety Five Only	22,18,500.00
618	Supply & fixing of signboard made out of 3mm thick sun board with face fully covered with digital print of approved shade and make. The sign board should be fixing on wall, fixed with four rawls plugs stainless steel srew/ double side tape of 3M make required nos of holes, wherever required complete as per direction of Unit Incharge.	450	Sq Ft	404.00	Rupees Four Hundred Four Only	1,81,800.00
SIGNAGES SUB HEAD TOTAL						1,27,93,443.00
ART & MURALS WORK						
Artwork & Murals						
619	Supply & Installation of following Art Work with approved frame & Murals, complete in all respects as directed by EIC					
a	Tree of Life Painting with Frame 55 x 33	2	Each	39759.00	Rupees Thirty Nine Thousand Seven Hundred Fifty Nine Only	79,518.00
b	Madhubani Painting with Frame 27 x 35	8	Each	17973.00	Rupees Seventeen Thousand Nine Hundred Seventy Three Only	1,43,784.00
c	Kalighat Painting with Frame 27 x 19	8	Each	11897.00	Rupees Eleven Thousand Eight Hundred Ninety Seven Only	95,176.00
d	Kanta Painting with Frame 61 x 27	1	Each	18071.00	Rupees Eighteen Thousand Seventy One Only	18,071.00
e	Madhubani Painting with Frame 8 x 5	1	Each	145707.00	Rupees One Lac Forty Five Thousand Seven Hundred Seven Only	1,45,707.00
f	Tree of Life Painting with Frame 69 x 39	1	Each	198789.00	Rupees One Lac Ninety Eight Thousand Seven Hundred Eighty Nine Only	1,98,789.00
g	Tree of Life Gujrat School Painting with Frame 30 x 41	4	Each	31475.00	Rupees Thirty One Thousand Four Hundred Seventy Five Only	1,25,900.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
h	Wooden warily work	1	Each	219428.00	Rupees Two Lac Nineteen Thousand Four Hundred Twenty Eight Only	2,19,428.00
i	Pattachitra Orissa School Painting with Frame 39 x 45	1	Each	52709.00	Rupees Fifty Two Thousand Seven Hundred Nine Only	52,709.00
j	Venkatagiri Painting with Frame 70 x 47	1	Each	97889.00	Rupees Ninety Seven Thousand Eight Hundred Eighty Nine Only	97,889.00
k	Pichwai Painting with Frame 45 x 69	1	Each	115961.00	Rupees One Lac Fifteen Thousand Nine Hundred Sixty One Only	1,15,961.00
l	Wooden Door 45 x 89	1	Each	222025.00	Rupees Two Lac Twenty Two Thousand Twenty Five Only	2,22,025.00
m	Divider Screen 62 inch	1	Each	29687.00	Rupees Twenty Nine Thousand Six Hundred Eighty Seven Only	29,687.00
n	Mirror Dhokra Work	3	Each	23872.00	Rupees Twenty Three Thousand Eight Hundred Seventy Two Only	71,616.00
o	Pichwai Painting with Frame 45 x 57	1	Each	158451.00	Rupees One Lac Fifty Eight Thousand Four Hundred Fifty One Only	1,58,451.00
p	Browns Ardhnareshwar Painting with Frame 21 x 54	1	Each	795160.00	Rupees Seven Lac Ninety Five Thousand One Hundred Sixty Only	7,95,160.00
q	Wooden carved Saraswati 57 x 102	1	Each	670969.00	Rupees Six Lac Seventy Thousand Nine Hundred Sixty Nine Only	6,70,969.00
r	Carved Ganesha 8 x 6	1	Each	503040.00	Rupees Five Lac Three Thousand Forty Only	5,03,040.00
s	Brass Lamp 52inch	1	Each	331331.00	Rupees Three Lac Thirty One Thousand Three Hundred Thirty One Only	3,31,331.00
t	Brass Ganesha 57 inch	1	Each	274925.00	Rupees Two Lac Seventy Four Thousand Nine Hundred Twenty Five Only	2,74,925.00

Sl.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
u	Natraj with Rishi Muni 84 inch	1	Each	4052707.00	Rupees Forty Lac Fifty Two Thousand Seven Hundred Seven Only	40,52,707.00
v	Brass Saraswati 54 inch	1	Each	121110.00	Rupees One Lac Twenty One Thousand One Hundred Ten Only	1,21,110.00
w	Brass Laxmi 54 inch	1	Each	118892.00	Rupees One Lac Eighteen Thousand Eight Hundred Ninety Two Only	1,18,892.00
x	Deeplaxmi 40 inch	1	Each	599682.00	Rupees Five Lac Ninety Nine Thousand Six Hundred Eighty Two Only	5,99,682.00
y	Urli Big	1	Each	268367.00	Rupees Two Lac Sixty Eight Thousand Three Hundred Sixty Seven Only	2,68,367.00
z	Dhokra Figure with Bird 69 inch	1	Each	215371.00	Rupees Two Lac Fifteen Thousand Three Hundred Seventy One Only	2,15,371.00
aa	Dhokra Panel 5 x 18	1	Each	66262.00	Rupees Sixty Six Thousand Two Hundred Sixty Two Only	66,262.00
ab	Dhokra Mask 88 inch	1	Each	36658.00	Rupees Thirty Six Thousand Six Hundred Fifty Eight Only	36,658.00
ac	Tribal Figure Dhokra 32 inch	1	Each	95825.00	Rupees Ninety Five Thousand Eight Hundred Twenty Five Only	95,825.00
ad	Dhokra Small Painting 14 x 15	300	Each	2335.00	Rupees Two Thousand Three Hundred Thirty Five Only	7,00,500.00
ae	Deer Dhokra 37 inch	1	Each	82844.00	Rupees Eighty Two Thousand Eight Hundred Forty Four Only	82,844.00
af	Murga Dhokra 41 inch	1	Each	89704.00	Rupees Eighty Nine Thousand Seven Hundred Four Only	89,704.00
ag	Boat with Fisherman Dhokra	1	Each	81188.00	Rupees Eighty One Thousand One Hundred Eighty Eight Only	81,188.00
ah	Kuchilla Soft Stone Buddha 65 inch	1	Each	534838.00	Rupees Five Lac Thirty Four Thousand Eight Hundred Thirty Eight Only	5,34,838.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
ai	Wooden Carved Panel 36 x 48	1	Each	130764.00	Rupees One Lac Thirty Thousand Seven Hundred Sixty Four Only	1,30,764.00
aj	Marble Figure Black Buddha 26 inch	1	Each	97149.00	Rupees Ninety Seven Thousand One Hundred Forty Nine Only	97,149.00
ak	Kuchilla Soft Stone Krishna 40 inch	1	Each	196598.00	Rupees One Lac Ninety Six Thousand Five Hundred Ninety Eight Only	1,96,598.00
al	Wooden Ashoka Pillar	3	Each	9713.00	Rupees Nine Thousand Seven Hundred Thirteen Only	29,139.00
am	Warli Painting with Frame 12 x 27	50	Each	2105.00	Rupees Two Thousand One Hundred Five Only	1,05,250.00
an	Wooden Carved pen Stand	25	Each	3091.00	Rupees Three Thousand Ninety One Only	77,275.00
ao	Wooden Charka	3	Each	56474.00	Rupees Fifty Six Thousand Four Hundred Seventy Four Only	1,69,422.00
ap	Antique Brass Planter 16 inch	15	Each	7483.00	Rupees Seven Thousand Four Hundred Eighty Three Only	1,12,245.00
aq	Wooden Tissue Box	75	Each	3859.00	Rupees Three Thousand Eight Hundred Fifty Nine Only	2,89,425.00
ar	Wooden Tray Big	3	Each	6196.00	Rupees Six Thousand One Hundred Ninety Six Only	18,588.00
as	Brass Buddha 24 inch	1	Each	54336.00	Rupees Fifty Four Thousand Three Hundred Thirty Six Only	54,336.00
at	Brass Hanging Bells	10	Each	14239.00	Rupees Fourteen Thousand Two Hundred Thirty Nine Only	1,42,390.00
au	Painted Vase 34 inch	15	Each	18570.00	Rupees Eighteen Thousand Five Hundred Seventy Only	2,78,550.00
av	Elephant Dhokra 16 inch	3	Each	29509.00	Rupees Twenty Nine Thousand Five Hundred Nine Only	88,527.00
aw	Tara Sitting 29 inch	1	Each	129228.00	Rupees One Lac Twenty Nine Thousand Two Hundred Twenty Eight Only	1,29,228.00
	Murals					0.00

SI.No	Description	Qty.	Unit	Rate (in Rs.)	Rate (in words)	NSR Amount
ax	Terracotta Sculpture 5m X 1.8m	1	Each	847115.00	Rupees Eight Lac Forty Seven Thousand One Hundred Fifteen Only	8,47,115.00
ay	Lotus Mural 1.8m X 1.2m	1	Each	336158.00	Rupees Three Lac Thirty Six Thousand One Hundred Fifty Eight Only	3,36,158.00
az	Glass Mosaic Mural 5m X 20m	1	Each	1521985.00	Rupees Fifteen Lac Twenty One Thousand Nine Hundred Eighty Five Only	15,21,985.00
ART & MURALS WORK SUB HEAD TOTAL						1,60,38,228.00
MECHANICAL PARKING						
620	Supply , installation, testing and commissioning of Stack parking system with all required equipments and softwares for the functioning.					
	Mechanical Parking	68	Each	165000.00	Rupees One Lac Sixty Five Thousand Only	1,12,20,000.00
MECHANICAL PARKING SUB HEAD TOTAL						1,12,20,000.00

SPECIAL CONDITIONS OF CONTRACT

INTRODUCTION

The following clauses of Special Conditions of Contract (SCC) shall be applicable for this contract:

These Special Conditions of Contract shall be read in conjunction with General Conditions of Contract, Technical qualification, Instructions to Tenderers (ITT), Notice Inviting Tenders (NIT), Bill of Quantities (BOQ), Tender Drawings and Pre Specifications & Other Tender Documents.

SET OF CONTRACT DOCUMENTS

The following documents will complete a set of tender documents:

- i) Letter of Award, along with statement of agreed variations and its enclosures, if any.
- ii) Description of Bill of Quantity / Schedule of Quantities.
- iii) Special Condition of Contract (SCC).
- iv) Technical specifications (General, Additional and Technical Specification) as given in Tender documents.
- v) General Conditions of Contract (GCC).
- vi) Drawings.
- vii) MUDA/ specifications (as specified in Technical Specification of the Tender) update with correction slips issued up to last date of receipt of tenders.
- viii) Relevant B.I.S. Codes

1. The tenderer shall acquaint him with the proposed site of work, its sub soil strata, underground water table and its approach roads before quoting his rates. The construction of new approach road or repair of the existing approach and its maintenance during the execution of the work shall all be carried out by the tenderer and nothing extra shall be payable over his quoted rates.
2. The earth work item in BOQ for excavation of earth is for all leads, lifts and filling the same, and nothing extra will be paid on account of lead and lifts. Items given for additional lift in BOQ doesn't not entitle contractor to claim the same while executing the work.

