

VISITORS HOSTEL, IIT KANPUR						
DETAIL ESTIMATE FOR INTERNAL ELECTRICAL WORK						
ABSTRACT ESTIMATE: INTERNAL ELECTRICAL WORKS						
S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
1.1		<b>Sub Head - I- WIRING</b>				
1.1.1	1.3	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR 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/HFFR PVC insulated copper conductor single core cable etc. as required.				-
a)	1.3.1	Group A	1,095	Each	1,440	1,576,800
1.1.2	1.54	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/HFFR PVC insulated copper conductor single core cable in surface/ recessed steel conduit, and earthing the point with 1.5 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required				-
a)	1.54.1	Group A	361	Each	914	329,954
1.1.3	1.5	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	8,332	Metre	480	3,999,360
1.1.4	1.6	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	10	Metre	724	7,240
1.1.5	1.7	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required.				
a)	1.7.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	11,200	Metre	370	4,144,000
b)	2x1.7.1	4 X 1.5 sq. mm + 2 X 1.5 sq. mm earth wire	10	Metre	740	
c)	1.7.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	2,055	Metre	652	1,339,860
d)	1.7.5	2 X 10 sq.mm + 1 x 6 sq. mm earth wire	120	Metre	778	93,360
e)	1.7.10	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	10	Metre	1,253	12,530
f)	1.7.11	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	765	Metre	1,760	1,346,400
1.1.6	1.17	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)	1.17.2	2 x 1.5 sq. mm	10	Metre	77	770
b)	1.17.3	3 x 1.5 sq. mm	10	Metre	104	1,040
c)	1.17.6	6 x 1.5 sq. mm	10	Metre	195	1,950
d)	1.17.21	3 x 4 sq. mm	10	Metre	222	2,220
1.1.7	1.27	Supplying and fixing following size/modules, GI box alongwith modular base & cover plate for modular switches in recess etc.as required				-
a)	1.27.1	1 or 2 Module (75mmX75mm)	138	Each	354	48,852
b)	1.27.2	3 Module (100mmX75mm)	2	Each	384	768
c)	1.27.3	4 Module (125 mm X 75 mm)	2	Each	401	802
d)	1.27.4	6 Module (200 mm X 75 mm)	2	Each	462	924
1.1.8	1.15	Rewiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable and 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable as earth wire in existing surface/ recessed steel/PVC conduit including dismantling as required				-
	1.15.1	Group A	1	Point	687	687
1.1.9	1.31	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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	80	Each	545	43,600
1.1.10	1.32	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 A modular socket outlet and 15/16 A modular switch, connections etc. as required	225	Each	659	148,275
1.1.11	1.56	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	556	Each	757	420,892
1.1.12	1.20	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)	1.20.1	20 mm	100	Metre	254	25,400
b)	1.20.2	25 mm	15,842	Metre	289	4,578,338
c)	1.20.3	32 mm	500	Metre	360	180,000
d)	1.20.4	40 mm	100	Metre	515	51,500
e)	1.20.5	50 mm	100	Metre	634	63,400
1.1.13	2.18	Supplying and fixing 20 A, 240 V, SPN Industrial type socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 A "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required	2	Each	1,806	3,612
1.1.14	2.20	Supplying and fixing 30 A, 415 V, TPN Industrial type socket outlet, with 4 pole and earth, metal enclosed plug top alongwith 30 A "C" curve, TPMCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc.as required	2	Each	4,358	8,716

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1.1.15	1.24	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc.as required				
a)	1.24.6	Telephone socket outlet	138	Each	168	23,184
1.1.16	1.57	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	4	Each	807	3,228
1.1.17	1.18	Supply and drawing following pair 0.5mm dia FRLS/HFFR PVC insulated annealed copper conductor unarmoured telephone cable in the existing surface/recess steel/PVC conduit as required				
	1.18.2	2 pair	6,000	Metre	39	234,000
	1.18.3	4 pair	1,000	Metre	53	53,000
1.1.18	1.19	Supply and drawing co axial TV cable RJ-6 grade, 0.7mm solid copper conductor PE insulated sealed with fine tin copper braid and protected with PVC sheath in the existing surface/recess PVC /steel conduit as required	6,000	Metre	54	324,000
<b>2.0</b>		<b>SUB HEAD - II- SDB, DISTRIBUTION BOARD &amp; RISING MAINS</b>				
2.1	2.3	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, 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)	2.3.1	6 way, Double door	1	Each	2,390	2,390
b)	2.3.2	8 way, Double door	141	Each	2,773	390,993
c)	2.3.3	12 way, Double door	9	Each	2,871	25,839
d)	2.3.4	16 way, Double door	1	Each	3,367	3,367
2.2	2.5	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, 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)	2.5.3	12 way (4 + 36), Double door	4	Each	13,512	54,048
2.3	2.5	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				-
a)	2.5.1	4 way (4 + 12), Double door	1	Each	7,951	7,951
b)	2.5.2	8 way (4 + 24), Double door	4	Each	10,724	42,896
c)	2.5.3	12 way (4 + 36), Double door	17	Each	13,512	229,704
2.4	2.10	Supplying and fixing 5 A to 32 A rating, 240/415 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)	2.10.1	Single pole	1,304	Each	285	371,640
b)	2.10.2	Single pole and neutra	10	Each	643	6,430
c)	2.10.3	Double Pole	10	Each	696	6,960
d)	2.10.4	Triple pole	10	Each	1,070	10,700
e)	2.10.5	Triple pole and neutra	10	Each	1,301	13,010
2.5		Supplying and fixing 63A rating, 240/415 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				
2.5.1	MR	Triple pole	4	Each	2,278	9,112
2.6	2.11	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required	12	Each	14	168
2.7	2.2	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, Ics=100% Icu and Operational Voltage 690V etc. as required.				
2.7.1	2.2.13	100 A,30KA,FPMCCB	21	Each	8127	170,667
2.8	2.12	Supplying and fixing following rating, double pole, 240 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.				-
a)	2.12.1	40 amps	1	Each	472	472
b)	2.12.2	63 amps	1	Each	569	569
2.9	2.13	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required				-
a)	2.13.1	40 amps	1	Each	1,049	1,049
b)	2.13.2	63 amps	1	Each	1,115	1,115
c)	2.13.3	100 amps	1	Each	1,317	1,317
2.10	2.14	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc as required				-
a)	2.14.1	25 amps	UR	Each	2,141	
b)	2.14.2	40 amps	446	Each	2,512	1,120,352
c)	2.14.3	63 amps	15	Each	2,866	42,990
2.11	2.15	Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required				-
a)	2.15.1	25 A	1	Each	3137	3,137
b)	2.15.2	40 A	1	Each	3452	3,452
c)	2.15.3	63 A	1	Each	3597	3,597

