MAHARASHTRA METRO RAIL CORPORATION LIMITED (Nagpur Metro Rail Project)

Dt.18.07.2019

Corrigendum-II

NAME OF WORK: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBERS ELEVATED METRO STATIONS (AUTOMOTIVE SQUARE, NARI ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION KASTURCHAND PARK AND ZERO MILE) INCLUDING E&M WORKS AND PD AREA BALANCE WORKS EXCLUDING VIADUCT IN REACH-2. OF NAGPUR METRO RAIL PROJECT.

Tender No: N1C-39/2019 DT: 05/07/2019, Portal No.189

S.No	Tender Document	Replace as
1	Part-4 Financial Bid & Bill of Quantities: ABSTRACT OF AMOUNT FOR ALL SCHEDULES	Part-4 Financial Bid & Bill of Quantities: Refer REVISED ABSTRACT OF AMOUNT FOR ALL SCHEDULES
2	Part-4 Financial Bid & Bill of Quantities: - Schedule-F, E and M work (Electrical, Fire Fighting and Fire alarm System, HVAC System	Part-4 Financial Bid & Bill of Quantities: - Refer Revised Schedule-F, E and M work (Electrical, Fire Fighting and Fire alarm System, HVAC System



		REVISED ABSTRACT OF AMOUNT FOR ALL SCHEDUL	ES		
	T	Tender No.N1C-39/2019			
ltem	Description	Description of Schedule	Estimated Amount (Rs.)	Percentage Above/Below/At Par	Amount in Indian Rs.(INR
CHEDUL	E- A to G				
1	SCHEDULE- A	General Works of Stations	165,12,059		
2	SCHEDULE- C	Structural Works of Stations	6727,06,473		
3	SCHEDULE- C1	Structural Works of Stations NDSR items	73,14,985		
4	SCHEDULE- D	NDSR items for the Architectural Finishing Works, Parking works, Site development works etc and other Miscellaneous work	3678,91,083		
5	SCHEDULE-D1	Architectural & Site Development Works	2167,00,953		
6	SCHEDULE- E	Item for the Architectural Finishing Works, Parking works, Site development works, etc and other Miscellaneous work	212,16,397	<i>.</i>	
7	SCHEDULE- F	E and M work (Electrical, fire fighting with fire alarm system, HVAC system)	8069,11,950		
8	SCHEDULE- F1	Public Health Engineering	451,19,649		
9	SCHEDULE- G	DSR-2018 items (with latest amendment / Directives to the DSR-2018). The contractor has to carryout the works as per DSR-2018 varrious clauses,chapters and schedules covered in the DSR-2018.	975,00,000		
GRAND	TOTAL (Rs.)		22518,73,548		
	t in Words:				
lote: The	financial rate quoted	by the bidder in which BOQ for Schedule "A" to "G" should be brought forward and mentioned in	this summary sheet alon	g with grand Total.	
ASHTR4 M	C C C C C C C C C C C C C C C C C C C				

GRAND SUMMARY.

				Tender No.NIC-39/2019 REVISED SUMMARY OF SCHEDULE-F	
				ELECTRICAL, FIRE FIGHTING AND HVAC	
				ations, Kasturchand Park PD, Gaddigodam PD & Zero Mile Station	
1 No	Section E.01	Station R2,KCP PD & GGS	System	Description LV Switchgear -E.01	Amount
1994		PD R2,KCP PD & GGS	-		1468,52,064
2	E.02	PD R2,KCP PD & GGS		Distribution Boards - E.02	95,94,54
3	E.03	PD R2,KCP PD & GGS	-	LV Power & Control Cables, Cable Trays And Steel Works- E.03	864,69,33
4	E.04	PD		Internal Wiring & Accessories - E.04	237,63,49
5	E.05	R2,KCP PD & GGS PD		Indoor Lighting And Fans - E.05	332,91,68
6	E.06	R2,KCP PD & GGS PD		Protective Earthing - E.06	199,75,52
7	E.07	R2,KCP PD & GGS PD	ELECTRICAL	Lightning Protection - E.07	57,75,47
8	E.08	R2,KCP PD & GGS PD		External Lighting - E.08	720,89,32
9	E.09	R2,KCP PD & GGS PD		Uninturrupted Power Supply System - E.09	59,47,20
10	E.10	R2,KCP PD & GGS		Safety and Other accessories - E.10	4,72,00
11	E.11	PD R2,KCP PD & GGS	1	BMS/SCADA for all system parameter of the panel - E.11	424,80,00
12	E.12	PD R2,KCP PD & GGS		Via Duct Lighting - E.12	
13	E.13	PD R2,KCP PD & GGS		Mandatary Operational Spares for the Panels And safety items - E.13	28,32,00
		PD R2,KCP PD & GGS			
14	E.14	PD R2,KCP PD & GGS		Lighting Control System - E.14	163,84,71
15	F.01	PD R2,KCP PD & GGS	FIRE	Fire Hydrant System - F.01	552,76,36
16	F.02	PD R2,KCP PD & GGS	FIGHTIN	Portable Fire Extinguishers - F.02	38,95,89
17	F.03	PD	G & FIRE ALARM	Panel Flooding - CO2 Gas Based Fire Trace Tube System - F.03	113,28,00
18	F.04	R2,KCP PD & GGS PD		Fire Alarm And Detection System - F.04	157,10,07
19 20	H1 H2	R2 R2	HVAC	VRV Airconditioning System - H.01 Ventilation System - H.02	340,07,48
20	H2 H3	R2	INAC	Air Distribution System - H.03	1,43,40
22	ZE.01			LV Switchboards - ZE.01	289,79,08
23	ZE.02			Distribution Boards - ZE.02	16,95,92
24	ZE.03			MV Cabling, Busduct And Tray - ZE.03	357,57,68
25	ZE.04			Internal Wiring & Accessories - ZE.04	140,85,88
26	ZE.05			Lighting Fixtures And Fans - ZE.05	158,57,93
27	ZE.06	z	AL	Protective Earthing - ZE.06	25,41,10
28	ZE.07	E STATION	ELECTRICAL	Lightning Protection - ZE.07	12,83,66
29	ZE.08] [Ë	External Lighting - ZE.08	29,14,18
30	ZE.09	j is	Ĕ	Uninturrupted Power Supply System - ZE.09	24,88,13
31	ZE.10		ш	Diesel Generator - ZE.10	38,01,57
32	ZE.11	Σ		BMS/SCADA for all system parameter of the panel - ZE.11	53,10,00
33	ZE.12	ZERO MI		Safety and Other accessories - ZE.12	59,00
34	ZE.13	- ⁻		Mandatary Operational Spares for the Panels And safety items - ZE.13	3,54,00
35	ZE.13	-		Facade Lighting - ZE.14	321,91,38
36	ZF.01	1	FIRE FIGHTIN	Fire Hydrant System - ZF01	183,02,80
37	ZF.02	-	G & FIRE	Fire Detection System- ZF.02	87,17,13
38	КА		ALARM	HVAC Equipment - KA	58,63,76
39	КВ	1		Air Distribution - KB	45,98,06
40	КС	KCP PD	HVAC	Thermal Insulation - KC	1,57,50
41	KD	1		Electrical Installation - KD	7,05,48
42	GA			HVAC Equipment - GA	40,00,57
43	GB			Air Distribution - GB	28,35,78
44	GC	GGS PD	HVAC	Thermal Insulation - GC	2,36,25
	-	1		Electrical Installation - GD	5,37,68
45	GD				
46	ZA	4		HVAC Equipment & Piping - ZA	181,65,81
47	ZB	ZERO MILE	HVAC	Air Distribution - ZB	70,66,98
48	ZC			Thermal Insulation - ZC	7,13,87
49	ZD			Electrical Installation - ZD	13,08,40
				Total for E&M (E+F+H)	8069,1



April-19

Signature and Seal of Bidder

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	SYSTEMS								
Item	Description			NAR			GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
E	General Notes for Electrical Works													
1	The BOQ specified below include the latest relevent standards, specifications, drawings (In conjuction with relevant Station drawings) and the contractor is required to go through them as referred in tender document while quoting the rates. All the samples/ material intended to be used in the works shall be subject to approval before use as the Employer's representative may opt.													
2	The description as mentioned in BOQ, specifications, special conditions, GCC drawing and the conditions mentioned therein whichever is stringent shall be applicable, acceptable and complied with.													
3	Sub-letting of work by the contractor shall only be permitted in accordance with Special Conditions of Contract.													
4	The items indicating zero quantity can also be operated and variation clause shall be applicable as stipulated in GCC / SCC.													
5	Bus Bar Sizing calculations shall be submitted for approval of Employer or his representative.													
6	Contractor's shall quote resonably rates against each item of BOQ (both in word and figure)													
7	Auto, manual, bypass , remote, local selector switch and interlocking arrangement shall be provided for the Panel boards wherever required.													
E.01	L V SWITCHGEAR													
E1.1	Switch Boards/panels													
	Supply, installation, testing & commissioning of front operated front access cubical type indoor duty floor / wall / recess/ surface mounting, totally enclosed dust and vermin proof (minimum protection IP 54) panels with neoprene gaskets, fabricated from 2 mm thick CRCA sheets with dlo cab priming and epox powder coated finish (minimum thickness 50 micron) suitable for 415 volts 3 phase 4 wire 50 Hz system to withstand symmetrical fault level of 50 KA at 415 V including interconnections, bonding to earth etc. and flush doors conforming to relevant EIC/SI (viz. IEC 6043), IS 6622 etc.) standard including the earth leakage protection complete as per specification & drawings as required and as given below. All internal wiring in the panels shall be carried out using high temperature FRLS wires.													
a)	The Switchboards shall be provided with detachable gland plates for entry of cables from the top/bottom as required.													
b)	All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars shall be insulated with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports suitably spaced shall be used. Hinged doors with padlocking facility shall be provided on all outgoing feeders with switch handles lockable in OFF position.													
c)	The panel shall have tinned copper busbars with bar type feeder connections, spacers etc.and neutral busbar shall be of 50% capacity for busbar of above 200A rating and 100% otherwise.													
d)	Earthing all components, frame etc. to a common internal earth bar of minimum size 50 x 6 mm Copper .													
e)	All accessories & supporting structures such as channels, ISMC base frame, mounting brackets, lifting lugs, panel heaters, ventilation arrangement etc as required.													
f)	Each incomer and outgoing feeder shall be provided with multiple LED/neon type status indication lamps suitable for 230 V, AC as approved.													
g)	Space provision @ 15% for future expansion													
h)	The makes of components and accessories shall, to the extent practically feasible, be same for panels and boards for uniformity, standardisation and replaceability and shall be applicable to all panels/ boards under the scope of work.													
i)	Switchboard including interconnections, labeling, earthing,associated foundation / masonary work & erection etc. complete as required.													
j)	All MCCBs shall be current limiting type microprocessor based, rated for requisite specified Service short circuit breaking capacity (Ics suitable for isolation conforming to latest IEC947-2/IS13947-2 duly marked on MCCB, at operating voltage (Ub of 415 V, insulation voltage (UI) 750 V and with trip free mechanism, handle indicating ON/OFF/tripped position. The breaking capacity as mentioned shall be Ics values.													
k)	MCCBs shall be compact (As the Engineer may decide), suitably designed to provide protection of motors, cables, busbars to suit rated current, unbalanced power distribution as required and with front adjustable overload and short circuit releases and minimum electrical endurance of the order of 7000-8000 operation cycles (higher shall be preferred) for capacity of 100-250 amps.													
I)	All the MCCBs shall be provided with potential free contacts for connectivity to PLC in ESR/Pump Room for ON/OFF status and control, as required, from BMS workstation.													

	REVISED SCHEDULE-F ELE	CIRICAL, I	TRE PROT	ECTION A	ID HVAC 5									
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
m)	MCBs shall conform to IEC398/IS 8828 (latest) and, with breaking capacity 9/10 kA at 415 V AC, current limiting type lower powerloss appx 40 -70% of the stipulated value and suitable for magnetic releases operating between 3 to 5 times rated current for normal power distribution application and 5 to 10 times rated current for moter application and 5 to 10 times rated current endurance of the order of 20000 operation cycles.													
n)	Panel/board design shall be compact and components / accessories of compact sizes be used to economies the room space available. Employer reserve the right to seek compact items inplace of larger ones													
0)	All incomer ACB's shall be provided with minimum 2 NO + 2 NC auxiliary contacts and all MCCBs shall be provided with 2 NO+ 2NC auxiliary contacts, and there should be provision to add min. 6 Auxiary contacts.													
(מ	All 4-pole ACBs shall have fully rated neutral pole													
q)	The panels shall be fitted with fire trace tube system. Payment for fire trace tube system shall be made under separate item. Scheme of fire trace tube system shall be got approved by Engineer before proceeding with manufacturing and assembly.													
r)	Various panels/boards as given below:													
1.1	Main Distribution Board (MDB1 and MDB 2)													
-	Main Distribution Board (MDB)as per specifications & as per following details:	Nos	1	1	1	1	1	1				6	2066220.12	12397320.3
Α	TRANSFORMER - I INCOMING													
	1 no. 800 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with:													
a) b)	1- set Red/Green ON/OFF indicating lamps 1- set of three phase (red, yellow, blue) indicating lamps													
c)	Amber healthy trip indicating lamps													
<u>d</u>)	3 nos. cast resin current transformers of 1000/5 ratio with 15 VA Burden & Class 5P10 for protection and metering 3 nos. cast resin current transformers of 1000/5 ratio with 15VA burden and Class 1.0 for measurement						-							
f)	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time log facility for													
->	each of the fault for achieving discrimination along with distinct fault indication through LED's. 230V AC or 24 V DC shunt trip coil													
	230V AC of 24 V DC shuft trip coli 230V, AC Motor wound spring closing mechanism													
i)	Terminals to receive aluminium XLPE armoured cables													
i)	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
в														
в	TRANSFORMER - II INCOMING 1 no. 800 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with:													
a)	1- set Red/Green ON/OFF indicating lamps													
b)	1- set of three phase (red, yellow, blue) indicating lamps Amber healthy trip indicating lamps						-							
d)	3 nos. cast resin current transformers of 1000/5 ratio with 15 VA Burden & Class 5P10 for protection													
e) f)	3 nos. cast resin current transformers of 1000/5 ratio with 15VA burden and Class 1.0 for measurement Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
.,	each of the fault for achieving discrimination along with distinct fault indication through LED's.													
	230V AC or 24 V DC shunt trip coil													
	230V, AC Motor wound spring closing mechanism Terminals to receive aluminium XLPE armoured cables													
i)	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as													
	required.BMS interface terminal shall be separate													
	Auto,manual,bypass,remote and local selector switch and interlocking arrangement					1	-	1		1				
С	BUS COUPLER													
- `	1 no. 800 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with: 1- set Red/Green ON/OFF indicating lamps						+							
b)	1- set of three phase (red, yellow, blue) indicating lamps													
c)	Amber healthy trip indicating lamps													-
d)	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol.					1	-							
D a)	BUSBAR Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 800 A having a maximum current density of 1.2 A per sqmm suitable to with stand symmetrical fault level of 50 kA. at 415 V with necessary high temp PVC sleeving. The neutral busbars shall be of 50% capacity.													
b)	Two incomers & Bus coupler shall be electrically & mechanically interlocked such that only two breakers shall be switched ON at a time.													
-														
<u>Е</u> а)	Metering 2 sets (4 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Volt meter similar to SMP-45 models of MECO or						+			<u> </u>				
a)	equivalent with necessary Circuit MCBs and with suitable size summation CTs connections as required for both incoming feeders.													

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION A	ND HVAC S	SYSTEMS								
tem	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INF
b)	1 No., 230V, AC operated integral type Digital meter with RS-445 port for measuring Amps. Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ ENC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity													
F	MDB1 OUTGOINGS (TYPE 1)													
	2 no. 125 A, 415V, Ics = 50 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
	4 no. 63 A, 415V, Ics= 35 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
.,	3 no. 200 A, 415V, Ics= 35 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
d)	1 no. 100 A, 415V, Ics=35 kA, TP MCCB's and with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
G	MDB1 OUTGOINGS (TYPE 2)													
a)	3 no. 125 A, 415V, Ics = 50 kÅ, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
b)	3 no. 63 A, 415V, Ics= 35 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
c)	1 no. 400 A, 415V, Ics = 50 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
						1								
H a)	MDB2 OUTGOINGS 1 no. 400 A, 415V, Ics = 50 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
	2 no. 125 A, 415V, Ics= 35 kA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
	1 no. 100 A, 415V, ISE= 35 KA, TP MCCB's with variable overcurrent and short circuit releases, UVR & shunt trip each having 1 set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link. 2 no. 63 A, 415V, ISE=35 KA, TP MCCB's and with variable overcurrent and short circuit releases, UVR & shunt trip each having 1													
u)	set of 3nos. phase indicating lamps (red, yellow, blue) & with heavy duty solid neutral link.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.BMS interface terminal shall be separate													
1.2	Capacitor Panel													
	Capacitor Bank Panel (75kVAR) as per specifications & as per following details:	Nos	2	2	2	2	2	2				12	305218.80	3662625
		1003	2	2	2	~ ~	2	2				12	505210.00	5002025
Α	INCOMING													
	INCOMER Incoming from MDB with 125 A, 415V, Ics=50 kA, 4P,MCCB complete with variable overcurrent and short circuit releases													
	2 - set Red/Green ON/OFF indicating lamps													
	2 set of three phase indicating lamps (red, vellow, blue) Amber healthy/ trip indicating lamps for above feeders U/V relay with shunt trip.													
-2	Direct Cable incoming													
b)	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 1 set of three phase indicating lamps (red, vellow, blue)													
b)	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps													
b) c) B	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 1 - set Red/Green ON/OFF indicating lamps (red, vellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override. BUSBAR													
b) c) B	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 1 set of three phase indicating lamps (red, vellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override.													
b) c) B a)	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 1 - set Red/Green ON/OFF indicating lamps (red, yellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override. BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 160 A having a maximum current density of 1.2 A per sq mm suitable to with stand symmetrical fault level of 50 kA at 415 V. The neutral busbar is to be of 50% capacity.													
b) c) B a) C	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 1 set of three phase indicating lamps (red, vellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override. BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 160 A having a maximum current density of 1.2 A													
b) c) B a) C a)	Direct Cable incoming 1 - set Red/Green ON/OFE Indicating lamps 1 - set Red/Green ON/OFE Indicating lamps (red, vellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override. BUSEAR Electrolytic high conductivity copper three phase and neutral busbars rated at 160 A having a maximum current density of 1.2 A per sq mm suitable to with stand symmetrical fault level of 50 kA at 415 V. The neutral busbar is to be of 50% capacity. DUTGOING UNITS													
b) c) B a) C a) b) c)	Direct Cable incoming 1 - set Red/Green ON/OPF indicating lamps 1 - set Red/Green ON/OPF indicating lamps set of three phase indicating lamps (red, vellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override. BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 160 A having a maximum current density of 1.2 A per sq mm suitable to with stand symmetrical fault level of 50 kat 415 V. The neutral busbar is to be of 50% capacity. OUTGOING UNITS 2 nos. 100 A, 415V, 35 kA TP MCCB with fixed neutral and 100A, 3 pole Contactor for automatic switching of capacitor 3 nos. 63 A, 415V, 35 kA TP MCCB with fixed neutral and 63A, 3 pole Contactor for automatic switching of capacitor 2 nos. 25 kVAR, 415 V hermetically sealed metalised obypropylene capacitors in well ventilated enclosures complete as per sometical sectors and provide obypropylene capacitors in well ventilated enclosures complete as per sometical sectors and sectors and sectors in well ventilated enclosures complete as per sometical sectors and sectors and sectors in well ventilated enclosures complete as per sometical sectors and sectors and sectors and sectors in well ventilated enclosures complete as per sometical sectors and sectors and sectors and sectors in well ventilated enclosures complete as per sometical sectors and													
b) c) B a) C a) b) c) d)	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 2 - nos. 100 A, 415V, 35 kA TP MCCB with fixed neutral and 100A, 3 pole Contactor for automatic switching of capacitor 3 - nos. 63 A, 415V, 35 kA TP MCCB with fixed neutral and 63A, 3 pole Contactor for automatic switching of capacitor 2 - nos. 25 kVAR, 415V hermetically sealed metalised polypropylene capacitors in well ventilated endosures complete as per secofications, application duty and as reguired 2 nos. 10 kVAR, 415V hermetically and as reguired													
b) c) B a) C a) b) c) d)	Direct Cable incoming 1 - set Red/Green ON/OFF indicating lamps 1 - set Red/Green ON/OFF indicating lamps set of three phase indicating lamps (red, vellow, blue) 5-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor circuits with automatic switching over facility with manual override. BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 160 A having a maximum current density of 1.2 A per sq mm suitable to with stand symmetrical fault level of 50 kA at 415 V. The neutral busbar is to be of 50% capacity. OUTGOING UNITS 2 nos. 100 A, 415V, 35 kA TP MCCB with fixed neutral and 100A, 3 pole Contactor for automatic switching of capacitor 3 nos. 63 A, 415V, 35 kA TP MCCB with fixed neutral and 63A, 3 pole Contactors in well ventilated enclosures complete as per specifications, application duty and as required 2 nos. 10 KVA, 415 V hermetically sealed metalised polypropylene capacitors in well ventilated enclosures complete as per													

Name of	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUDTONOTIVE SQUARE, N BALANCE WORKS ESCLUDING YU REVISED SCHEDULE-F ELE	ADUCT IN F	REACH-2 O	F NAGPUR	R METRO R	AIL PROJE	GODAM ST	TATION, KASTURCHA	ND PARK A	AND ZERO	MILE) INCLUE	DING E&M WORK	; AND PD AREA
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	Essential Main distribution Board (EMDB) complete with automatic source transfer system as per specifications and as per following details	Nos	1	1	1	1	1	1			6	1059205.76	6355234.56
	Automatic source transfer system suitable for the below												i i
Δ	INCOMER (Normal supply) Incoming from MD82 with 400 A, 415V, Ics=50 kA, 4P, motorised MCCB complete with variable overcurrent and short circuit releases for Normal supply												
b)	2 - set Red/Green ON/OFF indicating lamps												
	2 set of three phase indicating lamps (red, yellow, blue) Amber healthy/ trip indicating lamps for above feeders U/V relay with shunt trip.												
(D	Amber healthy trip indicating tamps for above reeders 0/V relay with shunt trip.												
a)	INCOMING FROM DG PANEL 1 nos. 400 A, 415V, ICs= 50 KA, 4P, motorised MCCBs complete with variable overcurrent and short circuit releases 1 set Red/Green ON/OFF indicating lamps												
b)	1- set of three phase indicating lamps (red, yellow, blue) Amber healthy trip indicating lamps for above feeders												
C)													 I
a)	BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 400 A having a maximum current density of 1.2 A per sq mm suitable to with stand symmetrical fault level of 50 kA at 415 V. The neutral busbar is to be of 50% capacity.												
	All incomers shall be interlocked electrically & mechanically with automatic source transfer system so that only one supply is switched on at a time and fail safe restoration.												
D	Metering	-				-	+		-		<u> </u>		
a)	Hock 2007 Hoc, 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity												
E	OUTGOING UNITS												
E a)	OU IGUING UNLIS I no. 2004, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt trip having indication lamps to give status												
-	3 nos. 100A, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt trip each having indication lamps to give status												
	5 nos. 63A, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases UVR & shunt trip each having indication lamps to give status no. 32A, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases UVR & shunt												ŀ
	trip each having indication lamps to give status												[
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												
1.4	Main lighting panel (MLP) complete as per specifications and as per following details:	Nos	1	1	1	1	1	1			6	331074.96	1986449.76
				-				_					
	INCOMER 1 no. 63A, 415V, ICS=35 KA, TP motorised MCCB with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt trip having indication lamps to give status 1 - set Red/Green ON/OFF indicating lamps												
b)	1 - set of three phase indicating lamps (red, yellow, blue)												
_													1
a)	BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 63 A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 35kA at 415 V. The neutral busbar is to be of same size as phases.												
с	OUTGOING				1		1		1				i
	8 no. 32A, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases UVR & shunt trip each having indicationlamps to give status												
D	Meterina												I
	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps , Voltage, Energy, frequency & power factor conforming to specifications, latest EC/E MC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity												
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.											<u></u>	
1.5	Emergency lighting panel (EMLP) as per specifications and as per following details:	Nos	1	1	1	1	1	1			6	243973.26	1463839.56
А	INCOMER	<u> </u>					+		<u> </u>		<u> </u>		i
	1 no. 63A, 415V, Ics=25 kA, TP motorised MCCB with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt trip having indication lamps to give status												
	1- set Red/Green ON/OFF indicating lamps				1		-						
b)	1- set of three White phase indicating lamps				1								
В	BUSBAR												

	BALANCE WORKS EXCLUDING VI	ADUCT IN	REACH-2 C	OF NAGPUR	METRO R	AIL PROJE	ст.							
	REVISED SCHEDULE-F ELE	ECTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCD		CS PD	7M	Total Oty	Pate (INP)	Amount (INR)
 a) Electrolytic high cond 	luctivity copper three phase and neutral busbars rated at 63A having a maximum current density of 1.4 A per th stand symmetrical fault level of 25kA at 415 V. The neutral busbar is to be of same size as phases.	Unit	Ans	hak	1115	RDC	665	Rer	KCF FD G	103 F D	Lin	Total Qty	Kate (INK)	Amount (INK)
C OUTGOING														
	=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases UVR & shunt													
trip each having indi	ation lamps to give status.													
SCADA / BMS CON All the breakers shou BMS/SCADA for all sy	NECTIVITY Id be provided with communication facilities & contractor should provide single point to communicate with stem parameter of the panel. DC source & other accessories including software and hardware as required.													
1.6 Power Panel as pe	specifications and as per following details:	Nos	1	1	1	1	1	1				6	496860.24	2981161.44
A INCOMER	s=35 kA. TP motorised MCCB with fixed neutral and with variable overcurrent and short circuit releases. UVR													
	idication lamps to give status													
 a) 1- set Red/Green ON 	/OFF indicating lamps													
b) 1- set of three White	phase indicating lamps													
B BUSBAR			1											
	luctivity copper three phase and neutral busbars rated at 125 A having a maximum current density of 1.4 A o with stand symmetrical fault level of 35kA at 415 V. The neutral busbar is to be of same size as phases.													
C OUTGOING														
1 nos. 63A, 415V, Ic	=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt	1		1										
	ation lamps to give status													
7 nos. 32A, 415V, Ic trip each having indi	s=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt cation lamps to give status													
D Metering	ated integral type Digital meter with RS-485 port for measuring Amps, Voltage, Energy, frequency & power													
factor conforming to SCADA/BMS connect	specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting													
	NECTIVITY Id be provided with communication facilities & contractor should provide single point to communicate with stem parameter of the panel. DC source & other accessories including software and hardware as required.													
1.7 Water pump Panel	(WPP) as per specifications and as per following details	Nos	1	1	1	1	1	1				6	504163.26	3024979.5
Internal wiring in the	Starters shall be done with FRLS PVC insulated cables of adequate size. Internal wiring, contactors, relay contacts should be rated not less than 2.5 Sqmm.	1403	-	1	1		-	1				0	504105.20	5024979.5
A INCOMER	· ·													
 a) 1 no. 63 A ,415V, Ics 	=35 KA , TP MCCB with variable over current and short circuit releases													
b) 1- set Red/Green ON c) 1- set of three phase	/OFF indicating lamps indicating lamps (red, yellow, blue)													
B BUSBAR														
	luctivity copper three phase and neutral busbars rated at 63 A having a maximum current density of 1.4 A o with stand symmetrical fault level of 35kA. at 415 V. The neutral busbar is to be of same size as phases.													
C OUTGOING														
a) 2 Nos. 32A, Ics = 35	KA, 415V, TP MCCB each with the following :	1					-							
	W, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, at relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.													
a2) 1 - set Red/Green O			1											
 a3) 1 – set start stop pus a4) Auto / Manual selecter 		+		+			<u> </u>							
a5) Amber healthy trip in	dicating lamps	1	1	1										
a6) AC operated, 3.5 Dig suitable size CTs and	it, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB, selector switch for current measurement on standby and main pumps including connections as required for suitable selector for measuring other circuit current as required.													
b) (N== 224 Z = 10		1		1										
b1) 6 nos. 5.0 HP/ 3.75 H	KA, 415V, TP MCB each with following WK, Star Delts attarter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, it relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.													
h2) 1 - set Red / Green (N/OFF indicating lamp													
 b3) 1 - set start / stop p b4) Auto / Manual selector 														

	REVISED SCHEDULE-F ELEC Description		FIRE PROT	ECTION A	ND HVAC S	VSTEMS								
b6)							6.00	K 22	KOP	000		T-t-1 C:	B-+- (5455)	A
	AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	MCB, suitable size CGT, and selector switch for current measurement on standady or and main pumps including connections as required for incoming feeder and suitable selector or the measuring other circuit current as required.													
()	2 Nos. 32A, Ics = 35KA, 230V, DP MCB each with following													
c1)	1 ros. 20 HP / 15 kW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and control.													
c2)	1 - set Red/Green ON/OFF indicating lamps													
	1 – set start stop push buttons. Auto / Manual selector switch.													
c5)	Amber healthy trip indicating lamps													
c6)	AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB,suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
D	Metering													
	No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity													
E.	Presettable switching timer set for each pump													
	SCADA / BMS CONNECTIVITY						-							
	SCADA 7 MMS CONNECTIVITY Bit the breakers should be provided with communication facilities & contractor should provide single point to communicate with MMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.8	Fire Pump Panel													
	Fire pump panel (FPP) Type 1 as per specifications as per following details complete with automatic source													
	the pump panel (PP) Type 1 as per specifications as per following details complete with automatic source changeover facility. Internal wiring in the Starters shall be done with FRLS PVC insulated cables of adequate size. Internal wiring, contactors, relay	Nos	1	1	1	1	1	1				6	530467.82	3182806.92
	contacts, push button contacts should be rated not less than 2.5 Sqmm.													
Α	INCOMER - I from EMDB (EMERGENCY supply)													
<i>a)</i>	 no. 200 A, 415 V, Ics=35kA, 4P, motorised MCCB with variable over current and short circuit releases having: set Red/Green ON/OFF indicating lamps 													
b)	1- set of three phase indicating lamps (red, yellow, blue)													
c)	Amber trip indicating lamps													
в	INCOMER -II from DG set													
	1 no. 200 A, 415 V, Ics=35 kA, 4P, motorised MCCB with variable over current and short circuit releases having:													
a)	1- set Red/Green ON/OFF indicating lamps 1- set of three phase indicating lamps (red, yellow, blue)													
c)	A set of three phase motioning langes (red, yearwy, orde) Amber trip indicating langes													
c	BUSBAR													
a)	busbark Electrolytic high conductivity copper three phase and neutral busbars rated at 200 A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 35kA at 415 V. The neutral busbar is to be of capacity as phases													
b)	Two incomers shall be interlocked electrically & mechanically with automatic source transfer system so that only one supply is switched on at a time.													
D a)	OUTGOING 1 no. 200 A, Ics=35 kA, 415 V, TP MCCB with fixed neutral and with variable overcurrent and short circuit releases					1	1					1		
a1)	1 no. 100 HP/74.50 KW, Star Delta starter comprising 1 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.													
	1 – set Red/Green ON/OFF indicating lamps													
a3)	1 – set start stop push buttons.													
a5)	Auto / Manual selector switch. Amber healthy trip indicating lamps						1					1		
a6)	AC operated, 3.5 Diglt, independent Digital Anmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB, suitable size CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
1.5	1 no. 32 A, Ics=35 kA, 415 V, TP MCCB with fixed neutral and with variable overcurrent and short circuit releases													
	1 no. 32 A, Ics=35 kA, 415 V, TP MCCB with fixed neutral and with variable overcurrent and short circuit releases 1 no. 7.5 HP/56, Star Detta starter comprising 2 Nos. TP contactor AC-3 dly Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.													
b21	1 – set Red/Green ON/OFF indicating lamps													
b3)	1 - set start stop push buttons.													
b4)	Auto / Manual selector switch. 1 no. of AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary						+							
	1 no. or Ac operated, 3-5 urgit, independent bigital Animeter similar to SmP-45 models or MECU or equivalent with necessary Circuid MCBs and with suitable size CTs, connections as required for incoming feeder and suitable selector for measuring other circuit current.													
		-					1							

	BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTINE SOURCE, NA BALANCE WORKS EXCLUDING VI REVISED SCHEDULE-F ELEV	ADUCT IN	REACH-2 C	OF NAGPUR	METRO R	AIL PROJE						,,		
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	7M	Total Otv	Rate (INR)	Amount (INR)
Rem	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity	Unit	ANJ	hak	INS	KDC	005	KCr	KCF FD	00570	211	Total Qty		Amount (INK)
F	Auxiliary relay shall be provided which shall be activated by pressure switch for remote monitoring.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.9	Escalator Power Panel as per specifications & Drawing and as per following details:Type-1	Nos	0	0	0	0	0	0				0	366031.28	0.00
Α	INCOMER													
	1 nos. 160 A ,415V, Ics= 35 KA, TP motorised MCCB with variable over current and short circuit releases having:													
	1- set Red/Green ON/OFF indicating lamps 1- set of three phase indicating lamps (red, yellow, blue)													
В	BUSBAR													
5	Electrolytic high conductivity copper three phase and neutral busbars rated at 160 A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 35kA at 415 V. The neutral busbar is to be of same capacity as phases.													
c a)	OUTGOING 5 nos. 40A Ecs=35 kA, 415V, TP MCCB with fixed neutral and with variable overcurrent and short circuit releases each having indication lamps to give status													
b)	Space for providing variable KWHr meter with required CT's/PT's for each of the outgoing feeder with locking arrangement.													
_														
D	Metering 1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.10	Escalator Power Panel Type 2 as per specifications & Drawing and as per following details	Nos	0	0	0	0	0	1				1	377600.00	377600.00
A	INCOMER													
	1 nos. 250 A ,415V, Ics= 35 KA, TP motorised MCCB with variable over current and short circuit releases having: 1- set Red/Green ON/OFF indicating lamps													
b)	1- set of three phase indicating lamps (red, yellow, blue)													
В	BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 250 A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 35kA at 415 V. The neutral busbar is to be of same capacity as phases.													
с	OUTGOING													
	8 nos. 40A Ics=35 kA, 415V, TP MCCB with fixed neutral and with variable overcurrent and short circuit releases each having indication lamps to give status													
b)	Space for providing variable KWHr meter with required CT's/PT's for each of the outgoing feeder with locking arrangement.													
D	Metering													
	 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps, Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity 													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.11	Escalator Power Panel Type 3 as per specifications & Drawing and as per following details	Nos	1	1	1	1	1	0				5	528184.52	2640922.60
Α	INCOMER 1 nos. 400 A ,415V, Ics= 35 KA, TP motorised MCCB with variable over current and short circuit releases having:													
a) b)	1- set Red/Green ON/OFF indicating lamps 1- set of three phase indicating lamps (red, yellow, blue)													
В		-					-		-					
в	BUSBAR Electrolytic high conductivity copper three phase and neutral busbars rated at 400 A having a maximum current density of 1.4 A						-		1		1	-		
-														
С	OUTGOING		l	ļ		I	1	I	1	ļ	1	1		

	BALANCE WORKS EXCLUDING VIA REVISED SCHEDULE-F ELE						CT.							
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
a)	14 nos. 40 A Ics=35 kA, 415V, TP MCCB with fixed neutral and with variable overcurrent and short circuit releases each having indication lamps to give status													
b)	Space for providing variable KWHr meter with required CT's/PT's for each of the outgoing feeder with locking arrangement.													
D	Metering													
-	 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps, Voltage, Energy, Frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity 													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.12	UPS output Panel Type-1 as per specifications and as per following details:	Nos	0	0	0	0	0	0	0	0		0	395781.44	0.00
Α	INCOMER 1 no. 63A, 415V, Ics=25 kA, TP motorised MCCB with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt trip having indication lamps to give status													
a) b)	1- set Red/Green ON/OFF indicating lamps 1- set of three White phase indicating lamps													
в	BUSBAR		+		l									
в	BUSBARK Electrolytic high conductivity copper three phase and neutral busbars rated at 63A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 25kA at 415 V. The neutral busbar is to be of same size as phases.													
с	OUTGOING		+	+			+			<u> </u>		1		
	8 nos. 32A, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases UVR & shunt trip each having indication lamps to give status.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.13	UPS output Panel TYPE-2 as per specifications and as per following details:	Set	1	1	1	1	1	1	1	1		8	203681.90	1629455.20
Α	INCOMER 1 no. 100A Ics=25 kA, DP motorized MCCB with variable overcurrent and short circuit releases, UVR & shunt trip having indication lamps													
a)	1- set Red/Green ON/OFF indicating lamps													
b) B	1- set of three White phase indicating lamps BUSBAR													
B	Bussam. Electrolytic high conductivity copper three phase and neutral busbars rated at 125A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 25kA at 415 V. The neutral busbar is to be of same size as phases.													
C	OUTGOING													
a)	12 nos. 32A, 240V, Ics=10 kA, DP MCB's SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	LT Panel - Gaddigodam PD													
	Design, fabrication, assembling, wingu, supply, installation, testing and commissioning of Main LT panel/Main distribution panel/s/ub-distribution panele fabricated out of a mm thick for structural members and 2 mm thick for door and covers CRCA sheet steel in cubicle compartmentalised free standing floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel T irons and/or flats wherever necessary. I to gauge CRCA sheet steel shall be used for final distribution panels. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall, be treated with all anticorrosive process before painting as per specifications with 2 coats of zinc chromate primer and final approved shade of enamelled paint. 2 Nos. earthing terminals shall be provided for all distribution panels. Panels shall be suitable for 415V, 3 phase, 4 wire, 50 HZ supply system and with 15% spare space. Alling hooks shall also be provided in case of large panels. Approval shall be taken (4) IEC 60364 : Electrical Installation of Buildings with zinc passivation shall be used in fabrication of panels.													
Note:	The panels to confirm IP-43 for indoor & IP-55 for outdoor. RATING AND SWITCH BOARDS WILL BE DESIGNED AS PER ACTUAL													
	INTRO INTO SITUATION DOWNLOW THE DECOMPTION FOR ALLONG. (NOTE: Unless not specified all incomes and outgoings ACBS/NCCBs of main LT panel shall be Microprocessor based with 485 communication port for BMS (Building Management system) connectivity through MODBUS protocol, as specified in Technical specification)													
1.14	Main Distribution Board (MDB1) Type-2													
<u> </u>	Incoming Air Circuit Breaker A' (Transformer-) ISODA, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :													
	Electronic energy meter of accuracy class-1 with 3 Nos 1600/5A, 15VA CTs to measure and display the following electrical quantities:			1			1							
	Real time		1	1		1	1							
	Total active energy (KWH/MWH)													

	REVISED SCHEDULE-F ELE	CTRICAL				VETEME								
Item	REVISED SCHEDULE-F ELE Description		AMS				GGS	KCD		GGS PD	714	Total Oty	Rate (INR)	Amount (INR)
Item	Maximum Demand (KVA/MVA) (KW/MW)	Unit	АМЗ	NAR	103	KDC.	005	KUP	KCP PD	003 PD	211	Total Qty	Rate (INK)	Allount (INK)
	Maximum Demand reset count													
	Instantaneous power factor													
	Eight time of a day energy Current													
	Voltage													
	Frequency / Harmonics													
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set													
	0-1600A digital ammeter with selector switch and 1600/5A, 15VA, CLASS 1, CT - 1 Set													
	Phase indicating lights and protected by 2A MCB's - 1 Sets Breaker ON/OFF/TRIP indicating lights and push button -1 Set													
	Breaker Ow/OFF/INF Indicating lights and push button -1 Set 230V or 24V, shunt trip coil - 1 Set													
	LCT 160/5A, 15VA, CL SPID consisting of													
	Undervoltage Relay (27) - 1 set													
	Over voltage relay (59)- 1 Set													
	Under Over Freg. Relay (81) - 1 set													
	Restricted Earth Fault Relay (64) - 1 set 2000/5A,15VA, CLASS-1, CT on Y Phase for APFCR.													
	Auxiliary contacts required for necessary interlocking of breakers.													
	Incoming MCCB' (SOLAR)													
	400 amps 4 Pole motorized MCCB, minimum Ics = 50 kA with microprocessor release unit of Over current, Short Circuit, Ground Fault - 1 Set													
	Electronic energy meter of accuracy class-1 with 3 Nos 400/5A, 15VA CTs to measure and display the following electrical													
	quantities :													
	Real time													
	Total active energy (KWH/MWH)											L		
	Maximum Demand (KVA/MVA) (KW/MW)													
	Maximum Demand reset count Instantaneous power factor													
	Instantaneous power ractor Eight time of a day energy		-	-	-							1		
	Current Gradovenergy		1	1	1									l
	Voltage													
	Frequency / Harmonics													
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set													
	0-400A digital ammeter with selector switch and 400/5A, 15VA,CLASS 1, CTs - 1 Set													
	Phase indicating lights and protected by 2A MCB's - 1 Set													
	Breaker ON/OFF/TRIP indicating lights and push button - 1 Set 230 V or 24V shunt trip coil - 1 Set													
	1 Ct 400/51/SVA,CISPIO consisting of													
	Undervoltage Relay (27) - 1 set													
	Over voltage relay (59)- 1 Set													
	Under Over Freq. Relay (81) - 1 set													
	Restricted Earth Fault Relay (64) - 1 set													
	400/5A, 15VA, CLASS-1, CT on Y Phase for APFCR.													
	Auxiliary contacts required for necessary interlocking of breakers. Bus Bars													
	1600A, TPN tinned copper bus bars with heat shrinkable insulation sleeves 1Set													
	Douting in a minute copper bus burs man near similable insulation secres roce													
	1000 amps TPN ACB draw out type (manually operated) 2 Nos													
	630 amps TPN (50 kA) MCCB 1 Nos													
	400 amps TPN(50 kA) MCCB 1 Nos													
	250 amps TPN (50 kA) MCCB 4 Nos													
	100 amos TPN (50 kA) MCCB 7 Nos Red indicating light 230V (15 Nos.), Green indicating light 230V (15 Nos.), MCCB Aux. Contact Block T1-T6 (15 Nos.), MCB 6A													
	SP 10KA (15 Nos.), CT 2000/5A CL-PS 15VA (08 Nos.)													
	Note -1. All outgoing feeders shall have suitable range of following (except capacitor feeders)													
	a. Digital electronic ammeter with selector swtich and CTs - 3 Nos		1	1	1									
	b. Phase indicating light protected by 2A MCB's - 3 Nos													
	All incoming / outgoing ACB and MCCB shall be 50 KA breaking capacity							_						
	3. The two incomer shall be interlocked elecrtically and mechanically operated ACBs with Automatic source transfer system. so	1								1	1			
	that only one supply can be swithed ON at a time.													1
	Main Distribution Board (MDB1) Type-2 as described above	Set	1	1	1	1				1		1	2898610.65	2898610.
1.15	Essential Main distribution board (EMDB)													
	Incomer 1 No. comprising of (Normal Supply) : 1000 A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release													
	unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :													
	Electronic energy meter of accuracy class-1 with 3 Nos. 1000/5A, 15VA CTs to measure and display the following electrical quantities :													
												L		l
	Real time													
	Total active energy (KWH/MWH)													
	Maximum Demand (KVA/MVA) (KW/MW)													
	Maximum Demand reset count											+		
	Instantaneous power factor													
	Eight time of a day energy. Current		+	+	+									
	Content		1	1	1									1
	Frequency / Harmonics													
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set 0-1000A digital ammeter with selector switch and 1000/5A, 15VA, CLASS 1CT - 1 Set													

Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NARI ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION, KASTURCHAND PARK AND ZERO MILE) INCLUDING E&M WORKS AND PD AREA

	BALANCE WORKS EXCLUDING VIA	ADOCT IN	REACH-2 U	A MAGFOR	HEIRO K	AIL PROJE	••••							
	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION A	ND HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Otv	Rate (INR)	Amount (INR)
	Breaker ON /OFF /TRIP indicating lights and push button - 1 Set													
	Incomer 1 No. Comprising of(DG Panel) :													
	1000 A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release													
	unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :													
	Electronic energy meter of accuracy class-1 with 3 Nos. 1000/5A, 15VA CTs to measure and display the following electrical													
	cuantities :													
	quantues .													
	Real time													
	Total active energy (KWH/MWH)													
	Maximum Demand (KVA/MVA) (KW/MW)													
	Maximum Demand reset count													
	Instantaneous power factor Eight time of a day energy.													
	Voltage													
	Frequency / Harmonics													
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set													
	0-1000A digital ammeter with selector switch and 1000/5A, 15VA, CLASS 1CT - 1 Set													
	Phase indicating lights and protected by 2A MCB's - 1 Sets													
	Breaker ON /OFF /TRIP indicating lights and push button - 1 Set													
	Bus Bars 1000A, TPN tinned copper bus bars with heat shrinkable insulation sleeves 1 Set		-			-	1							
	Outgoings						1							
	250 amps TPN (50 kA) MCCB 4 Nos		1			1	1							
	100 amps TPN (50 kA) MCCB 5 Nos													
	63 amps TPN (10 kA) MCB 7 Nos							_						
	63 amps TPN (10 kA) MCB 7 Nos						I							
	a. Digital electronic ammeter with selector swtich and CTs - 3 Nos b. Phase indicating light protected by 2A MCB's - 3 Nos													
	D. Phase indicating light protected by ZA MCB'S - 3 Nos All incoming / outgoing ACB and MCCBs shall be 50 KA (1 sec) breaking capacity			-			1							
	Essential Main distribution board (EMDB) as described above	Set								1		1	1810504.80	1810504.8
										-		_		
1.16	FIRE PUMP PANEL													
Α.	Incomer 2 No. each comprising of :													
а.	400 amps 4 Pole motorized MCCB, minimum Ics = 50 kA with microprocessor release unit of Over current, Short Circuit, Ground Fault - 1 Set													
	raut - 1 Set													
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering													
	supporting SCADA/BMS connectivity													
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or													
	equivalent with necessary Circuit MCBs and with suitable size summation CTs connections as required for both incoming feeders.													
d.	3 No. 400/5 amps cast resin current transformers with 15 VA Burden & Class 5P10 for protection and metering - 1 Set													
а.	3 No. 400/5 amps cast resin current transformers with 15 VA Burden & Class 5P10 for protection and metering - 1 Set													
e.	3 No. 400/5 amps cast resin current transformers with 15 VA Burden & Class 1.0 for metering - 1 Set													
f.	Breaker ON / OFF / TRIP, Ready to close contact & indicating lights with control MCB - 2 Set													
a.	RYB Phase indicating light protected by 2 amps MCB's 2 Set													
<u>h.</u>	230 V or 24V AC Shunt trip coll 2 Set													
1.	RS-485 port for display of ON/OFF status of MCCB on BMS workstation through MODBUS protocol Note: Contractor shall provide an earmarked terminal boards for SCADA and BMS signals as per specifications and requirements.			l	l					l				
1.	The conductor share provide an earmained terminal boards for SCNDA and bird signals as per specifications and requirements.						1					1		1
k.	Amber healthy trip indicating lamps													
в	Due Pay comprising of 1						I							
В.	Bus Bar comprising of :													
1	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 400 A having a maximum current density of		-			-	1							
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA at 415 V with necessary high temp PVC colour						1					1		1
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.						1					1		1
							1					1		1
_														
с.	Outgoing comprising of :							_						
i.	4 No. 200A, 415V, TP MCCB (motor duty) each outgoing comprises with following						1					1		
а	3 no. 100 HP/ 74.5 KW, star Delta starter comprising 1 Nos. TP contactor AC-3 duty, bimetallic over current relays single phasing						1							
-	preventer and timer & with potential free contacts for remote monitoring and control + 3 level liquid controller with following						1					1		
							1					1		1
b	1 ask Dad (Green ON (OFF indication import													
b C	1 - set Red/Green ON/OFF indicating lamps 1 - set start stop push buttons.													
d	1 - set start stop push buttons. Auto / Manual selecto switch.													
e	Amber healthy trip indicating lamps		1			1	1							
f	AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP+45 models of MECO or equivalent with necessary Circuit MCB,		1			1	1					1		
	suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for						1					1		1
	incoming feeder and suitable selector for measuring other circuit current as required.						1					1		1
							1					1		1
	Note: Contactor & overload relay shall be as per the type - 2 coordination chart													

	BALANCE WORKS EXCLUDING VI/	ADUCT IN	REACH-2 O	F NAGPUR	METRO R	AIL PROJE	ст.							
	REVISED SCHEDULE-F ELE													
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
ii.	3 No. 40A. 415V. TP MCCB (motor duty) each outgoing comprises with following													
а	2 no. 7.5 HP/ 5.6 KW, Star Delta starter comprising 1 Nos. TP contactor AC-3 duty, bimetallic over current relays single phasing													
	preventer and timer & with potential free contacts for remote monitoring and control + 3 level liquid controller with following													
b	1 - set Red/Green ON/OFF indicating lamps													
c	1 – set start stop push buttons.													
d	Auto / Manual selector switch. Amber healthy trip indicating lamps													
f	Accoperated, 3.5 Digit, independent Digital Ammeter similar to SMP+45 models of MECO or equivalent with necessary Circuit MCB,													
	suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for													
	incoming feeder and suitable selector for measuring other circuit current as required.													
	Note: Contactor & overload relay shall be as per the type - 2 coordination chart													
	Notes:-													
a b	All meters shall be wired at one point for BMS compatibility. Both incoming breakers shall be electrically/ mechanically interlocked													
c	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
d	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.					1						1		
	undy sector for an system parameter of the parter. Do source & other accessories including sociade and hardware as required.					1						1		
e	Internal wiring in the Starters shall be done with FRLS PVC insulated cables of adequate size. Internal wiring, contactors,													
-	relay contacts, push button contacts should be rated not less than 2.5 Sqmm.					1								
	FIRE PUMP PANEL described as above	Set					<u> </u>			1		1	1049220.90	1049220.90
		Jul				1	1			-			1015220.50	1015220.90
1.17	Water pump Panel (WPP) as per specifications and as per following details					I								
	Internal wiring in the Starters shall be done with FRLS PVC insulated cables of adequate size. Internal wiring, contactors, relay contacts, push button contacts should be rated not less than 2.5 Sqmm.													
Α	INCOMER													
a)	2 no. 63A ,415V, Ics=25 KA, TP MCCB with variable over current and short circuit releases each Comparising of													
b) c)	1- set Red/Green ON/OFF indicating lamps													
c) d)	1- set of three phase indicating lamps (red, yellow, blue) Amber healthy trip inicating lamps for above feeders													
B	BUSBAR													
	Electrolytic high conductivity copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A													
	per sq mm suitable to with stand symmetrical fault level of 25 kA. at 415 V. The neutral busbar is to be of same size as phases.													
С	OUTGOING													
a)	4 no. 32A , Ics = 25 KA, 415V, TP MCB each with the following : 1 nos. 5 HP/ 3.75 KW, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button,													
a1)	bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control													
	+ 3 level liquid level controller													
a2)	1 – set Red/Green ON/OFF indicating lamps													
a2) a3)	1 - set start stop push buttons.													
a4)	Auto / Manual selector switch.													
	Healthy and trip indicating lamps 1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with													
a6)	The deal needed Active states and a state of the state of													
	connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
b)	11 Nos. 20 A, Ics = 10KA, 415V, TP MCB(Motor duty) each with following													
b1)	1 nos. 5 HP/ 3.75 KW, DOL starter Star with bimetallic over current relays single phasing preventer and timer & with potential													
b2)	free contacts for remote monitoring and control. 1 - set Red / Green ON/OFF indicating lamp													
b2)	1 - set start / stop puch buttons													
b4)	Auto / Manual selector switch.													
b5)	Amber healthy trip indicating lamps													
b6)	1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB.suitable size CTs and selector switch for current measurement on standby and main pumps including													
	connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
						1						1		
c)	2 Nos. 16 A, Ics = 10KA, 230V, DP MCB each with following													
c1)	1 nos. 2.5HP / 1.9 kW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and													
c?`	control.													
c2) c3)	1 - set Red/Green ON/OFF indicating lamps 1 - set start stop push buttons.					1								
c4)	Auto / Manual selector switch.													
c5)	Amber healthy trip indicating lamps													
c6)	1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB,suitable size CTs and selector switch for current measurement on standby and main pumps including					1						1		
	connections as required for incoming feeder and suitable selector for measuring other circuit current as required.					1						1		
						1						1		
D	Mataologi,													
U	Metering 1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency & power					1								
	factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting	1	1	1		1	1	1	1	1	1	1		
	SCADA/BMS connectivity													

Thom	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	CCE DD	ZM	Total Otv	Rate (INR)	Amount (INR
Item E.	Presettable switching timer set for each pump	Unit	AMS	NAR	145	KDC	003	KCP	KCP PD	GG3 PD	211	Total Qty	Rate (INK)	Allount (INA
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	WATER PUMP PANEL described as above	Set								1		1	768953.25	768953
1.18	MAIN LIGHTING PANEL (MLP)													
Α.	Incomer comprising of :													
a.	1 Nos. 100 amps TPN MCCB (35 kA) with release unit for SC and OL protection along with 1 Nos. 100 amps 4P AC3 duty Contactor													
	2 Set													
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering													
	supporting SCADA/BMS connectivity													
c.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or													
	equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	ON / OFE / TRTP indicating lights with control MCR - 1 Set													
e.	ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating light protected by 2 amps MCB's - 1 Set.											1		
f.	Amber healthy trip indicating lamps													
												1		
в.	Bus Bar comprising of :		+					+				+		+
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of		+			-	-	+	-		1	1		
a	Leterroyuc nign conductivity unned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per sgmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour		1					1				1		
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1					1				1		
			+					+						l
с.	Outgoing comprising of :		+			-	-	+	-		1	1		
.	Outgoing comprising of .													
i.	40 Amps TPN MCCB with releases for SC and OL protection & shunt trip each having indication lamps to give status - 15 Set													
	Notes:-													
a.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
<u>b.</u> с.	All Outgoing feeders shall be provided with earth fault release. Both the Incomers shall be electrically & mechanically interlocked with contactor based automatics chngeover system so that only													
ι.	both the filterners shall be electrically a mechanically interfocked with contactor based automatics childeover system so that only one supply is switched on at a time.													
d.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
		_												
	MAIN LIGHTING PANEL (MLP) described as above	Set								1		1	918303.75	91830
1.19	EMERGENCY LIGHTING PANEL (EMLP)													
Α.	Incomer comprising of :													
a.	100 amps TPN MCCB (35 kA) with release for SC and OL protections - 2 Set													
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps, Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for above incomer metering supporting SCADA/BMS		1					1				1		1
	connectivity		1					1				1		
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or		1			1	1	1	1			1		
	equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.		1					1				1		1
			1					1				1		
d.	ON / OFF / TRIP indicating lights with control MCB - 1 Set			1		1	1		1		1	1		
e.	Phase indicating light protected by 2 amps MCB's - 1 Set.		1	1	-	1	1	1	1		1	1		
f.	Amber healthy trip indicating lamps		1					1				1		
В.	Bus Bar comprising of :		+					+				+		
۵.	bus bar comprising or .		1			1	1	1	1			1		
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of										1	1		
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour		1					1				1		
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1					1				1		
												1		
			1					1				+		L
-	Outgoing comprising of :		+					+				+		+
C.			+			-	-	+	-		1	1		
			1	1				1				1		
с. і.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set													
	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set													
	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set Notes:-													

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
em	Description	linit	AMS	NAR	INS	KDC	GGS	KCP		GGS PD	7M	Total Qty	Rate (INR)	Amount (IN
<u>em</u> 	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.	Unit	AMS	NAK	INS	KDC	665	KCP	KCP PD	GGS PD	2M	Total Qty	Rate (INR)	Amount (IN
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	EMERGENCY LIGHTING PANEL (EMLP) described as above	Set								1		1	612202.50	61220
20	LOWER BASEMENT VENTILATION PANEL													
	Incomer comprising of :													
	100 amps TPN MCCB (25 kA) with release for SC and OL protections - 1 Set													
	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS													
	connectivity													
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or													
	equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
	ON / OFF / TRIP indicating lights with control MCB - 1 Set													
	Phase indicating light protected by 2 amps MCB's - 1 Set.													
	Amber healthy trip indicating lamps													
			1	1		1	1				1			
	Bus Bar comprising of :		1	1		1	1		1	1	1	1		
			1	1		1	1				1			
	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of		1	1		1	1		1	1	1	1		
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 25 kA, at 415 V with necessary high temp PVC colour		1	1			1		1	1	1	1		
	1.4 A per sqmm suitable to with stand symmetrical ratii tevel or minimum 25 kA, at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1	1		1	1		1	1	1	1		
	coded neat snrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
	Outgoing comprising of :													
	32 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 12 Set													
	32 Amps TPN MCCB with releases for 3C and 0E protections & shart the each naving indication lamps to give status - 12 Set													
	N													
	Notes:-													
	All subscience beneficiants about the antidencies OF 1.4 antidencies that Tax													
	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics. All Outgoing feeders shall be provided with earth fault release.													
	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	bioly scable for all system parameter of the panel. De source & other accessories including software and nardware as required.													
	LOWER BASEMENT VENTILATION PANEL described as above	Set								1		1	630635.85	6306
	UPPER BASEMENT VENTILATION													
1	UPPER BASEMENT VENTILATION													
	Incomer comprising of :													
	100 amps TPN MCCB (25 kA) with release for SC and OL protections - 1 Set		1									1		
	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,		1											
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/EMC and EMI		1	1			1		1	1	1	1		
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS		1	1			1		1	1	1	1		
	connectivity		1	1			1		1	1	1	1		
			1	1		1	1		1	1	1	1		
	1 sate (2 no.) of AC operated 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMD 45 m-d-tSMECO			1		1	1		1	1	1	1		
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or					1	1		1	1	1	1		
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.										1			
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.									1	I	l		
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OFF / TRIP indicating lights with control MCB-1 Set													
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating light by 2 amos MCB's - 1 Set.													
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OFF / TRIP indicating libits with control MCB - 1 Set. Phase indicating libit protected by 2 amos MCB's - 1 Set. Amber healthy trig indication Jamos													
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating light by 2 amos MCB's - 1 Set.													
	sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OF / TATP Indicating links with control MCB - 1 Set Phase indicating link ordected by 2 amos MCB's - 1 Set. Amber healthy trig indicating lamps Bus Bar comprising of :													
	sets (2 no.) of AC operated, 3: D bight, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating light sets of the V 2 amos MCB's - 1 Set. Amber healthy trip indicating lamos Bus Bar comprising of : Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of													
	I sets (2 no.) of AC operated, 3:5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OF / TAIP indicating liabits with control MCB - 1 Set Phase indicating liabit ordected by 2 amos MCB's - 1 Set. Amber healthy trig indicating liabit ordected by 2 amos MCB's - 1 Set. Bus Bar comprising of : Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1:4 A per sgams suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour													
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	I sets (2 no.) of AC operated, 3:5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OF / TAIP indicating liabits with control MCB - 1 Set Phase indicating liabit ordected by 2 amos MCB's - 1 Set. Amber healthy trig indicating liabit ordected by 2 amos MCB's - 1 Set. Bus Bar comprising of : Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1:4 A per sgams suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour													
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	I sets (2 no.) of AC operated, 3:5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders. ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating lights with control MCB - 1 Set. Amber healthy this indicating tamos MCB's - 1 Set. Bus Bar comprising of : Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
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	REVISED SCHEDULE-F ELE	CTRICAL	FIRE PROT	FCTION AN		VSTEMS								
ltem	Description	Unit		NAR			GGS	KCD	KCP PD	CCE PD	714	Total Oty	Rate (INR)	Amount (IND
b.	All Outgoing feeders shall be provided with earth fault release.	onic	ANS	MAN	1113	RDC	005	KUP	KCF FD	003 FD	2.11	i otali Qty	Rate (INK)	Amount (Ink
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amos SP MCBs. SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	UPPER BASEMENT VENTILATION(LT PANEL ROOM UPPER BASEMENT) described as above	Set								1		1	565648.20	565648.
.22	Lift Well & Lift Lobby Pressurization Panel													
Α.	Incomer comprising of :													
	100 amps TPN MCCB (25 kA) with release for SC and OL protections - 1 Set													
a. b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS													
	connectivity													
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
	equivalent, with necessary Circuit Picos and with suitable size Crs connections as required for incoming request.													
d.	ON / OFF / TRIP indicating_lights with control MCB - 1 Set													
e.	Phase indicating light protected by 2 amos MCB's - 1 Set.													
r. B.	Amber healthy trip indicating lamps Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of													
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
r	Outgoing comprising of :													
i.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 9 Set													
	Notes:-													
a. h.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics. All Outgoing feeders shall be provided with earth fault release.													
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	Lift Well & Lift Lobby Pressurization Panel described as above	Set								1		1	533221.65	53322
.23	METER BOARD PANEL(TYPICAL FOR 1,2,3 & 4)													
.23														
Α.	Incomer comprising of :													
a.	100 amps TPN MCCB (25 kA) with release for SC and OL protections - 1 Set													
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS													
	connectivity													
2.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or													
	equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	ON / OFF / TRIP indicating lights with control MCB - 1 Set													
2.	Phase indicating light protected by 2 amps MCB's - 1 Set.													
f. B.	Amber healthy trip indicating lamps Bus Bar comprising of :		1	1		1	1							
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per samm suitable to with stand symmetrical fault level of minimum 25 kA, at 415 V with necessary high temp PVC colour		1	1		1	1							
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1	1		1	1					1		
c.	Outgoing comprising of :													
			1	1		1	1							
i.	32 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 17 Set													
ii.	Space for providing variable KWHr meter with required CT's/PT's for each of the outgoing feeder with locking arrangement.		1	1		1	-							
ı.			1			1	1							
	Notes:-											<u> </u>		
			1	1		1	1					t		
э.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
	All Outgoing feeders shall be provided with earth fault release.													