3. Under head of medium rock item only. Both medium and hard rocks will be paid. Items given for hard rock blasting prohibited in BOQ doesn't not entitle contractor to claim the same while executing the work.
4. All RCC rates are valid for all levels and considered to be inclusive of admixture etc. change in design mix in due course of project will also not entitle contractor for additional rates.
5. RCC to be done for dome as per technical requirement and for that also nothing extra will be paid.
6. Normal structural shuttering, shuttering of dome and its associated members etc. will be strictly paid as per SOR rates, nothing extra will be paid on account of less repetition of shuttering.
7. If for any reasons, any part of the site is not available temporarily for some time for part of the work under the contract, the agreed construction schedule shall be suitably modified and contractor shall diligently divert his men and materials to utilize them appropriately, profitably and no claim of damages whatsoever shall be entertained on this account. However, the contractor shall be allowed extension of time for completing the work as deemed fit by the competent authority.
8. Contractor to arrange for emergency vehicle/staff vehicle .
9. The contractor shall make his own arrangement for obtaining electric connection required for execution of work and make necessary payments directly to the concerned departments and nothing extra shall be payable on this account.
The contractor shall make his own arrangement for water suitable for construction work as well as drinking and other purpose for the labour engaged by him for the execution of the work.
10. The water for construction work shall be got tested quarterly from the laboratory approved by the Engineer-in-charge to ensure its suitability for construction. The charges for these tests and related arrangements shall be borne by the Contractor. In the event of water found unsuitable for construction, the contractor shall make alternative arrangement for suitable water from any other source to the satisfaction of the Engineer-in-charge.
11. The contractor shall provide, at his own cost instruments for surveying, weighing and measuring purpose at the site of work as may be necessary for execution of the work.
12. The contractor shall construct a sample unit complete in all respect as per the directions of the Engineer-in-charge/ Architect. This sample unit shall be got approved from the Engineer-in-charge/ Architect before commencing the mass work of plastering, flooring, finishing and fixing the fixtures without any extra cost and nothing extra shall be payable on this account.

13. The contractor shall take care of all safety Precautions pertaining to construction of work, such as excavation, trenching, demolition, provision of scaffolding, ladder, working platforms, gangways, mixing asphaltic materials, electric arc/ gas welding, use of hoist and construction machinery. He shall be governed by relevant provisions of safety code and as directed by the Engineer-in-charge and nothing extra shall be payable on this account.
14. On account of security consideration, some restrictions may be imposed by the security staff on the working and/ movement of men and materials etc. The contractor shall be bound to follow all such restrictions/ instructions and he shall organise his work accordingly. No claim on this account, whatsoever, shall be payable.
15. The contractor shall take all Precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to existing/ new work due to negligence on his part. No hindrance shall be caused to traffic during the execution of the work.
16. The contractor shall be responsible for the watch and ward of the building safety of all fittings and fixtures including sanitary and water supply fittings and fixtures against pilferage and breakage during the period of installation and thereafter till the building is physically handed over to the department.
17. The contractor shall take all Preventive measures against any damage caused by rain, snowfall, floods or any other natural calamity, whatsoever during the execution of the work. The contractor shall be fully responsible for any damage to the Owners property and to the work for which the payment has been advanced to him under the contract. However, the contractor shall maintain an 'Contractor All risk policy' from any unit of General Insurance Co., for the amount equal to contract value and have to revise accordingly if additional cost is approved, at his own cost. This will also cover the defect liability period. This shall be favoring the MPWD/CLIENT. Nothing extra on this account shall be payable to the contractor for maintaining such Insurance Policy.
18. The work will be carried out in the manner complying, in all respects, with the requirements of relevant bye-laws of the local body under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-Charge and nothing extra shall be paid on this account.
19. The work of water supply, internal sanitary installations and drainage work etc. shall be carried out as per local Municipal Corporation or such local body bye-laws and the contractor shall produce necessary completion certificates, wherever required, from such authorities after completion of work.

20. Water tanks, taps, pipes, fittings and accessories shall conform to bye-laws and specifications of the Municipal body/ corporation. The contractor should engage licensed plumbers for the work and get the materials, (fixtures and fittings) tested by the Municipal Authorities, wherever required, at his own cost and nothing extra shall be payable.
21. The contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rules and regulations and pay all fees and charges which may be liable. And cost of same will reimbursed after production of receipt.
22. All the pre construction approvals are to be obtained by the Architects.If any approvals are pending at the time of award of work Contractor will assist in getting clearance done from appropriate authorities. All approvals during construction stage and commissioning phase are to be obtained by the contractor. The fee for such clearances shall be borne by the Employer.
23. The contractor shall give due notices to Municipal, Police and/ or other authorities that may be required under the law/ rules under force in the area and obtain all requisite licenses for temporary obstructions / enclosures and pay all charges which may be leviable on account of his execution of work under the agreement. And cost of same will reimbursed after production of receipt.
24. All materials to be incorporated in the work shall be arranged by the contractor and shall be in accordance with the specifications laid down.
25. The tenderer shall use materials bearing ISI Certification Mark/provided in LOM unless otherwise specified or allowed in writing by the Engineer-in-Charge. Any material banned by the department shall not be used in the work.
26. The contractor shall submit to the Engineer-in-charge samples of all materials for approval. Such samples of materials which affect aesthetics of the work shall also be got approved from the Engineer-in-charge/ Architect of the project before procuring bulk supplies. These approved samples shall be Preserved and retained in the custody of the Engineer-in-charge as standards of materials till the completion of the work. The cost of such samples shall be borne by the Contractor and nothing shall be payable on this account over the Agreement rates.
27. The contractor shall be required to get all the necessary mandatory and other tests as per the specifications/ IS codes, carried out on materials/ work from an approved laboratory as per the direction of the Engineer-in-charge. The testing charges and conveyance from the site shall be borne by the contractor.

28. In case any material / work is found sub-standard the same shall be rejected by the Engineer-in-charge/ Architect and the same shall be removed from the site of work within 48 hours, failing which the same shall be got removed by the Engineer-in-charge at the risk and cost of the contractor without giving any further notice and time.
29. The treads and risers in staircase shall be in single piece stone only, unless otherwise shown on the drawings.
30. In order to ensure quality of work during its execution, the Engineer-in-charge/ Architect may require samples for mandatory or routine testing of materials. All costs of these samples, their packaging, conveyance from the site to the testing laboratory and return, shall be borne by the contractor.
31. Even ISI marked materials may be subjected to quality test at the discretion of the Engineer-in-charge. Whenever ISI marked materials are brought to the site of work the contractor shall, if required by the Engineer-in-charge, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the materials procured by the contractor, satisfy the provisions of relevant ISI codes. The testing charges shall be borne by the contractor. However cement/ steel will be necessarily tested before start of work and also during the execution of work as per the requirements of specifications, and will not be used till test certificates are obtained and approved by Engineer-in-Charge.
32. Cement bags shall be stored in separate godowns to be constructed by contractor at his own cost as per sketch approved by Engineer-in-charge with weatherproof roofs and walls. Each godown shall be provided with a single door with double lock arrangement. The keys of one lock shall always remain with authorized representative of Engineer-in-charge of work and that of the other lock with the authorised agent of the contractor at site of work so that the cement from the godown is removed according to daily requirement with the knowledge of both the parties and proper account of issue of cement is maintained in the Prescribed proforma.
33. The cement godown of the capacity to store a minimum of 15000 bags of cement shall be constructed by the contractor at site of work for which no extra payment shall be made. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-charge at any time.
34. The actual issue and consumption of cement on work shall be regulated and proper accounts maintained. The theoretical consumption of cement shall be worked out as per procedure.
35. The steel reinforcement shall be stored by the contractor at site of work in such a way as to Prevent distortion and corrosion and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking at any time as and when desired by the Engineer-in-charge.

36. The actual issue and consumption of steel on work site shall be calculated and proper accounts maintained. The theoretical consumption of steel shall be worked out as per procedure.
37. The work shall be executed and measured in metric system. The metric dimensions given in the schedule of quantities and drawing etc. shall be followed. (The dimension in FPS units wherever indicated, is for guidance only). The figures in the drawings shall be followed.
38. For measurement purpose the floor level shall mean the top surface of main structural RCC slabs of that floor and not the top of sunken floor of toilets or any other depressed floor.
39. In respect of projected balconies or slabs at any level, RCC work and related centering shuttering shall be measured under the normal RCC/ Shuttering work at that level.
40. The contractor shall be responsible for completing the work and for satisfying all terms and conditions of the Contract without any extra payment over his quoted rates unless otherwise specified. The contractor shall quote his rates for various items of work accordingly and no claim whatsoever shall be entertained for any incidental or extra work involved in the execution of the work as per nomenclature of the item and the specifications indicated in the tender documents.
41. Subject to the nomenclature of the item as per schedule of quantities, the specification indicated in the tender documents, the rates shall include cost of all materials including royalty and taxes if any, labour, sundry inputs, execution of work at all heights, levels, pattern and design for all leads, lifts and depths including overhead charges and contractor's profit. Nothing extra shall be paid on this account. The cost of unloading cement and steel from the trucks & its carriage to store/site of work shall be borne by the contractor. In case cement is supplied by MPWD/CLIENT and in bags the empty bags shall be the property of the contractor for which nothing shall be charged from the contractor.
42. The rate shall be inclusive of making design, pattern and execution of work as per Architectural and structural drawings, at all levels and heights.
43. The rates shall be inclusive of making any holes in walls/ RCC work for fixing any fixture/ frame work and making good the structure to its original shape and finish.
44. The rate of items of flooring shall be inclusive of work for sunken or depressed floors.
45. The rate shall be inclusive of working under water and adverse or foul conditions and including pumping out or bailing out water, unless otherwise specified in the nomenclature. This will include water encountered from any source such as rains, floods and any other cause whatsoever and including sub-soil water.

