

SPICES BOARD

(Ministry of Commerce and Industry, Govt. of India)

Sugandha Bhavan, NH By-pass,

P.B No. 2277, Palarivattom P.O, Kochi – 682025.

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TENDER FOR CONSTRUCTION OF 33/11 KV SUBSTATION, RING MAIN UNITS & CABLING WORKS IN SPICES PARK AT EDLAPADU MANDAL IN GUNTUR DISTRICT ANDHRAPRADESH



VOLUME – II PRICE BID

TENDER NO. SPICES BOARD/FEATS/SPG/05/2010

Project Consultants:

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**TENDER FOR
CONSTRUCTION OF 33/11 KV SUBSTATION,
RING MAIN UNITS & CABLING WORKS
IN SPICES PARK
AT EDLAPADU MANDAL IN GUNTUR DISTRICT
ANDHRAPRADESH**

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SPICES PARK, GUNTUR

CONSTRUCTION OF 33/11 KV SUBSTATION, RING MAIN UNITS & CABLING WORKS

BILL OF QUANTITIES AND SCHEDULE OF RATES

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	

IMPORTANT NOTES

- a SITC shall mean Supply, Installation, Testing and Commissioning.
- b ITC shall mean Installation, Testing and Commissioning.
- c Contractor shall prepare all EXECUTION drawings & other Design documents for execution purpose as per statutory requirements and get it approved by the Owner/Consultant before commencement of execution. **A list of execution drawings to be prepared by the contractor is attached in the SCC. Please refer.**
- d Contractor shall **design supporting structure and foundation** for all equipments, and submit the design document for approval before fabrication.
- e Preparation of drawings, documents, liaison work, etc. for getting initial/final NOC from EB/ Pollution Control Board/ Electrical Inspectorate and other statutory agencies is also included in the scope of this contract. Contractor shall pay all the statutory fees initially, however, the same will be reimbursed on submission of supporting documents.
- f The contractor shall do necessary arrangements to measure Soil Resistivity at the site by the Inspectorate, and shall submit the report to the Owner/Consultant.
- g Item wise tentative quantities are given here. Quantities are subject to change as per site conditions and requirements. Payment will be made for the actually executed and measured quantities at site at agreed rates. No claim for escalation of rates due to increase or decrease in quantities will be considered later.
- h The work shall be carried out strictly as per Electrical Inspectorate & EB standards, and only after getting initial scheme approval from the Electrical Inspectorate.
- i All materials used shall be of IS approved and ISI marked. In addition, BEE labeled items shall also be offered.
- j Contractor shall get approval from the Owner/ Consultant for all Makes of items & its specifications before supply the same at site.
- k Contractor shall get prior approval from Owner/ Consultant for quantities of items to be supplied at site. This is to ensure adequate and actual quantities for execution.

