

PART-C for Electrical Component

BRIEF SCOPE OF WORK

Name of Work	:	Construction of a new campus for Canara Bank at Plot Nos. CBD-97, 98 and 99, Financial Hub, Rajarhat, New Town, Kolkata. SH: Construction of a (G+5)-storied RCC building with RCC pile foundation. Sub work: Construction of compound wall i/c Providing of LED Façade lighting around plot no. CBZ-97, 98, 99 of Canara Bank located in financial hub at new town, Kolkata.
Estimated Cost	:-	Rs. 3,01,00,232/- (Civil) <u>Rs. 62,89,845/- (Electrical)</u> Total Rs. 3,63,90,077/-
Period of Completion	:-	6 months
Location	:-	Financial Hub in Rajarhat, Newtown, Kolkata.

ADDITIONAL CONDITIONS

1. The work shall be carried out strictly in accordance with CPWD specification for electrical works CPWD general specification Part-I (Internal) 2023, Part- II (External) 2023 and amended up to date, Part -IV (Substation) 2013 and in accordance with Indian Electricity Rules, 1956, India Electricity Act, 2003, ECSBC 2024 as amended up to date and NBC 2016 as amended up to date and as per instructions of the Engineer-in-Charge and nothing extra will be paid.
2. The scope of works & specification is given in general but they are not exhaustive i.e. does not mention all the incidental works required to be carried out for complete execution of the item of work. The work shall be carried out, all in accordance with true intent and meaning of the specifications and the drawings taken together, regardless of whether the same may or may not be particularly shown on the drawings and/ or described in the specifications, provided that the same can be reasonably inferred there from. There may be several incidental works, which are not mentioned in the contract document/specifications but will be necessary to complete the item in all respect.
3. All these incidental works/ costs which are not mentioned, but are necessary to complete the work shall be deemed to have been included in the overall amount quoted by the contractor for various components of work. No adjustment of rates shall be made for any variation in quantum of incidental works due to variation/change in actual working drawings.
4. Adjustment of rates shall not be made due to any change in incidental works or any other deviation in such element of work (which is incidental to the items of work and are necessary to complete such items in all respects) on account of the directions of Engineer-in-charge. Nothing extra shall be payable on this account.
5. Three final copies of the documents prepared shall be submitted to Engineer-in-charge for record. All the documents created out of the assignment will become the sole property of the Department.
6. Stage Payment for E&M packages: The following percentage of contract rates shall be payable against the stages of work shown herein:

S. No.	Stage of Work	Payment terms in %
1	On initial inspection of materials and delivery at site in good condition on basis	50%
2	On completion of installation	25%
3	On completion of testing and commissioning	20%

4	On Handing Over	5%
	Total	100%

7. **ELIGIBILITY CRITERIA FOR ASSOCIATE AGENCY:** The Composite category contractor is also eligible to carry out electrical and mechanical services works himself/herself without associating any specialized agency provided he fulfils the prescribed eligibility criteria respectively for these work(s) as mentioned below:

a) **Eligibility Criteria for LED Façade Lighting system:**

Agency should have satisfactorily completed the similar works as mentioned below during the last 7 years ending last date of month previous to the one in which tender is invited.

Three similar completed works each costing not less than 40% of the estimated cost put to tender.

OR

Two similar works each costing not less than 60% of the estimated cost put to tender.

OR

One similar works each costing not less than 80% of the estimated cost put to tender.

Similar work shall mean **SITC of LED Façade Lighting system.**

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to the last date of submission of bids.

- b) The contractor has to submit MOU with associated contractor (in case electrical contractor is associated), engineers name, credential, email address & mobile no. before start of work. The main agency should possess a valid electrical contractor licence for executing EI works otherwise he has to associates contractor having valid electrical contractor licence.
- c) All the material to be used on this work by the contractor shall be got approved from the Engineer-in-Charge in advance before installation at the site.
- d) All damages done to the building during the execution of electrical work shall be the responsibility of the contractor and the same will be made good immediately at his own cost to the satisfaction of the Engineer-in-Charge. In case, the repair is not satisfactory, the department will get it rectified & any expenditure incurred by the department in this connection shall be recovered from the contractor and decision of the Engineer-in-charge

- e) All the debris of the electrical works should be removed and the site should be cleared by the contractor immediately after the accruing of debris daily. Similarly rejected material if any should be immediately cleared off from the site by the contractor.
- f) The contractor or his engineer is bound to sign the site order book as and when required by the Engineer-in-Charge and to comply with the remarks therein.
- g) The size of conduit and wiring shall be got approved from the Engineer-in-Charge before the execution of work.
- h) The contractor shall make his own arrangement at his own cost for Electrical/ General tools and plants required for the work. In case, proper tools are not available, the department will purchase the tools for bonafide use of work at the risk & cost of the contractor.
- i) Main board and main distribution board: The work shall be carried out according to the drawing/details as approved by the Engineer-in-Charge. The contractor shall have to get the sample approved before the whole lot is brought to site. The main board, distribution board shall be properly labelled.
- j) The entire installation shall be at the risk and responsibility of the contractor until these are tested and handed over to the department. The watch & ward is the responsibility of the contractor till handing over.
- k) The connection inter connection, earthing and inter earthing shall be done by the contractor wherever required and nothing extra shall be paid on this account.
- l) Nothing extra shall be paid for inter connections with thimbles/Wires/Tapes strips etc. used on the work.
- m) The contractor has to make his own arrangements for stores and watch and ward and no extra claim for this will be entertained.
- n) The contractor shall make his own arrangements for electrical power supply for the construction activities. No extra payments for the same will be made.
- o) The wiring and conduit route shall be marked by the contractor on the drawing first, and shall be got approved from the Engineer-in-charge.
- p) The rupturing capacity of the MCB's shall be 10KA. The MCB's shall have ISI mark.
- q) The insulated copper wire to be used on this work shall be FRLS type of multi stranded.
- r) Make of MCB/MCCB shall be the same as the make of MCB DB.
- s) The contractor shall on demand by the Engineer-in-charge, furnish the proof to the satisfaction of Engineer-in-charge regarding purchase of Wires, Modular switches & accessories, MCBs MCBDB fan & fixture and accessories and other items, from the manufactures authorized outlets.

