

BOQ FOR ELECTRICAL WORKS OF ANIMAL HOUSE AT IIIM, JAMMU.

S.No.		Description.	Unit.	Qty	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount in Rs.
1		2	3	5	6	7	8
		SUBHEAD 1: H.T. SUB STATION					
1.00		SUBSTATION EQUIPMENTS					
1.01		HT Panel.					
		Supply, delivery, erection, testing and commissioning of one (1) panel, 630A, 11KV, 3 Phase, 50 Hz., metal clad, dead front, 350MVA rupturing capacity Vacuum Circuit Breaker including power pack as per the detailed specifications and drawings including connections etc. complete with following incomers and outgoings and as approved by the Engineer In charge and as required.					
	A.	INCOMER/ OUT GOING					
	i)	1 No. VCB Panel having following					
		1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
		1 Set of Phase indicating lamps with HRC fuses					
		1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
		Push button for ON, OFF,TRIP & TRIP circuit healthy					
		1 set of 11kV/110-110 V Potential Transformers with HRC fuses					
		1 set of 30/5-5A Current Transformer for metering and protection					
		1 No. Digital voltmeter .					
		1 No. digital Amps ammeter .					
		Digital frequency meter, Digital Tri vector meter.					
		1 No. Digital Power factor meter					
		1 No. Frequency meter					
		1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
		1 Set of undervoltage relay and Overvoltage relay					

		Trip circuit supervision relay,Auxiliary relays with shunt trip coil					
		1 No. Master Trip relay					
		HT Panel as mentioned above	Set	1			
		TRANSFORMER :					
1.02		Supply, erection, testing and commissioning of 630 KVA , 11/0.433 kV, 3 Phase, 4 wire, 50 Hz., ON-AN Transformer for outdoor duty with on load tap changer (OLTC) range -20%, +7.5% with RTCC panel , cable box at primary (HT side) and secondary end (LT side) shall be connected through cable, the transformer shall be complete with first filling of oil, with double float buchholz relay protection, high winding temperature/oil temp. sensors, complete with all fittings and accessories, interconnection of control cables and accessories as per detailed technical specifications confirming to IS 2026 & as per CPWD soecifications and as required.	Each	1			
1.03		H.T. CABLE					
		Supply of following sizes of 11 kV grade multicore aluminium conductor XLPE armoured power cable as per IS : 7098.					
	i)	3 Core, 185 sq mm	Mtrs.	300			
1.04		Laying of one number 3 core XLPE power cable of grade exceeding 1.1 KV but not exceeding 11KV of size exceeding 120 sqmm but not exceeding 240 Sqmm direct into ground including excavation, sand cushioning, protective covering and refilling the trench, supply of route marker complete as required.	Mtrs.	300			

1.05		Supplying and making end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size 3 Core, XLPE aluminium conductor cable of 11kV grade as required.					
	i)	185 sqmm	Each	4			
		TOTAL FOR SUB HEAD 1: H.T. SUB STATION					
		SUB HEAD 2: MAIN LT PANEL.					
2.01		MAIN L.T. PANEL:					
		Supply, installation, testing and commissioning of LT Panel, cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of powder coated CRCA sheet, complete with aluminium busbars, danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, necessary interlocking, and having incoming and outgoing switchgears with cable alley in front as mentioned below and complete as per technical specifications and as required. The size of cable alley shall be sufficient enough to accomodate the cable sizes as mentioned in the SLD/ specifications/ drawings etc.					
		Note :					
		1. All ACBs shall have 5 NO + 5 NC contacts					
		2. All relays to operate at 240Volts, Single phase, 50Hz., AC supply through UPS. UPS is also in the scope of supply.					
		3.Digital Multifunction metre should be suitable for true RMS metering.Metre should measure line and phase voltage , current of all three phases and neutral, HZ, PF, KW, KWH, KVAR, KVARH, KVA, KVAH ,voltage and current including one set of CT. Metre should be EMI/ EMC compliant.					
		One set of dual core dual ratio CT of 1000/400/5/5A for capacitor panel.					
A.		INCOMER:					

	i)	2No. ACB Panels each having following:					
		1 No. 1000A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have Icw=Ics = 50 KA for 1 sec.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
		Push button to CLOSE the ACB.					
		R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
		Restricted earth faulty protection with one set of CT.					
		Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
		1000/5A CTs with CT shorting links for power factor improvement panel suitable for giving signal to APFCR at less than 10% of secondary ratio current					
B.		BUSBARS :					
		1250 Amps Phase TPN busbars of aluminium.					
C.		OUTGOING.					
	i)	1 No. ACB Panels each having following:					
		800 A, 415/500V, Fully Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit, instantaneous & earth Fault trip including under voltage release and lockable trip push button. ACB should have Icw=Ics= 50 KA for 1 sec.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
		Push button to CLOSE the ACB					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					

		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
	ii)	3 Nos.MCCB as per following details/ specifications:					
		400 Amp 415 volts, 50 KA (Ics), TPN microprocessor based MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
	iii)	2 Nos. MCCB as per following details/ specifications:					
		160 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
	iv)	2 Nos. MCCB as per following details/ specifications:					
		125 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					

		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
	v)	5 Nos. 63 Amp MCCB as per following specifications:					
		63 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital energy metre with CT					
		Main LT Panel as mentioned above.	Set	1			
2.02		CAPACITOR PANEL					
		Supply, Installation, testing and commissioning of M.V. cubicle type totally enclosed free standing type, powder coated, dust, damp and vermin proof Capacitor Panel complete with busbars, M.V. danger notice plate, ammeter, ammeter selector switch, indicating lamps, CT's, Extra heavy duty, APP type Capacitors suitable for non linear loads upto 20%, operating losses not more than 0.5 W / KVAR, contactors suitable for capacitor switching (current limiting contactor circuit to suppress switching inrush current) interconnections with suitable capacity aluminium leads/solid aluminium strips, rods, connection of incoming and outgoing cables with thimbles, and having following incoming and outgoing switchgears complete as required					