46. Other agencies doing works related with this project will also simultaneously execute the works and the contractor shall afford necessary co-ordination for un-hindered completion of these sub-works
47. The contractor shall leave necessary holes, openings or core cutting as required etc as may be directed by the Engineer-in-charge for laying, burying or fixing, conduits, pipes, boxes, hooks, fans, plumbing pipes, fire fighting pipes etc.without any extra cost implication.
48. Conduits for electrical wiring/ cables will be laid in a way that they leave enough space for concreting and do not adversely affect structural members.
49. The contractor shall give a satisfactory performance test of installations individually and as a whole to ensure their proper functioning before the work is finally declared completed and accepted.
50. The contractor shall continue to maintain watch and ward to safeguard the Owner's property in his possession until the same is formally handed over as per directions of the Engineer-in-charge. Nothing extra over agreement rates shall be paid on this account.
51. All tools, plants and measuring or weighing equipment shall be arranged by the contractor himself and nothing extra shall be paid to the contractor on this account.
52. The quantities of various items incorporated in the tender are approximate. However, the payments shall be made to the contractors on the basis of actual measurements taken at site.
53. The contractor shall protect the adjoining buildings or works and the work under execution from fire and shall make adequate arrangements for fire protection and fire fighting and if any property is damaged, by fire due to the negligence of the contractor, the same shall be made good by the contractor at his own cost, to the entire satisfaction of Engineer-in-charge.
54. The contractor shall provide adequate lighting arrangements as approved by the Engineer-in-charge for carrying out the work during night time, if so required and also provide all other facilities for the labour employed to carry out the work as per direction of Engineer-in-Charge.
55. In order to achieve the targeted date of completion the contractor may have to work in multiple shifts, round the clock and nothing extra shall be paid on this account.

56. The contractor shall get the samples of all the materials to be used, in the work approved from Engineer-in-Charge / Architect before going for bulk procurement. Bulk procurement shall be taken up only after obtaining approval from the Architect/ Engineer-in-charge. Any delay in getting the samples approved shall be contractor's responsibility.
57. All materials, articles and workmanship shall be of respective best quality and kind for the class described in the schedule of quantities and specifications. All materials, so used in different items of work shall be subject to the approval of the Engineer-in-charge / Architect.
58. The contractor shall be responsible for all statutory provisions and deductions towards ESI, PF or any other, as the case may be or any other levies and taxes shall be borne by the contractor. The TDS and Contract Tax or any other statutory levies/ taxes incorporated from time to time shall be deducted progressively from the running account bills, as applicable at the time of payment. No claim in this regard shall be entertained.
59. The contractor is supposed to abide the minimum wages act, and shall produce all records to the Engineer-in-charge or any other statutory authority as and when called for. The Engineer-in-Charge does not hold any responsibility, on account of any lapses in this regard.
60. For any clarification/ doubt, the MPWD/CLIENT may organize regular meetings with Contractor & Architect. The contractor shall attend such meetings invariably as and when required.
61. In respect of the work of other agencies, where the commencement or progress of such work of any other agency is dependent upon the completion of particular portions of the contractor's work or generally upon the contractor maintaining progress in accordance with the approved coordinated construction programme, it shall be the responsibility of the Contractor to complete such portions and maintain such progress.

Should any difference arise between the contractor and the other agencies, these shall immediately be brought to the attention of the Engineer-in-Charge who after reviewing the matters causing the differences will give their decision which shall be final and binding on the contractor.

62. The contractor shall have to do all drilling of holes and cutting of walls, chases or other elements of the building for the complete and proper installation of the pipe lines/ ducts and other equipments by using electrically operated tools such as drills/ chase cutting machine/core cutter etc. Manual drilling or chiseling or cutting shall be permitted on special request only.

No chiseling or cutting or drilling of RCC columns, beams, girders and other principal structural members shall be done unless prior permission has been granted by the Engineer-in charge in writing.

63. All chases and openings made by the contractor for his pipe lines shall be filled/ covered over with cement plaster/filling compound micro concrete etc. in reasonable manner. Before rough plastering on the pipe surfaces the concealed pipes shall be secured to the wall by using proper supports/ clamps.
64. The contractor shall Prepare and produce instruction, operation and maintenance manuals in English for the use, operation and the maintenance of the supplied equipment and installations, and submit to the Engineer-in-Charge in (5) copies at the time of handing over. The manual shall generally consist of the following:
- a) Description of the project
 - b) Operating instructions
 - c) Maintenance instructions including procedures for Preventive maintenance
 - d) Manufacturers catalogues
 - e) Spare parts list
 - f) Trouble shooting charts
 - g) Drawings
 - h) Type and routine test certificates of major items.
 - i) One (1) set of reproducible `as built' drawings on polyester film.
65. The Contractor shall employ competent fully licensed/ qualified, plumber for the work of PLUMBING/ SANITARY installations in accordance with the drawings and specifications. The licensed plumber shall be available at all times at site to receive instructions from the Engineer-in-Charge in the day to day activities throughout the duration of execution of plumbing/ sanitary work.
66. On completion of the PLUMBING/ SANITARY installation a certificate shall be furnished by the contractor countersigned by the licensed plumber, under whose direct supervision the installation was carried out. This certificate shall be in the form as required by the Engineer-in-charge.

67. The contractor shall be provided adequate area for construction of storage/ office space for his use. The space has to be maintained/ constructed by the contractor as per his usage requirements.

All spaces allotted to the contractor, as described above shall be vacated and all structures removed from site at any time as and when required and directed by the Engineer-in-charge, unconditionally and without any reservation. The Engineer-in-charge will not be obliged to give any reason for such removal. Upon receiving instructions to vacate the space, the contractor shall immediately remove all his structures, materials, etc. from the sources and clear and clean-up the site to the satisfaction of the Engineer-in-charge.

It shall be the responsibility of the Contractor to safeguard the site and ensure that no illegal encroachments are made by outside elements within the area allotted to the contractor. Upon completion of the work or earlier as required by Engineer-in-Charge, the contractor shall vacate the land totally without any reservation.

68. The contractor will arrange to erect, at his own cost, barricading as per norms of MPWD/NGT/CLIENT around the infrastructure site, with entry/ exit gates at suitable points. The contractor shall, at his own cost, provide and erect suitable fencing around the spaces allotted to him at the infrastructure sites to ensure the security of his men, materials and equipment within the sites and in relation to other contractors who will also be allotted spaces at above sites.

The security of workmen, materials, equipment stores etc, within the area allotted to the contractor shall be the responsibility of the contractor.

69. The contractor has to get executed the works from specialized agencies for the specialized nature of works such as aluminum works, wood works, false ceiling works, flooring works, finishing items, Horticulture, electrical works, Fire fighting works , Interior work , Structural steel work and any other specified work as decided by Engineer In charge. The contractor has to obtain the approval from Engineer In charge for execution of specified nature of work.

70. The rate for Centering and shuttering shall be for all heights and levels. Nothing extra shall be paid for additional height of centering & shuttering wherever required with adequate bracing, propping etc. including its de-shuttering and de-centering at all levels even if the floor height is over 4 Mtr. Except in case of dome

71. Nothing extra shall be paid for the additional thickness of cement mortar bed wherever required over and above thickness mentioned in the nomenclature of various items of flooring for providing the slope and / or matching the floor levels of various type of floor finishes like ceramic/ vitrified tiles/ Kota /marble/Granite /Perquet /wooden and cement concrete flooring etc.

72. The face of gang saw cut (diamond cut) granite stone, white sand stone(Dholpur Stone) in contact with bed of cement mortar used for the items of wall lining etc. (veneering work) shall be roughened adequately to have proper bonding with backing and nothing extra shall be paid for the same.
73. The Contractor, at his own cost, shall obtain initial municipal approvals for starting the work in Shillong as per norms, NOC from CFO & completion certificate of the building from the local body for occupation of the building. The Architect and Owner will render all assistance. Similarly, the Contractor, at his own cost, shall be responsible for getting the water and sewer connection sanctioned from the concerned Local Authority. For obtaining the above completions/ clearances/ connections, the contractor shall collect necessary drawings/ documents/ load calculations from the architect/ owner and submit the same to the concerned authorities along with Prescribed receipted fee (which shall be paid by the Owner or reimbursed to contractor by the Owner) and do all running about/ persuasion for issue of the completion certificate / clearances/ connections at the earliest. The security deposit of the contractor shall be released only after the completions/ clearances/ connection as above are obtained or the period Prescribed for release of Security Deposit in the tender documents which ever is later.
74. The Contractor shall be responsible to co-ordinate with service provider/ concerned authorities for cutting of trees, shifting of utilities and removal of encroachments etc. and making the site unencumbered from the project construction area required for completion of work. This shall include initial and frequent follow up meetings/ actions/ discussions with each involved service provider/ concerned authorities. The contractor shall not be entitled for any additional compensation for delay in cutting of trees, shifting of utilities and removal of encroachments by the service provider/ concerned authorities.
75. The work in general shall be carried out as per the latest MPWD Schedule, MPWD specifications / CPWD specifications with up to date correction slips, unless otherwise specified in the nomenclature of the individual item or as per specifications provided with this tender. In case any item is not covered in any of these documents, the same shall be carried out as per the latest BIS Code in practice or as per approval of Engineer in Charge.
76. **SITE DOCUMENTS**
The following site documents shall mainly be maintained by the contractor at site:
- Copy of contract documents and drawings.
 - Computerized bill format.
 - Site Order Book.
 - Material testing registers/ Quality Inspection Reports.
 - Measurement books on computerized format.
 - Progress bar chart.
 - Sample approval register.
 - Visitors register.
 - Any other detail and specific requirement as deemed necessary.
 - Hindrance Register
 - Work Diary,

➤ Stage passing Register

In case the above are not provided at site within 10 days of placement of LOI, MPWD/CLIENT shall provide the same and necessary expenditure shall be deducted from the bills for documents.

77. **PLANTS & MACHINERY:** All plant and machinery required for execution of work shall have to be arranged by the contractor adequately at his own cost. However, the contractor shall have to provide the following machinery at site in coordination with EIC. Mutually that can be increased or decreased as per requirement and need of site.

