

SCHEDULE OF QUANTITY (E & M)

Name Of Work:- Construction of Office Building & Residential Complex for Subsidiary Intelligence Bureau (SIB) at Mahasamund (C.G.)

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	SH-I (Wiring)						
1.01	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.						DSR 2025
a	Group A	Point	57	1440.00	1454.40	82901.00	1.3.1
b	Group B	Point	47	1684.00	1700.85	79940.00	1.3.2
a	Group C	Point	112	2101.00	2122.00	237664.00	1.3.3
1.02	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required.	Point	3	2242.00	2264.40	6793.00	1.4
1.03	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.						
c	Group C	Point	8	1246.00	1258.45	10068.00	1.54.3
1.04	Wiring for light/ power plug with 2X4 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit along with 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	Mtr	200	480	484.80	96960.00	1.5
1.05	Wiring for light/ power plug with 4X4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit along with 2 Nos. 4 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable for loop earthing as required.	Mtr	150	724	731.25	109688.00	1.6
1.06	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required						
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Mtr	150	370	373.70	56055.00	1.7.1
b	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Mtr	100	652	658.50	65850.00	1.7.4
c	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	Mtr	60	1001	1011.00	60660.00	1.7.9
d	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	Mtr	20	1253	1265.55	25311.00	1.7.10
1.07	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.						
a	6 x 1.5 sq. mm	Mtr	90	195	196.95	17726.00	1.17.6
1.08	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.						
a	20 mm	Mtr	293	254.00	256.55	75169.00	1.20.1

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
b	25 mm	Mtr	150	289.00	291.90	43785.00	1.20.2
c	32 mm	Mtr	60	360.00	363.60	21816.00	1.20.3
1.09	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.						
a	5/6 amps switch	Each	30	121.00	122.20	3666.00	1.24.1
b	15/16 amps switch	Each	30	176.00	177.75	5333.00	1.24.3
c	3 pin 5/6 amp socket outlet	Each	30	136.00	137.35	4121.00	1.24.4
d	6 pin 15/16 A socket outlet	Each	28	219.00	221.20	6194.00	1.24.5
e	Telephone socket outlet	Each	12	168.00	169.70	2036.00	1.24.6
f	TV antenna socket outlet	Each	10	168.00	169.70	1697.00	1.24.7
1.10	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	Each	34	151.00	152.50	5185.00	39.14
1.11	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	30	47.00	47.45	1424.00	1.26
1.12	Supplying and fixing following size/ modules, GI box along with modular base & cover plate for modular switches in recess etc as required.						
a	1 or 2 Module (75mmX75mm)	Each	55	354	357.55	19665.00	1.27.1
b	6 Module (200mmX75mm)	Each	30	462	466.60	13998.00	1.27.4
1.13	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch , connection etc. as required.	Each	47	545.00	550.45	25871.00	1.31
1.14	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch , connection etc. as required.	Each	38	659.00	665.60	25293.00	1.32
1.15	Supplying and fixing 3 pin, 5 amp ceiling rose on the existing junction box/ wooden block including connection etc as required.	Each	30	104.00	105.05	3152.00	1.33
1.16	Supplying and fixing call bell/buzzer suitable for single phase, 230 volts, complete as reqd.	Each	6	112.00	113.10	679.00	1.38
1.17	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	Each	18	807.00	815.05	14671.00	1.57
1.18	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
a	1 Run of Cable.	Mtr	300	60.00	60.60	18180.00	39.17.1
b	2 Run of Cable.	Mtr	80	96.00	96.95	7756.00	39.17.2
c	3 Run of Cable.	Mtr	40	131.00	132.30	5292.00	39.17.3
1.18	Supplying and drawing following 0.5 mm dia.FR PVC insulated annealed copper conductor unarmoured telephone cable in the existing surface / recessed steel / PVC conduit as reqd.						
a	2 pair	Mtr	199	39.00	39.40	7841.00	1.18.2
1.19	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PF insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Mtr	199	54.00	54.55	10865.00	1.19
	Total of SH-I (Wiring)					1173305.00	
	SH-II (Fan & LED Fittings)						
2.01	LED Panel light 2x2 ft. (System lumen efficacy $\geq 120 < 135$ lm/Watt)						
	Supplying, installation, Testing & Commissioning of Panel light 2x2 ft., of following body material and construction as per IS : 10322 with driver as per the requirement with Driver efficiency $>85\%$, Operating voltage AC 140-270 Volt, freq 50/60 hz, Operating temp range -15 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD $< 10\%$, P. F. ≥ 0.95 , IP20, CRI >80 , UGR (Unified Glare Rating) < 19 , Flicker free, (flicker should be below 5 %), life time (LED,Driver & electrical circuitry), of minimum 50000 Burning Hours with , 70% of initial Lumen maintained till life ends,CCT 3000°K / 4000°K / 5700°K /6000°K/6500°K (As per ANSI Bin), SDCM(Standard Deviation Color Matching) <3 , Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard and trade mark certificate (T.C.). Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c connections with 1.5 sq mm FRLS, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy $\geq 120 < 135$ lm/Watt output . LM79 & LM80 Test report from NABL lab for all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C)						
	Powder coated die cast / Extruded aluminium Body (Thickness ≥ 1.20 mm)						
b)	36 watt	Each	21	2962.00	2991.60	62824.00	8.7.4
2.02	LED Down lighter (SMD Type) (System lumen efficacy $\geq 120 < 135$ lm/Watt)						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Supplying, installation, Testing & Commissioning of LED Recessed / surface Down lighter (Round / square/ Rectangular) SMD type of following body material with PMMA and prismatic diffuser and construction as per IS : 10322 with driver as per the requirement with Driver efficiency >85%, Operating voltage AC 140-270 Volt, freq 50/60 hz, Operating temp range -15 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20, CRI >80 , UGR (Unified Glare Rating) < 19, Flicker free (flicker should be below 5 %), life time (LED,Driver & electrical circuitry), life time of minimum 50000 Burning Hours with , 70% of initial Lumen maintained till life ends , CCT 3000°K / 4000°K / 5700°K /6000°K/6500°K (As per ANSI Bin), SDCM(Standard Deviation Color Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard and trade mark certificate (T.C.). Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. OEM must have its own in house NABL lab setup for all testing facilities for LED fixtures. "complete in all respect i/c connections with 1.5 sq mm FRLS, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥120 <135 lm/Watt output . LM79 & LM80 Test report from NABL lab for all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminum housing such that LED junction temperature shall not rise above 90°C).						
	Powder coated die cast /Extruded aluminum Body including trim						
a)	8 - 10 watt	Each	49	624.00	630.25	30882.00	8.2.2
b)	12 -15 wat	Each	43	715.00	722.15	31052.00	8.2.3
2.03	LED Batten light (System lumen efficacy ≥105 <120 lm/Watt)						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Supplying, installation, Testing & Commissioning of LED surface mounted Batten light of following body material and construction as per IS : 10322 with driver (Replaceable) as per the requirement with Driver efficiency >85% ,Operating voltage AC 140-270 Volt, freq 50/60 hz, Operating temp range -15 deg to 40 deg centigrade, internal surge protection of 2.5 KV with Short & Open circuit protection ,THD < 10% , P. F.≥0.95, IP20, CRI >80, Flicker free, (flicker should be below 5 %), life time (LED,Driver & electrical circuitary), of minimum 50000 Burning Hours with , 70% of initial Lumen maintained till life ends, CCT 3000°K / 4000°K / 5700°K /6000°K/6500°K (As per ANSI Bin), SDCM(Standard Deviation Color Matching) <3, Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard and trade mark certificate (T.C.). Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c connections with 1.5 sq mm FRLS, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy ≥105 <120 lm/Watt output . LM79 & LM80 Test report from NABL lab for all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminum housing such that LED junction temperature shall not rise above 90°C).						
	Powder coated die cast / Extruded aluminium Body (Thickness ≥ 1.20 mm)						
a)	18- 22 watt	Each	39	681.00	687.80	26824.00	8.9.1
2.04	Supplying, Installation, Testing and Commissioning of Decorative wall bracket fitting having Polycarbonate Diffuser alongwith 7-9 Watt LED lamp i/c fixing arrangement on wall, connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. complete as required.	Each	15	1295.00	-	19425	MR
2.05	Supplying, Installation, Testing and Commissioning of 10W LED Bulk Head fitting comprises of Polycarbonate housing, with a nominal system lumen output of not less than 800 lumens and a minimum system lumen efficacy of 80 lm/W. The Color temperature should not be not less than 5700K. The luminaire shall meet IP 66 rating with PF not less than 0.95 i/c fixing arrangement on ceiling working on 230V 50Hz A.C Supply, connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. complete as required.e cable and earthing etc. complete as required.	Each	11	1782.00	-	19602.00	MR
2.06	Supplying, Installation, testing and commissioning of 5/10 watt LED Lighting Fixture with extruded Polycarbonate 1 Ft length having Color temperature should not be not less than 5700K i/c fixing arrangement on wall, connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. complete as required.	Each	13	502.00	-	6526.00	MR
2.07	Brush Less Direct Current (BLDC) Motor						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit,safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, suitable for operation with regulator for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req						
a)	1200mm, service value ≥ 6.0 CM/Min/Watt, air delivery 210 CM/Min (Minimum)	Each	30	2695.00	2721.95	81659.00	9.2.3
2.08	Supplying, Installation, testing & commissioning of 250mm sweep Fresh air fan with louvers in the existing opening including making good the damage, connection with 1.5 sq. mm FRLS PVC insulated,copper conductor, single core cable,testing, commissioning etc. as reqd.	Each	14	2010	-	28140	MR
2.09	Supplying, Installation, testing & commissioning of 300 mm sweep Exhaust fan,metallic body with bird screen having Speed not less than 1350 RPM & Air Delivery Not less than 1160 CMH in the existing opening including making good the damage, connection with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable,testing, commissioning etc. as reqd.	Each	7	3139	-	21973	MR
Total of SH-II (Fan & LED Fittings)						328907.00	
SH-III (MCB & DB'S)							
3.01	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc as required. (But without MCB/RCCB/Isolator)						
a	8 Way, Double door	Each	6	2773.00	2800.75	16805.00	2.3.2
b	16 Way, Double door	Each	2	3367.00	3400.65	6801.00	2.3.4
3.02	Supplying and fixing following way, horizontal type three pole and neutral, sheet, MCB distribution board, 415 volts, on surface/recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required . (But without MCB/RCCB/Isolator)						
a	8 way (4+24) way, Double door	Each	7	6337.00	6400.35	44802.00	2.4.3
3.03	Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer) as required . (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.) (with provision for upto 125 Amp. TP MCCB as incomer but without MCCB)						
a	4 way (4 + 12), Double door	Each	3	7951.00	8030.50	24092.00	2.5.1