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2.12	2.23	Supplying and fixing Cable End Box (Loose Wire Box) suitable for following single pole and neutral, sheet steel, MCB distribution board, 240 Volts, on surface/ recess, complete with testing and commissioning etc. as required.			-	-
a)	2.23.1	For 6 way, Double door SPN MCBDB	1	Each	834	834
b)	2.23.2	For 8 way, Double door SPN MCBDB	141	Each	918	129,438
c)	2.23.4	For 14 way, Double door SPN MCBDB	9	Each	990	8,910
2.13	2.24	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)	2.24.2	For 6 way, Double door TPN MCBDB	2	Each	1223	2,446
b)	2.24.3	For 8 way, Double door TPN MCBDB	5	Each	1448	7,240
2.14	2.25	Supplying and fixing Cable End Box (Loose Wire Box) suitable for triple pole and neutral, sheet steel, Vertical MCB distribution board, 415 Volts, on surface/ recess, complete with testing and commissioning etc. as required.	22	Each	1271	27,962
2.15	3.8	Supplying, installation on wall, testing and commissioning of following capacity Air Insulated Compact Type Rising Mains for use on 3 phase 4 wire 415 volts, 50Hz A.C. supply with enclosure having IP-54 rating after fixing the tap off boxes and all accessories, made of 1.6mm thick steel sheet duly powder coated in convenient sections complete with 4 Nos aluminium bus bars having current density of 130 A/ sq cm at nominal current rating, necessary joints & expansion joints, fire barrier at each floor, provision of tapping at every metre, continuous earthing with 2 Nos aluminium strip of suitable size (one on each side) including, G.I. clamping brackets, angle iron bracket, steel fasteners, connecting to earthing system etc. as required.				
a)	3.8.4	500 A, I <sub>sc</sub> = 35kA for 1 second	20	Metre	11779	235,580
2.16	3.11	Supplying, installation, testing & commissioning of following capacity End Feed Unit for the existing Air Insulated Compact Type bus trunking/ rising mains for use on 3 phase 4 wire 415 volts, 50Hz A.C. supply made with 1.6mm thick steel sheet enclosure (IP54) duly powder coated with provision of MCCB/ACB (but without MCCB/ACB) complete with necessary joints including clamping brackets, angle iron bracket, steel fasteners, connecting to earthing system etc. as required				
a)	3.11.4	500 A, I <sub>sc</sub> =35kA for 1 sec	2	Each	11888	23,776
2.17	3.12	Supplying, installation, testing & commissioning of following capacity Plug In/ tap off box on the existing Air Insulated Compact Type bus trunking/ rising mains for use on 3 phase 4 wire 415 volts, 50Hz A.C. supply made with 1.6mm thick sheet steel enclosure (IP54) duly powder coated with provision of MCCB/ACB (but without MCCB/ACB) complete etc. as required				
a)	3.12.1	125 A, I <sub>sc</sub> =15kA for 1 sec	6	Each	9104	54,624

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
3.0		<b>Sub Head III- LIGHTENING CONDUCTOR</b>				
		<b>AIR TERMINATION SYSTEM</b>				
3.2	MR	Supply and Installation of 8mm dia Aluminium alloy Solid Round Conductor of material AlMgSi used in air termination and down conductor system . Cross sectional area of conductor should be 50 mm <sup>2</sup> . Meets the requirement for IS/IEC 62305. Test Parameter: a. Lightning impulse current of 100kA for 10/350 $\mu$ s b. Electrical resistivity - 0.034 m, c. Tensile strength - 178 MPa or N/mm <sup>2</sup> d. Salt spray - No Sign of Corrosion. Tested as per IEC 62561-2.	300	Mtr	267	80,100
3.3	MR	Supply and Installation of SS Conductor Holder for Parapet wall for holding 8 mm dia Aluminium alloy round Conductor horizontal air termination and in down conductors. Meets the requirements as per IS/IEC 62305, IEC 62561-4.	300	Nos	260	78,000
3.4	MR	Supply and Installation of Nylon roof conductor holder for flat roof with concrete block for fixing 8 mm dia Aluminium alloy Solid Round Conductor in the terrace flat surface at every 1 mtr.	100	Nos	156	15,600
3.5	MR	Supply and Installation of Adhesion Glue for fixing metal roof conductor holder over the metal surface to meet the requirement of IS/IEC 62305.	10	Nos	2,535	25,350
3.6	MR	Supply and Installation of Stainless steel 304 Grade MP Connector for 8-10 mm dia round conductor at cross/Tee junction to meet the requirement for IS/IEC - 62305 and tested for Mechanical load as per IEC 62561-1.	30	Nos	481	14,430
3.7	MR	Supply and Installation of Expansion Joint with connector to compensate the expansion and contraction of 8mm dia Solid Round Al. Conductor during temperature variations. Expansion Joint should be considered at every 20 mtr length of straight horizontal air termination and connected at both the end with use of straight connector conductor.	15	Nos	397	5,955
3.8	MR	Supply and Installation of Aluminium Straight conductor connector for interconnecting 8mm Aluminium conductor to meets the requirement of IS/IEC 62305. Test Parametres: a) Mechanical Load b) Electrical Resistivity c) Environmental Test Tested as per IEC 62561-1	10	Nos	78	780
3.9	MR	Supply and Installation of rod of 3mtr length of material AlMgSi of diametre $\phi$ 16/10 mm crimped on both the ends (Tapped Type). The rod shall be mounted with stainless steel clamp and fixing accessories . Test Parameter for 3 mtr vertical air terminal a)ELectrical Resistivity b) Tensile Strength c) Condition of Salt Mist Tested as per IEC 62561-2. Test Parametrer for Wall clamp a) Mechanical load as per IEC 62561-1	7	Nos	8,041	56,287
3.10	MR	Supply and Installation of Stainless steel Earthing stud -1 with fixing clamp accessories of dimension 69 x 69 mm used in structural steel ring earthing system to meet the requirements of IS/IEC 62305 and tested as per IEC 62561-1. Rated Current (CPRI TESTED): I <sub>rms</sub> - 5 KA; I <sub>peak</sub> - 10.5 KA Per sec	11	Nos	2,490	27,390
3.11	MR	Supply and Installation of Connecting point made of stainless steel for terminating the 8-10mm dia conductor to meets the requirement of IS/IEC 62305 / IEC62561-2	11	Nos	397	4,367
3.12	MR	Supply and Installation of Aluminium folding seam conductor holder as per sheet profile for an 8 mm dia aluminium alloy solid round conductor for fixing a horizontal air terminal above the metal sheet to meet the requirements for IS/IEC 62305 and tested as per IEC 62561-4.	5	Nos	293	1,465
II		<b>STRUCTURAL RISER</b>				
3.13	MR	Supply and Installation of Rust resistant non corrosive 10 mm Dia Copper Bonded solid Steel round conductor used for Earth termination inside the concrete and soil. Meets the requirement of IS/IEC 62305. Test parameter: a) Short circuit current test for copper bonded conductor: Test 6.6 kA ratings, as per cross sectional area for 1 sec (IS3043/IEEE80). b) Electrical Resistivity : 0.1 m c)Tensile strength 672 N/mm <sup>2</sup> . d)Adhesion no peel or crack & Bend test no seperation of Cu, e) Cu Coating thickness min. 70 $\mu$ m. Tested as per IEC 62561-2.	370	Mtr	767	283,790
3.14	MR	Supply and Installation of Multi Conductor Bonding Clamp Copper Coated for interconnecting 10 - 18 mm Round Conductor with reinforcement rebar ranging 16 to 32mm at every interval of 3Mtr inside the concrete to meet the requirements of IS/IEC 62305 and IEC 62561-1.	120	Nos	540	64,800
3.15	MR	Supply and Installation of Diagonal clamp MS for interconnecting 10 -18 mm dia round conductor with reinforcement rebar at every interval of 3Mtr inside the concrete to meet the requirements of IS/IEC 62305 and IEC 62561-1.	11	Nos	267	2,937
3.16	MR	Supply Installation of MS cross connector for 16-18 mm dia round conductor inside concrete to meet the requirement of IS/IEC - 62305. Test Parameter a) Static Mechanical Test b) Lightning Impilse Current (Iimp) Tested for IEC 62561-1	4	Nos	273	1,092