- t) All PVC/MS conduits accessories shall be of the same make as conduits and shall be ISI marked. The conduits shall be terminated as switch boxes/metallic junction boxes with suitable glands/check nuts.
- u) Cutting of brick walls shall be done with due care. All repairs and patch works shall be neatly carried out to match the original finish and to the entire satisfaction of the Engineer in Charge.
- v) All the sub main and circuits wiring includes loose wire for connections inside switch boxes and MCB DBs. No payment for these loose wires shall be made. However, wires within the cubicle panel will be measured and paid under relevant item of work.
- w) To facilitate drawing of wires, 18 SWG GI fish wire shall be provided along with laying of recessed conduit for which no extra payment shall be made. Conduits laid for other services, like TV, Telephone etc., where wiring is not done along with IEI work, fish wire shall be invariably drawn.
- x) The connection between incoming switch/isolator and bus bar shall be made with suitable size of thimble and cable at no extra cost.
- y) Copper conductor of insulated cables of size 1.5 Sq.mm and above shall be stranded and terminals provided with crimped lugs.
- z) All hardware items such as screws, thimbles, GI wire etc. which are essentially required for completing an item as per specification will be deemed to be included in the item even when the same have not been specifically mentioned.
- aa) All hardware items such as nuts/bolts/screws/washers etc. to be used in work shall be of zinc/cadmium plated iron.
- bb) While laying conduit, suitable size junction boxes shall be provided for pulling the wire as per the decision of the Engineer-in-charge.
- cc) Materials to be used in work are to be ISI marked. The make of the materials has been indicated in the list of preferred makes. No other makes will be acceptable. The materials to be used in the work shall be got approved by the Engineer in Charge/his representative before its use at site. The Engineer-in-charge shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not acceptable.
- dd) Where switches / sockets / regulator / telephone / TV / internet outlets are to be provided, the same shall be of only one make. Modular accessories for UPS outlets shall be of distinguishable colour.
- ee) The firm should submit the warranty against manufacturer defect for a period of 5 years from the date of completion of work for LED fittings and products from the manufacturer.
- ff) The contractor shall have to work as per the convenience of the concerned Department.

- gg) Any conduit which is not to be wired by the contractor shall be provided with GI fish wire for wiring for some other agency subsequently. Nothing extra shall be paid for the same.
- hh) The tenderer should either himself meet the eligibility conditions for the respective E&M components or otherwise he will have to associate with agencies, fulfilling the eligibility requirements and hence consent letter from eligible Associate Agency of the respective components of E&M work shall also be submitted as per attached **Proforma in Form “A”**.
- ii) In case the main contractor is himself eligible (as per eligibility criteria) for executing any specific minor component and intends doing the job himself, he may not be required to associate with another agency for that minor component of work. In such cases the main contractor also has to submit the documents as per eligibility criteria mentioned for associated agency of individual E&M component.
- jj) In support of the eligibility conditions of the proposed Associated Contractor, copy of their registration documents, Electrical License, GST Documents duly attested by the applicants (Main Contractor) shall be submitted to the **Executive Engineer-in-charge** for deciding the eligibility. Each such Associated Contractor will certify that they are not debarred as on the day of application for tender participation. Proposal for associating agency for minor components of work shall be submitted in **Form ‘B’** of this tender document from each associate independently for all electrical and mechanical components.
- kk) The main contractor should submit an affidavit of MoU signed with eligible associated contractor. The MoU in the enclosed **Form ‘C’** shall be signed by both the parties, main contractor as 1st party and associated contractor as 2nd party independently for all electrical and mechanical components.
- ll) In the event of the concerned E&M agency not performing satisfactorily or failure of associate contractor to complete the E&M work, the main contractor on written directions of the department, shall remove the Associate contractor deployed on the work and shall submit name of new associate agency who fulfil the conditions mentioned in the NIT to execute the leftover work without any loss of time or variation in cost to the department. **Such associates shall also give an undertaking along with the main tenderer but both of them together will stand guarantee for the equipment’s already supplied for which payment has been released by the department in part.** If any equipment supplied for the work, during the currency of the earlier Associate contractor and paid partly by the Department, becomes redundant / not in a position to be installed and commissioned and put to beneficial use due to change in agency for execution of E&M work, the main contractor shall be liable for replacement of the equipment(s) at no cost to Department. No change of Associated Contractor will be allowed without prior approval of the Engineer-in-charge of the work.
- mm) In respect of all works i.e., Electrical installation., the materials shall be procured only from the original equipment manufacturers / authorized dealers of OEM. The contractor

shall submit all documentary details in fulfilment of these conditions regarding procurement of materials including relevant test certificates.

- nn) **Before completion of defect liability period as per condition laid down in GCC 2023, the main contractor has to submit security deposit of 5% of 80% of the Quoted price of SITC of LED fittings for the warranty period for LED fittings in acceptable form i.e. FDR/ Bank guarantee to Engineer in charge. The Security Deposit deducted from the bills of contractor shall be refunded to the main contractor only after submission of above security deposit for LED fittings by main contractor, failing which this LED security deposit shall be deducted from Security Deposit deducted for total work and balance amount only will be refunded after completion of defect liability period. The LED Security Deposit will be released after completion of warranty period of 5 years to the main contractor.**
- oo) The contractor shall execute the whole work in the most substantial and workman like manner in strict accordance with the specifications, approved design, drawings, particular specifications, special conditions, additional conditions and instructions of the Engineer-in-Charge.
- pp) The contractor shall at his own expense and risk arrange land for accommodation of labour, setting up of office, storage of materials, erection of temporary workshops, construction of approach roads to the site of work, including land required for carrying out of all jobs connected with the completion of the work. The contractor shall have to abide by the regulations of the authorities concerned and the directions of the Engineer-in-Charge for use of land available at the site of work. If it becomes necessary during construction to remove or shift the stored materials, shed, workshop, access roads, etc, to facilitate execution of the work included in this agreement or any other work by any other agency, the contractor shall remove or shift these facilities as directed by the Engineer-in-Charge and no claim whatsoever shall be entertained on this account.
- qq) The necessary tests shall be conducted in the laboratory approved by the Engineer-in-Charge. The samples for carrying out all or any of the tests shall be collected by the Engineer-in-charge or on his behalf by any other officer of CPWD. The contractor or his authorized representative shall associate himself in collection, preparation, packing and forwarding of such samples for the prescribed tests and analysis. In case the contractor or his authorized representative is not present or does not associate himself in the aforesaid operation the results of such tests and consequences thereon shall be binding on the contractor.
- rr) Materials used on work without prior inspection and testing (where testing is necessary) and without approval of the Engineer-in-Charge are liable to be considered unauthorized, defective and not acceptable. The Engineer-in-Charge shall have full powers to require the removal of any or all of the materials brought to site by contractor which are not in accordance with the contract specifications or do not conform, in character or quality to the samples approved by the Engineer-in-Charge. In case of default on the part of the

contractor in removing rejected materials, the Engineer-in-Charge shall be at liberty to have them removed at the risk and cost of the contractor.