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
3.04	Supplying and fixing Cable End Box (Loose wire box) (IP 43) suitable for following single pole and neutral , sheet steel.MCB distribution board, 240 V, on surface/recess , complete with testing and commissioning etc. as reqd .(make : Same as MCB DBs)						
a	For 8 way, Double door SPN MCB DB	Each	6	918.00	927.20	5563.00	2.23.2
b	For 14 way, Double door SPN MCB DB	Each	2	990.00	999.90	2000.00	2.23.4
3.05	Supplying and fixing Cable End Box (Loose Wire Box) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 Volts, on surface/recess, complete with testing and commissioning etc.as required.						
a	For 4 way, Double door TPN MCBDB	Each	3	1177.00	1188.75	3566.00	2.24.1
b	For 8 way, Double door TPN MCBDB	Each	7	1448.00	1462.50	10238.00	2.24.3
3.06	Supplying and fixing of 5 amps to 32 amps rating , 240/415 volts, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.						
a	Single pole	Each	212	285.00	287.85	61024.00	2.10.1
3.07	Supplying and fixing following rating, double pole, (single phase and neutral), 240 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 300 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required.						
a	40 amps	Each	8	2512.00	2537.10	20297.00	2.14.2
3.08	Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 30 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required.						
a	40 amps	Each	2	3452.00	3486.50	6973.00	2.15.2
b	63 amps	Each	6	3597.00	3632.95	21798.00	2.15.3
3.09	Supplying and fixing following rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as Required.						
a	63A Triple pole	Each	8	1909.00	-	15272.00	MR
3.10	Supplying and fixing of single pole blanking plate in the existing MCB DB complete etc. as required.	Each	30	14.00	14.15	425.00	2.11
3.11	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board/DB/Tap off box including drilling holes in cubicle panel, making connections, etc. as required.						
a	100A, 25 KA,TP MCCB	Each	1	9554.00	-	9554.00	MR
Total of SH-III (MCB & DB'S)						249210.00	
SH-IV (Earthing)							
4.01	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	Set	9	7658	7734.60	69611.00	5.2

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
4.02	Earthing with G.I. earth plate 600mm x 600mm x 6 mm thick including accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 mtr long etc. with charcoal/ coke and salt as required.	Set	4	8351	8434.50	33738.00	5.4
4.03	Earthing with Copper earth plate 600mm x 600mm x 3 mm thick including accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 mtr long etc. with charcoal/ coke and salt as required.	Set	6	15004	15154.05	90924.00	5.6
4.04	Providing and fixing 25 mm X 5 mm Copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	Mtr	36	1638	1654.40	59558.00	5.10
4.05	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connection etc. as required.	Mtr	48	1246	1258.45	60406.00	5.14
4.06	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	Mtr	49	755	762.55	37365.00	5.11
4.07	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connection etc. as required.	Mtr	52	287	289.85	15072.00	5.15
4.08	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	Mtr	150	50	50.50	7575.00	5.18
4.09	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface for connections etc. as required.	Mtr	3	2245	2267.45	6802.00	5.20
Total of SH-IV (Earthing)						381051.00	
SH- V (Lightning Conductor)							
5.01	Providing and fixing of lightning conductor finial, made of 25 mm dia 300mm long, G.I. tube, having single prong at top, with 85mm dia 6mm thick G.I. base plate including holes etc. complete as required.	Each	2	609.00	615.10	1230.00	6.1
5.02	Jointing copper / G.I. tape (with another copper/ G I tape, base of the finial or any other metallic object) by riveting / nut bolting/ sweating and soldering etc as required.	Each	50	139.00	140.40	7020.00	6.3
5.03	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For horizontal run)	Mtr.	160	148.00	149.50	23920.00	6.6
5.04	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For vertical run)	Mtr.	50	238.00	240.40	12020.00	6.7
5.05	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	Each	2	140.00	141.40	283.00	6.10
5.06	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	Mtr	16	221.00	223.20	3571.00	6.11
Total of SH-V (Lightning Conductor)						48044.00	
Essential Panel							