	A.	INCOMER :					
		1 No. 400A, 415/500V, 35 KA (Ics) FP MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP.					
		R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
		Day & Night mode selector switch					
		10 steps Intelligent microprocessor based Automatic Power					
		factor Correction relay having measurment sensitivity of 1 %.					
		Extension of incoming busbars for connection of multicore armoured aluminium cables.					
	B.	METERING :					
		1 set of digital Amp. Meter, digital Poper factor meter and Digital voltmeter					
	C.	BUSBARS :					
		630 Amp FP busbars of aluminum					
	D.	OUTGOINGS :					
	i	1 Nos . MCCB as per following details/ specification:					
		100 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to supress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		50 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					

	ii	5 Nos . MCCB as per following details/ specification:					
		63 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		25 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
	iii	1 Nos . MCCB as per following details/ specification:					
		32 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP					
		MCCB					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		10 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
		Capacitor panel as mentioned above.	Set	2			
		TOTAL SUBHEAD 2: MAIN LT PANEL.					
3.00		SUB HEAD 3 : DG SET & ACCESSORIES					
		SOUND PROOF DG SETS OF 500 KVA :					

3.01		Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 500 KVA Prime Power Rating , 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system ,0.85 load factor, suitable bhp, water cooled type, radiator type, diesel engine-alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	-	Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe for exhaust of DG sets including pollution control board norms and as required.					
	-	Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					
	-	Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					
	-	Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
	-	Supplying and fixing of suitable capacity cable adapter box for alternator.					
	-	Providing and fixing oil tank of 990 litres capacity complete with suitable M.S. fabricated MS stand oil level indicator gauge tank and stand duly painted, complete with float switches etc. as required.					

		Factory assembled Sound proof Canopy as per pollution control board requirement to achieve noise level desired					
	-	during night condition, with base frame, doors, inspection window, fresh air supply fans, light fixtures for illumination with switch, wiring for light fixtures and power sockets, etc.					
	-	Any other item required for completion of system above (D.G. set)					
		DG AMF PANEL					
	A.	DG AMF PANEL					
		Supply, installation, testing and commissioning of DG , cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of powder coated 14/16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, and having incoming and outgoing switchgears as mentioned below and complete as required.					
		Note :					
		1. Panel shall be suitable for manual and automatic operation (AMF) and shall be complete as required.					
		Auto change over arrangement consisting of the following including interlocking etc :					
	B.	1 No ACB as per following details/ specification:					
		1000 A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have Icw=Ics = 50 KA for 1 sec.					
		"ON" LED indicating lamp and 2A control SP MCB					
		Digital energy meter with one set of suitable CTs, CT shorting links.					

		Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
		Digital Volt meter with VSS & HRC fuse					
		Digital multifunction meter to show, KWH, KVAH, P.F.and					
		frequency meter one set of suitable CTs, CT shorting links.					
	C.	PROTECTION AND AMF COMPONENTS for above mentioned DG set.					
	-	Auto/manual/test/off selector switch					
	-	2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					
	-	3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class - I for metering					
	-	Energy analyzer unit to indicate current voltage frequency power factor and KWH					
	-	Indicating lamps for load on mains and load on set.					
	-	Fuse for instruments.					
	-	Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment.					
	-	Main supply failure monitor.					
	-	Supply failure timer					
	-	Restoration timer.					
	-	Control unit with three impulse automatic engine start / stop and failure to start lockout.					
	-	Impulse counter with locking and reset facility.					
	-	On/Off/ Control circuit switch with indicator.					
	-	Audio/ Video annunciation for :					
	a)	High stator temperature.					
	b)	Low lubricating oil pressure					
	c)	Engine over speed					
	d)	Engine fails to start					
	e)	Full load/ maximum load warning.					
	D.	ENCLOSURE :					

		Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
		DG SET WITH AMF PANEL(500 KVA) as mentioned above	Set	1			
		TOTAL SUBHEAD 3: DG SETS					
		SUB HEAD 4 : UPS SYSTEM					
4.00		UPS OF 10 KVA.					
4.01	i)	Supply of 10 KVA True Online double conversion and fully Microprocessor Controlled UPS system with IGBT based Rectifier with minimum input pf 0.95 with minimum 92% overall efficiency at 50% load condition and THDI less than 5% on non linear loads with accessories and suitable Power Management software in each UPS including IGBT/PWM technology based inverter, automatic bi - directional static switch, manual bypass switch, input phase reversal protection, provision for separate input for rectifier and for bypass .UPS should be three phase input and single phase output complete in ready to use condition and as required.					
	ii)	Rack mounted external battery bank of 12 V Sealed Maintenance Free batteries for 30 mins backup.					
	iii)	Installation & commisioning of 10 KVA UPS with battery and accessories.					
		Supply, installation , testing and commissioning of 10 KVA UPS as mentioned above.	1	Set			
		TOTAL SUBHEAD 4 : UPS SYSTEM					
5.00		SUB HEAD 5 :MV PANELS					

		Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, powder coated, wall mounted type, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, and having following incoming and outgoing switchgears complete as required.					
5.01		MV PANEL GROUND FLOOR :					
	a)	INCOMER:					
		320 Amp 415 volts, 35 KA (1cs) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. 0 to 160 Amp Digital ammeter with selector switch with one set of 160/5A C.Ts.					
	b)	BUSBARS:					
		500Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	6 Nos. MCCB as per following details / specifications:					
		63Amps, 415 volts, TPN, 25 KA Moulded Case Circuit Breaker with thermal magnetic release having variable current settings					
		"ON" LED indicating lamp and 2A control SP MCB					

		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	i)	6 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii)	2 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	iii)	4 no. 100 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
		MV PANEL GROUND FLOOR as mentioned above	Set	1			
5.02		UPS MV PANEL :					
	a)	INCOMER:					
		63Amps,415 volts, TPN, 25 KA Moulded Case Circuit Breaker with thermal magnetic release having variable current settings					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. 0 to 60 Amp Digital ammeter with selector switch with one set of 60/5A C.Ts.					
	b)	BUSBARS:					
		100 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	2 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii)	3 no. 25 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
		UPS MV PANEL as mentioned above	Set	1			