	– 1.1													
Item	Description SCADA / BMS CONNECTIVITY	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	METER BOARD PANEL(TYPICAL FOR 1,2,3 & 4) described as above	Set								4		4	866232.90	3464931.
1.24	250 KVAR CAPACITOR BANK TYPE-2													
Α.	Incomer comprising of :													
a. b.	630 amps TPN MCCB (50 kA) with release for SC and OL protections each having indication lamps to give status etc 1 Set Microprocessor APFC controller relay to sense and monitor the system power factor and provide impulses for operation of 5													
0.	capacitor circuits with automatic switching over facility with manual override. It shall continuously monitor all three phases and													
	displays various Electrical Parameters like voltage, input current, capacitive current, KVA demand, KW, Power Factor, self													
	diagnostic error code indication with printout facility of the above with RS 485 port. Controller should mounted on the front side of													
	the panel. It shall have data logging for minimum 2 months, it shall provide output for maximum 8 stages.													
c. d.	Multifunction meter for V, Hz & A with CT's - 1 Set Breaker ON / OFF / TRIP indicating lights with control MCB - 1 Set													
e.	Phase indicating light protected by 2 amps MCB's 1 Set													
f.	Amber healthy trip indicating lamps													
в.	Bus Bar comprising of :													
	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of													
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour													
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
C.	Outgoing comprising of :													
a. i)	100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amps TPN MCCB - 1 Set													
ii)	250 amps or capacitor heavy duty 525 volts 50Hz contactors 1 Set													
iii)	"ON" /"OFF" push buttons and indicating lamps 1 Set													
iv) v)	100 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per 7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
b. i)	50 kVAR Capacitor Bank - 2 Set each comprising of following: 125 Amps TPN MCCB - 1													
ii)	125 Amps in mode - 1 125 amps or capacitor heavy duty 525 volts 50Hz contactors 1 Set													
iii)	"ON" /"OFF" push buttons and indicating lamps 1 Set													
iv)	50 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
	specifications, application duty and as required - 1 Set													
v)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
с.	25 kVAR Capacitor Bank - 1 Set each comprising of following:													
D	80 Amps TPN MCCB - 1 Set													
ii)	80 amps or capacitor duty 525 volts 50Hz contactors 1 Set													
iii) iv)	"ON" /"OFF" push buttons and indicating lamps 1 Set 25 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
10)	specifications, application duty and as required - 1 Set													
v)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
*1	/ / mannonic mices, on/on pash bacton, moleculing lamps - 1 Sec													
d.	12.5 kVAR Capacitor Bank - 2 Set each comprising of following:													
i)	40 Amps TPN MCCB - 1 Set													
))	40 amps or capacitor duty 525 volts 50Hz contactors 1 Set "ON" /"OFF" push buttons and indicating lamps 1 Set													
iv)	12.5 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
	specifications, application duty and as required - 1 Set													
v)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
	Notoci													
a.	Notes: All outgoing breakers shall be minimum 35 kA rating with Icu = Ics.									1				
b.	Heavy duty exhaust fans to be provided for cooling Capacitors & Filters.													
с.	LED indication for number of capacitor banks 'ON'.													
d. e.	LED indication of Power Factor lagging or leading. APFC system shall comprise of following:													
C .	SCADA / BMS CONNECTIVITY									1				
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
										1		1		
	250 kVAR Capacitor Panel described as above	Set								1		1	904176.00	90/176
	250 kVAR Capacitor Panel described as above	Set								1		1	904176.00	904176

Name of	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NARI ROAD, BALANCE WORKS EXCLUDING VIADUCT IN	REACH-2 (OF NAGPUI	R METRO F	RAIL PROJE		ATION, K	ASTURCHA	ND PARK	AND ZERO	MILE) INCLUD	ING E&M WORK	S AND PD AREA
	REVISED SCHEDULE-F ELECTRICAL,	FIRE PROT	ECTION A	ND HVAC	SYSTEMS								
Item	Description Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	Design, fabrication, assembling, wining, supply, installation, testing and commissioning of Main LT panel/Main distribution panels/sub-distribution panels fabricated out of a mm thick for structural members and 2 mm thick for door and covers CRCA sheet steel in cubicle compartmentalised free standing floor mounted, dust and vernin proof with reinforcement of suitable size angle iron, channel T irons and/or fifts wherever necessary. Is gauge CRCA sheet steel shall be used for final distribution panels. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall, be treated with all anticorrosive process before painting as per specifications with 2 costs of zinc chromate primer and final approved shade of enamelled paint. 2 Nos. earthing terminals shall be provided for all distribution panels. Panels shall be suitable for 415V, 3 phase, 4 wire, 50 HZ supply system and with 15% spare space, lifting hooks shall also be provided in case of large panels. Approval shall be taken (4) IEC 60364 : Electrical Installation of Buildings with zinc passivation shall be used in fabrication of panels.												
	The panels to confirm IP-43 for indoor & IP-55 for outdoor.												
	RATING AND SWITCH BOARDS WILL BE DESIGNED AS PER ACTUAL												
	(MTE: Unless not specified all incomers and outgoings ACBS/MCCBs of main LT panel shall be Microprocessor based with 485 communication port for BMS (Building Management system) connectivity through MODBUS protocol, as specified in Technical Specification)												
1.25	MAIN LT PANEL												
2.20	SECTION - I	1		1						1			l
	Incoming Air Circuit Breaker A' (Transformer-1)												
	2000A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :												
	Electronic energy meter of accuracy class-1 with 3 Nos 2000/5A, 15VA CTs to measure and display the following electrical quantities:												
	Real time Total active energy (KWH/MWH)	I	+	I	+	+		<u> </u>	+				
	Maximum Demand (KVA/MVA) (KW/MW)												
	Maximum Demand reset count												
	Instantaneous power factor												
	Eight time of a day energy												
	Current Voltage												
	Voltage Frequency / Harmonics												
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set												
	0-2000A digital ammeter with selector switch and 4000/5A, 15VA, CLASS 1, CT - 1 Set												
	Phase indicating lights and protected by 2A MCB's - 1 Sets												
	Breaker ON/OFF/TRIP indicating lights and push button -1 Set		-										
	230V or 24V, shunt trip coil - 1 Set 1 CT 2000/5A, 15VA, CL 5P10 consisting of												
	Undervoltage Relay (27) - 1 set												
	Over voltage relay (59)- 1 Set												
	Under Over Freq. Relay (81) - 1 set												
	Restricted Earth Fault Relay (64) - 1 set 2000/5A,15VA, CLASS-1, CT on Y Phase for APFCR.												
	Auxiliary contacts required for necessary interlocking of breakers.												
	Bus Bars												
	2000A, TPN copper bus bars with heat shrinkable insulation sleeves 1Set												
	Outgoing												
	2000 amps TPN ACB draw out type (manually operated) 1 No 1250 amps TPN ACB draw out type (manually operated) 2 No												
	G30 amps TPN (50 KA) MCCB 2 Nos												
	100 amps TPN (50 kA) MCCB 3 Nos												
	Bus Coupler -: Breaker *C 2000,4, 4 pole electrically operated (motorised) fully drawotd type air circuit breaker with ON/OFF/TRIP indicating lamps & auxiliary contacts required for necessary interlocking of breakers - 1 Set												
	SECTION= II	1	1			1			1				
	Incoming Air Circuit Breaker B' (Transformer-II)												
	2000A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker, with built in micro processor based release unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :												
	Electronic energy meter of accuracy class-1 with 3 Nos 2000/5A, 15VA CTs to measure and display the following electrical quantities :												
	Real time	1	+	1	+	+			+				
	Total active energy (KWH/MWH) Maximum Demand (KVA/MVA) (KW/MW)	1	1	1	1	1		1	1				
	Maximum Demand reset count												
	Instantaneous power factor												
	Eight time of a day energy	I	+	1	-	1			1				
	Current Voltage		+		+	+			+				
	Voltade Frequency / Harmonics Frequency / Harmonics	1		1									
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set												
	0-2000A digital ammeter with selector switch and 4000/5A, 15VA,CLASS 1, CTs - 1 Set									I			
	Phase indicating lights and protected by 2A MCB's - 1 Set		-		-				-				
	Breaker ON/OFF/TRIP indicating lights and push button - 1 Set 230V or 24V shunt trip coil - 1 Set	1	1	1	1	1		1	1				
	1 Ct 4000/5,15VA,CL5P10 consisting of	1		1									İ
	Undervoltage Relay (27) - 1 set												
	Over voltage relay (59)- 1 Set												

	f Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, N/ BALANCE WORKS EXCLUDING VI						ECT.	ATION, KA	STURCHA	ND PARK A	ND ZERO	MILE) INCLUE	DING E&M WORK	S AND PD AREA
	REVISED SCHEDULE-F ELE										-			
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	Under Over Freq. Relay (81) - 1 set Restricted Earth Fault Relay (64) - 1 set													
	2000/5A, ISVA, CLASS-1, CT on Y Phase for APFCR.													
	Auxiliary contacts required for necessary interlocking of breakers.													
	Bus Bars													
	2000A, TPN tinned copper bus bars with heat shrinkable insulation sleeves 1Set													
	Outgoing													
	2000 amps TPN ACB draw out type (manually operated) 1 No													
	1250 amps TPN ACB draw out type (manually operated) 2 No						_							
	630 amps TPN (50 kA) MCCB 2 Nos													
	250 amps TPN (50 kA) MCCB 1 Nos 100 amps TPN (50 kA) MCCB 4 Nos													
	63 amps TPN (50 kA) MCCB 1 Nos													
	Red indicating light 230V (19 Nos.), Green indicating light 230V (19 Nos.), MCCB Aux. Contact Block T1-T6 (19 Nos.), MCB 6A SP 10KA (19 Nos.), CT 2000/5A CL-PS 15VA (08 Nos.)													
	Note -1. All outgoing feeders shall have suitable range of following (except capacitor feeders)													
	a. Digital electronic ameter with selector swtich and CTs - 3 Nos													
	b. Phase indicating light protected by 2A MCB's - 3 Nos													
	All incoming / outgoing ACB and MCCB shall be 50 KA breaking capacity													
	3. The two incomer shall be interlocked elecrtically and mechanically operated ACBs with Automatic source transfer system. so													
	that only one supply can be swithed ON at a time.											1		
	4.MFM and indiacting lamp shall be provided as per SLD.			-		1	1					1		
	4.MFM and indiacting lamp shall be provided as per SLD. Main LT Panel as described above	Set	1	1	1	1	1		1			1	6910488.00	6910488
			1		1	1			•				0,10,00,00	0,2,0400
1.26	Essential Power Panel (LT Panel Room Upper basement)	1			1		1					İ		l
	SECTION - I													
	Incomer 2 Nos. each comprising of :													
	2000 A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :													
	Electronic energy meter of accuracy class-1 with 3 Nos. 2000/5A, 15VA CTs to measure and display the following electrical													
	electronic energy meter of accuracy class-1 with 3 Nos. 2000/SA, 15VA CTs to measure and display the following electrical quantities :													
	quantues . Real time													
	Total active energy (KWH/MWH)													
	Maximum Demand (KVA/MVA) (KW/MW)													
	Maximum Demand (reset count													
	Instantaneous power factor													
	Eight time of a day energy.													
	Current													
	Voltage													
	Frequency / Harmonics						_							
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set 0-2000A digital ammeter with selector switch and 2000/5A, 15VA, CLASS 1CT - 1 Set													
	D-2000A digital animeter with selector switch and 20005A, ISVA, CLASS ICL - I Set													
	Breaker ON /OFF /TRIP indicating lights and push button - 1 Set													
	Auto Manual selector switch - 1 Set													
	Bus Bars													
	2000A, TPN copper bus bars with heat shrinkable insulation sleeves 1 Set													
	Outgoings													
	1250 amps TPN ACB draw out type (manually operated) 2 No													
	1000 amps TPN ACB draw out type (manually operated) 1 No													
	160 amps TPN (50 kA) MCCB 2 Nos													
	125 amps TPN (50 kA) MCCB 2 Nos 100 amps TPN (50 kA) MCCB 4 Nos			-		1	1					1		
	63 amps TPN (50 kA) MCCB 6 Nos											1		
		1	1		1	1						1		
	Bus Coupler	1	1		1	1								
	1 No. 2000A, 4 Pole ACB electrically operated drawout type with necessary potential free contacts for inter lockings and with breaker control switch, ON/OFF/TRIP indicating lamps with control MCB/s The two incomer shall be interlocked electrically and mechanically operated ACBs with Automatic source transfermer system. so that only one supply can be swithed ON at a time.													
												1		
	SECTION - II			-		1	1					1		
	Incomer 2 No. each comprising of :	1	1		1	1						1		
	2000 A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release	1			1		1					İ		
	unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :													
	Electronic energy meter of accuracy class-1 with 3 Nos. 2000/5A, 15VA CTs to measure and display the following electrical quantities : Real time													
	Total active energy (KWH/MWH)											1		
	Maximum Demand (KVA/WVA) (KW/MW)	1			1		1					1		
	Maximum Demand (reset count	1	1		1	1								
	Instantaneous power factor													
	Eight time of a day energy.													
	Current													
	Voltage			L								1		
	Frequency / Harmonics						-					-		
	0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set													
	0-2000A digital ammeter with selector switch and 2000/5A, 15VA, CLASS 1CT - 1 Set						+					1		
	Phase indicating lights and protected by 2A MCB's - 1 Sets Person ON I/OFE (CDLD) indicating lights and protected by 2A MCB's - 1 Sets						-					1		
	Breaker ON /OFF /TRIP indicating lights and push button - 1 Set Auto/ Manual/ Remote/ Local selector switch - 1 Set	1	1		l	l						1		

Name o	ff Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NAR) BALANCE WORKS EXCLUDING VIAD REVISED SCHEDULE-F ELECT	UCT IN I	REACH-2 C	OF NAGPUR	METRO R	AIL PROJE	GODAM ST	TATION, K	ASTURCHA	ND PARK /	AND ZERO	MILE) INCLUI	DING E&M WORKS	S AND PD AREA
	Description												. (1115)	. (51)5.)
Item	Bus Bars	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	2000A. TPN tinned copper bus bars with heat shrinkable insulation sleeves 1 Set													
	Outgoings 1250 amps TPN ACB draw out type (manually operated) 2 No													
	1000 amps TPN ACB draw out type (manually operated) 2 No													
	630 amps TPN (50 kA) MCCB 2 Nos													
	400 amps TPN (50 kA) MCCB 2 Nos 32 amps DP (10 kA) MCB 4 Nos													
	Note -1. All outgoing feeders shall have suitable range of following													
	a. Digital electronic ammeter with selector swtich and CTs - 3 Nos b. Phase indicating light protected by 2A MCB's - 3 Nos													
	2. All incoming / outgoing ACB and MCCBs shall be 50 KA (1 sec) breaking capacity Essential Power Panel (LT Panel Room Upper basement) as described above	Set							1			1	8542579.50	8542579.5
	Essential Power Panel (LI Panel Koom Opper basement) as described above	Set							1			-	8342379.30	8342379.3
1.27	FIRE PUMP PANEL - FIRE PLANT ROOM													
Α.	Incomer 2 No. each comprising of :													
a.	630 amps 4 Pole motorized MCCB, minimum Ics = 50 kA with microprocessor release unit of Over current, Short Circuit, Ground Fault - 1 Set													
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI						1							
	standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity													
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or													
-	equivalent with necessary Circuit MCBs and with suitable size summation CTs connections as required for both incoming feeders.													
d.	3 No. 600/5 amps cast resin current transformers with 15 VA Burden & Class 5P10 for protection and metering - 1 Set													
e.	3 No. 600/5 amps cast resin current transformers with 15 VA Burden & Class 1.0 for metering - 1 Set						1							
f.	Breaker ON / OFF / TRIP, Ready to close contact & indicating lights with control MCB - 2 Set RYB Phase indicating light protected by 2 amps MCB's 2 Set													
4. h.	230 V AC Shunt trip coil 2 Set													
ļ.	RS-485 port for display of ON/OFF status of MCCB on BMS workstation through MODBUS protocol													
j.	Note: Contractor shall provide an earmarked terminal boards for SCADA and BMS signals as per specifications and requirements.													
k.	Healthy and trip indicating lamps													
В.	Bus Bar comprising of :													
I	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA, at 415 V with necessary high temp PVC colour													
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
С.	Outgoing comprising of :													
-	3 No. 200A, 415V, TPN MCCB (motor duty) each outgoing comprises with following													
a	2 no. 160 HP/ 119.4 KW, star Delta starter comprising 1 Nos. TP contactor AC-3 duty, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control + 3 level liquid controller with following													
b	1 - set Red/Green ON/OFF indicating lamps													
c d	1 - set start stop push buttons. Auto / Manual selector switch.													
e	Amber healthy trip indicating lamps													
f	AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP45 models of MECO or equivalent with necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
-	Note: Contactor & eventeed velow shall be as par the type - 2 coordination		-				1							
	Note: Contactor & overload relay shall be as per the type - 2 coordination chart													
Ш.	1 No. 63A, 415V, TPN MCCB (motor duty) each outgoing comprises with following	-	-				-							-
а	1 no. 20 HP/ 15 KW, Star Delta starter comprising 1 Nos. TP contactor AC-3 duty, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control + 3 level liquid controller with following													
b	1 - set Red/Green ON/OFF indicating lamps						+							
d	1 - set start stop push buttons. Auto / Manual selector switch.													
e	Amber healthy trip indicating lamps AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP+45 models of MECO or equivalent with necessary Circuit MCB,	-	-				-							-
r	AC operated, 3.5 Uigr, independent Uigral Ammeter similar to SMP43 models of MELU or equivalent with necessary Lircuit MLb, suitable size CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
	Note: Contactor & overload relay shall be as per the type - 2 coordination chart													
							+							
a a	3 No. 40A, 415V, TPM MCCB (motor duty) each outoping comprises with following 2 no. 10 HP/ 7.5 KW, Star Delta starter comprising 1 Nos. TP contactor AC-3 duty, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control + 3 level liquid controller with following													
							1							
b	1 - set Red/Green ON/OFF indicating lamps 1 - set start stop push buttons.						1			-				
<i>c</i>														

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION A	ND HVAC S	YSTEMS								
Item	Description		AMS				GGS	KCP		GGS PD	7M	Total Otv	Rate (INR)	Amount (INR
e	Amber healthy trip indicating lamps	Unit	АМЗ	INAR	1145	KDC	005	NCP	KCP PD	003 PD	2.6	Total Qty	Rate (INK)	Amount (INK
f	AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP+45 models of MECO or equivalent with necessary Circuit MCB,													
	suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for													
	incoming feeder and suitable selector for measuring other circuit current as required.													
	Note: Contactor & overload relay shall be as per the type - 2 coordination chart													
	Notes:-													
a b	All meters shall be wired at one point for BMS compatibility. Both incoming breakers shall be electrically/ mechanically interlocked													
0	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
d	An outgoing of easers shall be minimum 25 kA rading with red = res.													
-	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
е	Internal wiring in the Starters shall be done with FRLS PVC insulated cables of adequate size. Internal wiring, contactors,													
-	relay contacts, push button contacts should be rated not less than 2.5 Sqmm.													
	FIRE PUMP PANEL - FIRE PLANT ROOM described as above	Set							1			1	1274188.50	1274188
	FIRE PUMP PAREL - FIRE PLANT ROOM described as above	Set							1			1	12/4100.30	12/4100
1.28	Water pump Panel (PLUMBING PLANT ROOM) as per specifications and as per following details													
	Internal wiring in the Starters shall be done with FRLSPVC insulated cables of adequate size. Internal wiring, contactors, relay		1			1	1							
	contacts, push button contacts should be rated not less than 2.5 Sqmm.				1		1	1		1	1	1		
	Incomer											+		
A a)	INCOMER 2 no. 250A ,415V, Ics=25 KA , TPN MCCB with variable over current and short circuit releases	l		l	l		1				l	1		
a) b)	1- set Red/Green ON/OFF indicating lamps		-			-	1					1		
0)	1- set of three obsec indicating lamps (red, vellow, blue)		1			1	1					1		
d)	Amber healthy trip inicating lamps for above feeders		1			1	1							
B	BUSBAR													
	Electrolytic high conductivity copper three phase and neutral busbars rated at 250 A having a maximum current density of 1.4 A											1		
	per sq mm suitable to with stand symmetrical fault level of 25 kA. at 415 V. The neutral busbar is to be of same size as phases.													
С	OUTGOING													
a)	5 no. 40A , Ics = 25 KA, 415V, TP MCCB(motor Duty) each with the following :													
a1)	4 nos. 10 HP/ 7.5 KW, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button,													
	bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control													
	+ 3 level liquid level controller													
a2)	1 – set Red/Green ON/OFF indicating lamps													
a2) a3)	1 - set start stop push buttons.													
a4)	Auto / Manual selector switch.													
a5)	Amber healthy trip indicating lamps													
a6)	1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with													
	necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including													
	connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													
b)	11 Nos. 20 A, Ics = 10KA, 415V, TP MCB(Motor duty) each with following													
b1)	10 nos. 5 HP/ 3.75 KW, DOL starter Star with bimetallic over current relays single phasing preventer and timer & with potential													
. ,	free contacts for remote monitoring and control.													
b2)	1 - set Red / Green ON/OFF indicating lamp													
b3)	1 - set start / stop puch buttons													
b4)	Auto / Manual selector switch.													
b5)	Amber healthy trip indicating lamps				L							1		
b6)	1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with						1					1		
	necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including						1					1		
	connections as required for incoming feeder and suitable selector for measuring other circuit current as required.				1		1	1		1	1	1		
c)	2 Nos. 16 A. Ics = 10KA, 230V, DP MCB each with following											+		
c1)	12 NOS. 15 A. ICS = 10KA. 230V. DP MCB each with following 1 nos. 2.5HP (1.9 KW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and											1		
	notrol.						1					1		
c2)												+		
c2) c3)	1 - set Red/Green ON/OFF indicating lamps 1 - set start stop push buttons.											+		
(4)	1 - set start stop push buttons. Auto / Manual selector switch.	-		-	-		1					1		
c5)	Aubor / Harldan Serector Switch.		1			1	1					1		
c6)	1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with					1						1		
,	necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including						1					1		
	connections as required for incoming feeder and suitable selector for measuring other circuit current as required.						1	1		1	1	1		1
D	Metering													
	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps, Voltage, Energy, frequency & power											1		
	factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting						1	1		1	1	1		
	SCADA/BMS connectivity						1					1		
E.	Presentable switching times set for each sume											+		
E.	Presettable switching timer set for each pump SCADA / BMS CONNECTIVITY	l		l	l		1				l	1		
	SLADA / BHS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with						1					1		
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.				1		1	1		1	1	1		1
	and source is over an event of the parter. Do source is other accessories including sortware and nardware as required.				1		1	1		1	1	1		1
	WATER PUMP PANEL - PLUMBING PLANT ROOM described as above	Set										1	1001052.00	1001052
	WATER FORF FAREL - FLORBING PLANT KOOM described as above	Jei		-	-		1		-			1	1001052.00	1001052
1.29	MAIN LIGHTING PANEL (MAIN LT PANEL ROOM UPPER BASEMENT)	I	I	I	t		1				t	1		
			1			1					i	1		

	f Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, N BALANCE WORKS EXCLUDING VI REVISED SCHEDULE-F ELE	DUCT IN	REACH-2 C	OF NAGPUR	METRO RA	AIL PROJE	GODAM ST	ATION, KA	STURCHA	ND PARK A	ND ZERO	MILE) INCLUD	ING E&M WORKS	AND PD AREA
	Description												. (111)	
Item A.	Incomer 2 No. each comprising of :	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
a.	1 Nos. 100 amps TPN MCCB (35 kA) with release unit for SC and OL protection along with 1 Nos. 100 amps 4P AC3 duty Contactor													
b.	11 Set 11 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary in Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity													
c.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	ON / OFF / TRIP indicating lights with control MCB - 1 Set													
e. f	Phase indicating light protected by 2 amps MCB's - 1 Set. Amber healthy trip indicating lamps													
в.	Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
~														
ι.	Outgoing comprising of :													
i.	40 Amps TPN MCCB with releases for SC and OL protection & shunt trip each having indication lamps to give status - 15 Set													
	Notes:-													
a.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
<u>b.</u> с.	All Outgoing feeders shall be provided with earth fault release. Both the Incomers shall be electrically & mechanically interlocked with contactor based automatics chngeover system so that only one supply is switched on at a time.													
d.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
-	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	MAIN LIGHTING PANEL AIN LIGHTING PANEL (MAIN LT PANEL ROOM UPPER BASEMENT) described as above	Set							1			1	1006434.00	1006434.00
1.30	EMERGENCY LIGHTING PANEL (MAIN LT PANEL ROOM UPPER BASEMENT)													
Α.	Incomer comprising of :													
a. b.	100 amps TPM MCCB (35 kA) with release for SC and OL protections - 2 Set 1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for above incomer metering supporting SCADA/BMS connectivity													
c.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	ON / OFF / TRIP indicating lights with control MCB - 2 Sets													
e. f.	Phase indicating light protected by 2 amps MCB's - 2 Sets. Healthy trip indicating lamps													
в.	Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
-												+		
ι.	Outgoing comprising of :													
i.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set													-
	Notes:-						1							
	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
a. b.	All Outgoing feeders shall be provided with earth fault release.									1			-	
	All Outgoing feeders shall be provided with earth fault release. All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
	All Outgoing feeders shall be provided with earth fault release.													

	REVISED SCHEDULE-F ELE Description													
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
1.31	LOWER BASEMENT VENTILATION PANEL(ELEC. ROOM LOWER BASEMENT)													
Α.	Incomer comprising of :													
_														
<u>a.</u> b.	125 amps TPN MCCB (25 kA) with release for 5C and 0.L protections - 1 Set 1 No., 230V, AC operated integral type Digital meter with R5-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest 1EC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS connectivity													
c.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	ON / OFF / TRIP indicating lights with control MCB - 1 Set													
e.	Phase Indicating light protected by 2 amps MCB's - 1 Set. Amber healthy trip indicating lamps													
	Amber reaking crip moreating tamps													
в.	Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 125 A having a maximum current density of 1.4 A per sgmm suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
C.	Outaoing comprising of :													
L.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set								T					
1.	40 Amps TPN MCLB with releases for SC and OL protections & shuft the each naving indication lamps to give status - 10 Set													
ii.	32 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 8 Set													
	Notes:-													
a. b.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics. All Outgoing feeders shall be provided with earth fault release.													
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	LOWER BASEMENT VENTILATION PANEL(ELEC. ROOM LOWER BASEMENT) described as above	Set							1			1	921667.50	921667.5
1.32	UPPER BASEMENT VENTILATION(LT PANEL ROOM UPPER BASEMENT)													
Α.	Incomer comprising of :													
a. b.	100 amps TPN MCCB (25 kA) with release for SC and OL protections - 1 Set 1 No., 2307, AC Operated Integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD Facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS connectivity													
c.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	ON / OFF / TRIP indicating lights with control MCB - 1 Set													
e. f	Phase indicating light protected by 2 amps MCB's - 1 Set. Amber healthy trip indicating lamps			<u> </u>										
В.	Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
	Outgoing comprising of :													
С.							1							
с. і.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 5 Set													
	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 3 Set													
i.														
i. II.	32 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 3 Set 25 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 5 Set													
i. II.	32 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 3 Set													

	REVISED SCHEDULE-F ELE													
Item	Description SCADA / BMS CONNECTIVITY	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	UPPER BASEMENT VENTILATION(LT PANEL ROOM UPPER BASEMENT) described as above	Set							1			1	651222.00	651222
1.33	Lift Well & Lift Lobby Pressurization Panel (Lift Machine Room Terrace)													
1.55														
Α.	Incomer comprising of :													
	100 serves TON MCCD (25 (a) with release for CC and OL surfacebars 1 Ceb													
a. b.	160 amps TPN MCCB (25 kA) with release for SC and OL protections - 1 Set 1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS													
	connectivity													
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													
d.	equivalent indicating lights with control MCB - 1 Set													
e.	Phase indicating light protected by 2 amps MCB's - 1 Set.													
f.	Amber healthy trip indicating lamps													
в.	Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 160 A having a maximum current density of													
a	1.4 A per squm suitable to with stand symmetrical fault level of minimum 25 kA, at 415 V with necessary high temp PVC colour													
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
с.	Outgoing comprising of :													
i.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 6 Set													
Ш.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 5 Set													
	Notes:-													
a. b.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics. All Outgoing feeders shall be provided with earth fault release.													
с.	All Outgoing feeders shall be provided with early and release. All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 2 amps SP MCBs.													
<u>.</u> .	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	Lift Well & Lift Lobby Pressurization Panel(Lift Machine Room Terrace) described as above	Set							1			1	583947.00	583947
1.34	325 kVAR Capacitor Panel (DG Cum Transformer Change Over Panel Room)													
Α.	Incomer comprising of :													
А.														
a.	630 amps TPN MCCB (50 kA) with release for SC and OL protections each having indication lamps to give status etc 1 Set													
b.	Microprocessor APFC controller relay to sense and monitor the system power factor and provide impulses for operation of 5													
	capacitor circuits with automatic switching over facility with manual override. It shall continuously monitor all three phases and displays various Electrical Parameters like voltage, input current, capacitive current, KVA demand, KW, Power Factor, self													
	diagnostic error code indication with printout facility of the above with RS 485 port. Controller should mounted on the front side of													
	the panel. It shall have data logging for minimum 2 months, it shall provide output for maximum 8 stages.													
с.	Multifunction meter for V, Hz & A with CT's - 1 Set													
d.	Breaker ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating light protected by 2 amps MCB's 1 Set			-		-						1		
e	Amber healthy ting indicating lamps													
е. f.					l	1	1		-		-			
f.					<u> </u>									
e. f. B.	Bus Bar comprising of :				1	1								
f.										1				
f.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour													
f.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of													
f.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour													
f. B.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
f.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour													
f. B.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA, at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
f. B. C. a.	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA, at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases. Outgoing comprising of : 100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amos TPM MCGB - 1 Set													
f. B. C. i) ii)	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases. Outgoing comprising of : 100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 amps 07 M MCCB - 1 Set 250 amps 07 apacitor leavy duty 525 volts 50Hz contactors, - 1 Set													
f. B. C. i) ii) iii)	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA, at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases. Outgoing comprising of : 100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amps TP MCCB - 1 Set 250 Amps Tr vash VACB read indicating lawns, - 1 Set 'OWT 'OFF' push buttoms and indicating lawns, - 1 Set													
f. B. C. i) ii)	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases. Outaoing comprising of : 100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amos TPN MCCB - 1 Set 250 amos or capacitor heavy duty 525 volts 50Hz contactors, - 1 Set "OW" "OFF" push buttoms and indicating lamps, -1 Set 100 kVAR, S25 volts Formetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
f. B. C. i) ii) iii)	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA, at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases. Outgoing comprising of : 100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amps TP MCCB - 1 Set 250 Amps Tr vash VACB read indicating lawns, - 1 Set 'OWT 'OFF' push buttoms and indicating lawns, - 1 Set													
f. B. C. i) ii) iii)	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 630 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 50 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases. Outaoing comprising of : 100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amos TPN MCCB - 1 Set 250 amos or capacitor heavy duty 525 volts 50Hz contactors, - 1 Set "OW" "OFF" push buttoms and indicating lamps, -1 Set 100 kVAR, S25 volts Formetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													

inanie o	f Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, N BALANCE WORKS EXCLUDING VI	ADUCT IN	REACH-2 C	F NAGPUR	METRO R	AIL PROJE		TATION, KA	STURCHA	ND PARK A	ND ZERO	MILE) INCLUE	DING E&M WORKS	AND PD AREA
	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
) 1)	125 Amps TPN MCCB - 1 Set 125 amps or capacitor heavy duty 525 volts 50Hz contactors 1 Set													
iii)	"ON" /"OFF" push buttons and indicating lamps, - 1 Set													
iv)	50 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
	specifications, application duty and as required - 1 Set													
v)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
V)	7% harmonic riters, on/on push button, multating tamps - 1 Set													
с.	25 kVAR Capacitor Bank - 2 Set each comprising of following:													
i)	80 Amps TPN MCCB - 1 Set													
))	80 amps or capacitor duty 525 volts 50Hz contactors 1 Set "ON" /"OFF" push buttons and indicating lamps 1 Set													
iv)	25 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
,	specifications, application duty and as required - 1 Set													
v)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
.,														
d.	12.5 kVAR Capacitor Bank - 2 Set each comprising of following:													
i) ii)	40 Amps TPN MCCB - 1 Set													
II) III)	40 amps or capacitor duty 525 volts 50Hz contactors 1 Set "ON" /"OFF" push buttons and indicating lamps 1 Set													
iv)	12.5 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
,	specifications, application duty and as required - 1 Set													
v)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
	Notes:													
a. b.	All outgoing breakers shall be minimum 35 kA rating with Icu = Ics. Heavy duty exhaust fans to be provided for cooling Capacitors & Filters.													
D. C.	Intervy duty exhaust rains to be provided for cooling capacitors & rifers. LED indication for number of capacitor banks 'ON'.													
d.	LED indication of Power Factor lagging or leading.													
e.	APFC system shall comprise of following:													
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and nardware as required.													
	225 Julia Constitution Devel (DC Constitution Changes Changes Changes Devel Deven) devention of a scheme	Set							2			2	1509651.00	3019302.00
	325 kVAR Capacitor Panel (DG Cum Transformer Change Over Panel Room) described as above	Set										2	1309031.00	3019302.00
1.35	DIESEL GENERATOR - R2 Stations													
	Supply, installation, testing and commissioning a complete system of 250kVA Prime duty type diesel generator sets to meet the load requirements for all essential loads as mentioned in these Specifications/Contract.													
	The DG set emissions shall cofirm to the latest regulation of the Central Pollution Control Board (CPCB).													
	Installation Batteries with Stand, leads, cover and accessories.													
	990 Ltrs Day Tank fabricated out of 6mm thick sheet steel with secondary containment tank and with fitments and float level													
	switches. Drip Tray for fuel tank ,Drip Tray below engine crank case													
	The entire set shall be housed in soundproof enclosure mounted on suitable Rubber-in-shear type vibration mounts with													
	form static deflection for isolating the building flor. A nominal base concrete pad (if required) shall be provided over which the													
	engine set with its own base frame and vibration mounts shall be mounted. Adopter Box for cable / bus duct termination with													
	extension bus bars & 630 4P MCCB Isolator													
	Any other item not specifically mentioned but required for proper performance and safe working of the system.		1	1	1	1	1	1				6	2147600.00	12885600.0
	The DG system shall be provided to interface with Station Management System (SMS)/Building Management system(BMS) for remote monitoring and management in Station Control Room and/or OCC room (if available) respectively.													
	AMF PANEL	Nos												
	The AMF Panel should therefore comprise:	INUS												
	(i) 630A, 4 Pole MCCB with 4-pole contactor as main Incomer from AMF													
	Panel, copper bus bar of adequate rating with one no. 4-pole													
	ACBs as outgoing for Essential Power Panel 400A and Fire Pump													
	Panel 250A, MCCB of adequate rating, duly interlocked. (ii) Battery charger with normal and trickle charging facility and an isolating switch.													
	(ii) Battery charger with normal and trickle charging facility and an isolating switch. (iii) Over load and Earth Fault protection for the generator set.						1					1		
	(in y						1					1		
		1					1							
	DG Exhaust Pipe	Ī												
	Exhaust piping shall be fabricated from class 'B' MS pipes upto 150	1												
		1	1	1		1	1	1	1			1		
	mm dia conforming to IS 1239 of size suitable to limit backpressure to					1	1	1				1		
	mm dia conforming to IS 1239 of size suitable to limit backpressure to within permissible limit.													
	within permissible limit.													
	within permissible limit.													
	within permissible limit. SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	within permissible limit.													
	within permissible limit. SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
1.36	within permissible limit. SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													

Name	of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NA BALANCE WORKS EXCLUDING VIA	RI ROAD	INDORA REACH-2	CHOWK, K/ OF NAGPUI	ADVI CHO R METRO F	NK, GADDI G AIL PROJEC	ODAM STAT	ION, KAS	TURCHA	ND PARK	AND ZERO	MILE) INCLU	DING E&M WORK	S AND PD AREA
	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PRO	TECTION A	ND HVAC	SYSTEMS								
Item	Description Supply, installation, testing and commissioning a complete system of 630kVA Prime duty type diesel generator sets to meet the load requirements for all essential loads as mentioned in these Specifications/Contract. The DG set emissions shall cofirm to the latest regulation of the Central Pollution Control Board (CPCB). Installation Batteries with Shan Leads. cover and accessories.	Unit	AMS	NAR	INS	KDC	GGS	KCP I	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	990 Ltrs Day Tank fabricated out of 6mm thick sheet steel with secondary containment tank and with fitments and float level switches. Drip Tray for fuel tank ,Drip Tray below engine crank case													
	The entire set shall be housed in soundproof enclosure mounted on suitable Rubber-in-shear type vibration mounts with form static deflection for isolating the building flor. A nominal base concrete pad (if required) shall be provided over which the engine set with its own base frame and vibration mounts shall be mounted. Adopter Box for cable / bus duct termination with extension bus bars. Any other item not specifically mentioned but required for proper performance and safe working of the system. The DG system shall be provided to interface with Station Management System (SMS) Building Management system(BMS)									1		1		
	for remote monitoring and management in Station Control Room and/or OCC room (if available) respectively.												-	
	AMF PANEL	Set											6122025.00	6122025.0
	The AMF Panel should therefore comprise: (i) 1000A, 4 Pole ACB as main Incomer from AMF Panel, copper bus bar of adequate rating with one no. 4-pole ACBs as outgoing for Essential Power Panel 100A, ACB and Fire Pump Panel 400A, MCCB of adequate rating, duly interlocked. (ii) Battery Charger with normal and trickle charging facility and an isolating switch. (iii) Over load and Earth Fault protection for the generator set.													
	DG Exhaust Pipe Exhaust piping shall be fabricated from class 'B' MS pipes upto 150 mm dia conforming to IS 1239 of size suitable to limit backpressure to within germissible limit.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
1.37	DIESEL GENERATOR FOR Kasturchand park PD													
1	Supply, installation, testing and commissioning a complete system of 750kVA Prime duty type diesel generator sets to meet the load requirements for all essential loads as mentioned in these Specifications/contract. The DG set emissions shall cofirm to the latest regulation of the Central Pollution Control Board (CPCB). Installation Batteries with Stand, leads, cover and accessories. 990 Ltrs: Day Tank fabricated out of 6mm thick sheet steel with secondary containment tank and with fitments and float level switches. Drip Tray for fuel tank, Drip Tray below engine crank case The entires est shall be housed in soundproof enclosure mounted on suitable Rubber-in-shear type vibration mounts with fifthe entires est shall be housed in soundproof enclosure mounted. Adopter Box for cable / bus duct termination with extension bus bars. Any other item not specifically mentioned but required for proper performance and safe working of the system. The DG system shall be provided to interface with Station Management System (SMS)/Building Management system(BMS) for remote monitoring and management in Station Control Room and/or OCC room (if available) respectively.								1			1	27582750.00	27582750.0(
2	Supply, installation, testing and commissioning a complete system of 1000kVA Prime duty type diesel generator sets to meet the load requirements for all essential loads as mentioned in these Specifications/Contract. The DG set emissions shall cofirm to the latest regulation of the Central Pollution Control Board (CPCB). Installation Batteries with Stand, leads, cover and accessories. 990 Ltrs Day Tank fabricated out of firm thick sheet steel with secondary containment tank and with fitments and float level switches.													
	Drip Tray for fuel tank, Drip Tray below engine crank case The entires est shall be housed in soundproof enclosure mounted on suitable Rubber-in-shear type vibration mounts with form static deflection for isolating the building floor. A nominal base concrete pad (if required) shall be provided over which the engine set with its own base frame and vibration mounts shall be mounted. Adopter Box for cable / bus duct termination with extension bus bars. Any other item not specifically mentioned but required for proper performance and safe working of the system. The DG system shall be provided to interface with Station Management System (SMS)/Building Management system(BMS) for remote monitoring and management in Station Control Room and/or OCC room (if available) respectively-2 Set													
3	DG SYN PANEL													
	INCOMER (DG-1 & 2)													
	2 nos. 1600 A, 415V, Ics= 50 KA, 4P,ACB complete with variable overcurrent,Earth Fault and short circuit releases				1									
	Each Incoming breaker shall comprise of following: Multifunction meter for THD, V,A, KWHr, Hz, P, kVAR with CT's and RS 485 communication port - 1 Set													
	Breaker ON / OFF / TRIP, Ready to close contact & indicating lights with control MCB - 1 Set				1									
	RYB Phase indicating light protected by 2 amps MCB's 1 Set Auto-manual / test selector / switch - 1 Set				1									
	230V or 24 V DC Shunt trip coil 1 Set		1		1					1	1			

Name of Work: CONSTRUCT

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	LECTION A	ND HVAC S	SYSTEMS							
em	Description						665	KCP	KCP PD GGS PD	7M	Total Otv	Rate (INR)	Amount (IN
	Under Voltage and over voltage relay (27 & 59) with timer - 1 Set	Unit			2110		000	NU			i otali Qty	Nuce (2007)	
	400 amps TP contactor (AC 3 duty) for neutral isolation with On/Off/Trip, Indication lamps complete with all accessories as												
	required.												
	Excitor field DC voltmeter and ammeter. Voltage resrained over current protection (50 V / 51 V) type CDV62 or equivalent with CT's - 1 Set												
	Engine cranking relay-1 Set												
	Microprocessor based engine control automatic failure stand by relay including all accessories												
	Selector switch for engine control OFF/ON												
	Five push buttons – start, stop, reset, test and accept												
	Three indicating lamps "load on set', 'Load on Mains' and " Set fail to start'.												
	16 Window alarm annunciators panel with hooter, push buttons, aux. Contactors etc as required as per specification. Battery charger with voltmeter of range 0-50 volts and ammeter of range 0-50 amps for trickle and boost charging.												
	Temperature scanner (Messi Bus/Procon)												
	Underpower Relay with Timer - 1 Set												
	Reverse Power Relay - 1 Set												
	Phase Sequence Relay - 1 Set	Set											
	Differential Protection Relay (87 G/N) - 1 Set												
	Under / Over Frequency Relay - 1 Set												
	INCOMER (DG-3)												
	1 nos. 1250 A, 415V, Ics= 50 KA, 4P,ACB complete with variable overcurrent,Earth Fault and short circuit releases												
	Incoming breaker shall comprise of following:												
	Multifunction meter for THD, V,A, KWHr, Hz, P, kVAR with CT's and RS 485 communication port - 1 Set												
	Breaker ON / OFF / TRIP, Ready to close contact & indicating lights with control MCB - 1 Set		1	1		1	1						
	RYB Phase indicating light protected by 2 amps MCB's 1 Set		1	1		1	1						
	Auto-manual / test selector / switch - 1 Set 230V or 24 V DC Shunt trip coil 1 Set		1	1		1	1						
	Under Voltage and over voltage relay (27 & 59) with timer - 1 Set		1	1		1	1						
	400 amps TP contactor (AC 3 duty) for neutral isolation with On/Off/Trip, Indication lamps complete with all accessories as	Ì	1	1	1	1							İ
	required.		1	1		1	1						
	Excitor field DC voltmeter and ammeter.												
	Voltage resrained over current protection (50 V / 51 V) type CDV62 or equivalent with CT's - 1 Set												
	Engine cranking relay- 1 Set												
	Microprocessor based engine control automatic failure stand by relay including all accessories												
	Selector switch for engine control OFF/ON Five public text and accept												
	Five push buttons – start, stop, reset, test and accept Three indicating lamps "load on set', 'Load on Mains' and " Set fail to start'.												
	16 Window alarm annunciators panel with hooter, push buttons, aux. Contactors etc as required as per specification.												
	Battery charger with voltmeter of range 0-50 volts and ammeter of range 0-50 amps for trickle and boost charging.												
	Temperature scanner (Messi Bus/Procon)												
	Underpower Relay with Timer - 1 Set												
	Reverse Power Relay - 1 Set												
	Phase Sequence Relay - 1 Set												
	Differential Protection Relay (87 G/N) - 1 Set Under / Over Frequency Relay - 1 Set												
	BUSBAR												
	Electrolytic high conductivity copper three phase and neutral busbars rated at 4000 A having a maximum current density of 1.2 A												
	per sq mm suitable to with stand symmetrical fault level of 50 kA at 415 V. The neutral busbar is to be of 50% capacity.												
	Bus Coupler												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent, Earth Fault and short circuit releases												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise:												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases 1600 A, 415V, Ics=50 kA, 4P, 4P, 4P, 4P, 4P, 4P, 4P, 4P, 4P, 4P	· · ·											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise:	· · · ·											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set.	- - - - -											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS	· · · ·											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt	· · · ·											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 KA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status	· · · ·											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (I) Battery charger with normal and trickle charging facility and an isolating switch. (II) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 630 A, 415V, Ics=50 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt	· · · · ·											
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OursOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 630 A, 415V, Ics=53 kA, TP, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 630 A, 415V, Ics=55 kA, TP, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status OE Exhaust Pipe A D SE Exhaust Pipe S 1. D G Exhaust Pipe S 1. D G Exhaust Pipe S												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Der Load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 530 A, 415V, Ics=35 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 Co E schaust Pipe 2. Co E schaust Pipe as per CPCB and local authority norms. 2. Exhaust Pipe Sping Sahlu Fe abricated from class 'B' MS pipes upto 150 mm dia conforming to 15 1239 of size suitable to limit												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Battery charger with normal and trickle charging facility and an isolating switch. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 630 A, 415V, Ics=55 kA, TP, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status OE Exhaust Pipe A D SE Exhaust Pipe S 1. D G Exhaust Pipe S 1. D G Exhaust Pipe S												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Der Load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 530 A, 415V, Ics=35 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status DG Exhaust Pipe 1. OG Exhaust Pipe as per CPCB and local authority norms. 2. Khaust Piping shall be fabricated from class 'B' MS pipes upto 150 mm dia conforming to 15 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms.												
	1600 A. 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Der load and Earth Fault protection for the generator set. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 10. GE Schaust Pipe as per CPCB and local authority norms. 1. CG Exhaust Pipe as per CPCB and local authority norms. 2. Exhaust Piping shall be fabricated from cloas 'B' MS pipes upto 150 mm dia conforming to 15 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms. X Schaol , HPS CONNECTIVITY												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (I) Battery charger with normal and trickle charging facility and an isolating switch. (II) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status I no. 630 A, 415V, Ics=35 kA, TP, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status DE Exhaust Pipe 1. DG Exhaust Pipe 2. Exhaust Pipe 1. DG Exhaust Pipe 2. Exhaust Pipe 2. Schaust Pipe <												
	1600 A. 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Der load and Earth Fault protection for the generator set. (ii) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 10. GE Schaust Pipe as per CPCB and local authority norms. 1. CG Exhaust Pipe as per CPCB and local authority norms. 2. Exhaust Piping shall be fabricated from cloas 'B' MS pipes upto 150 mm dia conforming to 15 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms. X Schaol , HPS CONNECTIVITY												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (i) Deer load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=30 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 630 A, 415V, Ics=30 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 no. 2000 B, 415V, Ics=30 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 630 A, 415V, Ics=30 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 C Exhaust Pipe 1. 0 C Exhaust Pipe as per CPCB and local authority norms. 2. Exhaust Pipe fips shall be faircrated from class 'B' MS pipes upto 150 mm dia conforming to 15 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms. V SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required. Synchron												
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases. Metering The SYN Panel should therefore comprise: (I) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 500 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 500 A, 415V, Ics=50 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 no. 2000 A, 415V, Ics=50 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 no. 500 A, 415V, Ics=50 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 CE Schaust Pipe 3 CE Schaust Pipe as aper CPCB and local authority norms. 2 Khaust Piping shall be fabricated from class 'B' M5 pipes upto 150 mm dia conforming to IS 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms. 4 If the breakers should be provided with communication facilities & contractor should provide single point to communicate with BM5/SCADA for all system parameter of the panel. Dc source &	Nos							1			613600.00	6136
	1600 A. 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (1) Der toad and Earth Fault protection for the generator set. 0UfcoIN6 UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 10. Get Alast Pipe 10. Get Alast Pipe 10. Get Alast Pipe and ICAT and the complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 10. Echaust Pipe and Information Informatis Information	Nos										613600.00	6136
	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases. Metering The SYN Panel should therefore comprise: (I) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 500 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 500 A, 415V, Ics=50 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 C Exhaust Pipe 3 C E Schaust Pipe 2 Folds Piping shall be fabricated from class 'B' MS pipes upto 150 mm dia conforming to IS 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms. 4 If the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. Dc source & other accessories including software and hardware as required. Synchronizing Panel for Solar power Intake Synchronizing Panel for Solar power Intake Synchronizing NBD2 with 400 A, 415V, Ics=50 kA, 4P, motorised MCCB complete with variable overcurrent and short circuit	Nos										613600.00	61366
	1600 A. 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases Metering The SYN Panel should therefore comprise: (1) Der toad and Earth Fault protection for the generator set. 011 (2) Over toad and Earth Fault protection for the generator set. 012 TooCING UNITS 2 no. 2000 A, 145V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 01 Concolling UNITS 1. D Ge Toback Tipes (ST, TP, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 02 Exhaust Pipe and Its (St, TP, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 03 Exhaust Pipe and Its (St, TP, MCCB and local authority norms. 1. D Ce Exhaust Pipe and Its Thall be complete with required cladding as per norms. N School, PMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required. Superstring Panel for Solar power Itake Superstring Panel for Solar power Itake Superstring With 400 A, 415V, Ics=50 kA, 4P, metorised MCCB complete with variable overcurrent and	Nos										613600.00	6136
88	1600 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases. Metering The SYN Panel should therefore comprise: (I) Over load and Earth Fault protection for the generator set. OUTGOING UNITS 2 no. 2000 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 500 A, 415V, Ics=50 kA, 4P, ACB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 1 no. 500 A, 415V, Ics=50 kA, 7P, MCCB complete with variable overcurrent,Earth Fault and short circuit releases, UVR & shunt trip having indication lamps to give status 2 C Exhaust Pipe 3 C E Schaust Pipe 2 Folds Piping shall be fabricated from class 'B' MS pipes upto 150 mm dia conforming to IS 1239 of size suitable to limit backpressure to within permissible limit. Shall be complete with required cladding as per norms. 4 If the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. Dc source & other accessories including software and hardware as required. Synchronizing Panel for Solar power Intake Synchronizing Panel for Solar power Intake Synchronizing NBD2 with 400 A, 415V, Ics=50 kA, 4P, motorised MCCB complete with variable overcurrent and short circuit	Nos										613600.00	61360

	REVISED SCHEDULE-F ELE	TRICAL	IRE PROT	ECTION A	ND HVAC	SYSTEMS								
tem	Description	Unit			INS		GGS	KCD	KCP PD	CCE PD	7M	Total Qty	Rate (INR)	Amount (IN
tem	INCOMING FROM Solar PANEL	Unit	AMS	NAK	1113	KDC	003	KUP	KCP PD	003 PD	20	Total Qty	Rate (INK)	Amount (IN
	1 nos. 400 A. 415V. Ics= 50 KA. 4P. motorised MCCBs complete with variable overcurrent and short circuit releases													
	1 - set Red/Green ON/OFF indicating lamps													
	1- set of three phase indicating lamps (red, yellow, blue) Amber healthy trip indicating lamps for above feeders													
	BUSBAR													
	Electrolytic high conductivity copper three phase and neutral busbars rated at 400 A having a maximum current density of 1.2 A													
	per sq mm suitable to with stand symmetrical fault level of 50 kA at 415 V. The neutral busbar is to be of 50% capacity.													
	OUTGOING UNITS 1 no. 400A, 415V, Ics=35 kA, TP MCCB's with fixed neutral and with variable overcurrent and short circuit releases, UVR & shunt													
	Trip having indication lamps to give status													
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
.00	Addition/Deletion Adjustment rates for addition/deletion of supply & fixing of following including making of suitable holes/space in the panel/DBs and													
	making good all external/internal finishes, terminations etc complete in all respect as required.		1			1	1					1		
		Cot	0	0	0	0	0	0	1			1	0121.00	
и h	Voltage Transduser Under & Over Voltage Relav	Set Set	0	0	0	0	0	0	1			1	8131.00 34151.00	8 34
c.	Multifunction Meter with CTs	Set Set	1	ĩ	Ö	ĩ	1	1	1	5		11	25702.00 25701.00	282 25
1	Digital Load Manager with CTs	Set	0	0	0	0	0	0	1	2		1	25701.00	25
e f	Electrical. Mechanical Interlock Surge Protection Device	Set Set	0	0	0	0	0	0	1	2		نے 1	12196.00 36235.00	36 36
a	Micom Relay P127 with CT	Set	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	i			î	90152.00 4309.00	90
h.	Under & Over Voltage Release		0	0	0	0	0	0	1	2		1		4
-	Motor Mechanism 100A/160A Motor Mechanism 250A	Set Set	3	3	3	2	3	3	1	2		15	34964.00 31646.00	734 474
k	motor mechanism 200A Motor Mechanism 400A/630A	Set	3	3	3	3	3	3	1	2		21	49828.00 41390.00	1046 41
Í.	Integral Type Digital Energy Meter with CTs	Set Set	0	0	0	0	0	0	1			1	41390.00	41
n	Copper Busbar Multiple LED/neon type indications	KG Nos	0	0	0	0	0	0	1	10		11	764.00 127.30	8
n D	Multiple LED/neon type indications Astronomical digital timer	Nos	0	0	0	0	0	0	1			1	7459.40	7
2	Ammeter/Voltmeter (3.5 digit display)	Nos	0	0	0	0	0	Û	1			1	1141.90	1
a	TP Contactor - 40/32 Amos	Nos	0	0	0	0	0	0	1			1	2768.30	2
r 3	Aux. Contact 1 NO + 1 NC for MCB Adjustment rates for addition/deletion of compartmentalised switchgear in panels/switchboard of following rating including the	Nos	0	0	0	U	0	0	1			1	359.10	
	supply, fabrication, extension, modification of the enclosure or in a separate enclosure, earthing ,basbar, other sub-systems, accessories etc complete as required and as per specifications and as specified in of item 1.0 above													
3.1	1 no. 4000 A, 415V, 65kA, 4P draw out Electrically operated ACB complete with:	Nos	0	0	0	0	0	0	1			1	450700.00	450
a.	1 - set Red/Green ON/OFF indicating lamps	1403	0	0	Ŭ	0	0	0	-			-	430700.00	450.
b	1- set of three phase (red, yellow, blue) indicating lamps													
c	Amber healthy trip indicating lamps													
d	3 nos. cast resin current transformers of 4000/5 ratio with15 VA Burden & Class 5P10 for protection 3 nos. cast resin current transformers of 4000/5 ratio with 15VA burden and Class 1.0 for measurement					-								
f	Since casc resin current consistences of 4000/3 ratio with 1504 but den and class 1.0 for measurement. Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													
g	230V AC or 24 V DC shunt trip coll													
h	230V, AC Motor wound spring closing mechanism.													
1 i	Terminals to receive suitable rating bus duct/XLPE armoured cables PS-485 port for display of ON/OEE status of ACB on BMS workstation through MODBUS protocol					1	+							
	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol			-		1	1							
.2	1 no. 1600 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with:	Nos	0	0	0	0	0	0	1			1	371000.00	371
а	1- set Red/Green ON/OFF indicating lamps					1	-			_				-
b	1- set of three phase (red, yellow, blue) indicating lamps					+	+							
1	Amber healthy trip indicating lamps 3 nos. cast resin current transformers of 1600/5 ratio with15 VA Burden & Class 5P10 for protection				-	+	+		-					
e	3 nos. cast resin current transformers of 1600/5 ratio with 15VA burden ac Class 10 for protection 3 nos. cast resin current transformers of 1600/5 ratio with 15VA burden and Class 1.0 for measurement			1	1	1	1		1					
f	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for each of the fault for achieving discrimination along with distinct fault indication through LED's.													
2	230V AC or 24 V DC shunt trip coll					1								_
	230V, AC Motor wound spring closing mechanism. Torgeneine to receive subtack we do do the section with the amount cables.					+	+							
1	Terminals to receive suitable rating bus duct/XLPE armoured cables RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
		Nos	0	0	0	0	0	0	1			1	322702.65	322
.3	1 no. 1250 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with:													
h i .3 a	1 no. 1250 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with: 1 - set Red/Green ON/OFF indicating lamps 1 - set of three phase (red, youllow, blue) indicating lamps				1		_							
h i i.3 a b c	1 - set Red/Green ON/OFF indicating lamps 1 - set of three phase (red, vellow, blue) indicating lamps Amber healthy trip indicating lamps								1			1		
a) :	1 - set Red/Green ON/OFF indicating lamps 1 - set of three phase (red, yours), build indicating lamps Amber healthy trip indicating lamps 3 nos, cast resin current transformers of 1250/5 ratio with15 VA Burden & Class 5P10 for protection													
a) :	1 - set Red/Green ON/OFF indicating lamps 1 - set of three phase (red, vellow, blue) indicating lamps Amber healthy trip indicating lamps													
1 0 1 1 6	1- set Ked/Green ON/OFF indicating lamps 1- set of three phase (red, verifiew, blue) indicating lamps Amber healthy trip indicating lamps Amber healthy trip indicating lamps ans. cast resin current transformers of 1250/5 ratio with 15VA Burden & Class 5P10 for protection 3 nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.0 for measurement Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for each of the fault for achieving discrimination along with distinct fault indication through LED's. 230V AC or 24 V DC shout thin coil													
1 2 1 2 1	1- set Key/Green ON/OFF indicating lamps 1- set of three phase (red, velow, blue) indicating lamps Amber healthy trip indicating lamps Amber healthy trip indicating lamps 3 nos. cast resin current transformers of 1250/5 ratio with 15VA Burden and Class 1.910 for protection 3 nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.0 for measurement Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for each of the fault for achieving discrimination along with distinct fault indication through LED's. 230V AC or 24 V DC shunt trip coli 230V. AC or ved versing closing mechanism.													
n 1 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1- set Red/Green ON/OFF indicating lamps 1- set of three phase (red, verilow, blue) indicating lamps Amber healthy trip indicating lamps Amber healthy trip indicating lamps Amber healthy trip indicating lamps ans. cast resin current transformers of 1250/5 ratio with 15VA Burden and Class 1.910 for protection a nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.910 for measurement flor measurement anso: cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.910 for measurement a nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.910 for measurement a nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.910 for measurement accord to the fault for achieving discrimination along with distinct fault indication through LED's. 230V Ac or 24 V DC shunt trin co cil 230V, AC Motor wound spring closing mechanism. Terminals to receive suitable ratin bus durk1XIPE armound cables													
	1- set Key/Green ON/OFF indicating lamps 1- set of three phase (red, velow, blue) indicating lamps Amber healthy trip indicating lamps Amber healthy trip indicating lamps 3 nos. cast resin current transformers of 1250/5 ratio with 15VA Burden and Class 1.910 for protection 3 nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.0 for measurement Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for each of the fault for achieving discrimination along with distinct fault indication through LED's. 230V AC or 24 V DC shunt trip coli 230V. AC or ved versing closing mechanism.													