- ss) The contractor shall make his own arrangement of water required for execution of work and get the water tested at his own cost with regard to its suitability for use in the works and get written approval from the Engineer-in-Charge before he proceeds with the use of same for execution of work.
- tt) The work shall be carried out in such a manner so as not to interfere or adversely affect or disturb other works being executed by other agencies, if any.
- uu) Any damage done by the contractor to any existing works or work being executed by other agencies shall be made good by him at his own cost.
- vv) The work shall be carried out in the manner complying in all respects with the requirement of relevant rules and regulations of the local bodies under the jurisdiction of which the work is to be executed and nothing extra shall be paid on this account.
- ww) For completing the work in time, the contractor may have to work in two or more shifts and no claims whatsoever shall be entertained on this account, notwithstanding the fact that the contractor will have to pay to the labourers and other staff engaged directly or indirectly on the work according to the provisions of the labour regulations and the agreement entered upon and/or extra amount for any other reasons.
- xx) The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards and by providing red flags, red lights and barriers. The contractor shall be responsible for any accident at the site of work and consequences thereof.
- yy) **Quality Assurance Manual (Quality Assurance Plan & Checklist for E &M Service).**
 - (a) Main contractor/Associate agency shall submit the required quantity of materials as sample for Testing from Govt. / approved private Laboratory.
 - (b) The decision on testing shall be as per E&M quality checklist of CPWD vide OM No. 51(4)/CE(E)/CSQ/2016/293 (H) dated 31.03.2016 as applicable and/or as per direction of Engineer in charge and shall be binding on contractor. Contractor shall submit the required size and quantity of samples for the testing.
 - (c) Department shall send the samples to the testing laboratory & the test results shall be reported directly to department.
- zz) All the equipment shall be delivered with (i) Manufacturer's test certificate, (ii) Manufacturer's technical catalogues and Installation / Instruction (O&M) manuals. For LED luminaries, the contractor shall also submit the LM-79 test report of LED luminaries from NABL accredited laboratory.

aaa) Scaffoldings & any other T & P required for execution, testing and commissioning of work shall be arranged by the contractor and is included in the cost of work tendered by the contractor.

bbb) **Inspection before Dispatch:** All routine tests shall be conducted before dispatch of equipment. No equipment shall be dispatched out from the manufactures premises before such tests are conducted and test result recorded. These test certificates shall be given along the supply of equipment. The Engineer- In-charge shall, if he so desires inspect and witness the pre-delivery tests. For this purpose, the agency shall give 15 days advance notice. Agency shall arrange for inspection of the department. Department shall bear expenses of its officials for inspection as far as travelling, boarding and / lodging is concerned. However, the inspection shall be done at the discretion of the department without any cost implication but **ROUTINE TEST & TYPE TEST Certificates** shall have to be submitted for all the equipment.

ccc) Prior to dispatch, all equipment shall be adequately protected & insured for the whole period of transit, storage and erection against corrosion and incidental damages etc. from the effect of vermin, sunlight, rain, heat, humid climate and accidents etc.

ddd) **APPROVAL OF MATERIALS, SHOP FLOOR DRAWINGS AND COMMENCEMENT OF WORK:** The contractor shall submit list of makes & Model numbers of all items of equipment and accessories for each Sub Head of work. Catalogues of the equipment to be supplied. Shop floor drawings of each packages/ Sub work shall be submitted separately for approval. It is the responsibility of the tenderer to get the makes, models and shop floor drawings approved by the department before placing of order.

eee) **Insurance:** The agency shall include storage cum erection insurance including third party insurance right from the storage to commissioning and handing over of various equipment. In insurance, the beneficiary shall be Engineer-In-charge at the cost of the agency. All insurance which the agency is required to enter into under the contract shall be affected any authorized general insurance company and the agency shall produce the policies of insurance. In case of any delay in handing over, the insurance cover will be suitably extended by the contractor at known cost.

fff) **Remedy of failure to insure:** If the agency fails to effect and keep in force the insurance referred to in the preceding sub-clause and in case of unforeseen eventuality of theft/damage etc. to any material, the contractor only shall be held responsible and necessary rectification/replacement has to be done by contractor himself.

ggg) **Quality of material and workmanship:** All parts of the equipment shall be of such design, size and material so as to function satisfactorily under all rated conditions of operation. All components of the equipment shall have adequate factor of safety. The work of fabrication and assembly shall conform to sound engineering practice and on the basis of "Fail Safe Design". The mechanical parts subject to wear and tear shall be easily replaceable type. The construction of the equipment shall be such as to facilitate easy operation, inspection, maintenance and repairs. All connections and contacts shall be

designed to minimize risk of accidental short circuits caused by animals, birds and vermin etc. All identical items and their component parts should be completely interchangeable including spare parts.

- hhh) All electrical & mechanical fittings / fixture / appliances, to be provided for the work, where BEE certification is available should have **5-star rating (of BEE)**.
- iii) **QUALITY ASSURANCE:** The Contractor shall make available, on request from the Department, for record, copies of challans, cash memos, receipts and other certificates, if any, vouchers towards the quantity and quality of various materials procured and the same shall be kept in record. These shall also provide information on the name of the manufacturer, manufacturer's product identification, manufacturer's instructions, warning, date of manufacturing and test certificates from manufacturers for the product for each consignment delivered at site, shelf life, if any, for the department to ensure that the material have been procured from the approved source and of the approved quality, as directed by the Engineer-in-Charge.
- jjj) Storage and safe custody of all materials shall be the sole responsibility of the Contractor. Nothing extra shall be payable on this account. This shall include cost of painting of the entire installation. The major equipment's shall be factory final finish painted. The agency shall be required to do only touch up to the damages caused to the painting during transportation, handling & installation at site, if there is no major damage to the painting. However, hangers, supports etc. of bus trunking & cable tray etc. shall be painted with required shade including painting with two coats of anticorrosive primer paint or pressurized paint for touch up of powder coated equipment atsite.
- kkk) The scope of works includes the on job technical training of two persons of department at site. Nothing extra shall be payable on this account.
- lll) The complete installation of FAÇADE lighting system shall be done through OEM or authorised representative of OEM.

FORM –A**CONSENT LETTER FROM ELIGIBLE ASSOCIATE AGENCY OF MINOR
COMPONENT OF WORK**

Name of work: Construction of a new campus for Canara Bank at Plot Nos. CBD-97, 98 and 99, Financial Hub, Rajarhat, New Town, Kolkata. SH: Construction of a (G+5)-storied RCC building with RCC pile foundation. Sub work: Construction of compound wall i/c Providing of LED Façade lighting around plot no. CBZ-97, 98, 99 of Canara Bank located in financial hub at new town, Kolkata .

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

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

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

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

Date:

Signature with date of Major component
Contractor
Address

Signature with date of Associate/Minor Component
Contractor
Address

Witness with address
(From major component contractor side)

Witness with address
(From minor component contractor side)

FORM – B**PROPOSAL FOR ELIGIBLE ASSOCIATING AGENCIES FOR MINOR COMPONENTS OF WORK**

I/we hereby propose the following agencies as mentioned against each for executing corresponding minor components of work. Their consent letters are also attached.