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
ELECTRICAL WORKS						
SUBSTATION EQUIPMENT						
1.0	POWER TRANSFORMER Outdoor, Oil type, 33/11KV, 5 MVA, ONAN, 3 Ph, 50Hz, Power Transformer with OnLTC, taps ranging from +5% to -15% in steps of 1.25% and suitable for operations from local and remote positions, Vector group Dyn-11, Delta/Star, oil conservator, first fill Oil +10% extra for topping up, Copper double wound, HV side Bushings & LV side Cable box suitable for three runs of 500 Sq.mm. single core XLPE Al. cable, Standard fittings, secondary neutral side shall be solidly earthed through neutral CT, transformer conforming to IS:2026, all accessories and as per specifications provided. Transformer shall also be provided with Rating and diagram plate, Earthing terminals, Oil level indicator, Pressure relief device, Top filter valve, Drain cum bottom filter valve, Sampling valve, Radiator, Oil filling hole with cover, Lifting lugs, Silica gel breather, Conservator with drain plug & Resetting device, etc. Transformer shall have minimum relays like: Buchholz, Winding Temp., Oil Temp, etc. Supply Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	1	No.			
		1	No.			
2.0	DISCONNECTING SWITCH/ ISOLATOR (Without Earth Switch) Outdoor, Manual gang operated, 3 pole, Centre rotating Post Disconnecting Switch/ Isolator, horizontal disconnecting double break, 33kV, 630A, 50Hz., WITHOUT Earth Switch, 25kA rated short circuit current, required number of NO + NC auxiliary contacts, Interlocking between the Isolators, including control wiring and as per specifications provided. (For Incomer feeder lines). Supply of above equipment Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	2	Set			
		2	Set			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
3.0	DISCONNECTING SWITCH/ ISOLATOR (With Earth Switch) Outdoor, Manual & Electrical gang operated, 3 pole, Centre rotating Post Disconnecting Switch/ Isolator, horizontal disconnecting double break, 33kV, 630A, 50Hz., WITH Earth Switch, 25kA rated short circuit current, required number of NO + NC auxiliary contacts, including control wiring and as per specifications provided. Supply of above equipment	3	Set			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	3	Set			
4.0	OUTDOOR 33KV VACCUM CIRCUIT BREAKER Outdoor Vaccum Circuit Breaker, 33KV, 1250A rated nominal current, 3 Pole, Gang operated, 50Hz., rated for 25kA (3 sec) short circuit current, required NO+NC contacts, control panel, suitable for local and motorized remote operations, all accessories, including control wiring and as per specifications provided. Supply of above equipment	2	No.			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	2	No.			
5.0	CURRENT TRANSFORMER					
a	Outdoor, 33KV, 100-50/1A, 1-Phase, Two core Current Transformer, Oil immersed, self cooled, 30VA burden, Core-1 CL:0.2 & Core-2 CL:5P20, Frequency 50Hz., all accessories conforming to IEC 44-1-1996 & IS 2705, including control wiring and as per specifications provided. Supply of above equipment	3	No			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	3	No			
b	Outdoor, 33KV, 100-50/1A, 1-Phase, Three core Current Transformer, Oil immersed, self cooled, 30 VA burden, Core-1 CL:0.5, Core-2 CL:5P20 & Core-3 CL:PS, Frequency 50Hz., all accessories conforming to IEC 44-1-1996 & IS 2705, including control wiring and as per specifications provided.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Supply of above equipment	3	No			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	3	No			
c	Outdoor, Cast Resin, 500/5A, 30VA, CL:PS, Single core, Current Transformer for transformer neutral including control wiring.					
	Supply of above equipment	1	No			
	Installation, testing and commissioning	1	No			
6.0	INDUCTIVE VOLTAGE TRANSFORMER					
a	Outdoor, 33/ $\sqrt{3}$ kV / 110/ $\sqrt{3}$ V, 1-Phase, One Core Inductive Voltage Transformer, Oil immersed, self cooled, 150VA burden, Core-1 CL: 0.2, 50Hz., with all accessories conforming to IEC 186-1987 & IS 3156-1992, including control wiring and as per specifications provided.					
	Supply of above equipment	3	No.			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	3	No.			
b	Outdoor, 33/ $\sqrt{3}$ kV / 110/ $\sqrt{3}$ V, 1-Phase, Two Core Inductive Voltage Transformer, Oil immersed, self cooled, 150VA burden, Core-1 CL:0.5 & Core-2, CL:3P, 50Hz., with all accessories conforming to IEC 186-1987 & IS 3156-1992, including control wiring and as per specifications provided.					
	Supply of above equipment	3	No.			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	3	No.			
7.0	LIGHTNING ARRESTOR					
	Outdoor, Zinc oxide gapless type, Lightning Arrestor, 33kV, 10kA Nominal 8/20 μ s discharge current, 50Hz, energy Class III, Surge Counter and Milli ammeter, all accessories conforming to IS3070, and as per specifications provided.					
	Supply of above equipment	9	No.			
	Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	9	No.			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
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8.0	DIGITAL TOD METER Digital TOD meter for 33kV EB side including weather proof kiosk for outdoor installation (IP56), and as per specifications provided including control wiring. The kiosk shall be provided with required test blocks, terminal connectors, control fuses etc. Supply of above equipment Installation, testing and commissioning	1 1	set set			
9.0	Solid Core Post Insulators for 33KV outdoor application as per IS 731 & 2544, etc. as specifications provided. Supply Supply of all materials and construction of suitable hot dip galvanized GI supporting structure, foundation blots & nuts, installation of above equipment, earthing, testing and commissioning (Cost of civil works for foundation will be paid separately).	7 7	No No			
10.0	Single tension insulator string assembly for 33KV with galvanised insulator fittings, galvanised tension clamp & suitable hardware for 1x Wolf ACSR, with accessories like D-shackle, Ball clevice/ Ball eye, socket eye, strain clamp, etc as per IS 731. Supply String the fittings to make busbar using connectors and clamps, testing and commissioning	18 18	No. No.			
11.0	ACSR 'Wolf' conductor of size 30/259mm Aluminium with 7/2.59mm steel wire as per IS398, including connectors, clamps, etc. Supply String the conductors to make busbar, Installation using connectors and clamps, testing and commissioning	170 170	m m			
12.0	IPS rigid aluminium alloy round tube 50mm for busbars as per IS5082 including connectors, clamps, etc. Supply Installation of busbar using connectors, joints and clamps, testing and commissioning.	70 70	m m			
13.0	GALVANIZED YARD STRUCTURE Design, supply, installation, testing and commissioning of Substation Yard Structure (towers and columns) using hot dip galvanized GI Sections of latticed box type column, gantries, equipment support, plates, pipes, etc. of bolted/welded construction, manufactured out of ISMC / ISA, placed as per design & drawings including GI assembly bolts, nuts, foundation bolts, etc. complete. (Design and calculation shall be got approved before supply & erection).					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Supply of materials	13	MT			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	13	MT			
14.0	EARTHING SYSTEM					
14.1	GI Earth mat design					
	Design the Earth Mat as per site conditions and actual fault level at Substation switch yard. Copy of design calculation, drawings, etc. shall be submitted for approval.					
	Design and delivery of documents in hard/ CD copies.	1	LS			
14.2	EARTH MAT					
	Earth Mat in switch yard at a depth of 0.5m from ground level, made up of GI strip of following size for horizontals as well as risers (including GI Pipes), including welding the strips and applying anticorrosive paints at the joints, after excavating the switch yard before the equipment foundation and concrete works, refilling, testing and commissioning and providing connection to all equipment like LAs, PTs, CTs, CBs, Isolators, Towers, Transformers, Marshalling Kiosk, Cable tray, Control room panels and all other metal parts equipments, etc. and as per specifications provided.					
a	50 x 6 mm GI Strip below ground level as per above requirement.					
	Supply of materials	2500	m			
	Installation, testing and commissioning	2500	m			
b	50 x 6 mm GI Strip in existing trench as required.					
	Supply of materials	110	m			
	Installation, testing and commissioning	110	m			
c	50mm x 6mm GI strip on surface or in recess for connections etc as required					
	Supply of materials	20	m			
	Installation, testing and commissioning	20	m			
14.3	MS Rod for Earthing					
	MS Rod 25 mm. dia. 2.5m long heavy duty driving into earth to augment the earth mat and connecting the same to the earth strip. Earth pits shall be treated with salt and charcoal for proper earth resistivity, if required.					
	Supply of materials	70	Each			
	Installation, testing and commissioning	70	Each			
14.4	Earthing Strip					
a	25 x 3 mm Copper strip on surface/recess/ tray including supports, clamping using Cu. strips, etc. as required.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Supply of materials	40	m			
	Installation, testing and commissioning	40	m			
b	25 x 3 mm Copper Strip in existing trench as required.					
	Supply of materials	12	m			
	Installation, testing and commissioning	12	m			
c	10 SWG copper wire on surface / recess/ tray for loop earthing as required.					
	Supply of materials	90	m			
	Installation, testing and commissioning	90	m			
14.5	PLATE EARTHING					
	SITC of Plate Earthing (conforming to IS 3043) using CI Earth plates of size 1200mm x 1200mm x 12 mm, 50mm dia. GI pipe medium extending upto middle of the plate and clamping to the plate with GI clamps and bolts, 800x50x12mm GI Strip, funnel, 20G GI wire mesh, 15mm GI water pipe, and supply of materials and constructing 1000x500x600mm brick masonry inspection chamber, plastering, fixing heavy duty CI cover plate having locking arrangement, CI frame painted with bituminous paint, earth pit with yellow paint below the chamber cover, filling with homogenous layer of charcoal, salt & sand, including excavation of earth pit up to permanent moisture level depth and back filling. The value of earth resistance should be less than 1 ohm for approval.					
	Supply of materials	5	Set			
	Installation, testing and commissioning	5	Set			
15.0	LIGHTNING PROTECTION SYSTEM					
15.1	Supply and stringing 7/9 SWG GI Shield wire IS 2141 on top of yard towers, interconnections and down using clamps, connectors, cleats, tension clamp, PG clamp, pad connector, crimped bonds, etc.					
	Supply of materials	430	m			
	Stringing, testing and commissioning.	430	m			
15.2	SITC of Pipe Earthing with GI Pipe medium 2.75m long x 40 mm dia. including all accessories, 300x50x6mm GI strip, and providing masonry inspection chamber of 400x400x400mm size, heavy duty CI cover plate hinged to CI frame, locking arrangement and watering pipe, wire mesh, excavation and back filling, filled with homogenous layers of charcoal, salt & sand, complete as per IS:3043.					
	Supply of materials	4	Set			
	Installation, testing and commissioning	4	Set			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