Item	Description	linit		ECTION AN			GGS	KCD	KCP PD	GGS PP	ZM	Total Qty	Rate (TND)	Amount (INR)
b	1- set of three phase (red, yellow, blue) indicating lamps	Unit	АМЗ	NAR	1145	KDC	005	KCP	KCP PD	663 PD	2.6	Total Qty	Rate (INK)	Amount (INK)
с	Amber healthy trip indicating lamps													
d	3 nos. cast resin current transformers of 1000/5 ratio with15 VA Burden & Class 5P10 for protection													
e f	3 nos. cast resin current transformers of 1000/5 ratio with 15VA burden and Class 1.0 for measurement Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													
q h	230V AC or 24 V DC shunt trip coll													
n i	230V, AC Motor wound spring closing mechanism. Terminals to receive suitable rating bus duct/XLPE armoured cables													
i	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
		Nos	1	0	0	0	0	0				1	261799.10	261799
3.5	1 no. 800 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with: 1- set Red/Green ON/OFF indicating lamps	INOS	1	U	0	0	0	U				1	261799.10	20179
b	1 - set of three phase (red, yellow, blue) indicating lamps													
с	Amber healthy trip indicating lamps													
d	3 nos. cast resin current transformers of 800/5 ratio with15 VA Burden & Class 5910 for protection													
f	3 nos. cast resin current transformers of 800/5 ratio with 15VA burden and Class 1.0 for measurement Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													
a	230V AC or 24 V DC shunt trip coil													
h	230V, AC Motor wound spring closing mechanism.													
-	Terminals to receive suitable rating bus duct/XLPE armoured cables													
1	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
	630A, 415V, Ics=50 kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps													6010
3.6	(red, yellow, blue)	Nos	0	0	0	0	0	0	1			1	60185.35	60185
3.7	630A, 415V, Ics=50 kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-set	Nos	5	5	5	5	5	5	1			31	55102.85	170818
	of three phase indicating lamps (red, yellow, blue)													
	400A, 415V, Ics=35 kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps													
3.8	(red, yellow, blue)	Nos	9	9	9	9	9	9	1			55	47347.05	260408
3.9	400A, 415V, Ics=35 kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid link and 1-set of	Nos	11	11	11	11	11	11	1			67	44198.75	296131
3.9	three phase indicating lamps (red, yellow, blue)	1403				**			-			0,	44150.75	250151
	250/200 A 41D/ Teo 2504 4D MCCD with visibility and share beneficiary barries and 1 are of these share induction													
3.10	250/200 A ,415V, Ics=35kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps	Nos	0	0	0	0	0	0	1			1	41208.15	4120
3.11	250/200 A ,415V, Ics=35kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and	Nos	5	5	5	5	5	5	1			31	37446.15	116083
5.11	1-set of three phase indicating lamps		-	-	-	-	-	-	-					
	100/63 A, 415V, Ics=35 kA ,TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-													
3.12	set of three phase indicating lamps	Nos	9	9	9	9	9	9	1			55	20634.95	113492
3.13	Less than 63A to 40A, 415V, Ics=25 kA ,TP, MCCB with variable over current and short circuit releases with heavy duty solid	Nos	11	11	11	11	11	11	1			67	20634.95	138254
3.13	neutral link and 1-set of three phase indicating lamps	NUS	11	11	11	11	11	11	1			07	20034.93	138234
3.14	32A, 415V, Ics=35 kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-set of three phase indicating lamps	Nos	10	10	10	10	10	10	1			61	12392.00	75591
3.15	Electrical operating mechanism (Motorised mechanism) for all type of above MCCBs	Nos	0	0	0	0	0	0	1			1	11971.90	1197
3.16	40-63A FP MCB 9/10 kA	Nos	1	0	0	0	0	0	1			2	4289.25	857
3.17	40-63A TP MCB 9/10 kA	Nos	1	0	0	0	0	0	1			2	4047.00	809
3.18	40-63A DP MCB 9/10 kA	Nos	1	0	0	0	0	0	1			2	1380.00	276
3.19 3.20	40-63A SP MCB 9/10 kA	Nos	1	0	0	0	0	0	1			90	730.00	146 16740
1.20	5-32A FP MCB 9/10 kA 5-32A TP MCB 9/10 kA	Nos	14	0	0	0	0	0	1			2	1380.00	
.22	5-32A DP MCB 9/10 kA	Nos	12	12	12	12	12	12	1			73	900.00	
3.23	5-32A SP MCB 9/10 kA	Nos	1	0	0	0	0	0	1			2	410.00	82
1.24	16-32Amp DP RCCB, 30 mA 1000mA 4P RCCB/ELCB-MCB	Nos Nos	1 4	0	0	0	0	0	1			2	3480.00 17321.00	696 43302
.25	1000IIA 4P RCCB/ELCB-MCB	1403	7	7	-	7		-	1			23	17521.00	43302
1.26	Supply, installation and testing of 63/40 Amp adjustable, TP MCCB with fixed neutral in sheet steel enclosure with incoming &				_									
	outgoing cable box and ON indication lamp complete as required.	Nos	1	0	0	0	0	0	10			11	13442.00	14786
3.27	Supplying installation testing and commissioning of 10/25/32A DP MCB in IP 54 rated surface/recessed box with the total unit	Nos	1	0	0	0	0	0	1		1	2	1829.00	365
	having IP 54 ingress protection with incoming & outgoing cable box for AC indoor unit complete as required.	1403	-	0	0	0	v	0	1			2	102 5.00	505
20							-							
2.28	Supplying installation testing and commissioning of 63 A 4P isolator MCCB in IP 56 rated surface/recessed GI box with the total unit having IP 56 ingress protection for AC Outdoor Units/Lifts/Escalators etc.	Nos	12	17	12	12	12	12	1		1	78	2666.00	20794
	and noting at 50 mg/cas protection for AC outdoor onica/Litta/Lataliators etc.		-									-		
2 20	Supplying installation testing and commissioning of 125 A 4P isolator MCCB in IP 56 rated surface/recessed GI box with the total						+	1						
3.29	unit having IP 56 ingress protection for Station UPS	Nos	2	2	2	2	2	2	1			13	4748.00	6172
							+							
3.30	Supply, installation and testing of 4 way TPN sheet steel enclosure with incoming and outgoing cable, distribution board complete						1					1		
	as required.	Nos	1	0	0	0	0	0	1			2	16368.50	3273
							1	1						
.31	Supply, installation and testing of 200 amps 4 Pole Isolator in sheet steel enclosure with incoming and outgoing cable box and		1	1		1	1	1	1					
	indication lamps complete as required.	Nos	2	2	2	2	2	2	1		1	13	18107.00	2353

	REVISED SCHEDULE-F ELEC	TRICAL	FIRE PROT	FECTION A	ND HVAC	SYSTEMS								
Item	Description	Unit			INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
3.32	Overload relav													
а	4 - 6 A	Nos	1	0	0	0	0	0	1			2	740.05	1480.1
b	6 - 12A 9 - 15 A	Nos	1	0	0	0	0	0	1			2	740.05 950.95	1480.3 1901.9
d	30 - 40 A	Nos	1	0	0	0	0	Ő	1			2	2091.90	4183.
e	40 - 65 A	Nos	1	0	0	0	0	0	1			2	2145.10	4290.
t	63 - 100 A	Nos	1	0	0	0	0	0	1			0	3508.35	7016.7
3.33	100 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos	3	3	3	2	2	2	1	1		17	141045.00	2397765.
3.34	75 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos	0	0	0	0	0	0	1	1		2	141045.00	282090.
3.35	50 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos	2	2	2	1	1	1	1	1		11	42960.00	472560.
3.36	10/7.5 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos	0	0	0	0	0	0	1	1		2	36774.00	73548.
3.37	Upto 5HP, DOL starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos	1	1	1	1	1	1	1	1		8	22823.68	182589.
3.38	Adjustment rates for addition/deletion of Power Contactor of following rating including the supply, fabrication, extension, modification of the enclosure or in a separate enclosure, earthing ,basbar, other sub-systems, accessories etc complete as required and as per specifications													
а	400 Amps 4 P Power Contactor	Nos	1	0	0	0	0	0	1			2	21576.40	43152.
b	300 Amps 4 P Power Contactor	Nos	1	0	0	0	0	0	1			2	16770.35	33540.
c d	250 Amps 4 P Power Contactor 200 Amps 4 P Power Contactor	Nos	1	0	0	0	0	0	1			2	9117.15 8136.75	18234
-														
	SUB TOTAL LV SWITCHGEAR - E.01													1468,52,064.4
E.02	DISTRIBUTION BOARDS													
	surface mounting, totally enclosed dust and vermin proof (minimum protection IP 54) panels with foamed-in neoprene gasketted hinged doors, fabricated from 2 mm thick RCRA with powder crated finish suitable for 415 V, 3-phase, 4 wire, 50 Hz system including suitably rated insulated copper busbars, interconnections, neutral bar assembly, phase segregating barriers, LED indicating lamps for incoming and outgoing feeders, 15% sparse space for future expansion, knockouts and gland plates for entry of cables and conduits, all internal wiring using high temperature FRLS wires, independant terminals for each phase, earthing terminals and including the cost of providing Master key lock on the door and pad locking facility on door as well as at incomer, bonding to earth etc. complete as per specification, drawings as required and as under:													
a)	MCBs shall conform to IEC898/IS 8828 (latest) and, with breaking capacity 9/10 kA at 415 V AC, current limiting type lower powerloss appx 40 -70% of the stipulated value and suitable for magnetic releases operating between 3 to 5 times rated current for normal power distribution application and 5 to 10 times rated current for moter application duty, with minimum Electrical endurance of the order of 20000 operation cycles.													
b)	Residual current circuit breaker (RCCB) conforming to IS 12640 shall be provided with 30 mA sensitivity and electrically connected rated current capacity MCB for short circuit and over load protection as required Number of MCD active to the context of the provided with NO.00C extra the provided in a protection as a context of the protection of the pr													
c) d)	All incomer MCBs of boards /panels shall be provided with NO/NC contacts as specified in specifications and drawings The LDBs may be required to accommodate Dimming Control equipment mountable on DIN rail. Contractor should refer to relevant specifications and drawings in this regard and submit his scheme for approval by Engineer.													
e)	All the contactors shall be provided with potential free contacts for remote monitoring and control.			1		1								
f)	Various distribution boards as given below:			1		I —								
2.1	Lighting Distribution Boards (LDB) Type-1 as per specification and Drawing as per following details.													
	One lighting distribution board (LDB) unit consisting of 3 compartments with respective incoming TPN MCBs, DP MCB RCCBs/ELCBs, set of contactors and outgoing SP MCBs each having indications for incoming & outgoing feeder status e.g. LDB is combination of LDB /N, LDB /G, LDB /Q, connected to incoming Supplies from Normal, DG set & UPS respectively including a set of time switches as per specifications and as shown on Drawing and as under:	Nos	4	4	4	4	4	4	5	7		36	154964.00	5578704
Α	Normal INCOMER			+		+	+							
a)	1 no. 40A TPN Contactor with astronomical digital timer													
b)	1 no. 40A TPN MCB 1 set of (ON) indicating lamps for each					+								
C)	OUTGOINGS feeder													
a)	24 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication													
b)	lamos 3 nos. 32A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped from above contactor (non timer -controlled feeders).													
в	DG INCOMER			+		+	+							
, v			1	1	1	1	1							
a)													1	
	1 no. 40A TPN Contactor with astronomical digital timer 1 no. 40A TPN MCB 1 set of (ON) indicating lamps for each 1 set of (ON) indicating lamps for each													

	REVISED SCHEDULE-F ELEC		IKE FROI	Letton A	ID III AC 3	131643								
ltem	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INF
a)	24 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication													
b)	lamps 3 nos. 32A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped from above contactor (non timer -controlled feeders).													
5)	S has size of Field + Leep received with reder on indication ramps tapped from above contactor (non-timer -controlled reders).													
с	UPS													
	INCOMER													
a)	1 no. 25A DP Contactor with astronomical digital timer													
b) c)	1 no. 25A TP MCB + ELCB/RCCB 1 set of (ON) indicating lamps for each													
C/	OUTGOINGS feeder													
a)	10 nos. 10A/20A SP MCB arranged in a row and controlled by one no. 25A DP ELCB/RCCB with feeder ON indication lamps 4 nos. 10A/20A SP MCB arranged in a row and controlled by a 20A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped													
b)	from above contactor (non timer -controlled feeders).													
	SCADA / BMS CONNECTIVITY													
	Contactor & Timer shall be provided with necessary NO/NC potential free contact & should provide single point to communicate with BMS/SCADA.													
2.2	Lighting Distribution Boards (LDB) Type-2 as per specification and Drawing as per following details.													
	One lighting distribution board (LDB) unit consisting of 2 compartments with respective incoming TPN MCBs, DP MCB													
	RCCBs/ELCBs, set of contactors and outgoing SP MCBs each having indications for incoming & outgoing feeder status e.g. LDB is	Nos	2	2	2	2	2	2	6	4		22	50847.00	11186
	combination of LDB /N, LDB /G/LDB /U connected to incoming Supplies from Normal, DG set / UPS respectively including a set of time switches as per specifications and as shown on Drawing and as under:	1105	~	~	~	~	~	~	Ŭ				500 17.00	11100.
	SCADA / BMS CONNECTIVITY											+		
	Contactor & Timer shall be provided with necessary NO/NC potential free contact & should provide single point to communicate											1		
	with BMS/SCADA.													
A	Normal INCOMER													
a)	I NO. HOA TPN MCB													
b)	1 set of (ON) indicating lamps for each													
	OUTGOINGS feeder													
a)	24 nos. 104/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication													
· ·	lamps													
в	UPS													
<u> </u>	UNCOMER													
a)	1 no. 25A DP MCB ELCB/RCCB													
b)	1 set of (ON) indicating lamps for each													
a)	OUTGOINGS feeder with feeder ON Indication LED Lamps 10 nos. 10A/20A SP MCB													
u/	SCADA / BMS CONNECTIVITY													
	Contactor & Timer shall be provided with necessary NO/NC potential free contact & should provide single point to communicate													
	with BMS/SCADA.													
2.3	Lighting Distribution Boards (LDB) Type-3 as per specification and Drawing as per following details.													
	One lighting distribution board (LDB) unit consisting of 2 compartments with respective incoming TPN MCBs, DP MCB													
	RCCBs/ELCBs, set of contactors and outgoing SP MCBs each having indications for incoming & outgoing feeder status e.g. LDB is	Nos	1	1	1	1	1	1	2	2		10	117067.00	11706
	combination of LDB /N, LDB /G/LDB /U connected to incoming Supplies from Normal, DG set / UPS respectively including a set of time switches as per specifications and as shown on Drawing and as under:	1403	-	1	1	1	1	-	-	2		10	11/00/.00	11/00
A	Normal INCOMER													
a)	INCOMER 1 no. 40A TPN Contactor with astronomical digital timer													
b)	1 no. 40A TPN MCB													
c)	1 set of (ON) indicating lamps for each													
-)	OUTGOINGS feeder 18 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication													
a)	lamos													
b)	3 nos. 32A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped with DP Contactor													
В	DG G													
a)	INCOMER 1 no. 40A TPN Contactor with astronomical digital timer											+		
b)	1 no. 40A TPN MCB													
c)	1 set of (ON) indicating lamps for each													
a)	OUTGOINGS feeder 9 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication						-			-		1		
	lamps													
b)	3 nos. 32A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped with DP Contactor											+		
.4	Vertical Power distribution boards (VDPN) TYPE-4 as per specification and as per following details.	Nos	1	1	1	1	1	1				6	50,946.50	3,05,6
	One lighting/Power distribution board (LDB) unit with respective incoming TP MCCBs, outgoing TPN MCBs each having indications		-	-	-	-	-	-				Ŭ	23,510,50	5,55,0
	for incoming & outgoing feeder status as per specifications and as under:		1	1			1	1	1	1	[1		
	INCOMER													
	1 no. 80 TP MCCB	_												
	1 set of (ON) indicating lamps. OUTGOINGS with feeder ON Indication											-		
	B Nos of 32 TPN MCB B											1		
	SCADA / BMS CONNECTIVITY													
						1	1	i i	i i	1		1	1	
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													

	REVISED SCHEDULE-F ELEC	CTRICAL, F	IRE PROT	FECTION AN	ID HVAC S	YSTEMS								
em	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
.5	Lighting distribution boards (LDB/PDP) Type-5 as per specification and as per following details. (Adversement DB			3		3			NCI I D	000.0		18		
	Concourse and Platform level)	Nos	3	د	3	3	3	3				18	54693.40	9,84,481.
	One lighting distribution board (LDB) unit with respective incoming TP MCBs, outgoing TP MCBs DP RCCB and outgoing SP MCBs													
	each having indications for incoming & outgoing feeder status as per specifications and as under:													
A	INCOMER 1 no. 63A Ics =35kA TPN MCCB													
a. b.	1 set of (ON) indicating lamps.													
_	OUTCOINCS with Sender ON Tedienties USD Learner													
в	OUTGOINGS with feeder ON Indication LED Lamps 3 No. 32A TP MCBs													
a)	9 Nos of 10A/20A SPMCB arranged in three rows and each row controlled by one no. 32A DP ELCB with feeder (ON) indication													
	Jamps. SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
.6	Lighting distribution boards (LDB/PDP) TYPE-6 as per specification and as per following details.	Nos	2	2	2	2	2	2				12	36365.00	4,36,380.
-	One lighting distribution board (LDB) unit with respective incoming TP MCBs, DP RCCB and outgoing SP MCBs each having		-		_		-		ĺ					.,,5000.
	indications for incoming & outgoing feeder status as per specifications and as under:			1										
	INCOMER					I								
	1 no. 40A TP MCB 1 set of (ON) indicating lamps.			1						1				
	OUTGOINGS 18 Nos of 10A/20A SPMCB arranged in three rows and each row controlled by one no. 40A DP ELCB with feeder (ON) indication													
	lamps.			1										
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	SUB TOTAL DISTRIBUTION BOARDS - E.02													95,94,548
3	LV POWER & CONTROL CABLES,CABLE TRAYS AND STEEL WORKS													
	Cable Laving													
1	Supply, laying, jointing, terminating, testing and commissioning of 1100 V grade, armoured, FRLS2H, AURP, aluminium(AL) / Copper (CL) conductor cables on existing trays/walk/columns/indor/ trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables, markers providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below.													
	Note 1: All cables 25 sq.mm and above are AL conductor unless specified otherwise.													
) 3.5 core 400 sq mm AL conductor) 3.5 core 300 sq mm AL conductor	Mtrs Mtrs	110 375	100 375	104 375	130 375	110 375	268 375	4725	1170		822 8145	1,982.40 1,247.26	16,29,532 101,58,932
) 3.5 core 240-sqmm AL conductor	Mtrs	70	70	70	70	70	63	4/23	200		613	814.15	4,99,073
0	1) 3.5 core 185-sgmm AL conductor	Mtrs	140	140	140	140	140 70	140 70	107			840	855.50	7,18,620 5,94,643
	2) 3.5 core 150 sg mm AL. Conductor f) 3.5 core 120-sgmm AL conductor	Mtrs Mtrs	70 280	70 150	70 205	70 410	158	371	465	305		1190 1574	499.70 592.36	9,32,374
0	3.5 core 95 sg mm AL. Conductor	Mtrs	0	0	0	0	0	0	95			95	563.35	53,518
ł	1) 4 core 95 sq mm AL, Conductor	Mtrs Mtrs	200 125	200 338	200	200 138	200 130	200 460	65			1200 1283	408.50 429.52	4,90,200
) 3.5 core 70-sqmm AL conductor)) 3.5 core 50 sq mm AL. Conductor	Mtrs	240	225	230	225	208	267	300	320		2015	354.00	7,13,310
-	3.5 core 35-sgmm AL conductor	Mtrs	155	2720	1604	494	400	1625				6998	283.20	19,81,83
n	1) 3.5 core 25-sqmm AL conductor 1) 4 core 16 sq mm CU Conductor	Mtrs Mtrs	1301 4000	1500 4000	465 4000	150 4000	697 4000	225 4000	1265	380		4338 25645	264.32 660.80	11,46,62
r	1) 4 core 10 sq mm CU Conductor	Mtrs	2000	2000	2000	2000	2000	2000	1630	1115		14745	538.08	79,33,98
) 4 core 6 sg mm CU Conductor) 4 core 4 sg mm CU Conductor	Mtrs Mtrs	400	600 350	440	476 350	270 350	135 350	490 245	2880		5691	365.80 295.00	20,81,76 6,91,77
0	13 core 6 sg mm CU Conductor	Mtrs	350 100	100	100	100	100	100	970	545		2345 2115	226.10	4,78,203
	1) 3 core 4 sg mm CU Conductor	Mtrs	100	100 250	100 250	100 250	100 250	100	70			670	133.00 95.95	89,110
1	(c) 2 core 16 sq mm AL. Conductor (c) 2 core 50 sq mm Cu. Conductor	Mtrs Mtrs	250 20	250	20	250	250	250 20				1500 120	732.45	1,43,925 87,894
2	Cable jointing and termination of cable as per item 1.1 -including cost of supplying and fixing, crimping lugs, double compression brass glands, insulation tape etc. complete as per specifications and as required.													
	1) 3.5 core 400 sg mm AL conductor	Nos	10	10	10	10	10	10		50		60	3,508.44	2,10,500
t) 3.5 core 300 sg mm AL conductor) 3.5 core 240-sgmm AL conductor	Nos Nos	14	14	14	14	14	14	146	50 12		280 30	3,035.37 2379.00	8,49,904 71,370
0	1) 3.5 core 185 sgmm AL conductor	Nos	8	8	8	8	8	8				48	1,752.39	84,114
6	3.5 core 150 sq mm AL. Conductor	Nos Nos	2	2	2 12	2 12	2 12	2	12	14		38 72	1268.00 1,347.80	48,18
0	1) 3.5 core 120 sgmm AL conductor)) 3.5 core 95 sg mm AL. Conductor	Nos	0	0	0	0	0	0	2			2	821.00	1,642
ł	1) 4 core 95 sq mm AL. Conductor	Nos	4	4	4	4	4	4	2	-	-	24	1542.80	37,02 50,11
) 3.5 core 70 sqmm AL conductor)) 3.5 core 50 sq mm AL. Conductor	Nos	10 18		10 18	10 18	10 18	10 18	2	20		62 140	808.30 690.30	
-	3.5 core 35 sgmm AL conductor	Nos	18 20	18 20	20	18 20	20	20		~~		120	577.20	96,64 69,26
	1) 3.5 core 25 sqmm AL conductor 1) 4 core 16 sq mm CU Conductor	Nos Nos	20	20	20	20 50	20	20 50	38	24		120 362	413.00 401.20	49,560
	1) 4 core 16 sq mm CU Conductor 1) 4 core 10 sq mm CU Conductor	Nos	30	30	30	30	30	30	56	108		344	334.29	1,14,99
-	14 core 6 sq mm CU Conductor	Nos	10	10	10	10 34	10	10	18	150		228	283.20 236.00	64,569 50,032
ŗ)) 4 core 4 sq mm CU Conductor)) 3 core 6 sq mm CU Conductor	Nos	34 12	34 12	12	34	34 12 8	34	8 42	46		160	1174.20	1,87,87

Maha-Metro

t) 3.1.3 a) b) c) d) c) a) b) c) c) c) c) d) d) c) c) c) c) c) c) c) c) c) c	Description 2 core 16 sa mm AL. Conductor 2 core 50 sa mm CL. Conductor 2 core 50 sa mm CL. Conductor Supply, Jaying testing and commissioning of 1.5 sqmm 1100 V grade, armoured, FRLSZ PVC insulated, FRLSZ HPVC sheathed copper conductor cables on existing trays/walls/columns/ indoor/ trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of providen and as below. Note: Termination of all control cables to be provided under the above item and as per schematic diagram including the cost of supports with suitable clamps, fixing crimingli upgs, compression type brass glands, heavy duty ferrules, insulation tage etc. complete as per specifications, as required and as below. 4 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 4 C x 1.5 samm 2 C x 1.5 samm 1 C x 1.5 samm 12 C x 1.5 samm 1 C x 1.5 samm	Unit Nos Nos Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Mtr	AMS 24 24 2 10 10 10 10 10 10 10 10 10 10 0 0 0 0	NAR 24 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	INS 24 24 2 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	KDC 24 2 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GGS 24 2 2 0 0 0 0 0 0 0 0 0 0 0 0	KCP 24 2 0 0 0 0 0 0 0 0 0 0 0	KCP PD	GGS PD 148 30 30 30		Total Oty 144 12 1340 140 140 140 340 340 0 0 0	Rate (INR) 940.50 940.50 229.90 140.29 165.66 197.00 268.00 268.00 5985.96 2530.91	1,22,846.40 11,286.00 22,990.00 36,194.87 23,192.40 1,970.00
t) 3.1.3 a) b) c) d) c) a) b) c) c) c) c) d) d) c) c) c) c) c) c) c) c) c) c	2 core 50 sa mm Cu. Conductor Supply, laying testing and commissioning of 1.5 sqmm 1100 V grade, armoured, FRLSZ PVC insulated, FRLSZ H PVC sheathed copper conductor cables on existing trays/walls/columns/ indoor/ trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of provided under the above item and as per specifications, as required and as below. Note : Termination of all control cables to be provided under the above item and as per schematic diagram including the cost of rouges, compression type brass glands, heavy duty ferrules, insulation tage etc. complete as per specifications and as required. 4 C x 1.5 sqmm 4 C x 1.5 sqmm 7 C x 1.5 sqmm 7 C x 1.5 sqmm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x 1 C x Sqm 1 C x Sqm 1 C x Sqm 1 C x Sqm 1 C x Sqm 1 C x Sqm 1 C x Sq	Nos Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Ntrs Ntrs Ntrs Ntrs Ntrs Ntrs Ntrs N	2 10 10 10 10 10 0 0 0 0	2	2 0 0 0 0 0 0	2	2 0 0 0 0 0 0 0	2	100 100 400 300	30 30 30		12 100 258 100 400 430 430 0 0	229.90 140.29 140.29 140.29 268.00 268.00 268.00 5985.96	22,990.00 36,194.87 23,192.40 92,400.00 91,120.00
a) 3.1.3 b) b) a) a) a) b) c) d) a) b) c) d) 3.3	Supply, laying testing and commissioning of 1.5 sqmm 1100 V grade, armoured, FRLSZ PVC insulated, FRLSZH PVC sheathed copper conductor cables on existing trays/walls/columns/ indoor/ trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables and including the cost of providing identification tags tet. complete as per specifications, as required and as below. Note : Termination of all control cables to be provide under the above item and as per schematic diagram including the cost of supplying and fixing crimping lugs, compression type brass glands, heavy duty ferrules, insulation tape etc. complete as per specifications and as required. 4 C ± 1.5 sqmm 5 C ± 1.5 sqmm 5 C ± 1.5 sqmm 1 C ± 1 C \pm 1 C \pm	Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Ntrs Nos	10 10 10 10 0 0 0	0	0	0	0	0	100 100 400 300	30 30 30		100 258 140 440 430	229.90 140.29 165.66 197.00 210.00 268.00 268.00 268.00 5985.96	22,990.00 36,194.87 23,192.40 92,400.00 91,120.00
a) b) c) c) c) c) c) c) c) c) c) c	copper conductor cables on existing trays/walls/columns/, indoor/ trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables and including the cost of providing identification tags tet. complete as per specifications, as required and as below. Note : Termination of all control cables to be provided under the above item and as per schematic diagram including the cost of supplying and fixing crimping lugs, compression type brass glands, heavy duty ferrules, insulation tape etc. complete as per specifications and as required. 4 C x 1.5 sqmm 4 C x 1.5 sqmm 5 C x 1.5 sqmm 5 C x 1.5 sqmm 5 C x 1.5 sqmm 1 C x	Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Ntrs Nos	10 10 10 10 0 0 0	0	0	0	0	0	100 100 400 300	30 30 30		258 140 10 440 340 430 430	140.29 165.66 197.00 210.00 268.00 268.00 5985.96	36,194.87 23,192.40 1,970.00 92,400.00 91,120.00
a) b) c) d) d) a) a) a) a) a) a) b) c) c) c) d) a a) a) a) a) a) a) a) a) a) a) a) a)	Note : Termination of all control cables to be provided under the above item and as per schematic diagram including the cost of supplying and fixing crimping lugs; compression type brass glands, heavy duty ferrules, insulation tape etc. complete as per specifications and as required. 4 (x 1.5 sgmm 5 (x 1.5 sgmm 1 (x 1.5 sgmm	Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Ntrs Ntrs Nos	10 10 10 10 0 0 0	0	0	0	0	0	100 100 400 300	30 30 30		258 140 10 440 340 430 430	140.29 165.66 197.00 210.00 268.00 268.00 5985.96	36,194.87 23,192.40 1,970.00 92,400.00 91,120.00
b) c) d) d) e) f n a) a) b) c) c) c) d) d) d) d) d) d) d) d) d) d	4 C x 1.5 sgmm 7 C x 1.5 sgmm 7 C x 1.5 sgmm 10 C x 1.5 sgmm 10 C x 1.5 sgmm 10 C x 1.5 sgmm 11 C x 1.5 sgmm 12 C x 1.5 sgmm 12 C x 1.5 sgmm 12 c x 1.5 sgmm 12 d x 1.	Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Ntrs Ntrs Nos	10 10 10 10 0 0 0	0	0	0	0	0	100 100 400 300	30 30 30		258 140 10 440 340 430 430	140.29 165.66 197.00 210.00 268.00 268.00 5985.96	36,194.87 23,192.40 1,970.00 92,400.00 91,120.00
b) c) d) d) e) f n a) a) b) c) c) c) d) d) d) d) d) d) d) d) d) d	4 C x 1.5 sgmm 7 C x 1.5 sgmm 7 C x 1.5 sgmm 10 C x 1.5 sgmm 10 C x 1.5 sgmm 10 C x 1.5 sgmm 11 C x 1.5 sgmm 12 C x 1.5 sgmm 12 C x 1.5 sgmm 12 c x 1.5 sgmm 12 d x 1.	Mtrs Mtrs Mtrs Mtrs Mtrs Mtrs Ntrs Ntrs Nos	10 10 10 10 0 0 0	0	0	0	0	0	100 100 400 300	30 30 30		258 140 10 440 340 430 430	140.29 165.66 197.00 210.00 268.00 268.00 5985.96	36,194.87 23,192.40 1,970.00 92,400.00 91,120.00
c) d) e) i) f) a) a) a) b) b) c) c) c) d) 3.3 3.4 3.4.1	5 C x 1.5 sgmm 5 C x 1.5 sgmm 10 C x 1.5 sgmm 11 C x 1.5 sgmm 12 C x 1	Mtrs Mtrs Mtrs Mtrs Ntrs Nos	10 10 10 10 0 0	0	0	0	0	0	400 300	30 30		10 440 340 430 0	197.00 210.00 268.00 268.00 5985.96	23,192.40 1,970.00 92,400.00 91,120.00
d) e) i e) i i f) i j a) a) i a) b) i i c) i i i d) i i i i i 3.3 3.3 i i i i i	7 C x 1.5 sgmm 10 C x 1.5 sgmm 12 C x 1.5 sgmm 12 C x 1.5 sgmm 12 C x 1.5 sgmm 12 C x 1.5 sgmm 12 c x 1.5 s	Mtrs Mtrs Mtrs Mtrs Nos	10 10 0 0	0	0	0	0	0	300	30		440 340 430 0	210.00 268.00 268.00 5985.96	92,400.00 91,120.00
D a) a) b) c) d) d) d) d) 3.3 3.4 3.4.1	10 C x 1.5 sqmm Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting and Power Bus bar (Addition and deletion) Lighting Clic Gob95-2-12 and V0 according to UL94) Standard tap-off outlets with captive IP 55 plug outlet covers Protection index IP 55 Impact resistance : IK 07 252 End feed units Allow electrical powering of the LB PLUS busbar With terminals for the connection of stranded or solid copper wire cables Delivered with corresponding cable glands Centre feed units Centre feed units Centre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Complete with all internal wing One set of terminals feeds both left hand and right hand feed sections. Supplied with both end caps Flexible joints Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Mtrs Mtrs Mtrs Nos	0	0	0	0	0	0	300	30		340 430 0	268.00 268.00 5985.96	91,120.00
a) 3.2 a) b) c) d) 3.3 3.4 3.4.1	12 C x 1.5 sqmm Lighting and Power Bus bar (Addition and deletion) tideal for all lighting and power demands up to 63 A Plug outlet covers (hinged and retained), cover tap-off outlets when not in use feed units and end covers . Lengths Ngid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing basic (IEC 60695-2-12 and V0 according to UL94) Standard tap-off outlets with captive IP S5 plug outlet covers Protection index P S5 Impact resistance : IK 07 ZS2 End feed units Allow electrical powering of the LB PLUS busbar With terminals for the connection of stranded or solid copper wire cables Delivered with corresponding cable glands Centre feed units Centre feed u	Mtrs Mtrs Nos	0	0	0	0		-		30 30		0	268.00	91,120.00 1,15,240.00
3.2 a) b) c) d) 3.3 3.4 3.4.1	Lighting and Power Bus bar (Addition and deletion) Ideal for all lighting and power demands up to 63 A Plug outlet covers (hinged and retained), cover tap-off outlets when not in use Feed units and end covers . Lengths Nglid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Nglid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Nglid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Nglid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Nglid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Nglid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Nglid galvanised steel casing 3 m maximum distance between suspension brackets End feed units Centre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Complete with all internal wing One set of terminals feeds both left hand and right hand feed sections. Supplied with both end caps Fexible joints Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Mtrs Nos	0	0	0	0		-	400	30		0	5985.96	-
a) b) c) d) 3.3 3.4 3.4.1	Ideal for all lighting and power demands up to 63 A Plug outlet covers (hinged and retained), cover tap-off outlets when not in use Feed units and end covers . Lengths Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between supply on the connection of stranded or solid copper wire cables Delivered with corresponding cable glands Centre feed units Centre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Complete with all internal wing One set of terminals feeds both left hand and right hand feed sections. Suppletive with both end cags Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Nos	0	0	0	0		-						
a) b) c) d) 3.3 3.4 3.4.1	Ideal for all lighting and power demands up to 63 A Plug outlet covers (hinged and retained), cover tap-off outlets when not in use Feed units and end covers . Lengths Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing Rigid galvanised steel casing 3 m maximum distance between supply on the connection of stranded or solid copper wire cables Delivered with corresponding cable glands Centre feed units Centre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Complete with all internal wing One set of terminals feeds both left hand and right hand feed sections. Suppletive with both end cags Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Nos	0	0	0	0		-						
b) c) d) 3.3 3.4 3.4.1	Ngið galvanised steel casing 3 m maximum distance between suspension brackets Conductors insulated with self-extinguishing plastic (IEC 60695-212 and V0 according to UL94) Standard tap-off outlets with captive IP 55 plug outlet covers Protection index IP 55 Impact resistance : IK 07 252 End feed units Allow electrical powering of the LB PLUS busbar With terminals for the connection of stranded or solid copper wire cables Delivered with corresponding cable glands Cantre feed units Cantre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Conglete with all intermal wing One set of terminals feeds both left hand and right hand feed sections Supplied with both end caps Texible joints Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Nos	0	0	0	0		-						-
c) d) 3.3 3.4 3.4.1	Allow electrical powering of the LB PLUS busbar With terminals for the connection of stranded or solid copper wire cables Delivered with corresponding cable glands. Centre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Complete with all internal wing One set of terminals feeds both left hand and right hand feed sections. Supplied with both end caps Flexible joints Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Nos	0				0	0				0	2530.91	
d) 3.3 3.4 3.4.1	Centre feed units can be used to power the busbar from an intermediate point of the line, reducing the voltage drop at the end of the line and/or facilitating the installation when the power supply point is near the centre of the line Complete with all internal wing One set of terminals feeds both left hand an right hand feed sections Supplied with both end caps Texible joints Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor			0	0				1	1		1		i i
3.3 3.4 3.4.1	Consists of a right hand and left hand unit Used to change direction, change level or overcome obstructions Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor	Nos	0			0	0	0				0	3105.75	-
3.3 3.4 3.4.1				0	0	0	0	0				0	8863.17	-
3.4.1	moulding. 5 mains power lines plus 2x2 conductors for integrating imergency lighting using two independently isolated circuits,plus 2 control-line conductors.Tool-free connection using electrical feed kit complete as required.Dimensions:4000x60x54 mm	Mtrs							10	10		20	3012.45	60,249.00
3.4.1	BUS DUCTS													
	Bus Ducis Ducis Design, manufacture, testing at works, supplying, Installtion, testing and Commissioning of sheet steel structure Sandwitch type Design, manufacture, testing at works, supplying, Installtion, testing and Commissioning of sheet steel structure Sandwitch type IPM "AI" bus duct having neutral cross section equal to phase, 50% Integral earth which is part of housing liself and class F/H insulation and enclosure will be of minimum 1.6 mm G1 sheet steel epoxy powder coated paint with approved shade as per specification including suitable earthing conductor through out the length of bus duct. The bus bar will be of Aluminium with radialised edges. Individual sections will not be more than 3 meters ingo uniblock. One section will be connected to adjacent section by joint system operating by single boit. Sub assembly should be removable without disturbing the adjacent bus bars. Rates shall be inclusive of all accessories i.e. bends, expansion joint, end feed box, Fire barriers inccluding all required necessary supports etc. as required. (Phase sequence shall be matched at both ends)													
-	1000 energy Canadia Burgdiant with share alarah with shared of FOLM for any Can	Mtrs							0			0	26251.00	1
b	1000 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec. 1600 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec.	Mtrs							0			0	24000.00	
	2000 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec.	Mtrs							40			40	27738.00	11,09,520.00
d	200 amps Sandwich Busduct with short clicuit withstand of 50kA for one Sec.	Mtrs							0			0	36300.00	
	4000 amps Sandwich Busduct with short circuit withstand of 65kA for one Sec.	Mtrs							0			0	86180.00	-
	Design, manufacture, testing at works, supplying, Installation, Testing and Commissioning of flanged end Bimetallic flexible Termination with all accessories as required for the following rating of bus duct. The Flange End should be suitable for the Transformers and Panels:													
	1000	Nos					1		0			-	49252.00	
	1000 amps 1600 Amps	Nos				l			0		l	0	49252.00	
	2000 Amps	Nos					1		4			4	31625.00	1,26,500.00
	2000 Amps	Nos					1		Ó			Ó	41013.00	-
	4000 Amos	Nos							0			0	169811.00	
3.5	Cable Travs											'		
3.5.1	Supply, fabrication & installation of perforated hot dipped galvanised double bended cable trays from 2 mm thick GI sheets continuously connected including horizontal and vertical bends, reducers, tees, and other accessories and duly suspended from the ceiling with 12 mm dia vertical GI crod supported by 40mm x 40 mm 5 mm GI angle etc. (or installed on wall supported on suitable brackets as required) complete as per specifications, as required and as below. Coloured cable tray shall be provided as per Fingineer In-charee. The Cable Tray shall be provided with berofrated removable cover.													
1	Note: Trays shall be supported adequately at minimum 1 m distance from the building structure/ ceiling by means of						500							
a) b)	Note: Trays shall be supported adequately at minimum 1 m distance from the building structure/ ceiling by means of painted/galvanized (as specified) MS structural members secured to the structure by dash fasteners or by grouting. This support should be capable of withstanding the weight equivalent of 3m length of the cables that can be laid in the trays. At turns the support has to be double and at both ends of the bend. 500 mm wide x 50 mm deep x 2mm thick	Mtrs	500	500	500	500		500	150	30 50		3180	1651.00 981.35	

	BALANCE WORKS EXCLUDING VI						ст.							S AND PD AREA
	REVISED SCHEDULE-F ELE													
Item	Description	Unit Mtrs	AMS 737	NAR 1700	INS 1900	1700	665 1145	1715	145	500	ZM	Total Qty 9542	Rate (INR) 1.062.00	Amount (INR) 101,33,604,00
	300 mm wide x 50 mm deep x 2mm thick 200mm wide x 50mm deep x 2mm thick	Mtrs	300	300	300	300	300	300	145	30		1830	708.00	12,95,640.00
e)	150mm wide x 50mm deep x 2mm thick	Mtrs	1752	1900	2150	1900	1410	2010	530	550		12202	649.00	79,19,098.00
Ð	100mm wide x 50mm deep x 2mm thick	Mtrs	116	1450	700	300	565	217		30		3378	590.00	19,93,020.00
3.6	CABLE LADDER												l	
3.0	Constant Control Contr													
а	900 mm wide	Mtrs	65	70	70	70	65	65	450	60		915	1,062.00	9.71.730.00
b	600 mm wide	Mtrs	60	60	60	60	60	60	50	50		460	885.00	4,07,100.00
с	450 mm wide	Mtrs	50	50	50	50	40	40		30		310	590.00	1,82,900.00
d	300 mm wide	Mtrs	0	0	0	0	0	0		50		50	1,030.00	51,500.00
	Raceways Supply, installation of sheet steel raceways /trunking , fabricated from 2.0 mm thick GI with minimum coating thickness 260 gm / sq. meter on both sides with removable cover plate complete with counter sunk cadmium plated brass screws, bends, tee- junctions, cross junction etc, in floor and suspended from the ceiling with required support . Coloured Raceways shall be provided as per Engineer In-charge. Rendered electrially continous as approved and of following sizes.													
	100 x 100 MM	Mtrs	0	0	0	0	0	0		50		50	1009.00	50,450.00
b) c)	100 x 50 MM 150 X 100 MM	Mtrs Mtrs	120	375	200	165	100	165 0		50 50		1175 50	1,888.00 2,242.00	22,18,400.00 1,12,100.00
() d)	150 X 100 MM 150 x 150 MM	Mtrs	0	0	0	0	0	0		50		50	2,242.00	34,150.00
e)	130 x 50 MM Raceway	Mtrs	100	100	100	100	100	100		30		630	2935.00	18,49,050.00
3.8	STEEL WORK Supply, fabrication & installation, of fabricated GI steel work conforming to M & E specification and tender doct, to support GI cable trays, bus duct, light fixtures, conduit wirings, Bracket, & other electrical works, as required.	kq	1500	1500	1500	1500	1500	1500	400	3360		12760	147.50	18,82,100.00
	SUB TOTAL LV POWER & CONTROL CABLES, CABLE TRAYS AND STEEL WORKS- E03													864,69,337.64
E04	INTERNAL WIRING & ACCESSARIES													
	Whether explicitly stated in the schedules below or not, the following must be complied with:													
	For supply and installation, of conduits, cable trunking, raceway, flexible conduits and wiring,													
	Wires supplied must conform to relevant clauses of tender doct. And Specifications.													
	Wiring accessories must conform to relevant clauses of tender doct. And Specifications.													
	In case of any contradiction between BOQ and tender doct. And specifications, the strangest condition of the two will apply.													
4.1	Supply and laying of Liphing Submains/circuit mains (3R x 2.5 Sqmm) in concealed or surface conduit system with GI conduits & 1100 V grade, multi strand copper conductor, PRIS2H-PVC insulted wires for phase, neutral & earth, shall include end termination. The conduits shall be complete with bends, JBs etc. The laying cost shall also include chipping works if necessary.													
a b	Primary Point (30 meter) Secondary Point	Points Points	86 324	176 734	156 597	123 458	145 450	122 620	200 376	185 275		1193 3834	6,079.36 2,138.16	72,52,676.48 81,97,705.44
4.2	Supply and laying of circuit wiring along with earth wire with the following size of FRLSZH PVC insulated copper conductor single core cable in GI conduit as required. Compete in all respect to the entire satisfaction of engineer-in-charge													
а	3 R of 1 c x 2.5 Sgmm	Mtrs	100	100	100	100	100	100	1500	750		2850	153.40	4,37,190.00
b	3R of 1 c x 4 Sqmm	Mtrs	0	0	0	0	0	0	50	50		100	205.00	20,500.00
C	3c x 2.5 Sqmm	Mtrs	0	0	0	0	0	0	50	100		150	151.00	22,650.00
4.3	Supply and laying of Power Submains/circuit mains (3R x 4 Sqmm)in concealed or surface conduit system with GI conduits & 1100 V grade, multi strand copper conductor, FRLSZH-PVC insulated wires for phase, neutral & earth, shall include end termination. The conduits shall be complete with bends, JBs etc. The laying cost shall also include chipping works if necessary.													
а	Primary Point (30 meter)	Points	77	135	104	78	101	97	55 20	25 10		672	6,608.00	44,40,576.00
b	Secondary Point	Points	29	98	40	36	65	93	20	10		391	3,127.00	12,22,657.00
4.4	Supply and laying of circuit wiring along with earth wire with the following size of FRLSZH PVC insulated copper conductor single core cable in GI conduit as required. Compete in all respect to the entire satisfaction of engineer-in-charge													
а	3R of 1 c x 4 Sg sqmm	Mtrs	500	500	500	500	500	500	150	20		3170	206.50	6,54,605.00
b	4c x 6 SaMM	Mtrs	0	0	0	0	0	0	100	50		150	484.00	72,600.00
4.5	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 6/16A 1P+N+E water proof socket with switch as required.	Nos	0	0	0	0	0	0	2	20		22	2,190.08	48,181.76
4.6	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 6/16A 1P+N+E socket with switch as required.	Nos	90	106	87	71	75	82		35		546	649.00	3,54,354.00
4.7	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 32A 3P+N+E water proof socket with plug as required.	Nos	0	0	0	0	0	0	75	2		77	7,670.00	5,90,590.00
4.8	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 20A 1P+N+E socket as required for AC.	Nos	20	21	20	18	18	18	2	1		118	1,003.00	1,18,354.00
4.9	S&F of 32 A 4P isolators with hox complete as required by the engineer	Nos	0	0	0	0	0	0	1	60		61	4.130.00	2,51.930.00
4.9	S&F of 32 A 4P isolators with box complete as required by the engineer S&F of 63 A 4P isolators with box complete as required by the engineer	Nos	0	0	0	0	0	0	1	60		61	4,130.00	2,51,930.00

Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NARI ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION, KASTURCHAND PARK AND ZERO MILE) INCLUDING E&M WORKS AND PD AREA

	REVISED SCHEDULE-F ELEC	CTRICAL, F			ID HVAC S	YSTEMS								
Item 4.11	Description Supply installation testing and commissioning of Occupancy sensor based movement detector with a build-in switch suitable for recessed mounting at a height of 3m with detection pattern of 6m X 8m. The sensor should have an operating voltage range of 230VAC + (1/95; 50/60Hz and should be able to take upto 6A of electrical load and should be able to provide the switch off delay	Unit			INS	KDC			KCP PD	GGS PD	ZM			Amount (INR)
	from 1 minute to 30 minutes range. The sensor should be in compliance with EN/IEC 60669-2-1, IEC (EN) 60669-2-1, IEC (EN) 61547, IEC (EN) 55015 and IEC (EN) 55022, class B.	Nos	0	0	0	0	0	0				0	3293.65	-
4.12	Supply and installation of G.I conduits complete with G.I junction box,pull box,other accessories with G.I fish wires as specified and as shown below	Mtrs	10	10		10		10	20				102.10	14,592.00
a b	25 mm dia,1.6 mm thick 32 mm dia,1.6 mm thick	Mtrs	10 10	10	10	10	10 10	10	20			80 80 60	182.40 255.55	20,444.00
С	50 mm dia,2.0 mm thick	Mtrs	10	10	10	10	10	10				60	421.80	25,308.00
	SUB TOTAL INTERNAL WIRING & ACCESSARIES - E.04													237,63,498.68
E.05	INDOOR LIGHTING AND FANS Supply, instaltion, testing & commissioning of light fittings including all accessories e.g. ballast, HPF condensors, lamps, holders, surface/recess mounting arrangement etc. including necessary supports, accessories and hardware as per specifications & as required at site and as below:													
Α	Luminaire minimum specifications and requirements													
a.	Luminaires should operate at +/-6% voltage fluctuation for continuous use to comply to IEC. PF > 0.95 for HF ballasts; for EM circuits PF > 0.85 with capacitor.													
b.	All the components including the internal wiring of the luminaries to be used shall be manufactured of material, which are of low smoke and zero halogen type. All luminaires shall be manufactured to relevant sections of IEC60598 or other approved international standards and the type tests for all luminaries shall be provided.													
с.	All internal wiring within the lighting fixtures shall be heat-resisting cables.													
	REFERRED STANDARDS FOR LED LIGHTING FIXTURES													
	IS: 513 Cold-rolled low carbon steel sheets and strips													
	IEC 60529 Classification of degree of protections provided by enclosures. EN 55015, CISPR15 Limits and methods of measurement of radio disturbance characteristic of electrical lighting and similar equiument.													
	IEC.62031 LED modules for general lighting-Safety requirements EN 61547 Equipment for general lighting purposes – EMC limunity requiement.													
	EN 60929 Performance, AC supplied electronics ballast for tubular flourescent lamps perormance requirement. IEC 60598-2-1 Fixed general purpose luminaries													
	IEC 60598-1 Luminaires - General requirement and tests													
	IEC 61000-3-2 Electro Magnetic compatibility (EMC) -Limits for Harmonic current emission (equipment input current = 16 Amps. per phase. IEC 60068-2-38 Environmental Testina : Test Z- AD: composite temperature/humidity cyclic test													
	IEC 60068-2-38 Environmental Testing : Test Z- AD: composite temperature/humidity cyclic test IEC 61347-2-13 Lamp control qear : particular requirements for DC or AC supplied electronic control gear for LED modules.													
	IEC 0194-2-15 Lamp control gear to recurrements for DC or AC supplied electronic control gear for LED modules. IS 10322 Specification for the luminaries													
	IS 4905 Method for random sampling													
	LM 79 LED luminair photometry measurement. LM 80 Lumen Maintenance													
	IEC 62384 DC or AC supplied electronic control gear for LED modules performance requirements													
	IEC/PAS 62612 Self-ballasted LED lamps for general lighting services- Performance													
5.1	Supply, Installation, Testing & Commissioning of 38W LED Recess mounted Luminaire with 6500K color temperature having 50000 burning hours life with minimum 70% lumen maintenance, CRI should be greater than 80, system lumen output should be minimum 3500 lumens and effactor > 92 lm/N, Housing should made of CRCA with opal diffuser. Electronic Driver should be in- built with life of 50000 hours, power factor >0.9 with THD <10%. LED make should be from CREE / Nichia /Philips Lumileds / LG. System Consumption should be less than 38W. Similar to PHILIPS CAT no: RC380B G2 LED355-6500 PSU OD WH	Nos	100	232	100	100	150	100				782	7,198.00	56,28,836.0
5.2	Supply, Installation, testing and commissioning of Surface mounted LED luminaire with Mid flux LED using efficient optics, System lumen efficacy > 80Lumen/Watt, System Luminous flux of >= 3200 lumens, System Wattage <= 43W with 50,000 hours burning life. Color rendering index > 70 and Color temperature 4000K. CRCA housing with high efficieny opal diffuser. Luminarie sealed from bottom. Inbuilt gear . Zero maintenance, Zero mercury. Driver Surge protection > 1.5kV. Electronic In-Built PF > 0.9, THO < 10%, IEC Compliant for Safety, Performance & EMI. The type shall be of 2x2'. EQUIVALENT TO PHILIPS CAT. No. SM365C LED-34-4000 PSE-OD or as per the approved make list	Nos	10	10	10	10	10	10				60	5910.00	3,54,600.0

	REVISED SCHEDULE-F ELEC	TRICAL, I	IRE PROT	ECTION AN	ID HVAC S	SYSTEMS								
tem 5.3	Description Supply, Installation, testing and commissioning of LED based luminaire enclosed in a CRCA housing with diffused optics. The luminaire shall be suitable for Wall / conduit/suspended/surface mounting. With a minimum system level lumen package of 3900 lumens should have a maximum system level wattage of 42W giving a system efficacy of >98 lm/W. The product is available in color temperatures of 6500k with CRI-800 and a system lifetime of 40,000 burning hours at 70 percent lumen maintenance. It has an electronicetoronic driver with a pF0-095 and THD k=10%. The luminaire is 12 0 protected. Operating votage range of 140-	Unit	AMS 100	NAR 467	INS 68	KDC 207	GGS 130	КСР 309	КСР РD 37	GGS PD 173	ZM	Total Qty 1491	Rate (INR) 3,776.00	Amount (INR 56,30,016.
	270 V AC. LED make should be from CREE/Nichia/Philips Lumileds/ LG. The diffuser shall be made of polycarbonate. The luminaire shall be with Short circuit and Over voltage cut off protection and Electrical Class I. Philips BN108C LED 40S PSU CDL WH													
5.4	Supply, Installation, testing and commissioning of LED highbay symmetric beam luminaire with housing made of die- cast aluminium of system wattage not more than 72W. The luminaire shall be with dedicated potics to provide precise lipht distribution of system wattage not more than 72W. The luminaire shall be designed to meet its specifications on performance & lifetime at a design arbitrate temperature of 45 deg C. A specially designed heat management system to ensure luminous efficacy. > 102 In/V W for the system and ensure lumen depreciation upto 30% over SWb burning hours. The luminaire is designed to meet IP 65 classification and is compliant with relevant immunity, safety and performance and EMI standards. The system lumens shall not be less than 7200 lumens with 5700K CCT. The CRI shall be > 70. The luminaire shall be able operate from 190 - 270V AC, 50Hz with > 0.9 PF & THD <= 20%. The luminaire shall have an in-built surge protection upto 3KV. The LEDs shall be of SMD type (not CO8 type). The luminaire shall be supplied with suitable suspended / surface mounting kit. Similar to Philips: BY400V LED72S CW SY PSU S2 FG WH - Surface.	Nos	30	45	30	30	30	30				195	21,240.00	41,41,800
5.5	LED based IP54 Light trunking system suitable for Suspended, surface-continuous or standalone mounting applications provided with silm extruded housing having width+27bm. With a minimum system level lumen package of 3900 lumens should have a minimum system level lumen package of 3900 lumens should have a minimum system level but applications provided with silm extruded housing having width+27bm. With ED used in the system shall be extin class ensuring system efficacy of at least 100 lumer/watt. Color rendering index (CRI) > 00. The trunking system shall be extin class ensuring system efficacy up to 3M length to ensure continuity along the length of the platem. The electronic driver used in the fixture shall be a constant current type driver with power factor > 0.9 and THD < 10%. The CCT shall be 4000K. Similar to Philips: LL199X IXDLED40-4000 PSE ODWH - IP54	Nos	125	128	125	125	125	125	354			1107	8,850.00	97,96,95
5.6	Supply and Installation of Trunking system suitabe for the above Trunking based Luminaire, Housing shall be made of extruded aluminium with white poweder coating, the length of the trunking system shall be 3.5 to 3.6m the trunking system shall be supplied with necessary suspensiton rods and end caps TTX 199/03LED	Nos	39	39	39	39	39	39				234	2,655.00	6,21,27
5.7	Supply, installation, testing and commissioning of LED round downlighter with > 1600 lumens with 4000K CCT. The optic shall be diffuser. The reflector shall be of polycarbonate and heat sink shall be of die-cast aluminium. The wattage of the luminaire shall be with not more than 18W. The efficave of the downlighter shall be >88 m/ W. The luminaire shall be monted using spring clip. The CRI of the luminaire shall be >88 m/ W. The luminaire shall be monted using spring clip. The CRI of the luminaire shall be >88 m/ W. The luminaire shall be monted using spring clip. The CRI of the luminaire shall be >88 m/ W. The luminaire shall be >0.9 m/ He interview with THD < 10% and FF > 0.9. The driver shall comply to IEC 62384 , IEC 61347-2-13, IEC 61547, EMI- CISPR15 standards. Equivalent to Philips: DN394B LED165-4000 PSU WH	Nos	18	37	16	20	12	23	69	226		421	3,776.00	15,89,69
5.8	Supply, installation, testing and commissioning of contemporary post top luminaire with system wattage not more than 36W and system lumens > 3400. The luminaire shall be with P6 6K, IK 10 and Electrical protection Class. The LID shall be of SMD type only with CCT 5700K CRI > 70. The luminaire shall be with P6 6K, IK 10 and Electrical protection Class. The luminaire shall be with P6 6K, IK 10 and Electrical protection Class. The luminaire shall be with P6 6K, IK 10 and Electrical protection Class. The luminaire shall have an efficacy > 100 lm /W. The luminaire shall comply to IS 10322, IEC 60698. The light distribution shall be stret lighting distribution. The housing shall be of die-cast aluminium with flat glass cover. The luminaire shall be with P6 4K. The pole height shall be 3m from FFL. The life of luminaire shall be \$\$2000 hours at 1/20. The luminaire shall bubmit LM79 and LM80 reports from NABL accredidated lab. The luminaire shall be supplied with square shaped pole of height > 30m. The base plate dimension shall be 300mm x 300mm with 4 nos of holes of dia 15mm. Equivalent to Philips BGP400 LED 3SL CW MR FG \$\$1 WITH BRACKET ZGP400 L TYPE LUMACUBE AND POLE ZGP400 3M POLE complete with pole & accessories	Nos	7	7	7	7	7	7				42	44,250.00	18,58,50
5.9	Supply, Installation, testing and commissioning of LED Flood light with system power not more than 70W High efficiency glass cover with Aesthetically Designed LM6 PDC housing with Black corrosion resistant polyester Powder coating, IP66 & IX:e07 with operating voltage from 140-270VAC; 50 Hz, with LED Life of 5000 Burning Hours @L70 with system efficary not less than 95 Lumen/Watt for the light fixture. The system lumen shall be > 7000 lumens . The supplier shall provide LM80 and LM 79 test reports from NABL accredited LAB before supplying the luminaires . Equivalent to Philip: BVP120 LED70 CW FG S1 PSU GR	Nos	20	20	20	20	20	20				120	18,880.00	22,65,60
5.10	Supply, Installation, testing and commissioning of LED floodlight with LMG Pressure die-cast aluminium Housing and High efficiency Glass cover. The system wattage shall be not more than 115W and system lumen output shall not be less than 10000 lumens. The Driver Efficiency: s 85% and Life L70, S0k Hrs. Color temp shall be 5700K. The luminaire shall be provided with Graduation disk for aiming and Suitable 'C' clamp mounting. The luminaire shall have an efficacy > 95 m/W. The luminaire shall be P 65, Class I protected. The dimension of the luminaire shall not be more than 447 x 327 x 163mm (H x W x H). The luminaire shall not weigh more than 13kg. The supplier shall provide LM60 and LM 79 test reports from NABL accredited LAB before supplying the luminaires.PHILIPS: BVP410 LED 107 CW HE NB FG S3 XT	Nos	2	2	2	2	2	2				12	41,300.00	4,95,60
5.11	Supply, installation, testing and commissioning of LED round downlighter with > 1600 lumens with 4000K CCT. The optic shall be diffuser. The reflector shall be of polycarbonate and heat sink shall be of die-cast aluminium. The wattage of the luminaire shall be with not more than 18W. The effector of the downlighter shall be $>$ 88 in (W. The luminaire shall be mounted using spring clip. The CRI of the luminaire shall be $>$ 80. The luminaire shall be mounted using spring clip. The CRI of the luminaire shall be $>$ 88 in (W. The luminaire shall be mounted using spring clip. The CRI of the luminaire shall be $>$ 88. In (W. The luminaire shall be $>$ 0.9. The driver shall comply to EC6 2384 , IEC 61347-2-13, IEC 61547, EMI- CISPR15 standards. Equivalent to Philips: SM251LED16S-6500PSUWH	Nos							64	33		97	1765.30	1,71,23
5.12	Supply, Installation, Testing & Commissioning of Surface mounted Buikhead LED with a system limen output of 600 lumens and a system efficacy of 100 lumeny watt. The luminarie shall be Pf66 & IX60 rated and shall have a CRI of 70. The housing of luminarie is made of high pressure die cast aluminium with front cover made of polycarbonat diffuser. Similar to Philips WT202W LED 6S and must conform to incress Protection Clasification of IP54.	Nos	10	10	10	10	10	10	37	16		113	1479.15	1,67,14