Sl. No	Name of Associated Contractor	Category and class of registration	Enlistment copy / Completion Certificates attached	Monetary Limit of work	Validity of registration	Consent Letter Attached (Yes/No)
1)						

Note: Self-Attested photocopies of enlistment order, valid electrical contractor license, work experience certificates of each agency for each component of E&M work shall be submitted.

Signature of contractor

FORM "C"

AFFIDAVIT OF MEMORANDUM OF UNDERSTANDING (MOU)

(to be submitted for each and every E&M component)

M/s. (Name of the firm with full address)Enlistment Status (Valid Upto)
(Henceforth called the main Contractor)

M/s. (Name of the firm with full address)..... Enlistment Status (Valid Upto).....
(Henceforth called Associated Contractor)

For the execution of E &M component Works

Name of work: Construction of a new campus for Canara Bank at Plot Nos. CBD-97, 98 and 99, Financial Hub, Rajarhat, New Town, Kolkata. SH: Construction of a (G+5)-storied RCC building with RCC pile foundation. Sub work: Construction of compound wall i/c Providing of LED Façade lighting around plot no. CBZ-97, 98, 99 of Canara Bank located in financial hub at new town, Kolkata

We state that M.O.U between us will be treated as an agreement and has legality as per Indian Contract Act (amended up to date) and the department (CPWD) can enforce all the terms and conditions of the agreement for execution of the above work. Both of us shall be responsible for the execution of work as per the agreement to the extent this MOU allows. Both the parties shall be paid consequent to the execution as per agreement to the extent this MOU permits. In case of any dispute, either of us will go for mediation by the Engineer In charge. Any of us may appeal against the mediation to the Chief Engineer, His decision shall be final and binding on both of us.

We have agreed as under:

The Associated Contractor will execute all E & M works in the wholesome manner as per terms and conditions of the agreement.

The Associated Contractor shall be liable for disciplinary action if he fails to discharge the action(s) and other legal action as per agreement.

All the machinery and equipments, tools and tackles required for execution of the E & M works, as per agreement, shall be the responsibility of the Associated Contractor.

The site staff required for the E & M work shall be arranged by the Associated Contractor as per terms and conditions of the agreement.

SIGNATURE OF MAIN CONTRACTOR

Date:

Place:

SIGNATURE OF ASSOCIATED CONTRACTOR

Date :

Place:

Witness with address
(From major component contractor side)

Witness with address
(From minor component contractor side)

**UNDERTAKING LETTER FROM MANUFACTURERS OF LED FITTINGS
(ON THEIR LETTER HEAD)**

We hereby agree that:

1. All the LED fittings supplied by us are guaranteed for five years including drivers from the date of handing over.
2. In case of discontinuation of model and non-availability of spares, we will replace the fittings with equivalent/ high end model in case of manufacturing defect during the warranty period of 5 years.

For M/S,

.....

(Authorized signatory of manufacturer of LED luminaries)

Counter Signature,

Major contractor

LIST OF PREFERRED MAKES OF MATERIALS

SL. NO.	ITEMS	MAKES
	ELECTRICAL INSTALLATIONS & GENERAL	
1	WIRES AND CABLES a) PVC INSULATED FRLS COPPER CONDUCTOR SINGLE CORE CABLE b) 1.1 KV GRADE XLPE POWER CABLE AND CONTROL CABLE c) FIRE SURVIVAL CABLE d) 11 KV GRADE XLPE POWER CABLE e) COMMUNICATION CABLE	POLYCAB/ KEI/ HAVELLS/ RR KABEL/ FINOLEX
2	a) MS CONDUIT/ PVC CONDUIT AND ITS ACCESSORIES b) GI PERFORATED CABLE TRAY c) GI RACEWAY	PRECISION / BEC / NIC
3	MODULAR SWITCH & SOCKET	MK -ORNA / HAVELLS (CRABTREE MURANO) / SCHNEIDER LIVIA OR MILUZ LARA
4	ANCHOR FASTENER	HILTI/ 3M/ FISCHER
5	CABLE LUGS AND BRASS GLAND	GRIPWEL / DOWELL/ COMET
6	CAT-6 UTP CAT-6A, UTP UTP PATCH CORD FIBRE OPTICS CABLE	PANDUIT/ BELDEN / DERWISER /COMMOSECPE.
8	UPVC / HDPE PIPE/DWC	DURALINE/ REX/ TIRUPATI
9	RACK FOR ALL (EPABX / AUDIO VIDEO / CCTV etc.)	PANDUIT/ APC INDIA / 3C3 / IMPULSE / NEXXUX / BELDEN
10	PAINT, PRIMER	ASIAN PAINT/ NEROLAC / BERGER/ ICICI
11	MS PIPE, GI PIPE	SAIL/ TATA/ JINDAL (HISSAR)/JINDAL STAR
12	SERVER / DESKTOP	DELL / HP/ IBM / LENOVO / PANASONIC
13	WI- FI SYSTEM & NETWORK SWITCHES	CISCO/ JUNIPER/ NEXXUUS / IMPLUSE / BELDEN
14	STRUCTURAL STEEL	TATA/ SAIL/ JINDAL HISSAR / APL-APOLLO
15	WATER SUPPLY, STP, DRAINAGE, SUBMERSIBLE PUMPS	KIRLOSKAR /KSB/ GRUNDFOSS/ WILO/ XYLEM/ ARMSTRONG/LUVI
	<u>DG SET</u>	
1	DIESEL ENGINE	CUMMINS / CATERPILLER/ PERKINS/ KIRLOSKAR OIL ENGINE LTD.
2	ALTERNATOR	STAMFORD/ KIRLOSKAR ELECTRIC
3	PROTECTION RELAYS & CT'S	L&T/ SIEMENS/ SCHNEIDER ELECTRIC
4	BATTERY	EXIDE / AMARON/ AMARAJA
5	DG SET - ACOUSTIC ENCLOSURE & ASSEMBLER	KIRLOSKAR (JACKSON) / SUDHIR / CUMMINS INDIA
6	AMF CONTROLLER	AS PER OEM
7	POWER/ AUXILLARY CONTACTOR/ CAPACITOR DUTY CONTACTOR / METERS INCLUDING DIGITAL METERS / INDICATING LAMP (LED TYPE) / PUSH BUTTON / STARTERS /OVERLOAD RELAY / TIMER	L&T/ SIEMENS/ SCHNIEDER ELECTRIC/ ABB
	<u>SUB-STATION</u>	
1	11 KV VCB PANEL	ABB / SCHNEIDER ELECTRIC/