Sl. No.	Description of items	Qty
1	Hyd. Mixer with Diesel Engine/Electrically Operated with Digital inbuilt weigh Batching	2 No
2	Batching plant electrically operated with automatic load cell weigh batching system (30 cum capacity per hour)	1 No
3	Mobile crane (wheel mounted) capacity 20 tonnes	1 No.
4	Tower Hoist with winch machine (750kg gross load and height Up to 110 ft	2 No
5	Excavator cum loader (JCB 3D model or equivalent)	1 No
6	ComPressor Machine with Jack Hammer	1 No.
7	DG Sets of adequate capacity	As per requirement
8	Any other Machinery as required for completion of the work	Actual
9	Mini batching plant (5 Cub.m./Hr.)	01 No.
10	Transit Mixer	03 No.
11	Concrete Pump (30 Cum/Hr. min capacity & lift 50M)	01 No.
12	Vibrators	10 No.
13	Dumper	4 No.
14	Reinforcement banding machine	3 No.
15	Reinforcement cutting machine	3 No.
16	Power driven earth rammer	2 No.
17	Total station	01 No.
18	Auto Level & staff	01 No.
19	Transit Concrete mixers	2 nos
20	Tractor with trolley	02 No.
21	Water Tanker	01 No

78. **EQUIPMENTS FOR TESTING OF MATERIALS & CONCRETE AT SITE
LABORATORY (however as per requirement it can be increased)**

All necessary equipment for conducting all necessary tests shall be provided at the site laboratory by the contractor at his own cost. The following minimum laboratory equipments shall be set up at site office laboratory:

- (i) Cube testing machine----- 1 Nos.
- (ii) Slump Cone -----1 Nos.
- (iii) Tensile Briquette testing machine ----- 1 Nos.
- (iv) Vicats apparatus with Desk Pot----- 1 Nos.
- (v) Megger & earth resistance tester ----- 1 Nos.
- (vi) Pumps and Pressure gauges for hydraulic testing of pipes -----2 Nos.
- (vii) Weighing scale platform type 100 Kg capacity -----2 Nos.
- (viii) Graduated glass cylinder-----As per requirement
- (ix) Sets of sieves for coarse aggregate [40; 20;10;4.75mm]----- 4Nos.
- (x) Sets of sieves for fine aggregate [4.75;2.36;1.18;600;300 & 150 micron ----- 4Nos.
- (xi) Core cutter for soil compaction with accessories ----- 2 Nos.
- (xii) Cube moulds size 70mm X70mmX 70mm ----- 18 Nos.
- (xiii) Cube moulds size150mmX150mmX150mm ----- 60 Nos.
- (xiv) Moisture Content Rapid moisture meter standard,----- 04 nos.
- (xv) Hot Air Oven Temp. Range 50°C to 300°C----- 02 Nos.
- (xvi) Electronic balance 600g x 0.01g. 10kg and 50kg -----03 Nos.
- (xvii) Physical balance weight upto 5 kg -----01 No.
- (xviii) Digital Thermometer upto 150°C-----02 Nos.
- (xv) Poker Thermometer (Concrete Road) 0°C to 50°C &150°C----- 02 Nos. Each
- (xvi) Measuring Jars 100ml,200ml,500ml -----02Nos. set of each size
- (xvii) Gauging trowels 100mm & 200mm with wooden handle -----04 Nos.
- (xviii) Spatula 100mm & 200mm with long blade wooden handle ----- 02 Nos. each size
- (xix) Vernire callipers 12” and 6” sizes ----- 02 Nos. each
- (xx) Digital PH motor least count .01mm ----- 01 No.
- (xxi) Digital Micrometer least count .01mm-----01 No.
- (xxii) Digital paint thickness meter for steel 500 micron range -----02 Nos.
- (xxiii) GI tray 600 x450x50mm., 450x300x40mm, 300x250x40mm -----02 Nos. each
- (xxiv) Electric Morter mixer 0.25 CUM capacity----- 01 Nos.
- (xxv) Rebound hammer test Digital rebound hammer----- 01 Nos.
- (xxvi) Screw Gauge 0.1mm-10mm, least count 0.05 ----- 02 No.
- (xxvii) Water testing Kit -----02 Nos.
- (xxviii)Aggregate impact value testing machine with blow counter-- ----- As per Requirement

- (xxix) Crushing value apparatus ----- As per Requirement
- (xxx) Thickness gauge for measuring flakiness index -----As per Requirement
- (xxxi) Elongation gauge----- As per Requirement
- (xxxii) Measuring Cylinder 3,5,10 & 15 Liter cylinder -----As per Requirement
- (xxxiii)Pycnometer----- 02 Nos.
- (xxxiv)Motorized Sieve shaker ----- 02 Nos.
- (xxxv) Any other equipment for site tests as outlined in BIS and as directed by the Engineer-in-charge.

Three qualified laboratory engineer shall be posted at site by the contractor for collecting samples and conducting regular testing at his own cost.

All relevant I S codes, CPWD manual, specifications, schedule of rates, etc in hard as well as soft copy shall be made available at site by the contractor at his own cost.

79. Design mix concrete shall only be used for all RCC works, Produced through Batching plant.

Design Mix: The Contractor shall conduct the design mix of requisite grade for reinforced cement concrete work in accordance with the relevant latest IS Code at his cost from any reputed engineering institution/ IIT through the Engineer-in-charge. The Contractor shall conduct and submit minimum 03 design mix test / reports from different sources of materials to the Engineer-in-charge for approval. Nothing extra shall be paid for the same. Design of concrete mix is to be repeated / redone afresh as and when directed by the Engineer-In-charge of MPWD/CLIENT / Local Bodies / State Government / Central Government. Cost of admixtures to be also inclusive.

- 80. Only PPC/OPC as specified by EIC shall be used and no blending of fly ash /secondary cementing material shall be permitted.
- 81. The acceptance letter as mentioned in Instructions to tenderers in general Conditions of Contract is to be given on the letter head of the company / organization and the same is to be signed by an authorized representative of the company / organization who is empowered to sign the documents.
- 82. The contractor shall ensure that before energizing the E&M installation the inspection of the Electrical Inspector / Inspector of Electrical Machinery have carried out Pre-commissioning test and shall be responsible for all safety / security aspects as per I E and other rules.

83. The Contractor shall be responsible for smoke test for sewage and manhole system, hydraulic Pressure test for pipe line system, slope test for drain and sewage and other relevant tests applicable at different stages.
84. The Contractor shall submit the test report of water to be used from a reputed Lab for his quality/suitability for construction and curing before use in the work and this test is to be conducted at least quarterly or as an when directed by Engineer-Incharge.
85. Manufacturer's Warranties: The Contractor shall:
- a) Ensure that all the manufacturer's warranties are made available to the Employer/MPWD/CLIENT / Local Bodies/Owner and the legal documentation between the Contractor and the Supplier must have a transparent pass through of the warranty benefits to the Local Bodies/ Owner/ MPWD/CLIENT as the user/maintenance Body of the Asset for the entire duration of each available warranty.
 - b) warranty that the material is new and free from all defects and faults in workmanship and manufacture and shall be of the highest grade and consistent with the established and generally accepted standards for materials of the type ordered and shall perform in full conformity with the specifications and drawings.
 - c) The contractor shall be responsible for any defects that may develop under proper use but arising from faulty materials, design or workmanship and shall remedy such defects at its own cost, or get them remedied from the supplier, when called upon to do so by the Local Bodies/MPWD/CLIENT/Owner, who shall state in writing in what respect the material is faulty. **This warranty shall survive inspection and acceptance of material but shall expire **twenty four months** after the issue of Performance Certificate, except in respect of complaints notified prior to such date.**
 - d) If it becomes necessary for the Contractor, or on its behalf by the supplier, to replace or renew any defective portion/portions of the material/equipment supplied in the work, the provisions above would also apply to the portion/portions of materials so replaced or renewed until the end of the aforesaid period of twenty four months, whichever may be later. If any defect is not remedied within a reasonable time, the Employer/MPWD/CLIENT/ the Local Bodies/Owner may proceed to do the work at the Contractor's risk and cost but without Prejudice to any other rights which the Employer may have against the Contractor in respect of such defects. However, for such components, which require immediate replacement, MPWD/CLIENT/the Local Bodies/State Government/Central Government or the Employer shall take action and the Contractor shall be required to reimburse the cost.

86. **Witnessing of Tests by the Engineer-in-Charge:** The Contractor shall make under the direction and in the Presence of Engineer-in-charge, such tests and inspections as have been specified or as the engineer-in-charge shall consider necessary to determine whether or not the full intent of requirements of the specifications and the other related contract documents have been fulfilled. In case the work does not meet the full intent of the specifications and the other related contract documents it shall be rectified by the Contractor at no extra cost and the Contractor shall bear all the expenses for any further tests considered necessary.
87. **Inspection of materials & Equipments:-** The Contractor before supplying of any materials/ equipment shall give a inspection notice well in advance for inspection & testing of the same at the manufacturing units/ shop. The expenditure on account of TA/ DA of inspecting officials of MPWD/CLIENT & Representatives of Ministry & Consultants for the inspection of the said items shall be borne by the contractor. However, inspection report issued by the inspecting officials MPWD/CLIENT does not waiver of quality /performance of equipment & due quality/performance & successful commissioning of equipment is the responsibility of contractor.
88. The final bill will be submitted by the Contractor within 90 days from the date of acceptance of completion of work accompanied by the following documents:-
- Completion certificate issued by the Engineer In-Charge / Local Bodies/State Government/Central Government/ Owner specifying the handing over of the work.
 - Computerized Measurement Books.
 - No claim certificate by the Contractor.
 - 'As built' drawings.
 - Periodical services and measurement books.
 - Road Register.
 - Plant Record books.
 - History Sheet of Machines.
 - Drawings for lay out of underground cables and details showing location of sluice valve etc.
 - All operation and maintenance manuals.
 - All statutory approval from various state / central Govt. / local bodies /Owner if required for completion & handover of work.
 - All test certificates of manufacturers and test conducted at site as well as outside agencies.
89. During post construction phase the contractor shall be responsible for carrying out the following activities but not limited to the following:
- (i) Rectification of the defects promptly as pointed out by Engineer In-Charge /Owner's representative(s) during the defects liability period.

- (ii) Preparation & submission of “As Built Drawings”, Road register, Plant record book, History sheet of machines, drawings for layout of underground cables, pipelines showing locations of sluice valves etc. The formats in respect of above documents shall be got arranged by Engineer In-Charge from the Local Bodies/State Government/Central Government/ Owner.
- (iii) Submission of all operation & maintenance manuals.

Submission of “FINAL REPORT” of the completed project containing all Pre & other related details

90. **HANDING OVER OF PROJECT: The contractor within 15 days from virtual completion of Project including services shall Prepare a list of all inventory i/c fitting & fixture and submit to Engineer In-Charge and the contractor shall be liable to maintain the building up to defect liabilities period. If the project is not taken over by the Local Bodies/ Engineer In-Charge / Owner due to any reason the contractor shall provide necessary watch & ward at his own cost which will be reimbursed beyond DLP period till the project is handed over to the Local Bodies/ Engineer In-Charge / Owner.**
91. The contractor may have to carry out work under water/liquid or slush as per bill of quantities and rate quoted by him shall be deemed to be included pumping out water or Dewatering etc. Also proper disposal of concrete spoil Malba/Solid Waste shall be responsibility of the contractor.
92. Along with monthly computerized running bill / final bill, the contractor shall submit a monthly progress report showing various details, photographs of works etc as per direction of the Engineer-in-charge in four hard copies and six soft copies. The contractor shall also submit video-grapy of the site showing progress of work monthly. Please note that the running / final bill payment shall only be released after submission as aforesaid.
93. Tender drawings enclosed with the tender documents are indicatives only. However, the work shall be executed based on the good for construction drawings issued at site from time to time and nothing extra shall be paid or no claim will be entertained if any GFC drawing varies from tender drawings.
94. **MINOR DETAILS OF CONSTRUCTION:**
The rates quoted by the Contractor shall be deemed to cover for all the minor details / requirement of construction which may not have been specifically shown on the drawings or given in particular specifications, BOQ, but are required as per established engineering practice.