Name of Work: CONSTRUCT

Item	REVISED SCHEDULE-F ELE									000 00				
		Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
5.13	Supply, Installation, Testing & Commissioning of LED Wall mounted linear batten fixture (1200mm length approx.), Aluminium housing, high optically efficient translucence diffuser complete with driver, PF>0.9, THD>C30%, rated life of L>70@ 50,000 hours having minimum system lumen output of 2000 Lumens and system efficacy of minimum 100 Lumens / watt with CR1 ≥ 80.	Nos							3	6		9	1049.00	9,441.0
	Similar to PHILIPS BN108C LED 20S PSU													
5.14	Supply, Installation, Testing & Commissionimg of 10 Wall bracket LED light fixture with high optically effecient translucence diffuser complete with driver, PF>0.9, THD<20%, rated life of L-70@ 50,000 hours having minimum system lumen output of 1000													
	Lumens and system efficacy of minimum 100 Lumens / watt with CRI ≥ 80. Similar to Philips: 34153	Nos							12			12	3027.00	36,324.0
5.15	FANS Supply and installations of 230 V, 1-phase, 1440 RPM, sweep of appx. 400mm Bracket fan including mounting bracket, blades, starters & other standard accessories complete as required.	Nos	5	5	5	5	5	5	1	1		32	1879.00	60,128.0
		1105	5		,	-	5	5	-	-		32	10, 5,00	00,120.0
5.16	Supplying and installations of 230 V single phase, 1400 mm sweep ceiling fans with electronic regulators including all standard accessories complete, mounting of regulator on grid plate & MB SOX etc. and suitable length down rod, duly painted, not exceeding minimum fan height of 2.4 m from floor as required and as below.	Nos	10	10	10	10	10	10	1	1		62	2,360.00	1,46,320.0
5.17	Supply, installation, testing and commissioning of exhaust fan with fan guards on both sides, double ball bearings, class-E insulation, capacitor (pf 0.90 or better) complete with all other accessories as per IS 2312 and as required, of following sizes:													
a)	Size 450mm dia. 1400 rom	Nos	7	7	7	7	7	7	1	10		53	3232.85 8160.50	1,71,341.0
b)	Size 300 mm dia, 1400 rpm SUB TOTAL INDOOR LIGHTING AND FANS - E05	Nos	3	3	3	3	3	3				18	8160.50	1,46,889.0 332,91,689.10
E.06	PROTECTIVE EARTHING													332,91,009.10
6.1.1	Earthmat Supply, laying, testing and commissioning of 30 mm dia MS rod for earth mat grid conductor (at 500mm or deeper as per the final													
0.1.1	Supply, wiging, testing and commissioning of so time rise to be early index to be early index of the conductor (at southin to be early and the inter- approved design as per the site condition) as per specifications including lag (of not less than 150mm) & cross weld joints and providing bitumin cost at every joint as required. Risers from earth mat to be brought out as per approved drawings and specifications. (Cost of risers not included in this item).													
6.1.2	Supply, laying, testing and commissioning of vertical earth electrodes of 30 mm dia MS rod, 3 m deep from earth mat including weld joints with earth mat as per approved drawings and specifications. The weld joints to be provided with bitumin coats.	Lumpsum	1	1	1	1	1	1	1	1		8	3,65,800.00	29,26,400.0
	Providing and making plate earthing station including the cost of 600 mm x 600 mm x 6.3 mm G. I. plate electrode, 15 mm dia G.I.watering pipe, CI funnel with wiremesh charcoal/coke _salt, all earth work, masonry enclosure with frame,hinged cover plate having locking arrangement,Disconnecting links, complete as per IS 3043:1987 for earthing.													
6.2	Note: In the above items description says the lump sum price however the contractor responsibility to arrive The resistance of the													
6.3	earth mat shall not be more than 1 Ohm Providing and making plate earthing station with 600mm x 600 mm x 3.15 mm Cu plate electrode , 15 mm dia G.I.watering pipe,													
0.5	CI funnel with wirenesh charcoal/coke, salt, all earth work, masonry enclosure with frame,hinged cover plate having locking arrangement,Disconnecting links, complete as required as per IS-3043-1997 for earthing.	Nos	10	10	10	10	10	10	10	20		90	35,400.00	31,86,000.0
6.4	Supply, Installing, Testing and commissioning of 50mm dia ,3m length ,pipe in pipe Chemical earth electrode complete as required as per IS-3043-1987 for earthing.	Nos	10	10	10	10	10	10	6	20		86	14,750.00	12,68,500.0
6.5	Supply and laying, Testing and commissioning of copper/GI Strips/wire for interconnecting the earthing stations ,panels,DBs etc. of the following sizes in built up trenches /surface/wal/ground complete with holes & fixing,jointing / terminating accessories as per specifications & drawing as required. (Quantity shall be paid as per the actual measurement as executed, however direct measurement shall not exceed the quantity indicated in drawing approved.													
6.5.1	75 mm x 6 mm GI strip	Mtrs							1900	1886		3786	305.90	11,58,137.4
6.5.2	50 mm x 6 mm GI strip	Mtrs	4000	5000	4500	5500	4000	5500	600	600		29700	236.00	70,09,200.0
6.5.3	25 mm X 6 mm GI strip 20 mm X 3 mm GI strip	Mtrs Mtrs	2500 0	2500 0	2500	2500	2500 0	2500	2500 250	2500 250		20000 500	141.60 123.90	28,32,000.0 61,950.0
6.5.5	50 x 6 mm Cu strip	Mtrs	0	0 65	0	0	0 65	0	200	200		400	2,419.00	9,67,600.0
6.5.6	8 SWG / 4 mm diameter, copper Wire	Mtrs	65	65	65	65	65	65	120	420		930	112.10	1,04,253.0
	Supply, laying and testing of unarmoured, stranded copper conductor, Low Smoke Zero Halogen, green coloured cables of following sizes, conforming to BS 7211 and Section E02 of M & E Specifications, for earthing, including termination of the same by													
6.6	copper lugs at both ends.					0	0	0	100	100		200	65.00	13,000.0
а	copper lugs at both ends.	Mtrs	0	0	0									
	copper lugs at both ends. 1 x 6 sq. mm 1 x 10 sq. mm	Mtrs	Ō	Ō	Ō	Ō	0	0	100	100		200	84.00	36,000.0
а	copper lugs at both ends.	Mtrs Mtrs Mtrs						0	100 100 100	100 100 100		200 200	180.00 606.00	36,000.0
a b c	copper lugs at both ends. 1 x 56 sq. mm 1 x 15 sq. mm 1 x 15 sq. mm 1 x 15 sq. mm 1 x 150 sq. mm	Mtrs Mtrs	0	0	0	0	0	0	100	100		200	180.00	36,000.0
a b c d	copper lugs at both ends.	Mtrs Mtrs Mtrs	0	0	0	0	0 0 0	0	100 100	100 100		200 200	180.00 606.00	16,800.0 36,000.0 1,21,200.0 2,49,400.0
a b c d	copper lugs at both ends. I x 6 sg. mm I x 10 sg. mm I x 10 sg. mm I x 10 sg. mm I x 10 sg. mm I x 10 sg. mm Note-1: In case of non availability of any of the sizes mentioned above, next higher size available in market shall be provided at	Mtrs Mtrs Mtrs	0	0	0	0	0 0 0	0	100 100	100 100		200 200	180.00 606.00	36,000.0 1,21,200.0

Thoma	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCD DC	GGS PD	ZM Total Qty	Date (TND)	Amount (Thin)
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM Total Qty	Rate (INR)	Amount (INR)
6.8	Extra for GI / Electrolytic Copper test links/ termination With building pier continuity conductor including termination plate, nut& bolts,fixing/welding etc as per specifications and as required.	Nos	0	0	0	0	0	0	20	20	40	252.00	10,080.0
	SUB TOTAL PROTECTIVE EARTHING - E06												199,75,520.4
													-
E.07	LIGHTNING PROTECTION												-
7.1	Supplying and laying of the stainless steel SS-304 air terminations, base plate & clamping of down Conductor complete with base plate, concrete coping fixing accessories and clamping with down Conductor as per specifications & drawing as required	Set	12	12	12	12	12	12	15	12	99	1871.00	1,85,229.0
7.2	Supplying and laying of the stainless steel SS-304 strip down conductor size 25 x 3 on surface/wall / parapet/ shaft complete with joints, bimetallic connectors, testing links & other fixing accessories and clamping/ connection with earth terminations as per specifications & drawing as required.	Mtrs	1500	1500	1500	1500	1500	1500	50	1000	10050	354.00	35,57,700.0
7.3	Supplying and laying of the stainless steel SS-304 strip Earth terminations with burried conductor size 25 x 3 with bituminous coating and covered with PVC taping complete as per specifications & drawing as required.	Mtrs	500	500	500	500	500	500	100	1000	4100	265.50	10,88,550.0
7.4	Earth terminations with 50 mm dia GI perforated pipe complete with 15mm GI watering pipe with funnel with wire mesh etc. complete as per specification and drawing as required.	Nos	20	20	20	20	20	20	20	20	160	5,900.00	9,44,000.0
	SUB TOTAL LIGHTNING PROTECTION - E07												57,75,479.0
E.08	EXTERNAL LIGHTING												-
E.08													
8.1	Poles												-
8.1.1	9m Octagonal pole hot dip galvanieed with top bottom dia 70/155 mm , thickess 3 mm , base plate 260 mm X 260 mm X 16 mm , with single arm bracket 1.5 m with foundation bolts excluding cables and other electrical accessories	Nos	5	5	5	5	5	5	5	5	40	20701.00	8,28,040.0
8.1.2	9m Octagonal pole hot dip galvanised with top bottom dia 70/155 mm , thickess 3 mm , base plate 260 mm X 260 mm X 16 mm , with double arm bracket 1.5 m with foundation bolts excluding cables and other electrical accessories	Nos	1	1	1	1	1	1	10	10	26	21,830.00	5,67,580.0
8.1.3	7m Octagonal pole hot dip galvanised with top bottom dia 70/130 mm , thickess 3 mm , base plate 220 mm X 220 mm X 16 mm , with single arm bracket 1.5 m with foundation bolts excluding cables and other electrical accessories	Nos	5	5	5	5	5	5	5	5	40	17388.00	6,95,520.0
8.1.4	7m Octagonal pole hot dip galvanised with top bottom dia 70/130 mm , thickess 3 mm , base plate 220 mm X 220 mm X 16 mm , with double arm bracket 1.5 m with foundation bolts excluding cables and other electrical accessories	Nos	1	1	1	1	1	1	10	10	26	18493.00	4,80,818.0
8.2	Luminaires												
8.2.1	Supply, installation, testing and commissioning of LED Street light fixture - 70 watt with IP66 protected UR6 high pressure aluminium die cast housing capable of delivening a nominal system lumen output of 7200 lumens with a minimum system efficacy of 85 lumen/watt and a CRI greater than 70. The luminaire shall have a life class of 50,000 hours @ L70 and driver efficiency of >85%. (Similarto Philips Cat. No. BRP410 LED CW072 MR FG 51 PSU or equivalent)	Nos	20	20	20	20	20	20	20	20	160	15,045.00	24,07,200.0
8.2.2	Supply of 75mm dia HDPE pipe confirming to PN-4 boring of road channel area by using open trench method and laying of HDPE pipe properly continuously jointed restoring the surface where pitting is done, to original position.	Mtrs	200	200	200	200	200	200	200	200	1600	212.00	3,39,200.0
8.2.3	Supply and laying of 6 SWG wire along with the cable	Mtrs	200	200	200	200	200	200	100	100	1400	17.00	23,800.0
8.2.4	Providing and fixing thermo plastic poly carbonate pole boxex confirming to IP-65 degree of protection, along with 16A MCB and 5 way connector and 2 No. cable gland suitable for 4x25 sq.mm cable.	Mtrs	10	10	10	10	10	10	20	20	100	6220.00	6,22,000.0
8.2.5	wiring for luminaries in existing poles with following sizes of unarmoured cu cables from pole box to each fittings.	Mtrs	200	200	200	200	200	200	200	200	1600	189.00	3,02,400.0
	3x2.5 sg mm												
8.3 8.3.1	High Mast Supply, installation, Testing and Commissioning 20 m high area lighting High Mast of Wipro/Phillips/GE/Thorn, suitable for O6 nos . 250W LED luminaires complete with all standard accessaries like winches, latern carriage etc. including the cost of providing supplying and fixing 6 nos of IP65 rated 250W LED flood light luminaires with High efficiency, Iong Life, high power LED - Chip On Board(COB) Technology with luminaire Lumen outputs 2:2900m, Luminaire efficacy-S2im/W, CCT - 5000K, 50000 burning hours as per L70 Criteria. Housing: Extruded Aluminium, Highly efficient & specially designed glass lens optics, Constant Current- Constant Volges Isolated mutsage LED driver with operating voltage ranges from 90v-300X AC. Operating power Factor-20.95, THD-10%, Driver efficiency > 85%, Complete assembly with LED, Driver and accessories pre wired in driver compartment, best efficient heat dissipation system similar to Wipro Cat num LF07-227-606-3-ACX with beam angles 60degrees. System should include Lightning Arrestor and others accessaries like phosper Bronz Gear, double drum, stanifess steel wire ropes, suitable MCB wires/cables as required with alongwith the floolwing accessaries as required as under :-20 m High Mast suitable for 6 Nos LF07- 582-XXX-50-XX with lanterm carriage excluding lightening arrestor, panel, cables & other electrical accessories like MCB etc. The supplier shall provide LM80 and LM 79 test reports from NABL accredited LAB before supplying the luminaires.	Nos							1	1	2	7,20,000.00	14,40,000.0
a] b`	Suitable foundation for the Mast considering soil bearing capacity 10 Ton per Sqm, with base pedestal of approve design, incoporating a suitable cable looping box with terminal blocks MCB etc. S.I.T.C. of Earth station of Pipe earthing as per IEEE 80 - 2000, asn IS 3043 - 1987, including duplicate earth connection to the												
D,	ISING OF STATE STATE AND A		1				1						
				1		1							

	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUDTONOTIVE SQUARE, N BALANCE WORKS EXCLUDING VI REVISED SCHEDULEFF ELE	ADUCT IN	REACH-2 C	OF NAGPUR METR	O RAIL PROJ						,		
Item	Description	Unit	AMS	NAR IN	S KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
8.4.1	Facade Lighting - Design, Supply, Installation, Testing and commission of following Items for Facade Light ITW PER MFER 24V 1968 24v OC [3 4 w/F] 15M 0505 Th-rchip [160° Basm Angle LED Light SMD LED Chip Running Length Single feed: 10 meters / 32.81 feet Double feed: 20 meters / 65.62 feet Light Surface Square Profile 160° Lumen Maintenance 70,000 Hours L70 @ 25°C : 90,000 L50 @ 25°S,000 Hours L70 @ 50° : 70,000 Hours L50 @ 50°C Electrical Input Voltage 24V DC Driver On Board Constant Current Power Consumption 7.2 watts per meter / 12 watts per meter / 2.19 watts per foot 2.66 watts per foot LED Count 108 per meter / 32.9 per foot Physical Materials Polylyiny (Chiorde (PVC) LED Spacing 9.26 mm / .36 inches Cutting Length 83.3 mm / 3.28 inches (9 LEDs) Physical Materials Polylyiny (Chiorde (PVC) LED Spacing 9.26 mm / .36 inches Cutting Length 83.3 mm / 3.28 inches (9 LEDs) 55.6 mm / 2.19 inches (6 LEDs) Package Size: 697 x 807 x 48 mm / 2.7 x 3.1.8 x 1.9 inches Weight/Meter: 325 grams / .72 pounds Thermal Management Cold to the Touch, Free Air Convection Fixture Connections Front & End Leader Cables Bend Tolerances IP Rated IP68 Factory Order / IP68 with Accessories. (MAKE: CONNECT - GREENLED, INSTAPOWER, OSRAM, Schreder)	Mtrs									0	24304.00	-
-	IP65 protected Channel Light DIFFUSE S000K WITH BACK PROFILE with integrated cable alley for cable management with integrated IP rated cable connectors hidden within profile for additional protection from weather. Cross section of profile Silver anodized surface mounted aluminium profile 25 mm (W) x 20 mm (D) approx , with opal semi translucent sealed encapsulation, protection grade IP67, DC 24 V, 1000 Im/m, 20 W/m, warm white 3000K or neutral white 4000K or cool white 5000K, CRI>80Ra (optional R68, R68W, other CCT, red, blue, green), 700 LED/m, standard length 2000 mm. Excl. converter and end caps (on request). The support Is made of an anodized extruded aluminium frame which makes it possible to first fix AWP3 or AWM3 to the wall/ceiling. (MAKE: CONNECT-GREENLED, INSTAPOWER, OSRAM, Schreder)	Mtrs									0	18585.00	-
	IP66 protected PATHFINDER IP66 3000K 10 ⁶ Aluminium Die Cast 9W Body Hard anodized aluminum Finish Installation Housing box Rover Supply Cables35 cm NS20N PC 2X.05 mm2 Rover Suppl/24/dc Power Consumption 9W at Lumen Output680Im Working Temperature-20°C +45°C Insulation ClassIII Weight535g. Choice of three colour emperatures as standard (2700K, 3000K and 4000K) and delivers 80CR1 for excellent colour rendering, and with binning-free LEDs carefully selected from two-step Macadam's ellipse. PATHFINDER is Smart Shield protected against polarity inversion; an Integrated super fast diode prevents accidental damage to the luminaire during installa on due to reverse polarity. Smart Shield protects against 'hot-plugging'. Fully Integrated surge protection the constant- current driver and prevents damage to the LED die surface. (MAKE: CONNECT, INSTAPOWER, OSRAH, Schreder)	Nos									0	11437.00	-
-	Recessed ceiling compact downlight 55925. Mid beam light distribution. LED 50 W, connected wattage 50W, 5000 lm, half beam angle 45°, colour temperature 3000 K. Colour rendering index (Ra) > 80.0verheating protection and an expected service life of at least 50,000 pertaing hours. 3 years warrantly of availability of LED module and wear parts. Without power supply unit. Protection class IP 55, safety class III. Luminaire made of cast aluminium, aluminium and stainless steel, colour graphite. Safety glass, clear. Reflector made of pure anodlesed aluminium. With fixed connecting cableA05VvF 2 x 0,5 qmm, length 0,5 m, with connector. For installation in suspended ceilings having a material thickness of 10-45 mm. (MAKE: CONNECT, INSTAPOWER, OSRAM, Schreder, BEGA, SILL, HOFFMEISTER)	Nos									0	17156.00	-
	SPIKE LED 24DEG beam angle IP rated 65 product fitted with Osram 700ma 18W 24DEG 3000/4000K CRI80+ NON DIM with led power supply built in Color tolerance: <macadam (make:="" 4="" connect,="" instapower,="" osram,="" schreder)<="" sdcm.="" td=""><td>Nos</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0</td><td>14296.00</td><td>-</td></macadam>	Nos									0	14296.00	-
	LINEAR HANGING LIGHT DIRECT + NDIRECT 100% recyclable, extruded Acrylic tubular White LINEAR LENNE Struded, twin- layered, high-inmpact acrylic white and extra diffuse with minimat-to-no source vibibility. MOUNTING SIZE - Suspended 1.5m. LED MED Medium-output, high performance LED HI High-output, high-performance LED 3000K CRI > 80 4 Step MacAdam binning FINISH AL Standard, natural "Utimate" aluminium VOLTAGE UNV Universal voltage LED Driver. NON - DIM (MAKE: CONNECT, INSTRAPWER, OSAM, Schneder)	Nos									0	18585.00	-
8.5	Supply, installation, testing & commissioning of Facade light fittings including all accessories e.g. ballast, HPF condensors, lamps, holders, surface/recess mounting arrangement etc. Including necessary supports, accessories and hardware as per specifications & as required at lets and as below:												
8.5.1	Surface mounted RGB direct view aluminum profile 25mm (approx) with snap in notch , to be installed together with aluminium bracket profiles for cable conduit, screws hidden. With opal semi translucent sealed encapsulation. 18w per meter with direct view led profile. JP67. Approved Makes - Bharat Alurays-Connect/Instapower/Tulip	Mtrs						550	550		1100	28619.00	314,80,900.0
8.5.2	LPV-100/24V Qty to be confirm as per site requirement.	Nos						115	115		230	26131.00	60,10,130.0
	Surface mounted linear grazer with adjustable mounting base 45mm with snap in notch , to be installed together with aluminium bracket profiles for cable conduit, screws hidden. With opal semi translucent sealed encapsulation. 18w per meter with direct view led ronfile. 48wm. IP67. Approved Hakes - Bharrat Aluraxe-Connect/Instancer/Tuilo	Mtrs						150	150		300	49773.00	149,31,900.0
8.5.4	LPV-100/24V Qty to be confirm as per site requirement.	Nos				1		35	35		70	26131.00	18,29,170.0
	LED high-performance floodlight with very narrow beam light distribution.Floodlight made of aluminium alloy, aluminium and stainless steel. Clear safety glass. Silicone gasket. Reflector surface made of pure aluminium. with integral silicone lens and louvre. Swivel range -10°/+170°. Mounting bracket made of steel. 300w, 3000k, 10°,IP67. Approved Make - Bega 84540, Acuity, Simes, instapower	Nos				1		2	2		4	278112.00	11,12,448.0

Name of	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, N. BALANCE WORKS EXCLUDING VI	ADUCT IN	REACH-2	OF NAGPUR	METRO R	AIL PROJE		TATION, K	ASTURCHA	ND PARK #	ND ZERO	MILE) INCLUI	DING E&M WORK	S AND PD AREA
	REVISED SCHEDULE-F ELE													
Item 8.5.7	Description Exterior projector for permanent outdoor installations to integrate textures, patterns and graphics for limitless creative exterior lighting designs. Flat field, high contrast image projection based on high power LED engine. 0-100% electronic dimming, Full CMY color mixing + additional color whele with 7 interchangeable colors. 7 gobs obsto for projecting graphic images (gobs included). Alimation system for creating animated lighting effects (horizontal and vertical). Zoom range from 10° - 43° for exact projection on desired surfaceVariable frost for creating morphing effects and hybrid function as wash light. rotating prisms for creating abstract multi patterms. Intuitive setup, configuration and stand-alone programming via graphical OLED display. RDM and DMX control. Housing: Cast aluminum Finish: Hard anolized, white or metallic grey lacquered Front glass: 5 mm (0.2 in.) anti-reflection coated tempered glass Inaress protection: IP66. Anonyced Makes - Martin exterior projection 1000. Selecon/ Showline	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty 2	Rate (INR) 933240.00	Amount (INR) 18,66,480.00
8.5.8	Surface floodlight with mounting box. Flat beam light distribution. LED 65 W, 8200 im, half beam angle 28/92°, colour temperature 3000 K. Colour rendering index (Ra) > 90. With replaceable LED module with overheating protection and an expected service life of at least 30,000 operating hours. 2 years warranty of availability of LED module and ware parts. With LED power supply unit, 220-240 V, y 050-60 Hz, Protection class IP 65. Luminaire made of cast aluminium, aluminium and stahless steel, colour silver. Safety glass with optical texture. Reflector mode of pure andidaed aluminium. Two cable entries for through-withing power connecting cable up to 10.5 mm in diameter, max. 5 G 1.5 qmm. Approved Makes - Bega 77584AK3, Simes, Aculty, instapower	Nos							30	30		60	80881.00	48,52,860.00
8.5.9	LED pole-top luminaire with symmetrical light distribution. Luminaire made of aluminium alloy, aluminium and stainless steel Synthetic diffuser, clear Silicone gasket. Reflector made of pure anodised aluminium. 35w 3000K. IP65. Approved Makes - Bega 7175, Aculty, Simes, instapower	Nos							10	10		20	105767.00	21,15,340.00
8.5.10	3 mtr GI Pole as per requirement	Nos							10	10		20	9177.00	1,83,540.00
	SUB TOTAL EXTERNAL LIGHTING - E08													720,89,326.00
E.09	UNINTERRUPTED POWER SUPPLY SYSTEM													
9.1	Supply, Installation, Testing and Commissioning of true parallel redundant 2 x 20 kVA , online , UPS system suitable for providing power supply to emergency lighting at station & viaduct, Platform edge door and Computerised Control panel load of approved make, suitable for incoming 415 volts, 3 phase +10 % -20%, 50 Hz, supply and single phase output voltage, variation 4 1%, including transformer, rectifier/dual converter, static switch, inverter, filter, Bypass & static transfer switch for automatic switch over without giving any break of power, maintenance bypass switch, Mircor porcessor; Software controlled annunciation, protection (including against input phase reverssal), and menu run diagnostic module, associated cabling and connections; terminations, complete as per specifications and as required. Note-1: The price of above item is inclusive of a manual chageover switch suitable for terminating. cons of 4-core aluminium conductor armoured cables on the incoming side of UPS. The manual chageover switch may be wall mounted in the UPS room. RS 485 port for display of ON/OFF status of UPS on BMS work station through MODBUS protocol is also included in the price. Supply , Installation, Testing and Commissioning of valve regulated lead acid-sealed maintenance free suitable for 30-minute- battery backup to the each UPS of tem 9.1, Battery shall comply with relevant regulations & Battery racks shall be made of acid resistant material complete as per specifications & as required.	Set	1	1	1	1	1	1	1	1		8	7,43,400.00	59,47,200.00
	SUB TOTAL UNINTERRUPTED POWER SUPPLY SYSTEM - E09													59,47,200.00
E.10	Safety and Other accessories													
10.1 a) b) c) d) e)	Supply and fixing of the following safety equipments in Aux. Sub.Station/MDB room as per detailed descriptions given below and as per relevant IE rules & code of standard practice. 1000 mm wide rubber matting (complying with 1.5.15652) and suitable to withstand 11 kV in front of all panels in ASS building & MDB room as required suck treatment charts in English & Hindi in ASS, ESR, DG room and Pump room in each station. Langue plate as per approved Style & sample written in English & Hindi in ASS, ESR, DG room and Pump room in each station. Langue plate as per approved Style & sample written in English & Hindi in ASS, ESR, DG room and Pump room in each station. Langue plate as per approved style & sample written in English & Hindi in ASS, esc, DG room and Pump room in each station. Langue plate as per approved as per station 2 nos, per station first Ald Box Complete as approved by \$L.John ambulance or Indian Red Cross 4 nos, per station first Ald Box Complete as approved by \$L.John ambulance or Indian Red Cross 4 nos, ner station of a statice as approved by \$L.John ambulance or Indian Red Cross 1 noc for targe, medium, small scree drivers, 1 no. Insulated plate, 1 no nose plier, 1 no. hand crimping tool upto 16 sq.mm, 1 no. digital multimeter, 1 no. test lamp and 1 no. tester. Screw driver set for all types of screw heads also to be provided.	Lumpsum	1	1	1	1	1	1	1	1		8	59,000.00	4,72,000.00
	SUB TOTAL Safety and Other accessories - E10													4,72,000.00
E.11	BMS/SCADA for all system parameter of the panel													
11.1	The Specifications shall be read in conjuction with Manual of specifications and standards and Technical Specifications. Supply, Installation, testing, commissioning, trainging and AMC of Biluding Management System PLC, Remote Processor, Siganl Interface wiring and cabling with field equipment interface and provision of supervisory control and monitoring for M&E SCADA contractor using standard protocol over Ethernet(Station LAN-Provided by Others(S&T Contractor)) as per specification and Tender clauses.		1	1	1	1	1	1	1	1		8	<u>.</u>	
11.2	SOFTWARE - RPU Programming and Configuration Software(Rate included in item 11.1)(Complies to SIL-2) Programme software (or RPU logic development and debugging for use with compatible Personal Computer with Licence to carry required engineering and maintenance function with below marked minimum functions: RPU Argomming and Configuration Functionality RPU dignosis and data monitoring function locally. RPU histroic data download function for record and fault segregation process.													

	REVISED SCHEDULE-F ELEC	TRICAL,	FIRE PROT	ECTION A	ND HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Oty	Rate (INR)	Amount (INR
	RPU software interlock and logic development for process or data management													
	Communication and Integration mangement and configuration of I/Os fucntion													
	The RPU shall be capable of fully stand-alone operation and shall be independent of any central computer for all specified control													
	or communication applications. The software shall include all necessary routines and modules required to implement any control													
	strategy and shall be user programmable. The programming language shall be English and shall use standard controls													
	terminology.													
Ľ	Input and Output point processing shall include: (i) Continuous update of input and output values, conditions and status. All connected points are to be updated at a maximum of 5													
	(1) Continuous update or input and output values, conditions and status. All connected points are to be updated at a maximum or 5 second intervals, under worst conditions.													
	(ii) Analog to digital conversion of input values shall be carried out with at least 11 bit resolution with typically 40 dB series mode													
	rejection @50 Hz. It shall be possible to calibrate the inputs by means of movable jumpers or links to suit the sensor type in use,													
	to achieve a high accuracy reading.													
	(iii) Input reading shall be automatically checked to determine that the reading is within the sensor's range and within the range													
	of the input circuit, i.e. 0-10V or 4-20mA. Should this not be the case then an alarm status shall be indicated.													
	(iv) All sensor readings shall be in engineering or user-definable units. These units shall be calculated by the sensor scaling type													
	assigned to each sensor.													
	(v) Each sensor shall have, in addition to the checks specified above, operator adjustable High and Low alarm limits. If the sensor													
	reading is outside these limits then an alarm shall be generated. It shall be possible to delay these alarms by a user-defined													
	amount so that spurious alarms are not reported.													
	(vi) All inputs shall be filtered to reject mains frequency interference. The mains frequency of 50 Hz shall be selectable in													1
	software.		L				I					+		1
	Each RPU is to be configured to run the control strategies called for in the sequence											+		1
	Each MPU is to be conjugate to run the control strategies called for in the sequence													1
	modules available for arithmetic calculations, logical decisions and relational operators						i							1
-	necessary for the implementation of these control sequences.										-			1
	(i) RPU data such as set points, sensor values, loop parameters etc., shall be available to				L		I]				1
	the operator for display and modification at the main supervisor, the portable													
	supervisor or the display panel. (ii) The reschedule time of control loops shall be adjustable, in 5 second intervals.		-											
	(in the rescriedule time of control loops shall be autostable, in 5 second intervals.													
c	Each RPU shall provide five independent time zones, each of which shall have three													
	separate start and stop periods within each 24 hours.													
	(i) Unique time program shall be provided for each day of the week, plus a unique													
	holiday schedule. Each RPU time zone may be provided with unique time programs,													
	or they may be grouped and assigned a common time program as configured by the operator.		-											
	(ii) For each time program, the main supervisor shall have a calendar available which													
	may be used to make simple modifications up to a year in advance. The calendar													
	shall allow these modifications to be permanent or to execute only once and then													
	return to the previous (permanent) schedule.													
	(iii) Calendar days which are intended to operate as Holidays shall also be definable up to a year in advance.													
6	All control strategies shall be held in RAM, battery backed up for at least 2 years. All													
	data shall be available for review and modification from the main or portable supervisors.													
11.4	Remote Processor Unit (RPU), It's Sub-components and Mounting Panel													
	Remote Processor Unit (RPU) Modules should have (Digital Input, Digital Output,													
	Analog Input and Analog Output Modules integrated to CPU module along with													
	other required interface or system module for integration of field signals;													
	should capable of standalone monitoring and control function irrespective to													
	server communication interface; should fully equiped with Power Supply module,													
	device protection and intrface terminals and wiring and other devices as required to		L				I					+		1
	meet tender specification & functional requirment.		<u> </u>									-		1
	The contractor shall cross reference the RPU Panel and others to Housing Type as required.				-		1					1		1
														1
	A by-pass switch/s shall be provided to completely by-pass the RPU in the event of a total						1							1
	failure of the Processor and associates equipment to enable the normal operation of													
	the equipment controlled by the RPU. Panels shall be fitted with a suitable pocket to contain						1							1
												1		1
	circuit diagrams and other relevant Definitive Design Drawings. An "as installed" set shall be						1							1
	having. All wiring and equipment tagging as per most acceptable inernational standards and						1							1
			L				I					+		1
	metro practice.		L				I					+		1
	CPU with onboard RS485port for profibus/mpi/Modbus communication.				-		-							1
							I							1
	Data and program backup without external battery. CPU shall have scan time of						1							1
			L				I					+		1
	not less than 0.1ms per 1k bit instruction and 5ms per 1k floating point instructions.						1							1
												1		1
	Micro-Memory Card													1
	Power Supply Module with AC/DC converter as required.													1
	Al Module of 8 Channel as per Signal list with necessary spare and redundant I/O consideration.													
	Al Module of 8 Channel as per Signal list with necessary spare and redundant I/O consideration. DI Module of 16 / 32 /64 Channel as per Signal list with necessary spare and redundant I/O consideration.													

Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NARI ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION, KASTURCHAND PARK AND ZERO MILE) INCLUDING E&M WORKS AND PD AREA

indine o	BALANCE WORKS EXCLUDING VI							14110H, K	- or or or or or or or or or or or or or					
	REVISED SCHEDULE-F ELE													
Item	Description DO Module of 8 / 16 / 32 Channel as per Signal list with necessary spare and redundant I/O consideration.	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	· · · · · · · · · · · · · · · · · · ·													
	AO Module of 8 Channel as per Signal list with necessary spare I/O consideration. (Minimum 1 Modules per panel)													
	Front Connector for Programming/console port (Serial RS232 / Ethernet) with portable computer communication BUS.	Î												
	BMS Workstation / Server system interface provison in PLC communication Port (Ethernet TCP/IP Rj45 connector)	1												
	Field equipment serial RS485/Rs232 Port interface port (3 nos or as required to meet the functional and integration requirment	1												
	Active Bus Module for IO Modules (As applicable for DI module up to field cable interface TBs)	1												
	Active Bus Module for DO Modules (As applicable for DO module up to Relay control Board/ field cable interface TBs)	1												
	Active Bus Module for AI/AO Modules (As applicable for AI/AO module up to field cable interface TBs)	1												
	Mounting Rail and other cable containment for RPU panel different component mounting and Cable wiring.	1												
	RPU Required frameware, protocol and data point licence as required to meet the interface and programming requirement in ref to tender specification with provision of spare (i.e. spare of 50% of Total IO Point as future expansion requirement without any upoardation)													
	Bus cable for different module integration. Or as required for intermodule communication.													
	Interface Module and/ or integrator module with or without gateway for ethernet interface provision of M&E SCADA system.													
	Ethernet Module TCP/IP 10/100 MBPS MODBUS/PROFIBUS/BACNET card as required	1												
		-												
	Terminal block 8 slots (as required for field cable interface and termnination) 16 channels Relay Board PCB Mounted type, plug in relays. (As per DO module)													
	Allowance for 30% Spare I/O Points Modules and expansion by 50% shall be possible by adding more I/O modules and software reconfiguration													
	Assorted connectors, pre-formed connecting cables, special terminal blocks, bus cables, taps, tap links, networking accessories consisting of patch Panels, Cat 5 patch cords etc.	1												
	Note:	-												
	All devices as required to meet tender specification & Operational requirment shall be provided for fully functioning of BMS system.	1												
	The DIO shall be designed in encodered with the IO signals since as weather IO	1												
	The RIO shall be designed in accordance with the IO signals given as per the IO Summary Provided for stations.													
	All RPU Controller input modules served equipment from outside are	-												
	protected against voltage transients. All input/output modules are	1												
	galvanically separated from CPU & internal bus. It is protected against short circuit and it is connected via separate terminal strip. PLCs shall	1												
	be designed by taking 20% of spares in I/O's signals with Mounting cabinet.	-												
		Lumpsum											53,10,000.00	424,80,000.00
11.5	Marshalling Cabinets	-												
	Terminal blocks shall be designed and tested in complying with IEC 60947-7-1. Terminal block shall have ability to receive unprepared conductors.													
		1												
	Terminal block shall be single terminal type. Each terminal shall be exchangeable without dismounting adjacent terminals and also suitable for designative labeling.	-												
		1												
	Terminal blocks shall be of the rail-mounted type and shall be of screwless type terminals 600V a.c. moulded block type with molded insulating barrier between terminals.	+												
	Terminal connections shall be such that the conductors shall be connected with the	1												
	necessary maintained contact pressure. Terminals shall be so constructed that the conductors can be clamped between suitable surface without any significant damage	-												
	either to conductors or terminals.													
	Terminal blocks shall have test probe facilities for connections of test leads and an	+												
	Integral disconnecting device to facilitate testing.	1			-	1	1	1		1			1	
	The rated cross-section of a terminal block shall be 0.5-2.5 mm2 of round copper	ł		+		+	1	1		1				
	conductor. No terminal can carry more two conductors simultaneously connectable on	1		1									1	
	each incoming/outgoing side.	+		+		+								
	The spare terminating block in all MS shall be provided with capacity at least 20% of the number of I/O points.]												
	The Marshalling Cabinet shall be of 1.6 mm thick galvanized sheet steel with gray	ł		+		+	1	1		1				
	colour epoxy and electrostatic powered coated. The protection class shall be IP 31.	1												
11.6	ETHERNET SWITCHES	ł		+		+	1	1		1				
		1												
	Providing, Installing, Testing & Commissioning of industrial Ethernet Switches having the following specifications to meet the functional and system regurment in a redundant	ł		+		+	1	1		1				
		-												

Data Data <thdata< th=""> Data Data <thd< th=""><th>Name of</th><th>Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NARI ROAD, BALANCE WORKS EXCLUDNG VIADUCT IN</th><th>INDORA C REACH-2 C</th><th>HOWK, KA</th><th>DVI CHOV METRO R</th><th>VK, GADDI AIL PROJE</th><th>GODAM ST</th><th>ATION, K</th><th>ASTURCHAND PAR</th><th>K AND ZERO</th><th>MILE) INCLU</th><th>DING E&M WORK</th><th>S AND PD AREA</th></thd<></thdata<>	Name of	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NARI ROAD, BALANCE WORKS EXCLUDNG VIADUCT IN	INDORA C REACH-2 C	HOWK, KA	DVI CHOV METRO R	VK, GADDI AIL PROJE	GODAM ST	ATION, K	ASTURCHAND PAR	K AND ZERO	MILE) INCLU	DING E&M WORK	S AND PD AREA
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	Item		AMS	NAR	INS	KDC	GGS	KCP	KCP PD GGS P	D ZM	Total Qty	Rate (INR)	Amount (INR)
		system architechure											
		2. Network Protocol - IEEE 802											
		Full or half duplex operation with now control supported on all the ports Severes endarity protection											
		6. Industrial surge and Spike protection											
		10. Relative Humidity 10 to 95 % non condensing											
1.1 Resonance Model Converse I		11. UL listed equipment											
		12. 24AWG Cat o K) 43 port and 6 noel optic port											
	11.7	Integrators/ Modems/ Gateways/Protocol Converters											
		Supply installation, tasting and commissioning of Integrators / Modems / Gateways /											
		Protocol Converters for Integration of standalone Systems with BMS (All software,											
		Supplied by respective contractor). The following Equipments with necessary											
		Uninterrupted Power Supply	L										
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		Lifts											
	_	Escalators	<u> </u>										
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		HV Panels				1							
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Systems on lated apply of lated part many many many many many many many many		All the Panel boards incoming and out going breakaers											
111 Held Decide I <		Systems not listed above but that requires BMS/SCADA to be considered.											
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span of not arrest the build the status arrestma flag. I <tdi< td=""> I I</tdi<>		Pressure transmitters											
pressure at shuff as agnicable. Note:		Pressure transmitters shall have a linear output of 0-10V. Pressure transmitters shall be a											
Numer from MetricNumer													
Water-flow measuring devices consisting along the flow demends Image: Construction of another weaker the about the flow demends on the construction flow		pressure at sharen as apprease.											
having the following minimum Secclitations. Select the Annuar for the accertation flow Image: Select additione Image: Select additione Image: Select additione improve the following additione improve the following additione Improve the following additione Improve the following additione Improve the following additione improve the following additione improve the following additione Improve the following additione Improve the following additione Improve the following additione improve the following additione improve the following additione Improve the following additione Improve the following additione Improve the following additione improve the following additione improve the following additione Improve the following additione Improve the following additione Improve the following additione improve the following additione improve the following additione Improve the following additione Improve the following additione Improve the following additione improve the following additione improve the following additione improve the following additione Improve the following additione Improve the following additione Improve the following additione Improve the following additione Improve the following additione Improve the following additione Improve the foll		Water-Flow Meter											
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wind Transmitter wind Transmitter<		(v) Operating Pressure Rating - 174 kPa [250 psig]											
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G1 conduits as applicable for running cable from Cable try / Raceways to equipment panel or required to be liad to gen. I <tdi< td=""> I <tdi< td=""></tdi<></tdi<>	11.9	Control Cable									1		
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required to be laid at open. Image: Constant of the laid at open. All control cable shall be suitable for installation in wet and dry locations. The conductor Image: Conductor		GI conduits as applicable for running cable from Cable try / Raceways to equipment panel or											
shall be of so for annealed strand uncoated copper wire. Image: So for annealed strand uncoated copper subable for use on a copper Conductor with a maximum operating temperature not less than 70°C. Image: So for annealed strand uncoated copper strand for annealed copper shell be able where necessary to give the necessary		required to be laid at open.									1		
shall be of so for annealed strand uncoated copper wire. Image: So for annealed strand uncoated copper subable for use on a copper Conductor with a maximum operating temperature not less than 70°C. Image: So for annealed strand uncoated copper strand for annealed copper shell be able where necessary to give the necessary		All control cable shall be suitable for installation in wet and dry locations. The conductor								-	1		
conductor with a maximum operating temperature not less than 20°C. I I I I Filters shall be used to the multi-conductor cable where necessary to give the complete cable a substantially circular cross section. Filters shall be polywiny! I I I I I Chord(e (PVC) rod or Polywthylee (PC) materials. I I I I I The cable shall be helically wrapped over the filter and copper shielding with non-hydroscopic (Whar or Polysethylee (PC) materials. I I I I The shielding, for control cables, shall be annealed copper tape or suitable width and shall be helically polied with a miniumum 10% labor. I I I I For Analogue Sionals and Data Communication 2 Twisted Pair 0.5 gam copper Cable with Aluminium Schelding. I I I I For Digital Sionals I I I I I I		shall be of soft or annealed strand uncoated copper wire.											
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the complete cable a substantially circular cross section. Fillers shall be Polychiyed. P(PC) materials. The cable shall be helically wrapped over the filler and copper shielding with non-hyperscopic (Mydra or Polyster tape. The shielding, for control cables, shall be annealed copper tape or suitable with and immum 10% laos. Ishall be helically wrapped over the filler and copper tape or suitable with animum 10% laos. for Analogue Sionals and Data Communication 2. Twisted Pair 0.5 gam copper Cable with Aluminium Schelding. For Digital Sionals			<u> </u>						<u>├</u> ──				
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non-hydroscopic Mylar or Polyester tape. The shielding, for control cables, shall be annealed cooper tape or suitable width and shall be helicially applied with a minimum 10% lap. The annealed cooper tape shall be a least 0.1mm thickness and substantially free from burgs. for Analouse Signals and Data Communication 2 Twisted Pair 0.5 Sg mm cooper Cable with Aluminium Schelding. For Digital Sinals		chloride (PVC) rod or Polyethylene (PE) materials.											
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shall be helically applied with a minimum 10% lab. The annealed copper tape shall be a Imm thickness and substantially free from burs. Imm thickness and substantially free f			-								1		
least 0.1mm thickness and substantially free from burrs. Image: Communication Image: Communication For Analogue Signals and Data Communication Image: Communication Image: Communication 2 Twisted Pair 0.5 gam cooper Cable with Aluminium Schelding. Image: Communication Image: Communication For Digital Signals Image: Communication Image: Communication Image: Communication		shall be helically applied with a minimum 10% lap. The annealed copper tape shall be a											
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2 Twisted Pair 0.5 Sq mm copper Cable with Aluminium Schelding.		For Analogue Signals and Data Communication								+	1		
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Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE. NART ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION, KASTURCHAND PARK AND ZERO MILE) INCLUDING ERM WORKS AND PD AREA

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Source Sections of Control and a control and cont	11.10	CAT5e CABLE - Data Cable	1												
Models Models<		Supply, Installation, testing and commissioning of CAT 5e cable with	1												
Important Important <t< td=""><td></td><td>25mm GI conduit & complying to Class 1E type Communication with</td><td>+</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		25mm GI conduit & complying to Class 1E type Communication with	+												
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Information conservation with a large strate status in the stat		OPTICAL FIBRE CABLE - Communication Cable	+												
DC DC D <thd< th=""> D D D</thd<>		Supply Installation testing and commissioning of 6 core single mode	+												
1 1. White files that not a loaded with absore Place Single S															
a. 1. 2berls flare About 1 used with a basic trait. a b a b a b a b a b a b a b a b a b a b b a b a b a b a b a		OFC with all accessories necessary such as listed below:	+												
a. 1. 2berls flare About 1 used with a basic trait. a b a b a b a b a b a b a b a b a b a b b a b a b a b a b a		1) 12Dort fiber Patch cord Loaded with adapter Plates & Solice trav	+	-				-							
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a) b) b) <td< td=""><td></td><td>ii) 24Port fiber Patch cord Loaded with adapter Plates & Splice tray</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		ii) 24Port fiber Patch cord Loaded with adapter Plates & Splice tray													
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		iii) SC-LC, Duplex OFC patch cord, 3mtrs, OM3	+												
		W) SC-Style Piotail 50/125 Multimode OM3 1 5 mater	+	-				-							
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whether is included. alleled and running data and regarded pairs (N). Image: Note and the pairs of the pairs			4										1		
Image: problem Image:		Note: The items indicated above are probable and main items.	+										+		
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SUB TOTAL BMS/SCADA for all system parameter of the panel - E11 Image: Control of Control Control of Control			4												
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E13 Via Dati Lishing. Via Dati Lishing		SUB TOTAL BMS/SCADA for all system parameter of the panel - E11													424,80,000.00
Supply, Installation, Testing and commissioning of Ue duct light righting, cable, BD, Cable tray and junction and all net experiments and cable that accessories in club with apprention and as per following plass; cover with Aesthetical Documents and the set of the provided at the form accessories in club with apprention and as per following details. Image: Club with apprention of the plant interval and apprention of the plant interval and as per following details. Image: Club with apprention of the plant interval apprention of the															
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cover with Aesthatically Designed UMS PDC housing with corraction resistant polyester Powder cating, IP66 & IL With operating volutes of non 200-204X (2, 50 Hz, with LL ID ef 50000 Burnes). The system flate poly to the state B d Lumer/Vector for the light fitture. The system fluores in the system flate poly to the state B d Lumer/Vector for the light fitture. The system fluores in the system flate poly to the state B d Lumer/Vector for the light fitture. The system fluores in the system flate poly to the poly to the poly	12.1	Light Fixtures Supply, Installation, testing and commissioning of LED Via Duct Light with system power not more than 20W High efficiency glass	+												
voltage from 220-240VAC, Soft x, with LED Life of S0000 Burning Hours (k120 with system efficien not less than Burner/Watt reports from MAB, accredited LAB before supplying the luminares. This supplies that and X79 test reports from MAB, accredited LAB before supplying the luminares. This supplies that burner is the supplies that burner is that burner is the su															
for the light future. The system lumen shall be >= 1600 lumens. The supplier shall provide LMB0 and LM 79 test reports from 12.0 Instribution band		voltage from 220-240VAC, 50 Hz, with LED Life of 50000 Burning Hours @L70 with system efficacy not less than 80 Lumen/Watt													
1.2.0 Distribution Board Cubicitor Under Unitability Description boards (VDPN) IPSS rated as per specification and as per following details. 1 0 0 0 0		for the light fixture. The system lumen shall be >= 1600 lumens . The supplier shall provide LM80 and LM 79 test reports from													
Outdoor type Vertical Power distribution boards (UPPN) IP65 rated as per specification and as per following details. Image: Control Power distribution boards (UPPN) IP65 rated as per specification and as per following details. Image: Control Power distribution boards (UPPN) IP65 rated as per specification and power distribution power distribution power distribution power distribution boards (UPPN) IP65 rated as per specification and power distribution power distributin power distribution power distribution power distribu		NABL accredited LAB before supplying the luminaires . Philips: Philips Via Duct LED Luminaire													
Outdoor type Vertical Power distribution boards (UPPN) IP65 rated as per specification and as per following details. Image: Control Power distribution boards (UPPN) IP65 rated as per specification and as per following details. Image: Control Power distribution boards (UPPN) IP65 rated as per specification and power distribution power distribution power distribution power distribution boards (UPPN) IP65 rated as per specification and power distribution power distributin power distribution power distribution power distribu															
12.1 INCOMER Impact	12.2	Distribution Board	4												
1 no. 63 TP Contactor with with stranomic digital timer 1 no. 63 TP Contactor with with astronomic digital timer 0<	12.2	Outdoor type Vertical Power distribution boards (VDPN) IP65 rated as per specification and as per following details.	+												
1 no. 63 T PM C6 1 no. 63 T PM C6 0	12.3		1												
1 set of CON) indicating lamps. I		I no. 63 TP MCCB	1												
8 Nos of 20 TPN NCB Called ScontectTUTY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required. 12.5 Cables supply, laying, jointing, terminating, testing and commissioning of 1100 V grade, armoured, FRLSZH, XLPE, aluminium(AL) / Copper (CU) conductor cables on existing trays/walls/columns/ indoor/ trenches including the cost of supports with suitable classes, markers providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below. 5 core 4 sg nm CU Conductor 3.5 core 50 sg nm AL. Conductor 3.5 core 50 sg nm AL. Conductor 3.5 core 50 sg nm AL. Conductor 3.5 core 50 sg nm AL. Conductor Score 4 sg nm CU Conductor Score 50 sg nm AL. Conductor Score 50 sg nm AL. Conductor Score 50 sg nm AL. Conductor Cable Tensis Cable Tensis Score 7.5 sg nm CU Conductor	-	1 set of (ON) indicating lamps.	1	1	1	1	1	1		1	1	-	1		
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All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required. 12.5 Cables Image:			+										+		
BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required. Image: Deliver Image: D			1		1	1	1	1		1	1		1		
In the second			1		1	1	1	1		1	1		1		
Supply, laying, jointing, terminating, testing and commissioning of 1100 V grade, armourd, RES2H, XLPE, aluminium(AL) / Copper (CU) conductor cables on existing trays/multicolums (including the cost of supports with suitable damps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables, markers providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below. S core 2.5 sq mm CU Conductor 3.5 core 5.9 sq mm AL. Conductor 3.5 core 5.9 sq mm AL. Conductor 3.5 core 5.9 sq mm AL. Conductor 3.5 core 5.9 sq mm AL. Conductor 3.5 core 5.9 sq mm AL. Conductor 3.5 core 6.9 sq mm CU Conductor Cable Termination Cable Termination above cables including cost of supplying and fixing, crimping lugs, double compression brass glands, insulation tape etc. complete as per specifications and as required and any other Miscellaneous items required for to complete installation. Exiting and commissioning of Via duct lighting . 12.7 Cable Terrination Supply, Jobrication & installation of perforated hot dipped galvanised double bended cable trays from 2 mm thick GI sheets continuously connected including norizontal and vertical bends, reducers, tess, and other accessories and duly suspended from the celling with 12 mm dia vertical GI rods supported by 40mm x 40 mm 5 mm GI angle etc. (or installed on wall supported on suitable brackets as required) complete as as required) complete as a required and as below. Coloured cable trays shall be provided as			1		1	1	1	1		1	1		1		
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Score 4 sg mm AL conductor - <			4			1	1			1			1		
3.5 core 50 sg mm AL. Conductor 3.5 core 50 sg mm AL. Conductor 12.6 Cable Termination above cables including cost of supplying and fixing, crimping lugs, double compression brass glands, insulation tape etc. complete as per specifications and as required and any other Miscellaneous items required for to complete installation, testing and commissioning of Via duct lighting . Image: Cable Terry Stable Devices tables including cost of supplying and fixing, crimping lugs, double compression brass glands, insulation for Via duct lighting . Image: Cable Terry Stable Devices tables including cost of supplying and the mission of perforated hot dipped galvised double bended cable trays from 2 mm thick GI sheets communuely connected including notizontal and vertical Bends, reducers, tess, and other accessories and duly suppended from the celling with 12 mm dia vertical GI rods supported by 40mm x 40 mm 5 mm GI angle etc. (c) installed on wall supported on suicible brackets as required) complete as per sequired and as below. Coloured cable trays shall be provided as Image: Cable Terry Stable Devices table table trays table brackets are quired) complete as per sequired and as below. Coloured cable trays table brackets are quired on the seling with 12 mm dia vertical GI rods supported by 40mm x 40 mm 5 mm GI angle etc. (c) installed on wall supported on suice tables to table table trays table brackets are quired) complete as per sequired and as below. Coloured cable trays table t		5 core 2.5 sq mm CU Conductor	4							<u> </u>			1		
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Cable Joining and termination above cables including cost of supplying and fixing, crimping lugs, double compression brass glands, installation, testing and commissioning of Via duct lighting. Image: Cable Joining and termination above cables including cost of supplying and fixing, crimping lugs, double compression brass glands, installation, testing and commissioning of Via duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting. Image: Cable Joining and termination above cables including cost of supply for a duct lighting and termination above cables including termination and vertical bends, reducers, tees, and other accessories and duly supported on suble brackets as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifications, as required () complete as per specifica	12.6	Cable Termination	1		1	1	1			1	1		1		
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12.7 Cable Trays Cable Trays Image: Ca		installation, testing and commissioning of Via duct lighting .	1		1	1	1			1	1		1		
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suitable brackets as required) complete as per specifications, as required and as below. Coloured cable tray shall be provided as		continuously connected including horizontal and vertical bends, reducers, tees, and other accessories and duly suspended from	1		1	1	1	1		1	1		1		
		the certaining with 12 mm dia vertical GI rods supported by 40mm x 40 mm 5 mm GI angle etc. (or installed on wall supported on with the second secon	1	1	1	1	1	1	1	1	1		1		
Iner Engineer In-charge		suitable brackets as required) complete as per specifications, as required and as below. Coloured cable tray shall be provided as per Engineer In-charge	1	1	1	1	1	1		1	1		1		
per cirginiter intribuitye		per Engineer In-charge													

	REVISED SCHEDULE-F ELE								-		-			
Item	Description 150mm wide x 50mm deep x 2mm thick	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
a)														
	SUB TOTAL Via Duct Lighting - E12													-
E.13	Mandatary Operational Spares for the Panels And safety items R.Y.B Phase Indication lamp Led Type		1	1	1	1	1	1	1	1		8	3,54,000.00	28,32,000.
	Red / Green On, Off Indication lamp Led Type ,On,Off,trip Indication lamp Led Type	1												
	Amber trip Indication lamp Led Type 3Phase Digital Amp/Volt. Meter 96mm*96mm with inbuilt Selector Switch	-												
	Electronic Multifunction Meter 3Phase Class1.0 EM6400	1												
	CTs 1000/5A CI 1.0 15VA, cast resin for measurement CTs 1000/5A CI 5P10 15VA, cast resin for protection	-												
	CTs 100/5A Cl 1.0 5VA, tapewound	1												
	230V AC or 24V DC shunt trip coll 230V AC motor wound spring close mechanism													
	Control MCB 6A SP 10kA MCB, 'C' Curve CTTB+Neutral Link	Lumpsum												
	Power terminals ,Control Terminal Block,Neutral Link,Spreader Terminals	1												
	Shunt release,UV release RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
	Exhaust Fan 8" with Filter and Switch	1												
	Rotary Operating Handle Control MCB 6A SP 10kA MCB, 'C' Curve,													
	Power Contactor 3Pole 9A 220V AC-3 Duty, Auxiliary Contact Block 2No+2NC	1												
	On, Off Push Button,Auto Manual Selector Switch Single phase Preventor	1												
_	Over current Relay And not limited to the above and any other items necessay shall also be considered.	├ ──												
	SUB TOTAL Mandatary Operational Spares for the Panels And safety items - E13													28,32,000
E.14	Lighting Control System													
	Supply, Installation, Testing and commissioning of Lighting control panel to achieve 33%, 66% and 10% on/off the lighting. The Lighting Control System shall be integrated with the E&M SCADA. Each lighting circuit from the lighting control panels (LCP) shall be controlled by the SCADA between the LCP and RTU. The Schedule for control and monitoring of lighting circuits and graphic													
	of lighting control floor plan shall be from the E & M SCADA work station in SCR and OCC .													
	The lighting control system configuration such as graphic, layout, setting, etc., shall be adjusted to harmonize with													
	Architectural finishes. This is also applied to third party vendors interfaces with the system. The lighting control system shall comply with the following codes and standards:													
	(1) IEEE 802 : Standard for Information Technology – Telecommunications and Information exchange between systems													
	(2) IEC 60529/1989 : Degree of protection provided by enclosures (IP Code)													
	(3) IEC 60255 : Electrical Relay (4) IEC 60364 : Electrical Installation of Buildings													
	(4) IEC 60364 : Electrical Installation of Buildings													
a)	LX Lighting Control Panels with encloser, 24 Relay Spaces, Relays Ratings : 120, 277, and 347VAC 20 Amp Single Pole Input: 120/277/347VAC multi-tap transformer.	Nos	5	5	5	4	4	4	1	1		29	3,42,058.40	99,19,693
b)	Power Supply for LX Panel	Nos	4	4	4	4	4	4	1	1		26	77,219.20	20,07,699
c)	LX Switches for Manual Override, 5 Switches, White Color	Nos	6	6	6	5	5	5	1	1		35	12,637.80	4,42,323
d)	Graphic User Interface for LX Panel for Local Control	Nos	1	1	1	1	1	1	1	1		8	39,598.44	3,16,787
						-		-						
e)	PC Integration Tool for remote controlling Panels Via IP Address	Nos	1	1	1	1	1	1	1	1		8	2,49,245.50	19,93,964
f)	Building Automation multi-protocol gateway (BACnet, Metasys N2 by JCI, and Modbus) for providing control and access to LX Network Lighting Control Panel system Input: 24VDC	Nos	1	1	1	1	1	1	1	1		8	1,77,350.46	14,18,803
g)	Power Supply for ProtoCessor Input: 100-240VAC, 1.5A Output: 24V. 1.5A	Nos	1	1	1	1	1	1	1	1		8	632.48	5.059
		NUS	1	1	Ŧ	1	1	Ŧ	1	1		-		
h)	Control Cable for LON Communication between Panels (100 Ft Reel)	Nos	1	1	1	1	1	1	1	1		8	13,704.52	1,09,636
i)	Surface Mounted Cabinet for LX Panel Accessories	Nos	7	7	7	5	5	5	1	1		38	4,493.44	1,70,750
	SUB TOTAL Lighting Control System - E14													163,84,717.
	SCHEDULE-F-FIRE FIGHTING & FIRE ALARM SYSTEM													
F.01 A	Hydrant Main Fire Pumps													
1.0	Supply, installation,testing and commissioning of fire pumps, electrically driven generally as specified and shown in equipment schedule complete with:													
i)	all accessories													
ii) iii)	vibration mounts test connection excluding starter panel													
iv)	(call foundation in R.C.C. 1:2:3 200 mm high and 150 mm projection allround base plate or as per pump manufacturer's recommendation.													
1.1	Hydrant Main Fire Pumps		1	1										
	Providing and fixing horizontal single stage, single outlet pumping set with bronze impeller, C.I. body and connected by a flexible coupling to a totally enclosed fan cooled induction motor mounted on a common M.S. structural base plate with RCC base (RCC by											1		
	civil contractor) and with all pump accessories, including pressure switch, pressure guage (both with cut off ball valves) complete											1		
	as per specifications. Motor to be suitable for 415V, 3-phase, 50 Hz AC supply (specifications as per fire fighting requirements and on the pattern of local authority approval) as per instruction and specifications.	1	1	1		1	1			1		1	1	

	REVISED SCHEDULE-F ELE													
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
а	Сарасту : 2280 lpm Арр.Леаd : 70 m Арр. Ле 60 HP	Set						2				2	408000.00	8,16,000.0
b	Capacity : 2850 lpm App.head : 70 m App. HP :75 HP	Set										0	482344.00	-
с	Capacity : 2280 lpm App.head : 90 m App. HP : 75 HP	Set		2	2	2	2					8	524001.00	41,92,008.0
d	Capacity : 2850 lpm App.Head : 90 m App. HP : 100 HP	Nos	2							3		5	639999.00	31,99,995.0
e	Capacity : 1800 lpm App.head : 90 m Apn HP : 100 HP	Nos										0	325952.00	-
f	Capacity : 1800 lpm App.head : 70 m Ann HP : 50 HP	Nos										0	262126.00	-
g	Supplying, Installation, Testing and Commissioning of Factory Assembled electrically driven centrifugal fire pump (For KCP PD)(Main Pump for hydrant and sprinkler system), suitable for automatic / manual operation, consisting of the following:													
	(a) Horizontal split casing, multi stage multi outlet, centrifugal fire pump with operating speed not exceeding 1500 rpm, suitable for operation on 415 volts ± 10%, 3 phase, 50 HZ A.C supply. Fire pump shall have C.I. casing, bronze impelier (hard finished and dynamically balanced) and 5.S. Shaft and Sleeve with Mechanical seal. The installation shall be complete with increasary strainers, 100 mm dia dial pressure gauge of calibration 0-20 kg/sq cm with gun metal shut off cock on delivery side including bypass arrangement for periodic testing of the working of pump set as well as testing of automation with required length and size of GI Pipe and Control Valves for proper completion of work.													
	Pump shall be capable of 150% of rated capacity at a head of 65% of the rated head. The shut off head should not exceed 120%													
	of rated head. (b) Squirrel cage induction motor, suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump conforming to IP 55 protection & class F insulation. The motor shall conform to IS 325-1978 (up to date) with flexible coupling and coupling guard, complete as required.													
	(c) The pump set shall be inclusive of base plate, coupling, coupling guard and foundation bolts, suitable vibration clamping arrangement as requried with anti vibration pads, washers etc. (Civil work shall be excluded from Vendor scope)													
	Discharge : 2850 liter per minute Head : 120 meter (Low Zone), 150 meter (High Zone)	Set							3			3	717151.50	21,51,454.5
h	Supplying, Installation, Testing and Commissioning of Factory Assembled electrically driven centrifugal fire pump (For KCP PD) (Water Curtain Pump), suitable for automatic / manual operation, consisting of the following:													
	(a) Horizontal end suction, single stage, centrifugal fire pump with operating speed not exceeding 2900 rm, suitable for operation on 415 volts ± 10%, 3 phase, 50 HZ A.C supply. Fire pump shall have C.I. casing, bronze impeller (hard finished and dynamically balanced) and S.S. Shaft and Sleeve with Mechanical seal. The installation shall be complete with necessary strainers, 100 mm dia dial pressure gauge of calibration 0-20 kg/sq cm with gun metal shut off cock on delivery side including bypass arrangement for periodic trsting of the working of pump set as well as testing of automation with required length and size of MS / GI Pipe and Control Valves for proper completion of work.													
	Pump shall be capable of 150% of rated capacity at a head of 65% of the rated head. The shut off head should not exceed 120%													
	of rated head. (b) Squirrel cage induction motor, suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump conforming to 1P 55 protection & class F insulation. The motor shall conform to 1S 325-1978 (up to date) with flexible coupling													
	and counling ouard. complete as required. (c) The pump set shall be inclusive of base plate, coupling, coupling guard and foundation bolts, suitable vibration clamping arrangement as required with anti vibration pads, washers etc. (Civil work shall be excluded from Vendor scope)													
	Discharge : 900 liter per minute													
	Head : 35 meter	Set							1	1		2	188370.00	3,76,740.
1.2	Fire Jockey Pumps Supplying, installing, testing, & commissioning of electric driven automatic pressurisation pump set consisting of the following.													
i) ii)	Vertical mounted multi stage centrifugal Jockey pump. Squirel cage induction motor suitable for 415 V, 50hz, AC supply of the above pump with synchronous speed of 2900 RPM T.E.F.C type such as confirming to IP-55 and flexible coupling and coupling guard with the pump.													
iii) iv)	Common bed plate of fabricated mild steel channel or cast iron type. Suitable cement concrete pump foundation of 1:2:4 ratio (1 cement : 2 fine aggregate : 4 coarse aggregate) with MS bolts, washers or as per pumpmanufacturer's recommedation.													
a	Capacity : 180 lpm. App.head : 70 m. HP : 7.5 HP	Nos						1		2		1	1,61,034.60 2,01,292.66	1,61,034. 14,09,048.
b c	Capacity: 180 Jpm, App.head: 90 m, HP:10 HP Supply, Fixing, Testing & Commissioning of fire authority approved electrical motor driven JOCKEY PUMP, suitable for automatic operation consisting of following:	Nos	1	1	1	1	1			2		7	2,01,292.66	14,09,048.6
	(a) Horizontal Multi stage multi oulet centrifugal pump with operating speed of 2900 rpm, suitable for operation on 415 volts ± 6%, 3 phase, 50 HZ A.C supply.													
	The pump shall be complete in S.S 304. The pump shall be provided with mechanical seal The system shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side.													