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
6.01	Supplying, installation, testing & commissioning of cubical type LT panel suitable for 415 V, 3 Phase, 4 Wire 50 Hz AC supply system fabricated in compartmentalized design from CRCA sheet steel of 2 mm thick for frame work and covers, 3 mm thick for gland plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 600 Amp capacity extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bars supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication shall be done in transportable sections, entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with 1.5/2.5/4 sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears & and as per approval of Engineer In charge.						
(A)	(Face Area not less than 1.1 Sq.mtr.)						
a	Incoming :-						
i	63Amp. On Load Manual Changeover Switch disconnecter Open Execution with Fuse-1 No.						
ii	TPN aluminium bus bars of 100 AMP rating - 1 set						
b	Metering						
i	3 Phase LED Voltmeter of class 1, i/c inbuilt selector switch						
ii	3 Phase LED Ammeter of class 1 i/c inbuilt selector switch						
iii	LED phase indicating lamps (RYB)with toggle switches with MCB control - 1 Set						
c	Outgoing :-						
ii	40 amp rating, 415 Volt, 25 KA, Ics=100% Icu, 4 Pole, MCCB with thermal magnetic release with suitable rotary handle and spreader terminals-8 Nos.	Job	1	153007.00	-	153007.00	MR
iii	Danger notice plate - 1 No.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
6.02	SITC of 415V, 3- phase, 4 wire, 50 Hz AC supply, totally enclosed, free standing, dust, damp, vermin proof, hinged, lockable, double door on front side out door type Feeder Pillar with IP:55 protection fabricated in compartmentalized (preferably) design from CRCA sheet steel of 2mm thick for frame work and covers, 3mm thick for gland, plates M.V. danger notice plate, i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, bottom base frame of MS section not less than 100 mm x 50 mm x 6 mm thick with canopy on top, fabrication shall be done in transportable sections, entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears with required size of Al. bus bars and control wiring with 1.5/2.5/4 sq. mm. FRLS PVC insulated copper conductor cable, cable alleys, cable gland plates in two half i/c providing following switch gears therein complete on CC foundation complete as per specifications and as required . (Drawing shall be got approved from Engineer-incharge before fabrication ,(Note- All MCCBs shall have spreader links, All indicating lights and measuring instruments shall be protected by suitable MCBs.)						
(A)	(Face Area not less than 1.4 Sq.mtr.)						
1	Incoming :-						
i	200 Amp FP MCCB,36 KA. (Ics= 100% Icu= Icw) with Microprocessor Release, suitable rotary handle and spreader terminals - 01 No.						
ii	TPN aluminium bus bars of 300 AMP rating - 1 set						
2	Metering						
i	3 Phase LED Voltmeter of class 1, i/c inbuilt selector switch						
ii	3 Phase LED Ammeter of class 1 i/c inbuilt selector switch						
iii	LED/phase indicating lamps (RYB)with toggle switches with MCB control - 1 Set						
3	Outgoing :-						
i	100 Amp rating, 415 Volt, 25 KA, Ics=100% Icu, 4 Pole, MCCB with thermal magnetic release with suitable rotary handle and spreader terminals-3 Nos.						
ii	Danger notice plate - 1 No.	Job	1	115958.00	-	115958.00	MR
	(Metering Panel)						
6.03	Supplying, Installation, Testing and Commissioning of indoor LT cubical type floor/wall mounted self supported totally enclosed meter panel board ,suitable size not less than 300mm deep made out of CRCA sheet steel 2mm thick CRCA sheet powder coated , having sealing arrangement , dust, vermin , duly compartmentalised having 4 strip TPN Aluminium busbar with cable alleys, detachable cable terminating plates at the bottom, ventilator louvers with wire mess,end termination, danger notice boards, sign wiring.The panel having bottom support suitable extended 'C' channel of size 75mm x 40 mm x 5mm and having following switch gears, instruments and accessories mounted inside the Feeder Pillar i/c connection, interconnection with copper thimbles, earthing etc complete as per CPWD specification and as per approval of Engineer in charge.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
(A)	For Type IV & III & II Block. (Face Area not less than 1.5 sqmtr)						
a	Incoming :-						
i	100 Amp rating, 415 Volt, 25 KA, Ics=100% Icu, 4 Pole, MCCB with thermal magnetic release with suitable rotary handle and spreader terminals-1 No.						
ii	TPN aluminium bus bars of 200 AMP rating - 1 set						
b	Metering						
i	3 Phase LED Voltmeter of class 1, i/c inbuilt selector switch						
ii	3 Phase LED Ammeter of class 1 i/c inbuilt selector switch						
iii	LED/phase indicating lamps (RYB)with toggle switches with MCB control - 1 Set						
c	Outgoing :-						
i	6 mm thick backlite sheet for single phase energy meter fixing with acrylic sheet/glass window for visualization of energy meter with sealing arrangement in doors -2 Nos.(Compartment for single phase Energy meter)						
ii	6 mm thick backlite sheet for three phase energy meter fixing with acrylic sheet/glass window for visualization of energy meter with sealing arrangement in doors - 1 No.(Compartment for three phase Energy meter)						
iii	63 A FP MCB C-Curve -2 NoS.						
iv	40 A DP MCB C-Curve -3 Nos.						
v	6 sq.mm copper wire for interconnection from bus- bar to energy metre and energy meter to loose wire box with copper lugs.. 1 Lot.						
vi	2 Nos. G.I Earth strip 25 x 5 mm size full width of the panel with earth stud at both ends-1 set.						
vii	Incoming/Outgoing complete Sign writing - 1 job.						
vii	Danger notice plate - 1 No.	Job	1	92266.00	-	92266.00	MR
	Total of SH- VI (Feeder Pillar)					361231.00	
	SH-VII (Cable laying)						
7.01	Supplying and drawing following sizes of PVC insulated and PVC Round Sheathed, Three core Copper cable in the existing surface/ recessed G.I/DWC/HDPE Pipe as required.						
a	3 Core 4 sq. mm (Multistranded)	Mtr	280	472	-	132160.00	MR
7.02	Supplying of following sizes XLPE (cross linked polyethylene) insulated PVC sheathed, armoured with galvanised steel strip/galvanized round steel wire U.G. Cable with aluminium conductor suitable for rated voltage of 1.1 KV grade and conforming to IS IS:1554 (Part-1) & IS:7098 (Part-1) & having ISI marking as required.						
a	4 x 25 sq. mm	Mtr.	80	644.00	-	51520.00	MR
b	3.5 x 35 sq. mm	Mtr.	80	774.00	-	61920.00	MR
c	3.5 x 95 sq. mm	Mtr.	160	1779.00	-	284640.00	MR
7.03	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC / HUME / METAL/HDPE pipe as required.						
a	Upto 35 sq. mm	Mtr.	310	47.00	47.45	14710.00	10.5.1
b	Above 35 sq. mm and upto 95 sq. mm	Mtr.	110	72.00	72.70	7997.00	10.5.2

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
7.04	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing open duct as required.						
a	Upto 35 sq. mm	Mtr.	80	36.00	36.35	2908.00	10.6.1
b	Above 95 sq. mm and upto 185 sq. mm	Mtr.	30	80.00	80.80	2424.00	10.6.3
7.05	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on wall surface as required.						
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	Mtr.	50	64.00	64.65	3233.00	10.7.1
b	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	Mtr.	20	180.00	181.80	3636.00	10.7.3
7.06	Supplying and making end termination with brass compression gland and aluminium lugs for following sizes PVC Insulated and PVC sheathed XLPE aluminium conductor cable of 1.1 KV grade as required.						
a	4 x 25 sq. mm (28 mm)	Each	4	373.00	376.75	1507.00	11.1.34
b	3.5 x 35 sq. mm (32 mm)	Each	6	437.00	441.35	2648.00	11.1.21
c	3½ X 95 sq. mm (45mm)	Each	2	684.00	690.85	1382.00	11.1.24
7.07	Providing , Laying and Fixing following Dia. G.I. Pipe (Medium Class) in Ground complete with G.I. Fittings including trenching (75 cm deep) and re-filling etc as required.						
a	100 mm dia	Mtr	24	1918.00	1937.20	46493.00	15.13.3
7.08	Supplying and laying of following size Double Walled Corrugated (DWC) High density polyethylene(HDPE) pipe Confirming ISI marked along with all accessories like socket,bend,couplers etc. complete with fitting and cutting,jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc. complete as reqd.						
a	40 mm dia .(OD-40 mm & ID-32 mm nominal)	Mtr	270	208.00	-	56160.00	MR
c	63 mm dia (OD-63 mm & ID-51 mm nominal)	Mtr	120	289.00	291.90	35028.00	15.16.1
c	120 mm dia .(OD-120 mm & ID-103 mm nominal)	Mtr	100	417.00	421.15	42115.00	15.16.3
	Total of SH-VII (Cable laying)					750481.00	
	SH-VIII (Street Lighting)						
8.01	Supplying, Installation, Testing and Commissioning of hot dip galvanised octagonal street light pole having bottom 130 mm A/F & top 70mm A/F made from 3 mm thick HT steel sheet along with base plate of size 200mm x 200mmx 12mm complete with 4 nos. M20X600 mm long "J" type foundation bolt with template of following heights (as per manufacturer design). Pole should be finished with flush door for connection with 3 x 1.5 Sq.mm PVC insulated FRLS copper conductor single core cable from flush door to fitting including supplying and fixing of suitable size DP MCB, neutral Link earth stud, heavy duty connector, connection etc. as required. Pole should be erected on cement concrete foundation of size as per manufacturer recommendation with 1:3:6 (1 cement:3 coarse sand :6 graded stone of 20 mm nominal size) / Steel reinforcement providing DWC,HPDE Pipe for cable entry & exit etc as required.						
a	6.0 metre Height	Each	8	21210.00	-	169680.00	MR