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3.17	MR	Supply and Installation of Stainless steel Straight Connector for interconnecting 10 mm dia copper bonded round conductor at straight connection to meets the requirement of IS/IEC 62305 at every 3mtr Test Parametres: a) Static Mechanical Test b) Environmental Test Tested as per IEC 62561-1	120	Nos	410	49,200
3.18	MR	Supply and Installation of Stainless steel Earthing stud -1 with fixing clamp accessories of dimension 69 x 69 mm used in structural steel ring earthing system to meet the requirements of IS/IEC 62305 and tested as per IEC 62561-1. Rated Current (CPRI TESTED): Irms- 5 KA; Ipeak- 10.5 KA Per sec	11	Nos	2,490	27,390
<b>III</b>		<b>STRUCTURAL EARTHING</b>				
3.19	MR	Supply and Installation of Rust resistant non corrosive 10 mm Dia Copper Bonded solid Steel round conductor used for Earth termination inside the concrete and soil. Meets the requirement of IS/IEC 62305. Test parameter: a) Short circuit current test for copper bonded conductor: Test 6.6 kA ratings, as per cross sectional area for 1 sec (IS3043/IEEE80). b) Electrical Resistivity : 0.1 m c) Tensile strength 672 N/mm <sup>2</sup> . d) Adhesion no peel or crack & Bend test no separation of Cu, e) Cu Coating thickness min. 70µm. Tested as per IEC 62561-2.	295	Mtr	117	34,515
3.20	MR	Supply and Installation of Corrosion proof tape to avoid corrosion inside Soil.	3	Nos	410	1,230
3.21	MR	Supply and Installation of Exothermic Welding - a complete installation part including welding mould and other accessories for welding to meet the requirements of IEC 62561-2.	24	Nos	5,688	136,512
<b>4.0</b>		<b>Sub Head IV- FITTINGS &amp; ACCESSORIES</b>				
4.1		Supply of light fixtures suitable for fluorescent / LED with all components and accessories including but not restricted to reflectors, housings, lamp holders and including cost of ballasts and cost of lamps complete as required and as below. (as per drawings) Colour temperature shall be finalized by the architect				
4.1.1	MR	Supply of IP20 surface/wall mounted LED batten, housing made up of extruded aluminium with polycarbonate cover. Luminous flux of luminaire 1000 lm, system efficacy >100lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 6500K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <u>Similar to Regent LED 5104 or Equivalent</u>	145	Each	867	125,668
4.1.2	MR	Supply of IP20 surface/wall mounted LED batten, housing made up of extruded aluminium with polycarbonate cover . Luminous flux of luminaire 2400 lm, system efficacy >120lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 6500K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <u>Similar to Regent LED 3976 or Equivalent</u>	288	Each	2,528	728,009
4.1.3	MR	Supply of IP20 surface/wall mounted LED batten, housing made up of extruded aluminium with polycarbonate cover . Luminous flux of luminaire 4000 lm, system efficacy >120lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 6500K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <u>Similar to Regent LED 3976 or Equivalent</u>	33	Each	2,744	90,568
4.1.4	MR	Supply of IP20 round Recessed mounted LED downlighter, housing made up of pressure die cast aluminium with Opal PS Diffuser with Energy efficient LEDs having diffused wide beam angle . Luminous flux of luminaire 1500 lm, system efficacy >110lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 4000K-5700K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <u>Similar to Regent LED 3469 Zale Circular or Equivalent</u>	24	Each	2,311	55,467
4.1.5	MR	Supply of IP20 round surface mounted LED downlighter, housing made up of pressure die cast aluminium with Opal PS Diffuser with Energy efficient LEDs having diffused wide beam angle Luminous flux of luminaire 1800 lm, system efficacy >100lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 4000K-6500K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. Product dimension : Ø126mm H-55mm <u>Similar to Regent LED 3469 Zale or Equivalent</u>	561	Each	2,203	1,235,773

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4.1.6	MR	Supply of IP20 round surface mounted LED downlighter, housing made up of pressure die cast aluminium with Opal PS Diffuser with Energy efficient LEDs having diffused wide beam angle Luminous flux of luminaire 1500 lm, system efficacy >100lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 4000K-6500K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. Product dimension : Ø126mm H-55mm <b>Similar to Regent LED 2462 Zero or Equivalent</b>	70	Each	2,203	154,196
4.1.7	MR	Supply of compact LED Bulk Head Light Fixture surface/ Wall mounted. LED bulkhead with LED , luminous flux of luminaire 900lm, system efficacy > 100lm/W, 5700K, cool white, CRI 70, 230V, Direct light emission, white housing, The fixture is designed for 35,000 hrs of operational life at L70. Impact resistant diffuser, integral electronic control gear, Protection class I, IP65. <b>Similar to Regent LED 9003 Bulkhead or Equivalent</b>	41	Each	1,481	60,703
4.1.8	MR	Supply of 300mmx300mm IP20 Square Surface mounted LED Ceiling luminaire, housing made up of CRCA along with Opal PS Diffuser with Energy efficient LEDs having diffused wide beam angle . Luminous flux of luminaire 2000 lm, system efficacy >100lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 4000K-5700K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <b>Similar to Regent LED 0920 Top 14 S.M or Equivalent</b>	47	Each	2,203	103,532
4.1.9	MR	Supply of IP20 suspended/surface LED linear light, housing made up of extruded aluminium and PMMA diffuser . Luminous flux of luminaire 2800 lm, system efficacy >100lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 4000-5700K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <b>Similar to Regent LED 0564 Slab S or Equivalent</b>	69	Each	4,695	323,921
4.1.10	MR	Supply of IP65 surface/wall mounted LED batten, housing made up of extruded polycarbonate with polycarbonate vapour proof diffuser. Luminous flux of luminaire 3600 lm, system efficacy >100lm/W, CRI > 80, direct light emission, 230V constant current driver, 70% of luminous flux after 50,000 operating hours. Power Factor >0.90, THD <10% & CCT - 5700K, Internal wiring along with Electronic Driver having an in built Surge Protection of 2.5kV. <b>Similar to Regent LED 6650 Stark or Equivalent</b>	14	Each	4,695	65,723
4.1.11	MR	Supply of IP65 Cylindrical Wall Light (Two way), 10W System Wattage, housing made up of Pressure Die Cast Aluminum. luminaire 1000 lm , system efficacy 100 Lm/W, CRI 80,<5, IK rating IK08, Similar to Stark 36 W 5700 K, Class- I Electrical Insulation, Surface- Wall Mounting, Input Voltage (V), 220-240Vac,50 Hz, Operating Voltage(V), 140 - 280 Vac, Power factor(Typ. Load), >0.95, THD <5%, Operating Temp. 0°C - 45°C, Inbuilt Surge Protection 4KV(CM/DM), HV Cut off @320V/440V Protection for 8 Hrs. with LV Cut off and Open & short circuit Protection (output side). <b>Similar to BWP102 Two Way</b>	12	Each	7,583	90,996
4.1.12	1.35	Installation, Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	1,304	Each	151	196,904
4.1.13	9.1	<b>Brush Less Direct Current (BLDC) Fan with Remote/Regulator</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal(Aluminium 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%, remote (preferably mobile app based)/Regulator for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 0C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC supply Ceiling Fan compliant to IS 374:2019 fan i/c external connections with 1.5 sq.mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required.				
a)	9.1.3	1200mm, service value ≥ 6.0 CM/Min/Watt, air delivery 210 CM/Min (Minimum)	144		2882	415,008
4.1.14	MR	Supply, installation, testing and commissioning of 8 feet sweep heavy duty HVLS industrial Ceiling fans with permanent magnet synchronous motor, aviation grade aluminium blades 5 nos, area coverage 4000 sqft, sound level max 50 dB, Air flow 135000 CFM min, including Ceiling mount with all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 50 Hz, earthing etc. complete as required.	4	nos	166,113	664,452