	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NA BALANCE WORKS EXCLUDING VID REVISED SCHEDULE-F ELEV	DUCT IN I	REACH-2 C	OF NAGPUR	METRO R	AIL PROJE	ст.							
	Description						666	KCE	KCD DT	666 PT	714	T-t-LO	Data (TND)	A
Item	(b) Squirrel cage TEFC induction motor TEFC type for operation on 415 V, 3 phase 50 HZ AC supply for the above pump with flexible coupling and coupling guard tet. as required, IP 55 protection and 'F' Class insulation, vaccume impregnated windings with heat and moisture resisting varish for the above pump. The motor shall be rated for continuous duty and shall have HP rating necessary to drive the pump at 150% of it's rated discharge at 65% of rated head.	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	(c) The pump set shall be inclusive of base plate, coupling, coupling guard and foundation bolts, suitable vibration clamping arrangement as requried with anti vibration pads, washers etc. (Civil work shall be excluded from Vendor scope)													
с	Head : 120 meter (Low Zone), 150 meter (High Zone) Discharge : 180 liter per minute	Nos							2			2	174915.00	3,49,830.00
1.3	Supply and installation of pressure gauge panel (manifold) as per the requirement & Comprising:	Set	1	1	1	1	1	1	1	1		8	20,665.34	1,65,322.72
	 I) Pressure aauges ii) Pressure witches with snubber ball valve and 2 x 1.5 sq mm copper conductor wiring to motor starter panel iii) Water piping from system upto the gauge panel along with valves etc.and as required. iv) Sheet metal enclosure with lagis paneling etc. as approved 													
1.4	Internal hydrants/landing valves generally as specified and all complete with: 1) 63mm dia Single headed landing valve IS marked (Stainless steel) 1) Firsti ad hose reel with 25 mm dia, 45 m long thermoplastic hose as per IS 12585 rubber hose, ball valve, piping and 7-8mm nozzle as required 10) 38mm synthetic hoses with 63mm instantaneous SS coupling, IS marked- 15 m x 2 lengths with suitable arrangement of	Set	11	11	11	11	11	11	15	15		96	51812.00	49,73,952.00
	connecting the hose pipe with coupling as required.													
	iv) branch pipe and nozzle IS marked (Stainless steel)													
1.5	Hose cabinet as approved or as per site conditions with universal locking arrangement. Glazed with 5.5mm clear glass Powder coated Aluminium shutter door as appropriate with universal locking arrangement with aluminium grill of following sizes and types :													
a b	Size 1200 x 1500 in 2 mm thick stainless steel sheet Size 1500 x 1850 in 2 mm thick stainless steel sheet	Set Set	0	0	0	0	0	2	12	15		29 42	27642.00 31136.00	8,01,618.00 13,07,712.00
c	Size 2100 x 900 in 2 mm thick stainless steel sheet	Set	4	4	4	4	4	4				24	29073.00	6,97,752.00
1.6	Hose cabinet door as approved or as per site conditions with universal locking arrangement. Toughen Glass of following sizes and types :	Set											29880.00	
b	Size 1200 x 1500 in 2 mm thick stainless steel sheet Size 1500 x 1850 in 2 mm thick stainless steel sheet	Set						0				0	34120.00	
с	Size 2100 x 900 in 2 mm thick stainless steel sheet	Set						0				0	32057.00	-
	Supply, installation, testing and commissioning of external (yard) hydrants inclusive of :) MS Box cabinet of size 750 x 600 x 250 mm of 2mm thickness with 2 nos x 15M Length of 38mm dia synthetic hose with 1 no branch SS nozzle.	Nos	2	2	2	2	2	2	5	4		21	62,540.00	13,13,340.00
	ii) 63 mm dia single headed landing valve IS marked.													
1.8	Providing and fixing in position the industrial type Pressure Gauges with gun metal / brass valves complete as required.	Nos							20	19		39	1038.00	40,482.00
2.0 2.1.1	PIPING FOR FIRE FIGHTING SYSTEM Stopply, fabricating, laying, testing, painting and commissioning external piping (UNDERGROUND) generally as specified using heavy class G.I. conforming to IS : 1239 & BS : 1387 with all fittings and complete with one protection layer of 4mm thick Pypkote													
	 All pipes and all heavy grade fittings conforming to IS 1239 together with suitable joints, flanges, gaskets, bolts & nuts, washers, fittings, adapter pieces etc.including the support arrangements. 													
a b	150 mm nominal bore 100 mm nominal bore	Mtrs Mtrs	114 87	114 87	114 87	114 87	114 87	114 87	305 30	155 10		1144 562	2,447.08 1,643.80	27,99,464.10 9,23,815.04
c	80 mm nominal bore	Mtrs	70	70	70	70	70	70	35	10		465	1,190.74	5,53,693.17
2.1.2	Excavation upto hard murram as per general profiles and back filling	Cu.m	10	10	10	10	10	10	2	1		63	531.00	33,453.00
2.1.3	Making 1:2:4 cement concrete supports and thrust blocks generally as required and approved.	Cu.m	1	1	1	1	1	1	2	1		9	3,873.35	34,860.15
2.1.4	Butterfly Valve (PN16) Supply and installation of Butterfly Valve with mating flanges generally as specified all complete.	Nos							4	2		6	27500.00	1,65,000.00
a b	300 nominal bore 250 nominal bore	Nos		-	-	-	-	-	2	0		2	21513.00	43,026.00
с	200 nominal bore 150 nominal bore	Nos Nos	2 12	2	2	2	2	2 8	2	3		17 85	15489.00 15,133.06	2,63,313.00 12,86,310.39
e	100 nominal bore	Nos	31	19	12	17	20	17	4	2		122	9,317.43	11,36,726.87
	80 nominal bore 65 nominal bore	Nos Nos	7 4	11 4	4	14 4	7 4	14 4	20 1	15 0		92 25	7,583.72 4738.00	6,97,702.09 1,18,450.00
	50 nominal bore	Nos		<u> </u>	<u> </u>	<u> </u>			6	1		7	3226.00	22,582.00
	Non Return Valve(PN16) Supply and installation of Non Return Valve with mating flanges generally as specified all complete.	Nec								1		1	26200.00	26 200 00
b	250 mm dia 200 mm dia	Nos Nos							1	0		1	26200.00 25500.00	26,200.00 25,500.00
с	150 mm dia	Nos Nos	5	5	4	3	3	3	6	6		35	29,762.11 6008.00	10,41,673.97 12,016.00
e	100 mm dia 80 mm dia	Nos	2	2	2	2	2	2	5	2		19	9,705.06	1,84,396.20
f 2.1.6	50 mm dia Supply, installation testing and commissioning of Flexible connectors (Expansion Bellow) as per specification complete in all	Nos							5	2		7	2400.00	16,800.00
а	respect. PN16 Size 80 mm	Nos	2	2	2	2	2	2	2	2		16	4474.00	71,584.00

Thoma	Description	Unit	AMC	NAD	TNC	KDC	666	KCR	KCD DC	CCC PD	714	Total Of:	Data (TND)	Amount (TND)
Item b	Size 100 mm	Unit Nos	AMS 2	NAR 2	1NS 2	KDC	GGS	2 2	2	GGS PD	ZM	Total Qty 16	Rate (INR) 5333.00	Amount (INR) 85,328,00
c	Size 150 mm	Nos	6	6	6	4	4	4	6	6		42	6768.00	2,84,256.0
d	Size 200 mm	Nos	2	2	2	2	2	2	3	3		18	9117.00	1,64,106.00
2.1.7	Foot valve													
	Supply and installation of Foot Valves with mating flanges generally as specified all complete.												05 004 55	
a b	200 nominal bore 100 nominal bore	Nos Nos	0	0	0	0	0	0	2	2		0 10	35,394.55 9,026.71	90,267.05
U		1105	-		-				-	-		10	5,020.71	50,20710
2.1.8	Providing, fixing, testing & commissioning of cast Iron double flanged type 'Y' strainer with SS 304 perforated metal removable basket including all fittings complete as required and suitable for system pressure.													
а	Size 300 mm	Set								2		2	38200.00	76,400.0
b	Size 200 mm Size 100/150 mm	Set Set	2	2	2	2	2	2	2	1		14	37787.00 22615.00	5,29,018.00 3,84,455.00
C	Size 100/150 mm	Set	2	2	2	2	2	2	1	1		17	22013.00	3,84,433.00
2.2	Internal Piping Supply, fabrication & laying heavy grade IS marked G.I piping conforming to IS : 1239 & BS : 1387 complete with fittings, pipe supports, clamps, painting of two coats of red enamel etc. including the support arrangements.													
а	300 mm nominal bore (6 mm wall thickness)	Mtrs							20	20		40	4000.00	1,60,000.00
b	250 mm nominal bore (6 mm wall thickness)	Mtrs Mtrs	24	18	18	18	18	18	25 20	15		40 159	3200.00	1,28,000.00
d	200 mm nominal bore (6 mm wall thickness) 150 mm nominal bore	Mtrs	667	789	500	289	465	289	685	25 325		4009	3,389.67 2,330.38	5,38,957.2 93,42,501.4
e	100 mm nominal bore	Mtrs	350	231	662	250	291	250	55	135		2224	1,565.98	34,82,735.0
f	80 mm nominal bore	Mtrs Mtrs	100 20	100	100	24 20	18 20	24 20	345 230	335 165		1046 515	1,134.81 915.77	11,87,007.0
q h	65 mm nominal bore	Mtrs	20	20	20	0	20	20	130	165		300	915.77 754.49	4,71,620.8 2,26,347.6
	50 mm nominal bore 40 mm nominal bore	Mtrs	0	0	0	0	0	0	350	225		575	532.71	3,06,308.83
i	32 mm nominal bore	Mtrs	0	0	0	0	0	0	230	195		425	485.04	2,06,141.58
k	25 mm nominal bore	Mtrs	0	0	0	0	0	0	2325	1700		4025	361.73	14,55,959.23
2.3	Air vessel													
	Supply, fabrication (as per code), installation, testing and commissioning of Air vessels 300mm diameter and 1000mm high with ball valve inlet/outlet valve drain, air release valve, valve air inlet etc. all complete.	Nos	2	2	2	1	1	1	2	2		13	73,204.25	9,51,655.2
2.4	Basanna ana 1													
2.4	Pressure vessel Supply, fabrication (as per code), installation, testing and commissioning of Pressure vessels 450mm diameter and 1000mm high													
	Experience of the part every metanology sectory and commissioning or research ecology for the sector of the sector	Nos	0	0	0	0	0	0	2	1		3	81,501.13	2,44,503.38
2.5	Fire Brigade Connection (2-way)													
210	Supply, installation, testing and commissioning fire brigade connection with 2 way 63mm valves inlets, stand post and 150 mm MS pipe for mounting the stand post etc. as specified all complete as approved on tank. The fire brigrade connection shall be provided in a suitable MS box having mesh doors with universal locking arrangement. Note: The drawings of the proposed arrangement shall be provided by the contractor for approval of employer's representative.	Nos	0	0	0	0	0	0				0	28,342.13	-
2.6	Fire Brigade Connection (4-way) Supply, installation, testing and commissioning Slamese connection with 4-way 63-mm outlets with non-return valve and sluice valve etc. complete as required and approved including M.S. Cabinets with universal locking arrangement, M.S. welded mesh inside at road level cabinets.	Nos	3	3	3	3	3	3	3	3		24	66,205.38	15,88,929.00
	Note: The drawings of the proposed arrangement shall be provided by the contractor for approval of employer's representative.													
2.7	100 mm dia stainless steel Draw Out connection with foot valve for Fire Brigade.	Set	1	1	1	1	1	1	2	2		10	6839.00	68,390.00
2.8	Air Release valve Supply, installtion, testing and commissioning of 25 mm dia Air Release valve with Ball valve to be fixed on top of Risers.	Nos	4	4	4	4	4	4	5	5		34	8,145.68	2,76,953.17
3.0	SPRINKLER SYSTEM Providing, fixing, testing and commissioning of UL listed Pendant / Upright type Sprinkler Head rated at 68 degree centigrade													
а	rioviding, fixing, testing and commissioning of or insteal rendant / opright type spinikler near rated at do degree centigrade	Nos	0	0	0	0	0	0	740	650		1390	179.00	2,48,810.00
b	Flexible dropper for sprinkler- 1000 mm length UL Approved	Nos	0	0	0	0	0	0	200	230		430	895.00	3,84,850.00
с	Side wall Sprinkler 68°C in brass / chorme finish (K =80)	Nos							80	30		110	550.00	60,500.00
3.1	Providing & Fixing of installation control valve with turbine type automatic Alarm Gong to be connected with control valve, drain & test valve as per manufacturer's specifications complete as required.													
	a) 150 mm dia:	Nos	0	0	0	0	1	1	2			4	40,151.00	1,60,604.00
3.2	Providing and fixing UL listed Flow Switch of 65/ 80 / 100 / 150 mm dia on Sprinkler Header complete with flexible full bore paddle, U clamp and NO / NC contact terminals	Set	0	0	0	0	0	1	7			8	4893.00	39,144.00
3.3	Supply, fixing, testing & commissioning of Braided FM & VDS approved Annular Corrugation Stainless Steel flexible sprinkler pipe drop pressure rated upto 200 psi. The drop shall consist of a BRAIDED type 304 stainless steel flexible tube, zinc plated steel Male threaded nipple for connection to branch-line piping, and a zinc plated steel reducer with a female thread for connection to the sprinkler head and with a numbering on the reducer to ease the process for vertical positioning of the sprinklers with Bracket arrangement as per the Celling Profile. The bracket assembly shall be one piece open gate bracket complete in all respect.													
	1000	Nos				1			-	70		70	1800.00	1 26 000 0
	1200mm 1500 mm	Nos				+			1	70		70 50	1800.00 2200.00	1,26,000.0
						1	1		1				2200.00	1,10,000.

	REVISED SCHEDULE-F ELE				METRO R		ci.							
	REVISED SCHEDULE-F ELEC													
Item	Description Providing and fixing UL listed Flow Switch of 65/ 80 / 100 / 150 mm dia on Sprinkler Header complete with flexible full bore	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD		ZM		Rate (INR)	
3.4	paddle, U clamp and NO / NC contact terminals	Set								8		8	8577.56	68,620.5
3.5	Supply, fixing, testing & commissioning of 25 mm dia inspecting and testing assembly with gun metal valve, sight glass, with 50 mm dia by pass valve and connection to the drain line as required to complete the system.	Set							1	1		2	8000.00	16,000.0
3.6	Supply, fixing, testing & commissioning of 25 mm dia drain ball valve (gun metal) at end of sprinkler branch line with connection to the nearest drain with all fittings, pipe and acessorels complete in all respect.	Set							7	8		15	2500.00	37,500.0
3.7	Supply, fixing, testing & commissioning of UL / FM listed / approved 15 mm NB water curtain nozzle chrome plated complete including fixing in position on pipe complete in all respects with Teflon tape. (K=23)	Nos							26	4		30	2100.00	63,000.
3.8	Flow Meter													
510	Supply, installation, testing and commissioning of electronic type flow meter with all required aessoires complete in all respect	Nos							2			2	16819.00	33,638
	150 mm dia													
3.9	Providing and Fixing of UL/FM Approved Deluge Valve with Grooved Ends / Flange End low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 5-45-12, aluminum bronze clapper, stainless steel spring and shaft, peroxide cured EPOM diaphragm, EPOM seal, brass seat, and Nitrile seat O-rings. 8. S. Shaft complete with Electrical release trim, Hydrautic Release trim, Pressure Switch, Solenoid valve actuator and Control Panel, control Wiring including necessary accessories, complete with tap off socket arrangement as required, with potential free contact with 2 Nos. NO/NC 8. ON/OFF arrangement and all other associated works of complete as required. Note: Cable for Integration of deluge valve / Drencher system with Fire Alarm System shall be included.													
	a 50 mm diameter	Nos							2	1		3	40000.00	1,20,000.
3.10	Supply, Installation, Testing and Commissioning of Pressure Reducing Valve (PN16) having SS seal, metallic brass diaphargam, system suitable for controlling outlet pressure of water having inlet range of maximum 12 kg/cm2 and outlet range of 2.6 kg/cm2, complete as required. 250 NB								1			1	145000.00	1,45,000
	SUB-TOTAL FIRE HYDRANT SYSTEM - F01													552,76,361.0
														332,70,301.
F.02	PORTABLE FIRE EXTINGUISHERS													
	Supply and installation of portable fire Extinguishers as described below:													
2.1	9 litre capacity of water CO ₂ type, IS marked, with discharge tube including clamps etc.	Nos	20	20	20	20	20	20	23	15		158	5,943.52	9,39,075
2.2	Carbon dioxide extinguisher conforming to IS with high pressure discharge tube, horn, control valve, IS marked including clamps etc.													
2.3	4.5 kg capacity extinguisher	Nos Nos	50	20	20	20	20	20	23	15		188	10,091.95	18,97,286
2.3	Mechanical foam type 9.0 liter capacity fire extinguisher (for DG room) 5 kg capacity of DCP(Dry Chemical Powder) fire extinguisher Mechanical form type 50.0 liter capacity fire extinguisher trolley mounted complete set (for Plant Room)	Nos	20	20	20	20	20	20	5	2		32 127 4	7,934.77 5,943.51 12697.88	2,53,912 7,54,826 50,791
	SUB-TOTAL PORTABLE FIRE EXTINGUISHERS - F2													38,95,892.
F.03	PANEL FLOODING - CO2 GAS BASED FIRE TRACE TUBE SYSTEM													
	Supply, fixing, testing and commissioning of Polymer Tube Detection based CO2 System for Electrical Panels including AMF and Communication Panels, The exact quantity of the Panels shall be finalized during detail design stage. (Firetrace Tube Panel		1	1	1	1	1	1	1	1		8	14,16,000.00	113,28,000
(a1	Protection System), consisting of the following components: CO2 Cylinder, 8 kg capacity, complete with all necessary CO2 Gas, fittings, support and accessories, connected with Valve (with													
(a1	CO2 Cylinder, 4.5 kg capacity, complete with all necessary CO2 Gas, fittings, support and accessories, connected with Valve (with													
	mandal release facility).													
(0) Filling Adapter) Outlet adapter	Lumpsum												
(0) End of Line adapter													
) Pressure switch) Flexible Polymer Detection Tube with all necessary fittings & supports.													
(0	Master Control Unit for controlling each system, complete with pressure switches, buzzers and electronic hooters, including all													
) Auto weight measuring Unit for Cylinders with automatic audio/visual alarm.													
														112 20 000
	SUB-TOTAL PANEL FLOODING - CO2 GAS BASED FIRE TRACE TUBE SYSTEM - F3													113,28,000.
F.04	FIRE ALARM AND DETECTION SYSTEM					-								
	The Fire Alarm and Detection System specified herein, must conform to M & E Specifications, in addition to the description given in respective items of BOQ, whether explicitly specified or not. In case of contradiction between M & E specification and description in BOQ, the most stringent of the condition will prevail.													

	BALANCE WORKS EXCLUDING VIA REVISED SCHEDULE-F ELE													
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	All the items not specifically mentioned here but necessary to make the system complete and suitable for desired application as per M & E Specifications and Drawings will be deemed to be included in the quoted prices													
	Supply Installation Testing and Commissioning of 2 Loop Addressable Main Eise Alarm Control Datal (MEACD) complete with													
4.1	Supply, Installation, Testing and Commissioning of 2 Loop Addressable Main Fire Alarm Control Panel (MFACP) complete with capacity to connect Devices & Detectors (in zoned manner) as per M & E Specifications & Drawings but not limited to the following:	Set	1	1	1	1	1	1		1		7	4,83,800.00	33,86,600.00
а														
a h	2 Loop Panel Repeator Driver Board													
c	Communication Board													
d	Software & Graphics													
e	PC with 21" TFT + 80 column Printer.													
a	Nicl. Batteries & Battery Charger. Amplifier card													
ĥ	Provision for interfacing with other systems such as SCADA / BMS with all required Hardware & Software.													
4.2	Supply, installation, testing and commissioning of the Microprocessor based intelligent analogue addressable, modular, expandable networkable, 10 loop (each loop shall consist of minimum 125 detector & 125 devices and 10% spare loop capacity) fire alarm control panel. The panel shall have abuilt-in integrated voice command center with suitable rating amplifiers for minimum 25 speaker zones. The panel shall ave abuilt-in integrated voice command center with suitable rating amplifiers for sprinkler etc controlled by powerful Boolean logic equation. The panel shall have minimum five independent hazard release circuit built-in the panel. The panel shall have 240 voits AC power supply, automatic battery charger, 24 voits, sealed lead acid maintenance free batteries sufficient for 24 hours normal working and then be capable of operating the system for 4 hours during emergency condition. The panel shall be U240 Veik listed.	Set							1			1	7,46,708.15	7,46,708.15
a	10 Loop Panel													
b	10 Loop Panel Repeater Driver Board			1			1							
с	Communication Board													
d	Software & Graphics													
e f	PC with 21" TFT + 80 column Printer. Nicl. Batteries & Battery Charger.													
q	Amplifier card													
h	Terminal strips for receiving and terminations all external cabling													
1	Provision for interfacing with other systems such as SCADA / BMS with all required Hardware & Software. Note: Provision for additional loops for Future floors shall be included													
4.3	Supply, Installation, Testing and Commissioning of Repeater Annunciator Panel with Mimic panel as per Specifications and Drawings.	Set	1	1	1	1	1	1	1	1		8	1,05,148.62	8,41,188.96
4.4	Supply, Installation, Testing & Commissioning of following Signal Initiating (Intelligent Analogue Addressable) devices complete with Detector Base etc. etc. complete as specified, required and as approved .												-	-
4.4.1	Intelligent Addressable Multi Sensor Smoke Detector.	Nos	105	150	95	80	94	95	65	225		909	2,856.78	25,96,813.02
	Rate of rise cum fixed Temperature thermister type Heat detector with mounting base complete as required													
4.4.2	Addressable Fault Isolator Base	Nos	19	32	19	19	19	19	10	15		152	1,739.32	2,64,376.64
4.4.3	Addressable Fault Isolator	Nos	19	32	19	19	19	19	10	15		152	3,363.00	5,11,176.00
4.4.4	Supply installation testing and commissioning of dust and vermin proof addressable analogue Manual Call Boxes to initiate audio visual alarm including the cost of mounting accessories complete as per specifications and as required.	Nos	15	23	15	20	20	15	18	8		134	3,776.00	5,05,984.00
4.4.5	Supply, installation, testing and commissioning of Wall/ Celling mounting strobes for visual indication including the cost of mounting accessories complete as per specifications and as required.	Nos	13	24	13	20	20	13	18	8		129	3,122.28	4,02,774.12
4.4.6	Addressable Loop Sounder 6.8 W.	Nos	0	0	0	0	0	0	18	8		26	3,001.92	78,049.92
4.4.7	Response Indicator constructed from 16 guage MS stove / ABS plastic enamelled sheet with front 16 guage steel cover plate / ABS plastic complete as required.	Nos	56	105	56	45	45	56	15	125		503	365.80	1,83,997.40
4.4.8	Intelligent Addressable Duct Detector.	Nos	0	0	0	0	0	0	5	5		10	7,670.00	76,700.00
4.4.9	Supply, installation, testing and commissioning of Control Modules including the cost of mounting accessories complete as per specifications and as required.	Nos	20	25	20	20	20	20	2	20		147	3,363.00	4,94,361.00
4.4.10	Supply, installation, testing and commissioning of Monitor Modules including the cost of mounting accessories complete as per specifications and as required.	Nos	34	32	34	26	23	34	2	8		193	3,363.00	6,49,059.00
4.4.11	Intelligent Addressable water Flow Monitoring Modules	Nos	20	20	20	20	20	20	8	8		136	3,363.00	4,57,368.00
4.4.12	High Temperature (min. 80 C degree trip) Heat detector	Nos	2	2	2	2	2	2	2	8		22	3,363.00	73,986.00
4.5	Supplying, Laying, Termination, Testing & Commisioning of Fire Survival Cables (confirming to BS: 7846 and Section E02, 35 of M & E specifications for perfomance requirements of Fire Survival Cables) armoured, 1 pair 2.5 sq.mm, screened / shielded, Copper conductor (one pair shielded and one pair unshielded) cable or Mineral Insulated cable complying the CWZ category.	Mtrs	0	0	0	0	0	0	1600	2500		4100	83.78	3,43,498.00

	REVISED SCHEDULE-F ELE	CIRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
4.6	Supplying, Laying, Termination, Testing & Commisioning of Fire Survival Cables (confirming to BS: 7846 and Section E02, 35 of M & Especifications for performance requirements of Fire Survival Cables) armounced, 1 lwisted pair 1.5 sq.mm, screened / shielded copper conductor cable or Mineral Insulated cable complying the CWZ category for looping of detection units etc.	Mtrs	2500	2500	2500	2000	2000	2000	3200	2500		19200	76.70	14,72,640.00
4.7	Fire Rated Material for Cut-outs Closing													
	Description of Work All the Shaft and services openings in fire rated walls & floors are to be properly fire stopped with 2 hrs fire rated Insulation & Integrity with PROMASTOP [®] Mortar/Cement. The system would involve providing and fixing of PROMASTOP [®] Cement with required thickness. Penetrations through walls and floors to be sealed with POMASTOP [®] Mortar as tested to BS: 476 Part 20 & AS 1530 part 4 to maintain the required fire ration go 4 hrs of the building element. Installation shall be done in accordance with the tested specification. The system will have to be supported by a valid Test report of the complete system as per BS 476 part 20 issued by M/s.Promat International Asia Pacific Ltd.	Sqm	10	10	10	10	10	10	150			210	12499.00	26,24,790.00
	SUB-TOTAL FIRE ALARM AND DETECTION SYSTEM - F.04													157,10,070.21
H.01	VRV AIRCONDITONING SYSTEMS													
1.1	Supply, Installation, testing and commissioning of Air Cooled Variable Refrigerant Volume System suitable for R410A and 415 \pm 10%, 50 Hz, AC supply. The unit shall consist of indoor units and external condensing units and other accessaries as listed below complete in all respects. The unit shall be fully charged with gas and oil.													
1.1.1	Outdoor Unit Supply, installation, testing and commissioning of Modular type outdoor condensing units equipped with highly efficient													
	corply instantious due to compare the compared of the second and the processing of the compared in the compare													
	The units shall be complete with necessary mounting frames													
	Capacity shall be as under													
а	26 HP (22TR Nominal Capacity)	Nos	0	0	0	0	0	0				0	7,73,136.00	-
b	24 HP (20TR Nominal Capacity)	Nos	0	0	0	0	0	0				0	7,10,690.40	
			0	-	0	0	0	0				0		-
с	20 HP (16TR Nominal Capacity)	Nos	0	0	0	0	0	0				-	6,60,139.20	-
d	18 HP (15TR Nominal Capacity)	Nos	3	3	3	3	3	3				18	6,48,244.80	116,68,406.40
e	6 HP (STR Nominal Capacity)	Nos	3	3	3	3	3	0				15	4,35,632.40	65,34,486.00
1.1.2	Indoor Units													
	Supply, installation, tesing and commissioning of celling mounted duct type indoor units each complete with coll, pre-filter, etc. The units casing shall be of steel construction, wall mounted split type indoor units and 220 volt, 1 phase, 50 Hz, AC supply all as per specifications.													
	The capacities shall be as follows:													
а	Ceiling mounted duct type 3500 CFM - 6.0 TR Nominal Capacity	Nos	0	0	0	0	0	0				0	2,53,053.36	÷
b	Ceiling mounted duct type 3200 CFM - 5.0 TR Nominal Capacity	Nos	0	0	0	0	0	0				0	82,368.72	-
с	Ceiling mounted duct type 2800 CFM - 5.0 TR Nominal Capacity	Nos	0	0	0	0	0	0				0	82,368.72	-
d	Ceiling mounted duct type 2500 CFM - 4.0 TR Nominal Capacity	Nos	0	0	0	0	0	0				0	75,975.48	-
e	Ceiling mounted duct type 2400 CFM - 4.0 TR Nominal Capacity	Nos	0	6	5	0	0	0				11	75,975.48	8,35,730.28
f	Ceiling mounted duct type 2300 CFM - 4.0 TR Nominal Capacity	Nos	6	0	1	3	0	6				16	75,975.48	12,15,607.68
g	Ceiling mounted duct type 2000 CFM - 3.0 TR Nominal Capacity	Nos	0	2	3	6	9	3				23	81,625.32	18,77,382.36
h	Ceiling mounted duct type 1600 CFM - 3.0 TR Nominal Capacity	Nos	0	1	0	0	0	0				1	81,625.32	81,625.32
1	Wall mounted split type 2.0 TR Nominal Capacity	Nos	0	0	0	0	0	6				6	48,023.64	2,88,141.84
1	Wall mounted split type 1.5 TR Nominal Capacity Wall mounted split type 1.5 TR Nominal Capacity	Nos	3	0	3	3	3	3				15	45,198.72	6,77,980.80
k		Nos	0	3	0	3	0	0				6	42,373.80	2,54,242.80
ĸ	Wall mounted split type 1.0 TR Nominal Capacity		0	3	0		Ŭ	Ű				Ŭ		2,34,242.80
1	Ceiling mounted duct type - 2.5 TR Nominal Capacity	Nos	U	0	U	U	0	0				0	49120.00	-
m	Ceiling mounted duct type - 2.0 TR Nominal Capacity	Nos	3	3	0	3	6	0				15	42109.00	6,31,635.00
n	Ceiling mounted duct type - 1.5 TR Nominal Capacity	Nos	0	0	0	0	0	0				0	38363.00	-
0	Ceiling mounted duct type - 1.0 TR Nominal Capacity	Nos	0	3	3	3	0	0	1	-		9	38139.00	3,43,251.00
1.1.3	Supply, installation, tesing and commissioning of Corded Remote controllers for operation of indoor units.	Nos	12	15	12	18	18	15				90	4,014.36	3,61,292.40
1.1.4	Supply, installation, tesing and commissioning of Central Remote controller for complete system including all VRV indoor and outdoor units.	Nos	1	1	1	1	1	1				6	1,26,378.00	7,58,268.00

	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUDTOMOTIVE SQUARE, NJ BALANCE WORKS EXCLUDING VI REVISED SCHEDULEFF ELE	ADUCT IN F	REACH-2 O	F NAGPUR	METRO R	AIL PROJE		TATION, K	ASTURCHA	ND PARK /	AND ZERO	MILE) INCLUL	DING E&M WORKS	S AND PD AREA
	Description	Unit			INS		GGS	KCD	KCP PD	666 PD	714	Total Qty		Amount (THD)
Item 1.1.5	Supply, installation, tesing and commissioning of Imported fittings Y-joints, T-joints, distributer and headers for all Indoor units at both the floors layout as per layout drawings.	Nos	17 17	17	17	KDC 17	17	17	KCP PD	GGS PD	ZM	102	Rate (INR) 12,191.76	Amount (INR) 12,43,559.52
1.2	Refrigerant Piping													
	Supply,installation,testing and commissioning of Interconnecting refrigerant pipe work with elastomeric nitrile rubber/closed cell expanded polythene tubular insulation between each set of indoor & outdoor units as per specifications, all piping should be laid on Galvanised/Powder Coated tray supported by Galvanised M S Hangers & Clamps.													
a)	41.3 mm O.D. (insulation : 19 mm)	Mtrs	0	0	0	0	0	0				0	1,561.14	-
	34.9 mm O.D. (insulation : 19 mm)	Mtrs	0	0	0	0	0	0				0	995.92	-
c)	28.6 mm O.D. (insulation : 19 mm)	Mtrs	107	130	107	107	107	107				665	802.40	5,33,596.00
d)	22.2 mm O.D. (insulation : 13 mm)	Mtrs	36	54	36	36	36	36				234	798.41	1,86,828.31
e)	19.1 mm O.D. (insulation : 13 mm)	Mtrs	31	31	31	31	31	31				186	520.38	96,790.68
f)	15.9 mm O.D. (insulation : 13 mm)	Mtrs	315	291	315	315	315	315				1866	428.20	7,99,018.21
q)	12.7 mm 0.D. (insulation : 13 mm)	Mtrs	36	144	36	36	36	36				324	334.53	
	9.5 mm O.D. (insulation : 13 mm)	Mtrs	264	155	264	264	264	264				1475	243.84	3,59,656.92
	6.4 mm O.D. (insulation : 13 mm)	Mtrs	56	56	56	56	56	56				336	150.17	50,456.04
1.3		Mus	50	50	50		50	30				330	130.17	30,430.04
1.3 a	Control cum transmission wiring Supply,installation,testing and commissioning of control cum transmission wiring of 2 core x 1.5 sqmm copper in suitable GI conduits between indoor and outdoor units.	Mtrs	1000	1000	1000	1000	1000	1000				6000	356.82	21,40,921.20
b	Supply, installation, testing and commisioning of conti cum transmission wiring of 2 core x 1.0 sqmm copper in suitable GI conduits between indoor and outdoor units.	Mtrs	1000	0	0	0	0	0				1000	164.00	1,64,000.00
1.4	Supply,installation,testing and commissioning of power cables from isolator MCB to outdoor unit.	Mtrs	0	0	0	0	0	0				0	624.46	-
1.5	DX wall mounted Split Unit													
1.5.1	Providing, fixing, testing and commissioning of Hi wall split unit air conditioing air cooled type with evaporator coil, fan and fan motor, air cooled condenser with hermatically sealed recipcating compressor, condenser coil and complete with electrical Wiring as required (Voltage stabilizers are not to be provided)													
	Note:Providing and fixing of M.S. angle iron frame work for outdoor unit including P.O. painting of the same is also included in the above scope. Contractor to submit design/Scheme for Iron frame and obtain approval of engineer-in-chage before proceeding further.													
a)	Nominal capacity 1.5 TR	Nos	6	7	6	3	6	0				28	- 66,906.00	18,73,368.00
1.5.2	Providing, fixing and testing of copper refrigerant piping of apppriate sizes duly insulated with nitrile rubber insulation of 9 mm thickness for all types of split AC units. The pipes plus nitrile rubber insulation are to be covered with PVC flexible conduits for protection.	Mtrs	48	54	48	24	48	0				222	2,750.58	6,10,628.76
1.6	Condensate Drain Piping:													
	Providing, fixing and testing GI drain piping for condensate from indoor unit to nearest suitable drain system as per site conditions as per instructed at site engineer complete with all required fittings and pviding clean out plug at suitable location when required complete with 6mm thick elastomeric nitrile rubber insulation over GI pipe:													
а	40mm Dia.	Mtrs	0	0	0	0	0	0				0	564.98	-
b c	32mm Dia. 25mm Dia.	Mtrs Mtrs	0 125	0 125	0 125	0 125	0 125	0 125				0 750	460.91 416.30	3,12,228.00
	TOTAL FOR VRV AIRCONDITONING SYSTEMS - H.01													340,07,489.25
H.02	VENTILATION SYSTEM													
	Supply, installation, testing and commissioning of following equipment .													
2.1	Propeller type fan complete with motor suitable for 220±6% volt, 1 phase, 50 Hz AC supply, mounting frames and GI gravity louvers.													
a	Capacity 1500 CFM (2550CMH) wall mounted	Nos	0	0	0	0	0	0				0	9,664.20 8,177,40	-
b c	Capacity 1350 CFM (2295CMH) wall mounted Capacity 1300 CFM (2210CMH) wall mounted	Nos Nos	Ő	0	0	0	Ő	Ő				Ő	8,177.40	-
d	Capacity 1200 CFM (2040CMH) wall mountde	Nos Nos	0	0	0	0	0	0				0	7,434.00 7,434.00	-
e f	Capacity 1150 CFM (1955CMH) wall mounted Capacity 1080 CFM (1836CMH) wall mounted	Nos	0	0	0	0	0	0				0	7,434.00	-
q	Capacity 1000 CFM (1700CMH) wall mounted	Nos	0	Ő	0	0	0	0				0	6,690.60	-
h i	Capacity 960 CFM (1632CMH) wall mounted Capacity 920 CFM (1564CMH) wall mounted	Nos Nos	0	0	0	0	0	0				0	6,690.60 6,690.60	
i	Capacity 900 CFM (1530CMH) wall mounted	Nos	0	0	0	0	0	0				0	6,690.60	-

	REVISED SCHEDULE-F ELE	CTRICA	FIRE PROT			VSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР		GGS PD	ZM	Total Qty	Rate (INR)	Am
Item	Capacity 800 CFM (1360CMH) wall mounted	Nos	0	0	0	0	0	0	KCP PD	GGS PD	ZM		5,947.20	Am
1	Capacity 650 CFM (1105CMH) wall mounted	Nos	0	0	0	0	0	0				0	5,947.20	
m	Capacity 520 CFM (884CMH) wall mounted	Nos	0	0	0	0	0	0				0	5,947.20	
n	Capacity 500 CFM (850CMH) wall mounted	Nos	0	0	0	0	0	0				0	4,460.40	I
0	Capacity 400 CFM (580CMH) wall mounted	Nos	0	0	0	0	0	0				0	4,460.40	
g	Capacity 300 CFM (510CMH) wall mounted Capacity 260 CFM (442CMH) wall mounted	Nos Nos	3	3	3	0	0	0				9	3,717.00 2,973.60	<u> </u>
2.2	cabinet fan with centrifugal blower driven by motor. The motor shall be suitable for 220 Volts ±6% 1 Phase 50 HZ AC supply.													-
а	Capacity 9300 CFM (15810 CMH) ceiling mounted	Nos	0	0	0	0	0	0				0	71,366.40	
b	Capacity 7440 CFM (12648 CMH) ceiling mounted	Nos	0	0	0	0	0	0				0	47,577.60	<u> </u>
с	Capacity 6000 CFM (10200 CMH) ceiling mounted	Nos	0	0	0	0	0	0				0	42,373.80	-
d	Capacity 5000 CFM (8500 CMH) ceiling mounted	Nos	0	0	0	0	0	0				0	32,709.60	-
e	Capacity 4800 CFM (8160 CMH) ceiling mounted	Nos	0	0	0	0	0	0				0	32,709.60	
f	Capacity 4000 CFM (6800 CMH) ceiling mounted	Nos	0	0	0	0	0	0				0	29,736.00	
	TOTAL FOR VENTILATION SYSTEM - H.02													
H.03	AIR DISTRIBUTION SYSTEM													
3.1	Supplying, fabricating, installing and testing of factory fabricated G.I. Sheet metal ducts with flanges complete with supports, vanes, dampers, links, levers and quadrants etc. as per specifications and drawings. The rates shall include all materials of the duct and labour for suspension and supporting arrangement for plenums, ducts, complete with fire retardant flexible connection as required and specifications.													
a	0.63 MM (24 Gauge) for ac duct	Sqm	5	5	5	5	5	5				30	966.42 966.42	
b	0.63 MM (24 Gauge) for ventilation duct	Sqm	0	0	0	0	0	0				0	900.42	
3.2	Grilles and Dampers													<u> </u>
a.	Providing and fixing, testing and commissioning of powder coated extruded aluminium section grills with dampers for supply air	Sqm	0	0	0	0	0	0				0	13,381.20	
b	terminal. Providing and fixing, testing and commissioning of powder coated extruded aluminium section grills without dampers for exhaust	Sam	0	0	0	0	0	0				0	6,690.60	
U	air terminal.	Sqiii	0	0	0	0	0	0				U	6,090.00	<u> </u>
3.3	Providing, fixing, testing and commissioning of exhaust air/fresh air louvers with filter of powder coated extruded aluminium construction with bird screen, minimum 80 mm deep.	Sqm	0	0	0	0	0	0				0	11,151.00	
3.4	Providing and fixing, testing and commissioning of 16 Ga GI Frame / 24 Ga GI aerifoli blades type volume control damper for duct complete with linkages,levers, fittings, supports, all accessories and any other item required to make the system complete.	Sqm	0	0	0	0	0	0				0	7,434.00	
3.5	Providing and fixing of self adhesive Closed Cell Elastomeric Nitrile rubber 13mm thick insulation on duct complete as per the	Sqm	0	0	0	0	0	0				0	743.40	
	specifications.													
3.6	Supplying and fixing of accoustic lining of duct with fiber glass rigid board of density 48 kg/m3 sealed in fiberglass tissue paper and covered with 0.5mm perforated aluminium sheet & conforming to standard specification.	Sqm	0	0	0	0	0	0				0	966.42	
3.7	Providing, fixing, testing and commissioning of supply and return air Diffusers as per specification and drawings including fixing frames of GI in False ceiling / Wall.												-	
а	Aluminium Diffuser without Damper	Sqm	1	1	1	1	1	1				6	7417.00	
b	Aluminium diffuser with damper	Sqm	1	1	1	1	1	1				6	11651.00	L
	TOTAL FOR AIR DISTRIBUTION SYSTEM - H.03													
	BOQ FOR ZERO MILE STATION		1		1			1	1					r
					1									
<u>ZE.01</u> 1.1	LT. PANELS Design, fabrication, assembling, wiring, supply, installation, testing and commissioning of Main LT panel/Main distribution panels/sub- distribution panels fabricated out of 3 mm thick for structural members and 2 mm thick for door and covers CRCA sheet steel in cubicle compartmentalised free standing floor mounted, dust and vermin proof with reinforcement of suitable size angle iron, channel T irons and/or flats wherever necessary. 16 gauge CRCA sheet steel shall be used for final distribution panels. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall, be treated with all anticorrosive process before painting as per specifications with 2 coats of zinc chromate primer and final approved shade of enamelied paint. 2 Nos. earthing terminals shall be provided on top as pace, lifting hocks shall also be provided in case of large panels. Approval shall be takeny (4) IEC 60364 : Electrical Installation of Buildings with zing passivation shall be used in fabrication of panels.													
	The panels to confirm IP-43 for indoor & IP-54 for outdoor.		1											
Note:	RATING AND SWITCH BOARDS WILL BE DESIGNED AS PER ACTUAL		1	1	1	1		1	1					
			1					1	1					
	(NOTE: Unless not specified all incomers and outgoings ACBs/MCCBs of main LT panel shall be Microprocessor based with 485 communication port for BMS (Building Management system) connectivity through MODBUS protocol, as specified in Technical Specification)													
														1

	CAL, FIRE PRO								,		
	nit AMS	NAR	INS	KDC GGS	6 KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amou
4000A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :											
unit for short circuit, over current and earth aut protection with adjustable setting and with the following accessories.											
Electronic energy meter of accuracy class-1 with 3 Nos 4000/5A, 15VA CTs to measure and display the following electrical											
quantities:											
Real time											
Total active energy (KWH/MWH)											
Maximum Demand (KVA/MVA) (KW/MW)											
Maximum Demand reset count											
Instantaneous power factor											
Eight time of a day energy											
Current											
Voltage											
Frequency / Harmonics 0-500V dialtal voltmeter with selector switch with 6A MCB's - 1 Set											_
0-500V digital admeter with selector switch with 64 MCB S - 1 Set 0-4000A digital admeter with selector switch and 4000/5A, 15VA, CLASS 1, CT - 1 Set											
Phase indication lights and protected by 6A MGB's - 1 Sets											
Breaker ON/OFF/TRIP indicating lights and push button -1 Set											
230 V AC or 24V DC shunt trip coil - 1 Set											
1 CT 4000/5A, 15VA, CL 5P10 consisting of											
Undervoltage Relay (27) - 1 set										_	
Over voltage relay (59)- 1 Set											
Over current Relay (51) - 1 set											
Earth fault Protective Device (51N) 1 set		1	1					1			1
4000/5A,15VA, CLASS-1, CT on Y Phase for APFCR.		1	1					1			
Auxiliary contacts required for necessary interlocking of breakers.		1	1					1			
Bus Bars				├ ──				I			
4000A, TPN tinned copper bus bars with heat shrinkable insulation sleeves 1Set			+					1			
Outgoing 1150 among TDN ACP down out two (manually expended) 1 No.		1	1	<u> </u>				1			
1250 amps TPN ACB draw out type (manually operated) 1 No 1000 amps TPN ACB draw out type (manually operated) 1 No		1	+	<u> </u>				+	<u> </u>		
Iooo amps TPN XCB of Work (Transany Operated) TWO											
000 anijs TPN (50 KA) MCCB 6 Nos											
250 amps TPN (50 KA) MCCB 7 Nos											
200 amps TPN (50 kA) MCCB 5 Nos											
100 amps TPN (50 kA) MCCB 4 Nos											
63 amps TPN (50 kA) MCCB 4 Nos											
Bus Coupler-: Breaker "C											
4000A, 4 pole electrically operated (motorised) fully drawotd type air circuit breaker with ON/OFF/TRIP indicating lamps &											
auxiliary contacts required for necessary interlocking of breakers - 1 Set											
SECTION= II											
Incoming Air Circuit Breaker B' (Transformer-II)											
4000A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker, with built in micro processor based release											
unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :											
Electronic energy meter of accuracy class-1 with 3 Nos 4000/5A, 15VA CTs to measure and display the following electrical			-								
cliectronic energy meter of accuracy class-1 with 3 Nos 4000/SA, ISVA CTs to measure and display the following electrical quantities :											
Real time											
Total active energy (KWH/MWH)											
Maximum Demand (KVA/MVA) (KW/MW)											
Maximum Demand reset count	_										
Maximum Demand reset count Instantaneous power factor	_										
Maximum Demand reset count											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day e											
Maximum Demandreset count Instantaneous power factor Eight time of a day energy Current Voltage Frequency / Harmonics											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Current Voltage Frequency / Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set											
Maximum Demand reset count								- - - - - - - - - - - - - - -			
Maximum Demand reset count.								- -			
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Prequency (Harmonics Frequency (Harmonics Prequency (Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set Prequency (Harmonics 0-4000A digital anometer with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Phase indicating lights and protected by 6A MCB's - 1 Set Breaker ON/OFFTRE Indicating lights and use hutton - 1 Set Set											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Frequency (Harmonics Frequency (Harmonics Eight time of a day energy Output Eight time of a day energy Doutput Eight time of a day energy Develop (Harmonics Eight time of a day energy (Eight a day of the day											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Prequency (Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set 0-600V digital ammeter with selector switch and .4000/5A.15VA.CLASS 1. CTs - 1 Set 0-4000A digital ammeter with selector switch and .4000/5A.15VA.CLASS 1. CTs - 1 Set Phase indicating lights and protected by 6A MCB's - 1 Set Breaker ON/OFF/TRIP indicating lights and using button - 1 Set 230 V AC or 24V DC shunt trip coil - 1 Set 12 (t 4000/5).5VA.CL5P10 consisting of 15											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Frequency (Harmonics Frequency (Harmonics) Eight time of a down on the sector switch with 6A MCB's - 1 Set 0°-5000 folial voltmeter with selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set Eight time of a down on the selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set Phase indication lights and protected by 5A MCB's - 1 Set Eight down on the selector set of the selector set o											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Prequency (Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set Prequency (Harmonics) 0-4000A digital ammeter with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Presence (Norther Constraint) Phase indicating lights and protected by 6A MCB's - 1 Set Presence (Norther TARE) 230 V AC or 24V DC shunt trip coil - 1 Set 230 V AC or 24V DC shunt trip coil - 1 Set 1C 4000/S.15VA.CL5P10 consisting of Under Voltage relay (27) - 1 Set Under Voltage relay (27) - 1 Set Ext											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current C Voltage Frequency (Harmonics) 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set 0-4000V digital animeter with selector switch and 4000/5A. 1SVA.CLASS 1. CTs - 1 Set 0-4000A digital animeter with selector switch and 4000/5A. 1SVA.CLASS 1. CTs - 1 Set #hase indicating lights and protected by 6A MCB's - 1 Set 230 V AC or 240 OC shout through 1. Set 230 V AC or 240 OC shout through 1. Set Under Voltage relav (23) - 1 Set Over voltage relav(51) - 1 Set Over voltage relav(51) - 1 Set											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Current Current Praquency / Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set 0-4000A digital ammeter with selector switch and 4000/5A. 15VA.CLASS 1. CTs - 1 Set Phase indicating lights and protected by 6A MCB's - 1 Set Breaker ON/OFF/TRIP indicating lights and protected by 6A MCB's - 1 Set 230 V AC or 24V DC shunt trip coil - 1 Set 12, C4 4000/5, 15VA.CL5P10 consisting of Under Voltage relay (27) - 1 Set Over voltage relay(51) - 1 Set Over voltage relay(51) - 1 Set Over voltage relay(51) - 1 set											
Maximum Demand reset count Instantaneous power factor Elabit time of a day energy Elabit time of a day energy Current Coursent Voltage Frequency / Harmonics 0-500V diotal voltameter with selector switch with 6A MCB's - 1 Set Prevency / Harmonics Phase indication lights and protected by 6A MCB's - 1 Set Prevency / Harmonics Phase indication lights and protected by 6A MCB's - 1 Set Prevency / Harmonics Prevency / Harmonics Frequency / Harmonics Phase indication lights and protected by 6A MCB's - 1 Set Prevency / Harmonics Prevency / Harmonics / H											
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Maximum Demand reset count instantaneous power factor Eight time of a day energy instantaneous power factor Eight time of a day energy instantaneous power factor Voltage requency Trequency Hammonics Frequency Hammonics Developed Galaxies D-4000A, duotal ammeter with selector switch and .4000/SA. 15VA.CLASS 1. CTs - 1 Set D-4000A, duotal ammeter with selector switch and .4000/SA. 15VA.CLASS 1. CTs - 1 Set Dasse indicating lobits and orosted by GA McGS - 1 Set Under voltage relay C2D - 1 Set 1 Ct 4000/S, 15VA.CLSP10 consisting of Under voltage relay C2D - 1 Set Over voltage relay C3D - 1 Set Over voltage relay C3D - 1 Set Auxiliary contacts required for necessary interdoking of reakers. Auxiliary contacts required for necessary interdoking of preakers. Bus Bars 4000A, TPN timed copper bus bars with heat shrinkable insulation sleeves 1Set											
Maximum Demand reset count Instantaneous power factor Elabit time of a day energy Elabit time of a day energy Current C Voltage Frequency / Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set Frequency / Harmonics 0-4000A digital voltmeter with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Frequency / Harmonics 0-4000A digital voltmeter with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Frequency / Harmonics 0-4000A digital voltmeter with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Frequency / Harmonics 1230 VAG or 24V DC shurt trip coll - 1 Set Ereker CNU/CPTRIP indication lights and outshutton - 1 Set 124 0400/SA.DLSP10 Consisting of Under Voltage relay (27) - 1 Set Over voltage relay (27) - 1 Set Ereker CNU/CPTRIP indication lights and David (2000/SA. 15VA.CLASS 1. CTo Y has for APFCR. 4000/SA.DLSP10 Consisting of the set of APFCR. Auxiliary contacts required for necessary interfocking of breakers. Bus Bars Bus Bars Exet of APFCR. 4000A, TPN timed copper bus bars with heat shrinkable insulation sleeves 1Set Outcoing											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Frequency / Harmonics 0 - 5000 voltable voltameter with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Phase indication lobits and protected by SA MCB's - 1 Set 20 - Voltable voltameter with selector switch and 4000/SA. 15VA.CLASS 1. CTs - 1 Set Phase indication lobits and protected by SA MCB's - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 230 V AC or 24 VC Shunt time oil - 1 Set 210 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - VAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - 25 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - XAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - XAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - XAC or 24 VC Shunt time oil - 1 Set 240 VC Shunt time oil - 1 Set 20 - XAC or 24 VC Shunt time oil - 1 Set											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Current D-500V didtal voltmetter in with selector switch with 6A MCB's - 1 Set Eight time of a day energy D-500V didtal voltmetter in with selector switch with 6A MCB's - 1 Set Eight time of a day energy D-500V didtal voltmetter in with selector switch with 6A MCB's - 1 Set Eight time of a day energy D-500V didtal voltmetter in with selector switch and 400V5A. ISVA.CLASS 1. CTs - 1 Set Eight time of a day energy D-500V didtal voltmetter in with selector switch and 400V5A. ISVA.CLASS 1. CTs - 1 Set Eight time of a day energy 230 V AC or 240 CShaut time oil - 1 Set 230 V AC or 240 CShaut time oil - 1 Set 240 V AC or 240 CShaut time oil - 1 Set Eight day and time of time oil - 1 Set 250 V AC or 240 CShaut time oil - 1 Set Eight day and time of time oil - 1 Set 2600V5A.ISVA.CLSP1 O consisting of Under Voltage relay (31) - 1 Set Overcurrent Relay(S1) - 1 Set Eight day to the day (51) - 1 Set 2000V5A.ISVA.CLSS-1 C on Y Phase for APCR. Eight day and time of the east with heat shrinkable insulation sleeves 1Set 2000Sa.ISVA.CLSS-1 C on Yenge on											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current C Voltage Frequency (Harmonics 0-S00V digital voltmeter with selector switch with 6A MCB's - 1 Set O 0-400A digital ammeter with selector switch and 4000/5A. 15VA.CLASS 1. CTs - 1 Set Phase indicating lights and protected by 6A MCB's - 1 Set Phase indicating lights and protected by 6A MCB's - 1 Set Instantere (Set 1 Se											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current C Voltage Frequency (Harmonics D-S00V dialtal voltimeter with selector switch with 6A MCB's - 1 Set Frequency (Harmonics) D-S00V dialtal voltimeter with selector switch with 6A MCB's - 1 Set Frequency (Harmonics) D-S00V dialtal voltimeter with selector switch with 6A MCB's - 1 Set Frequency (Harmonics) Dasse indication links and proceed by 6A McB's - 1 Set Frequency (Harmonics) Breaker ON/OFF/TREI indication links and push button - 1 Set 230 V AC or 240 CS shut time coil - 1 Set 230 V AC or 240 CS shut time coil - 1 Set Frequency (Harmonic) Over voltaour Falley (S1) - 1 Set Over voltaour Falley (S1) - 1 Set Qover voltaour Falley (S1) - 1 Set Over voltaour Falley (S1) - 1 Set Qover voltaour Falley (S1) - 1 Set Over voltaour Falley (S1) - 1 Set Qover voltaour Falley (S1) - 1 Set Auxiliary contacts required for necessary interfocking of breakers. Bau Bar D Bau Bar D Quolysia, 1SVA, CLSS=1, CT on Y Phase for APFCR. Auxiliary contacts required for necessary interfocking of breakers. Quolysia, 1SVA, CLSS=1, CT on Y Phase with healt shrinkable insulation sleeves 1Set Outgoing 1250 amps TPM ACE draw out type (manually operated) 1 No 1000 1250 amps TPM ACE draw out											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Current Voltage Feauency / Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Instantaneous power factor Voltage Frequency (1 Harmonics) 0-500V digital voltatil ammeter with selector switch with 6A MCB's - 1 Set Instantaneous control of the selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set 0-4000A digital admeter with selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set Instantaneous control of the selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set 20 V AG or 24 VO CS shout time coil - 1 Set Instantaneous control of the selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set 20 V AG or 24 VO CS shout time coil - 1 Set Instantaneous control of the selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set 20 V AG or 24 VO CS shout time coil - 1 Set Instantaneous control of the selector switch and 4000/SA. ISVA.CLASS 1. CTs - 1 Set Over voltace relav (27) - 1 Set Over voltace relav (27) - 1 Set Instantaneous control of the selector switch and the selector switch and the selector switch and the selector switch and the selector switch selector selector switch and the selector switch and the selector switch and the selector switch and the selector switch and selector switch and selector switch and selector switch and the selector switch and the selector switch and the selector switch and the selector switch and selector switch and selector switch and selector switch and selector switch selector switch selector selector selector selector selector sel											
Maximum Demand reset count instantaneous power factor Eight time of a day energy instantaneous power factor Eight time of a day energy instantaneous power factor Voltage regularity Frequency/I Aternotics instantaneous power factor Frequency/I Aternotics instantaneous power factor switch with 6A MCD's - 1 Set 0-4000A dioital ammeter with selector switch and 4000/SA 15VA CLASS 1. CTs - 1 Set phase indicating lobits and orush button - 1 Set 230 V AG or 24V Oc shout tip oil - 1 Set instantaneous power factor instantaneous power factor Under Voltage relay (27) - 1 Set instantaneous power factor instantaneous power factor Over voltage relay (27) - 1 Set instantaneous power factor instantaneous power factor Availlage routing for incleasing interlocking of breakers. phasel power power factor factors bars with heat shrinkable insulation sleeves 1Set Outgoing instant Protective Di Nos insulation power power power power factor in Nos 1250 amps TPN ACB draw out type (manually operated) 1No insulation power power power factor instanting in the power power power factor instanting in the power power power factor instanting in the power power power power factor is power power power factor instanting in the power power power power factor instheat the insulation sleeves 1Set insulat											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Prequency () Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set Prequency () Harmonics 0-4000A digital animeter with selector switch and 4000/SA. 1SVA.CLASS 1. CTs - 1 Set Prequency () Harmonics 0-4000A digital animeter with selector switch and 4000/SA. 1SVA.CLASS 1. CTs - 1 Set Prequency () Harmonics 0-4000A digital animeter with selector switch and 4000/SA. 1SVA.CLASS 1. CTs - 1 Set Prequency () Harmonics 0-4000A digital animeter with selector switch and 4000/SA. 1SVA.CLASS 1. CTs - 1 Set Prequency () Harmonics 10.4 400/S.1SVA.CLASE 1.0 Coll 1. and onab hatton - 1 Set Prequency () Harmonics 11. Ct.4000/S.1SVA.CLASE 1.0 Coll 1. Set Prequency () Harmonics 0.0 vercurrent Releav(S1) - 1 Set Prequency () Harmonics 0.0 vercurrent Releav(S1) - 1 Set Prequency () Harmonics 0.0 vercurrent Releav(S1) - 1 Set Prequency () Harmonics 0.0 vercurrent Releav(S1) - 1 Set Prequency () Harmonics 11. Ct.4000/S.1SVA.CLASE Prequency () Harmonics 12. Set And Ct. Class : Coll 0. These for APFCR. Prequency () Harmonics 4000A, TPN timed copper bus bars with heat shrinkable insulation sleeves 1Set Prequency () Harmonics 1250 amps TPN ACB draw out type (manually operated) 1 No Pr											
Maximum Demand reset count Instantaneous power factor Eight time of a day energy Eight time of a day energy Current Eight time of a day energy Voltage Frequencial Marthonics Frequencial contender with selector switch with 6A MCB's - 1 Set Eight time of a day energy 0-4000A diatal ammeter with selector switch and .4000/SA .15VA.CLASS 1. CTs - 1 Set Eight time of a last energy 0-4000A diatal ammeter with selector switch and .4000/SA .15VA.CLASS 1. CTs - 1 Set Eight time of a last energy 0-4000A diatal ammeter with selector switch and .4000/SA .15VA.CLASS 1. CTs - 1 Set Eight time of a last energy 0-4000S, 15VA.CLSP10 consisting of Under Voltage relay (27) - 1 Set Eight time of a last energy 0ver voltage relay (27) - 1 Set Over voltage relay (27) - 1 Set Eight time of a needes/s1) - 1 set 0ver voltage relay (27) - 1 Set Eight time of needes/s1) - 1 Set Eight time of needes/s1) - 1 Set 0ver voltage relay (27) - 1 Set Eight time of needes/s1) - 1 Set Eight time of needes/s1) - 1 Set 0ver voltage relay (27) - 1 Set Eight time of needes/s1) - 1 Set Eight time of needes/s1) - 1 Set 120 v A Cor voltage relay (27) - 1 Set Eight time of needes/s1) - 1 Set Eight time of needes/s1) - 1 Set 2000A, TPN timed copper bus bars with heat shrinkable insulation sleeves 1Set Eight time of needes/s1) - 1 Set 2000A mos TPN ACB draw out ty											

		ernaene,	FIRE PROI	ECTION AN	D HVAC 5	TSTEMS								
n	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (IN
	b. Phase indicating light protected by 6A MCB's - 3 Nos 2. All incoming ACB shall be 65kA and outgoing MCCB shall be 50 KA breaking capacity													
	3. The two incomer shall be interlocked elecrtically and mechanically operated ACBs with Automatic source transfer system. so													
	that only one supply can be swithed ON at a time.													
	Main LT Panel as described above	Set									1	1	106,15,604.54	106,15,60
	Essential Power Panel (EPP)													
	Incoming Air Circuit Breaker A from AMF Panel													-
	1000 A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release													
	unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories :												I	
	Electronic energy meter of accuracy class-1 with 3 Nos. 1000/5A, 15VA CTs to measure and display the following electrical													
	guantities : Real time													
	Total active energy (KWH/MWH)													-
	Maximum Demand (KVA/MVA) (KW/MW)													_
	Maximum Demand reset count Instantaneous power factor													
	Eight time of a day energy.													1
	Current													
	Voltage		1				+							+
	Frequency / Harmonics 0-500V digital voltmeter with selector switch with 6A MCB's - 1 Set		1	1			1							1
	0-1000A digital ammeter with selector switch and 1000/5A, 15VA, CLASS 1CT - 1 Set													1
	Phase indicating lights and protected by 6A MCB's - 1 Sets	_		I			+			L – – – – –		<u> </u>		4
	Breaker ON /OFF /TRIP indicating lights and push button - 1 Set 1 CT, 1000/5A, 15VA, CL 5P10 consisting of		+	1			+							+
	Under Volkage relav (27) - 1 Set													1
	Over voltage relay (59) - 1 Set													
	Overcurrent Relay (51)- 1 Set Earth fault protection device (51N)- 1 Set													
	Auxiliary contacts required for necessary interlocking of breakers.													
	Breaker control switch - 1 Set													
	Under Voltage release - 1 Set Auto Manual Remote selector switch - 1 Set													
	Voltage sensing relay & timer for auto change over.													
	230 V AC or 24V DC shunt trip coil - 1 Set													
	Bus Bars													
	1000A, TPN tinned copper bus bars with heat shrinkable insulation sleeves 1 Set Outgoings													
	400 amps TPN (50 kA) MCCB 3 Nos													
	250 amps TPN (50 kA) MCCB 3 Nos 200 amps TPN (50 kA) MCCB 5 Nos													-
	100 amps TPN (50 kA) MCCB 2 Nos													
	63 amos TPN (50 kA) MCCB 7 Nos													_
	Bus Coupler													
	Dus counter 1 No. 1000A, 4 Pole ACB electrically operated drawout type with necessary potential free contacts for inter lockings and with													+
	breaker control switch, ON/OFF/TRIP indicating lamps with control MCB/s The two incomer shall be interlocked elecrtically and mechanically operated ACBs with Automatic source transfermer system. so that only one supply can be swithed ON at a time.													
	Incoming Air Circuit Breaker B and C from MDB													
	1000A, 4 pole electrically operated (motorised) fully draw out type air circuit breaker with built in micro processor based release													
	unit for short circuit, over current and earth fault protection with adjustable setting and with the following accessories:												i i	
	Electronic energy meter of accuracy class-1 with 3 Nos. 1000/5A, 15VA CTs to measure and display the following electrical													
	quantities:													
	Real time													
	Total active energy (KWH/MWH)													
	Maximum Demand (KVA/MVA) (KW/MW)													
	Maximum Demand reset count													
	Instantaneous power factor Eight time of a day energy													
	Current													
	Voltage													
	Frequency / Harmonics 0-500V diaital voltmeter with selector switch with 6A MCB's - 1 Set													
	0-1000 A digital ammeter with selector switch and 1000/5A, 15VA,CLASS,1CTs - 1 Set													
														4
	Phase indicating lights and protected by 6A MCB's - 1 Set Breaker ON/OFF/TRIP indicating lights and push button - 1 Set		+			<u> </u>	+							+
	1 CT, 1000/5A, 15VA, CL 5P10 consisting of													1
	Under Voltage relay (27) - 1 Set													
	Over voltage relay (59) - 1 Set		+				+							+
	Overcurrent Relay (51)- 1 Set Earth fault protection device (51N)- 1 Set		1	1			1							1
	Auxiliary contacts required for necessary interlocking of breakers													1
	Breaker control switch - 1 Set		1				1							+
	Under Voltage release - 1 Set		+	1			1					1		+
	Auto Manual selector switch - 1 Set													