		SIEMENS/TRICOLITE
2	a) DRY TYPE (11KV/433 VOLT)	KIRLOSKAR/ VOLTAMP/ ABB/CROMPTON GREEVES
	b) OIL TYPE TRANSFORMER (11KV/433 VOLT)	
3	COMPACT SUB STATION	SCHNEIDER ELECTRIC/ ABB/ SIEMENS/ THEIR AUTHORIZED LICENSE PARTNER
4	ACB	SCHNEIDER ELECTRIC – MASTERPACT NW (6.0A)/ L&T - U POWER OMEGA (MTX3.5)/ SIEMENS 3WL (ETU 45B)/ ABB EMAX (PR122)
5	MCCB	SCHNEIDER – COMPACT NSX/ L&T DU/ ABB TMAX
6	MCB/ RCCB/ ISOLATOR	SCHNEIDER - ACTI9/ HAGER-H3/ SIEMENS BETA GUARD 10KA/ ABB SB200M
7	MCB DB	HAGER (H3) / SIEMENS (BETAGARD) /SCHNEIDER (ACTI-9)/ABB (ITUS)
8	MAIN LT PANEL/ SUB LT PANELS/ CAPACITOR PANEL/ SYNCHRONIZING PANEL WITH ACCESSORIES/ STARTER PANEL	NEPTUNE/TECHNOMAN ENGINEERING SOLUTION / MILESTONE
9	BUS DUCT, AIR INSULATED COMPACT RISING MAINS, END FEED UNIT, TAP-OFF BOX (PLUG-IN TYPE)	SCHNEIDER ELECTRIC/ LEGRAND / L&T/RR
10	OUTDOOR BUS TRUNKING	SCHNEIDER ELECTRIC/ RR/ NAXSO BBT
10	HT, LT JOINTING KIT & TERMINATION KIT	REYCHEM / 3M / ABB
11	SOFT STARTERS	SIEMENS/ SCHNEIDER/ ABB / L&T
12	CT, PT	ADVANCE / KAPPA / AE
	UPS	
1	UPS	SCHNEIDER (APC)/ EATON/ EMERSON (VERTIV)/ PEGASUS/ ABB / NUMERIC
	LIGHTING, FIXTURES & FANS	
1	CEILING FAN / EXHAUST FAN / KITCHEN FRESH AIR/ WALL FAN	HAVELLS/ CROMPTON/ USHA /BAJAJ
2	LED EXIT SIGNAGE	MR. LITE/ PROLITE
3	A) LED INDOOR LUMINAIRES B) LED DECORATIVE LIGHT LUMINAIRES/FAÇADE LIGHT C) LED STREET LIGHT D) BOLLARDS & OUTDOOR FITTINGS	PHILIPS/ REGENT/ LIGHTING TECHNOLOGY/ K-LITE
4	PRORRAM CONTROOLER/ SPILTTER/ AMPLIFIER/DMX/ ACCESSORIES	- SAME AS OEM
5	MS DECORATIVE POLE	PHILIPS/ BAJAJ / K-LITE/ TWINKLE LUXMAX/ HAVELLS/ LUSTER
6	POLYCARBONATE JUNCTION BOX WITH CONNECTOR	HENSEL / RITTAL/ SCHNIEDER
7	SENSORS & TIMER FOR LIGHT CONTROL	PHILIPS / HONEYWELL / SCHNEIDER ELECTRIC / HAVELLS
	EPABX	
1	IP-PBX SYSTEM / IP PHONE	CISCO / CORAL / TADIRAN
	FIRE ALARM SYSTEM	
1	a) ADDRESSABLE FIRE ALARM CONTROL PANEL b) ADDRESSABLE DETECTORS c) GRAPHIC USER INTERFACE SOFTWARE d) MONITOR & CONTROL MODULE	EDWARDS / NOTIFIER (HONEYWELL) / SIEMENS / BOSCH/ SCHNEIDER

	e) RESPONSE INDICATORS f) MANUAL CALL BOXES & HOOTERS g) INPUT /OUTPUT DEVICES	
	PUBLIC ADDRESS SYSTEM	
1	a) PYBLIC ADDRESS SYSTEM CONSOLE AND ALL ACCESSORIES b) P.A. SPEAKERS c) AMPLIFIERS	BOSCH/ BIAMP/ HONEYWELL
	FIRE FIGHTING SYSTEM	
1	a) 2-WAY/4-WAY FIRE BRIGADE CONNECTION b) AIR RELEASE VALVE c) LANDING VALVE d) BRANCH PIPE e) FIRST AID HOSE REEL AND DRUM f) RRL HOSE PIPE g) FIRE MAN AXE	SAFEX/ NEWAGE/ LIFE GUARD / EXFLAME
2	DIESEL ENGINE (FIRE-FIGHTING)	CUMMINS/ KIRLOSKAR / CATER PILLER
3	FIRE EXTINGUISHERS	CEASEFIRE/ MINIMAX/ NEWAGE / SAFEX / KANEX / EXFLAME
4	FLEXIBLE DROP & FLEXIBLE COUPLINGS	LIFE GUARDS / VICTAULIC/ TYCO
5	a) INSTALLATION CONTROL VALVE b) DELUGE VALVE c) SPRINKLER HEADS	TYCO / VICTAULIC / HD / HONEYWELL
6	SPRINKLER PANEL, CURTAIN SYSTEM PANEL PRESSURE RELEASE VALVE ZONE CONTROL VALVE (ZCV)	TYCO / HONEYWELL / HD
7	ALL FIRE FIGHTING PUMPS	GRUNDFOSS / WILO / MATHER PLATT / KIRLOSKAR
8	ELECTRICAL MOTOR	ABB/ KIRLOSKAR ELECTRIC CO./ SIEMENS INDIA LTD
9	THERMAL INSULATION FOR EXHAUST PIPE	UPTWIGA/ LLOYD INSULATION/ OWENS CORNING/ KIMMCO
10	M.S. FITTINGS	VS / DRP / VICTAULIC / UNIK
11	WELDING RODS	ADORE / ESAB/ MARGLAM
12	BUTTERFLY (MANUAL, GEAR OPERATED) VALVES, NON-RETURN VALVES, SLUICE VALVES Y-TYPE STRAINER FOOT VALVE WITH STRAINER AIR RELEASE VALVE BALL VALVES	AUDCO / ZOLOTO / SANT / HONEYWELL
13	TAMPER SWITCH FOR BUTTERFLY VALVE	HONEYWELL/ POTTER/ RAPID CONTROL/ SYSTEM SENSOR/ PACIFIC FIRE
14	PRESSURE SWITCH FLOW TEST METER	DANFOSS/ INDFOS/ VIKING/ DELTA CONTROL
15	PRESSURE GAUGE LIQUID FILLED	FEIBIG/ H. GURU/ EMERALD/ WAAREE
	HVAC	
1	SPLIT TYPE AC	HITACHI/ MITUSBISHI/ O-GENERAL
2	REFRIGERANT PIPING	MANDEV / MEXFLOW / RR SHRAMIK
3	CLOSED CELL NITRILE RUBBER INSULATION/ EPDM INSULATION	ARMAFLEX / AEROCELL / ALP
4	INLINE FANS	SYSTEMAIR/ KRUGER/ GREENHECK/ HUMIDIN/ NICOTRAAIR
5	CHILLER	TRAIN/ TROX/ YORK/DAIKEN
6	CHILLER PUMP	ARMSTRONG/ GROUND FOSS/XYLEM
7	AIR HANDLING UNITS/ TREATED FRESH	SYSTEMAIR/ EDGETECH/ TRANE/