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15.3	SITC GI tape 25x3mm thick on parapet or surface of wall of building for lightning conductor including porcelain/ DMC supports as required. (For horizontal run)					
	Supply of materials	80	m			
	Installation, testing and commissioning	80	m			
15.4	SITC of GI tape 25x3mm thick on surface of wall of building for lightning conductor including porcelain/ DMC supports as required. (For vertical down run)					
	Supply of materials	16	m			
	Installation, testing and commissioning	16	m			
15.5	SITC of Test Terminal Block with box for lightning protection down comer on surface at 1.2m above ground level and connecting to earth electrode as required.					
	Supply of materials	3	Set			
	Installation, testing and commissioning	3	Set			
15.6	SITC of 40 x 6 mm GI Strip atleast 500mm below ground level including excavating and refilling of earth etc. as required for interconnecting lightning protection earth electrodes.					
	Supply of materials	120	m			
	Installation, testing and commissioning	120	m			
16.0	CONTROL AND RELAY (C & R) PANELS					
	Feeder and Transformer protection Control and Relay Panel for remote operation and protection of Substation switchyard equipment suitable for 110V DC.					
	It shall be fabricated out of cold rolled sheet steel of thickness not less than 3mm, powder coated in cubicle compartmentised, free standing, cable top entry, floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel, 'T' sections wherever necessary fully meeting all the requirements specified in the technical specifications. Galvanized hardware with zinc passivation shall be used for fabrication. All other requirements of the panel shall be as per specifications provided.					
	It shall consist of Relays /CTs, Multi Function Digital Meters, Mimic diagram, Semaphore indicators, LED Alarm indicating lamps, Annunciation system, Hooter, Communication functions, Internal control wiring, Visual and audible alarm, Interlocking schemes, Remote/ Auto / Manual operation, Test Terminal Blocks, IP4X protection, Earthing, Space heaters, Anti pumping facility, etc.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	<p>Relays in C & R Panel shall be for multi-functional Protection, Control and Monitoring of Feeder lines and Transformers, suitable for remote operation. All types of Protection/Monitoring / Controlling Relays, Auxiliary Relays, Trip Circuit relays, AC Circuit relays, etc. All other requirements of the panel shall be as per specifications provided.</p> <p>Before fabrication of the Panel, electrical and control scheme for the entire substation shall be prepared by the Contractor and hard copies submitted for approval.</p>					
16.1	<p>FEEDER PROTECTION PANEL</p> <p>Incoming feeder line shall have relays for minimum following functions:- 3OC IDMT Over current+Earth fault, Trip circuit supervision, DC supervision, Master trip relay, etc. as per electrical scheme. It shall have Ammeter+ASS, KV Meter+VSS, MW, MVAR, MFDM, PF meters, etc. and as per requirements of C & R Panel given above.</p>					
	Supply of materials	1	Set			
	Installation, testing and commissioning	1	Set			
16.2	<p>TRANSFORMER PROTECTION PANEL</p> <p>Transformer HV Side line shall have relays for minimum following functions:- 3OC IDMT Over current+Earth fault, Trip circuit supervision, DC supervision, Differential relay, Transformer other auxiliary relays, Master trip relay, etc. as per electrical scheme. It shall have Ammeter+ASS, KV Meter+VSS, MW, MVAR, MFDM, PF meters, etc. and as per requirements of C & R Panel given above.</p>					
	Supply of materials	1	Set			
	Installation, testing and commissioning	1	Set			
17.0	<p>Remote Tap Changer Circuit (RTCC) PANEL</p> <p>RTCC Panel shall be with following specifications. Tap change in progress, Supply ON, Out of step, Excess pressure, AC Fail, Tap position indicator, Annunciation display unit, Tap raise push button, Tap lower push button, Alarm cancel push button, Automatic Voltage Regulator (AVR), Control supply isolator, Auto/Independent, Auto/ Manual switch, etc. Annunciation shall be for Oil temperature alarm, Winding temperature alarm, Winding temperature trip, Buchholz alarm, Tap changer out of step, Low oil level alarm, Cooling fans working/not working, etc. as per specifications provided.</p>					
	Supply of materials	1	Set			
	Installation, testing and commissioning	1	Set			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
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18.0	<p>11 KV VCB PANEL</p> <p>It shall be fabricated out of cold rolled sheet steel of thickness not less than 3mm, powder coated in cubicle compartmentised, free standing, cable top entry, floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel, 'T' sections wherever necessary fully meeting all the requirements specified in the technical specifications. Galvanized hardware with zinc passivation shall be used for fabrication.</p> <p>It shall consist of Relays /CTs, Multi Function Digital Meters, Mimic diagram, Semaphore indicators, LED Alarm indicating lamps, Annunciation system, Hooter, Communication functions, Internal control wiring, Visual and audible alarm, Interlocking schemes, Remote /Auto / Manual operation, Test Terminal Blocks, IP4X protection, Earthing, Space heaters, Anti pumping facility, etc.</p> <p>It shall have relays for minimum following functions:- 3OC IDMT Over current+Earth fault, UV, OV, REF, Trip circuit supervision, DC supervision, Master trip relay, etc. as per electrical scheme. It shall have Ammeter+ASS, KV Meter+VSS, MW, MVAR, MFDM, PF meters, etc. All other requirements of the panel shall be as per specifications provided.</p> <p>Incoming CR PT 11/√3kV / 110/√3V, 50VA , Core-1 CL:0.5 & Core-2 CL:3P, 50Hz., with all accessories - 2 Set. CR CT 11KV 300/5A 30VA Core-1 CL:0.5, Core-2 CL:5P10, Core-3 CL:PS - 2 Sets Voltmeter with selector switch (0-15kV) - 2 Sets Ammeter with selector switch (0-300A) - 2 Sets Multi Function Digital Meter - 2 Set 3OC IDMT Over current+Earth fault - 2 No. Over voltage relay - 2 No. Under voltage relay - 2 No. Restricted earth fault relay - 2 No. Master trip relay - 2 No. VCB 11kV 1250A 3P 350MVA 50KA EDO Microprocessor based as Incoming - 2 No. VCB 11kV 1250A 3P 350MVA 50KA EDO Microprocessor based as Bus Coupler - 1 No. 1250A TP 11kV AL. Busbars with heat shrinkable insulation sleeves - 1 Set.</p> <p>Outgoing VCB 11kV 1250A 3P 350MVA 50KA EDO Microprocessor based as feeders - 7 Nos. CR CT 11KV 10/5A 15VA Core-1 CL:0.5, Core-2 CL:5P10 - 1 Set CR CT 11KV 200/5A 15VA Core-1 CL:0.5, Core-2 CL:5P10 - 6 Sets 3OC IDMT Over current+Earth fault - 7 Sets</p>					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Multi Function Digital Meter - 7 Sets					
	Master trip relay - 7 Sets					
	Supply of materials	1	Set			
	Installation, testing and commissioning	1	Set			
19.0	STATION AUXILIARY TRNASFORMER (Indoor)					
	Indoor Oil Transformer 100 KVA 3Ph, 50 Hz, ONAN, DYN-11 with Off load tapplings from +/-5% insteps of 2.5%, first fill of oil, HT/ LT side cable box suitable for terminations, MS shouldering for cable, all standard fittings and accessories as required complete. Voltage Ratio: 11/0.433kV, Winding: Copper, Fittings: Standard fittings as per IS:2026/77, etc. complete as required.					
	Transformer shall also be provided with Rating and diagram plate, Earthing terminals, Oil level indicator, Pressure relief device, Top filter valve, Drain cum bottom filter valve, Sampling valve, Radiator, Oil filling hole with cover, Lifting lugs, Silica gel breather, Conservator with drain plug & Resetting device, etc.					
	Transformer shall have minimum relays like: Buchholz, Winding Temp., Oil Temp, etc.					
	Supply	1	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	1	No.			
20.0	STATION AUXILIARY PANEL BOARD (Indoor)					
	SITC of Station Auxiliary Panel Board. It shall be fabricated out of 14/16 gauge CRCA sheet powder coated in cubicle compartmentized, free standing, floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel, 'T' sections wherever necessary, front detachable cover, rubber beeding, marking identification of switches, fully meeting all the requirements specified in the technical specifications and drawings. Galvanized hardware with zinc passivation shall be used for fabrication. It shall undergo seven tank process and powder coated with approved shade. Equally rated neutral links shall be provided in the panel for all 4/2 wire outgoing. All alarm, controlling circuits, etc. shall be provided with fuses/MCBs at its incomer side to protect alarm and controlling equipment in the lower sides.					
	Incoming					
	MCCB 160A TP 35kA Isolation duty with O/C, S/C, E/F releases (set at 133A) - 1 No.					
	Standby low set earth fault relay with 30/5A 5P10 15VA CR CT at Trans.					
	Neutral - 1 No.					
	RYB Indication lamps and controlling MCBs - 1 Set					
	Voltmeter with selector switch (0-500V) - 1 Set					
	Ammeter (0-150A) - 3 Nos					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
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	CR CT 150/5A 10VA CL:1 - 1 Set 150A TPN AL. Busbars with heat shrinkable insulation sleeves - 1 Set. Outgoing MCCB 32A 25kA TP with O/C & S/C releases - 7 No. Panel Board - 1 No. Supply Installation, testing and commissioning	1 1	Job Job			
21.0	BATTERY & CHARGER					
21.1	Station Battery Station type battery either Tubular or VRLA maintenance Free Sealed, set of 55 cells of 2V, 120 AH capacity with lead coated inter connecting bars, nuts, bolts, supporting insulators, stand, acid for first filling with 10% extra, inter row and inter tier connectors, special connector bolt wrenches, sp. gravity meter, 3-0-3 V cell tester etc complete. as per specifications. Supply Installation, testing and commissioning	1 1	Set Set			
21.2	Station Battery Charger Station Battery Charge Indoor floor mounting float & boost (IP45) compatible for an AC input system of 3 phase, 4 wire 50 Hz, 415V ± 10% solidly earthed system. The DC out put should have a nominal output voltage of 110V, steplessly adjustable float charge of 0-125V, steplessly adjustable boost charge of 0-150V. The permissible voltage regulation should be ± 1%. The float charger should be capable of supplying continuous load of 30A while float charging a battery. The boost charger should be capable of supplying continuous current of 50A while boost charging the battery. The maximum ripple content shall be 1%, the charger should have an efficiency not less than 80% at full rated output. Apart from this the charger should have a DC MCB DB as per specification provided. Supply Installation, testing and commissioning	1 1	Each Each			
22.1	11KV RING MAIN UNITS - RMUs (Outdoor) 11kV, 630A, 20KA, 3 Pole, Outdoor Ring Main Units (RMUs) with SF6 Load Break Switches, direct cable termination (suitable for 300/240/150 Sq.mm XLPE Al. Cable), copper bus, IP54 enclosure of metal with sheet steel of min 3mm thk., earth switch, test cable, cable boxes, voltage indicator lamps and phase comparators, earth fault indication, CTs, earthing, necessary interlocks and as per specifications provided and relevant national standards, of following configurations. a TYPE-A, with 3 Nos. SF6 Load Break Switches and Extencible.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Supply	10	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	10	No.			