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
<b>5.0</b>		<b>SUB HEAD V - LT PANELS</b>				
<b>5.1</b>		<b>MAIN LT Panel</b>				
		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 extensible type TPN aluminium alloy bus bars of high conductivity, DMC / SMC bus bars of high conductivity, DMC/ SMC bus bar supports, with short circuit withstand capacity of 31 MVA for 1 Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication shall be done in transportable sections, entire panel shall have a common copper earth bar of size 25 mm x 5 mm at the rear with 2 Nos. earth stud, solid connections from main bus bar to switch gears, switch gears to cable alley, switchgears to BBT/Cable Connection box with required size of Al. bus bars and control wiring with 2.5 .sq. mm. PVC insulated copper conductor S/C cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :-				
		All the incoming, outgoing and bus coupler ACB shall be equipped with suitable port for control, monitoring and operation of ACB with energy management systems.				
<b>(A)</b>		<b>Incoming :</b>				
A.1		2 Nos. - 1250 Amps each four pole horizontal drawout type (EDO) air circuit breaker of fault breaking capacity 50 kA (Ics = Icu = Icw upto 433V) electrically operated, fitted with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-13947-2 1993 as amended up-to-date complete with following accessories for each ACB				
A.1.1		Motor Wound spring closing mechanism- 1 No				
A.1.2		Microprocessor based release comprising of:- PROTECTION overcurrent 40%-100%- Time setting. Selectrive short circuit 60%-1000%- time setting. Instantaneous short circuit 150%-1500% Earth fault with adjustable 20%-100% Under voltage 60%-95% time setting. Over voltage 105%-120% time setting Residual voltage 10%-40% Time setting. Reverse Power. MEASUREMENT current-Phases, Neutral Voltage- Phases, Neutral Power- Active, Reactive Energy- Active, Reactive Power Factor Frequency Harmonics CONNECTIVITY				
A.1.3		Digital Multifunctional Bidirectional Meter to record demand (KVA), energy (KWH & KVAH), power factor, current (in each phase and the neutral), voltage (between phases and between each phase and neutral), Total harmonic distortion (THD) as a percentage of total current, comprising of suitable communication port for connection to energy Management systems. and 1 set of 3 Nos. CT of 1250 A/5 A Class 1 accuracy and 30 VA burden - 1 Set				
A.1.4		3 Nos. Phase indication LED lamps with 2 Amp back up MCE				
A.1.5		3 Nos. Indication lamps (Red for ACB ON, Green for ACB OFF, Orange for Auto Trip.				
A.1.6		Shunt trip coil 220 V A.C.				
A.1.7		Breaker control switch for Breaker ON, Breaker OFF and Trip Alarm Cancellation				
A.1.8		Test terminal block set, fuses, circuits as per standard practice, auxiliary contacts for positive interlocking of the breakers as required.				
<b>II)</b>		<b>Bus Couplers :</b>				
B.1		1 No. - 1250 Amps four pole horizontal drawout type (EDO) air circuit breakers of fault breaking capacity 50 kA (Ics=Icu upto 433V) electrically operated, with interlocked door, automatic safety shutters, mechanical ON/OFF and service/test/isolated position indicators and frame earthing contact, conforming to IS-13947-2-1993 as amended upto date complete with following accessories for each ACB -				
B.1.1		Motor Wound spring closing mechanism- 1 No				
B.1.2		2 Nos. Indication lamps (Red for ACB ON, Green for ACB OFF)				
B.1.3		Breaker control switch for Breaker ON, Breaker OFF				
B.1.4		Test terminal block set, fuses, circuits as per standard practice, auxiliary contacts for positive interlocking of the breakers as required.				
<b>III)</b>		<b>Bus Bars :</b>				
		4-P aluminium bus bars of minimum of 1600 Amps capacity with heat shrinkable coloured sleeves and i/c DMC/SMC bus bar cross section, size supports & their spacing etc. for withstanding fault level of 31 MVA for 1 Sec.				
<b>(IV)</b>		<b>Interlocking :</b>				
		Electrical through advance contacts in ACB's (incomers & bus couplers) interlocking should be provided to ensure that only one supply is available at a time on each section of bus and to eliminate any possibility of accidentally approaching two supplies at one bus section as per control sequence indicated on drawing				
<b>(V)</b>		<b>Outgoing :</b>				
1.4		<b>Section-1</b>				

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
1.4.1		2 Nos 500 Amp 4-P MCCB (Ics = 50 kA upto 433 V) with Microprocessor electronic release-over current 40%-100%- Time setting selective short circuit 150%-800%- Time Setting Instantaneous Short circuit 150%-800% <u>Earth Fault with adjustable setting 20%-50%</u>				
a)		Digital Multifunctional Meter to record demand (KVA), energy import/export (KWH & KVAH), power factor, current (in each phase and the neutral), voltage (between phases and between each phase and neutral), Total harmonic distortion (THD) as a percentage of total current, comprising of suitable communication port for connection to energy management systems. and 1 set of 3 Nos. CT of 630 A/5 A Class 1 accuracy and 30 VA burden -- 1 Set				
b)		ON/OFF & Phase Indicating lamp				
1.4.2		1 Nos 125 amp 25 kA 4-P MCCB with adjustable thermal and adjustable magnetic release having overcurrent and short circuit protection with ON/OFF indicating lamps complete with 1 no. 3 phase 4 wire unbalanced panel mounted, Digital dual type KWH CT operated meter alongwith CT's class 1.0 accuracy 10 VA Burden & CT shorting link				
1.4.3		6 Nos 63 amp 25 kA 4-P MCCB with thermal and magnetic release having overcurrent and short circuit protection with ON/OFF indicating lamps complete with 1 no. 3 phase 4 wire unbalanced panel mounted, Digital dual type KWH CT operated meter alongwith CT's class 1.0 accuracy 10 VA Burden & CT shorting link				
1.5		<b>Section-2</b>				
1.5.1		1 Nos 500 Amp 4-P MCCB (Ics = 50 kA upto 433 V) with Microprocessor electronic release-over current 40%-100%- Time setting selective short circuit 150%-800%- Time Setting Instantaneous Short circuit 150%-800% <u>Earth Fault with adjustable setting 20%-50%</u>				
a)		Digital Multifunctional Meter to record demand (KVA), energy (KWH & KVAH), power factor, current (in each phase and the neutral), voltage (between phases and between each phase and neutral), Total harmonic distortion (THD) as a percentage of total current, comprising of suitable communication port for connection to energy management systems. and 1 set of 3 Nos. CT of 500 A/5 A Class 1 accuracy and 30 VA burden -- 1 Set				
b)		ON/OFF & Phase Indicating lamp				
1.5.2		1 Nos 315 Amp 4-P MCCB (Ics = 50 kA upto 433 V) with Microprocessor electronic release-over current 40%-100%- Time setting selective short circuit 150%-800%- Time Setting Instantaneous Short circuit 150%-800% <u>Earth Fault with adjustable setting 20%-50%</u>				
a)		Digital Multifunctional Meter to record demand (KVA), energy (KWH & KVAH), power factor, current (in each phase and the neutral), voltage (between phases and between each phase and neutral), Total harmonic distortion (THD) as a percentage of total current, comprising of suitable communication port for connection to energy management systems. and 1 set of 3 Nos. CT of 315 A/5 A Class 1 accuracy and 30 VA burden -- 1 Set				
b)		ON/OFF & Phase Indicating lamp				
1.5.3		2 Nos 125 amp 25 kA 4-P MCCB with adjustable thermal and adjustable magnetic release having overcurrent and short circuit protection with ON/OFF indicating lamps complete with 1 no. 3 phase 4 wire unbalanced panel mounted, Digital dual type KWH CT operated meter alongwith CT's class 1.0 accuracy 10 VA Burden & CT shorting link				
1.5.4		4 Nos 63 amp 25 kA 4-P MCCB with thermal and magnetic release having overcurrent and short circuit protection with ON/OFF indicating lamps complete with 1 no. 3 phase 4 wire unbalanced panel mounted, Digital dual type KWH CT operated meter alongwith CT's class 1.0 accuracy 10 VA Burden & CT shorting link				
	MR	<b>Main Panel as above</b>	1	nos	3,272,789	3,272,789
5.2		<b>EMERGENCY PANEL (GROUND FLOOR)</b>				
		<b>INCOMING</b>				
		1 Nos 315 amp 4-P ATS				
		<b>BUSBAR</b>				
		Electrolytic high conductivity aluminium three phase and neutral busbars rated at 400 amps having interleaving design throughout having a maximum current density as per IEC 60439 suitable to withstand symmetrical fault level of 25 kA at 415 volts. The neutral busbar is to be of 50% capacity.				
		The fault level & temperature rise calculations to withstand 25kA to be submitted with no derating at 50 deg C. The temperature rise should not be more than 40 deg C over ambient of 50 deg C.				
		<b>OUTGOING UNITS</b>				
		2 Nos. 200 amp 25 kA 4-P MCCB with adjustable thermal & adjustable magnetic release, ON/OFF indicating lamps				
		4 Nos. 125 amp 25 kA 4-P MCCB with adjustable thermal & adjustable magnetic release, ON/OFF indicating lamps				
		2 Nos. 100 amp 25 kA 4-P MCCB with adjustable thermal & adjustable magnetic release, ON/OFF indicating lamps				
		1 Nos. 63 amp 10 kA 4P MCB with thermal & magnetic release				
		<b>The Switchboard Panel complete with all interconnections, risers, internal wiring, labels etc. as required as per above</b>	1	Nos	545,465	545,465