95. **DISCREPANCY IN DRAWINGS:**The Contractor shall be responsible to ensure correlation in Structural drawings Architectural Drawings and Bill of Quantities, before quoting for the work and also before commencement and execution of work. In case of discrepancy, the Contractor shall bring it to the notice of the Engineer-in-Charge for clarifications within 28 days of the issue of Letter of Acceptance. In the event of such discrepancy arising during the course of the work for which drawings are given after the date of issue of Letter of Acceptance, the Contractor shall seek clarifications within 14 days of receipt of such drawings. The Contractor shall take into consideration such contingencies in the completion schedule the programme of work is finalized and the Contractor shall not be eligible for any extension of time for such occurrences. The decision of the Engineer-in-Charge shall be final and binding in this case. The bidder is also advised to visit the site and seek clarifications before submitting his bid.

96. **DOCUMENTS FOR SUPPLY ITEMS**

For supply items in BOQ the Supplier shall submit the following documents to Engineer-in-Charge

- a) Warranty Cards.
- b) Manufacturer's test certificate.
- c) Any other test certificate from an external laboratory to determine the Pre Specification.
- d) Catalogues
- e) Pollution Control Certificate.
- f) Documents required for registration of vehicle with the local transport Authority and other inter state movement of vehicle.
- g) List of recommended spares with specification and costs thereof.
- h) Operation & Maintenance manuals.

97. **SURVEYOR**

Contractor shall provide a team of skilled Surveyors for marking layout of buildings and making permanent survey pillars/burgies for individual buildings at the beginning of the work, which shall be Preserved till completion of the Project. One theodolite and sufficient nos. of levelling machines shall be made available at site till completion for day to day work.

98. Some of the common safety rules to be followed during working are as follows :-

- No body is allowed to enter at construction site without Safety Shoe.
- Never enter work area without Safety helmet & chin strap in place.
- No climbing/working allowed without proper safety belt above 2 m. height.
- Do not exceed the speed limit 25 Kmph within Premises.
- No debris obstacles allowed on the roads & passages.
- Do not walk on pipelines or false ceiling.
- Maintain good Housekeeping at work site.
- No photography/ Videography allowed without permission
- All Site supervisors & engineers (including subcontractor's) must be imparted structured training on construction safety before start of the job & record to be maintained.
- Availability of qualified & trained Site Engineer at site during all working hours.
- Site Safety training to be imparted to all workers & plan to be made to cover every worker.
- Tools box talk (5-15 minutes) by supervisor prior to commencement of any job.
- All accident / incidents(Near Miss) to be reported & investigated.(formats & procedure should be finalised)
- Daily Safety Checking by Each Site Engineer along with Safety engineer.
- Weekly co-ordination meeting of all Safety engineers with MPWD/CLIENT safety officer.
- Monthly safety meeting with Site In-charges.
- All Safety equipment must be ISI marked & checked by Safety officer before use.
- Tag system for erection & use of scaffoldings.
- Bamboo/wooden Scaffolding material not allowed.
- LPG cylinders not allowed for gas cutting.
- Good Housekeeping. Separate waste bins to be used for flammable & non flammable material.
- Safety awareness programs for workers by display of boards, posters, competitions, talks etc.
- Deployment of Safety Supervisors for every 250 workers and part thereof at work site.
- Display of List of First Aid trained persons.
- Testing certificates for lifting tools & tackle.
- Provision & maintenance of fire extinguishers at construction site & material stores.
- Display of emergency telephone numbers at various locations.
- For work in confined space use 24 V lamp fitting & use tools with air motors or electric tools with max. 24 V.
- For confined space entry Gas test must be done before & at regular intervals.
- Checking & tag of equipment like grinding machine, welding machine, gas cutting set etc. by supervisors before use.

99. **Contractor shall ensure following:**

1. Contractor has to maintain contact with local hospital having scanning & other ultra modern medical facilities required during emergency including Ambulance.
 2. Contractor has to ensure Pre employment medical check for all staff & workers.
 3. Contractor has to ensure that adequate First Aid facilities with trained nurse & ambulance are available at work site for emergency purpose. This emergency set-up should include, but not limited to, following Male nurse (in shifts)
 - Oxygen set up
 - Breathing apparatus
 - Eye wash facility
 - Stretcher
 - Trauma blanket
 - Medicines.
100. Any rates of items in Boq & conditions either in GCC or in SCC appeared more than one location decision of Engineer In-Charge on those rates / conditions final and binding on Contractors.
101. The scope of work covered in this tender shall be as per the Bill of Quantities, specifications, drawings, instructions, orders issued to the contractor from time to time during the pendency of work. The drawings for this work, which may be referred for tendering, provide general idea only about the work to be performed under the scope of this contract. These may not be the final drawings and may not indicate the full range of the work under the scope of this contract. the work will be executed according to the drawings prepared by contractor as **“GOOD FOR CONSTRUCTION”** from time to time by the Engineer-in-charge and according to any additions/ modifications/ alterations/ deletions made from time to time, as required by any other drawings that would be issued to the contractor progressively during execution of work. It shall be the responsibility of the contractor to incorporate the changes that may be in this scope of work, envisaged at the time of tendering and as actually required to be executed.
102. The quantities of various items as entered in the “BILL OF QUANTITIES” are indicative only and may vary depending upon the actual requirement. The contractor shall be bound to carry out and complete the stipulated work irrespective of the variation in individual items specified in the bill of quantities. The variation of quantities will be governed as per clause of contract.
103. The contractor shall Prepare and submit shop drawings for HVAC, Fire Fighting & Fire Alarm, Structural Steel work, Aluminium Work, Structural Glazing , Electrical Work , Plumbing etc(or as directed by Engineer In charge), to Engineer In charge for approval before execution of work.

ADDITIONAL CONDITONS OF CONTRACT AND SPECIFICATIONS

(A) RELATING TO CIVIL, ELECTRICAL, PLUMBING & FIRE FIGHTING WORKS, HVAC WORKS, LIFTS .

1.0 General

- 1.1 The following Additional Conditions and specification shall be read in conjunction with General Conditions of Contract and Specific Conditions of Contract. If there are any provisions in these Additional Conditions of Contract & specifications which are at variance with the provisions in the above mentioned documents, the provisions in these Additional Conditions of Contract & specifications shall take precedence.
- 1.2 Rates: - The quoted rates shall be for complete items of work i.e. inclusive of material, labour, plant and machinery, tools and tackles, batching plant etc. including water & electricity, overheads charges, all taxes, statutory charges / levies applicable from time to time and others as specified etc, incidental works and all other charges for items contingent to the work, such as, packing, forwarding, insurance, freight and delivery at Site, watch and ward of all materials & successful installation, testing & commissioning at site etc.

2.0 Scope of Contract

- 2.1 The scope of work covers the supply, erection, testing and commissioning of the Civil, Plumbing, Fire Fighting & Electrical Systems, HVAC -Air- conditioning, Lifts & Landscaping works which also includes design & preparation of structural and all other detailed shop drawings, testing and commissioning of components and accessories.
- Civil works, plumbing & Fire Fighting works, Fire Alarm System.
 - Electrical works, HVAC works & Lifts.
- 2.2 The work shall be carried out in conformity with the relevant drawings and the requirement of architectural, electrical, structural, and other specialised service drawings approved by Engineer-in-charge/Consultant.
- 2.3 The Contractor shall make provision of hangers, sleeves, structural openings and other requirements during construction to avoid holding up progress of the construction schedule. The Contractor should ensure that the structure is designed for additional loads or cut outs. Subsequent Cutting holes in the RCC structural members /slab shall not be allowed.
- 2.4 The contract items comprises of furnishing of all materials, equipment, labour & transportation etc. necessary to render the installation/ item fully operational as per the intent of specification and drawings, including any necessary adjustment or corrections. Further the installation /item shall be in conformity with local laws and manufacturer instructions applicable.

3 Contract Drawings

- 3.1 The drawings issued with the Bid are diagrammatic only and indicate the extent and general arrangement of the installation. Drawings shall not be scaled.
- 3.2 The Contractor shall follow the Bid drawings for preparation of his detailed sanitary, plumbing & fire fighting & Shop drawings and for subsequent installation work and also cross check the drawings of other services to avoid subsequent complications in inter services. Any discrepancies observed should be immediately brought into the notice of Engineer-in-charge/Consultant and clarifications obtained. No changes from approved plans shall be made without prior approval of the Engineer-in-charge.

4 Shop Drawings

- 4.1 The Contractor shall furnish for approval of the Engineer-in-charge/Consultant three sets of detailed sanitary, plumbing, fire fighting (external & internal), Pump room & Shop drawings of all equipment and materials required to complete the work as per specifications well in advance. These drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics, and capacity of all items of equipment, as also the details of all related items of work of other trades. All shop drawings to be made in accordance with latest fire safety norms and building codes.
- 4.2 All drawings necessary for assembly, erection, maintenance, repair and operation of the equipment shall be furnished and different parts shall be suitably numbered for identification and ordering of spare parts.
- 4.3 For any amendments proposed by Engineer-in-charge /Consultant in the above drawings, the Contractor shall supply fresh sets of drawings with the amendments duly incorporated, along with the drawings on which corrections were indicated.
- 4.4 No material or equipment may be brought at Site until the Contractor has the approved Shop drawings for that particular material or equipment.
- 4.5 After approval of the drawings by the Engineer-in-charge/Consultant, the Contractor shall further furnish six sets of Shop drawings for the exclusive use of and retention by the Engineer-in-charge/Consultant /Client.
- 4.6 Approval of drawings by the Engineer-in-charge/Consultant shall not relieve the Contractor of any obligation to meet all the requirements of the Contract or of the correctness of his drawings. The Engineer's approval of specific item shall not mean the approval of the assembly of which it is a component. The Contractor shall be responsible for and is to bear the cost for all alternations of the works due to discrepancies or omission in the drawings or other particulars supplied by him, whether such drawings have been approved by the Engineer-in-charge/Consultant or not.
- 4.7 Where the work of the Contractor has to be installed in close proximity to, or will interfere with the work of other trades, the Contractor shall assist in working out the space conditions to make a satisfactory adjustment. If so directed by the Engineer, the Contractor shall prepare composite working drawings and sections to a suitable scale not less than 1:50, clearly showing how his work is to be installed in relation

to the work of other trades. If the Contractor installs his work before coordinating with other trades, and it is cause for any interference with the work of other trades, he shall make all the necessary changes without extra cost.