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
8.02	Supplying, Installation, Testing and commissioning of 35 watt LED Post Top Lantern Fitting made of die cast aluminium housing with a nominal system lumen output of not less than 3500 lumens. The luminaire shall meet IP 66 protection with PF not less than 0.95, CCT-5700K & THD not more than 10% working on 230V 50Hz A.C Supply including connection with 1.5 sq.mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. complete as required .	Each	2	9134.00	-	18268.00	MR
	LED Street light fixture, powder coated pressure die cast aluminum body (System lumen efficacy $\geq 120 < 135$ lm/Watt)						
8.03	Supplying, installation, Testing & Commissioning of Street light LED fixture powder coated pressure die cast aluminum body with driver as per the requirement with Driver efficiency $> 85\%$, Input voltage: 140-270 Volt AC, freq 50/60 hz, Operating temp range -15 deg to 50 deg centigrade, internal surge protection of 5 KV L,N,E as per IEC 61000-4-5, Driver efficiency $> 85\%$, THD $< 10\%$ as per IEC 61000-3-2 , P. F. ≥ 0.95 , IP66, IK-10, CRI > 80 , under voltage and over voltage protection, EMI EMC As per CISPR 15 , lenses for beam angle as per IESNA type I/II/III as per the width of the road and the project requirement., suitable to fit in up to 65mm dia pipe, life time (LED, Driver & electrical circuitry) of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends as per LM80 extrapolation IES TM-21-11 report, CCT 3000°K / 4000°K / 5700°K / 6000°K/6500°K (As per ANSI Bin), SDCM (Standard Deviation Color Matching) < 5 , Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard complete in all respect i/c connections with 1.5 sq mm FRLS, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy $\geq 120 < 135$ lm/Watt output . LM79 & LM80 Test report from NABL lab for all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminum housing such that LED junction temperature shall not rise above 90°C).						
b)	36 watt	Each	8	1629.00	1645.30	13162.00	8.13.9
8.04	Providing and fixing of Single arm galvanized bracket 1000 mm long and 70 mm(I.D.) top A/F as per Standard manufacturer specification including with tightening bolt etc as required.	Each	8	1686	-	13488.00	MR

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
8.05	Supplying Instalation testing and commissioning of Street Light outdoor feeder pillar Panel fabricated with minimum 2 mm thick Not less than 200 mm deep CRCA sheet steel Floor/Wall mounted type totally enclosed duly enclosed compartmentalised cubical type (IP 54) powder coated with hinged type front openable complete with suitable size strip Alu.Bus bar duly PVC sleeved suitable for 415V 3 phase 4 wire 50 Hz A C i/c making provision for cable alley earth connection plate , danger notice plate earthing sign , making foundation for installation etc. i/c supplying and fixing following switch gear / accessories & other mountings theron i/c interconn ection/ connection etc complete as per CPWD specification and as per approval of Engineer in charge.						
(A)	(Face Area not less than 0.7 sqmtr)						
a	Incoming :-						
i	63 Amp rating, 415 Volt, 25 KA, Ics=100% Icu, 4 Pole, MCCB with thermal magnetic release with suitable rotary handle and spreader terminals-1 No.						
ii	TPN aluminium bus bars of 100 AMP rating - 1 set						
b	Metering						
i	3 Phase LED Voltmeter of class 1, i/c inbuilt selector switch						
ii	3 Phase LED Ammeter of class 1 i/c inbuilt selector switch						
iii	LED/phase indicating lamps (RYB)with toggle switches with MCB control - 1 Set						
c	Outgoing						
i	32 A TP Power Contactor -3 No.						
ii	5-32 Amp, DP MCB 'C' Curve -6 Nos.						
iii	Astronomical time Switch - 1 No						
		Job	1	88273.00	-	88273.00	MR
	Total of SH-VIII (STREET LIGHTING)					302871.00	
	SH- IX (Fire Extinguisher)						
9.01	Providing and Fixing ABC type 6 kgs capacity, stored pressure type Fire Extinguishers with ISI mark, fitted with discharge control valve and pressure gauge, filled with mono ammonium phosphate powder, complete with initial charge conforming to IS 15683 along with wall bracket, along with accessories etc., complete as required.	Each	5	3896.00	-	19480.00	MR
9.02	Providing and Fixing CO2 type, 4.5 kgs, capacity Fire Extinguishers with ISI mark in seam less drawn steel cylinder, fitted with wheel valve, with discharge bend and horn, complete with initial charge, conforming to IS 15683 along with wall bracket, accessories etc., complete as required.	Each	5	8714.00	-	43570.00	MR
	Total of SH- IX (Fire Extinguisher)					63050.00	
	SH- X (CCTV Equipments)						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below : 1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP camera or more and must be ONVIF with minimum support of 384 Mbps incoming Bandwidth. 2) NVR should support video compressions : H.265 or better, H.264, MJPEG. 3) Must support 1 channel RCA Input, 2 channel RCA Output for Two-way Talk with G.711U/A, G.711u, PCM, G726 audio compressions. 4) Intelligent auto power on when power resumes after power outage. 5) Storage: It should support minimum 8 SATA Slots with 20TB capacity/ Slot and RAID support of RAID 0/1/5/6/10. 6) Connectivity Interface : 2 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232, 1x eSATA Port 7) Backup Interface : Its should have 4 Nosx USB port (2x USB3.0, 2xUSB2.0) 8) Video Output Ports: 2x HDMI and 2 VGA 9) Alarm Ports: It should have 16/8 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc. 10) Email & SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tampering, network disconnection and panic						
	11) Web & Mobile Application: Web, Mobile app (For iPhone, iPad, Android Phone) for alerts and viewing. 12) Protocols: HTTP, HTTPS, TCP/IP, IPv4/IPv6, UDP, DHCP, DNS, SMTP, UPnP, IP Filter, PPPoE, FTP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF 21.12 (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need. 13) Standards: CE, FCC, RoHS, BIS Certified 14) Power Supply : Should support AC100-240V, 50/60Hz Power supply. 15) Operating Condition : -5°C to 50°C, humidity 90% (max) (non-condensing) 16) The VMS application shall support all the features & functionalities of the offered cameras. 17) VMS should consist Licenses for all channels to record Cameras with General, motion detection, intelligent, alarm and POS recording modes. VMS should be provided with Camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
10.01	18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage. 19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet. 20) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode .21) It should support Resolution: 32MP; 24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 1080p; 720p; D1; CIF; QCIF 22) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page 23) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm 24) It should have Web and GUI interface. 25) Built-In Artificial Intelligence: NVR should have built-in AI :- - 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection						
	26) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec and facility to add Name, gender, birthday, address, credential type, credential No., countries & regions and state to each face image. 27) Face & Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella. 28) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes. 29) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception. 30) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email. 31) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection. 32) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency 34) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics 35) Analytics by NVR: Perimeter protection and face recognition						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	32 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/32(36), 2nd screen: 1/4/8/9/16	Each	1	64784	65431.85	65432.00	40.11.1
10.02	supply and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required.						39.23
	9U Rack	Each	1	8960	9049.60	9050.00	39.23.2
10.03	Supplying, Installation, Testing and Commissioning of following size LED display (LED monitor) industrial grade with 3840x2160 resolution or better, USB playback, bluetooth and miracast connectivity, 4X HDMI 2.0, DP 1.2, HDR 10/10+, brightness: 500-nits or better, Video wall mode should be available, contrast ratio: 1200:1, OPS slot, viewing angle (H/V): 170°/ 170°, response time less than 12ms, Display control shall be on monitor screen and programmable with remote (remote shall be supplied with system), Key Board, Optical Mouse, etc. as required.						
(a)	42 inch or larger	Each	1	51459	51973.60	51974.00	42.4.2
10.04	Supplying Installation Testing and Commissioning of 4MP IP IR Dome Camera having following specifications and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: > 50 dB, Camera should display Camera title, Date & Time in live & recorded video 2) Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control, White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 3) Compression (Minimum): Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates:- Triple streaming, configurable Main stream: 4MP (2560x1440)25/30fps, Sub streams minimum: 720P @ 25/30 fps 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, video encryption, IP/MAC filtering, HTTPS, trusted upgrade.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	9) On board Storage: Camera should support built-in Micro SD/ SDHC/ SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card. 10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)-to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-) 05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS						
(a)	4MP @ 25/30fps @1440P (2560 x 1440) Dome Camera with 2.8/ 3.6/ 6/8/12 mm fixed lens (as per site requirement).	Each	2	10365	10468.65	20937.00	40.3.1
	4MP IP IR Outdoor Bullet Camera						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
10.05	Supplying Installation Testing and Commissioning of 4MP IP IR Outdoor Bullet Camera having following specifications and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2) Image Sensor: 1/2.8" or better progressive Scan CMOS get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control, White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 3) Compression (Minimum): Video:- H.265 or better, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120dB or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming, configurable Main stream: 4MP (2560x1440)25/30fps Sub streams minimum: 720P@25/30 fps 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, video encryption, IP/MAC filtering, HTTPS, trusted upgrade 9) Onboard Storage: Camera should support built-in Micro SD/ SDHC/ SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card. 10) Recording Management: Format SD, overwrite, storage management, video to NAS device,						
	11) Alarm Trigger : Motion/tampering detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VDC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 40.4.1 40.4.2 19) Operating Condition:- Ambient Temperature:- ()05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS						
(a)	4MP @ 25/30fps@1440P (2560 x 1440) Outdoor Bullet Camera with 2.8/ 3.6/6/8/12 mm fixed lens (as per site requirement)	Each	5	10063	10163.65	50818.00	40.4.1