		TOTAL SUB HEAD 5 : MV PANEL					
		SUB HEAD- 6: MCB DISTRIBUTION BOARDS.					
6.00		MCB DISTRIBUTION BOARD					
6.01		Supplying & fixing following way, three pole and neutral, prewired, sheet steel, MCB distribution board, 415 volts, on recess/surface complete with loose wire box, terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc. Before procurement of DB the contractor has to take approval of DB schedule/drawing of each DB from the Electrical Engineer, HSCC, as per technical specifications and as required. (but without MCB & RCCB),					
	i	4 way (8+12), Double door	Each	3			
	ii	6 way (8+18), Double door	Each	1			
	iii	8 way (8+24), Double door	Each	4			
	iv	12 way (8+36), Double door	Each	4			
6.02		Supplying & fixing 6 Amps to 32 Amps rating, 240 volts, 'B' series, miniature circuit breaker suitable for lighting & other loads of following poles in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications & as required.					
	i	Single pole	Each	221			
	ii	Triple pole & neutral (FP)	Each	2			
6.03		Supplying & fixing following rating, four pole, 415 volts, Miniature Circuit Breaker (MCB), in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
	i	40 Amps	Each	6			
	ii	63 Amps	Each	1			

	iii	100 A mps	Each	3			
6.04		Supplying & fixing following rating, four pole, 415 volts, Residual Current Circuit Breaker (RCCB) having a sensitivity current upto 300 mA in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
	i	25 Amps	Each	2			
	ii	40 Amps	Each	6			
	iii	63 Amps	Each	1			
	iv	100 A mps	Each	3			
6.05		Supplying and fixing Single pole Blanking plate in the existing MCB DB complete as required.	Each	74			
		TOTAL SUB HEAD-6: MCB DISTRIBUTION BOARDS.					
		SUB HEAD 7: WIRING					
7.00		WIRING					
7.01	i	Wiring for light point/fanpoint/ exhaust fan point/call bell point with 1.5 sq.mm. PVC insulated, fire retardant low smoke (FRLS) copper conductor cable, single core/ multi strand, in steel conduit (Including supplying & recess laying of MS conduit and accessories) including the following and complete as required.					
	ii	Supplying and Fixing Modular type switches (modular Bell push in case of call bell points) in suitable size modular metal boxes, base plate & modular cover plates, space for fixing electronic fan regulator in case of fan point wiring & space for fixing 5A socket on the board etc.					
	iii	Supplying and fixing Hexagonal fan Boxes with 3 mm thick hylem sheet covers in case of Fan Points					
	iv	Supplying & Fixing Ceiling Rose in case of Exhaust Fan Points etc.					

		Note :					
		i) Unless otherwise specified all the conduiting work to be done in recess					
		Point wiring as mentioned above	Point	448			
7.02	i	Wiring for twin control light points with 1.5 sq.mm. PVC insulated, FRLS copper conductor cable in MS conduit (including supplying and recess laying of MS conduit) including the following and complete as required.					
	ii	Supplying and Fixing Modular type two numbers 2 Way switches in suitable size modular metal boxes, base plate & modular cover plates etc.					
		Note :					
		i) Unless otherwise specified all the conduiting work to be done in recess					
		Wiring for twin control light points as mentioned above	Point	40			
7.03		Wiring for 5A light plugs with 1.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 1.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit) as per technical specifications and as required.	Point	14			
		5 A light plug wiring same as above but plug point is in the switch board itself.	Point	15			
7.04		Wiring for computer points (Three sockets & one switch) with 2.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 2.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed MS conduit (including supply and recess laying of conduit) as per technical specifications and as required.	Point	40			

7.05		Wiring for 16 amp power plug with 2X4 sqmm PVC insulated, FRLS copper conductor, single core/multi strand cable in surface/recessed MS conduit (including supply and recess laying of MS conduit with all accessories) along with 4 sqmm PVC insulated, copper conductor, single core/multi strand cable for loop earthing etc per technical specifications & as required.					
		Directly from MCB-Distribution Board to the Socket Outlets	Point	153			
7.06		Wiring for 32 amp power plug with 2X6 sq.mm. PVC insulated, copper conductor, single core cable in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit with all accessories) along with 1X6 sqmm PVC insulated, copper conductor, single core cable for loop earthing, as per technical specifications & as required.	Point	2			
7.07		Wiring for submain/ circuit wiring with following sizes of PVC insulated, copper conductor single core/multi strand cable in recessed steel conduit (including supply & laying of recessed conduit) as required.					
	i)	2X2.5 Sqmm with 1 No. 2.5 sqmm PVC insulated, copper conductor for earthing.	Metre	1092			
	ii)	4X4 Sqmm with 2 No. 4 sqmm PVC insulated, copper conductor for earthing	Metre	54			
	iii)	4X10 Sqmm with 2 No. 10 sqmm PVC insulated, copper conductor for earthing	Metre	144			
	iv)	4X16 Sqmm with 2 nos 16 sq mm PVC insulated, copper conductor for earthing.	Metre	36			
	v)	4X25 Sqmm with 2 nos 25 sq mm PVC insulated, copper conductor for earthing.	Metre	72			