- 4.8 All shop drawings and detail drawings will be made as per requirements of local authorities and tender drawings incorporating all latest regulations and requirements. No separate drawings will be, issued for making shop drawings.

5 **Samples and Catalogues**

- 5.1 Prior to ordering any equipment/ material/ system, the Contractor shall submit to the Engineer-in-charge/Consultant the catalogues, along with samples from approved list of manufacturers. No material shall be procured without written approval of the Engineer-in-charge / Consultant.

5.2 **Approval of Materials**

All materials used on the Works shall be new and of the best quality and make available, conforming to the relevant specifications of the contract. Prior approval shall be obtained in writing from the Engineer-in-charge/Consultant for all materials proposed and when necessary, approved samples duly identified and labelled shall be deposited with the Engineer-in-charge/Consultant and shall be kept in the sample room at Site. List of approved make indicates make / manufacturer generally acceptability. Final choice of make / manufacturer of material & models shall be with the Engineer-in-charge /Consultant.

6 **Material and Equipment**

- 6.1 All material and equipment shall conform to the relevant Indian Standards and bear IS marking where ever applicable.
- 6.2 Where interfacing is involved, both equipments shall be mutually compatible in all respects.
- 6.3 Where an item of equipment, other than as specified or detailed on the drawings, is approved by Engineer-in-charge/ Consultant, requires any re-design of the structure, partitions, foundation, piping, writing or any other part of the mechanical, electrical or architectural layout, all such re-design, and all new drawings and detailing required therefore, shall be prepared by the Contractor at his own expense and approval obtained by the Engineer.
- 6.4 All similar equipment, materials, removable parts of similar equipment etc. shall be inter-changeable with one another.
- 6.5 **Approved makes for materials and vendor list**

The contractor shall procure materials as scarified in the vendor lists enclosed, the particular material shall be got approved from the Engineer - in- Charge before procurement.

7 **Conformity with Statutory Acts, Rules and Standards**

- 7.1 The installation shall be in conformity with the Bye-laws Regulations and Standards of the local authorities applicable to the installations. But if the specifications and

drawings call for a higher standard of materials and/or workmanship than those required by any of the above regulations and those required by any of the above regulations and standards, then the specifications and drawings shall take precedence over the said Regulations and Standards.

- 7.2 However, if the drawings or specifications required something, which violates the Byelaws and Regulations, then the Bye-laws and Regulations shall govern the requirement of such installation/drawings.
- 7.3 Indian Standards: The System / Components shall conform to relevant Indian standards wherever they exist and to the National Building Code Amended up to date.
- 7.4 Nothing in these Specifications shall be construed to relieve the contractor of his responsibility for the design, Manufacture and installation of equipment with all its accessories in accordance with applicable statutory regulations and safety codes in force.

8 **Manufacturer's Instructions**

Where manufacturers have furnished specific instructions relating to the materials and equipment used, covering points not specifically mentioned in these documents, manufacture's instructions shall be followed with the approval of Engineer-in-charge.

9 **Training and Operating Instructions**

- 9.1 If required by the Engineer-in-charge / Consultant, the Contractor shall at his cost, train members of the maintenance staff either at his or the subcontractor's workshop or at such other place or places as may be considered suitable by the Engineer-in-charge / Consultant.
- 9.2 Upon completion of all work and all tests, the Contractor shall furnish the necessary skilled labour and helpers for operating the entire installation for a period of fifteen (15) working days. During this period, the Contractor shall instruct and train the Engineer-in-charge /Consultant/ client representative in operation, adjustments and maintenance of the equipment installed.
- 9.3 The Contractor shall submit to the Engineer-in-charge /Consultant draft comprehensive operating instructions and maintenance schedule for all systems and equipment included in this Contract. This shall be supplemented, not substituted, by manufacturer's operating and maintenance manuals. Upon approval of the draft, the Contractor shall submit to the Engineer-in-charge/Consultant four (4) complete bound sets of operating and maintenance schedules along with manufacturers printed literature.

10 **Inspection and Testing**

- 10.1 The Engineer-in-charge / Consultant reserve the right to request inspection and testing at manufacturer's Works at all reasonable times during manufacture of items for this Contract.
- 10.2 The Engineer-in-charge / Consultant or his authorised representative shall have full power to inspect the materials and workmanship at the Contractor's Works or at any place from which the materials or equipment is obtained. Approval by the Engineer-

in-charge /Consultant of any material or equipment shall in no way relieve the Contractor of his responsibility for meeting the requirements of the specifications. All incident expenditure like travelling, boarding and lodging etc shall be born by the contractor.

- 10.3 Routine and typical tests for the various items of equipment shall be performed at the Contractor's Workshop in the presence of Engineer-in-charge/Consultant or his authorised representative, results recorded and test certificates issued.
- 10.4 After installation has been virtually completed, the Contractor shall carry out under the direction and in the presence of the representative of the Engineer-in-charge such tests and inspections as have been specified, or as considered necessary to determine whether or not the requirements of the item, drawings and specifications have been fulfilled. In case the work does not meet the full intent of the drawings and specifications and further tests after making require changes and as considered necessary shall be done again, the Contractor shall carry them out and bear the expenses thereof. If test fail to demonstrate the satisfactory nature of the installation or any part thereof, then no claims for the extra cost of modifications, replacement or retesting will be considered. The decision of the Engineer shall be regarded as final as to what constitutes a satisfactory test.
- 10.5 The above general requirements as to testing shall be read in conjunction with any particular requirements specified elsewhere
- 10.6 The Contractor shall provide all necessary instruments such as Theodolite, Dumpy level, steel tapes, weighing machine, plumb bobs, spirit levels, hammers, micro-meters, thermometers, hydraulic cube testing machine, smoke test machine and labour for conducting tests. All such equipments shall be tested for calibration by an approved laboratory. The Contractor shall make adequate records of the test procedures, readings and results to be maintained by the Engineer-in-charge/Consultant who shall issue test certificates signed by the person authorised by him.

11 Test Certificates

The contractor shall submit test certificates for all the materials / systems issued by government recognized inspection / office / manufacturer certifying the Equipment / Materials / installation and its function are in agreement with the requirements of relevant specification and accepted standards.

12 Performance Guarantee

It is clearly understood that the specifications, drawings, schedule of quantities for fire fighting system are for bidder's guidance only. The bidder shall carry out necessary calculation and provide alternative equipment required to achieve the specified level of fire fighting required for human safety. Complete sets of Architectural Drawings shall be available at site in the Engineer-in-charge / Consultant office and reference may be made to these drawings as required for calculations or for other details. The contractor shall also guarantee that performance of various equipments, individually, shall not be less than, the specified ratings.

13 Quiet Operation and Vibration

All equipments shall operate under all conditions of designed load without any sound or vibration, which is considered objectionable by the Engineer-in-charge. Such conditions shall be corrected by the Contractor at his own expense. Decision of the Engineer-in-charge / Consultant shall be final in this regard.

14 Accessibility

The Contractor shall locate all equipment, which require servicing, operation or regular maintenance in a fully accessible positions. The exact location and size of access panels, required for each valve or other devices requiring attendance, shall be finalised and communicated to Engineer - in- Charge well in time, to facilitate working by other agencies, failing this, the Contractor shall make all the necessary repairs and changes at his own expense.

15 Handing over & Taking over process

For handing over & taking over process in addition to clauses specified elsewhere, following services / works shall to be complied by the main contractor:

- a. Submission of Guarantees in stamp paper, of appropriate value, (format approved by Engineer-in-charge/Consultant) for all water proofing treatment executed in the works for a period of ten years. If any defects noticed within 10 years from completion of defect liability period the main contractor shall be sole responsible for the defects and same shall be rectified by the main contractor as per information from client within a period of 10 days from the notice.
- b. Rectification of all defects shall be carried out by the main contractor before Handing over/Taking over process.
- c. As built drawings : - 4 (four) sets for Architectural, Structural, Plumbing, Electrical, HVAC system, Specialised services and other required drawings as approved by Engineer-in-charge / Consultant shall be submitted by the main contractor before handing over & taking over process.
- d. All services/equipments to be run and check before handing over & taking over process as per requirements of Engineer-in-charge/Consultant.
- e. Contractor has to arrange water, electricity, fuel , consumables and manpower at their own cost for the purpose of testing of services and equipments. No amount shall be payable on this account.
- f. Main contractor shall submit catalogues, brochures, operation manual, manufacturer test certificate, Guaranty/Warranty papers, licence etc for all equipments/materials before handing over & taking over process.

(B) RELATING TO CIVIL WORKS

- (i) All concrete work will be strictly done by automatic computerized batching plant of suitable capacity installed at site or RMC as per approval of Engineer-in-Charge /MPWD. No concrete work will be permitted without automatic batching plant unless specifically approved in writing by Engineer-in-Charge /MPWD. Transportation of the mix concrete shall be through transit mixers and concrete pumped through suitable concrete pumps and pipes arrangement and vibrated by vibration machines, materials lifts shall also be provided at site as and where required.
- (ii) **Mix Design of Concrete:-** The contractor shall carry out the mix design for the relevant item of concrete from a reputed institution / laboratories as approved by Engineer-in-charge / Consultant at his own expenses within 15 days from notification of award. Samples of materials (i.e. Cement, Coarse & fine aggregates) shall be jointly sealed jointly by Engineer-in-charge /Consultant and contractor before sending the same for Mix design. The design mix may be with or without admixtures as per specifications /requirements at site.
- (iii) Reinforcement Steel conforming to BIS specifications (latest edition) shall be procured directly from main manufacturers or their authorised dealers as per the approved list provided in the agreement. The manufacturer has to give a certificate that the material supplied is not a re-rolled product. Relevant vouchers & test certificates will be produced by the contractor. Re-rolled sections will not be allowed. Reinforcement steel, structural steel shall be stored and stacked in such manner so as to facilitate easy identification, removal etc. The contractor shall take proper care to prevent direct contact between the steel and the ground/ water for which he shall provide necessary arrangement at his own cost including ensuring proper drainage of area to prevent water logging as per directions of the Engineer-in- charge/Consultant. Steel shall also be protected, by applying a coat of neat cement slurry over the bars for which no extra payment shall be made. Test certificates for each consignment of steel shall be furnished and further tests shall be got carried out from the authorized laboratory as per the directions of Engineer-in-charge /Consultant, before incorporating the materials in the work.
- (iv) Marine plywood only or steel plates of minimum thickness as approved by Engineer-in-charge / Consultant shall be used for formwork. All shuttering material to be used at site will be new / just like new as approved by Engineer-in-charge/Consultant The shuttering plates shall be cleaned and oiled after every repetition and shall be used only after obtaining approval of Engineer's representative at site. The number of repetitions allowed for plywood and steel shuttering shall be at the discretion of Engineer-in- charge / Consultant depending upon the condition of shuttering surface after each use and the decision of Engineer-in-charge/ Consultant in this regard shall be final and binding on the contractor. No claim whatsoever on this account shall be admissible.
- (v) **Anti-termite treatment & waterproofing treatment:-**
 - a. The treatment against water-proofing of basement, roofs, water retaining areas and termite infestation (**since not available in schedule of quantities deemed**

to be included in excavation) shall be of type and specifications as given in the schedule of quantities and remain fully effective for a period of not less than 10 (Ten) years to be reckoned from the date of expiring of the Defect Liability period, prescribed in the contract. At any time during the said guarantee period if the Client Engineer-in-charge / Consultant or his representative finds any defects in the said treatment or any evidence of re-infestation, dampness, leakage in any part of buildings or structure and notifies the contractor of the same, the contractor shall be liable to rectify the defect or give re-treatment and shall commence the work or such rectification or re-treatment within seven days from the date of issue of such letter to him. If the contractor fails to commence such work within the stipulated period, the Client Engineer-in-charge / Consultant or his representative may get the same done by another agency at the Contractor's cost and risk and the decision of the Client/ Engineer-in-charge / Consultant for the cost payable by the contractor shall be final and binding upon him. Re-treatment if required shall be attended to and carried out by the Contractor within seven days of the notice from the client or his representative.