b	TYPE-B, with 1 No. SF6 Load Break Switch and Extencible					
	Supply	8	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	8	No.			
c	TYPE-C, with 5 No. SF6 Load Break Switches and Extencible.					
	Supply	2	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	2	No.			
d	TYPE-D, with 1 No. VCB in SF6 container and Extencible.					
	Supply	1	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	1	No.			
e	TYPE-E, with 1 No. VCB + 2 Nos. Load Break Switches in SF6 container and Extencible.					
	Supply	1	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	1	No.			
22.2	SITC of Pipe Earthing with GI Pipe Medium 2.75m long x 40 mm dia. for each RMU Station. Same as Item 15.2.					
	Supply of materials	44	Set			
	Installation, testing and commissioning	44	Set			
22.3	50mm x 6mm GI strip on surface or in recess for connections, etc. as required for each RMU Station. Same as Item 14.2.					
	Supply of materials	66	m			
	Installation, testing and commissioning	66	m			
23.1	LT DISTRIBUTION TRNASFORMER (Outdoor)					
	Outdoor Oil Transformer 200 KVA 3Ph, 50 Hz, ONAN, DYN-11 with Off load tappings from +/-5% insteps of 2.5%, first fill of oil, HT/ LT side cable box suitable for terminations, MS shouldering for cable, all standard fittings and accessories as required complete. Voltage Ratio: 11/0.433kV, Winding: Copper, Fittings: Standard fittings as per IS:2026/77, etc. complete as required.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Transformer shall also be provided with Rating and diagram plate, Earthing terminals, Oil level indicator, Pressure relief device, Top filter valve, Drain cum bottom filter valve, Sampling valve, Radiator, Oil filling hole with cover, Lifting lugs, Silica gel breather, Conservator with drain plug & Resetting device, etc. Transformer shall have minimum relays like: Buchholz, Winding Temp., Oil Temp, etc.					
	Supply	1	No.			
	Installation, testing and commissioning (Cost of civil works for foundation will be paid separately).	1	No.			
23.2	LT SUPPLY PANEL BOARD (Outdoor)					
	It shall be fabricated as per specifications provided and suitable for Outdoor IP24 classification. It shall be provided with full front covering doors and canopy for protection against rain and dust.					
	Incoming					
	MCCB 320A TP 35kA Isolation duty with O/C, S/C, E/F releases (set at 260A) - 1 No.					
	Standby low set earth fault relay with 60/5A 5P10 15VA CR CT at Trans. Neutral - 1 No.					
	RYB Indication lamps and controlling MCBs - 1 Set					
	Voltmeter with selector switch (0-500V) - 1 Set					
	Ammeter (0-300A) - 3 Nos					
	CR CT 300/5A 10VA CL:1 - 1 Set					
	300A TPN AL. Busbars with heat shrinkable insulation sleeves - 1 Set.					
	Outgoing					
	MCCB 40A 25kA TP with O/C & S/C releases - 6 No.					
	Panel Board - 1 No.					
	Supply	1	Job			
	Installation, testing and commissioning	1	Job			
24.0	CABLES AND TERMINATIONS					
24.1	11 kV HT CABLE					
	Supply of following armoured XLPE insulated Aluminium conductor cables of 11 kV grade suitable for 11kV earthed system conforming to relevant Indian standards.					
a	1C x 500 Sq.mm	75	m			
b	1R 3C x 300 Sq.mm	4310	m			
c	1R 3C x 150 Sq.mm	28	m			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
24.2	Laying of 1 No. armoured XLPE insulated Aluminium conductor cables of 11 kV grade direct in ground including excavation, sand cushioning, protective covering and refilling the trench, etc. as required conforming to relevant Indian standards.					
a	1C x 500 Sq.mm	6	m			
b	1R 3C x 300 Sq.mm	2200	m			
c	1R 3C x 150 Sq.mm	5	m			
24.3	Laying, testing and commissioning of 1 No. armoured XLPE insulated and PVC sheathed/XLPE power cable of grade exceeding 1.1kV but not exceeding 11kV of following size in the existing masonry open duct/ soil surface as required.					
a	1R 3C x 300 Sq.mm	100	m			
b	1R 3C x 150 Sq.mm	5	m			
24.4	Laying of 1 No. armoured XLPE insulated Aluminium conductor cables of 11 kV grade direct in existing trench as required conforming to relevant Indian standards.					
a	1C x 500 Sq.mm	69	m			
b	1R 3C x 300 Sq.mm	2000	m			
c	1R 3C x 150 Sq.mm	15	m			
24.5	Laying, testing and commissioning of 1 No. armoured XLPE insulated and PVC sheathed/XLPE power cable of grade exceeding 1.1kV but not exceeding 11kV of following size in the existing Metal/ Hume/ Stoneware pipes as required.					
a	1R 3C x 300 Sq.mm	10	m			
b	1R 3C x 150 Sq.mm	3	m			
24.6	11 kV HT Cable End Termination					
	SITC of outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs for the following size armoured XLPE Aluminium conductor cable of 11 kV grade as required.					
a	1C x 500 Sq.mm					
	Supply	3	Set			
	Installation, testing and commissioning	3	Set			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
b	3C x 300 Sq.mm Supply	1	Set			
	Installation, testing and commissioning	1	Set			
c	3C x 150 Sq.mm Supply	2	Set			
	Installation, testing and commissioning	2	Set			
24.7	SITC of indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs for the following size armoured XLPE Aluminium conductor cable of 11 kV grade as required.					
a	1C x 500 Sq.mm Supply	3	Set			
	Installation, testing and commissioning	3	Set			
b	3C x 300 Sq.mm Supply	50	Set			
	Installation, testing and commissioning	50	Set			
c	3C x 150 Sq.mm Supply	2	Set			
	Installation, testing and commissioning	2	Set			
25.0	LT CABLES					
25.1	Supply of 1.1kV grade armoured XLPE insulated PVC sheathed power cables with Aluminium conductor of following sizes.					
a	3.5C x 185 sq.mm	10	m			
b	3.5C x 50 sq.mm	30	m			
c	4C x 16 sq.mm	60	m			
d	4C x 10 sq.mm	45	m			
e	2C x 4 sq.mm	320	m			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
25.2	LAYING OF LT Cable UNDER GROUND Laying of 1.1kV grade armoured XLPE insulated PVC sheathed power cables with Aluminium conductor of following sizes under Ground, including excavation of earth trench of required size and depth 750mm min. from finished ground level, supply and providing protective covering with country burnt bricks laid breadth-wise & sand cushion of min 200mm depth, refilling the trench in layers, making good the trench as required.					
a	3.5C x 185 sq.mm	10	m			
b	3.5C x 50 sq.mm	Rate	m			
c	4C x 16 sq.mm	Rate	m			
d	4C x 10 sq.mm	Rate	m			
e	2C x 4 sq.mm	300	m			
25.3	On Surface/ Tray Laying of 1.1kV grade armoured XLPE insulated PVC sheathed power cables with Aluminium conductor of following sizes cables on Surface/ Tray as required.					
a	3.5C x 50 sq.mm	24	m			
b	4C x 16 sq.mm	30	m			
c	4C x 10 sq.mm	40	m			
d	2C x 4 sq.mm	20	m			
25.4	In existing Trench/ Open Duct Laying of 1.1kV grade armoured XLPE insulated PVC sheathed power cables with Aluminium conductor of following sizes cables in existing Trench/ Open duct as required.					
a	3.5C x 50 sq.mm	6	m			
b	4C x 16 sq.mm	30	m			
c	4C x 10 sq.mm	5	m			
d	2C x 4 sq.mm	Rate	m			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
26.0	BRICK WORK & SAND CUSHIONING Supply and providing protective covering with country burnt bricks laid breadth-wise & sand cushion of min 200mm depth in existing trenches for already laid cables, refilling the trench in layers, making good the trench as required. Supply and providing.	10	m			
27.1	LT Cable End Termination Supply of end termination with Brass compression gland and Aluminium lugs for following size of XLPE insulated and PVC sheathed Aluminium conductor armoured cable of 1.1 kV grade as required.					
a	3.5C x 185 sq.mm	4	Set			
b	3.5C x 50 sq.mm	4	Set			
c	4C x 16 sq.mm	Rate	Set			
d	4C x 10 sq.mm	6	Set			
e	2C x 4 sq.mm	16	Set			
27.2	Installation of end termination with Brass compression gland and Aluminium lugs for following size of XLPE insulated and PVC sheathed Aluminium conductor armoured cable of 1.1 kV grade as required.					
a	3.5C x 185 sq.mm	4	Set			
b	3.5C x 50 sq.mm	4	Set			
c	4C x 16 sq.mm	Rate	Set			
d	4C x 10 sq.mm	6	Set			
e	2C x 4 sq.mm	16	Set			
28.0	COPPER CONTROL CABLES					
28.1	Supply of Control cables of PVC insulated PVC sheathed Armoured copper conductor cables conforming to IS 1554. Control cable scheme shall be got approved before supply.					
a	2 Core 2.5 Sq.mm Copper cable	900	m			
b	4 Core 2.5 Sq.mm Copper cable	300	m			
c	7 Core 2.5 Sq.mm Copper cable	200	m			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
d	12 Core 2.5 Sq.mm Copper cable	150	m			
e	19 Core 2.5 Sq.mm Copper cable	100	m			
28.2	Laying, testing and commissioning of above Copper Control cables using crimped sockets in cable trench.					
a	2 Core 2.5 Sq.mm Copper cable	900	m			
b	4 Core 2.5 Sq.mm Copper cable	300	m			
c	7 Core 2.5 Sq.mm Copper cable	200	m			
d	12 Core 2.5 Sq.mm Copper cable	150	m			
e	19 Core 2.5 Sq.mm Copper cable	100	m			
28.3	Copper Control Cable Terminations Supply of superior quality copper tubular cable socket for 2.5 Sq.mm. Copper control cable and making core termination of cable of the following sizes including crimping etc. as required.					
	Supply	600	Each			
	Installation, testing and commissioning	600	Each			
28.4	Copper Control Cable Glands SITC of Compression gland and earth clamp suitable for PVC insulated and PVC sheathed armoured copper conductor cable 1.1kv grade and making end termination for following sizes of cables as required.					
a	2 Core 2.5 Sq.mm Copper cable	200	Each			
b	4 Core 2.5 Sq.mm Copper cable	80	Each			
c	7 Core 2.5 Sq.mm Copper cable	20	Each			
d	12 Core 2.5 Sq.mm Copper cable	20	Each			
e	19 Core 2.5 Sq.mm Copper cable	10	Each			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
29.0	INTERNAL WIRING Following items are for internal wiring works. Concealed wiring is proposed everywhere, unless and otherwise mentioned separately. Wiring includes providing and fixing of conduits also. Conduiting shall be done on surface /concealed /RCC / wall, including providing and fixing ISI marked suitably sized medium grade rigid PVC conduits, fittings, accessories, etc. Cost of civil works like cutting grooves on wall/RCC, fixing conduits, filling the grooves with cement mortar, making good thereof, etc. shall also be included in the rates.					
	Point Wiring					
29.1	SITC of Point wiring for Light /fan/exhaust fan point/call bell point using 3 x 1.0 sq. mm (1 for earth) FRLS PVC insulated copper conductor stranded cable in surface/concealed, supply and fixing ISI marked PVC medium grade conduit (rigid / flexible) complete with Modular type Switch with non metallic inner and outer cover, suitable GI metal boxes, saddles, junction boxes, bends, other accessories, ceiling roses, etc. complete.					
	Supply	21	Pt.			
	Installation, testing and commissioning	21	Pt.			
	Circuit wiring					
29.2	SITC of Wiring for Circuit Wiring using 3 x 1.5 Sq. mm. FRLS PVC insulated, copper conductor, stranded cable (1 for earth) in surface/concealed, supply and fixing ISI marked PVC medium grade conduit (rigid / flexible) as required.					
	Supply	120	m			
	Installation, testing and commissioning	120	m			
29.3	SITC of Wiring for Circuit Wiring using 3 x 4 Sq. mm. FRLS PVC insulated, copper conductor, stranded cable (1 for earth) in surface/concealed, supply and fixing ISI marked PVC medium grade conduit (rigid / flexible) as required.					
	Supply	10	m			
	Installation, testing and commissioning	10	m			
	Switch & Socket					