	AIR UNITS	BALANCE/ ZECO / WAVES
8	AIR WASHER	SYSTEMAIR/ EDGETECH / TRANE/ BALANCE/ ZECOW/ WAVES
9	AIR SEPARATOR	XYLEM/ EMERALD/ ANERGY/ KD AGENCIES
10	COOLING TOWERS (CTI/ CERTIFIED)	ADVANCE/ MARLEY/ PAHARPUR/ BELL
11	GI SHEETS DUCTING ETC	SAIL/ TATA/ JINDAL
12	CO2 SENSOR	SCHNEIDER/ HONEYWELL/ SIEMENS
13	PPR PIPE	JINDAL HISSAR / ASTRAL / FUSION
14	CENTRIFUGAL & AXIAL FANS VANE AXIAL IN-LINE FANS AND THEIR MOTORS	KRUGER/ GREENHECK/ NICOTRA/ BALANCE/ TRISTAR WITH MOTOR FROM THEIR APPROVED OEM
15	VIBRATION ISOLATOR RUBBED PAD DUCT SUPPORT ARRANGEMENT	DUNLOP/ RESISTOFLEX/ GERB
16	GRILL DIFFUSER FIRE DAMPERS LOUVERS VOLUME CONTROL DAMPER	SYSTEM AIR/ CARRYAIRE/ COSMOS/ TRISTER/ GREENHECK/ BALANCE
17	FLEXIBLE GROOVED FITTINGS COUPLINGS	VICTAULIC/ TYCOGRINNEL/ VIKING
18	PRE FABRICATED DUCT DUCT FLANGE (WITH GI SHEETS OF MAKES)	ZECO/ ROLLASTAR/ DUCTOFAB/ WAVES
19	VARIABLE FREQUENCY DRIVE	DANFOSS/ ABB / HONEYWELL/ SIEMENS / SCHNEIDER
20	ALUMINUM TAPE	JOHNSON/ BIRLA-3M/ NIPPON INDUSTRIES
	LIFT	
1	LIFT	KONE ELEVATORS INDIA PVT. LTD./ MITSUBISHI / SCHINDLER/ OTIS ELEVATOR/ JHONSON / THYSSENKRUPP
	SOLAR POWER	
1	POWER CONDITIONING UNIT (PCU)/ SOLAR INVERTERS	ABB FIMER/ SOLAREEDGE/ FRONIUS
2	SOLAR PV PANEL	TATA SOLAR/ WAAREE ENERGY/ADANI SOLAR
	STP	
1	PLANT MANUFACTURER	GRANNUS WATER AND ENVIRONMENTAL SOLUTIONS PVT. LTD./ CIMERA ENGINEERS/ SPECTRUM ENGINEERING TECH PVT. LTD. / ION EXCHANGE / ZETA4/ WATERNEER
2	AIR BLOWER	EVEREST / BETA / ROBUSCHI
3	AIR DIFFUSERS	REHAU / SSI AERATION / MM AQUA
4	RAW SEWERAGE TRANSFER PUMP / SLUDGE RECYCLE PUMP / FILTER FEED PUMP / NON CLOG HORIZONTAL CENTRIFUGAL PUMP/ DE WATERING PUMP / DOSING PUMP/ SBR FEED PUMP/ FILTER FEED PUMP/ SLUDGE PUMP/ CHLORINE DOSING PUMP	ARMSTRONG / XYLEM / GRUNDFOS/ / WILO
5	FILTER PRESS	SACHINFILTECH / PHARMATECH / HITECH
6	TUBE SETTLER MEDIA /MBBR MEDIA	WELBRICK / PHARMATECH / MM AQUA
7	M.S. FILTER	WELBRICK / ION EXCHANGE / ASTHA / THERMAX / ZETA4
8	OZONATOR	CREATIVE/ OZONICS/ ORAPL / CHEMTRONICS / FARADAY
9	NON CLOGG HORIZONTAL SCREW TYPE FILTER PRESS PUMP	ROTO/ POSITIVE/ ROTAMAC/ TUSHACO
10	CENTRIFUGE	APOLLO/ WELBRICK/ GWSPL/ PHARMATECH / GEA
11	PRESSURE GAUGE	H GURU / FEIBIG / GLUCK / BAUMER
12	BUTTERFLY / DUAL PLATE CHECK VALVES	AUDCO / ZOLOTO / ADVANCE / CASTLE /

		SANT
13	PLC	DELTA/ SIEMENS/ SCHNEIDER
	AUDIO-VIDEO	
1	LED VIDEO WALL / LED DISPLAY	SAMSUNG/LG/ PANASONIC / SONY
2	PROJECTOR	CHRISTIE / BARCO / NEC / PANASONIC
3	WIRELESS AND WIRED MICROPHONE BOUNDARY MICROPHONE GOOSNECK MICROPHONE WIRELESS CHARGER FOR WIRELESS GOOSNECK MICROPHONE ANTENNA & SPLITTER/ COMBINER	SHURE / SENNHEISER / AUDIO TECHNICA
4	DIGITAL PODIUM	AHA/ UNI/ MAXHUB/ TECCOM
5	NETWORK VIDEO ENDPOINT	QSC/KRAMER/EXTRON/ LIGHTWARE/ CRESTRON/ LUMENS
6	FULL RANGE CEILING SPEAKERS 2 WAY SPEAKER – TYPE 1 & 2 SUBWOOFER SURROUND SPEAKER PASSIVE COLUMN ARRAY LOUDSPEAKER – TYPE 1 & 2	QSC/ BOSE / TW AUDIO
7	AMPLIFIER	QSC/ LAB GRUPPEN / POWER SOFT
8	DIGITAL SIGNAL PROCESSOR	QSC/ BOSE / SYMETRIX
9	DIGITAL IP BASED CHAIRMAN UNIT DIGITAL IP BASED DELEGATE UNIT WIRELESS DELEGATE UNIT WIRELESS CHAIRMAN UNIT WIRELESS CONFERENCE CONTROLLER	SENNHEISER/ SHURE / TELVIC
10	MATRIX SWITCHER DISTRIBUTION AMPLIFIER, TRANSMITTER & RECEIVER	LIGHTWARE/ EXTRON/ CRESTRON
11	TABLE MOUNT ENCLOSURE	KRAMER/CRESTRON/ LOGIC
12	PTZ CAMERAS	SONY/ LUMENS/ QSC/ PANASONIC
13	RECORDER & STREAMING SYSTEM	LUMENS/ MEDIA POINTE/ PANASONIC/ SONY
14	CONTROL TOUCH PANEL AND CONTROL SYSTEM	CRESTRON/QSC/EXTRON
15	SPEAKER & MICROPHONE CABLE	KRAMER / BELDONE / KRYSTAL
	CONTROL CABLE	
16	HDMI CABLE ACTIVE USB CABLE	CRESTRON/ EXTRON/ LIGHTWARE
17	VIDEO CONFERENCE SYSTEM	CISCO/ POLYCOM/ CRESTRON
	CCTV	
1	PTZ, BULLET, DOOM CCTV CAMERA NVR	AXIS / HONEYWELL ENTERPRISES/ MOBOTIX IMPULS
	BOOM BARRIER	
1	BOOM BARRIER	DESIGNA / NEPTUNE / GODREJ
	FIRE SUPPRESSION SYSTEM	
1	FIRE SUPPRESSION SYSTEM	SVS BUILDWELL/ SAFEX / LIFEGUARD
	WTP	
1	WTP	ZETA4 / WATERNEER / ION EXCHANGE