- b. Water proofing and anti-termite treatment shall be got done through approved specialized agencies only with prior approval of the Engineer-in-charge / Consultant or his representative. During the execution of work, if any damage shall occur to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of the client or his representative by the contractor at his costs and risks.
 - c. The contractor shall submit a guarantee bond for the water proofing and anti-termite work executed under the contract in a format specified in the GCC. Further a security deposit amounting to 10% of the cost of these items as executed shall be retained for a period of 10 years with effect from actual date of actual completion of the work. 50% of the security deposit shall be released on successful completion of 5 years period and the balance shall be released on completion of 10 years.
- (vi) Records of Consumption of Cement & Steel –
- a. For the purpose of keeping a record of cement and steel received at site and consumed in works, the contractor shall maintain a properly bound register in the form approved by the Engineer-in-charge / Consultant, showing columns like quantity received and used in work and balance in hand etc. The contractor's representative shall sign this register daily.
 - b. The register of cement & steel shall be kept at site in the safe custody of Engineer-in-charge / Consultant during progress of the work. This provision will not, however, absolve the contractor from the quality of the final product.

C) RELATING TO ELECTRICAL WORKS & INSTALLATIONS

1.0 General

- i. The electrical installation shall be in total conformity with the control wiring drawings prepared by the Contractor and approved by the Engineer-in-charge & shall be connected and tested in the presence of an authorised representative of the Contractor and of the Engineer - in- Charge.
- ii. The responsibility for the sufficiency, adequacy and conformity to the Contract requirements of the electrical installation work lies solely with the Contractor.

2.0 Regulations and Standards

The installations shall conform in all respects to Indian Standard Code of Practice for Electrical Wiring Installation IS: 732-1989 and as per latest CPWD General Specification for Electrical Works as mentioned in Schedule "F" of General Conditions of Contract. It shall also be in conformity with the current Indian Electricity Rules and regulations in so far as these are applicable to the installations. Wherever these Additional Specific Conditions calls for a higher standard of material and/or workmanship than those required by any of the above regulations, then this Additional Specific Conditions shall take precedence over the said Regulation and Standards. External works & fire detection & alarm system works to be done as per CPWD specification & relevant BIS codes.

3.0 Completeness of Bid

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the Bid rates and prices, whether such items are specifically mentioned in the Bid documents or not.

4.0 Works to be done by the Contractor :-

Unless and otherwise mentioned in the Bid documents, the following works shall be done by the Contractor, and their cost shall be deemed to be included in the contract price:

- i. Foundations for equipment and components where required, including foundation bolts
- ii. Cutting and making good all damages caused during installation and restoring the same to their original finish
- iii. Sealing of all floor openings provided for pipes and cables, from fire safety point of view, after laying of the same
- iv. Painting at site of all exposed metal surfaces of the installation other than pre-painted items like fittings, fans, switchgear/ distribution gear items, cubicle switch board etc. damages during erection, shall however be rectified by the contractor.
- v. Testing and commissioning of complete installation

5.0 **Completion Certificate by the licensed supervisor**

On completion of the installation, a certificate shall be furnished to the Engineer-in-charge, by the Contractor, countersigned by the licensed supervisor under whose direct supervision the installation was carried out. This Certificate shall be in the prescribed form as required by the local authority. On the basis of this certificate, the Contractor shall arrange for inspection of installation by the concerned local authorities.

6.0 **Completion Drawings**

On completion of the work, the Contractor shall at his own cost submit to the Engineer-in-charge / Consultant 4 (four) sets of layout drawings drawn at the approved scale indicating the installation. These drawings shall clearly indicate the complete plant layouts, and piping layouts, location wiring, exact location of all the concealed piping, valves, controls, wiring and other services. The Contractor shall also submit 4 (four) sets of consolidated control diagrams, technical literature on all automatic controls and complete technical literature on all equipment and materials. The Contractor shall mount a set of all consolidated control diagrams and all piping diagrams in a frame with glass, and display in the plant room

7.0 **Interrelationship of Services**

The Contractor shall keep a check at all stages and supervise at the point of connection the associated civil, HVAC, electrical and plumbing works like underground and overhead tanks, power supply and installation of makeup water connection, drain connection in the fire fighting tanks and vicinity of plant room etc. In case of any discrepancy the same should be brought into the knowledge of Engineer-in-charge / Consultant in writing, all rectifications etc, required in future as a result of failure on the part of the contractor to do so, shall be carried out by the Contractor at his own expenses.

8.0 **Check List**

The Contractor shall provide to the Engineer-in-charge / Consultant 4 (four) copies of a comprehensive maintenance checklist and shall place a copy of it in the Plant Room. The checklist shall be a list of each piece of equipment in this Contract, and shall provide a space for record of maintenance provided and status of various equipment during the maintenance period. This list shall be updated every month at the time of inspection. The Contractor shall certify on this check list that he has examined each piece of equipment and that; it is operating as intended in the contract.

9.0 **Repairs**

All equipment that requires repairing shall be immediately serviced and repaired during the maintenance period. All spares/parts and labours shall be furnished by the contractor free of cost.

10.0 **Control System**

During the maintenance period, the Contractor shall monthly check all controls in various areas to ensure that these are functioning satisfactorily. This shall apply to all pressure switches and pressure gauges, contacts, relays, controller switches, high and low pressure cut-outs etc.

11.0 Reference Points

Contractor shall provide permanent bench marks, flag tops and other reference points in consultation with Engineer-in-charge/Consultant for the proper execution of work and these shall be preserved till the completion of the work.

12.0 Licenses and Permits

- i. **Contractor** or the approved specialised agency engaged by them shall hold a valid plumbing, electrical, HVAC, Lifts, license issued by the Competent Authority under whose jurisdiction the work falls.
- ii. The contractor has to take all the approvals of local bodies for all the addition/deletion over the approved building plans which are to be given by the Engineer-in-charge/Consultant. The documents/drawings to be prepared and submitted in the manner desired by them after the same is approved by Engineer-in-charge /**Consultant**. Contractor has to take approvals of entire/Part works if required before start of works. Contractor will be responsible for any work at site carried out without approval of municipal or local bodies.
- iii. Contractor shall keep constant liaison with the competent Municipal or other authority and obtain approvals for all drainage and water supply works carried out by him.
- iv. Contractor shall obtain from the competent Municipal Authority completion certificates with respect to his work as required for occupation of the building.
- v. Any fees in connection with obtaining the approvals on behalf of the Client from the statutory bodies/Corporations/Government departments, etc. shall be paid by the Contractor and the same shall be reimbursed on production of original vouchers. Necessary endorsement / application if required shall be arranged from the Engineer-in-charge/Consultant/Client.
- vi. Before undertaking of works for HVAC, Lifts, Electrical, Anti Termite Treatment, Water proofing, Fire Fighting, Fire alarm system, PA system, EPABX System, Horticulture Works etc., the contractor must take approval of specialised agencies proposed to be engaged by him from Engineer-in-charge/Consultant.

13.0 Cutting of structural members

No structural member shall be chased or cut without the written permission of the Engineer-in- Charge/Consultant.

14.0 Operation and Running of entire system

The contractor shall ensure smooth operation & running of entire sanitary, HVAC , Lifts, plumbing and fire fighting system including pumps and RO plant, solar water heating system etc. for a minimum period of one month after satisfactory completion of work as desired by Engineer. Cost of such operation & running of entire system including required material e.g. fuel, consumables, tools & tackles, requisite manpower etc. shall be borne by the contractor & deemed to be included in the contract price , nothing shall be paid on this

account.

15.0 Regulations and Standards

The installations shall conform in all respects to Indian Standard Code of Practice for Electrical Wiring Installation IS: 732-1989 and as per latest CPWD General Specification for Electrical Works as mentioned in Schedule "F" of General Conditions of Contract. It shall also be in conformity with the current Indian Electricity Rules and regulations in so far as these are applicable to the installations. Wherever these Additional Specific Conditions calls for a higher standard of material and/or workmanship than those required by any of the above regulations, then this Additional Specific Conditions shall take precedence over the said Regulation and Standards. External works & fire detection & alarm system works to be done as per CPWD specification & relevant BIS codes.

16.0 Tools for Handling and Erection

All tools and tackles required for handling of equipments and materials at Site of work as well as for their assembly and erection and also necessary test instruments shall be the responsibility of the Contractor.

17.0 Drawings

The drawings indicate the extent and general arrangements of the fixtures, controlling switches, wiring system etc. and are essentially diagrammatic explanation. The drawings indicate the points of termination of conduit runs and broadly suggest the routes to be followed. The Contractor shall submit six sets of working electrical drawings based on tender drawing including reflected ceiling plan coordinating other essential building services for the Engineer-in-charge /Consultant's approval. Contractor has to make necessary changes if any as per comments given by Engineer-in-charge /Consultant before execution. The work shall be executed as indicated in the approved drawings, however any minor changes found essential to co-ordinate the installation of this work with the other trades shall be made in consultation with the Engineer-in-charge/Consultant.

The drawings are for guidance of the contractor and exact locations, distance and levels shall be governed by the building. The Contractor shall examine all architectural, structural, plumbing and sanitary & electrical drawings before starting the work any discrepancies noticed shall be reported to the Engineer-in-charge / Consultant for clarification. In case of failure to do so Contractor shall not be entitled to any cost for omissions or defects in electrical drawings due to any conflict with other services work.

18.0 Conduit/ Trunking Layout

Prior to the laying of the conduits and trunking, the Contractor shall examine/ study drawings and report to Engineer-in-charge/Consultant .If he desires to make any changes from Engineer-in-charge /Consultant proposed conduit layout plan and shall get the same approved from Engineer-in-charge /Consultant .