7.08	Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing 3 pin 5/6 amps. modular socket outlet with shutters and 5/6 amps. modular type switch, base plate, modular cover plate, connections etc. and all civil works 'complete as required.	Each	29				
7.09	Supplying and fixing suitable module modular metal box on surface or in recess including providing and fixing 6 pin 15/16 A modular socket outlet with shutters and 15/16 A modular switch, base plate, modular cover plate, connections, etc. and all civil works complete as required.	Each	33				
7.10	Supply, installation, testing and commissioning of 16 Amp. IP 66/56 power switch and socket in suitable enclosure consisting of the following as per technical specifications and as required.						
	Switch:						
	Single pole, 250 V, 16 amp without enclosure similar to Schneider Electric-Clipsal model no. 56SW116LE-GY or approved equivalent.						
	Socket						
	16 amp, 3 round pin socket out let, Indian standard, without enclosure similar to Schneider Electric-Clipsal model no. 56SO116RP-LE-GY-EX or approved equivalent.						
	Angle Plug						
	16 amp, 3 pin, 250 V, Indian Standard similar to Schneider Electric-Clipsal model no. 56PA316RP-GY-EX or approved equivalent.						
	Mounting Enclosure						
	Mounting enclosure for the above mentioned switch and sockets as supplied by Schneider Electric- Clipsal model no. 56E2 GY or approved equivalent						
	Supply , installation, testing and commissioning of above mentioed power switch and socket.	Nos.	120				

		Light Control Box					
7.11		Supply, installation, testing and commissioning of light control box for animal room's light and dark cycle in suitable enclosure consisting of the following as per technical specifications and as required.					
		Incomer:					
		6-32 A, DP, 10 KA C curve MCB					
		Power Contactor					
		3 pole , 9 amp AC3 duty , wide band 220 V coil					
		Time Switch					
		Digital time switch suitable for daily and weekly application, having minimum 8 ON/OFF function and 4 mode manual over ride and LED indication for relay status with a battery backup of 1500 hours and shortest switching time 1 minute. Similar to L&T-GIC Crono 62DDT0 or approved equivalent.					
		Mounting Enclosure					
		Mounting enclosure in powder coated MS for the above mentioned items					
		Supply , installation, testing and commissioning of above light control box.	Nos.	30			
7.12		Supply, Installation, Testing & Commissioning 63 Amps, TPN MCCB in a sheet steel enclosure,extended rotary operating mechanism complete with all accessories as required.	Each	5			
7.13		Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing three nos 3 pin 5/6 amps. modular socket outlet with shutters and one no. 10 amps. modular type switch, base plate, modular cover plate, connections etc. and all civil works 'complete as required. (For computer Points)	Each	40			

7.14		Supplying, providing & fixing cordless musical bell, batteries etc of approved make complete as required.	Each	5			
7.15		Supply and fixing following 32 Amps, 240 volts, SP, Industrial Socket Outlet (with plugs) in a metal box with 32 SP MCB in a sheet steel cover on surface or recess complete with all accessories including connections, testing and commissioning etc. as required.	Each	2			
7.16		Standalone type single channel dual lens presence / occupancy detector with time delay range of 30 sec to one hr catering to minimum one thousand watt load	Each	10			
		TOTAL SUBHEAD: 7- WIRING					
		SUB HEAD: 8 - LIGHT FIXTURE AND FANS					
8.00		LIGHT FIXTURES AND FANS					
8.01		Supply of following light fixture with high efficiency electronic ballast, starter, capacitor, tubes/lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required.					
	i	1X28 watt box type fluorescent light fixture (Philips TMS 122M 1XTL5 28 W EBT or approved equivalent) (136b/136bw)	Each	10			
	ii	2X28 watt box type fluorescent light fixture with reflector (Philips TMS 122M2XTL528 W EBT or approved equivalent) (236b)	Each	57			
	iii	1X36 watt surface mounted type fluorescent light fixture with clear acrylic (GE TC 1X36 AC S HF or approved equivalent) (136ac)	Each	6.00			

	iv	1X36watt recess mounted flourescent light fixture (Philips TBS 0501XTLD36 W EBE MI or approved equivalent) 136RMO1/136RMO2	Each	38			
	v	2X TL5 28 watt recess mounted mirror optics flourscent CAT-2 light fixture (Philips TBS 669 M 2XTL5-28 W EB M2 or approved equivalent). (236 rmo1/236rmo2)	Each	49			
	vi	4X 14 watt recess mounted mirror optics flourscent light fixture with opal acrylic diffuser (Philips TBS 570 4XTL5-14W HF ODF-WH or approved equivalent). (414RMSQ1)	Each	50			
	vii	3X 36 watt recess mounted mirror optics flourscent light fixture (Philips FBS 300M 3XPLL36W EBP P5 or approved equivalent). (336 RMSQ1)	Each	35			
	viii	2X 36 watt recess mounted clean room flourscent light fixture with bottom opening and toughened glass (Philips TBS 670 2X36W TL-D FOP GT or approved equivalent). (236CRF)	Each	150.00			
8.02		Supply of following compact flourescent light fixture with electronic ballast, starter, capacitor, yellow light lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required.					
	i	1x9 watt Bulk Head light fixture (Philips FXC 101 1XPL-S/2P11 W ACO or approved equivalent) BH	Each	8			
	ii	2 X 11 watt surface mounted mirror optics (Philips FCS 518 2XPLS/2P 11 W I 240 V OR EQUIVALENT) (211CFLRECT)	Each	32			

	iii	2X18 watt Mirror top light fixture with frosted glass (Decon 05 CA 01 or approved equivalent) (w toilet)	Each	10			
	iv	Surface mounted Batten holder (Plastic) with 13 watt CFL	Each	10			
	v	2X18 W recessed mounted down light fixture with low depth recessed low glare inclusive of enclosed control gear box, matt finish reflector & ZZG 145 attachment of recessed glass circleline (Philips FBH 145M2XPLC/4P 18W HF 240V LH or approved equivalent) DL1	Each	140			
8.03		Supply of following ceiling fans (Crompton Greaves High Breeze or approved equivalent) complete with double ball bearing, motor, blades, downrod, canopies, capacitor, modular type electronic fan regulator, suitable for operation on 230 volts, 50 Hz., 1 phase, AC supply complete as required					
	i	900 mm sweep	Each	5			
	ii	1200 mm sweep	Each	35			
8.04		Supply of 900 RPM, 300 mm (Crompton Greaves Trans Air or approved equivalent) exhaust fan suitable for single phase 230 volts, 50 Hz., AC supply complete with motor, louvers/shutters etc. complete as required.	Each	8			
8.05		Supply of 450 mm sweep, crompton greaves model high flow 18" wall mounted fan complete with double ball bearing, motor, blades, capacitor etc suitable for single phase 230 volts, 50 Hz., AC supply, complete as required.	Each	10			