Note:

1. If approved make/brand of any material is not given in the list, the same will be approved by Engineer In-charge of Minor component, CPWD.

SCHEDULE OF QUANTITY (E&M WORK)

Name of Work : Construction of a new campus for Canara Bank at Plot Nos. CBD-97, 98 and 99, Financial Hub, Rajarhat, New Town, Kolkata. SH: Construction of a (G+5)-storied RCC building with RCC pile foundation. Sub work: Construction of compound wall i/c Providing of LED Façade lighting around plot no. CBZ-97, 98, 99 of Canara Bank located in financial hub at new town, Kolkata.

Sl.	Description of Items	Qty.	Rate	Unit	Amount
	SH:I IEI				
1	Supplying Installation, Testing and Commissioning of Circular/ Rectangular/square LED RGB/ RGBWW/RGBNW/RGBA/RGBW (as per site requirement) Facade Floodlight/ Projector luminaire for facade lighting with Pressure Die-cast aluminium housing, powder-coated finish, with inbuilt driver of following wattage as given below. The luminaire bracket shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted to $\pm 90^\circ$, the scale shall be provided for rotation degrees. The luminaire shall be IP66 protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection and impact resistance of IK 07. CRI>80, SDCM<5, THD<10%. as per IEC 61000-3-2, under voltage, over voltage protection, driver inbuilt surge protection of 4KV and external surge protection (SPD) of 10 KV common mode/differential mode, Driver Efficiency>85%, EMI/EMC as per CISPR-15. There should be options of beam angles of 5/10/15/20/25/30/40/45/60 degree. Luminaire should have efficacy of minimum 35 lm/W for GBNW/RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing dynamic colour changing light for with 16 million colours by DMX/Ethernet based control. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate powersupply from 100-270 V AC, 50 Hz with power factor >0.9. Fixture shall be suitable to operate at an bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, RoHS Compliance, ambient temperature range of -10°C to +50°C. Lifetime of complete luminaire(LED ,Driver , Electrical & control circuitry) shall be at				

	least L70:50000 burning hours at 50°C. Luminaire shall be conforming to BIS: (IS10322) with duly R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories, Integral male/female water proof connectors IP 68 etc. as required. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, RoHS Compliance.				
a	25W	92	36027.00	nos	3314484.00
2	LED Linear Profile (DC) Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/RG BNW/ RGBA/ RGBW (as per site requirement) Linear Profile / Wall Washer luminaire for Facade lighting with aluminium extruded/ Die Cast housing with inbuilt driver of following wattage as given below. The luminaire bracket shall be made of cold-rolled steel & shall be so designed that the luminaire can be tilted to $\pm 90^\circ$, having the rotation degrees scale shall be provided. The luminaire shall be IP66 protection also having silicon gasket between optical cover & LED chamber to ensure proper IP66 protection. CRI>80, SDCM<5, THD<10%. as per IEC 61000-3-2, under voltage, over voltage protection, driver inbuilt surge protection of 4KV and external surge protection (SPD) of 10 KV common mode/differential mode, Driver Efficiency>85%, EMI/ EMC as per CISPR-15. There should be options of beam angles of 10/20/30/40/60, asymmetric degree. Luminaire should have efficacy of minimum 40 lm/W for GB/RGBNW/RGBWW/TNW and 65 lm/W for mono colour options. Luminaire shall be capable of producing dynamic colour changing light for with 16 million colours by DMX/Ethernet based control. The beam angle of the fitting shall be narrow, medium, wide or asymmetric as per the requirement. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 24 V DC. Fixture shall be suitable to operate at an ambient temperature range of -10°C to $+50^\circ\text{C}$ and shall have impact resistance of IK 07. Lifetime of complete luminaire (LED ,Driver ,Electrical & control circuitry) shall be at least				

	L70:50000 burning hours at 50°C. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked and shall be complete with all necessary accessories required for proper working of fixture including connection/inter connection with weather proof ISI Marked copper conductor of minimum size 1.5sqmm connection cables and accessories , Integral male/female water proof connectors of IP68 etc. as required. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79 report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer, Rohs Compliance. Wattage per meter				
a	30W	4	12012.00	nos	48048.00
3	Supplying Installation, Testing and Commissioning of LED RGB/RGBWW/ RGBNW/ RGBA/RGBW suitable for exterior use having IP68 rating (as per site requirement). Flexible light strip of 5 mtr standard length with 12-15 Watt per meter. Luminaire shall be capable of producing dynamic colour changing light for with 16 million colours by DMX/Ethernet based control. Minimum System lumens 450 lumens/meter and System Lumen Efficacy > 30lm/w. Luminaire light beam spread - 100-110°, The Strip should have IP 68 protection and is offered IP 68 rated connectors to join the LED Strips in continuity. The luminaire must be offered with Aluminium channel for mounting the strip lights. The product should be complete with all accessories and Driver. Lifetime of complete luminaire (LED, Driver, Electrical & control circuitry) shall be at least L70:50000 burning hours at 50°C. Luminaire shall be conforming to BIS (IS 10322) with dully R Number marked. Luminaire shall be complete with replaceable driver and capable of operating at line voltage without any separate power supply from 24 V DC, Fixture shall be suitable to operate at an ambient temperature range of -10°C to +50°C. The successful bidder shall submit the following certifications/reports for approval before supply of materials: product data sheets, LM79. report from NABL accredited lab, illuminance diagram, polar curve & LM80 report issued by LED manufacturer & RoHS Compliance along with CE certificate.	120	9689.00	nos	1162680.00