Maha-Metro

Name Unit AMS J 1000.0.1Tm		REVISED SCHEDULE-F ELECTRICAL, F	IRE PROT	ECTION AN	ID HVAC S	YSTEMS								
But Bars Image: Second Se		Description Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (IN
Outcomes Outcomes S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INCCE 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INTER 3 Note Image: TMX 150 AM INCCE 3 Note S08 million TMX 150 AM INTER 3 Note Image: TMX 150 AM INTER 3 Note S08 million TMX 150 AM INTER 3 Note Image: TMX 150 AM INTER 3 Note S08 million TMX 150 AM INTER 3 Note Image: TMX 150 AM INTER 3 Note S08 Million TMX 150 AM INTER 3 N														
650 answ TPL 59 Add NCC 1 Non	D	copper bus bars with heat shrinkable insulation sleeves - 1 Set												
450 pmms TPV: 55 AbJ NSCG 2 Nos														
250 amos TPM (59 kA) MCCB 3 Mos	:A	kA) MCCB 1 Nos												
200 amos TPN L 50 kM XCCB 3 Mos	A	kA) MCCB 2 Nos												
100 arms TPN LS0 kAI MCCB 6 Nos will all kind in the source will all kind in the source of following 0. Data all dictronic animeter with selector witch and CTs - 3 Nos	CP.	kA) MCCB 3 Nos												
S3 amos TPH (20 8A) NCC8 6 Nos Image: 14 (20 8A) NCC8 6 Nos Net C. 14 (20 00001 Steps and Data sublate statule transe of following Image: 14 (20 8A) NCC8 6 Nos Not, OPF. This status light protected by AA (NCS 3 - 3 Nos Image: 14 (20 8A) NCC8 6 Nos 2. All incoming / outgoins CAB and NCC8 5 will be S0 FAI (1sc) breaking capacity Set Hain Enversency Anal as described above. Set 3 FIRE FGUENTIG PANEL - TERP PAINT ROOM Image: 14 (20 8A) NCR 6 Nos	A	kA) MCCB 3 Nos												
Note - 1. All outgoins feeders shall have subtle range of following Image: Constraint of the consthe constraint the constraint of the constraint of the	CP	kA) MCCB 6 Nos												
a. Dibital electronic annueter with selector awtich and CTs - 3 Nos b. Dib. CTF. The status field protectively to MACEs - 3 Nos b. Dib. CTF. The status field protectively to MACEs - 3 Nos c. Dib. CTF. The status field protectively to MACEs - 3 Nos c. Dib. CTF. The Status field protectively to MACEs - 3 Nos c. Dib. CTF. The Status field protectively to MACEs - 3 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Status field protective to the Status - 2 Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Nos c. Dib. CTF. The Status field protective to the Status Dib. CTF. Di	()	(A) MCCB 6 Nos												
b. Ob, OFF. The status light protected by 6A MCBE - 3 Mos Set b. All incomparison of a discribul addicable status and MCBE shall be 50 KA (1 sec) breaking capacity Set b. All incomparison of a discribul addicable status and MCBE shall be 50 KA (1 sec) breaking capacity Set b. FIRE FIGHTING CANEL - TERE FLANT ROOM Set c. Roomer 2 Nos. each comprising d : Set c. No., 2007, AC operated integral type Digital meter with R5-485 port for measuring Amps, Voltage, Energy, Frequency, Wett, WAT, maximum demark Boyne factor et with TOD follity conforming to specificables, latest IEC / EVA and EMI standards/criterion, with necessary Circuit MCB and sultable size summation CTs for above two incomer metering supporting CSADMBS connectivity integrated Digital metering. Digital Viniteering - 1 Set c. 1 No., 2007, AC operated, ILS 2007 VICE and with sultable size summation CTs connections as required for both incoming feeders. c. 1 No., 2007, AD Coperated, ILS 2007 VICE and with sultable size summation CTs connections as required for both incoming feeders. c. 1 No. 4007, annos cast resin current transformers with 15 VA Burden & Class 5 10 for motection and metering - 1 Set c. 3 No. 4007, annos cast resin current transformers with 15 VA Burden & Class 5 10 for metering - 1 Set c. 3 No. 4007, annos cast resin current transformers with 15 VA Burden & Class 5 10 for metering - 1 Set c. 3 No. 4007, ITBL, Ready to close cortex at Misclinia Inbias with control MGD- 2 Set c. 3 No. 4007, ITBL, Ready to close cortex at Misclinia Inbia														
2. All incoming / unitable scales/bit above Set Main Kenneserv Panel as described above Set 3 FLBE FIGHTING PANEL - FIRE PLANT ROOM Image: Comparison of the scale sc	ar	ammeter with selector switch and CIS - 3 Nos												
Main Emergency Panel as described above Set 3 FIRE FIGHTING PANEL - FIRE PLANT ROOM Image: Plant Room <	u	dus light protected by 6A MCB s - 3 Nos												
3 FIRE FIGHTING PANEL - FIRE PLANT ROOM	10	Itigoing ACB and MCCBS shall be 50 KA (1 sec) breaking capacity									1	1	41,86,263.75	41,86,
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RVB Phase indicating light protected by 6 amps MC28 - 2 Set Image: Control of Control														
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	v	overioad relay shall be as per the type - 2 coordination chart		1		1	1					1		
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- 1. Art data table grant hands. - 1. Art data table gra		1 no. 10 HP/ 7.5 KW, Star Delta starter comprising 1 Nos. TP contactor AC-3 duty, bimetallic over current relays single phasing	Unit	AMS	NAK	INS	KUC	665	KCP	KCP PD	GGS PD	2M	Total Qty	Rate (INR)	-
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C. Decompose baseling table for the communit of the first intermation of the communit of the fir	h	All interest shall be wined at the point for birds compatibility interlocked													-
a) School sets of sector services of the construction while producting while out to communicate while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the construction while producting while out the services of the s	C C	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													
rely order to crited: but no crited:	d	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													-
Itel FlatTing Fl	e	Internal wiring in the Starters shall be done with FRLS PVC insulated cables of adequate size. Internal wiring, contactors,													
Image: Note: proper panel (WPP) as per specifications and as per following details Image: panel panel (WPP) as per specifications and as per following details Image: panel			Sat									1	1	7,42,860.00	7,42,860.00
Image Image <th< td=""><td></td><td>FIRE FIGHTING PAREL - FIRE PLANT ROOM described as above</td><td>Set</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>1</td><td>7,42,860.00</td><td>7,42,800.00</td></th<>		FIRE FIGHTING PAREL - FIRE PLANT ROOM described as above	Set									1	1	7,42,860.00	7,42,800.00
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A Discoversal No. 90.4 (15), (12), (23), (34), (12), (12), (13),		Internal wiring in the Starters shall be done with FRLSPVC insulated cables of adequate size. Internal wiring, contactors, relay contacts, puck button contacts should be rated not bese than 2.5 Somm													-
a) 2.m. 1254. At 19. (no. =>5. 4A. TP MCCD with variable our current and short circuit releases such comprising of: <								_							
b) 1-set Red/Csee DNUCF Indication lamos. <td></td> <td>2 no. 155A .415V. Ics=25 KA . TP MCCB with variable over current and short circuit releases each comprising of:</td> <td></td> <td>-</td>		2 no. 155A .415V. Ics=25 KA . TP MCCB with variable over current and short circuit releases each comprising of:													-
c) 1-step of three plase indication lamps (red. yellow, blob). Image indicational lamps (red. yellow, blob). Image indicational lamps (red. yellow, blob). Image indicational lamps (red. yellow, blob). 10 Interletable trip indicational lamps (red. yellow, blob). Image indicational lamps (red. yellow, blob). Image indicational lamps (red. yellow, blob). Image indicational lamps (red. yellow, blob). 11 Apper sq. massibable to with stand symmetrical fault level of 25 kA, at 415 V. The neutral busbar is to be of some size as a plassis. Image indicational lamps (red. yellow).															-
Busseam Busseam <t< td=""><td>c)</td><td>1- set of three phase indicating lamps (red, yellow, blue)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></t<>	c)	1- set of three phase indicating lamps (red, yellow, blue)													-
Electrolytic high conductivity timed copper three phase and neutral busbars rated at 125 A having a maximum current density of 14 Apers and summa status is to with stand symmetrical fault level of 25 kA, at 415 V. The neutral busbar is to be of same size as a base. Image: Comparison of the comparison of the	d)	Amber healthy trip inicating lamps for above feeders													-
Electrolytic high conductivity timed copper three phase and neutral busbars rated at 125 A having a maximum current density of 14 Apers and summa status is to with stand symmetrical fault level of 25 kA, at 415 V. The neutral busbar is to be of same size as a base. Image: Comparison of the comparison of the	-	NICRAD													
1.4 A per sq musibile to with stand symmetrical fault level of 25 kA, at 415 V. The neutral bushar is to be of same size as places. Image: Control in the image: Control in th	в	BUSBAK													-
a) 3040A, Los = 25 KA, 415V, TP MCGEmotor Duty) each with the following : a)		1.4 A per sq mm suitable to with stand symmetrical fault level of 25 kA. at 415 V. The neutral busbar is to be of same size as													-
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a1) 1. no. 10 HP, 75 KW, Star Delta starter comprising 3 No. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, be 3 level liquid level controller. Image: Start Stop push button, start Stop push button, start Stop push button, be start Stop push button starts 21) 1. set Red/Creen ON/OF indication lamos Image: Start Stop push button, start Stop push buttons, start Start Stop push buttons, start Stop push bu	Ľ														-
a1) 1. no. 10 HP, 75 KW, Star Delta starter comprising 3 No. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, be 3 level liquid level controller. Image: Start Stop push button, start Stop push button, start Stop push button, be start Stop push button starts 21) 1. set Red/Creen ON/OF indication lamos Image: Start Stop push button, start Stop push buttons, start Start Stop push buttons, start Stop push bu	a)	3no. 40A , Ics = 25 KA, 415V, TP MCCB(motor Duty) each with the following :													-
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a4) Auto / Manual/Remote/Local selector switch. Image: Control of the control of	a2)	1 – set Red/Green ON/OFF indicating lamps													-
a5) Healthy and trip indicating lamps		1 – set start stop push buttons.													-
a6) In or for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with groups including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. Image: Connection as a required for incoming feeder and suitable selector for measuring other circuit current as required. Image: Connection as a required for incoming feeder and suitable selector for measuring other circuit current as required. Image: Connection as a required for incoming feeder and suitable selector for measuring other circuit current as required. Image: Connection as a required for incoming feeder and suitable selector for measuring other circuit current as with potential free contacts for remote monitoring and control. Image: Contacts for measure monitoring and control. Image: Contacts for measure monitoring and control. Image: Contacts for measure field or for measuring other circuit current measurement on standby and main pumps including content field at measurement on standby and main pumps including content circuit current measurement on standby and main pumps including content circuit current measurement on standby and main pumps including content circuit current measurement circuit current as required. Image: Contact for for Content field at the following for current measurement circuit current as required. Image: Contact for for Content field at the following for current measurement on standby and main pumps including content field at the following content circuit current measurement circuit current as required. Image: Contact for for content field at the following for current measurement circuit current as required. Image: Contact for for content field at the following for current measurement circuit current as require															-
b1 1 no. 2 HP/ 1.5 KW,DOL starter Star with bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control. Image: Control indication in the current relays single phasing preventer and timer & with potential free contacts for remote monitoring and train indication in the current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control. Image: Control indication in the current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control. Image: Control indication in the current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relays with potential free contacts for remote monitoring and control. Image: Control indication in the current relay with potential free contacts for remote monitoring and control. Image: Control indin indication inding indic		1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including													-
b1 1 no. 2 HP/ 1.5 KW,DOL starter Star with bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control. Image: Control image: Co		6 Nos. 20 A, Ics = 10KA, 415V, TP MCB(Motor duty) each with following													-
b2) 1 - set Bet/J Green ON/OFF indicating lamp Image: Constraint of SMP-45 models of MECO or equivalent with necessary Circuit MCS, suitable size: CTS and selector switch. Image: Constraint of SMP-45 models of MECO or equivalent with necessary Circuit MCS, suitable size: CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. Image: CTS and Selector SWItch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. Image: CTS and Selector SWItch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitoring and control. Image: CTS and Selector SWItch for current relay with potential free contacts for remote monitcring and control. Image: CTS and Sel	b1)	1 no. 2 HP/ 1.5 KW, DOL starter Star with bimetallic over current relays single phasing preventer and timer & with potential free									1				-
b3) 1 - set start / stop puch buttons													<u> </u>		
h4) Auto / Manua/Remote/Local selector switch. Image: Constraint of the const	b2)			1						1					-
b5) Healthy and trip indicating lamps Image: Construct MCB, subable size CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. Image: Construct MCB, subable size CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. Image: Construct MCB, subable size CTS and selector switch for current relay with potential free contacts for remote monitoring and control. Image: Control.							I				1		+		-
b6) 1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB, suitable size: CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required. c) 3 Nos. 16A, ICS = 10KA, 230V, DP MCB each with following c) a Nos. 1HP / 0.75 KW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and control. c) a set Red/Creen ON/OFF indicating lamps c) a set Red/Creen ON/OFF indicating lamps c) a set Red/Creen ON/OFF indicating lamps c) <lic)< li=""> <lic)< li=""> c) <</lic)<></lic)<>	b4)						1	+			-		1		-
c1 1 nos. 1HP / 0.75 KW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and control. Image: control = control		1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB,suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													-
c2) 1 - set Bed/Green ON/OFF indicating larges </td <td></td> <td>1 nos. 1HP / 0.75 kW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and</td> <td></td>		1 nos. 1HP / 0.75 kW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and													
c3 1 - set start stop push buttons.	c21	1 - set Red/Green ON/OFF indicating lamps		1		1	1	1		1	1		1		-
c4) Auto / Manual/Remote/Local selector switch. Image: Constraint of the cons	c3)	1 - set start stop push buttons.													-
c6) 1 no for each feeder AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCB, suitable size CTS and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.		Auto / Manual/Remote/Local selector switch.		1						1				-	-
necessary Circuit MCB,suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.		Healthy and trip indicating lamps									-		1		-
		necessary Circuit MCB,suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required.													-
D Metering Construction of the Device for any Matter Former forme	D										1				-
1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps , Voltage, Energy, frequency & power factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity E. Presetable switching turner set for each pump		factor conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity													-

	REVISED SCHEDULE-F ELEC		INE FROM	Letton An	D IIIIAC 3	131EPIS							
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												-
	WATER PUMP PANEL - PLUMBING PLANT ROOM described as above	Set								1	1	4,78,954.85	4,78,954.85
1.5	MAIN LIGHTING PANEL (ASS Room)												-
Α.	Incomer 2 No. each comprising of :												-
a.	1 Nos. 200 amps TPN MCCB (35 kA) with release unit for SC and OL protection along with 1 Nos. 200 amps 4P AC3 duty Contactor												
b.	1 Set 1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summating CTs for above two incomer metering supporting SCADA/BMS connectivity												-
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.												-
d.	ON / OFF / TRIP indicating lights with control MCB - 1 Set Phase indicating light protected by 6 amps MCB's - 1 Set.												
f.	Healthy and trip indicating lamps												-
в.	Bus Bar comprising of :												
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 200 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.												
C.	Outgoing comprising of :												-
i.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status 2 Set												-
н.	40 Amps TPN MCCB with releases for SC and OL protection & shunt trip each having indication lamps to give status - 14 Set												-
	Notes:-												
a.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.												-
a. b.	All Outgoing feeders shall be provided with earth fault release.												
c.	Both the Incomers shall be electrically & mechanically interlocked with contactor based automatics chngeover system so that only one supply is switched on at a time.												-
d.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs.												-
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												-
	MAIN LIGHTING PANEL (ASS Room) described as above	Set								1	1	5,31,359.70	5,31,359.70
1.6	ESSENTIAL LIGHTING PANEL (ASS Room)												
													-
Α.	Incomer comprising of :												
a.	100 amps TPN MCCB (35 kA) with release for SC and OL protections - 2 Set												-
b.	1 No., 230Y, AC operated integral type Digital meter with RS-485 port for measuring Amps. Voltage, Energy, frequency, KWH, KVAH, maximum demand & power factor etc with TOD Facility conforming to specifications, latest. IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for above incomer metering supporting SCADA/BMS connectivity.												-
c.	Connectivity 1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTS connections as required for incoming feeders.												-
d.	ON / OFF / TRIP indicating lights with control MCB - 2 Sets Phase indicating light protected by 6 amps MCB's - 2 Sets												-
е. f.	Healthy and trip indicating lamps												
в.	Bus Bar comprising of :												
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 100 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.												-
C.	Outgoing comprising of :	-			-	_				-			
													-
i.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 4 Set												-
												1	-

	REVISED SCHEDULE-F ELEC	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS							
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	Notes:-												-
_	All schedules baselines shall be excludence OF 1A vehice colds Two. Tee												-
a. b.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics. All Outgoing feeders shall be provided with earth fault release.												
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs.												-
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												-
	ESSENTIAL LIGHTING PANEL (ASS Room) described as above	Set								1	1	7.89.860.00	7,89,860.
1.7	POWER PANEL (ASS Room)												-
Α.	Incomer comprising of :												
<u></u>													
<u>a.</u> b.	125 amps TPN MCCB (35 kA) with release for SC and OL protections - 2 Set 1 No., 230V, AC operated integral type Digital meter with R5-485 port for measuring Amps ,Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS connectivity												-
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.												
d.	ON / OFF / TRIP indicating_lights with control MCB - 2 Sets Phase indicating light protected by 6 amps MCB's - 2 Sets												
f.	Healthy and trip indicating lamps						1						
в.											<u> </u>		
в.	Bus Bar comprising of :												
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 125 A having a maximum current density of 1.4 A per signm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.												-
C.	Outgoing comprising of :												
I.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set												
	Notes:-												
а	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.												
b.	All Outgoing feeders shall be provided with earth fault release.												
с.	All Outopoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs. SCADA / BMS CONNECTUTY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												
	POWER PANEL (ASS Room) described as above	Set								1	1	4,96,860.24	4,96,860
1.8	ESCALATOR POWER PANEL (ASS Room)												
Α.	Incomer comprising of :												
a.	400 amps TPN MCCB (35 kA) with Microprocessor release for SC, OL and E/F protections - 2 Set												
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps /Voltage, Energy, frequency, kWH, kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest. IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summating. CTs for above two incomer metering supporting SCADA/BMS connectivity												
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.												
d.	ON / OFF / TRIP indicating lights with control MCB - 2 Sets												
e. f.	Phase indicating light protected by 6 amps MCB's - 2 Sets Healthy and trip indicating lamps			1			1						
_													-
в.	Bus Bar comprising of :		-	-			-				<u> </u>		
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 400 A having a maximum current density of 1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.												
C.	Outgoing comprising of :						1						
i.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status 14 Set												
	Space for providing variable KWHr meter with required CT's/PT's for each of the outgoing feeder with locking arrangement.			1			1						
						1	1	1 1			1		
	Space to providing variable Kwm meter with required CF s/FF shot each of the outgoing requer with locking an angement. Notes:-												

	REVISED SCHEDULE-F ELE												
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP KCP PE	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs.												-
	SCADA / BMS CONNECTIVITY												
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with												-
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												
													-
	ESCALATOR POWER PANEL (ASS Room) described as above	Set							_	1	1	5,28,184.52	5,28,184.5
1.9	SUB VENTILATION POWER PANEL - 1 (Basement - 2)												-
	- · · · ·								-		-		-
Α.	Incomer comprising of :												
a.	160 amps TPN MCCB (25 kA) with release for SC and OL protections - 2 Set												-
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,												
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI												
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS												_
	connectivity												
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.												
	equivalent with necessary circuit moss and with suitable size CTs connections as required for incoming reeders.												-
d.	ON / OFF / TRIP indicating lights with control MCB - 2 Sets								-		-		
e.	Phase indicating light protected by 6 amps MCB's - 2 Sets												-
f.	Healthy and trip indicating lamps												-
													-
в.	Bus Bar comprising of :												-
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 160 A having a maximum current density of		-							-	-		-
a	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 25 kA, at 415 V with necessary high temp PVC colour		1						1	1		1	
	1.4 A per squim success to with starting symmetrical radii tever or manimalize A. 4.4.3 with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1							1			-
			1							1			
													-
с.	Outgoing comprising of :												-
i.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 5 Set												-
	of Anips in the Beer with releases for SC and SC protections & shant the each naving indication lamps to give status - S Sec												-
													-
ш.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 11 Set												-
													-
	Notes:-												-
	inces.												-
a.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.												-
b.	All Outgoing feeders shall be provided with earth fault release.												-
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs. SCADA / BMS CONNECTIVITY												-
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with												
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.												-
													-
	SUB VENTILATION POWER PANEL - 1 (Basement - 2) described as above	Set								1	1	4,56,830.00	4,56,830.0
1.10	SUB VENTILATION POWER PANEL - 2 (Basement - 1)& SUB VENTILATION POWER PANEL - 5 (Street level)												-
1.10	SOD VENTION FOWER FAREL - 2 (Desement - 1)& SOD VENTION FOWER FAREL - 5 (Street lever)												-
													-
Α.	Incomer comprising of :								-				-
a.	125 amps TPN MCCB (25 kA) with release for SC and OL protections - 2 Set								-		-		-
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,												
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI												
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS												
	connectivity												
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.												
	equivalent with necessary circuit ricos and with suitable size CTs connections as required for incoming feeders.												-
d.	ON / OFF / TRIP indicating lights with control MCB - 2 Sets												
e.	Phase indicating light protected by 6 amps MCB's - 2 Sets												-
f.	Healthy and trip indicating lamps		_		_					_			-
	Bur Bar annulation of a		+			<u> </u>				+	+		
В.	Bus Bar comprising of :		+							+	+		-
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 125 A having a maximum current density of						1					l	
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour												
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1							1			-
		[1		1	1			1	1	1		
			1	1			1		1	1	1		-
С.	Outgoing comprising of :												-
										1			-
i.	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 9 Set		1							1			-
			+						-	+	+		-
	Notes: -		1	1			1		1	1	1		-
													-
a.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.		_		_					_			-
b.	All Outgoing feeders shall be provided with earth fault release.		1							1	+		-
с.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs.		1	1		1	1	1 1	1	1	1	1	-

	REVISED SCHEDULE-F ELEC	,		201101174	D IIVAC 3	131263								
em	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													-
													I	-
	SUB VENTILATION POWER PANEL - 2 (Basement - 1), SUB VENTILATION POWER PANEL - 3 & 4 (Platform level) SUB VENTILATION POWER PANEL - 5 (Street level) described as above	Set									4	4	5,78,040.00	23,12,160.0
													5,70,010.00	
.11	RETAIL & ADVERTISEMENT POWER PANEL - 2 (DB ROOM)												├ ────┤	-
	RETAIL & ADVERTISEMENT FOWER FAREL - 2 (DB ROOM)									-				-
Α.	Incomer comprising of :													-
a.	200 amps TPN MCCB (35 kA) with release for SC and OL protections - 1 Set												I	-
u .														-
b.	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps , Voltage, Energy, frequency, kWH,													
	kVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS													-
	connectivity													
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or													
	equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													-
d	ON / OFF / TRIP indicating lights with control MCB - 1 Set													-
u. e.	Phase indicating lights protected by 6 amps MCB's - 1 Set.									-				-
f.	healthy and trip indicating lamps													
в.	Due Day semiglar of -									¹	<u> </u>		l	-
в.	Bus Bar comprising of :													
а	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 200 A having a maximum current density of													
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													-
	coded neat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													
												+		-
	Outgoing comprising of :													-
	100 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 2 Set											+'	l	-
	The Amps TPN PICCB with releases for 3C and 0C protections & shuft the each having indication famps to give status - 2 set													-
	63 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 2 Set													-
										-				-
Ι.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 10 Set													
													I	
	Notes:-											+		-
														-
a. D.	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics. All Outgoing feeders shall be provided with Multifunction meter for V,A, KWHr, Hz, P with 3 No. 40/5 amps cast resin current										<u> </u>		I	-
	transformers with 15 VA Burden & Class 5P10 for protection and metering and RS 485 communication port - 1 Set													-
	All Outgoing feeders shall be provided with earth fault release.													-
	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs. SCADA / BMS CONNECTIVITY											+	<u>├</u>	-
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													-
													├ ────┤	
	RETAIL & ADVERTISEMENT POWER PANEL - 2 (DB ROOM) described as above											+		
		Set									1	1	3,56,898.85	3,56,898.
_													├ ────┤	-
12	RETAIL & ADVERTISEMENT POWER PANEL - 1 (DB ROOM)											+	<u>├</u>	
	Incomer comprising of :											+		-
														-
l.	125 amps TPN MCCB (35 kA) with release for SC and OL protections - 1 Set 1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, frequency, kWH,													
	KVAH, maximum demand & power factor etc with TOD facility conforming to specifications, latest IEC/EMC and EMI													
	standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS													-
	connectivity													
	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or						1							
	equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.		1				1			'		1		-
	ON / OFF / TRIP indicating lights with control MCB - 1 Set							l		H	<u> </u>	+'	├ ────────────────────────────────────	
	Phase indicating light protected by 6 amps MCB's - 1 Set.											1		
	Healthy and trip indicating lamps							L			<u> </u>	+	L	-
3.	Bus Bar comprising of :									<u> </u>	<u> </u>	+	├ ──── ├	-
~							1							
э	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 125 A having a maximum current density of		1				1					1	I	
	1.4 A per sqmm suitable to with stand symmetrical fault level of minimum 35 kA. at 415 V with necessary high temp PVC colour		1				1			'		1		-
	coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.		1	1		1	1	1	1	1	1	1	1	

Maha-Metro

	BALANCE WORKS EXCLUDNG VIJ REVISED SCHEDULE-F ELE		REACH-2 C		METRO R	AIL PROJE						,	JING LUM WORK	
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
														-
i.	40 Amps TPN MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 27 Set													-
														-
	Notes:-													-
	All outgoing breakers shall be minimum 25 kA rating with Icu = Ics.													-
a. b.	All outgoing feeders shall be minimum 25 KA rating with real = 1cs. All outgoing feeders shall be provided with Multifunction meter for V,A, KWHr, Hz, P with 3 No. 60/5 amps cast resin current													_
-	transformers with 15 VA Burden & Class 5P10 for protection and metering and RS 485 communication port - 1 Set													-
с.	All Outgoing feeders shall be provided with earth fault release.													-
d.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs. SCADA / BMS CONNECTIVITY													-
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													-
	RETAIL & ADVERTISEMENT POWER PANEL - 2 (DB ROOM) described as above	Set									1	1	4,73,900.00	4,73,900.00
1.13	UPS OUTPUT PANEL - 1 (UPS Room & Basement UPS Room)													-
2129														-
Α.	Incomer comprising of :													-
а	125 amps DP MCCB (25 kA) with release for SC and OL protections - 2 Set						+							-
<u>ь.</u> b.	1 No., 220V, AC operated integral type Digital meter with RS-64S port for measuring Amps, Voltage, Energy, frequency, KWH, KVAH, maximum demand & power Factor etc with TOD Facility conforming to specifications, latest. Etc/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size CTs for incomer metering supporting SCADA/BMS connectivity.													-
с.	1 sets (2 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Voltmeter similar to SMP-45 models of MECO or equivalent with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders.													-
d.	ON / OFF / TRIP indicating lights with control MCB - 2 Sets													-
e.	Phase indicating light protected by 6 amps MCB's - 2 Sets													-
f.	Healthy and trip indicating lamps													-
в.	Bus Bar comprising of :													-
														-
а	Electrolytic high conductivity tinned copper single phase and neutral busbars rated at 125 A having a maximum current density of 1.4 A per squm suitable to with stand symmetrical fault level of minimum 25 kA. at 415 V with necessary high temp PVC colour coded heat shrinkable sleeving. The neutral busbar shall be of same capacity as phases.													-
c.	Outgoing comprising of :													-
ι.														-
i.	63 Amps DP MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 3 Set													-
іі.	40 Amps DP MCCB with releases for SC and OL protections & shunt trip each having indication lamps to give status - 12 Set													-
	Nuber:													-
	Notes:-													-
a.	All outgoing breakers shall be minimum 16 kA rating with Icu = Ics.													-
b.	All Outgoing feeders shall be provided with ON/OFF/TRIP Indications and shall be protected by 6 amps SP MCBs. SCADA / BMS CONNECTIVITY													-
c.	SCADA / BMS COMPACTION IN All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													-
-		Cat					-					2	0.04.33.55	-
	UPS OUTPUT PANEL - 1 (UPS Room) described as above	Set	<u> </u>				+				2	2	2,31,774.35	4,63,548.70
1.14	400 kVAR Capacitor Panel (ASS Room)													-
	Incomer comprising of :													-
А.				1			1		1					-
a.	1000 amps 4 Pole Electrically operated fully draw out type air circuit breaker (50 kA) with over current, short circuit & earth fault protection releases, UVR & shunt trip each having indication lamps to give status etc 1 Set	-												-
b.	Microprocessor APFC controller relay to sense and monitor the system power factor and provide impulses for operation of 5 capacitor icruits with automatic switching over facility with manual override. It shall continuosily monitor all three phases and displays various Electrical Parameters like voltage, input current, capacitive current, KVA demand, KW, Power Factor, self diagnostic error code indication with printout facility of the above with R5 485 port. Controller should mounted on the front side of the panel. It shall have data logging for minimum 2 months, it shall provide output for maximum 8 stages.													-
с.	Multifunction meter for V, Hz & A with CT's - 1 Set													-
d.	Breaker ON / OFF / TRIP indicating lights with control MCB - 1 Set													-
e. f	Phase indicating light protected by 6 amps MCB's 1 Set Healthy and trip indicating lamps						+							-
В.	Bus Bar comprising of :													-
			1	1		1	1	1	1	1		1	1	-

	Description	11/214	A.M.C		THE	YSTEMS	665	KCD	KCD DD	CC5 77	714	Total Oto	Date (Thin)	Ame
m	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 1000 A having a maximum current density of 1.4 A per sqrim suitable to with stand symmetrical fault level of minimum 50 kA, at 415 V with necessary high temp PVC colour coded heat shrinkable serving. The neutral busbar shall be of same capacity as phases.	Unit	AMS	NAK	INS	КДС	GGS	КСР	KCP PD	GGS PD	2M	Total Qty	Rate (INR)	Amount (IN
	Outgoing comprising of :													
	100 kVAR Capacitor Bank - 1 Set each comprising of following: 250 Amps TPN MCCB - 1 Set													
)	250 AMDS TPN MCCB - 1 Set 250 amps or capacitor heavy duty 525 volts 50Hz contactors 1 Set													
)	"ON" /"OFF" push buttons and indicating lamps 1 Set													
)	100 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per specifications, application duty and as required - 1 Set													
)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
	50 kVAR Capacitor Bank - 4 Set each comprising of following:													
	125 Amps TPN MCCB - 1 Set													
)	125 amps or capacitor heavy duty 525 volts 50Hz contactors 1 Set "ON" /"OFF" push buttons and indicating lamps 1 Set													
)	OW / Orr push outcome and indicating lamps 1 Sec 50 kVAR, 525 volts hermetically seeled metalized polypropylene capacitors in well ventilated enclosures complete as per specifications, application duty and as required - 1 Set													
)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
	25 kVAR Capacitor Bank - 3 Set each comprising of following:		1											1
)	80 Amps TPN MCCB - 1 Set													
)	80 amps or capacitor duty 525 volts 50Hz contactors 1 Set													
)	"ON" /"OFF" push buttons and indicating lamps 1 Set 25 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per													
)	25 KVAR, 323 Volts remetating search metalized purphopylene capacitors in wen ventilated enclosures complete as per specifications, application duty and as required - 1 Set													
)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
	12.5 kVAR Capacitor Bank - 2 Set each comprising of following:													
	40 Amps TPN MCCB - 1 Set 40 amps or capacitor duty 525 volts 50Hz contactors 1 Set													
	"ON" // OFF" push buttons and indicating lamps 1 Set													
)	12.5 kVAR, 525 volts hermetically sealed metalized polypropylene capacitors in well ventilated enclosures complete as per specifications, application duty and as required - 1 Set													
)	7% Harmonic Filters, On/Off push button, Indicating lamps - 1 Set													
	Notes:													
	All outgoing breakers shall be minimum 35 kA rating with Icu = Ics.													
	Heavy duty exhaust fans to be provided for cooling Capacitors & Filters.													
	LED indication for number of capacitor banks 'ON' and 'OFF' LED indication of Power Factor lagging or leading.													
	APFC system shall comprise of following: i. Over Voltage ii. Voltage imbalance													
	iii. Farth Leakage													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	400 kVAR Capacitor Panel (ASS Room) described as above	Set									2	2	17.16.733.73	34,33,4
	Addition /Deletion Items													
	Adjustment rates for addition/deletion of supply & fixing of following including making of suitable holes/space in the panel/DBs and making good all external/internal finishes, terminations etc complete in all respect as required.													
	Voltage Transduser	Set Set									1	1	8,131.00	8,1
	Under & Over Voltage Relay Multifunction Meter with CTs	Set	1			-					1	1	34,151.00	0 34,1 0 25,7
	Digital Load Manager with CTs	Set									i	î	25,701.00	25,7
	Electrical, Mechanical Interlock	Set			-						1	1	12,196.00) 12.1
	Surge Protection Device	Set Set	1								1	1	36,235.00	
	Micom Relay P127 with CT Under & Over Voltage Release	Set	1			1					1	1	90,152.00	0 90,1 0 4,3
	Motor Mechanism 100A/160A	Set									1	1	34,964.00	34,9
_	Motor Mechanism 250A	Set									1	1	31,646.00	31,6
	Motor Mechanism 400A/630A Integral Type Digital Energy Mater with CTs	Set Set									1	1	49,828.00) 49,8) 41,3
1	Integral Type Digital Energy Meter with CTs Copper Busbar	KG	1								1	1	764.00	
	Multiple LED/neon type indications	Nos									1	1	127.30) 1
	Astronomical digital timer	Nos									1	1	7,459.40	7,4
	Ammeter/Voltmeter (3.5 digit display) TP Contactor - 40/32 Amps	Nos Nos									1	1	1,141.90 2,768.30	1,1 2,7
	Aux. Contact 1 NO + 1 NC for MCB	Nos	1								1	1	2,768.30	
													555.10	Ĩ
	Adjustment rates for addition/deletion of compartmentalised switchgear in above panels/board of following rating including the supply, fabrication, extension, modification of the enclosure or in a separate enclosure, earthing ,busbar, other sub-systems,													

	REVISED SCHEDULE-F ELEC	CTRICAL, I	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
3.1	1 no. 4000 A, 415V, 65kA, 4P draw out Electrically operated ACB complete with:	Nos	And			ND C	000		Nel 1 D	000.0	1	1	4.50.700.00	4,50,700.00
а	1- set Red/Green ON/OFF indicating lamps													-
b	1- set of three phase (red, yellow, blue) indicating lamps													-
c d	Amber healthy trip indicating lamps 3 nos. cast resin current transformers of 4000/5 ratio with15 VA Burden & Class 5P10 for protection													-
u	s has test resil current transionners of 4000/s ratio withing via burden & class serio for protection													-
e	3 nos. cast resin current transformers of 4000/5 ratio with 15VA burden and Class 1.0 for measurement													-
f	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													-
														-
a h	230V AC or 24 V DC shunt trip coll 230V, AC Motor wound spring closing mechanism.													
	Terminals to receive suitable rating bus duct/XLPE armoured cables													-
j	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													-
														-
		Nee											0.74.000.00	3,71,000.00
3.2	1 no. 1600 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with: 1- set Red/Green ON/OFF indicating lamps	Nos									1	1	3.71.000.00	3,71,000.00
h	1- set of three phase (red, yellow, blue) indicating lamps													-
c	Amber healthy trip indicating lamps													-
d	3 nos. cast resin current transformers of 1600/5 ratio with15 VA Burden & Class 5P10 for protection													-
е	3 nos. cast resin current transformers of 1600/5 ratio with 15VA burden and Class 1.0 for measurement													-
f	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for			1	1	1			1	1	1			
	each of the fault for achieving discrimination along with distinct fault indication through LED's.			1	1	1			1	1	1			-
a	230V AC or 24 V DC shunt trip coil											1		-
h	230V, AC 0124 V DC sindle thip Curing and the control of the contr											1	1	-
ï	Eronials to receive suitable rating bus duct/XLPE armoured cables													-
i	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													-
			-	1	-						-			
3.3	1 no. 1250 A. 415V. 50kA. 4P draw out Electrically operated ACB complete with:	Nos									1	1	3,22,702.65	3,22,702.65
a	1- set Red/Green ON/OFF indicating lamps													-
b	1- set of three phase (red, vellow, blue) indicating lamps													-
d	Amber healthy trip indicating lamps 3 nos. cast resin current transformers of 1250/5 ratio with15 VA Burden & Class 5P10 for protection													
6	3 nos. cast resin current transformers of 1250/5 ratio with 15VA burden and Class 1.0 for measurement													-
f	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													-
a	230V AC or 24 V DC shunt trip coil													
h	230V AC 07 24 V DC Shuft Trib Caling mechanism.													
- "	Terminals to receive suitable rating bus duct/XLPE armoured cables													-
1	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													-
														-
3.4	1 no. 1000 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with:	Nos									1	1	2,83,617.75	2,83,617.75
а	1- set Red/Green ON/OFF indicating lamps													-
b	1- set of three phase (red, yellow, blue) indicating lamps													-
с	Amber healthy trip indicating lamps													-
d	3 nos. cast resin current transformers of 1000/5 ratio with15 VA Burden & Class 5P10 for protection													-
e	3 nos. cast resin current transformers of 1000/5 ratio with 15VA burden and Class 1.0 for measurement													-
	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													-
0	230V AC or 24 V DC shunt trip coil													
h	230V, AC Motor wound spring closing mechanism.													-
I.	Terminals to receive suitable rating bus duct/XLPE armoured cables													-
i	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													-
														-
3.5	1 no. 800 A, 415V, 50kA, 4P draw out Electrically operated ACB complete with:	Nos									1	1	2,61,799.10	2,61,799.10
a	1- set Red/Green ON/OFF indicating lamps													-
b	1- set of three phase (red, vellow, blue) indicating lamps													
d	Amber healthy trip indicating lamps 3 nos. cast resin current transformers of 800/5 ratio with15 VA Burden & Class 5P10 for protection		-											-
-				1	1	1			1	1	1			-
e	3 nos. cast resin current transformers of 800/5 ratio with 15VA burden and Class 1.0 for measurement													-
-														-
f	Microprocessor based release having variable range of overcurrent, short circuit and earth fault protection with time lag facility for													
	each of the fault for achieving discrimination along with distinct fault indication through LED's.													-
q	230V AC or 24 V DC shunt trip coil			1										-
h	230V. AC Motor wound spring closing mechanism.													-
1	Terminals to receive suitable rating bus duct/XLPE armoured cables		_	_										-
j	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													-
3.6	630A, 415V, Ics=50 kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps											<u> </u>		-
2.0	630A, 415V, ICS=50 KA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps (red, yellow, blue)	Nos									1	1	60,185.35	60,185.35
	(reu, yenow, blue)	1103									1	-	00,103.33	00,103.33
														-
3.7	630A, 415V, Ics=50 kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-set											1		
	of three phase indicating lamps (red, yellow, blue)	Nos									1	1	55,102.85	55,102.85
														-
3.8	400A, 415V, Ics=35 kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps													
	400A, 415V, Ics=35 kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps (red, yellow, blue)	Nos									1	1	47,347.05	47,347.05

	BALANCE WORKS EXCLUDING VI REVISED SCHEDULE-F ELE						ECT.							
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Otv	Rate (INR)	Amount (INR)
3.9	400A, 415V, Ics=35 kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid link and 1-set of three phase indicating lamps (red, yellow, blue)	Nos									1	1	44,198.75	
3.10	250/200 A ,415V, Ics=35kA, 4P, MCCB with variable over current and short circuit releases and 1-set of three phase indicating lamps	Nos									1	1	41,208.15	41,208.15
3.11	250/200 A, 415V, Ics=35kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-set of three phase indicating lamps	Nos									1	1	37,446.15	- 37,446.15
3.12	100/63 A, 415V, ICs=35 KA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1- set of three phase indicating lamps	Nos									1	1	20,634.95	- 20,634.95
3.13	Less than 63A to 40A, 415V, Ics=25 kA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-set of three phase indicating lamps	Nos									1	1	20,634.95	- 20,634.95
3.14	32A, 415V, ICs=25 KA, TP, MCCB with variable over current and short circuit releases with heavy duty solid neutral link and 1-set of three phase indicating lamps	Nos									1	1	12,392.00	- 12,392.00
3.15	Electrical operating mechanism (Motorised mechanism) for all type of above MCCBs	Nos									1	1	11,971.90	- 11,971.90
2.16		Noc	1	1			1				1	1	4 200 25	4 200 25
3.16	40-63A FP MCB 9/10 kA 40-63A TP MCB 9/10 kA	Nos	+	+			+				1	1	4,289.25	4,289.25 4,047.00
3.17	40-63A DP MCB 9/10 KA	Nos									1	1	4,047.00	1,380.00
3.19	40-633 5P MCB 9/10 kA	Nos									1	i	730	
3.20	5-32A FP MCB 9/10 kA	Nos									1	1	1,860	
3.21	5-32A TP MCB 9/10 kA	Nos									1	1	1,380	
3.22	5-32A DP MCB 9/10 kA	Nos									1	1	900	900.00
3.23	5-32A SP MCB 9/10 kA	Nos									1	1	410	410.00
3.24	16-32Amp DP RCCB, 30 mA	Nos									1	1	3,480	3,480.00
3.25	1000mA 4P RCCB/ELCB-MCB	Nos									1	1	17,321.00	17,321.00
3.26	Supply, installation and testing of 63/40 Amp adjustable, TP MCCB with fixed neutral in sheet steel enclosure with incoming & outgoing cable box and ON indication lamp complete as required.	Nos									10	10	13,442.00	1,34,420.00
3.27	Supplying installation testing and commissioning of 10/25/32A DP MCB in IP 54 rated surface/recessed box with the total unit having IP 54 ingress protection with incoming & outgoing cable box for AC indoor unit complete as required.	Nos									1	1	1,829.00	1,829.00
3.28	Supplying installation testing and commissioning of 63 A 4P isolator MCCB in IP 56 rated surface/recessed GI box with the total unit having IP 56 ingress protection for AC Outdoor Units/Lifts/Escalators etc.	Nos									1	1	2,666.00	2,666.00
3.29	Supplying installation testing and commissioning of 125 A 4P isolator MCCB in IP 56 rated surface/recessed GI box with the total unit having IP 56 ingress protection for Station UPS	Nos									1	1	4,748.00	4,748.00
3.30	Supply, installation and testing of 4 way TPN sheet steel enclosure with incoming and outgoing cable, distribution board complete as required.	Nos									1	1	16,368.50	16,368.50
3.31	Supply, installation and testing of 200 amps 4 Pole Isolator in sheet steel enclosure with incoming and outgoing cable box and indication lamps complete as required.	Nos									1	1	18,107.00	18,107.00
3.32	Overload relay		1	1			1					1		-
a.52	4 - 6 A	Nos	1				1				1	1	740.05	740.05
b	6 - 12A	Nos									1	1	740.05	740.05
с	9 - 15 A	Nos									1	1	950.95	950.95
d	30 - 40 A	Nos		-							1	1	2.091.90	2,091.90
e	40 - 65 A	Nos		+							1	1	2,145.10 3,508.35	2,145.10 3,508.35
I	63 - 100 A	Nos	+	+	-	1	+			-	1	-	3,308.33	
3.28	100 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos									1	1	1,41,045.00	1,41,045.00
3.29	75 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos									1	1	1,41,045.00	1,41,045.00
3.30	50 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos									1	1	42,961.00	42,961.00
3.31	10/7.5 HP, Star Delta starter comprising 3 Nos. TP contactor AC-3 duty Auto/Manual switch, Start Stop push button, bimetallic over current relays single phasing preventer and timer & with potential free contacts for remote monitoring and control.	Nos									1	1	36,774.00	36,774.00

TECTION A	FIRE P	TION AND H	IVAC S	STEMS								
	AM	NAR I			GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
									1	1	22,824.00	22,824.00
												-
												-
									1	1	21,576.40	21,576.4
									1	1	16.770.35 9,117.15	16,770.3
									1	1	8.136.75	8,136.75
												289,79,081.02
												-
												-
												-
												-
												-
												-
												-
									5	5	1,54,964.00	7,74,820.00
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	REVISED SCHEDULE-F ELE	CTRICAL I	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description			NAR			665	KCP		CCS PD	7M	Total Oty	Pate (INP)	Amount (INR)
b)	4 nos. 10A/20A SP MCB arranged in a row and controlled by a 20A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped from above contactor (non timer -controlled feeders).	Unit	AMS	MAR	185	KDC	663	KCP	KCP PD	663 PD	211		Kate (INK)	-
	SCADA / BMS CONNECTIVITY Contactor & Timer shall be provided with necessary NO/NC potential free contact & should provide single point to communicate with BMS/SCADA.													-
1.2	Lighting Distribution Boards (LDB) Type-2 as per specification and Drawing as per following details.													-
	One lighting distribution board (LDB) unit consisting of 2 compartments with respective incoming TPN MCBs, DP MCB													
	CRCSs/ELCSs, set of contactors and outgoing SP MCBs each having indications for incoming a tougoing feder status e.g. LDB is combination of LDB /N, LDB /G/LDB /U connected to incoming Supplies from Normal, DG set / UPS respectively including a set of time switches as per specifications and as shown on Drawing and as under:	Nos									2	2	50,847.00	1,01,694.00
	SCADA / BMS CONNECTIVITY Contactor & Timer shall be provided with necessary NO/NC potential free contact & should provide single point to communicate with BMS/SCADA.													-
	Normal INCOMER													-
a)	Inc. 40A TPN MCB													-
b)	1 set of (ON) indicating lamps for each													
	OUTGOINGS feeder													-
a)	24 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication lamps													-
в	UPS									1		1		-
	INCOMER													-
	1 no. 25A DP MCB ELCB/RCCB 1 set of (ON) indicating lamps for each													-
	OUTGOINGS feeder with feeder ON Indication LED Lamps									1		1		
a)	10 nos. 10A/20A SP MCB													-
	SCADA / BMS CONNECTIVITY Contactor & Timer shall be provided with necessary NO/NC potential free contact & should provide single point to communicate with BMS/SCADA.													-
1.3	Lighting Distribution Boards (LDB) Type-3 as per specification and Drawing as per following details.													-
	One lighting distribution board (LDB) unit consisting of 2 compartments with respective incoming TPN MCBs, DP MCB													
	RCCBS/ELCBs, set of contactors and outgoing SP MCBs each having indications for incoming & outgoing feeder status e.g. LDB is combination of LDB /N, LDB /G/LDB /U connected to incoming Supplies from Normal, DG set / UPS respectively including a set of time switches as per specifications and as shown on Drawing and as under:	Nos									1	1	1,17,067.00	1,17,067.0
Α	Normal INCOMER													-
a)	1 no. 40A TPN Contactor with astronomical digital timer													
	1 no. 40A TPN MCB													-
c)	1 set of (ON) indicating lamps for each OUTGOINGS feeder													-
a)	18 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication													
b)	liamps 3 nos. 32A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped from above contactor (non timer -controlled feeders).													-
в	DG													-
	INCOMER													-
a)	1 no. 40A TPN Contactor with astronomical digital timer 1 no. 40A TPN MCB													-
b) c)	1 set of (ON) indicating lamps for each													-
	OUTGOINGS feeder													-
a)	9 nos. 10A/20A SP MCB arranged in three rows and each row controlled by one no. 32A DP ELCB/RCCB with feeder ON indication													-
b)	3 nos. 32A DP MCB + ELCB/RCCB with feeder ON indication lamps tapped from above contactor (non timer -controlled feeders).													-
1.4	Vertical Power distribution boards (VDPN) Type-4 as per specification and as per following details. (ViaDuct													-
	Socket)	Nos									2	2	50,946.50	1,01,893.0
A	INCOMER						<u> </u>					1		-
	1 set of (ON) indicating lamps.						1			1				-
В	OUTGOINGS													-
	8 Nos of 32 TPN MCB SCADA / BMS CONNECTIVITY													-
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													-
1.5	Lighting distribution boards (LDB/PDP) Type-5 as per specification and as per following details. (Adversement DB													-
	Concourse and Platform level) One lighting distribution board (LDB) unit with respective incoming TP MCBs, outgoing TP MCBs and outgoing SP MCBs	Nos									3	3	54,693.40	1,64,080.2
	each having indications for incoming & outgoing feeder status as per specifications and as under:													-
	INCOMER													-
	INCOMER 1 no. 63A Ics = 35kA TPN MCCB 1 set of (ON) indicating lamps.													-

tem	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCD DD	GGS PD	7M	Total Qty	Rate (INR)	Amount (INR
a)	3 No. 32A TP MCBs	Unit	АМЭ	MAR	1143	KDC	005	KUP	KCP PD	003 PD	20	Total Qty	Rate (INK)	Amount (INA
b)	9 Nos of 10A/20A SPMCB arranged in three rows and each row controlled by one no. 32A DP ELCB with feeder (ON) indication													
	lamps. SCADA / BMS CONNECTIVITY													
	All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	All the breakers should be provided with communication racinities a contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
	bioly scalar for an system parameter of the panel. De source a other accessories including software and hardware as required.													
1.6	Lighting distribution boards (LDB/PDP) TYPE-6 as per specification and as per following details.	Nos									12	12	36,364.62	4,36,37
	One lighting distribution board (LDB) unit with respective incoming TP MCBs, DP RCCB and outgoing SP MCBs each having													
	indications for incoming & outgoing feder status as per specifications and as under:													
A	INCOMER													
a.	1 no. 32A TP MCB													
b.	1 set of (ON) indicating lamps.													
в	OUTGOINGS													
a)	18 Nos of 10A/20A SPMCB arranged in three rows and each row controlled by one no. 40A DP ELCB with feeder (ON) indication													
	lamos.													
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with													
	All the breakers should be provided with communication racing a contractor should provide single point to communicate with BM/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.													
														-
	TOTAL FOR DISTRIBUTION BOARDS - ZE.02													16,95,929
E.03	MV CABLING, BUSDUCT AND TRAY													
3.1	Supply, laying, jointing, terminating, testing and commissioning of 1100 V grade, armoured / unarmoured, FRLSZH, XLPE,													
	aluminium(AL) / Copper (CU) conductor cables on existing trays/walls/columns/ indoor/ trenches including the cost of supports with suitable clamps, saddles, hooks, bolts etc. and including the cost of proper dressing of cables, markers providing													
	what suitable champs, soluties, house, buts etc. and including the cost op toper diessing or cables, markets providing identification tags, earthing of glands armouring etc. complete as per specifications, as required and as below.													
	Note 1: All cables above 16 sq. mm are Al Conductor unless specified otherwise.													
а	3.5 core 400 sg mm AL conductor	Mtrs									420	420	1,794.78	7,53,80
b) 3.5 core 300 sq mm AL conductor	Mtrs									2700	2700	1,129.26	30,49,00
	13.5 core 240-samm AL conductor	Mtrs Mtrs									300 720	300 720	814.15 774.08	2,44,24 5,57,33
e) 3.5 core 185-sgmm AL conductor) 3.5 core 150 sg mm AL. Conductor	Mtrs									540	540	499.70	2,69,83
f	3.5 core 120-sgmm AL conductor	Mtrs									420	420	536.90	2,25,49
	13.5 core 95 sa mm AL. Conductor	Mtrs									540	540	563.35	3,04,20
n) 4 core 95 sg mm AL. Conductor) 3.5 core 70-samm AL conductor	Mtrs Mtrs									300 2160	300 2160	408.50 389.40	1,22,55
i	3.5 core 70 sq mm AL. Conductor	Mtrs									1560	1560	320.96	5,00,69
k) 3.5 core 35-sqmm AL conductor	Mtrs									13656	13656	256.06	34,96,75
	13.5 core 25-sqm AL conductor	Mtrs Mtrs									2400 16560	2400 16560	239.54 598.26	5,74,89 99,07,18
) 4 core 16 sg mm CU Conductor) 4 core 10 sg mm CU Conductor	Mtrs									4200	4200	487.34	20,46,82
0	14 core 6 sq mm CU Conductor	Mtrs									300	300	331.58	99,47
р) 4 core 4 sq mm CU Conductor	Mtrs									300	300	266.68	80,00
9) 3 core 6 sq mm CU Conductor) 3 core 4 sq mm CU Conductor	Mtrs Mtrs									900 900	900 900	226.10	2,03,49
s	12 core 15 g mm Co Conductor	Mtrs									1500	1500	95.95	1,43,92
t) 2 core 50 sq mm Cu. Conductor	Mtrs									30	30	732.45	21,97
) 1 core 95 sq.mm. Cu unarm.) 1 core 50 sq.mm. Cu unarm.	Mtrs Mtrs									720 630	720 630	238.00	1,71,36
v	11 core su sq.mm. cu unarm.	MUS									030	030	140.00	88,20
3.2	Cable jointing and termination of cable as per item 1.1 -including cost of supplying and fixing, crimping lugs, double compression													
	brass glands, insulation tape etc. complete as per specifications and as required.													
						1	1		1					
) 3.5 core 400 sg mm AL conductor) 3.5 core 300 sg mm AL conductor	Nos Nos									24 48	24 48	3,176.56 2,748.22	76,23
	1 3.5 core 240-sqmm AL conductor	Nos									24	24	2,379.00	57,09
d	3.5 core 185 sqmm AL conductor	Nos									24	24	1,587.10	38,09
e) [3.5 core 150 sg mm AL, conductor	Nos Nos									12 24	12 24	1,268.00	15,21 29,28
0) 3.5 core 120 sqmm AL conductor) 3.5 core 95 sq mm AL. Conductor	Nos									24	24	821.00	19,28
h) 4 core 95 sq mm AL. Conductor	Nos									24	24	1,542.80	19,70 37,02
	3.5 core 70 sgmm AL conductor	Nos									12 36	12	731.60 625.40	8,77
1	3.5 core 50 sq mm AL. Conductor	Nos									36 24	36 24	625.40 522.74	22,51
1) 3.5 core 35 sqmm AL conductor) 3.5 core 25 sqmm AL conductor	Nos									108	108	374.06	40,39
m) 4 core 16 sq mm CU Conductor	Nos									300	300	363.44	1,09,03
n) 4 core 10 sq mm CU Conductor	Nos	\vdash								252	252	302.08	76,12
) 4 core 6 sq mm CU Conductor) 4 core 4 sq mm CU Conductor	Nos Nos	<u> </u>								252 252	252 252	256.06 213.58	64,52 53,82
) 3 core 6 sq mm CU Conductor	Nos									72	72	1,174.20	84,54
	13 core 4 sq mm CU Conductor	Nos									72	72	880.65	63,40
r														
r	2 core 16 sq mm AL. Conductor) 2 core 50 sq mm Cu. Conductor	Nos Nos									144 10	144 10	853.10 940.50	1,22,84