8.06		Installation, testing and commissioning of prewired, fluorescent fittings of all types, complete with all accessories and tube etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	Each	395			
8.07		Installation, testing and commissioning of prewired, compact fluorescent lamp fixture (CFL fixtures) of all types, complete with all accessories and lamp etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	Each	200			
8.08		Installation, testing and commissioning of ceiling fan and modular type electronic fan regulator(Electronic regulator to be fixed in switch board) including wiring the down rod and connection with 1.5 sqmm FR PVC insulated, copper conductor single core/multi strand cable including providing & fixing phenolic laminated sheet cover on the fan box, etc. as required.	Each	40			
8.09		Installation, testing and commissioning of exhaust fan up to 450 mm sweep in the opening, including making the hole to suit the size of the above fan including , fixing of louvers/ shutters with frame making good the damages etc. as required.	Each	8			
8.10		Installation, testing and commissioning of wall mounted fan up to 450 mm sweep including supply and fixing wall bracket arrangement complete as required.	Each	10			
		TOTAL SUBHEAD 8 : LIGHT FIXTURE & FANS					
		SUB HEAD 9 : TELEPHONE SYSTEM					

9.00		TELEPHONE SYSTEM					
9.01		Wiring for telephone point with Supply & laying two pair 0.5 Sq. mm solid, annealed copper conductor insulated with high density polythlene. The insulated cores twisted to form pairs, helically wrapped with polyster tape, over all insulation of FR PVC, unarmoured telephone cable in MS conduit (including supply & recessed laying of M.S. conduit), including providing & fixing of two module modular metal box on recess with following pair cord outlet, connections etc. complete as required. This also includes conduiting, wiring from floor Tag blocks to individual telephone outlets.					
	i	1 pair cord outlet (Jack Type)	Point	18			
	ii	2 pair cord outlet (Jack Type)	point	4			
9.02		Supplying, Installation, testing and commissioning of following sizes of telephone distribution board in M.S. hinged type lockable box duly painted complete with Krone type tag block etc. including terminations of cable as required.					
	i	50 Pair	Each	1			
9.03		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured telephone cable on surface/tray with saddels etc. complete as required.					
	i	50 Pair	Metre	15			
9.04		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured jelly filled telephone cable in the existing trench/ hume pipe/ GI pipe etc with saddels etc. complete as required.					
	i	50 Pair	Metre	200			

		TOTAL : SUB HEAD 9:TELEPHONE SYSTEM					
		SUB HEAD 10: LAN SYSTEM					
10.00		LAN SYSTEM :					
10.01		Supply and fixing of following sizes of rigid PVC conduit alongwith the accessories in recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required					
	i	20 mm dia	Metre	800			
	ii	25 mm dia	Metre	400			
10.02		Supplying and fixing two module modular plate (suitable for RJ-45 computer socket) with GI box complete as required.	Each	40			
10.03		Active Device:					
	i	Supply, installation, testing and commissioning of 24 Ports 10/100/1000 Base-T L2 stackable management switch with 4 combo ports (D-Link/HP/Cisco make) as per requirement and as directed to the satisfaction of engineer	No	2			
	ii	Supply, installation, testing and commissioning of 1 KVA UPS (make - APC/Emerson or equivalent approved by engineer) as per requirement and as directed to the satisfaction of engineer	No	1			
10.04		Passive Device:					
	i	Supply, installation, testing and commissioning of 24 Ports Patch Panel as per requirement and as directed to the satisfaction of engineer	No	2			
	ii	Supply, installation, testing and commissioning of Wall Mounting Rack (Size 17U) with Cable Manager and Power DB as per requirement and as directed to the satisfaction of engineer	No	1			

	iii	Supply, laying, testing and commissioning of Cat 6 Cables - 305 meter per box as per requirement and as directed to the satisfaction of engineer	Meter	2135			
	iv	Supply, installation, testing and commissioning of Patch Cord 1 meter size as per requirement and as directed to the satisfaction of engineer	No	40			
	v	Supply, installation, testing and commissioning of Patch Cord 2 meter size as per requirement and as directed to the satisfaction of engineer	No	40			
	vi	Supply, installation, testing and commissioning of Single I/O device with face plate as per requirement and as directed to the satisfaction of engineer	No	40			
	vii	Supply, installation, testing and commissioning of Surface Mount Box as per requirement and as directed to the satisfaction of engineer	No	40			
		TOTAL SUB HEAD: 10 LAN SYSTEM					
11.00		SUBHEAD 11 :SECURITY SYSTEM :(CCTV)					
11.01		Supply and fixing of following size of ISI marked MS conduit along with the accessories in surface/ recess including painting in case of surface conduit or cutting the wall and making good the same in case of recessed conduit as required.					
	i)	20 mm dia	Metre	200			
	ii)	25 mm dia	Metre	100			
11.02		Cabling with 2x1.5 sq. mm PVC insulated copper conductor cable in the existing MS conduit for power supply to the camera.	Metre	400			

11.03		Supply and drawing coaxial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface / recessed steel conduit as required.	Metre	480			
11.04	A	CAMERAS :					
	i)	Supply, installation, testing and commissioning of indoor 520 TVL high resolution or better, day/night, weatherproof dome type, 1/3-inch CCD imager colour Day Night camera with varifocal lens, 3.6-8mm or better including Connectors, Lens, camera Mounts. Power Supply and all ancillary equipment required for the proper functioning of the camera complete as per technical specifications and as required of approved makes.	Each	2			
		Supply, installation, testing and commissioning of indoor 520 TVL high resolution or better , dome type, 1/3-inch CCD imager colour with varifocal lens, 3.6-8mm or better including Connectors, Lens, camera Mounts. Power Supply and all ancillary equipment required for the proper functioning of the camera. complete as per technical specifications and as required of approved makes.	Each	30			
	B.	DVR					