4	Supplying Installation, Testing and Commissioning of DMX Controller for the system including address writer and programming the DMX controller with the suitable designs as decided by the Engineer-in-charge/client department (not less than 10 nos designs) and all other accessories required for the running of the system Controller should have Input Power 5-5.5V DC 0.6A and Output Protocol DMX512 with 4 universe, 2 universe should work in Stand Alone Mode and 2 universe should work in live mode with laptop/ tablet / computer. The universe should be expandable from 2 to 4 DMX512 universes. It should be compatible for Programmability with PC, Mac, Tablet, Smartphone by using USB & Ethernet. Dmx controller should have network controllability feature to control the scene remotely through LAN and triggered via UDP packets on port 2430. It's must have Connections Type C USB, XLR3, Ethernet, battery. There should be provision for Memory microSD card. Device should have Intuitive backlit keyboard with 10 presents and also have provision of keypad on device for changing scene manually from device. Device should be capable to work on Extended triggering possibilities (TCA) & also have Smart Upgrade Technology (SUT). It is an IP 20 unit and has an Operating Temperature of 0°C to 50°C.OS Requirements for the controller is Mac OS X 10.8-10.12, Windows 7/8/10/11. Standards should be EC, EMC, ROHS. The controller should have a variety of features including 2048 DMX channels, clock/calendar, iPhone/iPad /Android remote control, Ethernet facilities, dry contact port triggering and multi-zone SD card memory. Network synchronization of one area across hundreds of universes with the possibility of 99 scenes across 5 areas with auto clock triggering for sunrise and sunset and as per the festivals for specific occasions. Device should be equipped with meta clamp to mount on wall with data enablers and splitters as required. To be provided with IP 66 enclosure if installed in external environment.	1	65891.00	nos	65891.00
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5	Supplying Installation, Testing and Commissioning of RDM-6Wall Splitter, should be able to provide 6 output DMX/RDM splitter with DMX/RDM pass-through supporting bi-directional communications for discovery, addressing and DMX control of Ethernet/DMX products. This unit takes the incoming DMX/RDM signal and splits the signal into six separate output channels allowing for expanding the number of devices controlled from 32 to 6x32. The output terminals are electronically isolated from the input & RDM-through port and share a common ground reference. All six output ports have an independent output driver to boost the DMX/RDM signal. Surface or DIN-rail mountable, Isolated DMX/RDM Input/Outputs, Automatic switching between DMX and RDM mode for auto-discovery, Environment-IP20, Interior applications, Finish/Color Polycarbonate, Certification: CE Certified. DMX Splitter/Booster etc. as required.	5	15142.00	nos	75710.00
6	Supplying Installation, Testing and Commissioning of Signal Amplifier to boost the Signal, IP 65 rated module to enhance the depleting DMX Signals, should have IP 66/67 rates inbuilt connectors compatible with Luminaires. It should be offered with inbuilt electronic circuit for functioning. No external LED driver needed etc., complete as required.	4	2519.00	nos	10076.00
7	Supplying, installation, testing and commissioning of high quality DMX decoder, Power Input : DC 24V etc complete as required.	120	5399.00	nos	647880.00
8	Supplying and Fixing of IP65 "I" power connectors having 3/4 pole cable connector, chuck type strain relief, Current rating 20 A rms continuous, Easy and extremely precise locking system "Quick Lock" High impact materials - long-lasting and reliable etc complete as required.	50	649.00	nos	32450.00
9	Supplying and Fixing of IP65 "I" DMX connectors having 3/5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability, etc complete as required.	50	649.00	nos	32450.00
10	Supplying and Fixing of 5 pin XLR Male/Female connectors having 5 pole cable connector, Male/Female connector with improved latch, cage type contacts, "solder stop" for easy soldering, and additional ground contact for best contact integrity between chassis and cable connector. More durable housing for maximum reliability etc	4	1958.00	nos	7832.00

	as required.				
11	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	400	168.00	mtr	67200.00
b	32 mm	100	209.00	mtr	20900.00
12	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	4 x 1.5 sq. mm	2000	130.00	mtr	260000.00
b	4 x 2.5 sq. mm	1500	189.00	mtr	283500.00
13	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force: 11.5Kg etc. complete as required.				
a	1 Run of cable	1000	60.00	mtr	60000.00
b	2 Run of cable	500	96.00	mtr	48000.00
14	Earthing with G.I. earth pipe 4.5 Meter long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/coke and salt as required.	2	7658.00	nos	15316.00
15	Providing and laying earth connection from earth electrode with 6 SWG dia G.I. Wire in 15 mm dia G.I. pipe from earth electrode including connection with G.I. thimble excavation and re-filling as required.	12	313.00	mtr	3756.00
16	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	20	84.00	mtr	1680.00
17	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc.direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
17.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	50	289.00	mtr	14450.00

18	Supply of XLPE insulated PVC sheathed armoured aluminium conductor UG cable of 650/1100 V grade as per IS 7098 (Part-1) 1988 etc as required.				
18.1	4x25 sq.mm	60	467.00	mtr	28020.00
19	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
19.1	Upto 35 sq. mm	50	47.00	mtr	2350.00
20	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
20.1	4 X 25 sq. mm (28mm)	4	373.00	each	1492.00
21	Supplying installation testing and commissioning of double door outdoor Feeder pillar made out of 2mm thick CRCA sheet with 7 time processed and painted with powder coated paint as per RAL 7032, Siemens Grey, enclosure protection IP 55, cable entry from bottom, as per CPWD, Standard Compliance: IEC 61439-1 & 2 / IS 8623, with 100A TPN aluminium busbar and controlled wiring with 2.5 sqmm FRLS, Copper conductor including providing and fixing of following switch gap (minimum size H-800 mm, W-600 mm and D-300 mm, Cubical type, Compartmentalized, Double Door with Canopy)				
	INCOMER				
	32A 4P 25KA TM MCCB with OL/SC Protection (100% ICS=ICU) - 1 no.				
	Spreader link - 1 set				
	Extended rotary handle - 1 no.				
	Phase indicating lamp R, Y, B, 230V AC LED type - 5 nos.				
	6A SP MCB - 3 nos.				
	Start/ Stop Push button with 1 NO + 1 NC contact - 2 nos.				
	ON indication lamp - 1 no.				
	10A A/M selector switch - 1 no.				
	OUTGOING				
	42A 4P, Contactor - 1 no.				
	20A, 2P, MCB c curve - 4 nos.				
	Astra timer digital - 1 no.	1	85680.00	job	85680.00
	TOTAL SH-I				6289845.00