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
10.06	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN, VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India,						
a)	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each cooper port supporting 802.3at PoE+ min.	Each	1	125393	126646.95	126647.00	39.3.1
10.07	Supply of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D	Each	1	5278	5330.80	5331.00	39.11
10.08	Supplying, Installation, Testing and commissioning of following CAT6A Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D.						
a)	Copper Patch Cords of length 1m (3ft)	Each	2	173	174.75	350.00	39.13.1
10.09	Supplying, Installation, Testing and commissioning of RJ45Connector for CAT 6/6A Cables. RJ45 modular plug supports 4twisted pairs, 8 positions, 8 connectors. Housing: PC, UL94V-2, transparent color. Use for 24- 26 AWG stranded wires.						
a)	Hard Disk Drive	Each	7	9	9.10	64.00	39.16
10.10	Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.						
a)	8TB (Terabytes)	Each	1	20119	20320.20	20320.00	40.12.3
Total of SH- X (CCTV Equipments)						350923.00	
SH- XI (UPS Equipment)							
Online UPS- Input supply: Three Phase, Output supply: Three Phase							

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
11.01	Online UPS- Input supply: Three Phase, Output supply: Three Phase Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable(allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS)system with N+1 modules (N denotes total number of modules required for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch along with provision for manual bypass, suitable isolation transformer for additional protection against neutral faults etc. UPS shall have inbuilt phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter(3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant Inter-national standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC :3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage:3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120%for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery overcharging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved asper EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication RS232/RS485/SNMP port open protocol for BMS integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost).This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current. d)Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging &Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i)Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load / UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms: Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short-circuit, Over Temperature. The UPS should have QR code which should contain drawing, test report OEM manual, Geo-Tag of manufacturing location etc.						
a)	30 KVA (Each Power module shall be ≤ 10 KVA)	Each	1	505748.00	510805.50	510806.00	26.2.3

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Total of SH- XI (UPS Equipment)					510806.00	
	SH- XII (IP Based EPABX System & LAN System)						
12.01	Supplying,Installation,Testing & Commissioning of IP Based EPBAX System shall employ IP at its core with IP switching technology and 100% non-blocking, IP Users Upto 100, Digital Extensions Upto 16, SLT Extensions Upto 48 Upto 16 CO Trunks, Upto 2 PRI Trunks, GSM/3G/4G VOLTE Trunks Upto 8, System should have two Gigabit Ethernet ports for LAN and WAN to separate out local and VoIP traffic on the external network Suitable up to 100 IP user with subscription of 30 No IP user Licence & License for activating 16 vocoder channels ,Suitable IP Card & including connection, interconnection etc. Complete as reqd.	Each	1	65418	-	65418.00	MR
12.02	Supply, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Ethernet, PoE etc. complete as required.	Each	18	11698	11815.00	212670.00	38.3
12.03	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN, VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India,						
a)	24 port Layer 2 Non-PoE Network Switch	Each	1	86163	87024.65	87025.00	39.3.2

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
12.04	Supplying and drawing following core Multi mode Fiber Optic Cable having corrugated steel armoring, lesser optimize 50/125 µm with HDPE jacket, LSZH (Low smoke Zero Halogen), Tightbuffered or loose tube, maximum attenuation: < 3.5 dB/km at 850 nm, < 1.5 dB/km at 1300 nm, bandwidth > 2000 MHz-km at 850 nm, > 500 MHz-km at 1300 nm compliance and certifications: ISO/IEC 11801 Ed. 2.2, ANSI/TIA-568-C.3, ITU-T G.651.1 RoHS compliant. Multi Mode Fiber shall be Central loose tube filled with Thixotropic jelly, duly following Standards: ISO 11801, IEC 60793-1/60794-1-2, ITU-T-REC G.652D and Telecordia GR-20-core, High quality Electro Chromium Coated Corrugated Steel tape (ECCS) and HDPE Sheath, Operating ambient Temperature should be – 5 deg C to +50 deg C and Storage Temperature should be – 5 deg C to +50 deg C, Maximum Attenuation ± 3.5 db / km at Operational Wavelength 850 nm and ± 1.5 db / km at Operational Wavelength 1300 nm . type of fiber should be 50/125 / G.652D & Refractive Index should be 1.483/1.478, The value for Mode-field, Cladding Diameter 50 ± 2.5 µm and 125 ± 1µm correspondingly etc complete as required.						
a)	6 Core Multi Mode Optical Fiber Cable	Mtrs	150	87	87.85	13178.00	39.20.1
12.05	Supply and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset < 50 µm, Fiber Height + 100 nm, End-face radius of Curvature 7mm < R < 25mm, Repeatability < 0.2 db, Working ambient Temperature – 5 deg C to +50 deg C, Storage Temperature – 10 deg C to +50 deg C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.	Each	1	705	712.05	712.00	39.22
Total of SH- XII (IP Based EPABX System & LAN System)						379003.00	
Sub-Head - XIII (LIFT)							
	Supplying, installation, testing & commissioning of 16 passenger (1088 kg) lifts without machine room having contract speed of 1 MPS serving different floors in the lift shaft as per detailed CPWD specifications for electrical work (Lift) Part-III 2003 etc. ammended upto date as required with comprehensive maintainance for first year :-						
	(i) Speed: 1 MPS						
	(ii) Floors: S+3						
	(iii) Travel : About 4 mtrs. (approx. Each floor)						
	(iv) Stops opening: 5 stops, 5 openings, opening on Same Side						
	(v) Controller: Microprocessor Based variable voltage & variable frequency						
	(vi) Automatic rescue device complete with dry main-tenance free batteries as required.						
	(vii) Operation : Microprocessor based simplex selective collective control with / without attendant						
	(viii) Power — 415 V, 3 phase, 50 Hz, 4 wires system						
	(ix) Type of doors						
	(a) Car : Automatic Power operated, centre opening horizontal sliding stainless steel scratch proof surface (Moon rock/ Honey Comb Finish).						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks					
13.01	i) Car Entrance:- As per CPWD specification (Part III LIFTS)	Job	1	2260860.00		2260860.00	MR					
	ii) Car Inside Size:- As per manufacturer's design and as per CPWD specification (Part III LIFTS) with minimum net inside car area as per IS:14665 (Part-3/Secton-1) 2000 as amended upto date.											
	(b) Landing doors : Automatic Power Operated, Center Opening horizontal sliding stainless steel scratch proof surface (Moon rock/ Honey Comb Finish) with door opening of not less than 1000 mm.											
	i) Landing door size:- 1000 mm (W) x 2000 mm (H)											
	(x) 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.											
	Note: Voice announcement system shall be operated during operation of ARD also.											
	xi) Three way Intercom (in car, machine room and upto fire control room/reception)											
	xii) Digital position indicators (in car and at all landings)											
	xiii) Battery operated emergency light and alarm bell complete with invertor.											
	xiv) Infra red door curtain full height.											
	xv) Car operating panel shall be provided on the side of the car door inside the lift bottom of the at a height not more 800mm from floor level with stainless steel buttons with braille signages of inside the car and stainless steel registration buttons with braille signages at all landings of minimum dimension of 20mm with height of letter size 15 mm including all facilities for disabled persons.											
	xvi) Fireman's Switch at ground floor.											
	xvii) Overload warning indicator.											
	xviii) Car lighting with LED down lighter with illumination of 200 lux and with atleast 2 Nos. Cross flow blower fan with louvers.(LED) and cabin fan											
	xix) SS hand rail not less than 800 mm long at 1000 mm above floor level on three sides to be fixed in the lift car.											
	Total of SH- XIII (LIFT)							2260860.00				
	Sub-Head - XIV (DG Set)											