		Supply, installation, testing and commissioning of 16 channel real time, 400 fps, embedded Digital Video Recorder (DVR) with 2 video outputs and facility to record multiple camera signles while simultaneously providing live multi-screen viewing, recording, play back, remote viewing and archiving of recorded data. DVR having capacity of 2 TB HDD storage capacity. DVR will do real time recording at CIF resolution & H.264 compressssion. DVR will be embedded IP based web enabled DVRs. DVR racks and any other item required in the commissiiong is in the scope of supply complete as per					
	i)	technical specifications and as required of approved makes.	Each	2			
	C.	Monitor					
		Supply, installation, testing and commissioning of 32" CCTV colour LED flat screen monitor including all accessoriess of approved makes.	Each	2			
		TOTAL SUBHEAD 11 : CCTV					
		SUB HEAD 12 : FIRE DETECTION AND ALARM					
12.00		FIRE DETECTION AND ALARM SYSTEM					
12.01		Supply and drawing of following sizes of PVC insulated FRLS copper conductor single core cable in surface/recessed MS conduit (including Supplying and fixing of MS Conduit) complete as required.					
	i	2X1.5 sqmm	Metre	3292			
12.02		Supply, installation, testing and commissioning of the following addressable type fire detection and alarm accessories as per technical specification & complete with connections etc. as required.					
	i	Optical type Smoke Detector	Each	125			
	ii	Heat Detector	Each	2			
	iii	Manual Break call point.	Each	6			

	iv	Fire Alarm Hooter cum speaker of suitable range to cover the complete floor, in enclosure.	Each	6			
	v	Response indicator	Each	55			
12.03		Supply, Installation, testing and commissioning of 2 loop microprocessor based addressable type networkable Fire Detection & Alarm Panel complete with inbuilt power supply, battery charger with SMF batteries for minimum 24 hours back-up. The panel shall have a communication module and HI 485 network card. The panel should have rectifier, loop card, minimum 80 character LCD unit to indicate fire/ fault signals with address including external/ internal printer to print the details complete as per technical specifications and requirement of Local Fire Authority and as required.	Set	1			
12.04		Supply testing and commissioning of isolator module as per specifications.	Set	7			
12.05		Supply, Installation, testing and commissioning of addressable control modules.	Each	9			
12.06		Supply, Installation, testing and commissioning of addressable monitor modules.	Each	2			
12.07		Supplying, drawing, connecting, testing & commissioning of 4 core, 1.5 sq. mm ,1100 volts FRLS copper conductor with PVC armoured cable with steel brading for mechanical protection and over all shielded with aluminium myler tape complete as required.	Metre	200			
		TOTAL SUB HEAD 12 : FIRE DETECTION AND ALARM					
		SUB HEAD 13 : LIFTS					

13.01		Design, manufacture, supply, installation, testing and commissioning of following 8 passenger (544 kg) lift , serving different floors in the lift shaft including lift well pressurization. The lift should be as per detailed specification/ drawing enclosed as required and as under:					
	-	Speed : 1 MPS					
	-	Travel: As per architectural drawing.					
	-	Controller: A.C. variable voltage & variable frequency					
	-	Automatic rescue device complete with dry maintenance free batteries as required.					
	-	Operation: Microprocessor based single automatic push button/ simplex selective collective/duplex collective selective with / without attendant.					
	-	415 V, 3 phase, 50 Hz, 4 wire system					
	-	Type of doors: a) Car : Power operated, centre opening for passenger lift horizontal sliding stainless steel scratch proof. (b) Landing doors: Stainless steel scratch proof. Lift car door and landing doors shall have a fire resistance of one hour.					
	-	A hand rail guide not less than 600 mm long at 900 mm above floor level .					
	-	Mirror of suitable size to be fixed inside the lift car.					
	-	Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator.					
	-	Telephone with minimum two connections one at operator's room and other at guard/ security room and the emergency signal with re-chargeable batteries as source of supply be made in the lift car.					
	-	Toe guard, PA speaker, IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided in the lift.					
	i	Floors : G+1 (Total two floors) , 2 stops & 2 openings	Each	1.00			

13.02		Design, manufacture, supply, installation, testing and commissioning of goods cum passenger lift of 1000 Kg , serving different floors in the existing lift shaft including lift well pressurization. The lift should be as per detailed specification/ drawing enclosed as required and as under:					
	-	Speed : 0.5 MPS					
		Floors: G+1					
	-	Travel: As per architectural drawing.					
		Stops & Opening: 2 stops & 2 opening					
	-	Controller: A.C. variable voltage & variable frequency					
	-	Automatic rescue device complete with dry maintenance free batteries as required.					
	-	Operation: Microprocessor based single automatic push button/ simplex selective collective/with / without attendant.					
	-	415 V, 3 phase, 50 Hz, 4 wire system					
	-	Type of doors: a) Car : Power operated, central opening horizontal sliding stainless steel scratch proof moon rock finish (b) Landing doors: Stainless steel scratch proof moon rock finish.					
	-	Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator.					
	-	IR curtain on full height, fireman's switch and potential free contacts etc to be provided in the lift.					
		Goods cum passenger lift as mentioned above	2	Nos			
		TOTAL SUB HEAD 13: LIFTS					
		SUB HEAD 14: LT CABLES					
14.00		LT CABLES					
14.01		Supply of following sizes of 1.1 kV grade multicore aluminium conductor PVC sheathed armoured AYFY cable as per IS 1554.					
	i	3.5 Core 25 Sqmm.	Metre	800			