29.4	SITC of 5 pin 5/6 amps Modular type Socket and Switch complete with non metallic inner & outer plates, suitable metal boxes, etc. on surface/ recess with all necessary accessories as required.					
	Supply	6	No.			
	Installation, testing and commissioning	6	No.			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
29.5	Supply and fixing of 6 pin 15/16 amps Modular type Socket & Switch complete with non metallic inner & outer plates, suitable metal boxes, etc. on surface/ recess with all necessary accessories as required.					
	Supply	4	No.			
	Installation, testing and commissioning	4	No.			
	Fan Regulator					
29.6	Supply and fixing of Modular type, 5 speed electronic fan regulator 100W rating complete with non metallic inner & outer plates, suitable metal boxes, etc. on surface/ recess with all necessary accessories as required.					
	Supply	2	No.			
	Installation, testing and commissioning	2	No.			
	Telephone cable wiring					
29.7	SITC of Modular type telephone socket RJ-11 with shutter complete with non metallic inner & outer plates, suitable metal boxes, etc. on surface/ recess with all necessary accessories as required.					
	Supply	2	No.			
	Installation, testing and commissioning	2	No.			
29.8	SITC of 2 pair telephone cable of size 0.50 dia annealed copper conductor PVC insulated and PVC sheathed unarmoured cable. Wiring shall be done on surface/concealed including providing and fixing IS marked suitably sized medium grade rigid PVC conduits, fittings, accessories, cutting and finishing, etc.					
	Supply	80	m			
	Installation, testing and commissioning	80	m			
29.9	SITC of telephone cable termination boxes with glands of Krone make or Equivalent in 1.6 mm CRCA sheet steel box with lockable door complete as required.					
	5 pair termination box					
	Supply	1	No.			
	Installation, testing and commissioning	1	No.			
	MCB Distribution Boards					
29.10	SITC of following MCB DBs suitable for mounting recess/ on wall fabricated out of CRCA sheet powder coated with approved colour, with locable front double door, complete and having power copper busbar, earth & neutral busbar, cable entry cum gland box, provision for fixing MCB/isolator /RCCB /RCBO as incomer, MCB as outgoing, complete as required.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
a	TPN 100A 415 V 4-way Vertical MCB DB (4+4+12). Supply	1	No.			
	Installation, testing and commissioning	1	No.			
b	TPN 100A 415 V 4-way MCB DB (4+4+12). Supply	1	No.			
	Installation, testing and commissioning	1	No.			
29.11	Supply and fixing of following in existing DBs complete with internal wiring, testing and commissioning, etc. as required					
a	40A 4P MCB 'C' Curve Supply	2	No.			
	Installation, testing and commissioning	2	No.			
b	40A 4P 30mA sensitivity RCCB Supply	2	No.			
	Installation, testing and commissioning	2	No.			
c	6A to 32A SP MCB 'C' Curve Supply	24	No.			
	Installation, testing and commissioning	24	No.			
d	MCB Single pole blanking plate Supply	2	No.			
	Installation, testing and commissioning	2	No.			
30.0	LIGHT FIXTURES AND LAMPS Supply of following Light fixtures & Lamps complete with fittings, lamps, ballast, starter, all accessories directly on wall/ ceiling as required.					
30.1	Supply of FTL Luminaries, surface or pendent mounting, open type, housing with in-built harmonic controlled electronic ballast, suitable for 1 x 28W (T5) FTL, other accessories, including lamp, etc. (Model: Bajaj BTIP 128 LHD, Philips/ Wipro / CG/ GE Equivalent). Supply	18	No.			
30.2	Supply of Bulk Head fixture Wall /Ceiling/ Surface mountable with 1x 9 W CFL lamp and control gear & complete set with all accessories, including lamp, etc. in lift well, etc. (Model: Philips FXC 101, Bajaj/ Wipro / CG/ GE Equivalent). Supply	1	No.			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
30.3	Supply of Ceiling fan of 1200 mm. sweep, double ball bearing, complete with all accessories, required length down rods as required. (Model: Bajaj Ultima/Pride or Crompton High Breeze). Supply	2	No.			
30.4	Supply of 225/230mm Light duty Exhaust fan complete with front guard capacitor, louvers/shutters and all accessories as required complete. (Model: Crompton CLEANFLO or Bajaj FRESHEE MK II). Supply	6	No.			
ITC of LIGHT FITTINGS, LAMPS, FANS, Etc.						
30.5	Open, Box & Mirror Optic type Fluorescent lamp light fixture complete with fluorescent lamp, ballast, starter & complete set with all accessories directly on wall/ ceiling including connections with 3 x 1.5 Sq.mm PVC insulated copper conductor cable as required. Installation, testing and commissioning	18	No.			
30.6	Bulk Head with CFL lamps and control gear complete set with all accessories directly on ceiling or wall including connections with 3 x 1.5 Sq.mm PVC insulated copper conductor cable as required. Installation, testing and commissioning	1	No.			
30.7	Ceiling fan of any dia. sweep complete with all accessories, required length down rods directly from ceiling including connections with 3 x 1.5 Sq.mm PVC insulated copper conductor cable as required. Installation, testing and commissioning	2	No.			
30.8	Exhaust fan complete with frame, motor, capacitor, louvers/shutters and all accessories as required complete on wall including connections with 3 x 1.5 Sq.mm PVC insulated copper conductor cable as required. Installation, testing and commissioning	6	No.			
YARD LIGHTING						
30.9	Supply, Installation, Testing and Commissioning of Yard light poles. i) MS tubular swaged pole (410, SP-12) of total length 8 M fabricated with following dia pipes 114.3mm OD x 5.4mm thk x 5M H (bottom), 88.9mm OD x 4.85mm thk x 2M H (middle), 76.1mm OD x 3.25mm thk x 1M H (top) with a bottom plate of size 350x350x6mm having necessary gusset plates, etc. with arm swan neck including bending to shape the top pipe section with over hang of 1.5m, erecting the same in cement concrete foundation. (Ref. Drawing).					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	ii) Cement concrete foundation with PCC mixture of 1:3:6 circular shape of size 70cm Dia. and 70cm above ground level, and 1500 mm below ground level with bed size of 0.7 (L) x 0.7 (B)x 1.5m (H) as per specification including excavation and refilling.					
	iii) Wiring with 3Cx 2.5 sq.mm copper wire from the control box to street light fixture, with Sintex / Equivalent FRP Junction control box with 6 way connectors, 1 No. 6A MCB, neutral link and connection to the lamp through the pole.					
	iv) Painting the pole with two coats of primer and two coats of enamel paint of approved colour as required.					
a	With 1 No. arm swan neck. Supply	6	No.			
	Installation, testing and commissioning	6	No.			
b	With 2 No. arm swan neck. Supply	2	No.			
	Installation, testing and commissioning	2	No.			
30.10	Supply and fixing Street light luminaries (IP65) suitable for 1 x 250W HPSV lamp with heat resistant toughened glass cover, copper ballast, electronic ignitor, power factor improvement capacitor, 250W Sodium Vapour lamp, as required complete. (Model: Wipro WST 25250 or equivalent Philips/Crompton/GE/Bajaj) Supply	10	No.			
	Installation, testing and commissioning	10	No.			
30.11	Supply and fixing Street light luminarie suitable for 1 x 36W CFL lamp with copper ballast, electronic ignitor, power factor improvement capacitor, 36W CFL lamp, as required complete. (Model: Wipro WSP 11136 or equivalent Philips/Crompton/GE/Bajaj) Supply	6	No.			
	Installation, testing and commissioning	6	No.			
31.0	MISCELLANEOUS ITEMS					
31.1	Cable Tray					
	Supply, fabricating and installing Cable trays made out of MS items such as Channels / Tees/ angles/ flats etc. on floor/ ceiling/ wall including necessary civil work such as grouting, finishing etc. and painting with two coats of primer and two coats of enamel paint as required.					
	Supply	0.5	MT			
	Installation, testing and commissioning	0.5	MT			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
31.2	MS Items MS Insert plates in cable trench, MS Angles for cable tray support, MS Angles for Cable trench, fasteners, etc. and painting with two coats of primer and two coats of enamel paint as required.					
	Supply	2.0	MT			
	Installation, testing and commissioning	2.0	MT			
31.3	MS Checkered plates Supply and fixing of chequered plate 6mm thick including cutting to required size using gas cutter and lay the same over the trench, fixing of nosing angle and supports for chequered plate, related civil works, finishing etc. and painting with two coats of enamel paint over one coat of Zinchromate primer as required.					
	Supply	40	Sq.m			
	Installation, testing and commissioning	40	Sq.m			
31.4	SITC of PVC conduits of following sizes. Conduiting shall be down on surface /concealed /RCC / wall, including providing and fixing IS marked suitably sized medium grade rigid PVC conduits, fittings, accessories, etc. Necessary cutting grooves, fixing conduits, filling the grooves with cement mortar, making good thereof, etc. shall also be included in the cost.					
a	20 mm dia.					
	Supply	20	m			
	Installation, testing and commissioning	20	m			
b	25 mm dia.					
	Supply	20	m			
	Installation, testing and commissioning	20	m			
c	32 mm dia.					
	Supply	10	m			
	Installation, testing and commissioning	10	m			
31.5	SITC of GI pipes medium of following sizes. It shall be laid on surface /concealed /RCC / wall/ existing trench including providing and fixing IS marked suitably sized medium duty pipes, fittings, accessories, etc.					
a	40 mm dia.					
	Supply	20	m			
	Installation, testing and commissioning	20	m			
b	50 mm dia.					
	Supply	20	m			
	Installation, testing and commissioning	20	m			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
c	100 mm dia. Supply	10	m			
	Installation, testing and commissioning	10	m			
31.6	Numbering of lights/ ceiling fan / exhaust fan using enamel paint as required.	27	No.			
31.7	Supply and fixing LT cable route marker with 10cmx10cmx5cm thick GI plate with inscription there on, bolted/welded to 35cmx35cmx6mm angle iron, 60 cm long and fixing the same in ground as required.					
	Supply	20	No.			
	Installation, testing and commissioning	20	No.			
31.8	Supply and fixing single line diagram, schematic diagrams etc. of A1 size on suitable Aluminium sheet including lamination etc. as required complete on wall.	2	Set			
31.9	Supply and fixing glass framed shock treatment chart.	2	Set			
31.10	Supply and providing rubber gloves tested for 11 kV.	4	Pair			
31.11	Supply and providing ISI marked electrical 11kV grade 2mx1mx12mm thick anti-skid rubber mat as per IS:5424.	8	Set			
31.12	Supply and fixing of required number of HT/MV voltage danger notice boards of 300x200mm size and colour as per statutory requirements wherever necessary.	6	Set			
31.13	Supply and fixing 9 lit. Fire buckets (3 Nos), sand filled on suitable angle iron stand including fabrication of stand and painted as per fire code.	2	Set			
31.14	Supply and installation of DCP type fire extinguisher of capacity 5 kg with upright operation conforming to IS:2171 having a jet length of 8m with discharge time of 10 sec including all accessories.	3	No.			
31.15	Information System Providing a Comprehensive Information in the form of Book /CD of Sub Station electrical works as executed. It should contain information on the following, nicely bound and handed over at the time of handing over of the system.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	