19.0 Shop Drawings

The Contractor shall prepare and submit to the Engineer-in-charge/Consultant for his approval detail shop drawings for Main & Sub Panels / Distribution Boards, Distribution

Boards, special pull boxes, light & fan switch boards, telephone distribution boards, FDA system and lightning protection system and other equipment to be procured/ fabrication by the Contractor before 15 days of placing of the orders with manufacturers/suppliers.

20.0 Manufacturer's Instruction

Manufacturer instructions for approved products shall be followed in consultation with Engineer-in-charge/Consultant.

21.0 Materials & Equipment

All materials and equipment shall be ISI marked and shall be of the make and design approved by the Engineer-in-charge/Consultant . Unless otherwise called for, only the best Grade of materials and equipment shall be used. The Contractor shall be responsible for the safe custody of all materials and equipment till these are taken over by client and shall insure them against theft, damage by fire, earth quake etc. A list of items of materials and equipment, together with a sample of each shall be submitted to the Engineer-in-charge/Consultant for his approval and shall be kept in the sample box.

22.0 Scale

All drawings shall be prepared to the scale as required for proper explanation and shall indicate the size and location of all equipments and accessories therein. The Contractor shall follow all dimensions of approved architectural drawings for the work or part concerned and check proposed drawings for any interference with the building structure or other equipment or services.

23.0 Brochures and Data

The Contractor shall submit four copies of all brochures / manufacturer's description data, operation manuals with internal complete circuit diagrams and other similar literature while obtaining the approval of product Engineer-in-charge/Consultant.

24.0 Approval of Shop Drawings

The approval of shop drawings, schedule, brochures etc. by Engineer-in-charge / Consultant shall be an approval of general details and arrangements only and shall not relieve the Contractor from responsibility for any deviation from drawings or specifications unless he has in writing informed by Engineer-in-charge/Consultant of such deviations at the time of submission of the drawings nor shall it relieve the Contractor from any responsibility for errors or omissions of any kind in the shop drawings.

25.0 Samples & Catalogues

Contractor shall submit the samples & catalogue of the material, which are proposed to be used at Site as per the approved makes for obtaining approval of the by Engineer-in-charge/Consultant.

26.0 Approval of Materials

All materials used on the Works shall be new and of the best quality available, conforming to the relevant specifications. Prior approval shall be obtained in writing from the by Engineer-in-charge/Consultant for all materials proposed and when approved, sample shall be duly identified and labelled, it shall be deposited with the by Engineer-in-

charge/Consultant and shall be kept in the sample's room at Site.

27.0 Inspection, Testing and Inspection Certificate

1. The Engineer-in-charge /Consultant and their authorised representative shall have at all reasonable times access to the Contractor's premises or Works and shall be at liberty to inspect and examine the materials and workmanship during its manufacture or erection even when they are being manufactured or assembled at other premises.
2. The Contractor shall arrange all the materials and labour required for inspection of equipment or for any testing to be carried out at his/ manufacturer's works or at Site. Notice for such inspection/ presence for testing shall be given to the Engineer-in-charge / Consultant by the Contractor at least fifteen (15) days in advance together with the routine test certificates of the equipments/ materials given by the manufacturer.
3. Notwithstanding approval of tests or equipment by the by Engineer-in-charge/ Consultant, the Contractor shall be required to perform site tests and prove the correctness of ratings and performance of equipment / machinery and materials supplied and installed by the Contractor as per the Contract specifications and conditions. The Engineer-in-charge / Consultant shall also have the power to order the material or work to be tested by an independent agency at the Contractor's expense in order to prove soundness & adequacy.

28.0 Schedule & Manner of Operation

Time being the essence of this Contract, Contractor shall arrange for all required labour & material in sufficient quantities and at appropriate time, execute as per schedule for execution of work to meet the contract period requirement and so manage the operations that the work shall be completed in time as provided in the contract.

29.0 Performance Guarantee Certificates for Equipment

All equipment shall be guaranteed against unsatisfactory performance and/or break down for a minimum period of 12 (Twelve) months from the date of handing over of complete work to the by Client/ Engineer-in-charge/Consultant. The equipment or component or any other part of installation so found defective within the guarantee period shall be replaced / repaired by the Contractor free of cost to the satisfaction of the Client / Engineer-in-charge/Consultant. The above guarantee and/ or warrantee provided by the manufacturer will be submitted along with all the test certificates from manufacturer to Engineer-in-charge/Consultant.

30.0 Conformity with Statutory Acts, Rules and Standards

1. All installations shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities applicable them. But if the specifications and drawings call for a higher standard of material and/or workmanship than those required by any of the above Regulations and Standards, then the specifications and drawings provided in the contract shall take precedence over the said regulations and standards.

2. However, if the drawings or specifications required something which violates the Bye-laws and Regulations, then the Bye-laws and Regulations shall govern the requirement of this installation.
3. Indian Electricity Act and Rules: All electrical works in connection with installations of the system shall be carried out in accordance with the provision of the Indian Electricity Act, 1910 and the Indian Electricity Rules 1956, both amended up to date.
4. CPWD Specification: as at Schedule “F” of GCC.
5. Indian Standards: The system / components shall conform to relevant BIS wherever they exist and to the National Building Code-2005 with latest amendments / addendums.
6. Nothing in these specifications shall be construed to relieve the Contractor of his responsibility for the design, manufacture and installation of the equipment with all its accessories in accordance with applicable Statutory Regulations and safety codes in force.

31.0 Completion Drawings (As Built Drawings)

1. On completion of the work and before issue of certificate of virtual completion, the Contractor shall submit to the Client/Engineer-in-charge/Consultant, completion plan drawn to a scale in the manner decided by him including the under mentioned details alongwith one set of computer CD containing the data.
 - a. Run and size of conduits, inspection boxes, junction boxes and pulls boxes
 - b. Number of circuits in each conduit
 - c. Location and rating of sockets and switches controlling the light and power outlets
 - d. Location and details of main & sub distribution boards, distribution boards indicating the circuit number controlled by them
 - e. Type of fitting viz. fluorescent, pendants, brackets, bulkhead etc., including their rating & type of lamp, fans and exhaust fans
 - f. A complete wiring diagram as installed and schematic drawings showing all connections for the complete electrical system
 - g. Location of telephone outlets, junction boxes and sizes of various conduits and number & sizes of wire drawn
 - h. Layout of telephone cables
 - i. Location of all earthing stations, route and size of all earthing conductors,

manholes etc.

- j. Layout and particulars of cables & sub mains.
- k. Schematic drawing for telephone system
- l. Layout of conduits for computer outlet points
- m. Layout and details of lightning protection system.
- n. Insulation tests and earth test results
- o. PA System drawings
- p. Disc Antenna drawings
- q. Equipment drawings
- r. Cable route layout of HT, LT & other cables
- s. External lighting drawing with road layout

32.0 Checking of BOQ Quantities

All quantities indicated in BOQ are tentative which may vary as per site conditions. Contractor has to verify quantities before procuring the materials. No payment shall be payable for quantity brought to site but not used.

33.0 Terms of Payment

- A. For items covered by CPWD Specifications (Part-IV -Sub Station -2007 & Part-VII - DG Sets-2006) as given below:
 - i. 85% after initial inspection and delivery at site in good condition on pro-rata basis.
 - ii. 10% after completion of installation in all respects.
 - iii. Balance 5% will be paid after testing, commissioning and handing over to the client/MPWD for beneficial use.
- B. For other items not covered in the above CPWD Specifications, payment shall be made as per GCC.

34.0 Training of Personnel

The Contractor shall arrange for training of the Client's personnel prior to provisional take over of the project for the following:

- a. Telephone Exchange
- b. All other Equipment like pumps, panels etc.
- c. Adjustment of setting for controls and protective devices
- d. Preventive maintenance

- e. Operation of all electrical panels including their interconnectivity and interlocking scheme
- f. Hot Water Boiler
- g. Any other specialized system as executed under this contract

35.0 Completion Certificate

1. On completion of the installation, a certificate shall be submitted to the Engineer-in-charge /Consultant by the Contractor which shall be countersigned by the agency under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority. On the basis of this certificate, the Contractor shall arrange for inspection of installation by the concerned local authorities.
2. The Contractor shall be responsible at his own cost for getting the installation duly approved by the authorities concerned.

36.0 Check List

The Contractor shall provide to the Client/Engineer-in-charge/Consultant , 4(four) copies of a comprehensive maintenance checklist and shall paste a copy of it in the Substations & Plant Room. The checklist shall be a list of each piece of equipment in this Contract, and shall provide a space for each of the next fifty-two weeks to record the maintenance results and status of various equipment each month i.e. at the time of inspection. The Contractor shall certify on this check list that he has examined each piece of equipment and that, in his opinion, it is operating as intended by the manufacturer, and that all necessary tests have been performed.

37.0 Repairs

All equipment that requires repairing shall be immediately serviced and repaired during the defect liability period. All parts and labours shall be furnished free of cost to the client.

38.0 Safe Custody and Storage

Safe custody of all machinery and equipment dismantled, shifted & supplied by the Contractor shall be his own responsibility till the final taking over by the Client/Engineer-in-charge/ Consultant. The Contractor should, therefore, employ sufficient staff for watch and ward at his own expenses. Client/Engineer-in-charge/Consultant may, however, allow the Contractor to use the building space for temporary storage of such equipment, if such space is available.

39.0 Testing and Commissioning

The Contractor shall pay for and arrange without any cost to the Engineer-in-charge / Consultant, all necessary balancing and testing equipment, instruments, materials, accessories, power, water, fuel and the requisite labour for testing. Any defects in materials and/or in workmanship detected in the course of testing shall be rectified by the Contractor entirely at his own cost, to the satisfaction of the Engineer-in-charge/Consultant. The installation shall be retested after rectification of defects and shall be commissioned only after approval by the Engineer-in-charge /Consultant. All tests shall

be carried out in the presence of the Engineer-in-charge /Consultant or his representative.

40.0 Operation and Running of entire system

The contractor shall pay for and arrange for operation & running of entire electrical system and other equipment for a minimum period of one month after satisfactory completion of work as desired by Engineer-in-charge/ Consultant. Cost of operation & running of entire system including required material e.g. fuel, water ,electricity consumables, tools & tackles, requisite manpower etc. shall be deemed to be included in the contract price and nothing extra shall be paid.

- 41.0 Layout of all services, operating and maintenance instructions. DO's and Don'ts's etc for all the plant rooms, pump room, control panels etc must be equipped with coloured layout of services for the each floor. Operation and maintenance manual of the respective services, Do's and don'ts's for all the plants, machinery & services to be installed with every individual units.