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Supply, installation, Testing & Commissioning of 'Silent Type Diesel Generating set as per CPCB IV + or better norms along with having Prime Power Rating of KVA as below, 415 volts at 1500 RPM, 0.8 lagging power factor at 415 V suitable for 50 Hz, 3 phase system & for 0.85 Load Factor, including testing at factory and site with fuel, load for test and other necessary arrangements Complete as per CPWD specifications, should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location, rating plate as per relevant IS Code etc. and consisting of the followings: (A) Diesel Engine: Turbo charged Diesel engine 4 stroke water cooled, multi cylinder, dynamically balanced fly wheel, electric start of suitable BHP at 1500 RPM suitable for above output of alternator at 40 Degree C, 50% RH & at 1000 Meter MSL, capable of taking 10% over loading for one hour after 12 hours of continuous operation. The engine will be with Electronic governor, Dry type Air filter with service indicator, first filling of engine fuel (after commissioning) lubricating Oil, Coolant and other consumables complete with all the required accessories, the Electronic governor shall be as per ISO 8528.						
	The engine shall comply to the latest CPCB norms (CPCB IV + or better) and Conforming to BS 5514, BS 649, IS 10000, IS 10002, IS 13018 and as per CPWD specifications. (B) Engine mounted Instrument Panel fitted with and having digital display Plate for following: (i) Start-stop switch with key (ii) Water temperature indication (iii) Lubrication oil pressure indication (iv) Lubrication oil temperature indication (v) Battery charging indication and Voltage indication (vi) RPM indication (vii) Over speed indication (viii) Low lubrication Oil trip indication (ix) Engine Running Hours indication (x) Fuel Level (C) Alternator: Synchronous alternator rated of appropriate KVA, 415 volts at 1500 RPM, 3 phase 50 Hz, AC supply with 0.8 lagging power factor at 40 Degree C, 50% RH & at 1000 Meter MSL. The alternator shall be having Screen Protected Drip Proof (SPDP) enclosure IP23, brushless, continuous duty, dynamically balanced rotor, capable of taking 10% over loading for one hour after 12 hours of continuous operation, self cooled, self-excited and self-regulated through AVR conforming to IS13364(Part 2)/IS: 4722/BS 2613 suitable for tropical conditions and with class- H insulation.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
14.01	(D) Base Frame & Foundation: Both the engine and alternator shall be mounted on suitable base frame made of MS channel with necessary reinforcement which shall be installed on suitable cement concrete foundation and vibration isolation arrangement as per recommendations of manufacturer. (E) FUEL TANK: Daily service fuel tank of suitable litres capacity as per CPWD Specifications, fabricated out of 3 mm thick M.S. sheet complete with all standard accessories and fuel piping between fuel tank and diesel engine with MS class ‘C’ pipes of suitable dia. Complete with valves, level indications & accessories as required as per specifications. (F) Exhaust System: Dry exhaust manifold with hospital type exhaust silencer and catalytic convertor. (G) Starting System: 12V/24V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with suitable numbers of batteries (180 AH capacity lead acid SMF type) as required as per specifications. The battery shall be housed inside the acoustic enclosure of DG Set. (H) Acoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air in to the atmosphere and the temperature rise inside the enclosure, noise level outside enclosure.						
	The acoustic enclosure should be suitable for cable connection/connection through bus-trunking. Such arrangements on acoustic enclosure should be water proof & dust-proof conforming to IP-65 protection. The enclosure shall be as per CPCB IV + or better norms etc. and as per CPWD specifications. (I) AMF Panel: Free standing floor mounted IP 42 automatic mains failure control panel including auto by-pass, suitable for KVA as below for silent type DG set complete with relays, timers, set of CTs for metering & protection and energy analyser to indicate currents, phase and line voltages, frequency, power factor, KWH, Kilo Volt Ampere Reative Hour (KVARH), KVA (Phase & Total), KW & provision for overload, short circuit, restricted earth fault, under frequency, power (aluminium) and control (copper) cabling of suitable size upto 15 meter between AMF panel, LT Panel and DG Set including connection interconnection etc. as required, all complete and inter locking and communication/ Ethernet /RS485/SNMP port open protocol for BMS integration including suitable software, the panel shall be of DG Set OEM make etc. as per approved by Engineering in charge and including the following: 1. Suitable numbers and appropriate capacity 4 pole motorised electrically operated draw out with cradle type 3 position ACB/ MCCB with electronic release for O/C & E/F and shunt trip. 2. Auto/Manual/Test/Off selector switch 3. Protection for under and over voltage phase reversal (2 nos Over voltage relay, 2 Nos. reverse power relay and 2 Nos. under voltage relay). 4. 3 Sets of current transformers 15 P 10 accuracy for protection and 15 VA class I for metering						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	5. Energy analyser unit to indicate current, Voltage(L-N & L_L), kW, kVA (Phase & Total), Frequency, KWH, PF. 6. LED Indicating lamps for load on mains and load on set 7. Fuse/ MCB for instruments 8. Battery charger, complete with transformer/ rectifier, D.C. voltmeter and ammeter, selector switch for trickle, off and boost and current adjustment. 9. Main supply failure monitor 10. Supply failure timer 11. Restoration timer 12. Control unit with three impulse automatic engine start/stop and failure to start lockout. 13. Impulse counter with locking and reset facility. 14. ON/OFF/Control circuit switch with indicator 15. Audio/Video annunciation for (i) High water temperature (ii) Low lubricating oil pressure (iii) Engine over speed (iv) Engine fails to start (v) Full load/maximum load warning 16. Protection for over/under Frequency, Loss of AC sensing, Over Current, Unbalancing load with suitable number of relays and accessories 17. Maintenance notification based on Engine Run Hour & due date. 18. Load Management through PLC to achieve auto opening and closing of incomer breakers, bus coupler switching of essential panel, interlocking providing signal to AMF Panel for load status and AMF shall give command to DG Set to auto start / auto stop depending upon load status and requirement etc. and necessary hardware and software required to perform the operation shall be provided by the contractor including all control wiring.						
	40 KVA	Each	1	532669	537995.70	537996.00	29.1.3
	Total of SH- XIV (DG Set)					537996.00	
	Sub-Head - XV (Air-Conditioning) (HI - WALL SPLIT SYSTEMS)						
15.01	Supplying , Installation, Testing and Commissioning of Air Cooled Hi Wall split type Air conditioners complete with Indoor unit(IDU), Out door unit (ODU), surface / concealed copper Refrigerant piping with insulation (closed cell elastomeric nitrile rubber tubular pipe section) upto 3 Mtr (IDU to ODU), copper power cable upto 3.5 Mtr (IDU to ODU) i/c drain pipe R-32/R-410/ R-407 Green Refrigerant, wireless Remote control, suitable for working between 180 260V with low & high voltage cutoff and 50 hz ,1 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll / rotary compressor. The system shall be able to deliver 100% of the rated capacity upto 42 0C. Min 5 year Original Equipment Manufacturer (OEM) warranty both compressor and Printed Circuit Board (PCB). Must comply : Electrical cable IS 694 or IS 9968 temperature sensing control IS /International Electrotechnical Commission (IEC) 60730, hermetic compressor IS 10617, heat exchanger IS 11329, capacitor IS 2993 and motor IS 12615. Complete as per CPWD specification and IS : 1391 Part II 2023. The system shall be able to operate up to 50 0C (out door ambient temperature). Inverter Type - Cooling only						
a	1.5 TR with 5 Star BEE Rating	Each	8	43539.00	43974.40	351795.00	32.2.3
15.02	Supplying and fixing of 3 core 4 sq.mm PVC insulated unarmoured copper conductor cable confirming to IS:1554 (Part1) on surface etc. complete as reqd.	Mtr.	15	472.00	-	7080.00	MR

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
15.03	Supplying and fixing water CPVC drain pipe i/c bend of size 25 mm with clamping etc as reqd.	Mtr.	50	208.00	-	10400.00	MR
	Total of SH- XV (Air-Conditioning) (HI - WALL SPLIT SYSTEMS)					369275.00	
	SH:-XVI (Manually Operated Electronic Fire Alarm System)						
16.01	Supplying, installation, testing & commissioning of main control and indicating panel made out of 16 SWG MS sheet to accommodate the following items duly powder coated in approved colour with louvers for ventilation, locking arrangement, audio and visual indication for fire alarm and public address system, monitoring system including connections, interconnections etc complete as required. 10 Zone panel for fire alarm system 250 Watt amplifier racks suitable for operation on 230V AC/24V DC supply conforming to IEC-268-3 complete with all accessories as required - 2 Nos.(one to act as standby) Talk back master station with LED PTT (press to talk) push button for operation on 230V AC/24 V DC supply conforming to IEC-268 for simplex mode of operation/communication suitable for 20 Nos.talk back unit -1 set. Announcement control desk suitable for selection of different zones selectively and ON ALL CALL switch with visual indication etc. complete as required -1 set. Amplifier change over switch for inter changing amplifier -1 No. Monitor panel for loudspeaker complete with output selector, ON/OFF switch, fuse, visual indications etc. complete as required- 1 No. Gooseneck microphone with stand and ON/OFF switch- 1 No. Main ON/OFF switch, fuse indication lamps, DC and AC voltmeters & ammeters, terminal blocks etc. complete as required -1 set. Battery charger trickle cum boost to take complete load of fire alarm & PA system complete with all accessories including providing & fixing of 2 nos.12 volt, 60 AH each sealed maintenance free batteries -1 set.	Each	1	75339.00	76092.40	76092.00	28.1.10
16.02	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete interconnections as required.						
a	4 Zone	Each	1	9808.00	9906.10	9906.00	28.1.9.1
16.03	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	Each	4	513.00	518.15	2073.00	28.1.3
16.04	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	Each	4	600.00	606.00	2424.00	28.1.6
16.05	Supplying and drawing following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.						
a)	2 x 1.5 sq. mm	Mtr	100	77.00	77.75	7775.00	1.17.2