Salient features of the system, detailed write up, schematic, equipment list with locations, relays, equipment specifications in detail, makes, date of installation, power distribution details, equipment layout, cable layout, panel details, maintenance and operation details of equipment, addresses of machinery /equipment suppliers, drawings, BOQ as executed, its rate, amount, total cost, etc., as required by the Engineer-in-charge. It shall be furnished in the following forms:

- | | | | |
|---|---|---|-----|
| a | Book on Substation electrical work containing the above information in A4 size, Laser printing, Min. 80 GSM paper, neatly bound. Colour print outs shall also be included wherever required. It shall also include photographs of machinery, etc. | 5 | Set |
| b | CD containing the soft copy of the above booklet. | 2 | Set |

TOTAL FOR ELECTRICAL WORKS

CIVIL WORKS IN NEXT PAGES

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
CIVIL WORKS						
EARTHWORK						
1.01	Earth work in surface excavation not exceeding 30cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including disposal of excavated earth, lead upto 50 m and lift upto 1.5m, disposed earth to be levelled and neatly dressed.	1750	SQM			
1.02	Earth work 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	463	CUM			
1.03	Excavation work 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.					
a	Ordinary Rock	10	CUM			
b	Hard Rock (requiring blasting)	10	CUM			
c	Hard Rock (blasting prohibited)	5	CUM			
1.04	Extra over and above item no. 1.02 for earth work excavation with lift from 1.5m to 3.0m					
	All kinds of soil	89	CUM			
1.05	Extra over and above item no. 1.03 for excavation work with lift from 1.5m to 3.0m					
	Ordinary or hard rock	5	CUM			
1.06	Earth work excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50 m and lift upto 1.5m, disposed earth to be levelled and neatly dressed.					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	All kinds of soil	20	CUM			
1.07	Excavation work by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50 m and lift upto 1.5m, disposed earth to be levelled and neatly dressed.					
	Ordinary Rock	5	CUM			
1.08	Filling available excavated earth (Excluding rock) in trenches, plinth, sides of foundation etc. in layers not exceeding 20cms in depth, consolidating each deposited layer by ramming and watering, lead up to 50m and lift up to 1.5m.	248	CUM			
1.09	Supplying and filling in plinth or in areas with good quality earth brought from outside including transportation, loading, unloading, taxes, etc.screening, watering, ramming and consolidating in layers of 15 cms complete as directed by Engineer-in-charge.	42	CUM			
1.10	Supplying and filling in plinth with river sand / quarry dust / stone chips under floors including, watering, ramming, consolidating and dressing complete.					
a	River sand	7	CUM			
b	Quarry dust	7	CUM			
c	6 mm stone aggregates	10	CUM			
1.11	Supplying, spreading and filling 40mm stone aggregates in the substation yard for a thickness of 150mm including leveling and dressing complete as per specificatons.	908	SQM			
1.12	Supplying, Diluting and injecting chemical emulsion for PRE-CONSTRUCTIONAL Anti-termite treatment and creating a continuous chemical barrier, as per IS:6313 (part II) under and all around the column pits, wall trenches, basement excavation, top surface of plinth filling, junction of wall and floor, along the external perimetre of building, expansion joints, surroundings of pipes and conduits etc. complete as per specifications (Plinth area of the building at ground floor only shall be measured for payment) (Cost of chemical emulsion is included in the item).					