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
5.3		<b>VH-21, VH-31,VH-41,VH-51,VH-61 &amp; VH-71 (2nd,3rd,4th,5th,6th &amp; 7th Floor)</b>				
		<b>INCOMING</b>				
		1 Nos 160 amp 4-P Switch MCCB with ON/OFF indicating lamps complete				
		<b>BUSBAR</b>				
		Electrolytic high conductivity aluminium three phase and neutral busbars rated at 200 amps having interleaving design throughout having a maximum current density as per IEC 60439 suitable to with stand symmetrical fault level of 25 kA at 415 volts. The neutral busbar is to be of 50% capacity.				
		The fault level & temperature rise calculations to withstand 25kA to be submitted with no derating at 50 deg C. The temperature rise should not be more than 40 deg C over ambient of 50 deg C				
		<b>OUTGOING UNITS</b>				
		4 Nos. 100 amp 25 kA 4-P MCCB with adjustable thermal & adjustable magnetic release, ON/OFF indicating lamps				
		3 Nos. 63 amp 10 kA 4P MCB with thermal & magnetic release				
	MR		6	nos	206,702	1,240,212
5.4		<b>LIFT Panel - 1</b>				
		<b>INCOMING</b>				
		2 Nos 125amp 25 kA 4-P MCCB with adjustable thermal and adjustable magnetic release having overcurrent and short circuit protection with ON/OFF indicating lamps complete				
		3 - CI 1.0 – 125/5 CT's				
		Ammeter scaled 0-400 amps with 3 way and OFF selector switch				
		Voltmeter scaled 0-500 volts with 3 way and OFF selector switch				
		1 - set of Red/Green On/OFF lamps				
		3 - white phase indicating lamps				
		<b>BUSBAR</b>				
		Electrolytic high conductivity aluminium three phase and neutral busbars rated at 150 amps having interleaving design throughout having a maximum current density as per IEC 60439 suitable to with stand symmetrical fault level of 25 kA at 415 volts. The neutral busbar is to be of 50% capacity.				
		The fault level & temperature rise calculations to withstand 25kA to be submitted with no derating at 50 deg C. The temperature rise should not be more than 40 deg C over ambient of 50 deg C				
		<b>OUTGOING UNITS</b>				
		2 Nos. 63 amp 10 kA 4-P 100 mA RCBO with thermal & magnetic release				
		2 Nos. 63 amp 10 kA 4P MCB with thermal & magnetic release				
		3 Nos. 25 amp 10 kA 4P MCB with thermal & magnetic release				
	MR	<b>The Switchboard Panel complete with all interconnections, risers, internal wiring, labels etc. as required as per above</b>	1	nos	160,769	160,769
5.5		<b>LIFT Panel - 2</b>				
		<b>INCOMING</b>				
		2 Nos 125amp 25 kA 4-P MCCB with adjustable thermal and adjustable magnetic release having overcurrent and short circuit protection with ON/OFF indicating lamps complete				
		3 - CI 1.0 – 125/5 CT's				
		Ammeter scaled 0-400 amps with 3 way and OFF selector switch				
		Voltmeter scaled 0-500 volts with 3 way and OFF selector switch				
		1 - set of Red/Green On/OFF lamps				
		3 - white phase indicating lamps				
		<b>BUSBAR</b>				
		Electrolytic high conductivity aluminium three phase and neutral busbars rated at 150 amps having interleaving design throughout having a maximum current density as per IEC 60439 suitable to with stand symmetrical fault level of 25 kA at 415 volts. The neutral busbar is to be of 50% capacity.				
		The fault level & temperature rise calculations to withstand 25kA to be submitted with no derating at 50 deg C. The temperature rise should not be more than 40 deg C over ambient of 50 deg C				
		<b>OUTGOING UNITS</b>				
		2 Nos. 63 amp 10 kA 4-P 100 mA RCBO with thermal & magnetic release				
		5 Nos. 63 amp 10 kA 4P MCB with thermal & magnetic release				
		6 Nos. 25 amp 10 kA 4P MCB with thermal & magnetic release				
		1 Nos. 16 amp 10 kA 4P MCB with thermal & magnetic release				
		<b>The Switchboard Panel complete with all interconnections, risers, internal wiring, labels etc. as required as per above</b>	1	nos	172,252	172,252
5.6		<b>AC Feeder Pillar -1</b>				

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
		Fabricating, supplying, installation, testing & commissioning of floor mounted type dooble door, out door feeder piller, fabricated from CRCA sheet of 2mm thickness of appropriate size to accomodate following switchgears, dust, damp & vermin proof having hinged type double leaf door in front with additional tapered top with 50 mm x 50 mm x 5 mm angle iron base & minimum 30 cm long legs for grouting in cement concrete foundation blocks and complete with 100 amp. capacity 4 strip copper bus bar, bakelite sheet for mounting the accessories and providing and fixing the following mountings, connections, interconnections with suitable size copper busbar upto cable alley, locking arrangement i/c painting making suitable cement concrete foundation etc. complete as reqd.( The size of the feeder pillar is measured from the lowest portion of the tapered high.)				
		<b>INCOMING</b>				
		1 Nos 500 Amp 4-P MCCB (Ics = 50 kA upto 433 V) with Microprocessor electronic release-over current 40%-100%- Time setting selective short circui150%-800%- Time Setting Instatntaneous Short circuit 150%-800% Earth Fault with adjustable setting 20%-50%				
		3 - CI 1.0 – 500/5 CT's				
		Ammeter scaled 0-400 amps with 3 way and OFF selector switct				
		Voltmeter scaled 0-500 volts with 3 way and OFF selector switct				
		1 - set of Red/Green On/OFF lamps				
		3 - white phase indicating lamps				
		<b>BUS BAR</b>				
		Electrolytic high conductivity aluminium three phase and neutral busbars rated at 630 amps having a maximum current density of 1 amp per sq mm suitable to with stand symmetrical fault level of 10 KA at 415 volts. The neutral busbar is to be of 100% capacity				
		<b>OUTGOINGS</b>				
		14 Nos.63 Amps 415 volt 10 kA TPN MCB with thermal magnetic protective releases as spares.				
	MR	<b>Feeder Pillar complete with interconnection earthing as as per above</b>	1	nos	223,928	223,928
<b>5.7</b>		<b>AC Feeder Pillar -2</b>				
		Fabricating, supplying, installation, testing & commissioning of floor mounted type dooble door, out door feeder piller, fabricated from CRCA sheet of 2mm thickness of appropriate size to accomodate following switchgears, dust, damp & vermin proof having hinged type double leaf door in front with additional tapered top with 50 mm x 50 mm x 5 mm angle iron base & minimum 30 cm long legs for grouting in cement concrete foundation blocks and complete with 100 amp. capacity 4 strip copper bus bar, bakelite sheet for mounting the accessories and providing and fixing the following mountings, connections, interconnections with suitable size copper busbar upto cable alley, locking arrangement i/c painting making suitable cement concrete foundation etc. complete as reqd.( The size of the feeder pillar is measured from the lowest portion of the tapered high.)				
		<b>INCOMING</b>				
		1 Nos 500 Amp 4-P MCCB (Ics = 50 kA upto 433 V) with Microprocessor electronic release-over current 40%-100%- Time setting selective short circui150%-800%- Time Setting Instatntaneous Short circuit 150%-800% Earth Fault with adjustable setting 20%-50%				
		3 - CI 1.0 – 500/5 CT's				
		Ammeter scaled 0-400 amps with 3 way and OFF selector switct				
		Voltmeter scaled 0-500 volts with 3 way and OFF selector switct				
		1 - set of Red/Green On/OFF lamps				
		3 - white phase indicating lamps				
		<b>BUS BAR</b>				
		Electrolytic high conductivity aluminium three phase and neutral busbars rated at 630 amps having a maximum current density of 1 amp per sq mm suitable to with stand symmetrical fault level of 10 KA at 415 volts. The neutral busbar is to be of 100% capacity				
		<b>OUTGOINGS</b>				
		18 Nos.63 Amps 415 volt 10 kA TPN MCB with thermal magnetic protective releases as spares.				
	MR	<b>Feeder Pillar complete with interconnection earthing as as per above</b>	1	nos	235,411	235,411
<b>6.0</b>		<b>SUB HEAD VI- CABLES AND CABLE TRAYS</b>				
6.1		Supply of XLPE power cable of 1.1 kV grade aluminium/copper conductor armoured cable of the followng sizes complete as required				
a)	MR	3.5 core 300 sq mm aluminium conductor	1,200	Metre	2,079	2,494,800
b)	MR	3.5 core 50 sq mm aluminium conductor	45	Metre	426	19,170
c)	MR	4 core 25 sq mm aluminium conductor	95	Metre	277	26,315
d)	MR	4 core 16 sq mm aluminium conductor	45	Metre	211	9,495
e)	MR	4 core 10 sq mm aluminium conductor	20	Metre	198	3,960
f)	MR	4 core 6 sq mm aluminium conductor	10	Metre	144	1,440
g)	MR	4 core 4 sq mm aluminium conductor	20	Metre	114	2,280
h)	MR	3.5 core 50 sq mm Copper conductor	170	Metre	3,043	517,310
i)	MR	3.5 core 120 sq mm Copper conductor	10	Metre	7,884	78,840
j)	MR	4 core 25 sq mm Copper conductor	55	Metre	1,790	98,450
k)	MR	4 core 10 sq mm Copper conductor	105	Metre	732	76,860