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Total of SH- XVI (Manually Operated Electronic Fire Alarm System)					98270.00	
	SH:-XVII (Down Comer System)						
	TEERACE PUMP						
17.01	(A)Supplying, installation, testing and commissioning of electric driven pressurisation pump suitable for automatic operation and consisting of following,complete in all respects, as required : (Terrace Pump)						
	(B) Horizontal type, multistage, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS : 1520.						
	(C) Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase 50 Hz AC supply with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS : 325.						
	(D) M.S fabricated, common base plate, coupling, coupling guard, foundation bolts etc. as required.						
	(E) Suitable cement concrete foundation duly plastered and with anti vibration pads.						
a	450 lpm at 35m Head	Each	2	91384.00	92297.85	184596.00	27.4.2
17.02	Providing, laying, testing & commissioning of ' C' class heavy duty MS pipe conforming to IS 1239/Class -II of IS: 3589 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :						
a	50 mm nominal dia	Rmt	10	1557.00	1572.55	15726.00	27.7.4
b	80 mm nominal dia	Rmt	12	2277.00	2299.75	27597.00	27.7.6
c	100 mm nominal dia	Rmt	18	3077.00	3107.75	55940.00	27.7.7
	BUTTERFLY VALVE						
17.03	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :						
a	50 mm nominal dia	Each	2	4114.00	4155.15	8310.00	27.11.2
b	80 mm nominal dia	Each	2	5406.00	5460.05	10920.00	27.11.4
c	100 mm nominal dia	Each	2	7271.00	7343.70	14687.00	27.11.5
	NON RETURN VALVE						
17.04	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :						
a	65 mm nominal dia	Each	1	6913.00	6982.15	6982.00	27.14.3
b	80 mm nominal dia	Each	1	8255.00	8337.55	8338.00	27.14.4
c	100 mm nominal dia	Each	1	11853.00	11971.55	11972.00	27.14.5
	Y-STRAINER						
17.05	Providing, installation, testing and commissioning of stainless steel Y-strainer fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.						
a	100 mm nominal dia	Each	1	7270.00	7342.70	7343.00	27.15.2

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	Flexible Bellow						
17.06	Supplying ,fixing, testing & commissioning of Flexible Rubber Bellow with MS Flange of PN-16 pressure rating for Fire Fighting System.						
a	80 mm nominal dia	Each	4	5445.00	-	21780.00	MR
	AIR VESSEL						
17.07	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and paintingwith synthetic enamel paint of approved shade as required.	Each	1	19402.00	19596.00	19596.00	27.20
	PRESSURE SWITCH						
17.08	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	2	1670.00	1686.70	3373.00	27.22
17.09	Supplying and fixing of fire brigade connection of cast iron body with gun metal male instantaneous inlet couplings complete with cap and chain as reqd. for suitable dia MS pipe connection conforming to IS 904 as required:						
a	2 way-100 mm dia M.S. Pipe	Each	1	7262.00	7334.60	7335.00	27.19.1
	PRESSURE GAUGE						
17.09	Providing and fixing in position the industrial type pressure gauges with gun metal / brass valves complete as required	Each	2	1491.00	1505.90	3012.00	30.8
17.10	Supplying, Installation, Testing and Commissioning of outdoor type double door feeder pillar compartmentlised Pump Starter Panel of suitable size not less than 300mm deep made out of CRCA sheet steel 2mm thick CRCA sheet powder coated , hinged double door,totally enclosed, dust, vermin and weather proof with locking arrangement duly compartmentalised having 4 strip TPN Aluminium busbar with cable alleys, detachable cable terminating plates at the bottom/top, end termination, danger notice boards, sign wirting.The panel having bottom support suitable extended 'C' channel of size 100mm x 40 mmx5mm and having following switch gears, instruments and accessories mounted inside the feeder pillar i/c connection, interconnection with copper thimbles, earthing etc complete as per CPWD specification and as per approval of Engineer in charge. (Face Area not less than 0.9 Sq.mtr.)						
A	Incoming :-						
i	40 A, 415 Volt, 25 KA, Ics=100% Icu, 4 Pole, MCCB with thermal magnetic release having adjustable overload protection, adjustable short circuit portection with suitable rotary handle and spreader terminals-1 No.						
ii	TPN aluminium bus bars of 100 AMP rating with sleeves - 1 set						
B	Metering						
(i)	BMS Compatible Digital Multi Function Meter (96mmx96mm) CL-0.5 having RS 485 port with looping wiring along with terminal block, suitable size CT's, Phase indication LED lamps with 2 Amp back up MCBs, breaker 'ON/ 'OFF' indicating light etc. ----1 Set						
C	Outgoing :-						
i	32 Amp, TP MCB 'C' Curve, - 2 Nos.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
ii	Suitable HP Fully Automatic DOL Starter suitable for 2 Nos. 450 LPM Terrace Booster Pump with Power contactor, thermal overload relay, Single Phase Preventor, Auto/ Manual/ OFF Selector switch, start & stop push buttons, LED ON & OFF indicating lamps etc. complete with all internal control wiring as required - 2 set	Job	1	62338	-	62338.00	MR
17.11	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required. (a) 20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type-2 as per IS: 12585. (b) 20 mm nominal internal dia gun metal globe valve & nozzle. (c) Drum and brackets for fixing the equipments on wall. (d) Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.						
a	30 m	Each	5	9440.00	9534.40	47672.00	27.17.1
17.12	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :						
a	Gun Metal	Each	18	5455.00	5509.55	99172.00	27.16.1
17.13	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :						
a	Gun Metal	Each	9	2544.00	2569.45	23125.00	27.18.1
17.14	Providing and fixing weather proof lockable cabinet of size not less than size 900mm x 600mm x 500mm made out of MS sheet of 16 gauge thickness having central opening and 4 mm thick glazed glass doors (Two nos.) suitably marked on the outside with the letters "FIRE HOSE" including necessary locking arrangement and shall be painted with two coats red colour over a two coats of primer. The cabinet shall be suitable to accommodate 2 nos. 15 mtr long Hose pipe & 1 No branch pipe nozzle i/c suitable foundation work etc. complete as required (Cost shall be inclusive of providing break glass box containing key for the cabinet along with hammer).	Each	5	12849.00	-	64245.00	MR
17.15	Supplying and fixing Single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :						
a	Single headed Gunmetal	Each	8	8208.00	8290.10	66321.00	27.9.1
17.16	Supplying and fixing Single headed external yard hydrant valve with 1 No. 63 mm dia instantaneous FM Gunmetal/Stainless Steel coupling and cast iron wheel, ISI marked, conforming to IS 5290 (type A) with blank Gunmetal/Stainless Steel cap and chain as required :						
a	Single headed Gunmetal	Each	5	8208.00	8290.10	41451.00	27.10.1
Total of SH:-XVII (Down Comer System)						811831.00	
Sub-Head - XVIII (Pump Sets & Panel)							