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	Chlorpyriphos or any equivalent Emulsifiable concentrate 20% with 1% concentration approved by the Engineer-in-Charge.	156	SQM			
1.13	Disposal of surplus excavated earth / debris etc., by mechanical / manual means, up to a distance of 50 m over and above the initial lead, including transportation, loading, unloading, etc. complete as directed by Engineer-in-charge.	116	CUM			
1.14	Disposal of surplus excavated earth / debris etc., by mechanical / manual means, up to a distance of 100 m over and above the initial lead, including transportation, loading, unloading, etc. complete as directed by Engineer-in-charge.	47	CUM			
1.15	Disposal of surplus excavated earth / debris etc., by mechanical transportation up to a distance of 5 kms, including transportation, loading, unloading, etc. complete as directed by Engineer-in-charge.	47	CUM			
2.00	CONCRETE AND ALLIED WORKS					
2.01	Providing and laying cement concrete 1:4:8 (1 cement, 4 coarse sand and 8 graded stone aggregate 40mm nominal size) in footings and bases for columns, plinth beam, pile cap, flooring etc., excluding the cost of centering and shuttering.	57	CUM			
2.02	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75 mm bed of dry brick ballast 40 mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth.	37	SQM			
2.03	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete M25 grade for reinforced cement concrete work including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per directions of Engineer-In-Charge.					
a	All works upto plinth level	137	CUM			
b	Above plinth level upto floor five level	48	CUM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
2.04	Providing, hoisting and fixing up to floor V level precast reinforced cement concrete cover slabs, precast cement concrete kerbs, shelves etc., of RCC M20 including filling joints and sides using cement mortar 1:3 (1 cement : 3 coarse sand), setting in cement mortar 1:3, finishing with neat cement punning, including cost of centering and shuttering, but excluding the cost and labour charges of steel reinforcement.	18	CUM			
2.05	Centering and shuttering including strutting, propping, etc., and removal of form for:					
a	Foundations, footings, bases of columns, etc., for mass concrete.	195	SQM			
b	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	309	SQM			
c	Suspended floors, roofs, landings, balconies and access platform.	245	SQM			
d	Shelves (Cast in situ)	10	SQM			
e	Lintels, beams, pergola beams, plinth beams, girders, bressumers and cantilevers.	225	SQM			
f	Column, pillars, piers, abutments, posts and struts.	279	SQM			
2.06	Reinforcement for RCC work including straightening, cutting, bending, placing in position and binding all complete.					
	Thermo-Mechanically Treated bars	20192	KG			
2.07	Extra for providing and mixing water proofing material in cement concrete work / plastering @ 1 kg per 50 kg of cement.	165	KG			
3.00	MASONRY WORK					
3.01	Brick work with bricks of class designation 35 in foundation and plinth in cement mortar 1:6 (1 cement : 6 coarse sand)	33	CUM			
3.02	Brick work with bricks of class designation 35 in superstructure above highest plinth level up to floor V level in cement mortar 1:6 (1 cement : 6 coarse sand)	5	CUM			
3.03	Half brick masonry in superstructure with bricks of class designation 35 above plinth level upto floor V level in cement mortar 1:4 (1 Cement : 4 coarse sand)	37.32	SQM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
3.04	Extra for providing and placing in position 2 Nos. 6 mm dia M.S. bars at every third course of half brick masonry	35	SQM			
3.05	Solid block masonry work with cement concrete solid blocks with compressive strength not less than 35 kg/cm ² in foundation and plinth in cement mortar 1:6 (1 cement : 6 coarse sand)	7.8	CUM			
3.06	Solid block masonry work with cement concrete solid blocks with compressive strength not less than 35 kg/cm ² in superstructure above highest plinth level up to floor V level in cement mortar 1:6 (1 cement : 6 coarse sand)	37	CUM			
4.00	ALUMINIUM WORKS					
4.01	Providing and fixing aluminium tower bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with nuts and screws etc. complete.					
a	200 x 10 mm.	5	EACH			
b	150 x 10 mm..	5	EACH			
4.02	Providing and fixing IS:3564 marked aluminium extruded section body tubular type universal hydraulic door closer with double speed adjustment with necessary accessories and screws etc., complete.	1	EACH			
4.03	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS : 6315 marked for doors, including cost of cutting floors as required embedding in floors and cover plates with brass pivot and single piece MS sheet outer box with slide plate etc., complete as per the direction of the Engineer-in-Charge.					
	With stainless steel cover plate	1	EACH			
4.04	Providing and fixing chromium plated brass 100mm mortice latch and lock with 6 levers and a pair of lever handles with necessary screws etc. complete (best make of approved quality).	4	EACH			
4.05	Supplying and fixing 6 lever padlock with 3 keys of best quality and make approved by the Engineer in Charge / Architect including all charges.	8	EACH			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
4.06	Supplying good quality nylon door bushes with necessary screws etc. complete as directed by the engineer in charge	4	EACH			
4.07	Providing and fixing aluminium hanging floor door stopper ISI marked anodised (anodic coating not less than grade AC10 as per IS: 1868) transparent or dyed to required colour and shade with necessary screws etc. complete					
	Single rubber stopper.	4	EACH			
4.08	Extra for providing ISI marked stainless steel butt hinges instead of oxidised iron butt hinges with necessary screws.	15	EACH			
4.09	Providing and fixing powder coated aluminium work for doors, windows, ventilators & partitions with extruded built up standard tubular and other section 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., aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, aluminium snap beading for glazing/panelling, C.P.brass/stainless steel screws, all complete as per architectural drawings and the direction of Engineer-in-charge. (Glazing and panelling to be paid for separately).					
a	For fixed portion.	77	KG			
b	For shutters of doors, windows & ventilators including providing and fixing hinges/pivots or sliding arrangements and making provision for fixing of fittings wherever required including the cost of PVC / neoprene gasket required and all fittings such as sliding rollers, handles, etc. complete.	91	KG			
4.10	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with PVC/neoprene gasket etc. complete as per the architectural drawings and the directions of Engineer-in-charge (cost of aluminium snap beading shall be paid in basic item)					
	With float glass panes of 4 mm thickness	17	SQM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
4.11	Providing and fixing 12 mm thick prelaminated particle board flat pressed 3 layer or graded wood particle board conforming to IS:12823 Grade I Type II, in panelling fixed in aluminium doors, windows shutters and partition frames with CP brass / stainless steel screws etc. as per the architectural drawings and the directions of Engineer-in-charge					
	Prelaminated particle board with decorative lamination on both sides.	8	SQM			
5.00	STEEL WORKS					
5.01	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5cm long wire springs grade No. 2, necessary bearings and M.S. top cover of required thickness for rolling shutters.					
	80 x 1.25mm M.S. laths with 1.25mm thick top cover.	28.8	SQM			
5.02	Extra for providing grilled rolling shutters manufactured out of 8 mm dia M S bar instead of laths as per design approved by Engineer in charge (Area of grill to be measured)	8	SQM			
5.03	Structural steel work in single section fixed with or without connecting plate including cutting, hoisting, fixing in position and applying two coats of synthetic enamel paint over two coats of zinc chromate primer, all complete.	100	KG			
5.04	Steel work welded in built up sections / framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc., as required. In gratings, frames, guard bar, grills, ladder, railings, brackets, gates and similar works.	380	KG			
5.05	Steel work welded in built up sections / framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using hollow rectangular / box sections etc., as required. In gratings, frames, guard bar, grills, ladder, railings, brackets, gates and similar works.	400	KG			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
5.06	Providing and fixing chain link fencing, using 10SWG GI wire 50mm square mesh fixed on MS frame made of 50x50x6mm MS angle on four sides and 40x6mm MS flat for fixing chain link to the frame around, fixed on vertical post of 50x50x2.6mm Square Hollow Section with angle cleat and flat, necessary nuts, bolts, washers and other fixtures required, painting two coats of zinc chromate primer and two coats of aluminium paint etc. complete as per drawings and as directed by Engineer-in-Charge. (Measurement will be taken from the top of kerb wall to the top of fencing)	240	SQM			
6.00	FLOORING					
6.01	Providing and laying jointless homogenous polished Vitrified tiles in different sizes with water absorption less than 1% and flexural strength not less than 30N/MM2, in all colour and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand) including grouting the joints with tile joint filler of desired shade and best quality approved by the Engineer in charge / Architect etc., complete.					
	Size of Tile 600 x 600 mm with thickness 9.6-10 mm	12	SQM			
6.02	Providing and laying jointless homogenous polished Vitrified tiles in different sizes with water absorption less than 1% and flexural strength not less than 30N/MM2, in all colour and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand) including grouting the joints with tile joint filler of desired shade and best quality approved by the Engineer in charge / Architect etc., complete. for skirting, treads, risers, dado etc.					
	Size of Tile 600 x 600 mm with thickness 9.6-10 mm	2	SQM			
6.03	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS:15622 of minimum thickness 5mm of best quality and make approved by the Engineer in Charge in all colours, shades except bergendy, bottle green, black or any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing with approved tile joint filler of matching shade complete.	18	SQM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
6.04	Providing and laying anti skid ceramic floor tiles 6 mm thick 300x300mm of 1st quality conforming to IS:15622 of best quality and make approved by the Engineer in Charge / Architect in approved colours, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand) including pointing with approved tile joint filler of matching shade etc. complete.	3	SQM			
6.05	52 mm thick cement concrete flooring with concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 stone aggregate 6mm nominal size) by volume, hardening compound is mixed @ 2 litre per 50 kg of cement or as per manufacturers specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	122	SQM			
6.06	Cement plaster skirting (upto 30 cm height) with cement mortar 1:3 (1 Cement: 3 coarse sand) finished with a floating coat of neat cement. 18 mm thick	13	SQM			
6.07	Chequered precast cement concrete tiles 22 mm thick in Passages & courtyard jointed with neat cement slurry mixed with pigment to match the shade of tiles including rubbing and cleaning etc., complete on 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand)	50	SQM			
6.08	Supplying and paving M35 grade reflective interlocking type machine pressed cobble stone 65mm thick of approved pattern and colour for court yard etc. laid over 50mm thick sand bed and compacting and including cost and conveyance of all materials labour charges etc. complete.	50	SQM			
7.00	FINISHING					
7.01	Providing and applying <u>cement plaster</u> 1:3 (1 cement and 3 fine sand) 6mm thick one coat floated hard and trowelled smooth to get a smooth finish to <u>ceiling</u> including cost and conveyance of all materials, labour, curing, etc as directed by Engineer-in-Charge at all levels.	193	SQM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
7.02	Providing and applying <u>cement plaster</u> 1:4 (1 cement and 4 fine sand) 12mm thick one coat floated hard and trowelled smooth to get a smooth finish to all surfaces such as walls (inside & outside), columns, beams, cornices, etc. including cost and conveyance of all materials, labour, curing, etc as directed by Engineer-in-Charge at all levels.	534	SQM			
7.03	Providing and applying <u>cement plaster</u> 1:3 (1 cement and 3 fine sand) 12mm thick finished with a floating coat of neat cement including cost and conveyance of all materials, labour, curing, etc as directed by Engineer-in-Charge at all levels.	267	SQM			
7.04	Plain cement mortar bands (raised) 20mm x 12 mm thick in cm 1:4 for water cutting in sunshades, roof slab etc.	136	RM			
7.05	Providing and applying wall putty two or more coats, of approved make over interior plastered surface to prepare the surface even and smooth complete.	56	SQM			
7.06	Applying one coat of cement primer of approved brand and manufacture on wall surface:	534	SQM			
7.07	Finishing walls with water proofing cement paint of required shade New work (Two or more coats applied @ 3.84 kg/10sqm)	25	SQM			
7.08	Distemping with 1st quality acrylic washable distemper (ready made) of approved manufacturer and of required shade and colour complete, as per manufacturer's specification. Two or more coats on new work	73	SQM			
7.09	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade Two or more coats on new work	50	SQM			
7.10	Finishing walls with acrylic smooth exterior paint of required shade New work (Two or more coats applied @ 1.67 Litre / 10sqm over and including base coat of water proofing cement paint applied @ 2.20 kg/10sqm)	653	SQM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
7.11	Applying priming coat with ready mixed zinc chromate primer of approved brand and manufacture of steel galvanized iron bar/steel work	159	SQM			
7.12	Painting with synthetic enamel paint of approved brand and manufacture to steel work to give an even shade					
	Two or more coats on new steel work	159	SQM			
7.13	Providing and fixing of 200mm wide chicken wiremesh of 24 gauge at the junction of brickwork and RCC work, including fixing with nails, rawl plugs etc; before applying plaster.	64	SQM			

8.00 ROOFING

8.01 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 and grouting a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with proprietary water proofing compound conforming to IS 2645 over the R.C.C. slab including adjoining walls upto 300mm 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 Engineer-in-Charge.