	ii	3.5 Core 95 Sqmm.	Metre	120			
	iii	3.5 Core 300 Sqmm.	Metre	1600			
	iv	3 Core 4 Sq mm	Metre	100			
	v	4 Core 10 Sq mm	Metre	100			
	vi	2 Core 10 Sq mm	Metre	100			
14.02		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required					
	i	Size not exceeding 25 sq.mm	Metre	160			
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	36			
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	480			
14.03		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in the existing RCC/Hume/Stoneware/Metal pipe as required					
	i	Size not exceeding 25 sq.mm	Metre	10			
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	15			
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	18			
14.04		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade on surface or on existing cable tray complete as required.					
	i	Size not exceeding 25 sq.mm	Metre	10			
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	10			
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	10			
14.05		Supplying and making end termination with suitable size Copper lugs including double compression glands of following sizes of 1.1. kv grade multicore aluminium conductor PVC insulated and PVC sheathed					
	i	3.5 Core 25 Sqmm.	Each	18			
	ii	3.5 Core 95 Sqmm.	Each	2			
	iii	3.5 Core 300 Sqmm.	Each	24			

	iv	3 Core 4 Sq mm	Each	10			
	v	4 Core 10 Sq mm	Each	6			
	vi	2 Core 10 Sq mm	Each	10			
14.06		Fabricating and installing following size of perforated M.S. cable trays including horizontal and vertical bends, reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with M.S. suspenders and including painting etc. as required :-					
	i	150 mm. width x 50 mm. depth x 1.6 mm. thickness	Metre	30			
	ii	300 mm. width x 62.5 mm. depth x 2.0 mm. thickness	Metre	30			
	iii	450 mm. width x 62.6 mm. depth x 2.0 mm. thickness	Metre	20			
	iv	600 mm. width x 62.6 mm. depth x 2.0 mm. thickness	Metre	15			
		TOTAL SUB HEAD 14 : LT CABLES					
		SUB HEAD 15: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS					
15.00		EARTHING, SAFETY EQUIPMENTS AND MISC. ITEMS					
15.01		Earthing with copper plate 600mmX600mmX3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required	Set	8			
15.02		Earthing with GI plate 600mmX600mmX6mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required	Set	10			
15.03		Extra for using charcoal and salt for GI or copper plate earth electrode as required.	Set	18			

15.04		Supplying and laying 25mmX5mm GI strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	20			
15.05		Providing and fixing 25mmX5mm GI strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	30			
15.06		Providing and fixing 50mmX6mm Copper strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	50			
15.07		Providing and fixing 50mmX6mm GI strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	20			
15.08		Providing and fixing 25mmX5mm Copper strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	30			
15.09		Supplying and laying 25mmX5mm Copper strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	30			
15.10		Providing and laying of following sizes non pressure NP2 class (light duty) RCC pipe with collar joint with stiff mixture of cement (1 cement : 2 fine sand) including testing the joints etc. as required.					
	i	150mm dia	Metre	20			
	ii	300mm dia	Metre	10			
15.11		Providing and fixing M.V. danger notice plate of 200mmX150mm made of mild steel, atleast 2mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required.	Each	2			

15.12	Providing and fixing H.T. (11kV) danger notice plate of 250mmX150mm made of mild steel, atleast 2mm thick and vitreous enameled white on both sides and with inscription in signal red colour on front side as required.	Each	2			
15.13	Supplying and laying of 12kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	20			
15.14	Supplying and laying of 1.1kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	15			
15.15	Design, manufacture, supply and installation of Fire Buckets 13 litre capacity 4 Nos. duly filled with sand and GI pipe support stand for these buckets including painting etc. complete as required.	Set	2			
15.16	Supply and fixing shock treatment chart in English, Hindi and local language mounted on 5mm thick Plywood and 3mm thick plain glass front complete as required.	Set	2			
15.17	Supplying and fixing Foam type 9 ltrs capacity fire extinguishers as approved by ISI complete as required.	Set	2			
15.18	Supplying and fixing CO2 type 9 Kg capacity fire extinguishers as approved by ISI complete as required.	Set	5			
15.19	Supplying and fixing CO2 type 4.5 Kg capacity fire extinguishers as approved by ISI complete as required.	Set	3			
15.20	Supplying, storing, handling and fixing in position First Aid Medical Box complete as per technical specifications as required.	Each	1			
15.21	Supply and testing of 11kV ISI marked hand gloves	Each	1			

15.22		Providing & fixing rigid PVC pipe complete with fittings, clamps including trenching & refilling/ wall cutting & plastering, etc. (for cable entry) with all minor civil & mech. Works complete as required.					
		50 mm dia nominal bore	Metre	10			
		TOTAL SUB HEAD 15: EARTHING, SAFETY EQUIPMENT AND MISC. ITEMS					
		SUB HEAD 16: OUT DOOR LIGHTING					
16.00		OUT DOOR LIGHTING					
16.01		Supply, erection, testing and commissioning of external swaged steel tubular pole with following specifications & items :					
	i	9.0 Mtrs. high swaged steel tubular pole (Single arm of suitable length each around 1.5 Metre), the construction of the pole shall be as per IS 410 SP-33 with base plate 450mmX450mmX6mm complete as per requirement with two coats of spray paints (shade as approved)					
	ii	1X150 watts street light fixture with 150watts HPSV lamp complete with control gear, acrylic cover cover etc. and its wiring with 2X4 sq.mm. PVC insulated, FRLS copper conductor and 1,5 sqmm PVC insulated, FRLS copper earth wire from control box complete as required - 1 No. (Phillips SPX 086/150 or approved equivalent)					
	iii	Suitable size 32 A DP MS Control box with 2 no. incoming and outgoing terminals and 2 nos. tap-out terminal with 6A DP MCB complete as required - 1 Set					
	iv	Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry					
	v	Providing foundation including excavation, shuttering, alingment of poles, casting etc. including lean concrete at the bottom as per CPWD/ BIS specifications.					