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
6.2	10.2	Laying of one number additional PVC insulated and PVC sheathed / XLPE power cable of 1.1KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
a)	10.2.4	Above 185 sq. mm and upto 400 sq. Mrr	1,940	Metre	423	820,620
6.3	10.7	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)	10.7.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	350	Metre	64	22,400
b)	10.7.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	215	Metre	151	32,465
c)	10.7.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	600	Metre	180	108,000
d)	10.7.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	560	Metre	271	151,760
6.4	11.1	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.			-	-
a)	11.1.30	3½ X 300 sq.mm (70 mm)	20	nos	1336.00	26,720
b)	11.1.25	3½ X 120 sq. mm (45mm)	2	nos	710.00	1,420
c)	11.1.22	3½ X 50 sq.mm (35 mm)	6	nos	484.00	2,904
d)	11.1.34	4 X 25 sq.mm (28 mm)	6	nos	373.00	2,238
e)	11.1.33	4 X 16 sq.mm (28 mm)	2	nos	366.00	732
f)	11.1.32	4 X 10 sq.mm (25 mm)	6	nos	325.00	1,950
g)	11.1.32	4 X 6 sq.mm (28 mm)	2	nos	325	650
h)	11.1.32	4 X 4 sq.mm (28 mm)	2	nos	325	650
6.5	15.16	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc.direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
a)	15.16.1	63 mm dia (OD-63 mm & ID-51 mm nominal'	20	Meter	289	5,780
b)	15.16.2	90 mm dia (OD-90 mm & ID-76 mm nominal'	10	Meter	336	3,360
c)	15.16.3	120 mm dia (OD-120 mm & ID-103 mm nominal'	10	Meter	417	4,170
d)	15.16.4	160 mm dia (OD-160 mm & ID-135 mm nominal'	20	Meter	537	10,740
e)	15.16.5	200 mm dia (OD-200 mm & ID-175 mm nominal'	10	Meter	733	7,330
6.6	15.14	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required.			-	-
a)	15.14.1	100 mm dia	10	Metre	771	7,710
b)	15.14.2	150 mm dia	10	Metre	846	8,460
c)	15.14.3	200/250 mm dia	20	Metre	1120	22,400
d)	15.14.4	300 mm dia	10	Metre	1293	12,930
6.7	10.1	Laying of one number PVC insulated and PVC sheathed/XLPE power cable of 1.1KV grade of following size direct in ground including excavation, sand cushioning protective covering and refilling the trench etc as required.			-	-
a)	10.1.1	Upto 35 sq. mm	40	Metre	453	18,120
b)	10.1.2	Above 35 sq. mm and upto 95 sq. mm	20	Metre	475	9,500
c)	10.1.3	Above 95 sq. mm and upto 185 sq. mm	600	Metre	479	287,400
d)	10.1.4	Above 185 sq. mm and upto 400 sq. mm	300	Metre	564	169,200
6.8	4.1	Supplying and installing following size of perforated pre-painted M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. susoenders including bolts & nuts, painting susoenders etc as requirec.				
a)	4.1.1	100 mm width X 50 mm depth X 1.6 mm thicknes:	10	Metre	623	6,230
b)	4.1.2	150 mm width X 50 mm depth X 1.6 mm thicknes:	10	Metre	686	6,860
c)	4.1.4	300 mm width X 50 mm depth X 1.6 mm thicknes:	10	Metre	866	8,660
d)	4.1.6	450 mm width X 50 mm depth X 2.0 mm thicknes:	10	Metre	1,243	12,430

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
7	MR	Supply of JFTC armoured telephone cable of 200 pair	900	Metre	1,642	1,477,800
7.0		<b>SUB HEAD VII- EARTHING</b>				
7.1	5.4	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/ coke and salt as required	6	Set	8351	50,106
7.2	5.5	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. (but without charcoal/ coke and salt) as required	2	Set	13733	27,466
7.3	5.8	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	30	Metre	1024	30,720
7.4	5.9	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	90	meter	160	14,400
7.5	5.10	Earthing with G.I. earth pipe 4.5 Meter long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal/ coke and salt) as required.	2	meter	1638	3,276
7.6	5.11	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	10	meter	755	7,550
7.7	5.14	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	30	meter	1246	37,380
7.8	5.15	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	50	meter	287	14,350
7.9	5.20	Earthing with G.I earth Pipe 4.5 metre long, 40mm dia including accessories and providing masonry enclosure with cover Plate having locking arrangement and watering pipe etc with charcoal /coke and salt as required.	8	nos	2245	17,960
7.10	5.16	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required	120	meter	84	10,080
8.0		<b>SUB HEAD VIII- FIRE DETECTION AND ALARM SYSTEM (CONVENTIONAL</b>				
8.1	28.1.1	Supplying, installation, testing & commissioning of heat detector operating at 54°C/57°C with rate of rise cum fixed temperature (dual thermistor) type with mounting base complete with all connection etc. as required.	4	Each	1136	4,544
8.2	28.1.2	Supplying, installation, testing & commissioning of smoke detector with builtin LED and mounting base complete with all connections etc. as required.	18	Each	1223	22,014
8.3	28.1.3	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	18	each	513	9,234
8.4	28.1.6	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.	18	each	600	10,800
8.5	28.1.8	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required.	18	each	963	17,334
8.6	28.1.4	Supplying, installation, testing & commissioning of manual call box of ABS type in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required	18	each	444	7,992
8.7		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 connection, 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/24V 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.				
8.8	28.1.10	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.	1	each	10033	10,033