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
18.01	Supplying, Installation, Testing and Commissioning of following rating 3HP Horizontal Openwell Submersible pump set suitable for operation on 415 Volts, 50 Hz AC Supply etc as reqd.						
A	(i) Total Head in metre : 15-27 Mtrs.						
	(ii) Discharge in LPM : 610-200 LPM(±10%)						
	(iii) Delivery dia in mm - 50 mm	Job	3	32795	-	98385.00	MR
18.02	Providing and fixing of 50 mm dia Class B GI Pipe ISI marked with all accessories like coupler/bend/elbow/union/Tee/nipple etc i/c cutting, threading and making the joint leak proof etc. Complete as required.	Mtr.	25	870	-	21750.00	MR
18.03	Providing and fixing of following sizes of screwed type Gun Metal valve of PN - 1.6 etc as required. (Duly ISI marked)						
a	50 mm dia gate valve	Each	3	5314	-	15942.00	MR
b	50 mm dia vertical check Valve	Each	3	3693	-	11079.00	MR
18.04	Supplying and drawing of following size ISI Marked three core flat Copper submersible cable in the existing PVC conduit/DWC Pipe i/c connection etc. as reqd..						
a	3C x 2.5 sqmm	Mtr.	150	219	-	32850.00	MR
18.05	Supplying, Installation, Testing and Commissioning of outdoor type double door feeder pillar compartmentlised Pump Starter Panel of suitable size not less than 300mm deep made out of CRCA sheet steel 2mm thick CRCA sheet powder coated, hinged double door, totally enclosed, dust, vermin and weather proof with locking arrangement duly compartmentalised having 2 strip Aluminium busbar with cable alleys, detachable cable terminating plates at the bottom/top, end termination, danger notice boards, sign wiring. The panel having bottom support suitable extended 'C' channel of size 100mm x 40 mm x 5mm and having following switch gears, instruments and accessories mounted inside the feeder pillar i/c connection, interconnection with copper thimbles, earthing etc complete as per CPWD specification and as per approval of Engineer in charge. (Face Area not less than 0.9 sqmtr)						
A	Incoming :-						
i	40 A, 415 Volt, 25 KA, Ics=100% Icu, 4 Pole, MCCB with thermal magnetic release having adjustable overload protection, adjustable short circuit protection with suitable rotary handle and spreader terminals-1 No.						
ii	TPN aluminium bus bars of 100 AMP rating with sleeves - 1 set						
B	Metering						
(i)	BMS Compatible Digital Multi Function Meter (96mm x 96mm) CL-0.5 having RS 485 port with looping wiring along with terminal block, suitable size CT's, Phase indication LED lamps with 2 Amp back up MCBs, breaker 'ON'/'OFF' indicating light etc. ----1 Set						
C	Outgoing :-						
i	5-32 Amp, TP MCB 'C' Curve, - 3 Nos.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
ii	Three Phase D.O.L Starter suitable to 3 HP Pump motor with Power contactor, thermal overload relay, Single Phase Preventor, Auto/ Manual/ OFF Selector switch, start & stop push buttons, LED ON & OFF indicating lamps etc. complete with all internal control wiring as required -3 set.	Job	1	76819	-	76819.00	MR
Total of SH- XVIII (Pump Sets & Panel)						256825.00	
SH:- XIX (Water cooler)							
19.01	Supplying, installation, testing and commissioning of Commercial Water Purifier having multiple purification process with in-built auto-cut system, 200 LPH (Max) Water Flow Rate, 3-stage Purification Process (sediment filter, activated carbon filter & Ultraviolet treatment), should compatible with existing water cooler & suitable to operate in 160V-270V AC, 50Hz, single phase power supply etc complete with connections as required.	Each	2	21401	-	42802.00	MR
19.02	Supplying, installation, testing and commissioning of 80 Ltrs. capacity stainless steel body Drinking Water Cooler (with R-134a Refrigerant Gas) with 40 Ltr./Hour Cooling Capacity, 2 Nos. Faucets (Normal & Cold water) & suitable to operate in 230V AC, 50Hz, single phase power supply etc complete with connections as required.	Each	2	56549	-	113098.00	MR
Total of SH:- XIX (Water cooler)						155900.00	
SH- XX (Solar Photovoltaic Power Plant)							
20.1	Supplying Installation, Testing and Commissioning of on-grid Solar Photovoltaic Power Plant conforming to various applicable standards BIS, IEC, MNRE guidelines, the Central Electricity Authority Regulations and CPWD Specifications as amended up to date, consisting of Mono/Poly Crystalline silicon solar cells module, net metering facility, necessary control, protections, earthing, cabling, mounting structure, junction boxes, power conditioning units, Real time online web interfaced Data Monitoring System, Distribution panels, grid connecting arrangement, conduits, pipes, cable trays and other accessories etc. as required.						
	a) High Energy Efficiency Solar Photovoltaic Module of capacity 330 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730- Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 23% at STC with temperature coefficient of Pmax better than -0.30% per 0C. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Solar Modules shall be designed to operate in relative humidity upto 100% with temperature between -10 0C and +85 0C. Further, each PV module used in any solar power project must have Radio frequency identification tag with information such as name of manufacturer, month and year of manufacturing, country of origin (separately for Solar cell and module), I-V curve, Unique Serial No and Model No of the module, Wattage, Im, Vm and FF, name of test lab issuing IEC certificate.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	b)Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 415 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC with a variation of 10% at nominal voltage. Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 OC, Minimum IP-65 for outdoor and Minimum IP 21 for indoor, Built-in meter and data logger, MPPT, switching devices IGBT/MOSFETs and controller Microprocessor /DSP. PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown. The PCU shall be able to withstand unbalanced load conforming to IEC standard with shutdown/standby mode. It must be provided with grid islanding along with manual disconnect pole isolation switch besides automatic disconnection. Minimum protections: Mains Under / Over Voltage, Over current, Over/Under grid frequency, Over temperature, Surge voltage induced at output due to external source, Short-circuit, Lightening, Anti Islanding (for grid synch. Mode) and other protections as per applicable standards. LCD/LED display of minimum parameters: DC input voltage, DC current, AC Voltage and current (all 3 phases, in case of 3 phase), Instantaneous & cumulative AC output power, Daily DC energy produced and other parameters applicable standard. Communication interface RS 485 / RS 232.						
	c) Module mounting structure: The roof top solar plant generation units shall be installed by using supporting Aluminium/Galvanized MS structure (mass of zinc coating shall be as per IS4759) having minimum head room clearance of 2.4 meter above the terrace level / ground level. The mounting structure would be designed to sustain wind load and seismic parameter of the site of installation. All the structure shall be design as per applicable BIS code and the material shall also confirm the applicable BIS Code. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. The suitable arrangements for maintenance and cleaning shall be provided.						
	d) Real time online web interfaced Data Monitoring System complete with accessories for various parameters such as Solar Irradiance, temperature, AC Output Voltage and current, Output Power, Power factor, DC Input Voltage and Current, Time Active, Time disabled, Time Idle, Power produced and other parameters as per standard practices. e) Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other ccessories etc. as required. Each junction box shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement with High quality Suitable capacity Metal Oxide Varistors(MOVs) (semiconductor diode with resistant applied voltage)/ surge arrestors and suitable Reverse Blocking Diodes, isolation switches isolate the DC input to Inverter, copper bus bar etc.						

S.N.	Description of Item	Unit	Qty	Rate	Rate i/c CI 1.01	Amount	Remarks
	f) Lightning, surge voltage protection, earthing protection and grid islanding. g) Cables: Connections & Interconnections by required size IR/UV protected XLPE insulated copper conductor 1.1 kV grade armored power and control cables(ISI Marked) along with supplying & fixing of necessary channel/conduit, GI cable trays, supports, lugs, thimble and other accessories etc. as required. h) DC Distribution Board And AC Distribution Panel Board: IP65, free standing, metal clad, having copper bus bar, having required protection and control gears, connection-interconnection, etc. as required.	5	Kwp	54280	54822.80	274114.00	17.1
	Total of Sub Head- XX (Solar Photovoltaic Power Plant)					2,74,114.00	
	ABSTRACT OF COST						
1	SH-I (Wiring)					1173305.00	
2	SH-II (Fan & LED Fittings)					328907.00	
3	SH-III (MCB & DB'S)					249210.00	
4	SH-IV (Earthing)					381051.00	
5	SH- V (Lightning Conductor)					48044.00	
6	SH- VI (Feeder Pillar)					361231.00	
7	SH-VII (Cable laying)					750481.00	
8	SH-VIII (Street Lighting)					302871.00	
9	SH- IX (Fire Extinguisher)					63050.00	
10	SH- X (CCTV Equipment)					350923.00	
11	SH- XI (UPS Equipment)					510806.00	
12	SH- XII (IP Based EPABX System & LAN System)					379003.00	
13	SH- XIII (Lift)					2260860.00	
14	SH- XIV (DG Set)					537996.00	
15	SH- XV (Air-Conditioning) (HI - WALL SPLIT SYSTEMS)					369275.00	
16	SH- XVI (Manually Operated Electronic Fire Alarm System)					98270.00	
17	SH- XVII (Down Comer System)					811831.00	
18	SH- XVIII (Pump Sets & Panel)					256825.00	
19	SH- XIX (Water cooler)					155900.00	
20	SH- XX (Solar Photovoltaic Power Plant)					274114.00	
	Total					9663953.00	