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	(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 3mm 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.					
	(i) With average thickness of 120mm & minimum thickness at khurra as 65mm.	20	SQM			

9.00 MISCELLANEOUS BUILDING WORK

9.01	<p>Supplying and fixing FRP frames made of glass fibre conforming to IS: 11551-1986, glass fibre ravings conforming to IS: 11390-1985, isophthalic resin conforming to IS: 6746-1972, curing agents, accelerators, fillers, additives, fire retardants and pigments as specified. The frames shall be contact moulded by laying gelcoat at 500gm/m² and laid over with two layers of FRP mat (one layer of 300 CSM mat and one layer of 450 CSM mat). The CSM mat shall be bonded with isophthalic resin and fillers of additives by weight. The edges shall be sealed with gelcoat and FRP mat to obtain smooth finish. The frames shall have an overall size of 100x63mm including the thickness of FRP and shall be filled with seasoned treated wood on the inside. Suitable depressions shall be made in the door frames for receiving the fixtures such as hinges, mortice lock as well as 30mm door shutter. (one number mortice lock at the centre and three numbers of 100mm heavy duty hinges). The rate shall include providing and fixing frames of approved colour, providing and fixing 6 Nos. of flat iron hold fast of size 300mmx30mmx3mm using stainless steel screws, fixing in PCC 1:2:4 blocks, finishing the joints to match the surroundings and finishing the frames by buffing and polishing with wax as directed. The rate shall also include supplying and and fixing FRP door shutters made of glass fibre conforming to IS:11551-1986, glass fibre ravings conforming to IS:11390-1985, isophthalic resin confirming to IS:6746-1972, curing agents, accelerators, fillers, additives, fire retardants and</p>					
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Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
	<p>pigments as specified. The shutter shall be contact moulded by laying gelcoat at 500gm/m2 and laid over with two layers of FRP mat (one layer of 300 CSM mat and another layer of 450 CSM mat) for each of the web (panels) and two layers of FRP mat (one layer of 300 CSM mat and another layer of 450 CSM mat) for the flange portion (rails and styles). The CSM mat shall be bonded with isophthalic resin in the ratio of not less than 1:2 (one part of mat : 2 part of isophthalic resin and fillers and additives) by weight. The edges shall be sealed with gelcoat and FRP mat to obtain smooth finish. The shutter/frames shall have an overall thickness of 30mm with a width of 100mm for outer frames and 80mm for inner frames (as per drawings enclosed). The shutter frames shall be provided with treated and seasoned wood on the inside to receive the tower bolts, handle, mortice lock, hinges, door closers, etc. at specified locations. Suitable depressions shall be made in the shutter frames for receiving the hinges and concealed mortice locks. The rates shall include providing and fixing shutter of approved colour in the frames already provided and fixed, including fixing changes of all accessories and fittings such as hinges, tower bolts, handles, door closers, mortice locks, etc. but excluding the cost of door fittings. The shutter shall be buffed and polished with wax as directed. The thickness of FRP laminate of hollow rails and styles shall be minimum 2mm and thickness of FRP laminate used for panel in shutter shall be minimum 3mm.</p>	2	SQM			
9.02	Providing and fixing 8 mm dia stainless steel fan hooks bend to shape including placing in position, tying with binding wire, etc. as directed by engineer in charge at all levels.	5	EACH			
9.03	Providing and laying non pressureable RCC hume pipe NP 3 class with necessary collars of approved quality including excavation of trenches, laying the pipes as per layout and drawing, filling the joints with stiff mixrure of cement mortar (1:1) and jute, curing testing the pipeline and refilling the trenches compacting the refilled earth etc. complete as directed by Engineer-in-charge.					
	a) 300mm dia	20	RM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
10.00 WATER SUPPLY WORKS						
10.01	Supplying, threading, laying and jointing Sch. 40 high pressure uPVC pipes as per ASTM-D-1785 (sizes in ID) with Sch. 80 specials as per ASTM-D-2467, such as tees, bends, elbows, unions, metal insert specials for fixing fittings etc. with clamps including cutting chases in masonry / concrete and making good the same, testing the lines after connecting to mains, rectifying any leakage or defects, etc., complete all as directed by the Engineer-in-charge for concealed lines for water supply.					
	20 mm dia	10	RM			
10.02	Supplying, threading, laying and jointing Sch. 40 high pressure uPVC pipes as per ASTM-D-1785 (sizes in ID) with Sch. 80 specials as per ASTM-D-2467, such as tees, bends, elbows, unions, etc. with clamps supported by galvanised steel slotted rails fixed on walls / ceiling etc. with grouting / anchor fastener legs, U clamps, including fixing the pipes on walls, ceiling etc., testing the lines after connecting to mains, rectifying any leakage or defects, etc., complete all as directed by the Engineer-in-charge for open lines for water supply.					
a	25 mm dia	10	RM			
b	20 mm dia	5	RM			
10.03	Supplying, threading, laying and jointing Sch. 40 high pressure uPVC pipes as per ASTM-D-1785 (sizes in ID) with Sch. 80 specials as per ASTM-D-2467, such as tees, bends, elbows, unions, etc., including earthwork, refilling, dewatering, ramming, consolidating, etc. testing the lines after connecting to mains, rectifying any leakage or defects, etc., complete all as directed by the Engineer-in-charge for underground lines for water supply.					
a	32 mm dia	10	RM			
b	25 mm dia	10	RM			
c	20 mm dia	5	RM			
10.04	Providing and fixing full way gunmetal gate valve with CI wheel of approved quality (screwed end)					
a	32mm dia	1	EACH			
b	25mm dia	1	EACH			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
c	20mm dia	1	EACH			
10.05	Providing and fixing approved make CP brass long body tap including CP cup for 15 mm dia water line as directed by Engineer-in-charge.	3	EACH			
10.06	Providing and fixing approved make CP brass stop cock 15 mm dia including CP cup for water line as directed by Engineer-in-charge.	1	EACH			
10.07	Providing and fixing approved make Health faucet with flexible pipe and wall hook, 1 no. CP brass angle valve of approved make with CP cup as directed by Engineer-in-charge.	1	EACH			
11.00	SANITARY WORKS					
11.01	Providing and fixing white glazed earthenware wash basin 550 x 400 mm or nearest size, including one CP brass pillar cock 15 mm size heavy duty including connecting pipes with all fittings, chrome plated chain 32mm dia rubber plugs, CP brass waste coupling 32 mm dia with waste pipe, 15 mm dia CP angle valve, PVC connection, heavy brackets with two coats of aluminium paint, etc. complete as directed by Engineer-in-charge.	1	EACH			
11.02	Supplying and fixing white glazed European type WC pan with trap including white duroplastic seat and lid, with CP brass hinges and rubber buffers, 6 litres PVC low level white flushing cistern with fittings and brackets, 40mm dia PVC flush bend over flow pipe with mosquito proof arrangements, 15 mm angle valve with PVC connection etc. complete including cutting and making good the walls and floors etc. complete as directed by the Engineer-in-charge.	1	EACH			
11.03	Supplying, laying and jointing hard PVC pipes (working pressure 6 kg/cm ²) with PVC specials such as tees, bends, door bend, door tee, elbows, unions, etc. with clamps including earthwork, refilling, cutting and making good the walls, testing the lines rectifying any leakages or defects, etc. complete all as directed by the Engineer-in-charge for soil, waste, drains, etc. concealed inside sunken slabs or inside toilets in lowest floors.					
a	110mm dia	3	RM			
b	75mm dia	3	RM			
c	50mm dia	3	RM			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
d	40mm dia	2	RM			
11.04	Supplying, laying and jointing hard PVC pipes (working pressure 6 kg/cm ²) with PVC specials such as tees, bends, door bend, door tee, elbows, unions, etc. with clamps supported by galvanised steel slotted rails fixed on walls / ceiling etc. with grouting / anchor fastener legs, U clamps, cutting chases/holes in floors / walls / slab making connection to soil and waste lines, making good the walls and floors etc. complete for soil, waste and vent lines open in walls and ceiling.					
	63mm dia	4	RM			
11.05	Supplying, laying and jointing hard PVC pipes (working pressure 6 kg/cm ²) with PVC specials such as tees, bends, door bend, door tee, elbows, unions, etc. with clamps including earthwork, refilling, cutting and making good the walls, testing the lines rectifying any leakages or defects, etc. complete all as directed by the Engineer-in-charge for soil, waste, rain water, drains, vent pipe, etc. underground drain lines					
a	110mm dia	8	RM			
b	75mm dia	8	RM			
11.06	Providing and constructing brick masonry manhole with bricks of class designation 35 in cement mortar 1:6 (1 cement : 6 fine sand) RCC top slab with 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), base concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size) 10 cm thick, inside & outside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a flushing coat of neat cement and making channels in cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) neatly finished complete as per standard design including cost of materials, labour, etc. complete, inside size 60x60x60 cm in plan area including CI cover weight not less than 50 kg with frame	4	EACH			

Item No.	DESCRIPTION OF ITEM	QTY	Unit	Rate (Rs.)		Amount (Rs.)
				in Figure	In Words	
11.07	Supplying and fixing 100mm square mouth PVC gully trap with CI grating brick masonry chamber with water tight CI Cover with frame of 300 x 300 mm size (inside), the weight of the cover to be not less than 4.50 kg and frame to be not less than 2.70 Kg as per standard design, brick jelly concrete in lime mortar, necessary brick masonry around, plastering with cement mortar 1:3, 12mm thick with neat cement flushing coat, etc. complete including painting grating and CI cover with black japan paint two coats, necessary earthwork excavation, PCC bed etc. complete as directed by the Engineer-in-Charge	1	EACH			
11.08	Providing and fixing floor trap of PVC, 110mm outer dia including CP grating as directed by Engineer-in-charge.	2	EACH			
11.09	Supplying and fixing approved quality and make sanitary fixtures of approved colour.					
a	Tile soap tray	1	EACH			
b	CP towel rod with end fixtures 600mm	1	EACH			
c	Best quality mirror viewing 60x30 cm or nearest with approved framework	1	EACH			
11.10	Providing and fixing PVC vent cowl to vent pipe already fixed, as directed by Engineer-in-charge.					
	63 mm dia	1	EACH			
11.11	Supplying and fixing CI manhole cover with frame in concrete slab for manholes in water tanks, sumps, etc., including cost and conveyance of all materials, labour charges, sundries etc., complete as directed by the Engineer-in-charge					
	600 x 600 mm weighing not less than 110 Kg	4	EACH			
TOTAL FOR CIVIL WORKS						
GRAND TOTAL						