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
8.9	28.5.2	Supplying & laying of 2x1.5 sqmm fire alarm armoured cable, 600/1000V rated with annealed copper conductor having XLPE insulation, steel wire armouring & FRLS/HFFR outer sheath complete as required.	1,500	Meter	192	288,000
8.10	MR	Supply of wall or ceiling mounted or suspended 240 Volt AC illuminated exit signs provided with appropriate direction arrow mounted on glass in green on white with a total wattage of maximum 5W LED Illumination System including the cost of in-built rechargeable batteries with charger suitable for 90 minute operation and including the cost of accessories for surface/ recessed or ceiling suspended mounting complete as required. /Sample to be approved by Client/Consultant	26	Each	5,852	152,152
9.0		<b>SUB HEAD IX- UPS</b>				
9.1	26.2	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase.</b>				
		Supplying, installation, Testing & Commissioning of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 0C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swapable (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 the 100% non-linear loads. Current total harmonic effect(THD) 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 Abehavior of fan, cybersecurity exception rts local/RADIUS database, Port-based Access Control and EAP, OTP, TLS, TTLS, PEAP Support				
		Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part 1 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 Level 65cable, cable alleys, cable gland plates in two half, i/c providing following switch gears :- manufacturing locati				
		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				
9.1.1	26.2.1	10KVA (Each Power module shall be < 10 KVA)	1	Each	208893	208,893
10.0		<b>SUB HEAD -XI CCTV SURVEILLANCE &amp; NETWORKING SYSTEM</b>				
A		<b>LAN</b>				
10.1	39.1	Supplying, installation, Testing and commissioning of following capacity 8 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: Minimum 8 X RJ-45 Gigabit Ethernet Ports and additional 2 X 1G SFP Ports with non-blocking architecture by having Switching capacity of minimum 20Gbps and packet forwarding rate of 14Mpps or higher, 8K MAC table. Internal dual AC Power supply with operating temperature of -5 0C to +50 0C. Jumbo frame: 10KB or higher, IGMP Snooping, IGMP snooping querier and support for IGMP Snooping Fast Leave, Should create 250 or more MLD groups, MLD Snooping, Per VLAN MLD Snooping C MLD Snooping Fast Leave, STP, RSTP, MSTP, Loopback detection, Multicast filtering, VLAN Tagging, QOS: 8 Que per port, WRR, IPv4/IPv6 Interface : minimum 100 IPv4 static route entries and minimum 50 IPv6 static route entries, 700 Access Control entries, SSH CSSL for IPv4 and IPv6, 802.1x, ARP Spoofing, DHCP Snooping and server screening, IP+MAC+Port Binding, Per Port Bandwidth Control, 802.1X Authentication (Supports local/RADIUS database, Port-based Access Control and EAP, OTP, TLS, TTLS, PEAP Support) Cable Diagnostic feature, LLDP, LLDP-MED, SNTP/NTP, RMON, SNMP v1,v2c, v3 and SNMP Traps. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.				
10.1.1	39.1.1	8 port PoE Layer 2 Network Switch with PoE Support of 130W or higher with each copper port supporting 802.3at PoE+.	2	Each	35091	70,182
10.1.2	39.1.2	8 port Layer 2 Non-PoE Network Switch	6	Each	28073	168,438

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
10.1.3	39.3	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 etc. complete as required.				-
10.1.3.1	39.3.1	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min	1	Each	125393	125,393
10.1.3.2	39.3.2	24 port Layer 2 Non-PoE Network Switch	12	Each	86163	1,033,956
10.2	39.4	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM- SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority- based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 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 etc. complete as required	1	Each	193791	193,791
10.3	39.8	Supplying, Installation, Testing and commissioning of indoor Wireless Access Point for High density use having features and specifications etc. as mentioned here under- WiFi6 802.11ax 574Mbps (2.4GHz) + 2402Mbps (5GHz), WIFI 6 Certified, 1 x RJ45 console port, MG 2.5G LAN POE Port, factory reset, WPA/WPA2/WPA3™ Personal/Enterprise, WEP 64/128-bit, SSID broadcast disable, MAC address access control, Internal RADIUS server, SNMP, Customizable Captive Portal, Auto Channel, Works as Access Point, WDS, WDS with AP, Wireless Client , Web (HTTP), Secure Socket Layer (SSL), Traffic control, Support ATF/Fast Roaming/Band Steering, Supports enhanced security – WPA-PSK/WPA2 PSK/WPA3-PSK and RADIUS client, and Cipher negotiation, and MAC/ IP ACL for networks, Certifications: MTCTE, CE, FCC. Works as Standalone, Compatible with S/W & H/W Controller with additional features like - Real-Time Monitoring and Alerts, Rich Advanced Features, Centralized Device Management, Role-Based Administration, Real-Time Monitoring, VLAN and Access Control, Auto RF Management and Bandwidth Optimization, Multi-SSID and Captive Portal Authentication.OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.	24	Each	35559	853,416
10.4	39.10	Supplying, Installation, Testing and commissioning of indoor Wireless Controller having features and specifications etc. as mentioned here under- The network controller shall be a dedicated hardware appliance designed for centralized management of wireless access points, It must support the management of up to 500 networking devices, The system should be on-premise, ensuring data privacy and complete control over network configurations. It must include an intuitive user interface for real-time monitoring, device discovery, firmware upgrades, scheduling, and mass configuration deployment. Features such as role-based administration, multi-site management. AP to controller communication shall be use of industry standards-based (IEEE or IETF) CAPWAP or any tunneling protocols as per guidelines of DoT.The controller should support Layer 2 and Layer 3 device discovery, VLAN configuration, MAC ACL groups, IGMP snooping, and bandwidth optimization. Automatic radio frequency (RF) management and access policy enforced Access Control, Auto RF Management and Bandwidth				-
		The solution must offer a comprehensive dashboard with network topology, floor plan views, client and device lists, and alert notifications. For authentication, it should support a range of methods including local database, external RADIUS, LDAP, and passcode or MAC-based access. It should provide detailed traffic analytics, logs, and customizable reporting for network visibility and planning.  Firmware and configuration backup and restoration functions must be available, with USB based log storage supported. Physical specifications should include a compact form factor with a minimum of one 2.5G Ethernet port and USB 3.0 port, and it must be MTCTE,CE, FCC, and RoHS certified. The controller should operate reliably within a 0°C to 40°C temperature range and 10–90% non-condensing humidity. /Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.	1	Each	113228	113,228
10.5	39.11	Supplying Installation Testing and Commissioning 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 etc. complete as required.	1	Each	5278	5,278
10.6	39.13	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 etc. complete as required.				-