	vi	The above installations shall be completed as CPWD specifications and as required					
	A.	Steet Tubular Poles(9M) Single Arm as mention above	Set	5			
16.02		Supply, installation, testing and commissioning of external post top lantern with following accessories and complete as required :					
	i)	4m high (3.3m above ground) 50mm dia GI pole as approved, adopting socket at top for fixture mentioned below, base plate 300 x 300 x 6mm and provision for mounting junction box etc. 1 set.					
	ii)	Supply, installation, testing and commissioning of Post top lantern with 70W HPSV lamp (Philips SPC 106/70(I) HPF or equivalent) and its wiring with 2 x 2.5 sq.mm PVC insulated copper wire and 1.5 sqmm PVC insulated copper earth wire from control box - 1 set.					
	iii)	Suitable size 20A DP MS Control box with 2 no. incoming and outgoings terminals and 2 nos. tap-out terminal with 1 nos. 5A HRC fuses complete 1 set.					
	iv)	Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry					
	v)	Providing 400x400x1000mm deep 1:3:6 ratio cement concrete including excavation shuttering alignment of poles casting etc. including 100mm thick lean concrete shall be provided at the bottom					
		Supply, installation, testing and commissioning of external post top lantern as mentioned above	Set	4			
16.03		Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS360 1XPL-C/2P 18W GR Sonara bollard in gree color or equivalent) control box - 1 set.	Each	2			

16.04	Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS 370 1XPL-L 18W GR Lumos bollard in green color or equivalent) control box - 1 set.	Each	2			
16.05	Road Lighting Panel Supply, installation, testing and commissioning of following outdoor type with canopy, IP-54 protected M.V. cubicle type totally enclosed, free standing type, dust, damp and vermin proof, MV Panel, busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, stove enamelled painted and having following incoming and outgoing switchgears complete as required. INCOMER: 1 No. 63 Amp 415 volts, TPN Switch Disconnecter Fuse Unit with HRC Fuses <i>1 Set of phase indicating lamp with HRC fuses</i> 1 Set of photo sensor & 100A TP contactor with neutral link (for street lights control) . BUSBARS: 100 Amp TPN Aluminium busbars OUTGOING: 10 Nos. 32 Amp 415 volts, DP MCB Feeder Pillar as mention above	Set	1			
16.06	Spiral earthing made out of 6 SWG GI wire , 50mm Dia, 115 turns closely wound ,1.5 mtr below ground, earth pit of 350 Dia., 1.5 mtr depth including providing charcoal and salt for earthing at alternate layers of 300 mm depth (total 3 layers),connections etc. complete as required.	Set	15			
	TOTAL SUB HEAD 16: OUTDOOR LIGHTING					

17.00		SUB HEAD 17: ACCESS CONTROL SYSTEM.					
17.01		ACCESS CONTROL SYSTEM					
		Supply , installation, testing and commissioning of Access Control System complete with biometric reders, proximity cards, proximity card readers, access logic controllers, electromagnetic locks, PC communicator, access control software and other items required for the proper working of the access control system complete as per technical specifications and as required.					
	i	Biometric + smart card Reader	Each	2			
	ii	Smart cards	Each	50			
	iii	Electromagnetic lock for single door	Each	2			
	iv	Electromagnetic lock for double door	Each	2			
	v	PC Communicator / Interface	Set	1			
	vi	Access Control Software for complete system	Set	1			
	vii	Single door controller	Set	2			
	viii	Double door controller	Set	2			
	ix	Supply & laying of 8 core 0.8 Sq. mm shielded copper cable in recess 25mm dia MS conduit with all accessories.	Metre	100			
	x	Supply & laying of 4 core 1 sq. mm power cable in recess MS conduit with all accessories	Metre	50			
	xi	Work station for ACS software (PC, MONITOR, KEYBOARD, MOUSE, PRINTER)	Set	1			
		TOTAL SUBHEAD 17 :ACCESS CONTROL SYSTEM,					
18.00		SUB HEAD 18: VIDEO CONFERENCING					
18.01		VIDEO CONFERENCING SYSTEM:					
		Main Site					
	i	High Definition Video Conferencing Equipment - 1080p with codec, camera and mic, Content / presentation sharing + 4 party embedded MCU with standard accessories : 1 Nos.					

		Other End					
	ii	HD End Points - 1080p with codec, camera and mic, Content / presentation sharing with standard accessories : 1nos					
	iii	Display Units - 42" LCD Monitors : 02 Nos					
	iv	Installation & Commissioning of system including any other item necessary for the proper functioning of the system.					
		<i>Note: All VC Equipments (except display) must be from the same OEM</i>					
		Video Conferencing system as mentioned above :	Lot	1			
		TOTAL SUBHEAD 18 :VIDEO CONFERENCING					
		GRAND TOTAL FOR ALL ELECTRICAL WORKS					

SUMMARY OF COST ESTIMATE FOR ELECTRICAL WORKS .			
S.No.	DESCRIPTION	Amount In Figure (In Rs.)	Amount in Words (Rs.)
1	SUBHEAD 1: H.T. SUB STATION		
2	SUB HEAD 2: MAIN LT PANEL.		
3	SUB HEAD 3 : DG SET & ACCESSORIES		
4	SUB HEAD 4 : UPS SYSTEM		
5	SUB HEAD 5 :MV PANELS		
6	SUB HEAD- 6: MCB DISTRIBUTION BOARDS.		
7	SUB HEAD 7: WIRING		
8	SUB HEAD: 8 - LIGHT FIXTURE AND FANS		
9	SUB HEAD 9 : TELEPHONE SYSTEM		
10	SUB HEAD 10: LAN SYSTEM		
11	SUBHEAD 11 :SECURITY SYSTEM :(CCTV)		
12	SUB HEAD 12 : FIRE DETECTION AND ALARM		
13	SUB HEAD 13 : LIFTS		
14	SUB HEAD 14: LT CABLES		
15	SUB HEAD 15: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS		
16	SUB HEAD 16: OUT DOOR LIGHTING		
17	SUB HEAD 17: ACCESS CONTROL SYSTEM.		
18	SUB HEAD 18: VIDEO CONFERENCING		
	GRAND TOTAL FOR ALL ELECTRICAL WORKS		