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
10.6.1	39.13.1	Copper Patch Cords of length 1m (3ft)	18	Each	173	3,114
10.6.2	39.13.2	Copper Patch Cords of length 3m (10ft)	18	Each	405	7,290
						-
10.7	39.15	Supplying, Installation, Testing and commissioning of CAT6A 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.	176	Each	302	53,152
						-
10.8	39.16	Supplying, Installation, Testing and commissioning of RJ45 Connector for CAT 6/6A Cables. RJ45 modular plug supports 4 twisted pairs, 8 positions, 8 connectors. Housing: PC, UL94V-2, transparent color. Use for 24- 26 AWG stranded wires etc. complete as required.	352	Each	9	3,168
						-
10.9	39.18	Supplying, drawing, Testing and commissioning of Cat6A UTP 4 pair, 23 AWG solid copper cable in existing conduit/ on surface, U/FTP, LSZH, Non Plenum, Horizontal (solid) Cable suitable for high speed data networking application supporting upto 10Gbps over a 100 meter channel. The 4 Unshielded Twisted Pairs (UTP) cable with color coded insulation for easy identification should have FLAME PROPERTIES i.e. Flammability Test - IEC 60332-1, Smoke Density - IEC 61034, LSZH standards compliance: ANSI/TIA-568 C.2, ISO/IEC 11801, IEEE 802.3an, RoHS. Delay Skew should be < 45NS. The outer Cable Diameter should be 7.5 + 2 mm. Cable should have been tested and verified by UL/ ETL etc. complete as required.				-
						-
10.9.1	39.18.1	1 Run of cable	5980	Meter	74	442,520
10.9.2	39.18.2	2 Run of cable	2700	Meter	124	334,800
10.9.3	39.18.3	3 Run of cable	1800	Meter	174	313,200
						-
10.10	39.20	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), Tight-buffered 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 0C to +50 0C and Storage Temperature should be – 5 0C to +50 0C, 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-filed,Cladding Diameter 50 ± 2.5 µm and 125 ± 1µm correspondingly i/c splicing & marking etc complete as required.				-
10.10.1	39.20.1	6 Core Multi Mode Optical Fiber Cable	150	Meter	87	13,050
						-
10.11	39.21	Supply and fixing following port Rack Mount loaded LIU with pigtail, Front-mounted cable saddles for jumper management, suitable to manage both splices and terminations, Pre-assembled shelves in multiple configurations, Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers, 2 fiber spools built-in for 900µm tight buffered fiber storing, Capable of storing up to 3 meters of 900µm tight buffered fiber per adapter, Removable front and rear covers for better access to interior of LIU, Should be Single / Multi mode LC Type fully loaded. Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube etc complete as required.				-
10.11.1	39.21.1	6 Port LIU	16	Each	5471	87,536
						-
10.12	39.23	Supplying 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.				-
10.12.1	39.23.1	6U Rack	8	Each	6939	55,512
10.12.2	39.23.3	15U Rack	1	Each	13330	13,330
						-
10.13	39.25	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, 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.	1	Each	32954	32,954
						-
<b>B</b>		<b>CCTV CAMERA</b>				-
		<b>5/6MP IP IR Dome Camera</b>				-
10.14	40.5	Supplying Installation Testing and Commissioning of 5/6MP IP IR Dome Camera having following specifications and features etc :- 1)Type of Camera: Dome Camera 2) Image Sensor: 1/2.8" or better progressive Scan CMOS get color image even at night condition 3) Signal System: PAL/NTSC 4) Minimum Illumination: 0.008Lux@ F1.4, AGC ON, 0 lux with IR or better 5) Imaging: 1/3s to 1/30000s Shutter Support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 6) On Screen Display: Camera should display Camera title, Date & Time in live & recorded video both. 7) Signal to Noise Ratio: > 50 dB 8) Day & Night: True Day & Night High Performance Mechanical IR cut filter with auto switch, IR Source- Inbuilt IR LED's with effective distance upto 50 Mtrs integrated IR 30 Mtrs for colour view in night. 9) Video Compression (Minimum): H.265 or better, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723				-
		10) Wide Dynamic Range: WDR (120dB or more) 11) Digital Noise Reduction: DNR (2D/3D) On/Off 12) Streaming: Triple streaming, configurable 13) Video Streaming & Frame Rates: Triple streaming , configurable Main stream: 5/6MP @25/30 fps, Sub streams: D1@25/30 fps or better 14) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser 15) Profile Management: User configuration import, export 16) Security: User Authentication, Water Marking 17) 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. 18) Recording Management: Format SD, overwrite, storage management, video to NAS device,				-

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
		19) Edge Analytics : Tripwire, Intrusion, Motion Detection 20) Alarm Trigger : Motion/tampering detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 21) Alarm Support: It should have 1/1 Alarm In/ Out Port 22) Audio Support: It should have 1x Built-In Mic and 1/1 Audio In/ Out Port for external Mic. and Speaker (As per site requirement) with G.711U/A/ G.711Mu/ AAC/ G.726 audio compression 23) Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 24) System Capability: ONVIF 25) VMS: Camera shall support open source VMS 26) Cyber Security: trusted boot, AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, , account lockout, video encryption, IP/MAC filtering, HTTPS, trusted upgrade. 27) Ethernet: 1 RJ 45 10/100 Ethernet port 28) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) ahe UPS should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location etcPEAP Support) Cabl				-
		30) Enclosure: IP67 weather proof, IK10 31) Operating Condition: Ambient Temperature:- ( ) 05°C to 50°C, humidity 95% (max) (non-condensing) 32) IR life: 40000 hours or higher 33) Video Bit rate: 32 KBPS - 8 MBPS or better 34) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS				-
10.14.1	40.5.1	5MP/6MP IP IR 2.8/ 3.6/6/8/12 mm fixed lens (as per site requirement) Dome Camera	9	Each	12800	115,200
10.15	40.6	<b>5MP /6MP IP IR Bullet Camera</b>				-
		Supplying Installation Testing and Commissioning of 5MP/6 MP IP IR Bullet Camera having following specifications, type of lens and features etc :- 1) Type of Camera: Bullet Camera 2) Image Sensor: 1/2.8" or better progressive Scan CMOS get color image even at night condition 3) Signal System: PAL/NTSC 4) Minimum Illumination: 0.006Lux@ F1.4, AGC ON, 0 lux with IR or better 5) Imaging: 1/3s to 1/30000s, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking. 6) On Screen Display: Camera should display Camera title, Date & Time in live & recorded video both. 7) Signal to Noise Ratio: > 50 dB 8) Lens Type & Focus: as given below. 9) Day & Night: True Day & Night High Performance Mechanical IR cut filter with auto switch, IR Source- Inbuilt IR LED's with effective distance upto 50 Mtrs integrated IR and 30 Mtrs for colour view in night. 10) Video Compression (Minimum): H.265 or better, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 11) Wide Dynamic RaMode-filed, Cladding Diamo				-
		12) Digital Noise Reduction: DNR (2D/3D) On/Off 13) Streaming: Triple streaming, configurable 14) Video Streaming & Frame Rates: Triple streaming , configurable Main stream: 5MP/6MP @25/30 fps, Sub streams: D1@25/30 fps or better 15) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser 16) Profile Management: User configuration import, export 17) Security: User Authentication, Digital Water Marking 18) 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. 19) Recording Management: Format SD, overwrite, storage management, video				-
		20) Edge Analytics: Tripwire, Intrusion, Motion Detection 21) Alarm Trigger : Motion/tampering detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 22) Alarm Support: It should have 1/1 Alarm In/ Out Port 23) Audio Support: It should have 1x Built-In Mic and 1/1 Audio In/ Out Port for external Mic. and Speaker (As per site requirement) with G.711U/A / G.711Mu/ AAC/ G.726 audio compression 24) Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 25) System Capability: ONVIF 26) VMS: Camera shall support open source VMS 27) Cyber Security: trusted boot, AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, , video encryption, IP/MAC filtering, HTTPS, trusted upgrade. 28) Ethernet: 1 RJ 45 10/100 Ethernet port 29) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) aMode-filed, Cladding Diameter 50 ± 2.5 µm and 125 ± 1µm correspondingly i/c splicing				-
		30) Power Requirement: 12VDC/24V DC/PoE (802.3af)/ePoE				-
		31) Enclosure: IP67 weather proof, IK1C				-
		32) Operating Condition: Ambient Temperature:- ( ) 05°C to 50°C, humidity 95% (max) (non-condensing) 33) IR life: 40000 hours or higher 34) Video Bit rate: 32 KBPS - 8 MBPS or better 35) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS				-
10.15.1	40.6.1	5MP/6MP IP IR 2.8/ 3.6/6/8/12 mm fixed lens (as per site requirement) outdoor bullet Camer:	9	Each	12525	112,725
10.16	40.11	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, temping, 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 (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.				-

S.No.	DSR/MR	Item Description	Qty	Unit	Rate	Amount
		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. 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				-
		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 33) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics 34) Analytics by NVR: Perimeter protection and face recognition				-
10.16.1	40.11.1	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	1	Each	64784	64,784
						-
10.17	40.12	Hard Disk Drive				-
		Supplying, Installation, Testing and Commissioning following capacity Surveillance 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				-
						-
10.17.1	40.12.1	4TB (Terabytes)	1	Each	13943	13,943
		Total Amount without Contingency & including GST @ 18%				<b>44,911,086</b>