	REVISED SCHEDULE-F ELEC Description		4146			KDC	666	KCR	KCD DC	666 PT	714	T-t-LO:	Data (TND)	A
Item	/) 1 core 50 sq.mm. Cu unarm.	Unit Nos	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	2M 12	Total Qty 12	Rate (INR) 747.00	Amount (IN 8,964
		1105									12		747.00	0,50
3.3	Supply, laying testing and commissioning of 1.5 sqmm 1100 V grade, armoured, FRLSZ PVC insulated, FRLSZH PVC sheathed													
	copper conductor cables on existing trays/walls/columns/ indoor/ trenches including the cost of supports with suitable clamps,													
	saddles, hooks, bolts etc. and including the cost of proper dressing of cables and including the cost of providing identification tags													
	etc. complete as per specifications, as required and as below.													
	Note : Termination of all control cables to be provided under the above item and as per schematic diagram including the cost of													
	supplying and fixing crimping lugs, compression type brass glands, heavy duty ferrules, insulation tape etc. complete as per													
	specifications and as required.													
		Mtrs										100	229.90	22,99
a	2 C x 1.5 sgmm 4 C x 1.5 sgmm	Mtrs									100 100	100	127.44	22,99
) = C x 1.5 sqmm	Mtrs									100	100	166.00	16,60
d	8 C x 1.5 sqmm	Mtrs									100	100	210.00	21,00
) 10 C x 1.5 sqmm	Mtrs									100	100	268.00	26,80
f	12 C x 1.5 sqmm	Mtrs									100	100	282.02	28,20
	Trunking made of roll-formed sheet steel in white polyster lacquer finish,11 conductors embeded in an integral conductor													
3.4	moulding. 5 mains power lines plus 2x2 conductors for integrating imergency lighting using two independently isolated	Mtrs									10	10	3,012.45	30,12
	circuits, plus 2 control-line conductors.Tool-free connection using electrical feed kit complete as required.Dimensions:4000x60x54								1	1	10	1	5,012.45	55,12
	mm											1		
-														
.5	BUS DUCTS													
5.1	Design, manufacture, testing at works, supplying, Installtion, testing and Commissioning of sheet steel structure Sandwitch type						1		1	1		1		
	TPN "AI" bus duct having neutral cross section equal to phase, 50% Integral earth which is part of housing itself and class F/H													
	insulation and enclosure will be of minimum 1.6 mm GI sheet steel epoxy powder coated paint with approved shade as per													
	specification including suitable earthing conductor through out the length of bus duct. The bus bar will be of Aluminium with													
	radialised edges. Individual sections will not be more than 3 meters long uniblock. One section will be connected to adjacent													
	section by joint system operating by single bolt. Sub assembly should be removable without disturbing the adjacent bus bars.													
	Rates shall be inclusive of all accessories i.e. bends, expansion joint, end feed box, Fire barriers inccluding all required necessary supports etc. as required.(Phase sequence shall be matched at both ends)													
	supports etc. as required.(Phase sequence shall be matched at both ends)													
	1000 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec.													
	1000 amps sandwich busdact with short circuit withstand of 30kk for one sec.	Mtrs									0	0	31,501.20	
)	1600 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec.	Mtrs									0	0	28,800.00	
		inu s									0	0	28,800.00	
2	2000 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec.	Mtrs									0	0	33,285.60	
d	2500 amps Sandwich Busduct with short circuit withstand of 50kA for one Sec.	Mtrs									0	0	43,560.00	
		inu s									0	0	43,300.00	
e	4000 amps Sandwich Busduct with short circuit withstand of 65kA for one Sec.	Mtrs									40	40	86,180.00	34,47,20
5.2	Design, manufacture, testing at works, supplying, Installation, Testing and Commissioning of flanged end Bimetallic flexible													
	Termination with all accessories as required for the following rating of bus duct. The Flange End should be suitable for the													
	Transformers and Panels:													
	1000 amps	Nos									0	0	59.102.40	
)	1600 Amps	Nos									0	0	30,930.00	
-	2000 Amps	Nos									0	0	37.950.00	
	2500 Amps	Nos									0	4	49,215.60 1.69.811.00	6,79,2
	4000 Amps	NUS									4	4	1.69.811.00	0,79,2
.6	Supply, fabrication & installation of perforated hot dipped galvanised double bended cable trays from 2 mm thick GI sheets													
-	continuously connected including horizontal and vertical bends, reducers, tees, and other accessories and duly suspended from													
	the ceiling with suitable size vertical fully threaded G.I rods or suitable size G.I angles supported by 40mm x 40 mm x 5 mm GI													
	angle etc. (or installed on wall supported on suitable G.I.brackets as required) complete as per specifications, as required and as													
	below as per Engineer In-charge.													
	Note: All cable tray, bends, tee, reducer, accessories etc shall be factory fabricated as approved by Engineer In-													
	charge.													
	Note: Trays shall be supported adequately at minimum 1 m distance from the building structure/ ceiling by means of													
	painted/galvanized (as specified) MS structural members secured to the structure by dash fasteners or by grouting. This support		1				1	1	1	1	1	1		
	should be capable of withstanding the weight equivalent of 3m length of the cables that can be laid in the trays. At turns the								1	1		1		
	support has to be double and at both ends of the bend.						1		1	1	1	1		
							L				500	500		
-	a) 600 mm wide x 50 mm deep x 2mm thick	Mtrs Mtrs				-			1	1	500	500 500	1,651.00	8,25,5
	(b) (450 mm wide x 50 mm deep x 2mm thick (c) 300 mm wide x 50 mm deep x 2mm thick	Mtrs									500 3000	3000	981.35 961.70	4,90,6 28,85,1
	1) 200 mm wide x 50 mm deep x 2mm thick 1) 200 mm wide x 50 mm deep x 2mm thick	Mtrs							1	1	140	140	640.74	28,85,1 89,7
	150 mm wide x 50 mm deep x 2mm thick	Mtrs								<u> </u>	2000	2000	587.64	11,75,2
	f) 100 mm wide x 50 mm deep x 2mm thick	Mtrs									0	0	534.54	
	1) 50 mm wide x 50 mm deep x 2mm thick	Mtrs							I		0	0	281.20	
7	Supply, & installation of prefabricated, GI, ladder type cable tray conforming to M & E Specifications continuously connected													
.7	Supply, & installation of prefabricated, GI, ladder type cable tray conforming to M & E Specifications continuously connected including horizontal & vertical bends reducers, tees, coupling plate, nut bolts washers etc. The side runners shall be 100 x 20 x 2.5								1	1		1		
	including norizontal & vertical bends reducers, tees, coupling plate, nut bolts wasners etc. The side runners shall be 100 x 20 x 2.5 mm and centre rungs shall be of size 30 x 15 x 2.5 mm with centre to centre distance of 250 mm, as required. The rate shall								1	1		1		
	mini and centre rungs shar be of size 50 x 15 x 2.5 mini with centre to centre distance of 250 mini, as required. The rate shall		1			1	1	1	1	1	1	1	1	
	include the supporting arrangement with suitable size fully threaded rod or G I suitable size angles as required													
	include the supporting arrangement with suitable size fully threaded rod or G.I suitable size angles as required. Note: All cable tray, bends, tee, reducer, accessories etc shall be factory fabricated as approved by Engineer In-													

	REVISED SCHEDULE-F ELE													
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
a	900 mm wide x 2.5 mm thick	Mtrs									100	100	1,062.00	1,06,200.0
b	600 mm wide x 2.5 mm thick	Mtrs									100	100	885.00	88,500.0
0	450 mm wide x 2.5 mm thick 300 mm wide x 2.5 mm thick	Mtrs Mtrs									100 100	100 100	590.00 1,030.00	59,000.0 1,03,000.0
e	150 mm wide x 2.5 mm thick	Mtrs									100	100	523.92	52,392.0
														-
7	Supply, installation of sheet steel raceways, Izrunking, fabricated from 2.0 mm thick GI with minimum counting thickness 260 gm / sq. meter on both sides with removable cover plate complete with counter sumk cadmium plated brass screws, benks, tea- junctions, cross junction tap-off boxes of adequate size etc., in floor and suspended from the ceiling with required support. Coloured Raceways shall be provided as per Engineer In-charge. Rendered electrically continuous as approved and of following sizes.													-
а	100 x 100 mm raceway	Mtrs									0	0	1,009.00	1
b	100 x 50 mm raceway	Mtrs									100	100	1,888.00	1,88,800.0
c	150 x 100 mm raceway	Mtrs Mtrs									0	0	2,242.00 683.00	-
d e	150 x 150 mm raceway 200 x 50 mm raceway	Mtrs									100	100	2,935.00	2,93,500.0
-														-
8	Steel Works Supply, fabrication & installation, of fabricated GI steel work conforming to M & E specification and tender doct, to support GI cable trays, bus duct, light fixtures, conduit wirings, Bracket ,& other electrical works, as required.	KG									1500	1500	133.34	2,00,010.0
	TOTAL CARRIED TO SUMMARY OF MV CABLING BUSDUCT AND TRAY - ZE.03													357,57,689.72
75.04			-	1		1	1	1		1		1		
ZE.04	INTERNAL WIRING & ACCESSORIES			1		1	1	1		1		1		-
	Whether explicitly stated in the schedules below or not, the following must be complied with:													-
	For supply and installation, of conduits, cable trunking, raceway, flexible conduits and wiring,													-
	Wires supplied must conform to relevant clauses of tender doct. And Specifications.													-
	Wiring accessories must conform to relevant clauses of tender doct. And Specifications.													
	In case of any contradiction between BOQ and tender doct. And specifications, the stringent condition of the two will apply.													
4.1	Supply and laying of Lighthng Submains/circuit mains (3R x 2.5 Sqmm) in concealed or surface conduit system with GI conduits & 1100 V grade, multi strand coper conductor, FRLSZH-PKC insulted wires for phase, neutral & earth, shall include end termination. The conduits shall be complete with bends, JBs etc. The laying cost shall also include chipping works if necessary.													-
а	Primary Point (30 meter)	Points									250	250	6,079.36	15,19,840.0
b	Secondary Point	Points									2300	2300	2,138.16	49,17,768.0
4.2	Supply and laying of circuit wiring along with earth wire with the following size of FRLSZH PVC insulated copper conductor single core cable in GI conduit as required. Compete in all respect to the entire satisfaction of engineer-in-charge													-
а	3 R of 1 c x 2.5 Sqmm	Mtrs									9750	9750	153.40	14,95,650.0
b	3R of 1 c x 4 Sgmm 3c x 2.5 Sgmm	Mtrs Mtrs									2400 100	2400 100	205.00	4,92,000.0
c		Hu 3									100	100	151.00	
4.3	Supply and laying of Power Submains/circuit mains (3R x 4 Sqmm)in concealed or surface conduit system with GI conduits & 1100 V grade, multi strand copper conductor, FRLS2H-PVC insulated wires for phase, neutral & earth, shall include end termination. The conduits shall be complete with bends, JBs etc. The laying cost shall also include chipping works if necessary.													-
а	Primary Point (30 meter)	Points									210	210	6,185.20	12,98,892.0
b	Secondary Point	Points				1		1			420	420	2,926.93	12,29,308.5
4.4	Supply and laying of circuit wiring along with earth wire with the following size of FRLSZH PVC insulated copper conductor single core cable in GI conduit as required. Compete in all respect to the entire satisfaction of engineer-in-charge													-
а	3R of 1 c x 4 Sq sqmm	Mtrs									8400	8400	206.50	17.34.600.0
b	4c x 6 sqmm	Mtrs		1			1			1	2120	2120	484.00	10,26,080.0
4.5	32A 3pin industrial socket outlet with 32A DP RCCB 30mA with MCB shall be standard powder coated MS sheet steel IP 55 enclosure, separately lockable	Each									30	30	8,786.55	- 2,63,596.5
4.6	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 6/16A 1P+N+E water proof socket with switch as required.	Points									10	10	2,190.08	- 21,900.8
4.7	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 6/16A 1P+N+E socket with switch as required.	Points									0	0	649.00	-
4.8	SBF suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 32A 3P+N+E water proof socket with plug as required.	Points	-						-		0	0	7,670.00	-

	REVISED SCHEDULE-F ELE		FIRE PROI	ECTION AP	ND HVAC S	YSTEMS							
Item	Description	Unit					665	КСР	GGS PD	7M	Total Oty	Rate (INR)	Amount (INR)
4.9	S&F suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing of 20A 1P+N+E socket as required for AC.	Points	And	inat		no c	005	nei	00010	5	5	1,003.00	5,015.00
4.10	S&F of 32 A 4P isolators with box complete as required by the engineer	Points								0	0	4,130.00	-
4.11	S&F of 63 A 4P isolators with box complete as required by the engineer	Points								0	0	6,195.00	-
4.12	Supply installation testing and commissioning of Occupancy sensor based movement detector with a build-in switch suitable for									-			-
4.12	Suppry instantation result and commissioning of Occupancy seriou based inversion detector with a double in which seturate in recessed mounting at a height of 3m with detection pattern of 6m X 8m. The sensor should have an operating voltage range of 230VAC +/10%; 50/60Hz and should be able to take upto 6A of electrical load and should be able to provide the switch off delay from 1 minute to 30 minutes range. The sensor should be in compliance with EN/IEC 60669-2-1, IEC (EN) 60669-2-1, IEC (EN) 61547, IEC (EN) 55015 and IEC (EN) 55022, class B.	Nos								5	5	3,293.65	16,468.2
4.13	Supply and installation of GI conduiting complete with GI junction and pull boxes, GI fish wires as specified and as shown below.												-
а	25 mm dia 1.6mm thick	Mtrs								100	100	182.40	18,240.0
b	32 mm dia 1.6mm thick	Mtrs Mtrs								20	20	255.55	5,111.00
с 4.14	50 mm dia 2.0mm thick Supply and providing of PVC cable trough complete with all fittings and accessories	Mtrs								10 100	10	421.80	4,218.00
		THUS									100	221.00	-
	TOTAL CARRIED TO SUMMARY INTERNAL WIRING AND ACCESSORIES ZE.04												140,85,888.05
E.05	LIGHTING FIXTURES & FANS												-
1	Lighting Fixtures												
1													-
1	Supply, installation, testing & commissioning of light fittings including all accessories e.g. ballast, HPF condensers, lamps, holders, surface/recess mounting arrangement etc. including necessary supports, accessories and hardware as per specifications & as required at site and as below:												-
	Luminaire minimum specifications and requirements												-
_													-
а	Luminaires should operate at $+/-6\%$ voltage fluctuation for continuous use to comply to IEC. PF > 0.95 for HF ballasts; for EM circuits PF > 0.85 with capacitor.												-
b	All the components including the internal wiring of the luminaries to be used shall be manufactured of material, which are of low smoke and zero halogen type. All luminaires shall be manufactured to relevant sections of IEC60598 or other approved international standards and the type tests for all luminaries shall be provided.												-
с	All internal wiring within the lighting fixtures shall be heat-resisting cables.												-
d	All light fixtures model no. specified are tentative and contractor shall ensure latest generation model no. shall be provided in case of any change in technical specification / obsolete model no. by light manufacturer at the time of installation.												-
	REFERRED STANDARDS FOR LED LIGHTING FIXTURES												
	IS: 513 Cold-rolled low carbon steel sheets and strips												-
	EC 60529 Classification of degree of protections provided by enclosures. EN 55015, CISPR15 Limits and methods of measurement of radio disturbance characteristic of electrical lighting and similar												-
	equipment. IEC 62031 LED modules for general lighting-Safety requirements												-
	EN 61547 Equipment for general lighting purposes – EMC immunity requirement.												-
	EN 60929 Performance, AC supplied electronics ballast for tubular fluorescent lamps performance requirement.												-
	IEC 60598-2-1 Fixed general purpose luminaries												-
	IEC 60598-1 Luminaires - General requirement and tests IEC 61000-3-2 Electro Magnetic compatibility (EMC) -Limits for Harmonic current emission (equipment input current = 16												-
	Amps, per phase. IEC 60068-2-38 Environmental Testing : Test Z- AD: composite temperature/humidity cyclic test												-
	IEC 61347-2-13 Lamp control gear : particular requirements for DC or AC supplied electronic control gear for LED modules.												-
	IS 10322 Specification for the luminaries												
	IS 4905 Method for random sampling												-
	LM 79 LED luminaire photometry measurement. LM 80 Lumen Maintenance												
	IEC 62384 DC or AC supplied electronic control gear for LED modules performance requirements												-
	IEC/PAS 62612 Self-ballasted LED lamps for general lighting services- Performance												-
5.1	Supply, Installation, Testing & Commissioning of 38W LED Recess mounted Luminaire with 5700K colour temperature having 50000 burning hours life with minimum 70% lumen maintenance, CRI should be greater than 80, system lumen output should be minimum 3500 lumens and efficacy > 100 lm/W. Housing should made of CRCA with PMAA diffuser and shall be with Electronic driver. The luminaire shall have life of 50000 hours, power factor > 0.9 with THD > 110%. LED make should be form CREF / Nichia	Nos								155	155	7,198.00	- 11,15,690.00

13 13 14<				FIRE PROTECTIO									
Image: Selicities with the subtlet with control with selecting with the subtlet with the subtlet with subtlet with with the subtlet with the subtlet with th		System lumen efficacy > 100 Lumen/Watt, System Luminous flux of >=3200 lumens, System Wattage <=43W with 50,000 hours burning life. Colour rendering index > 70 and Colour temperature 4000K. RCA housing with high efficiency opal diffuser. Luminaire sealed from bottom. Inbuilt gear . Zero maintenance, Zero mercury. Driver Surge protection > 1.5kV. Electronic In-Built PF > 0.9, PHD < 100%, JEC Compliant for Safety, Performance & BMI. The type shall be of 2x2: EQUVALENT		AMS NA	R INS	KDC	GGS	KCP KCP PD	GGS PD				
actionmutor of system statuse not more than 720. The luminate table with dedeted optics is provide process light of the system statuse not more than 720. The luminate table with dedeted optics is provide process light of the system status on externational system status on externati	5.3	Iuminaire shall be suitable for Wall / conduit/suspended/surface mounting. With a minimum system level lumen package of 3900 Iumens should have a maximum system level wattage of 42W giving a system efficacy of > 100 Im/W. The product is available in colour temperatures of 6500K with CR1×80 and a system iffetime of 40,000 burning hours at 70 percent lumen maintenance. It has electronic driver with a pf>0.95 and THD <= 10%. The luminaire is 1P 20 protected. Operating voltage range of 140-270 V AC. LED make should be from CREF(Nichi)#Philes Lumileds/LGT. The diffuser shall be made of polycarbonate. The luminaire shall be	Nos							100	100	3,776.00	3,77,600
with slim extruded housing hiving with -?Space (4.307) Not a maximum system (4.007) (4.307) Not a maximum system	5.4	cast aluminium of system wattage not more than 72W. The luminaire shall be with dedicated optics to provide precise light distribution of symmetric base maple. The luminaire shall be designed to meet its specifications on performance & lifetime at a design ambient temperature of 45 deg C. A specially designed heat management system to ensure luminous efficacy >=102 In/ W for the system and ensure lumen depreciation upto 30% over 50k burning hours. The luminaire is designed to meet IP 65 classification and is compliant with relevant immunity, safety and performance and EMI standards. The system lumens shall not be less than 7200 lumens with 5000 KCCT. The CI shall be > 70. The luminaire shall be able operate from 190 - 270V AC, 50Hz with > 0.9 PF & THD <=20%. The luminaire shall have an in-built surge protection upto 31%. The LEDs shall be of 5MD type (not COB type). The luminaire shall have an in-built surge protection upto 31%. The LEDs shall be of 5MD type (Dt CCD to CDS type). The luminaire shall have an in-built surge protection upto 31%. The LEDs shall be 2MD LEDZ SC WIDE CASE (LEDZ SC WIDE LEDZ SC W	Nos							70	70	21,240.00	14,86,800
aliminum with white powder coating, the length of the trunking system shall be 3.50 3.6m the trunking system shall be 3.50 3.6m the trunking system shall be 3.60 3.50 3.6m the trunking system shall be 3.60 3.50 3.6m the trunking system shall be 3.60 3.50 3.5m the trunking system shall be 3.60 3.5m the 3.5m the 3.60 3.5m the 3.60 3.5m the 3.60 3.5m the 3.5m the 3.60 3.5m the 3.5	5.5	with slim extruded housing having width+75mm. With a minimum system level lumen package of 3900 lumms should have a maximum system level wattage of 42W. The LED used in the system shall be best in class ensuring system efficacy of at least 100 lumen/watt. Colour rendering index (CRI) >80. The trunking system shall be available in single sections of up to 3M length to ensure continuity along the length of the platform. The electronic driver used in the fixture shall be actuated current type driver with power factor > 0.9 and Tho < 10%. The CT shall be 4000K. Similar to Philips: LL1999 X1XDLED40-4000 PSE ODWH -	Nos							120	120	8,850.00	10,62,000
diffusion: The reflector shall be of objectarboards and heat sink shall be of die-cast aluminium. The wattage of the luminaire shall be avoid by the shall be avoid the	5.6	aluminium with white powder coating, the length of the trunking system shall be 3.5 to 3.6m the trunking system shall be	Nos							40	40	2,655.00	1,06,200
system i umeres > 3400. The luminaire shall be with operating voltage 140-270 with PF > 0.9. The LED shall be of SMD type only with CCT 5700K CR1 > 20. The luminaire shall be with operating voltage 140-270 with PF > 0.9. The LED shall be of SMD type only with CCT 5700K CR1 > 20. The luminaire shall be with operating voltage 140-270 with PF > 0.9. The LED shall be of SMD type only with CCT 5700K CR1 > 20. The luminaire shall be with operating voltage 140-270 with PF > 0.9. The left of luminaire shall be strong the left of luminaire shall be store. The luminaire shall be store the light distribution shall be 2000 hours at 170. The luminaire shall be with 0% ULOR. The pole height shall be 30 mm FFL. The life of luminaire shall be store that the Philes BG400 LED 351. CW MR FG S1 WTTH BRACKET ZG400 L TYPE LUMACUBE AND POLE ZGF400 3M POLE Complete with pole & accessories 5.9 Supply, Installation, testing and commissioning of LED Flood light with system power not more than 70W High efficiency glass cover with Assthetically Designed LIGF POLO Loursing with Black corrosing the Bda on LED 351. CW MR FG S1 WTTH BRACKET ZG400 L TYPE LUMACUBE AND POLE ZGF400 3M POLE Complete with pole & accessories 5.9 Supply, Installation, testing and commissioning of LED Flood light with system power not more than 100 Lumer/Wat for the light future. The system lumers and labe PC 200 LED 251 CEV MR FG S1 WTTH BRACKET ZG400 L TYPE LUMACUBE AND POLE ZGF400 3M POLE Complete shall provide LM00 and LM 79 step start in a start and the provide LM00 and LM 79 step step start provide LM00 and LM 79 step step step step step step step step	5.7	diffuser. The reflector shall be of polycarbonate and heat sink shall be of die-cast aluminium. The wattage of the luminaire shall be with not more than 18W. The efficacy of the downlighter shall be $\ge 100 \text{ in / W}$. The luminaire shall be mounted using spring clip. The CR of the luminaire shall be ≥ 80 . The luminaire shall be ≥ 80 .	Nos							410	410	3,776.00	15,48,160
cover with Aesthetically Designed LM6 PDC housing with Black corrorsion resistant polyester Powder coating, IP668 LK207 with operating voltage from 140-270V4C, 50 Hz, with EU LIP de 50000 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy not less than 100 LIP of 2010 Burning House (BL207) with system efficacy is a system of the system vitage shall be not more than 118 Wand system efficacy is a system of the less than 1000 lip efficiency (Blass cover, Te system vitage shall be not more than 118 have an efficacy > 1000 ///. The luminaire shall not be more than 147 x 271 LiB of 2010 ///. The luminaire shall be PoS, Class I protected. The dimension of the luminaire shall not be more than 447 x 271 LiB of 1000 ///. The luminaire shall not be more than 147 x 271 LiB of 1000 ///. The luminaire shall not be more than 447 x 271 LiB of 1000 ///. The luminaire shall not be more than 447 x 271 LiB of 1000 ///. The luminaire shall not be more than 447 x 271 LiB of 1000 ///. The luminaire shall not be less than 1000 ///. The luminaire shall not be less than 1000 ///. The luminaire shall not be more than 447 x 271 LiB of 1000 ///. The luminaire shall not be liber than 447 x 271 LiB of 1000 ///. The luminaire shall be 2000 //. The luminaire shall not be more than 447 x 271 LiB of 1000 ///. The luminaire shall not be liber than 447 x 271 LiB of 1000 //. The luminaire shall not be liber than 447 x 271 LiB of 1000 //. The luminaire shall not be liber than 447 x 271 LiB of 1000 //. The luminaire shall not be liber than 447 x 271 LiB of 1000 //. The luminaire shall not be liber than 457 x 271 LiB of 1000 /	5.8	system lumens > 3400. The luminaire shall be with operating voltage 140-270V with PF > 0.9. The LED shall be of SMD type only with CCT 5700K CRI > 70. The luminaire shall be with PF 66, IK 10 and Electrical protection Class. I The luminaire shall have an efficacy > 100 Im /W. The luminaire shall comply to IS 10322, IEC 60698. The light distribution shall be served lighting distribution. The housing shall be of die-cast aluminium with flat glass cover. The luminaire shall be with 0% ULOR. The pole height shall be 3m from FFL. The life of luminaire shall be > 50000 hours at L70. The luminaire manufacture shall submit LM79 and LM80 reports from NABL accredited lab. The luminaire shall be supplied with square shaped pole of height > 3.0m. The base plate dimension shall be 300m x 300mm with 4 nos of holes of dia 15mm. Equivalent to Philips B6F400 LED 35L CW MR FG	Nos							10	10	44,250.00	4,42,500
efficiency Glass cover. The system wattage shall be not more than 11SW and system lumen output shall not be less than 10000 lumens. The Driver Efficiency : > 85% and Life 120, 50k Hrs. Colour temp shall be 570k. The luminaire shall be provided with Graduation disk for aiming and Sultable 'C' clamp mounting. The luminaire shall be provided shall be IP 65, Class I protected. The dimension of the luminaire shall not be more than 427 x 237 x 163mm (H x W H). The luminaire shall not being the shall provided to the luminaire shall not be more than 427 x 237 x 163mm (H x W H). The luminaire shall not being more than 13%, The supplies shall provide that accredited LAB	5.9	cover with Aesthetically Designed LM6 PDC housing with Black corrosion resistant polyester Powder coating, IP66 & IX2:07 with operating voltage from 140-270VAC, 50 Hz, with LED Life of 50000 Burning Hours @L70 with system efficacy not less than 100 Lumen/Watt for the light fixture. The system lumen shall be > 7000 lumens. The supplier shall provide LM80 and LM 79 test	Nos							25	25	18,880.00	4,72,000
	5.10	efficiency Glass cover. The system wattage shall be not more than 115W and system lumen output shall not be less than 10000 lumens. The Driver Efficiency: > 85% and Life 120, 50k Hrs. Colour temp shall be 5700k. The luminaire shall be provided with Graduation disk for aiming and Suitable 'C' clamp mounting. The luminaire shall have an efficacy > 100lm /W. The luminaire shall be 1P 65, Class 1 protected. The dimension of the luminaire shall not be more than 447 x 327 x 163mm (H x W x H). The luminaire shall not weigh more than 13kg. The supplier shall provide LM80 and LM 79 test reports from NABL accretited LAB	Nos							10	10	41,300.00	4,13,00

Name of Work: CONSTRU

	REVISED SCHEDULE-F ELEC									000 Pr				
Item 5.11	Description to the system of the system of the system of the system of the system lumen output of 600 lumens and a system efficacy of 100 lumen/watt The luminarie shall be IP66 & IK09 rated and shall have a CRI of 70. The housing of luminarie is made of high pressure die cast aluminium with front cover made of polycarbonat diffuser. Similar to Philips WT202W LED 6S and must conform to ingress Protection Classification of IP54	Unit Nos	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	2M 50	50	Rate (INR) 1,479.15	Amount (INR) 73,957.50
5.12	Supply, Installation, testing and commissioning of 4ft linear recess mounted light fixture with a system efficacy of at least 110Im/W and nominal system lumen output of 2600lumens. CRI greater than 80, SDCM-5 and the fixture CCT shall be available in 4000 as well as 6500K. The luminaire shall have a total harmonic distortion factor of not more than 10% and power factor of at least 0.9. The width of the fixture shall not be more than 60mm. The fixture shall have an extruded aluminum housing with an anodized finish and high efficiency extruded polycarbonate diffusion. The fixture shall have an extruded aluminum housing with an anodized finish and high efficiency extruded polycarbonate diffusion. The fixture shall have 17mm and width of the fixture shall not be more than 60mm. The luminaire shall have Class B serviceability and a life class of at least 50k hours at L70850. The luminaire shall be available in options of continuous as well as standalone versions. It should also have options of fixed output as well as DALI dimmable versions. LM79 and LM80 reports to be available similar to Philips RC780B LED 265	Nos									370	370	10,619.00	- 39,29,030.00
5.13	Supply, installation, testing and commissioning of LED round downlighter with > 1600 lumens with 4000K CCT. The optic shall be diffuser. The reflector shall be of polycarbonate and heat sink shall be of die-cast aluminium. The wattage of the luminaire shall be with not more than 18W. The effector of the downlighter shall be >100 ln / W. The luminaire shall be mounted using spring clip. The CRI of the luminaire shall be >80. The luminaire shall be with etectronic driver with THD < 10% and FF > 0.9. The driver shall comply to EC 62384 , IEC 61347-2-13, IEC 61547, EMI- CISPR15 standards. Equivalent to Philips: SM251C LED15S-4000 PSU WH	Nos									180	180	1,508.00	2,71,440.00
5.14	Supply, installation, testing and commissioning of LED round downlighter with > 1200 lumens with 4000K CCT. The optic shall be diffuser. The reflector shall be of polycarbonate and heat sink shall be of die-cast aluminium. The wattage of the luminaire shall be with not more than 12W. The efficacy of the downlighter shall be >100 ln / W. The luminaire shall be mounted using spring clip. The CR1 of the luminaire shall be >80. The luminaire shall be with electronic driver with THD < 10% and PF > 0.9. The driver shall comply to EC62384 , IEC 61347-2-13, IEC 61547, EMI- CISPR15 standards. Equivalent to Philips: SM250C LED125-4000 PSU WH	Nos									10	10	1,141.00	11,410.00
5.15	Supply, Installation, Testing & Commissioning of LED Wall mounted linear batten fixture (1200mm length approx.), Aluminium housing, high optically efficient translucence diffuser complete with driver, PF>0.9, THD < 20%, rated life of L-70@ 50,000 hours having minimum system lumen output of 2000 Lumens and system efficacy of minimum 100 Lumens / watt with CRI ≥ 80. Similar to PHILIPS BN108C LED 20S PSU	Nos									1010	1010	1,049.00	- 10,59,490.00
														-
	Fans													-
5.16	Supply and installations of 230 V, 1-phase, 1440 RPM, sweep of appx. 400mm Bracket fan including mounting bracket, blades, starters & other standard accessories complete as required.	Nos									10	10	1,879.00	18,790.00
5.17	Supplying and installations of 230 V single phase, 1400 mm sweep celling fans with electronic regulators including all standard accessories complete, mounting of regulator on grid plate & MS BOX etc. and suitable length down rod, duly painted, not exceeding minimum fan height of 2.4 m from floor as required and as below.	Nos									10	10	2,136.98	- 21,369.80
5.18	Supply, installation, testing and commissioning of exhaust fan with fan guards on both sides, double ball bearings, class-E insulation, capacitor (pf 0.90 or better) complete with all other accessories as per IS 2312 and as required, of following sizes:													
a)	Size 450 mm dia, 1400 rpm	Nos									0	0	3,232.85	-
b)	Size 300 mm dia, 1400 rpm	Nos									0	0	8,160.50	-
<u>3</u> a	Lighting Control System Supply, Installation, Testing and commissioning of Lighting control panel to achieve 33%, 66% and 100% on/off the lighting. The Lighting Control System shall be integrated with the E& M SCADA. Each lighting circuit from the lighting control and control and oncontrol and graphic be controlled by the SCADA between the LCP and RTU.The Schedule for control and monitoring of lighting circuits and graphic of lighting control foyset monfiguration such as graphic, layout, setting, etc., shall be adjusted to harmonize with Architectural finishes. This is also applied to third party vendors interfaces with the system. The lighting control system shall comply with the following codes and standards: (1) IEEE 802: Standard for Information Technology – Telecommunications and Information exchange between systems (2) IEC 60529/1989 : Degree of protection provided by enclosures (IP Code) (3) IEC 60255 : Electrical Installation of Buildings													-
b	LX Lighting Control Panels with encloser,24 Relay Spaces, Relays Ratings : 120, 277, and 347VAC 20 Amp Single Pole Input: 120/277/347VAC multi-tap transformer.	Nos									4	4	3,09,695.72	- 12,38,782.8
		Nos									4	4	69,913.82	2,79,655,28
с	Power Supply for LX Panel	NOS												
c	Power Supply for LX Panel I X Switches for Manual Override, 5 Switches, White Color:	Nos									10	10		1.14.424.60
c d	Power Supply for LX Panel LX Switches for Manual Override, 5 Switches, White Color Graphic User Interface for LX Panel for Local Control										10	10	11,442.46 35,851.94	-

	REVISED SCHEDULE-F ELE													
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty		Amount (INR)
f	PC Integration Tool for remote controlling Panels Via IP Address Input: 120VAC	Nos									4	4	2,25,663.20	9,02,652.
g	Building Automation multi-protocol gateway (BACnet, Metasys N2 by JCI, and Modbus) for providing control and access to LX Network Lighting Control Panel system Input: 24VDC	Nos									4	4	1,60,570.86	6,42,283.4
h	Power Supply for ProtoCessor Input: 100-240VAC,													-
	1.5A Output: 24V. 1.5A	Nos									4	4	572.30	2,289.
i	Control Cable for LON Communication between Panels (100 Ft Reel)	Nos									4	4	12,407.70	49,630.
1	Surface Mounted Cabinet for LX Panel Accessories	Nos									4	4	4,068.64	16,274
	TOTAL CARRIED TO SUMMARY LIGHTING FIXTURE AND FANS - ZE.05													158,57,938.
ZE.06	PROTECTIVE EARTHING													
6.1	Earthmat													
6.1.1 6.1.2	Supply, laying, testing and commissioning of 30 mm dia M5 rod for earth mat grid conductor (at 500mm or deeper as per the final approved design as per the site condition) as per specifications including lap (of not less than 150mm) & croas weld joints and providing bitumin coat at every joint as required. Risers from earth mat to be brought out as per approved drawings and specifications. (Cost of risers not included in this term). Supply, laying, testing and commissioning of vertical earth electrodes of 30 mm dia MS rod, 3 m deep from earth mat including weld joints with earth mat as per approved drawings and specifications. The weld joints to be provided with bitumin coats.	Lumpsum									1	1	3,65,800.00	3,65,800
6.2	Providing and making plate earthing station including the cost of 600 mm x 600 mm x 6.3 mm G. I. plate electrode, 15 mm dia G.I.watering pipe, CI funnel with wiremesh charcoal/coke , salt, all earth work, masonry enclosure with frame,hinged cover plate having locking arrangement,Disconnecting links, complete as per IS 3043:1987 for earthing.													
6.3	Providing and making plate earthing station with 600mm x 600 mm x 3.15 mm Cu plate electrode, 50 mm dia G.I. watering pipe, CI furnel with wiremesh charcoal/coke, salt, all earth work, masonry enclosure with frame, hinged heavy duty RCC top cover plate having locking arrangement,Disconnecting links, complete as per IS 3043:1987 for earthing.	Nos									10	10	35,400.00	3,54,000
6.4	Supply, Installing,Testing and commissioning of 50mm dia ,3m length ,pipe in pipe Chemical earth electrode complete as required as per IS 3043-1987 for earthing.	Nos										0	14,750.00	
6.5	Supply and laying,Testing and commissioning of copper/GI Strips/wire for interconnecting the earthing stations ,panels,DBs etc. of the following sizes in built up trenches /surface/wall/ground complete with holes & fixing_jointing / terminating accessories as per specifications & drawing as required. (Quantity shall be paid as per the actual measurement as executed, however direct measurement shall not exceed the quantity indicated in drawing approved.													
_		Mtrs									2000	2000	305.90	6,11,80
a h	75 mm x 6 mm GI strip 50 mm x 6 mm GI strip	Mtrs									2000	1000	236.00	2,36,000
c	25 mm x 6 mm GI strip	Mtrs									5000	5000	141.60	7,08,000
d	20 mm x 3 mm GI strip	Mtrs									100	100	123.90	12,39 2,41,90
e f	50 x 6 mm Cu strip	Mtrs Mtrs									100	100 100	2,419.00 112.10	2,41,90
I	8 SWG / 4 mm diameter, copper Wire	PILIS									100	100	112.10	11,210
6.6	Supply, laying and testing of unarmoured, stranded copper conductor, Low Smoke Zero Halogen, green coloured cables of following sizes, conforming to BS 7211 and Section E02 of M & E Specifications, for earthing, including termination of the same by copper lugs at both ends.													
		M									-	<u>^</u>		
a b	1 x 6 sq. mm 1 x 10 sq. mm	Mtrs Mtrs	-				1				0	0	65.00 84.00	
C	1 x 16 sq. mm	Mtrs									0	0	180.00	
d	1 x 70 sq. mm	Mtrs									Ő	0	606.00	
e	1 x 150 sg. mm	Mtrs									0	0	1.247.00	
	Note-1: In case of non availability of any of the sizes mentioned above, next higher size available in market shall be provided at		-	-			<u> </u>							
	the same rate. Note-2: No additional payment will be made for providing Main Earth Terminals (made out of GI/Cu strips from within the above sizes). The METs will required to be fixed on walls as required and will be required to be provided with 12/16/20mm holes for connections of individual equipments including of other contractors'.													
6.7	Extra for bituminous coating and hessian tape wrap or polyethylene faced hessian complete for buried G.I/Cu strips as per specifications and drawings as required.	Mtrs									0	0	75.00	
6.8	Extra for G1 / Electrolytic Copper test links/ termination With building pier continuity conductor including termination plate, nut& bolts,fixing/welding etc as per specifications and as required.	Nos									0	0	252.00	
	TOTAL CARRIED TO SUMMARY PROTECTIVE EARTHING ZE.06		1				1					-		25,41,100

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
ZE.07	LIGHTNING PROTECTION													-
1	Providing and fixing of stainless steel SS-304 air terminations, base plate and clamping of down conductor complete with base plate, concrete coping, fixing accessories and clamping with down conductor etc. complete as required as per specifications.	Nos									20	20	1,871.00	37,420.00
2	Supplying and laying of the stainless steel SS-304 strip down conductor size 25 x 3 on surface/wall / parapet/ shaft complete with joints, bimetailic connectors, testing links & other fixing accessories and clamping/ connection with earth terminations as per specifications & drawing as required.	Mtrs									2200	2200	320.96	7,06,112.00
3	Supplying and laying of the stainless steel SS-304 strip Earth terminations with burried conductor size 25 x 3 with bituminous coating and covered with PVC taping complete as per specifications & drawing as required.	Mtrs									1800	1800	240.72	4,33,296.00
4	Earth terminations pit as per IS 3043 with 50 mm dia GI perforated pipe complete with funnel, Wire mesh, Masonary Chamber with Heavy duty cover etc. complete as per specification and drawing as required.	Nos									20	20	5,341.86	1,06,837.20
	TOTAL CARRIED TO SUMMARY LIGHTNING PROTECTION ZE.07													12,83,665.20
														-
ZE.08	EXTERNAL LIGHTING													-
1	Poles													-
8.1.1	9 m Octagonal pole hot dip galvanised with top bottom dia 70/155 mm , thickess 3 mm , base plate 260 mm X 260 mm X 16 mm , with single arm bracket 1.5 m with required concrete foundation including foundation bolts, nuts and accessories. The rate shall inclusive of 2x40 mm dia G.I pipe for cable looping excluding cables and other electrical accessories	Nos									5	5	20,701.00	1,03,505.00
8.1.2	9m Octagonal polem hot dip galvanised with top bottom dia 70/155 mm, thickess 3 mm, base plate 260 mm X 260 mm X 16 mm, with double arm bracket 1.5 m with required concrete foundation including foundation bolts,nuts and accessories. The rate shall inclusive of 2x40 mm dia G.I pipe for cable looping excluding cables and other electrical accessories	Nos									5	5	21,830.00	1,09,150.00
8.1.3	7m Octagonal polem hot dip galvanised with top bottom dia 70/130 mm , thickess 3 mm , base plate 220 mm X 220 mm X 16 mm , with single arm bracket 1.5 m with required concrete foundation including foundation bolts, nuts and accessories. The rate shall inclusive of 2x40 mm dia G.I pipe for cable looping excluding cables and other electrical accessories	Nos									5	5	17,388.00	86,940.00
8.1.4	7m Octagonal polem hot dip galvanised with top bottom dia 70/130 mm , thickess 3 mm , base plate 220 mm X 220 mm X 16 mm , with double arm bracket 1.5 m with required concrete foundation including foundation bolts,nuts and accessories. The rate shall inclusive of 2x40 mm dia G.I pipe for cable looping excluding cables and other electrical accessories	Nos									5	5	18,493.00	92,465.00
8.1.5	Ornamental Cast iron Pole with double arm bracket, of total height 3500mm nominal above the foundation top level fabricated with cast iron embellishment, joints, column sections etc re-inforced internally with a pipe inside. The bottom column should have accommodation to mount MCB, Bakelite sheet and connector. The pole shall be painted with polyurethane paint of approved colour finish with supply of Foundation bolt M16*600. Similar to BAJAJ Make : ALEXANDER 3.5 M or equivalent	Nos									10	10	59,256.00	- 5,92,560.00
8.1.6	Supply, installation, testing and commissioning of Decorative Light 40W LED Luminaire which shall be black painted Die cast aluminium pole cap with top mounting arrangement for post top having optical compartment tightness level shall be IP65 The LED color temp shall be 5700 K. Two fittings required on each Edgar Pole. Similar to BAJAJ MAKE:- GLORILILLY 40W LED or equivalent.	Nos									20	20	16,322.00	3,26,440.00
8.1.7	Ornamental Cast iron Pole with of height 3500mm nominal above the foundation top level fabricated with cast iron embellishment, joints, column sections etc re-inforced internally with a pipe inside. The pole should be painted with polyurethane paint of antique finish copper colour finish. Similar to BAJAJ MAKE : EDGAR 3.5 M or equivalent	Nos									10	10	54,406.00	- 5,44,060.00
8.1.8	Supply, installation, testing and commissioning of 45W LED suspension type decorative street light fitting, made of spun aluminium housing, polycarbonate diffuser protector with IP 65 protection for optical compartment with high power LEDs and inbuilt driver with efficiency > 0.85 and having surge protection device,, Color temperature 5700K. Similar to BAJAJ MAKE : BORAGE 45W LED or equivalent	Nos									10	10	28,776.00	- 2,87,760.00
8.2	Luminaries													-
8.2.1	Supply, installation, testing and commissioning of LED Street light fixture - 70 watt with IP66 protected LM6 high pressure aluminium die cast housing capable of delivering a nominal system lumen output of 7200 lumens with a minimum system efficacy of 100 lumen/watt and a CRI greater than 70. The luminaire shall have a life class of 50,000 hours @ L70 and driver efficiency of >85%. (Similar to Philips Cat. No. BRP410 LED CW072 MR FG S1 PSU or equivalent)	Nos									20	20	15,045.00	3,00,900.00
8.2.2	Supply of 75mm dia HDPE pipe confirming to PN-4 boring of road channel area by using open trench method and laying of HDPE pipe properly continuously jointed restoring the surface where pitting is done , to original position.	Mtrs									200	200	212.00	- 42,400.00

				ECTION AN									
Item 8.2.4	Description Providing and fixing thermo plastic poly carbonate pole boxes confirming to IP-65 degree of protection, along with 16A MCB and 5	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	way connector and 2 No. cable gland suitable for 4x25 sq.mm cable.	Nos								60	60	6,220.00	3,73,200.00
8.2.5	wiring for luminaries in existing poles with following sizes of unarmoured cu cables from pole box to each fittings.												-
а	3x2.5 sq mm	Mtrs								200	200	189.00	37,800.0
8.3	High Mast												
	Supply, installation, Testing and Commissioning 20 m high area lighting High Mast of Wipro/Philips/GE/Thorn, suitable for 06 nos. 250W LED luminaires complete with al standard accessaries like winches, latern carriage etc. Including the tocat of providing supplying and King 6 nos of IP65 rated 250W LED flood light luminaires with High efficiency, Iong IIIe, high power LED- Chip On Board(COB) Technology with luminaire Lumen output> 22900im, Luminaire efficacy>921m//W, CCT Jong IIIe, high power LED- Chip On Board(COB) Technology with luminaire Lumen output> 22900im, Luminaire efficacy>921m//W, CCT Jong IIIe, high power LED- Chip On Board(COB) Technology with luminaire Lumen output> 22900im, Luminaire efficacy>921m//W, CCT Supply Construction of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment on the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide segment of the second provide second provide segment of the second provide second pr	Nos									0	7,20,000.00	-
а	Suitable foundation for the Mast considering soil bearing capacity 10 Ton per Sqm, with base pedestal of approve design, incoporating a suitable cable looping box with terminal blocks MCB etc.												-
b	S.I.T.C. of Earth station of Pipe earthing as per IEEE 80 -2000, ans IS 3043 -1987, including duplicate earth connection to the mast with 25X3 mm size MS GI flate.												-
с	S.I.T.C. of suitable neon Aviation lights as required.												
	TOTAL CARRIED TO SUMMARY EXTERNAL LIGHTING ZE.08												29,14,180.00
ZE.09	UNINTERRUPTED POWER SUPPLY SYSTEM												
9.1	Supply, Installation, Testing and Commissioning of true parallel redundant 2x30 kVA, online, UPS system suitable for												-
9.1	Supply, installation, resing and commissioning of twe parameter formant ALSA why, binnes (JPS system settable to providing power supply to emergency lighting is station, suitable for incoming 415 volts, 3 phase +10 % +20%, 50 kt, supply and single phase output voltage, variation ± 1%, including isolation transformer, rectifier/dual converter, statiste switch, inverter, filter, Bypass & statist transfer switch for automatic switch over which using vision and the switch, marker processor/ software controlled annunciation, protection(including against input phase reversal), and mean un alignostic module, associated cabling and connections/ terminations, complete as per specifications and as required.									1	1		18,76,275.00
	Note-1: The price of above item is inclusive of a manual chnageover switch suitable for terminating 2 nos. of 4 core aluminium conductor armoured cables of suitable size on the incoming side of UPS. The manual change over switch may be wall mounted in the UPS room. From manual chnageover switch to UPS, the connection should be through an adequately rated copper cable, and RS 485 port for display of ON/OFF status of UPS on BMS work station through MODBUS protocol is also included in the price.	Set										18,76,275.00	-
	Note-2: The above price is also inclusive of suitable size copper conductor, armoured cable from UPS outgoing side to UPS Output Panel. Size shall be cross varified by the E & M designer in reference to the allowable voltage drop before installation.												-
9.2	Supply, Installation, Testing and Commissioning of valve regulated lead acid-sealed maintenance free suitable for 30-minute- battery backup to the each UPS of item 9.1, Battery shall comply with relevant regulations & Battery racks shall be made of acid resistant material complete as per specifications & as required.												-
9.3	Supply, Installation, Testing and Commissioning of 1 x 15 kVA, online, UPS system suitable for providing power supply to emergency lighting at station & viaduct, Platform edge door and Computerised Control panel load of approved make, suitable for incoming 415 volts, 3 phase + 10 % - 20%, 50 Hz, supply and single phase output voltage, variation ± 1%, including transformer, rectifier/dual converter, static switch, inverter, filter, Bypass & static transfer switch for automatic switch over without giving any break of power, maintenance bypass switch, Micro processor/ software controlled annunciation, protection(including against input phase reverses), and menu run diagnostic module, associated cabling and connections/ terminations, complete as per specifications and as required.									1	1		6,11,861.00
	Note-1: The price of above item is inclusive of a manual chargeover switch suitable for terminating 2 nos. Of a core aluminium conductor armoured cables of suitable size on the incoming side of UPS. The manual charge over switch may be wall mounted in the UPS noom. From manual chargeover switch to UPS, the connection should be through an adequately rated copper cable, and RS 485 port for display of ON/OFF status of UPS on BMS work station through MODBUS protocol is also included in the price.	Set										6,11,861.00	-
	Note-2: The above price is also inclusive of suitable size copper conductor, armoured cable from UPS outgoing side to Emergency Lighting Panel (EMLP). Size shall be cross varified by the E & M designer in reference to the allowable voltage drop before installation.												-
9.4	Supply, Installation, Testing and Commissioning of valve regulated lead acid-sealed maintenance free suitable for 30-minute- battery backup to the each UPS of Item 9.1, Battery shall comply with relevant regulations & Battery racks shall be made of acid resistant material complete as per specifications & as required.												-
	TOTAL CARRIED TO SUMMARY UNINTERRUPTED POWER SUPPLY ZE.09												24,88,136.00

	BALANCE WORKS EXCLUDNG VI REVISED SCHEDULE-F ELE											
										· · · · · ·		
1 1	Description Supply, installation, testing and commissioning a complete system of 500kVA Prime duty type diesel generator sets to meet the load requirements for all essential loads as mentioned in these Specifications/Contract.	Unit	AMS	NAR INS	KDC	GGS	КСР	KCP PD GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	The DG set emissions shall cofirm to the latest regulation of the Central Pollution Control Board (CPCB). Installation Batteries with Stand, leads, cover and accessories.											
	990 Ltrs Day Tank fabricated out of 6mm thick sheet steel with secondary containment tank and with fitments and float level switches.											
	Drip Tray for fuel tank ,Drip Tray below engine crank case The entire set shall be housed in soundproof enclosure mounted on suitable Rubber-in-shear type vibration mounts with								1	1		38,01,570.
	6mm static deflection for isolating the building floor. A nominal base concrete pad (if required) shall be provided over which the engine set with its own base frame and vibration mounts shall be mounted. Adopter Box for cable / bus duct termination with extension bus bars.											
	Any other item not specifically mentioned but required for proper performance and safe working of the system. The DG system shall be provided to interface with Station Management System (SMS)Building Management system(BMS) for remote monitoring and management in Station Control Room and/or OCC room (if available) respectively.											
	AMF Panel The AMF Panel should therefore comprise:	1								_		-
	(i) 800A, 4 Pole ACB with 4-pole contactor as main Incomer from AMF Panel, copper bus bar of adequate rating with one no. 4-pole ACBs as outcoming for Essential Power Panel 800A and Fire Pump											
	Panel 400A, MCCB of adequate rating, duly interlocked. (ii) Battery charger with normal and trickle charging facility and an isolating switch with voltmeter of range 0-50 volts and											-
	ammeter of range 0-50 amps (iii) Over load and Earth Fault protection for the generator set.											
	Incoming breaker shall comprise of following:	Set									38,01,570.00	-
a b	Excitor field DC voltmeter and ammeter. Voltage resrained over current protection (50 V / 51 V) type CDV62 or equivalent with CT's - 1 Set	-								-		-
0												-
d	Engine cranking relay- 1 Set Microprocessor based engine control automatic failure stand by relay including all accessories	ł										
e	Selector switch for engine control OFF/ON	1										
g	Five push buttons - start, stop, reset, test and accept Three indicating lamps "load on set', 'Load on Mains' and " Set fail to start'.	ł										
h	16 Window alarm annunciators panel with hooter, push buttons, aux. Contactors etc as required as per specification.	1										
1	Temperature scanner (Messi Bus/Procon)	1								-		
k	Underpower Relay with Timer - 1 Set Reverse Power Relay - 1 Set	1								-		
1	Phase Sequence Relay - 1 Set	1]		
n	Differential Protection Relay (87 G/N) - 1 Set Under / Over Frequency Relay - 1 Set	1								-		
"		1										-
	DG Exhaust Pipe as per CPCB and local authority norms Selector switch for engine control OFF/ON	+								-		
										-		
	SCADA / BMS CONNECTIVITY All the breakers should be provided with communication facilities & contractor should provide single point to communicate with BMS/SCADA for all system parameter of the panel. DC source & other accessories including software and hardware as required.											-
	TOTAL CARRIED TO SUMMARY DIESEL GERERATOR ZE.10											- 38,01,570.0
ZE.11 11.1	BMS/SCADA for all system parameter of the panel The Specifications shall be read in conjuction with Manual of specifications and standards and Technical Specifications.								1	1	53,10,000.00	53,10,000
	Supply, Installation, testing, commissioning, trainging and AMC of Biluding Management System PLC, Remote Processor, Sigan											
	Interface wiring and cabling with field equipment interface and provision of supervisory control and monitoring for M&E SCADA contractor using standard protocol over Ethernet(Station LAN-Provided by Others(S&T Contractor)) as per specification and Tender clauses.											
11.2	SOFTWARE - RPU Programming and Configuration Software(Rate included in item 11.1)(Complies to SIL-2)	ŧ										
	Programme software for RPU logic develolpment and debugging for use with	1										
	compatible Personal Computer with Licence to carry required engineering	1										
		1	L		<u> </u>							
	and maintenance function with below marked minimum functions:	1										
	RPU Programming and Configuartion Functionality RPU dignosis and data monitoring function locally.											
	RPU Programming and Configuration Functionality	+										
	RPU Programming and Configuartion Functionality RPU dignosis and data monitoring function locally.											

Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NIMBED ELEVATER METRA STATANS (AUTOMOTIVE SOURCE NADT DOAD THOODA CHOWK KARVI CHOWK GARDI GORAM STATION KASTINCHAND DARK AND 7500 MILE) THE INCLUDING ERM WORKS AND DO ADEL

Name of	Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NA BALANCE WORKS EXCLUDING VIA REVISED SCHEDULE-F ELEC	DUCT IN	REACH-2 C	OF NAGPUR	METRO R	AIL PROJE	ECT.	IATION, K	ASTURCHA	ND PARK A	IND ZERO	MILE) INCLU	JING E&M WORK	S AND PD AREA
Item a	Description The RPU shall be capable of fully stand-alone operation and shall be independent of any central computer for all specified control or communication applications. The software shall include all necessary routines and modules required to implement any control strategy and shall be user programmable. The programming language shall be English and shall use standard controls terminology.	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
b	Input and Output point processing shall include: (1) Continuous update of input and output values, conditions and status. All connected points are to be updated at a maximum of 5 second intervals, under worst conditions.													
	(ii) Analog to digital conversion of input values shall be carried out with at least 11 bit resolution with typically 40 dB series mode rejection @50 Hz. It shall be possible to calibrate the inputs by means of movable jumpers or links to suit the sensor type in use, to achieve a high accuracy reading.													-
	(iii) Input reading shall be automatically checked to determine that the reading is within the sensor's range and within the range of the input circuit, i.e. 0-10V or 4-20mA. Should this not be the case then an alarm status shall be indicated.													-
	(iv) All sensor readings shall be in engineering or user-definable units. These units shall be calculated by the sensor scaling type assigned to each sensor.													-
	(v) Each sensor shall have, in addition to the checks specified above, operator adjustable High and Low alarm limits. If the sensor reading is outside these limits then an alarm shall be generated. It shall be possible to delay these alarms by a user-defined amount so that spurious alarms are not reported.													-
	(vi) All inputs shall be filtered to reject mains frequency interference. The mains frequency of 50 Hz shall be selectable in software.													-
c	Each RPU is to be configured to run the control strategies called for in the sequence													-
	of operation sections of this specification. Each RPU shall have the required software		-											-
	modules available for arithmetic calculations, logical decisions and relational operators													-
	necessary for the implementation of these control sequences. (i) RPU data such as set points, sensor values, loop parameters etc., shall be available to													-
	the operator for display and modification at the main supervisor, the portable													-
	supervisor or the display panel. (ii) The reschedule time of control loops shall be adjustable, in 5 second intervals.													-
	Each RPU shall provide five independent time zones, each of which shall have three													-
	separate start and stop periods within each 24 hours. (1) Unique time program shall be provided for each day of the week, plus a unique holiday schedule. Each RPU time zone may be provided with unique time programs,													-
	or they may be grouped and assigned a common time program as configured by													-
	the operator.													-
	(ii) For each time program, the main supervisor shall have a calendar available which													-
	may be used to make simple modifications up to a year in advance. The calendar shall allow these modifications to be permanent or to execute only once and then													-
	return to the previous (permanent) schedule.													-
	(iii) Calendar days which are intended to operate as Holidays shall also be definable													-
	up to a year in advance.													-
e	All control strategies shall be held in RAM, battery backed up for at least 2 years. All													-
	data shall be available for review and modification from the main or portable supervisors.													-
11.4	Remote Processor Unit (RPU), It's Sub-components and Mounting Panel													-
	Remote Processor Unit (RPU) Modules should have (Digital Input, Digital Output,													-
	Analog Input and Analog Output Modules integrated to CPU module along with													-
	other required interface or system module for integration of field signals; should capable of standalone monitoring and control function irrespective to				-		-							-
	server communication interface; should fully equiped with Power Supply module,													-
	device protection and intrface terminals and wiring and other devices as required to													-
	meet tender specification & functional requirment.						1							-
	The contractor shall cross reference the RPU Panel and others to Housing Type as required.													-

	REVISED SCHEDULE-F ELE	CTRICA	FIRE PROT			SYSTEMS								
Thomas	Description						666	KCD		666 PP	714	T-t-LOt-	Data (THD)	A
Item	A by-pass switch/s shall be provided to completely by-pass the RPU in the event of a total	Unit	AMS	NAK	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	lotal Qty	Rate (INR)	Amount (INR)
	failure of the Processor and associates equipment to enable the normal operation of													-
	the equipment controlled by the RPU. Panels shall be fitted with a suitable pocket to contain													-
	circuit diagrams and other relevant Definitive Design Drawings. An "as installed" set shall be	ł												-
	having. All wiring and equipment tagging as per most acceptable inernational standards and													-
	metro practice.													-
	CPU with onboard RS485port for profibus/mpi/Modbus communication. Data and program backup without external battery. CPU shall have scan time of													-
	not less than 0.1ms per 1k bit instruction and 5ms per 1k floating point instructions.													-
	Micro-Memory Card	İ.												-
	Power Supply Module with AC/DC converter as required. Al Module of 8 Channel as per Signal list with necessary spare and redundant I/O consideration.													-
	DI Module of 16 / 32 /64 Channel as per Signal list with necessary spare and redundant I/O consideration.													-
	DO Module of 8 / 16 / 32 Channel as per Signal list with necessary spare and redundant I/O consideration.													-
	AO Module of 8 Channel as per Signal list with necessary spare I/O consideration. (Minimum 1 Modules per panel)													-
	Front Connector for Programming/console port (Serial RS232 / Ethernet) with portable computer communication BUS.	İ												-
	BMS Workstation / Server system interface provison in PLC communication Port (Ethernet TCP/IP Rj45 connector)	İ				1								-
	Field equipment serial RS485/Rs232 Port interface port (3 nos or as required to meet the functional and integration requirment													-
	Active Bus Module for IO Modules (As applicable for DI module up to field cable interface TBs)													-
	Active Bus Module for DO Modules (As applicable for DO module up to Relay control Board/ field cable interface TBs)													-
	Active Bus Module for AI/AO Modules (As applicable for AI/AO module up to field cable interface TBs)													-
	Mounting Rail and other cable containment for RPU panel different component mounting and Cable wiring.													-
	RPU Required frameware, protocol and data point licence as required to meet the interface and programming requirement in ref to tender specification with provision of spare (i.e. spare of 50% of Total IO Point as future expansion requirement without any upgradation)													-
	Bus cable for different module integration. Or as required for intermodule communication.													-
	Interface Module and/ or integrator module with or without gateway for ethernet interface provision of M&E SCADA system.													-
	Ethernet Module TCP/IP 10/100 MBPS MODBUS/PROFIBUS/BACNET card as required													-
	Terminal block 8 slots (as required for field cable interface and termination)													-
	16 channels Relay Board PCB Mounted type, plug in relays. (As per DO module)													-
	Allowance for 30% Spare I/O Points Modules and expansion by 50% shall be possible by adding more I/O modules and software reconfiguration													-
	Recomportation Assorted connectors, pre-formed connecting cables, special terminal blocks, bus cables, taps, tap links, networking accessories consisting of patch Panels, Cat 5 patch cords etc.													-
	Note:	ł												-
	All devices as required to meet tender specification & Operational requirment shall be provided for fully functioning of BMS system.													-
	The RIO shall be designed in accordance with the IO signals given as per the IO													-
	Summary Provided for stations.													-
	All RPU Controller input modules served equipment from outside are		-											-
	protected against voltage transients. All input/output modules are	İ												-
	galvanically separated from CPU & internal bus. It is protected against short circuit and it is connected via separate terminal strip. PLCs shall	ł	<u> </u>			+	+					<u> </u>		-
	short circuit and it is connected via separate terminal strip. PLCs shall be designed by taking 20% of spares in I/O's signals with Mounting	ł				1	+			1		t		-
	cabinet.	Į					-							-
11.5	Marshalling Cabinets	ł				+				1		+		-
	Terminal blocks shall be designed and tested in complying with IEC 60947-7-1.	Lumpsum												-
	Terminal block shall have ability to receive unprepared conductors.	campadin												-
	Terminal block shall be single terminal type. Each terminal shall be exchangeable	ł												-
	without dismounting adjacent terminals and also suitable for designative labeling.	ł												-
		ł					-			-				-

		CHEDULE-F ELECTRICAL,												
Item	Description Terminal blocks shall be of the rail-mounted type and shall be of screwless type	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
	terminals 600V a.c. moulded block type with molded insulating barrier between terminals.													
	Terminal connections shall be such that the conductors shall be connected with the													
	necessary maintained contact pressure. Terminals shall be so constructed that the													
	conductors can be clamped between suitable surface without any significant damage													
	either to conductors or terminals.													
	Terminal blocks shall have test probe facilities for connections of test leads and an													
	integral disconnecting device to facilitate testing.													
	The rated cross-section of a terminal block shall be 0.5-2.5 mm2 of round copper													
	conductor. No terminal can carry more two conductors simultaneously connectable on													
	each incoming/outgoing side.													
	The spare terminating block in all MS shall be provided with capacity at least 20% of the													
	number of I/O points.													
	The Marshalling Cabinet shall be of 1.6 mm thick galvanized sheet steel with gray													
	colour epoxy and electrostatic powered coated. The protection class shall be IP 31.													
11.6	ETHERNET SWITCHES													
	Providing, Installing, Testing & Commissioning of industrial Ethernet Switches having the													
	following specifications to meet the functional and system requrment in a redundant													
	system architechure													
	Ethernet 10/100MBPS Switch Network Protocol - IEEE 802													
	Control of the control of the control supported on all the ports Full or half duplex operation with flow control supported on all the ports													
	5. Reverse polarity protection 6. Industrial surge and Spike protection													
	7. IP 30 protection 8. Operating temperature 0 to 60 deg C													
	 Storage temperature -40 to +85 deg C 													
	10. Relative Humidity 10 to 95 % non condensina 11. UL listed equipment													
	12. 24AWG Cat 6 RJ 45 port and 6 fiber optic port													
11.7	Integrators/ Modems/ Gateways/Protocol Converters													
	Supply, installation, testing and commissioning of Integrators/ Modems/ Gateways/													
	Protocol Converters for Integration of standalone Systems with BMS (All software,													
	hardware required for integration with the specific standalone system with BMS shall be													
	supplied by respective contractor). The following Equipments with necessary													
	Data Points as mentioned below shall be considered for integration with individual PLC.													
	Data romts as mentioned below shall be considered for integration with individual FLC.													
	Uninterrupted Power Supply													
	Digital Power Meter .													
	DG Set Lifts													
	Escalators													
	Water Meter Fire Alarm Panel													
	HV Panels													
	Fire Fighting systems and Panel flooding system All the Panel boards incoming and out going breakaers													
	PHE systems													
	Systems not listed above but that requires BMS/SCADA to be considered.		<u> </u>				<u> </u>							
11.8	Field Devices													
	Pressure transmitters													
	Pressure transmitters Pressure transmitters shall have a linear output of 0-10V. Pressure transmitters shall be a		-									1		
·	span of not greater than twice the s tatic pressure at maximum flow or differential							1						
	pressure at shutoff as applicable.	1				1	1					1	1	1

Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NART ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION, KASTURCHAND PARK AND ZERO MILE) INCLUDING ERM WORKS AND PD AREA

		EDULE-F ELECTRICA											
Item	Description Water-Flow Meter	Unit	t AMS	NAR	INS	KDC	GGS	KCP KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
	Water-riow meter Water-flow measuring devices consisting of annular averaging pilot tube flow elements												
	having the following minimum Specifications. Select the Annular for the operating flow												-
	range, pipe size and fluid temperature.												-
	(i) Accuracy - 2% (ii) Repeatability - 1.2%												-
	(iii) Pressure Drop - 1.5 kPa maximum												-
	(iv) Operating Temperature Range - 4°C to 95°C [140°F to 203°F] (v) Operating Pressure Rating - 174 kPa [250 psig]												-
	Level Switch												-
	Wind Transmitter												
	Wind Speed & Direction Sensors												
	Temperature Sensors												
	Temprature and Humidity Sensors												
11.9	Control Cable												
	Supply and laying Control Cables with following specification including 25mm dia rigid												
	GI conduits as applicable for running cable from Cable try / Raceways to equipment panel or												
	required to be laid at open.												
	All control cable shall be suitable for installation in wet and dry locations. The conductor												
	shall be of soft or annealed strand uncoated copper wire. The insulation shall be FRLS, PVC, insulated cables suitable for use on a copper												
	conductor with a maximum operating temperature not less than 70°C. Fillers shall be used in the interstice of the multi-conductor cable where necessary to give												
	the complete cable a substantially circular cross section. Fillers shall be Polyvinyl												
	chloride (PVC) rod or Polyethylene (PE) materials. The cable shall be helically wrapped over the filler and copper shielding with												
	non-hvoroscopic Mvlar or Polvester tape. The shielding, for control cables, shall be annealed copper tape or suitable width and												
	shall be helically applied with a minimum 10% lap. The annealed copper tape shall be a												
	least 0.1mm thickness and substantially free from burrs.												
	For Analogue Signals and Data Communication												
	2 Twisted Pair 0.5 Sq mm copper Cable with Aluminium Schelding.												
	For Digital Signals 12 Core X 1.0 Sq. mm Copper, screened cable												
	05 Core X 1.0 Sq. mm Copper, screened cable												
11.10	CAT5e CABLE - Data Cable Supply, Installation, testing and commissioning of CAT 5e cable with												
	25mm GI conduit & complying to Class 1E type Communication with												
	MODBUS, BACnet, Lontalk, ARCNET on RS 232/485 port to match the control system												
	requirement, thick 20mm dia Conduit shall be supported at regular intervals not												
	exceeding 2.5 m. on horizontal runs and 1.5 m. on vertical runs. as required at site.												
	etc. (For RPU panel internal Data commuication, Station LAN interface, etc)												
	OPTICAL FIBRE CABLE - Communication Cable												
	Supply, Installation, testing and commissioning of 6 core single mode OFC with all accessories necessary such as listed below:												
	i) 12Port fiber Patch cord Loaded with adapter Plates & Splice tray												
	ii) 24Port fiber Patch cord Loaded with adapter Plates & Splice tray				-					_			
	iii) SC-LC, Duplex OFC patch cord, 3mtrs, OM3												
	iv) SC-Style Pigtail, 50/125, Multimode, OM3, 1.5 meter												
	 v) Line interface unit for Fo cable termination, supply, installation and connection 												
	as required to meet functional requirment.					1	1				1		1

Name of Work: CONSTRUCTION OF BALANCE WORK OF SEVEN NUMBER ELEVATED METRO STATONS (AUTOMOTIVE SQUARE, NART ROAD, INDORA CHOWK, KADVI CHOWK, GADDI GODAM STATION, KASTURCHAND PARK AND ZERO MILE) INCLUDING ERM WORKS AND PD AREA

	REVISED SCHEDULE-F ELEC					131643								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INF
	Note: The items indicated above are probable and main items.													
	vendor to include all allied and implied items and required quantity for station building management system as indicated in various areas of													
	BOO.													
	Qunatity shall be as per detail design requirement or as to meet system operational and functional requirement as required by the													
	Make: Honeywell / Equivalent													
	Make. Holleywell / Equivalent													
	SUB TOTAL BMS/SCADA for all system parameter of the panel - ZE.11													53,10,000
ZE.12	Safety and Other accessories													
12.1	Supply and fixing of the following safety equipments in Aux. Sub.Station/MDB room as per detailed descriptions given below and													
12.1	Supply and fixing of the following safety equipments in Aux. Sub.Station/MDB room as per detailed descriptions given below and as per relevant IE rules & code of standard practice.													
	1000 mm wide rubber matting complying with LS. 15652 and suitable to withstand 11 kV in front of all panels in ASS building &													
a)	MDB room as required.													
α)	Laminated standard shock treatment charts in English & Hindi in ASS, ESR, DG room and Pump room in each station.													
	Danger plate as per approved Style & sample written in English & Hindi for MV installations as required as per IE rules, IES and IS													
b)	2551 (latest) - 8 nos, per station													
	2 nos. per station First Aid Box Complete as approved by St. John ambulance or Indian Red Cross	Lumpsum	1	1							1	1	59,000,00	59.00
c)	4 nos. per station of 3-fire-buckets set each painted red with 'fire' written complete with sand filling, floor/wall mounting	Lampadin	1	1							· ·	-		25,00
	brackets/stand complete as per elevant IS and as required.		1	1						1	1	1		
	One Tool kit per station comprising 1 set of flat spanner (Taparia / Jalan), 1 set of box spanner, 1 no. Hacksaw frame with 10 No.		1	1								1		
d)	blades, 1 no. large, medium, small screw drivers, 1 no. insulated plier, 1 no nose plier, 1 no. hand crimping tool upto 16 sq.mm, 1													
	no. digital multimeter, 1 no. test lamp and 1 no. tester. Screw driver set for all types of screw heads also to be provided.													
e)														
	TOTAL CARRIED TO SUMMARY ZE.12													59,00
														2 5 4 0 0
E.13	Mandatary Operational Spares for the Panels And safety items			-							1	1	3,54,000.00	3,54,00
	R,Y,B Phase Indication lamp Led Type Red / Green On, Off Indication lamp Led Type ,On,Off,trip Indication lamp Led Type													
	Red / Green On, On Indication lamp Led Type ,On,On,trip Indication lamp Led Type													
	Amber trip Indication lamp Led Type													
	3Phase Digital Amp/Volt. Meter 96mm *96mm with inbuilt Selector Switch													
	Electronic Multifunction Meter 3Phase Class1.0 EM6400													
	CTs 1000/5A CI 1.0 15VA, cast resin for measurement													
	CTs 1000/5A CI 5P10 15VA, cast resin for protection													
	CTs 100/5A Cl 1.0 5VA, tapewound													
	230V AC or 24V DC shunt trip coil													
	230V AC motor wound spring close mechanism			-										
	Control MCB 6A SP 10kA MCB, 'C' Curve													
	CTTB+Neutral Link Power terminals ,Control Terminal Block,Neutral Link,Spreader Terminals	Lumpsum												
	Shunt release IV release													
	RS-485 port for display of ON/OFF status of ACB on BMS workstation through MODBUS protocol													
	Exhaust Fan 8" with Filter and Switch													
	Rotary Operating Handle													
	Control MCB 6A SP 10kA MCB, 'C' Curve,													
	Power Contactor 3Pole 9A 220V AC-3 Duty,Auxiliary Contact Block 2No+2NC													
				+				<u> </u>						
	On, Off Push Button, Auto Manual Selector Switch			1								1		
	Single phase Preventor		—									1		
	Over current Relay And not limited to the above and any other items necessay shall also be considered.		-	1	-		-	<u> </u>				1		
	and hot minice to the above and any other reems necessary shall also be considered.		1	1								1		
	TOTAL CARRIED TO SUMMARY ZE.13													3,54,00
			1			-								
E.14	FACADE LIGHTING											-		
1	Supply, installation, testing & commissioning of light fittings including all accessories e.g. ballast, HPF condensors, lamps, holders,		+									1		
Ŧ	Supply, installation, testing & commissioning of light fittings including all accessories e.g. ballast, HPF condensors, lamps, holders, surface/recess mounting arrangement etc. including necessary supports, accessories and hardware as per specifications & as		1	1								1		
	Surface/recess mounting arrangement etc. including necessary supports, accessories and naroware as per specifications & as required as site and as below:		1	1								1		
	required at site and as DEIOW.		1							1	1	1		
1.1	Surface mounted RGB direct view aluminum profile 25mm (approx) with snap in notch , to be installed together with aluminium											1		
	bracket profiles for cable conduit, screws hidden. With opal semi translucent sealed encapsulation. 18w per meter with direct	Mtrs	1	1						1	550	550	28,619.00	157,40,4
	view led profileIP67. Approved Makes - Bharat Alurays-Connect/Instapower/Tulip		1	1							335	555	20,019.00	137,70,4
			+	1								1		
.2	LPV-100/24V		+	+								1		
	LPV-100/24V Oty to be confirm as per site requirement.	Nos	1	1							115	115	26,131.00	30,05,0
	ory to be continued by site requirement.		1	1								1		
.3	Surface mounted linear grazer with adjustable mounting base 45mm with snap in notch , to be installed together with aluminium		1	1								1		
	Surface modifies for cable conduit, screws hidden. With opal semi translucent sealed encapsulation. 18w per meter with direct view	Mtrs	1	1	1		1				150	150	49,773.00	74,65,9
	bracket promes for cable conduit, screws modeln, with opai semi translucent sealed encapsulation. Taw per meter with direct view led profile, 48w/m. 1F67, Approved Makes - Bharat Alurays-Connect/Instapower/Tulip	MUS	1	1							150	120	49,773.00	/4,05,9
	tee pointer tonyin at on hyproved makes - bilarat Alurays-connect/instapower/ turp			1										
				1				<u> </u>						
.4	LPV-100/24V	Nos	1	1	1		1	1		1	35	35	26,131.00	9,14,5
	Oty to be confirm as per site requirement.													

	REVISED SCHEDULE-F ELE	CTRICAL,	FIRE PROT	ECTION AN	D HVAC S	YSTEMS								
Item 1.5	Description LED high-performance floodlight with very narrow beam light distribution.Floodlight made of aluminium alloy, aluminium and stainless steel. Clear safety glass. Silicone gasket. Reflector surface made of pure aluminium. with integral silicone lens and louvre. Swivel range -10°/+170°. Mounting bracket made of steel. 300w, 3000k, 10°.IP67. Approved Make - Bega 84540, Acuity,		AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD		Total Qty		Amount (INR)
	Indures, Instapower	Nos									2	2	2,78,112.00	5,56,224.
1.6	Exterior projector for permanent outdoor installations to integrate textures, patterns and graphics for limitless creative exterior lighting designs. Flat field, high contrast image projection based on high power LED engine. 0-100% electronic dimming. Full CMY color mixing + additional color whele with 7 interchangeable colors. 7 gobs obts for projecting graphic images (gobs included). Animation system for creating animated lighting effects (horizontal and vertical). Zoom range from 10° - 43° for exact projection on desired surfaceVariable fors for creating morphing effects and hybrid function as wash light. rotating prisms for creating abstract multi patterns. Intuitive setup, configuration and stand-alone programming via graphical OLED display. RDM and DMX control. Housing: Cast aluminum Finish: Hard anodized, white or metallic grey lacquered front glass: 5 mm (0.2 ln.) anti-reflection coated tempered glass Incress motextion: IP66. Aboryoved Makes - Martin exterior projection 1000. Selecon/ Showline	Nos									1	1	9,33,240.00	9,33,240.
1.7	Surface floodlight with mounting box. Flat beam light distribution. LED 65 W, 8200 lm, half beam angle 28/92°, colour temperature 3000 K. Colour rendering index (Ra) > 90. With replaceable LED module with overheating protection and an expected service life of at least 50,000 operating hours. 2 years warranty of availability of LED module and wear parts. With LED power supply unit, 220-240 V, 0/50-60 Hz. Protection class 1P 65. Luminaire made of cast aluminium, aluminium and stainless steel,	Nos									30	30	80,881.00	- 24,26,430.0
	colour silver. Safety glass with optical texture. Reflector made of pure anodised aluminium. Two cable entries for through-wiring power connecting cable up to 10.5 mm in diameter, max. 5 G 1.5 qmm. Approved Makes - Bega 77584AK3, Simes, Acuity, instapower													
1.8	LED pole-top luminaire with symmetrical light distribution. Luminaire made of aluminium alloy, aluminium and stainless steel Synthetic diffuser, clear Silicone gasket. Reflector made of pure anodised aluminium. 35w 3000K. IP65. Approved Makes - Bega 77175, Aculty, Simes, instapower	Nos									10	10	1,05,767.00	10,57,670.
1.9	3 mtr GI Pole as per requirement	Nos									10	10	9,177.00	91,770.
	TOTAL CARRIED TO SUMMARY FACADE LIGHTING ZE.14													321,91,384.
ZF.01	FIRE HYDRANT SYSTEM													
1	Supply installation and testing of fire pumps, electrically driven generally as specified and shown in equipment schedule complete													
i)	with: all accessories													
II) III)	vibration mounts													-
iv)	test connection excluding starter panel Civil foundation in R.C.C.1:2:4, 200mm high and 150mm projection allround base plate.													
1.1	Sprinkler / Hydrant Main Fire Pumps													
	Providing and fixing horizontal single stage, single outlet pumping set with bronze impeller, C.I. body and connected by a flexible coupling to a totally enclosed fina cooled induction motor mounted on a common M.S. structural base plate with RCC base and with all pump accessories, including pressure switch, pressure guage (both with cut off ball valves) complete as per specifications. Motor to be suitable for 415V, 3-phase, S0 Hz AC supply (specifications as per fire fighting requirements and on the pattern of local authority approval) as per instruction and specifications.													
a	Capacity : 2850 lpm,	Nos									3	3	6,39,999.00	19,19,997
b	Capacity : 900 lpm, Head : 40m, HP : 15 HP (for Water Curtain)	Nos									1	1	1,75,000.00	1,75,000
1.2	Fire Jockey Pumps Supplying, installing, testing, & commissioning of electric driven automatic pressurisation pump set consisting of the following.													
	a) Vertical mounted multi stage centrifugal Jockey pump.													
	b) Squirrel cage induction motor suitable for 415 V, 50Hz, AC supply of the above pump with synchronous speed of 2900 RPM T.E.F.C type such as confirming to IP:55 and flexible coupling and coupling guard with the pump.													
	c) <u>Common bed plate of fabricated mild steel channel or cast iron type.</u> d) Suitable cement concrete pump foundation of 1:2:4 ratio (1 cement : 2 fine aggregate : 4 coarse aggregate) with MS bolts, washers as required.													
	Capacity : 180 lpm,	Nos									2	2	1,82,247.46	3,64,494
2	Supply and installation of pressure gauge panel (manifold) as per the requirement & Comprising: I) Pressure gauges	Set									6	6	18,710.08	1,12,260
-			1				1							
-	ii) Pressure switches with snubber ball valve and 2 x 1.5 sq mm copper conductor wiring to motor starter panel													
-	iii) Pressure switches with snubber ball valve and 2 x 1.5 sq mm copper conductor wiring to motor starter panel iii) Water piping from system upto the gauge panel along with valves etc.													
3	ii) Pressure switches with snubber ball valve and 2 x 1.5 sq mm copper conductor wiring to motor starter panel													

	BALANCE WORKS EXCLUDING VIA													
	REVISED SCHEDULE-F ELE													
Item	Description ii) First aid hose reel with 25 mm dia, 45 m long thermoplastic hose as per IS 12585 rubber hose, ball valve, piping and 7-8mm	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	nozzle as required													
	iii) 38mm synthetic hoses with 63mm instantaneous SS coupling, IS marked- 15 m x 2 lengths with suitable arrangement of connecting the hose pipe with coupling as required.													-
	iv) branch pipe and nozzle IS marked (Stainless steel)													
4	Supply, installation, testing and commissioning of external (yard) hydrants inclusive of :	Nos									9	9	62,540.00	- 5,62,860.00
	 MS Box cabinet of size 750 x 600 x 250 mm of 2mm thickness with 2 nos x 15M Length of 38mm dia synthetic hose with 1 no branch SS nozzle. 												,	-
	ii) 63 mm dia single headed landing valve IS marked.													-
5	Providing and fixing Orifice Plate made out of 8 mm thick stainless plate for pipe to reduce pressure upto 3.5 Kg/sqcm complete in													-
a)	all respect. 80 mm dia	Nos									20	20	1,421.00	28,420.00
	150 mm dia	Nos									20	2	1.751.00	3,502.00
6	Providing and fixing in position the industrial type Pressure Gauges with gun metal / brass valves complete as required.	Each									44	44	1,038.00	45,672.00
7	FIRE DOOR													-
7.1	Providing and fixing 4mm thick glass door of size 2.1m x 9.0m along with anodised aluminium frame with centre opening for fire hose cabinet. Suitably marked on the outside with the letters "FIRE HOSE" including locking arrangement.	Nos									0	0	11,597.00	-
7.2	Hose cabinet as approved or as per site conditions with universal locking arrangement. Glazed with 5.5mm clear glass Powder coated Aluminium shutter door as appropriate with universal locking arrangement with aluminium grill of following sizes and types :													-
а	Size 1200 x 1500 in 2 mm thick stainless steel sheet	Set									0	0	27.642.00	-
b c	Size 1500 x 1850 in 2 mm thick stainless steel sheet Size 2100 x 900 in 2 mm thick stainless steel sheet	Set Set									35 0	35	31,136.00 29.073.00	10,89,760.00
7.3	Hose cabinet door as approved or as per site conditions with universal locking arrangement. Toughen Glass of following sizes and types :													-
а	Size 1200 x 1500 in 2 mm thick stainless steel sheet	Set									0	0	29.880.00	-
b	Size 1500 x 1850 in 2 mm thick stainless steel sheet Size 2100 x 900 in 2 mm thick stainless steel sheet	Set Set									0	0	34,120.00 32.057.00	
9	PIPING FOR FIRE FIGHTING SYSTEM													-
														-
9.1	Supply, fabricating, laying, testing, painting and commissioning external piping (UNDERGROUND / ALONG WALL) generally as specified using heavy class G.I. pipe conforming to IS : 1239 & BS : 1387 with all fittings and complete with one protection layer of 4mm thick wrapping and coating for underground piping.													-
	 All pipes and all heavy grade fittings conforming to IS 1239 together with suitable joints, flanges, gaskets, bolts & nuts, washers, fittings, adapter pieces etc. 													-
	150mm nominal bore	Mtrs Mtrs									330	330 60	2,447.32 1,643.74	8,07,615.60 98,624.40
C D	100mm nominal bore 80mm nominal bore	Mtrs									60 20	20	1,043.74	23,812.40
9.2	Evenuation unto band muserman new constal profiles and back filling	Cu.m									10	10	531.00	5,310.00
9.2	Excavation upto hard murramas per general profiles and back filling										10	10	531.00	5,310.00
9.3	Making 1:2:4 cement concrete supports and thrust block generally as required and approved.	Cu.m									3	3	3,873.94	11,621.82
10	Butterfly Valve													
	Supplying, fixing, testing and commissioning of Butterfly Valve with C.I. body, SS Disc, Nitrile Rubber Seal & O-Ring PN16 pressure rating as specified.													-
	300mm nominal bore (Gear Operated)	Nos									1	1	27.500.00	27,500.0
а		Nos									3	3	21,513.00 15.489.00	64,539.00 46,467.00
b	250mm nominal bore (Gear Operated)					1	1				28	28	15,133.50	4,23,738.00
b c d	200mm nominal bore 150mm nominal bore	Nos									8	8	9,317.28	74,538.24
c d	200mm nominal bore 150mm nominal bore 100mm nominal bore	Nos Nos									40			
b c d e f	200mm nominal bore 150mm nominal bore 100mm nominal bore 80mm nominal bore 65mm nominal bore	Nos Nos Nos Nos									48 0	48 0	7,583.86 4.738.00	-
b c d e f	200mm nominal bore 150mm nominal bore 100mm nominal bore	Nos Nos Nos												-
b c d e f a h	200mm nominal bore 150mm nominal bore 100mm nominal bore 80mm nominal bore 65mm nominal bore	Nos Nos Nos Nos											4.738.00	-
b c d f a h 10	200mm nominal bore 100mm nominal bore 100mm nominal bore 50mm nomi	Nos Nos Nos Nos Nos									0 3	0 3	4.738.00 3,226.00 26,200.00	9,678.00 - - -
b c f f a h 10	200mm nominal bore 100mm nominal bore 100mm sominal bore 80mm nominal bore 80mm nominal bore 80mm nominal bore 80mm nominal bore 90mm nominal bore 90mm nominal bore 90mm nominal bore 90mm nominal bore 90mm nominal bore 200mm nominal bore 90mm nominal bore 900m	Nos Nos Nos Nos Nos Nos									0 3 1 0	0 3 1 0	4.738.00 3,226.00 26,200.00	9,678.00 - - 26,200.00
b c f f a h 10	200mm nominal bore 150mm nominal bore 30mm nominal bore 55mm nominal bore 55mm nominal bore 55mm nominal bore 50mm nominal bore Supplying, fixing, testing and commissioning of Non-Return Valve with dual plate of C.I. body, SS Plates vulcanized NBR seal flanged end & RN16 pressure rating including insulation as specified. 250mm nominal bore 200mm nominal bore 200mm nominal bore	Nos Nos Nos Nos Nos Nos Nos Nos									0 3	0 3	4.738.00 3,226.00 26,200.00 25.500.00 29,761.96	
b c d e f o h h 10 10 2 c d e	200mm nominal bore 100mm nominal bore 100mm nominal bore 80mm nominal bore 50mm nominal bore 50mm nominal bore Supplying, fixing, testing and commissioning of Non-Return Valve with dual plate of C.I. body, SS Plates vulcanized NBR seal finanged end & PNL6 pressure rating including insulation as specified. 250mm nominal bore 200mm nominal bore 100mm nominal bore 100mm nominal bore 100mm nominal bore	Nos Nos Nos Nos Nos Nos Nos Nos Nos									0 3 1 0 6 1 2	0 3 1 0 6 1 2	4.738.00 3,226.00 26,200.00 29,761.96 6.008.00 9,705.50	9,678.00 - - -
b c d e a h h 10 a b c c d e f	200mm nominal bore 100mm nominal bore 100mm nominal bore 80mm nominal bore Somm nominal bore Somm nominal bore Non Return Valve Non Return Valve Non Return Valve Supplying, fixing, testing and commissioning of Non-Return Valve with dual plate of C.I. body, SS Plates vulcanized NBR seal finaged end & PNL6 pressure rating including insulation as specified. 250mm nominal bore 250mm nominal bore 150mm nominal bore 150mm nominal bore 150mm nominal bore 160mm nominal bore 160mm nominal bore	Nos Nos Nos Nos Nos Nos Nos Nos Nos									0 3 1 0	0 3 1 0	4.738.00 3,226.00 26,200.00 25,500.00 29,761.96 6.008.00 9,705.50 2,700.00	
b c d e a h h 10 a b c c c e	200mm nominal bore 100mm nominal bore 100mm nominal bore 80mm nominal bore 50mm nominal bore 50mm nominal bore Supplying, fixing, testing and commissioning of Non-Return Valve with dual plate of C.I. body, SS Plates vulcanized NBR seal finanged end & PNL6 pressure rating including insulation as specified. 250mm nominal bore 200mm nominal bore 100mm nominal bore 100mm nominal bore 100mm nominal bore	Nos Nos Nos Nos Nos Nos Nos Nos Nos									0 3 1 0 6 1 2	0 3 1 0 6 1 2	4.738.00 3,226.00 26,200.00 29,761.96 6.008.00 9,705.50	1,

	REVISED SCHEDULE-F ELE	CTRICAL, I	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
	Providing, fixing, testing & commissioning of cast Iron double flanged type 'Y' strainer with SS 304 perforated metal removable basket including all fittings complete as required and suitable for system pressure.													-
а	250mm nominal bore	Nos									0	0	38,200.00	
a b	230mm nominal bore	Nos									3	3	37.787.00	1,13,361.0
c	150/100 mm nominal bore	Nos									4	4	22.615.00	90,460.0
d	80mm nominal bore	Nos									2	2	4.500.00	9,000.0
12	Foot Valve													
	Supply and installation of Foot Valves with mating flanges generally as specified all complete.													-
а	200mm nominal bore	Nos									0	0	35,394.10	-
b	100mm nominal bore	Nos									2	2	9,027.00	18,054.0
13	Rubber Bellow													
15	Supply, fixing, testing & commissioning of resilient rubber lined single arch vibration eliminators suitable for raw water up to 45 oC temperature, working pressure 15 Kg/cm2 and test pressure 20 Kg/cm2 for :-													-
а	200mm nominal bore	Nos									2	3	9.117.00	27,351.0
b	ISomm nominal bore	Nos									4	4	6,768.00	27,072.0
c	Io0mm nominal bore	Nos									1	1	5,333.00	5,333.0
d	80mm nominal bore	Nos									4	4	4,474.00	17,896.0
е	65mm nominal bore	Nos									0	0	4.300.00	-
f	50mm nominal bore	Nos		<u> </u>							0	0	3,800.00	-
14	Internal Piping													
-		-		-										-
14.1	Supply, fabrication, laying, testing and commissioning of heavy grade IS marked G.I. piping conforming to IS: 1239 & BS : 1387 complete with fittings, pipe supports, clamps, painting of two coats of red enamel etc.including support arrangements.													-
а	300mm nominal bore (6 mm wall thickness)	Mtrs		l		<u> </u>					15	15	4,000.00	60,000.0
b	250mm nominal bore (6 mm wall thickness) 250mm nominal bore (6 mm wall thickness)	Mtrs									24	24	3,200,00	76,800.0
c c	200mm nominal bore (6 mm wall thickness)	Mtrs									6	6	3.200.00 3,390.14	20,340.8
d	Isomm nominal bore	Mtrs									1070	1070	2,330.50	24,93,635.0
e	100mm nominal bore	Mtrs									210	210	1,565.86	3,28,830.6
f	80mm nominal bore	Mtrs									700	700	1,135.16	7,94,612.0
q	65mm nominal bore	Mtrs									600	600	869.66	5,21,796.0
h	50mm nominal bore	Mtrs									410	410	754.02	3,09,148.2
1	40mm nominal bore	Mtrs									800	800	532.18	4,25,744.0
<u>i</u>	32mm nominal bore	Mtrs									625	625	484.98	3,03,112.5
k	25mm nominal bore	Mtrs									4300	4300	362.26	15,57,718.0
15	Air Vessel													
15	Supply, fabrication (as per code), installation, testing and commissioning of Air vessels 300mm diameter and 1000mm high with ball valve intel/outlet valve drain, air release valve, valve air inlet etc. all complete with including inside painting with epoxy and outside with enamel.	Nos									2	2	73,204.84	1,46,409.6
														-
16	Pressure Vessel													-
	Supply, fabrication (as per code), installation, testing and commissioning of Pressure vessels 450mm diameter and 1000mm high fabricated with 8-10mm MS. plate with Ball value inlet/couter value drain, air release value, value air inlet etc. all complete with including inside painting with epoxy and outside with enamel.	Nos									2	2	81,501.42	1,63,002.8
17	Fire Brigade Connection (2-way)													-
	Supply, installation, testing and commissioning fire brigade connection with 2 way 63mm valves inlets, stand post and 150mm MS													
	pipe for mounting the stand post etc. as specified all complete as approved. The fire brigade connection shall be provided in a suitable MS box having mesh doors with universal locking arrangement. Note: The drawings of the proposed arrangement shall be provided by the contractor for approval of engineer incharge.	Nos									1	1	28,342.42	28,342.4
18	Fire Brigade Connection (4-way)						1							
	Supply, installation, testing and commissioning Siamese connection with 4 way 63mm outlets with non-return valves and sluce valve etc. complete as required and approved including MS colinets with universal locking arrangement, MS welded mesh inside at road level cabinets. Note: The drawings of the proposed arrangement shall be provided by the contractor for approval of engineer incharge.	Nos									2	2	66,205.08	1,32,410.1
19	100 mm dia stainless steel Draw Out connection with foot valve for Fire Brigade.	Set									6	6	6,839.00	- 41,034.0
20	All Bullance Makes					I								-
20	Air Release Valve Supply, installation, testing and commissioning of 25mm dia Air Release valve with Ball valve to be fixed on top of risers.										8	-		
		Nos		L				1	1		-	8	7,375.00	59,000.0
21	Providing & Fixing of Installation control valve with turbine type automatic Alarm Gong to be connected with control valve, drain & test valve as per manufacturer's specifications complete as required													-
	a) 150 mm dia	Set					1				2	2	40,151.00	80,302.0
											-			-
22	Providing, Fixing, Testing & Commissioning 15 mm dia Quartzite bulb type GEM. Sprinkler head suitable to operate at 68 deg.C (UL/FM/LOC listed/ approved).													-
														3.83.955.0
a) b)	Standard Pendent / Upright type in brass / Chrome finish. Side wall Sprinkler 68°C in brass / chorme finish	Nos									2145 90	2145 90	179.00	49,500.0

	REVISED SCHEDULE-F ELE													
<u>Item</u> 23	Description Supply, fixing, testing & commissioning of Braided PM & VDS approved Annular Corrugation Stainless Steel flexible sprinkler pipe drop pressure rated upto 200 psi. The drop shall consist of a BRADED type 304 stainless steel flexibile tube, zinc plated steel Male threaded nipple for connection to branch-line piping, and a zinc plated steel radies with a finale thread for connection to the sprinkler head and with a numbering on the reducer to ease the process for vertical positioning of the sprinklers with Bracket arrangement as per the Ceiling Profile. The bracket assembly shall be one piece open gate bracket complete in all respect.	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
-)	1000	Nos									100	100	005.00	89,500
a) b)	1000mm 1200mm	Nos									100 15	15	<u>895.00</u> 1,800.00	27,000
c)	1500mm	Nos									100	100	2.200.00	2,20,000
24	Supply, fixing, testing & commissioning of 25 mm dia inspecting and testing assembly with gun metal valve, sight glass, with 50 mm dia by pass valve and connection to the drain line as required to complete the system.	Set									12	12	8,000.00	96,00
25	Supply, fixing, testing & commissioning of 25 mm dia drain ball valve (gun metal) at end of sprinkler branch line with connection to the nearest drain with all fittings, pipe and accessorels complete in all respect.	Set									12	12	2,500.00	30,00
26	Providing and fixing UL listed Flow Switch of 65/ 80 / 100 / 150 mm dia on Sprinkler Header complete with flexible full bore paddle, U clamp and NO / NC contact terminals										12	12	4,893.00	58,71
27	Supply, fixing, testing & commissioning of UL / FM listed / approved 15 mm NB water curtain nozzle chrome plated complete including fixing in position on pipe complete in all respects with Teflon tape.	Nos									32	32	2,100.00	67,20
28	Providing and Fixing of UL/FM Approved Deluge Valve with Grooved Ends low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, perxide cured EPDM diaphragm, EPDM seal, hrass seat, and Nitrile seat O-rings. & S.S. Shaft complete with Flectrical release trim, Hydraulic Release trim, Pressure Switch, Solenoid valve actuator and Control Panel, control wing including necessary accessories, complete with ap off socket arrangement as required, with potential free contact with 2 Nos. NO/NC & ON/OFF arrangement and all other associated works of complete as required. Note: Cable for Integration of deluge valve / Drencher system with Fire Alarm System shall be included.													
a)	50 mm diameter	Nos									2	2	40,000.00	80,00
b)	B0 mm diameter	Nos									0	0	60.000.00	00,00
	PORTABLE FIRE EXTINGUISHERS (As per IS 15683)													
	PORTABLE FIRE EXTINGUISTIERS (AS DEL IS 15083)													
29 29.1	Supply and installation of portable fire extinguishers as described below: 9 liter capacity of water CO2 type, IS marked, with discharge tube including clamps etc.	Nos									35	35	5,943.66	2,08,02
9.2	4.5 kg capacity Carbon dioxide extinguisher conforming to IS with high pressure discharge tube, horn, control valve, IS marked including clamps etc.	Nos									35	35	10,092.54	3,53,2
29.3	Mechanical form type 9.0 liter capacity fire extinguisher (for DG room)	Nos									2	2	7,934.32	15,80
29.4	5 kg capacity of DCP (Dry chemical powder) fire extinguisher Mechanical foam type 50.0 liter capacity fire extinguisher trolley mounted complete set (for Plant Room)	Nos									4	4	5,943.66	23,77
9.5	mechanical toam type 50.0 mer capacity me extinguisher troney mounted complete set (for Plant Room)	Nos									2	2	12,075.51	24,1
	MISCELLANEOUS ITEMS													
30	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of next cement and making channels in cement concrete 1:2:4 (1 cement : 2 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of next cement, including orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS:10910 on 12 mm dia steel bar conforming to IS 1786 having minimum cross section as 23 mm x 23 mm and overall minimum length 263 mm and width as 165 mm with minimum 112 mm space between protruded legs complete as per standard design :													
a)	Inside size 120x80 cm and 120 cm deep including C.I. cover with frame (medium duty) 455x610 mm internal dimensions.					1	1							
	With bricks conforming to IS : 4885	Each									3	3	12,500.00	37,50
31	PANEL FLOODING - CO2 GAS BASED FIRE TRACE TUBE SYSTEM													
	Supply, fixing, testing and commissioning of Polymer Tube Detection based CO2 System for Electrical Panels including AMF and Communication Panels, The exact quantity of the Panels shall be finalized during detail design stage. (Firetrace Tube Panel Protection System), consisting of the following components:										1	1	14,16,000.00	14,16,0
(a1)	CO2 Cylinder, 8 kg capacity, complete with all necessary CO2 Gas, fittings, support and accessories, connected with Valve (with manual release facility).													
	CO2 Cylinder, 4.5 kg capacity, complete with all necessary CO2 Gas, fittings, support and accessories, connected with Valve (with manual release facility).	Lumpsum												
	Filling Adapter Outlet adapter	cumpsum												
(d)	End of Line adapter	i i i i i i i i i i i i i i i i i i i					1							
	Pressure switch Flexible Polymer Detection Tube with all necessary fittings & supports.					1	1							-

	REVISED SCHEDULE-F ELEC	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
(g)	Master Control Unit for controlling each system, complete with pressure switches, buzzers and electronic hooters, including all necessary accessories + electrical wiring to make each entire system functional.													-
(h)	Auto weight measuring Unit for Cylinders with automatic audio/visual alarm.													-
	Total of ZF01													183,02,804.44
ZF.02	FIRE ALARM SYSTEM													
	The Fire Alarm and Detection System specified herein, must conform to M & E Specifications, in addtion to the description given in													-
	The rise wain and because system specifies needing in the contraint of a classe system specification and description given in respective lense of BOQ, whether explicitly specified or not. In case of contradiction between M & E specification and description in BOQ, the most stringent of the condition will prevail.													-
	All the items / parts mentioned in relevant clauses of the M & E specifications and not specifically mentioned in BOQ shall be deemed to be included in the quoted rates, unless specifically excluded.													-
	All the items not specifically mentioned here but necessary to make the system complete and suitable for desired application as per M & E Specifications and Drawings will be deemed to be included in the quoted prices													-
1	Supply, installation, testing and commissioning of the Microprocessor based intelligent analogue addressable, modular, expandable networkable, 10 loop (each loop shall consist of minimum 125 detector & 125 devices and 10% spare loop capacity) fire alarm control panel. The panel shall have a bull: in integrated voice command center with suitable rating amplifiers for minimum 25 speaker zones. The panel shall aves a bull: in integrated voice command center with suitable rating amplifiers for sprinkler etc controlled by powerful Boolean loogic equation. The panel shall have minimum five independent hazard release circuit built-in the panel. The panel shall aves 240 volts AC power supply, automatic battery charger, 24 volts, sealed lead acid maintenance free batteries sufficient for 24 hours normal working and then be capable of operating the system for 4 hours during emergency condition. The panel shall be UL/EN listed.	Nos									1	1	7,46,708.15	7,46,708.15
а	10 Loop Panel													-
b	Repeater Driver Board													-
c d	Communication Board Software & Graphics													-
e	C with 21" TFT + 80 column Printer.													-
f	Nicl. Batteries & Battery Charger.													
h i	Amplifier card Terminal strips for receiving and terminations all external cabling Provision for interfacing with other systems such as SCADA / BMS with all required Hardware & Software.													
	Note: Provision for additional loops for Future floors shall be included													-
2	Supply, Installation, Testing and Commissioning of Repeater Annunciator Panel with Mimic panel as per Specifications and Drawinos.	Nos									1	1	1,05,148.62	1,05,148.62
3	Supply, Installation, Testing & Commissioning of following Signal Initiating (Intelligent Analogue Addressable) devices complete with Detector Base etc. etc. complete as specified, required and as approved .													-
3.1	Intelligent Addressable Multi Sensor Smoke Detector.	Nos									865	865	2,856.78	- 24,71,114.70
3.2	Addressable Fault Isolator Base	Nos									100	100	1,739.32	1,73,932.00
	Addressable Fault Isolator	Nos									100	100	3,363.00	3,36,300.00
3.4	Supply installation testing and commissioning of dust and vermin proof addressable analogue Manual Call Boxes to initiate audio visual alarm including the cost of mounting accessories complete as per specifications and as required.	Nos									50	50	3,776.00	1,88,800.00
3.5	Supply, installation, testing and commissioning of Wall/ Ceiling mounting strobes for visual indication including the cost of mounting accessories complete as per specifications and as required.	Nos									50	50	3,122.28	- 1,56,114.00
3.6	Addressable Loop Sounder 6.8 W.	Nos									50	50	3,001.92	1,50,096.00
3.7	Response Indicator constructed from 16 guage MS stove / ABS plastic enamelled sheet with front 16 guage steel cover plate / ABS plastic complete as required.	Nos									265	265	365.80	96,937.00
3.8	Intelligent Addressable Duct Detector	Nos									30	30	7,670.00	2,30,100.00
3.9	Supply, installation, testing and commissioning of Control Modules including the cost of mounting accessories complete as per specifications and as required.	Nos									60	60	3,363.00	2,01,780.00
3.10	Supply, installation, testing and commissioning of Monitor Modules including the cost of mounting accessories complete as per specifications and as required.	Nos									45	45	3,363.00	- 1,51,335.00
3.11	Intelligent Addressable water Flow Monitoring Modules	Nos						+	-		50	50	3,363.00	1,68,150.00

	REVISED SCHEDULE-F ELEC	CTRICAL,	FIRE PROT	ECTION AN	ID HVAC S	YSTEMS								
Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Otv	Rate (INR)	Amount (INR)
3.13	Supply, installation, testing and commissioning of wall or ceiling mounted 240V AC illuminated double sided pictorial Exit signs provided with appropriate direction arrow painted in green on white with LED lamp including the cost of in-built rechargable batteries with charger suitable for 90 minute operation and including the cost of mounting accessories for surface/recessed or ceiling suspended complete as per specifications and as required.	Nos		lunit				Kei		000.0	0	0	1,223.00	-
4	Supplying, Laying, Termination, Testing & Commisioning of Fire Survival Cables (confirming to BS: 7846 and Section E02, 35 of M & E specifications for perfomance requirements of Fire Survival Cables) armoured, 1 pair 2.5 sq.mm, screened / shielded, Copper conductor (one pair shielded and one pair unshielded) cable or Mineral Insulated cable complying the CWZ category.	Mtrs									2800	2800	83.78	2,34,584.0
5	Supplying, Laying, Termination, Testing & Commisioning of Fire Survival Cables (confirming to BS: 7846 and Section E02, 35 of M & E specifications for perfomance requirements of Fire Survival Cables) armoured, 1 twisted pair 1.5 sq.mm, screened / shielded copper conductor cable or Mineral Insulated cable complying the CWZ category for looping of detection units etc.	Nos									4800	4800	76.70	- 3,68,160.0
6	Mandatary Operational Spares for the Panels including with minimum as follows: a. 2 No. for each type of Detector and devices b. 5 No. MCP c. 1 No. controllers in FACP d. 2 No. Rover supply e. 5 No. Response indicator f. 2 No. Hooter g. 2 No. Strober f. 2 No. Hooter h. All other spares as required	Nos									1	1	3,54,000.00	3,54,000.0
														•
7	Fire Rated Material for Cut-outs Closing Description of Work													-
	All the Shaft and services openings in fire rated walls & floors are to be properly fire stopped with 2 hrs fire rated Insulation & integrity with PROMASTOP [®] Mortar/Cement . The system would involve providing and fixing of PROMASTOP [®] Cement with required thickness. Penetrations through walls and floors to be sealed with PONASTOP [®] Mortar as tested to BS: 476 Part 20 & AS 1530 part 4 to maintain the required fire rating of 4 hrs of the building element. Installation shall be done in accordance with the tested specification. The system will have to be supported by a valid Test report of the complete system as per BS 476 part 20 issued by M/s.Promat International Asia Pacific Ltd.	Sqm									200	200	12,499.00	24,99,800.0
	TOTAL CARRIED TO SUMMARY FIRE DETECTION ZF.02													87,17,134.4
	HVAC SYSTEM BOQ FOR KASTURCHAND PARK PD													
KA	EQUIPMENT													
1	Supplying, installing, testing and commissioning of Smoke extraction Fire Rated Axial fans as per specifications. Fan shall be with direct driven Tube axial fan. The fan shall be equipped with mounting bracket, inlet & outlet cone required at suction & discharge, fire rated flexible connection. Cost of spring isolators for the installation of the fans needs to be included.													
1.1	The motor shall be Class H rating and suitable for 415±10% volts 3 phase 50 cycles, AC supply. The motor selected shall be IE2 efficiency at full load. Fan shall be selected for minimum efficiency of 65%.													
1.2	Fan and casing shall be suitable for normal & smoke exhaust application.Motor shall be mounted inside the fan casing & thermally rated for 300 Deg C for 2 hour as per [BS-7346 Part-2 : 1090]													
1.3	External static pressure shall be 20-25 mm (WC) minimum and Total static pressure shall be checked by vendor and motor shall be compatible to operate on VFD. For EA-1-4 & 6-9, external static pressure shall be 35-40 mm (WC) minimum and total static pressure shall be checked by vendor													
1.4	Fan if used for any case other than in case of fire shall be selected for lower noise level and shall not exceed 70 DB (A) at 3 m distance from the fan. If required contractor to add sound attenuator to meet the desired noise level. Fan shall be selected for minimum efficiency of 65% and motor shall be compatible to operate on VFD.													
1.5	Fan are used in case of fire and can be selected for higher outlet velocity as sound is not criteria while selecting.											-		
			1						1					
1.6	The fan capacities shall be as follows:											+		
	Equipment Tag Space Location CFM Motor kW													
		Nec							2			2	1 55 007 00	3,11,774
	EA 1-2 Exhaust Air- Normal Basement 2 10000 3.7 EA 3-4 Exhaust Air- Normal Basement 2 10000 3.7	Nos Nos	1						2			2	1.55.887.00	3,11,774
	EA 5 Exhaust Air- HVAC Plant Basement 2 8000 1.5	Nos							1			1	89,691.00	89,691
	EA 6-7 Exhaust Air- Normal Basement 1 10000 3.7 EA 8-9 Exhaust Air- Normal Basement 1 10000 3.7	Nos							2			2	1.55.887.00 1,55,887.00	3,11,774 3,11,774
	EA 10 Plumbing Plant Room Basement 1 4500 1.10	Nos							1			1	78.575.00	78,575
	EA 11 LT Panel Room Basement 1 4200 1.10	Nos	1						1			1	88,113.00	88,113

				Description			VISED SCHEDU								Kan						
tem 2.1	Fan used for any purpose of distance from the fan. If re minimum efficiency of 60- 62 for higher outlet velocity as	quired contract 5% and also the	se of fire shall t or to add soun ese fan will oper	be selected for ad attenuator to rate through VF	o meet the des	ired noise leve	l. Fan shall be se	elected for	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
	for higher outlet velocity as	sound is not em	Jenia writte selec	ling.																	
2.2	The motor selected shall be maximum rating is specified	IE 2 efficiency below and cont	TEFC Motors s ractor can seler	uitable for 415 ct a lower ratin	± 10% volts, ig motor incase	50 Hz, AC supp the desired pe	ply and IE 2 effici rformance is being	ency. The g met													
2.3	External static pressure sha external static pressure shal			im and Total st				AXF-1-4 ,													
					e pressure sna	T be checked by	vendor														
2.4	The fan capacities shall be a	s follows:		·																	
	Equipment Tag	Sp	ace	Location	CFM		Motor kW														
	AXF 1-2			Basement 2	10000		3.7		Nos Nos							2			2	1,42,180.00	2,84,36
	AXF 3-4 AXF 5	HVAC P	r- Normal ant Room	Basement 2 Basement 2	10000 8000		3.7 1.50		Nos							2			1	1,42,180,00 1,07,156.00	1,07,156
	AXF 6			Basement 1	4500		1.10		Nos							1			1	73,712.00	73,712
	AXF 7			Basement 1	4200		1.10		Nos							1			1	69,481.00	69,481
	AXF 8-11	Lift Well Pre	assurization	Terrace	16500		5.5		Nos							4			4	1.27.748.00	5,10,992
	AXF 12		ressurization	Terrace	26500		7.5		Nos					+		1 4			4	1,82,827.00 1.82,827.00	1,82,822
	AXF 13-16	Staircase Pr	ressurization	Terrace	24000	- I	/.5		Nos					+		4			4	1.82.827.00	/,12,308
3	Supplying, installing, testing or horizontal ducts. The casi be DIDW with forward curve volt single phase 50 cycles <i>k</i> included between fan & regu	ing shall be dou impeller fitted AC supply. All u	ble skin, intern with maintenan nits shall be co	nally acousticall nce free externa omplete with du	y lined and cor al rotor motor. Ict flexible conr	structed of gal The motor shall ector, speed re	vanised steel. The l be suitable for 2 egulator (with wir	e fan shall 20 ± 10% ing of 3 m													
3.1	The fan shall have low soun vendor during the shop draw		ig not more tha	an 40 db(A) at	three metre di	stance. Actual	static to be check	ed by the													
	Fan Tag		Loca	tion	CF	м	SP (mmw	(a)													
	IF - 01-		Electrica	al Room	55	50	10-15		Nos							1			1	10.295.00	10,29 5,93
	IF - 02- IF - 03-		Toi		20	00	10-15 10-15		Nos Nos							1			1	5,935.00 7.025.00	5,93
4	Supplying, installing, testin permanent split capacitor o weather protection as requir	r shaded pole r	ssioning of dire motor, mountin	ect drive doming plate, access	estic propeller	fans. Each fa	in shall be comp									1			-	7.025.00	7,02.
	300 mm dia 900 RPM fan su	itable for 220±	6% volts 50 cyr	cles, 1 phase A	C supply.				Nos							3			3	8.590.00	25,770
5	Supply, installing, testing an with the tender specification following specifications :	nd commissioning ns and shall be	ng of VFD suita complete in a	able for HVAC a ill respects and	application wit I suitable for f	h minimum I ollowing motor	P 55 enclosures rating and shall	complying meet the													
	a) The VFD shall have a dua minimize power line harmon							DC bus to													
														1							
			'55 enclosure p	PID loops are	required																
	b) All the VFD's should have c) EMC filters. C1 Category.	Drive should -		TTO TOODS are	required									1					1		
	 b) All the VFD's should have c) EMC filters, C1 Category. 	Drive should su	ibboilt at least .							1									1		
	b) All the VFD's should have c) EMC filters. C1 Category.	Drive should su		lication				Motor						1					1		
	b) All the VFD's should have c) EMC filters. C1 Category.	Drive should su	Appl					Motor HP													
	b) All the VFD's should have c) EMC filters. C1 Category.	Drive should su	Appl	lication (FA and EA)					Noc							10			10	(5.412.00	11 77 414
	b) All the VFD's should have c) EMC filters. C1 Category.		Appl						Nos							18			18	65.412.00	11,77,410
	b) All the VFD's should have c) EMC filters. C1 Category.		Appl						Nos Nos							18					11,77,41
6	b) All the VFD's should have c) EMC filters. C1 Category.	Drive should su	Appl Axial Fan	(FA and EA)				HP 5 3								18					11,77,416
6	c) EMC filters. C1 Category.	Drive should su	Appl Axial Fan Ing of Adequate iller with necess	(FA and EA)	nel & control ca			HP 5 3								18					11,77,416
6	c) EMC filters. C1 Category.	Drive should su	Appl Axial Fan ing of Adequate iller with necess d in separate ill 02 -686 Sgm)	(FA and EA) e number of CC sary Control par	nel & control ca			HP 5 3								18					
6.1	c) FMC filters. C1 Category. Supply, installing, testing a ventilation fans (at B1, B2) a Please note that VFD, Fan Second Basemont (Zon-O1)	Drive should su nd commissioni and logic contro n is considered 719 Sam, Zone-0	Appl Axial Fan ing of Adequate iller with necess d in separate il -02 -686 Sam) 2 699 Sam)	(FA and EA) e number of CC sary Control particles	nel & control ca	bling will form	a part of the same	HP 5 3 r car park e.	Nos							18				65.412.00	6,12,68
6.1 6.2	c) FMC filters. C1 Category.	Drive should su nd commissioni and logic contro nis considerea 719 Sam, Zone-00 8 Sam, Zone-00 cum transmissi	Appl Axial Fan ing of Adequate iller with necess I in separate ili -02 -686 Sam) on flexible copp	(FA and EA) e number of CC sary Control particles	nel & control ca	bling will form	a part of the same	HP 5 3 r car park e.	Nos Lot							1			0	65.412.00	6,12,680
6.1 6.2	c) FMC filters. C1 Category. Supply, installing, testing a ventilation fars (at B1, B2) e Second Basement (Zane-D1 68 Providing & fixing of control CO senser & controller S. CO sensor shall be provid Supply, installation, testing	Drive should su	Appl Axial Fan Ing of Adequate Iller with necess I in separate ii Co2 - 686 Sam) on flexible copp 250 Sqm	(FA and EA) e number of CC sary Control par item of the BC	nel & control ca 00. core x 1.5 sq r	nm in 20/25 m	a part of the sam	HP 5 3 r car park e. t between	Nos Lot							1			0	65.412.00	6,12,680 2,65,000
6.1 6.2 6.3	c) EMC filters. C1 Category.	Drive should su	Appl Axial Fan Ing of Adequate Iller with necess I in separate ii Co2 - 686 Sam) on flexible copp 250 Sqm	(FA and EA) e number of CC sary Control par item of the BC	nel & control ca 00. core x 1.5 sq r	nm in 20/25 m	a part of the sam	HP 5 3 r car park e. t between	Nos Lot							1			0	65.412.00	11,77,416 6,12,680 2,65,000
6.1 6.2 6.3	c) FMC filters. C1 Category. Supply, installing, testing a ventilation fars (at B1, B2) e Second Basement (Zane-D1 68 Providing & fixing of control CO senser & controller S. CO sensor shall be provid Supply, installation, testing	Drive should su nd commissioni and logic contro of is considerea 8 Sam, Zone-02 cum transmissi ed one no per and commission here in BOQ.	Appl Axial Fan ing of Adequate liler with necessi 1 in separate in :-02686 Sam) 2 699 Sam) ion flexible copp 250 Sqm ning of Digital c	(FA and EA) e number of CC sary Control par item of the BC	nel & control ca 00. core x 1.5 sq r	nm in 20/25 m	a part of the sam	HP 5 3 r car park e. t between	Nos Lot							1			0	65.412.00	6,12,680 2,65,000

		REVISED SCHEDULE-F ELE													
tem	Description TOTAL CARRIED TO SUMMARY OF KA		Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR) 58,63,768.0
															-
КВ	AIR DISTRIBUTION														-
1	Supply, installation and testing of GI sheet metal ducts fabricated in f	actory as per SMACNA Standard and approved shop													
	drawings. Duct shall be supported via Gripples supports as per the specifica	tions :													-
	Duct Size	Recommended Gauge of GI sheet													
	1 -900 mm	26	Sqm							1400			1400	577.00	8,07,800
	901 -120 mm	24	Sqm							2060			2060	685.00	14,11,100
	1201 -1800 mm	22	Sqm							1110			1110	790.00	8,76,900
	1801 - 2100 mm	20	Sqm							20			20	890.00	17,800
	2101 - above	18	Sqm							100			100	1,100.00	1,10,000
			Jam							100			100	1,100.00	1,10,000
2	Supply, installation and testing of GI sheet metal ducts Site fabricated a shall be supported via Gripples supports as per the specifications :	s per 15 Standard and approved snop drawings. Duct													
	Duct Size	Recommended Gauge of GI sheet													
	Upto 750mm	24	Sqm							10			10	577.00	5,770
	750mm- 1500 mm	22	Sqm							10			10	682.00	6,820
	1510 mm- 2250 mm	20	Sqm							10			10	790.00	7,900
	above 2250 mm	18	Sam							200			200	945.00	1,89,00
3			Juli										200	943.00	1,05,00
3	Supply, installation and balancing of Extruded Aluminium construction Sup will be powder coated in shade approved by Client and installed as per a may be double or single louvered, adjustable or fixed as required by Client		Sqm							20			20	8,400.00	1,68,00
4	Supply, installation and balancing of Extruded Aluminium construction Retu The grilles will be powder coated in shade approved by Client and installed grilles may be double or single louvered, adjustable or fixed as required by	as per approved shop drawings and specifications. The	Sqm							22			22	6,300.00	1,38,60
5	Supplying & fixing of opposed blade GI construction volume control damp drawings and specifications.	ers in Rectangular supply air duct as per approved	Sqm							15			15	5,775.00	86,62
6	Supply, installation, testing and balancing of Powder coated/Anodised ex bird screen for fresh air alongwith GI construction volume control damper by Client and installed as per approved shop drawings and specifications.	truded aluminium construction inlet air louvers with The louvers will be powder coated in shade approved.	Sqm							18			18	9,450.00	1,70,10
7	Supply, installation, testing and balancing of Powder coated/Anodised extr bird screen. The louvers will be powder coated in shade approved by Cli specifications.		Sqm							22			22	6,825.00	1,50,15
8	Supply, installation, testing and balancing of Powder coated/Anodised extr make up/exhaust air. The grilles will be powder coated in shade approved and specifications.		Sqm							2			2	8,400.00	16,80
9	Supply, installation, testing and commissioning of motorised combined a control panel, inter connecting wiring at locations shown in approved shog shall include control panel alongwith fire resistant inter connecting wiring ar	drawings and as per specifications. The quoted price													
9.1	Motorized Dampers.		Sqm							18			18	7,875.00	1,41,75
9.2	Control Panel & Wiring (including actuators)		Nos	-		-	-	-		31			31	9,450.00	2,92,95
	TOTAL CARRIED TO SUMMARY KB		1105										21	5,155.00	45,98,06
×6															+3,93,00
кс	THERMAL INSULATION														
1	Supply and fixing of duct acoustic lining with in supply and return air ducts	as per specifications.													
1.1	15 mm thick nitrile rubber duct lining		Sqm							100			100	1,575.00	1,57,5
	TOTAL CARRIED TO SUMMARY KC														1,57,50
KD.															_,,00
KD	ELECTRICAL INSTALLATION														
1	CONTROL PANELS FOR FANS & FAN SECTION (IP 55)			1		1	1	1	1	1					

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				BAL	ANCE WORKS EXCLUDNG V REVISED SCHEDULE-F EL						•••							
Item	[Description		REVISED SCHEDULE-F EL			NAR			666	KCD		CCE PD	714	Total Oty	Date (IND)	Amount (INR)
Item	Design, manufacture, supply mounted control panels, incl be provided by the electrical	uding anchoring into the wall	mmissioning o	f the following cubicle type ating into MCCB and coppe	, dead front, sheet steel, wa r earthing, in each panel sha	I	AMS	NAK	1113	KDC	663	NUP	KCP PD		ZM			-
		ed with Stop /Manual /Auto s Contact for Connections to Bui			ugh BAS. All starters shall b	5												-
	The panel shall include the fo	llowing components & access	ories.															-
	a. MCCB as per the ratings g	iven below, suitable for motor	duty and able	to withstand fault level of 2	20 KA.													-
	b. DOL/SD starter as HP rati	ng																-
	c. Terminal block for power of																	-
		with built in single phasing pr	rotection.															-
		I indicating light for ON status																-
	f. Digital voltmeter and digita																	-
			arow switch sh	all be provided in each par	nel to facilitate override of th													-
	automatic operation.	ai operation, 5 pole single ti	now switch sh			-												-
	h. 3 No. of Single Pole MCB's as a spare.	Shall be provided at the inco	oming section o	of the starter panel for DDC	Panel , fire damper actuator 8	k												-
	i. All starters shall be provide	ed with suitable potential free	contract for co	nnections to the Building Au	utomation System.													-
	j. 220 / 24 V Transformer																	-
	The number of control panels	s shall be as follows.																-
1.1	Suitable rating MPCB with DO	OL starter for upto 5 HP motor				Nos										0		-
1.2	Suitable rating MCCB with D	OL starter with VFD for upto 5	HP motor			Nos							18			18	22.000.00	3,96,000.00
1.3	Suitable rating MPCB with S/	D starter for 7.5 HP motor		I I	1 1	Nos							4			4	27.500.00	1,10,000.00
1.4	Suitable rating MPCB with S/	D starter for 10 HP motor	1	1		Nos							5			5	39.896.00	1,99,480.00
	Note :- All Outdoor panel	shall be IP 55	1															-
	TOTAL CARRIED TO SUMM	IARY KD																7,05,480.00
		HVAC SYSTEM	BOQ FOR GA	DDIGODAM PD														
GA	EOUIPMENT		L		per specifications. Fan shall b													-
1	with direct driven Tube axis		ipped with mo	unting bracket, inlet & outle	et cone required at suction a													-
1.1	The motor shall be Class H r	ating and suitable for 415±10 all be selected for minimum e	0% volts 3 pha fficiency of 65%	ase 50 cycles, AC supply. The	he motor selected shall be IE	2												-
1.2					side the fan casing & thermall													
	rated for 250 Deg C for 2 ho	ur as per [BS-7346 Part-2 : 1	.090]															-
1.3	External static pressure shall be compatible to operate on shall be checked by vendor	VFD. For EA-1-9, external sta	m and Total st itic pressure sh	atic pressure shall be check hall be 35-40 mm (WC) min	ked by vendor and motor sha imum and total static pressur	5												-
1.4	distance from the fan. If red		nd attenuator t	to meet the desired noise le	I not exceed 70 DB (A) at 3n evel. Fan shall be selected fo													-
1.5	Ffan are used in case of fire a	and can be selected for higher	outlet velocity	as sound is not criteria wh	ile selecting.													-
1.6	The fan capacities shall be as	s follows:	1	· · ·	+ + T T	-	-											-
	Equipment Tag	Space	Location	CFM	Motor kW	1	1											-
	EA 1-2	Exhaust Air- Normal	Basement 2	8500	3.7	Nos								2		2	1.04.092.00	2,08,184.00
	EA 3-4 EA 5-6	Exhaust Air- Normal Exhaust Air- Normal	Basement 2 Basement 1	7500 7000	3.7 3.7	Nos Nos								2		2	1,04,092.00 1.04.092.00	2,08,184.00
	EA 7-8 EA 9	Exhaust Air- Normal Plumbing Plant Room	Basement 1 Basement 1	6500	2.2 0.55	Nos								2		2	84,701.00 59.278.00	
			Easternent I		0.00			1						*			55.275.00	25,27

					REV	ISED SCHEDU	JLE-F ELE				ID HVAC S									
tem			Description					Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (IN
2	Supply, installation, testing & commissioni																			
	per site requirement and complete with to					e rated flexible	connection													
	and vibration isolators. The fan shall be equ	uipped with mou	unting bracket.	Fan capacity s	hall be as follows															
		1	1		1		1													
.1	Fan used for any purpose other than in ca	ase of fire shall	he selected for	lower noise l	evel and shall not	exceed 65 DB	(A) at 3m													
	distance from the fan. If required contract	tor to add sour	d attenuator to	meet the de	sired noise level	Ean chall be o	elected for													
	minimum efficiency of 60- 65% and also the																			
	for higher outlet velocity as sound is not cri			D. AXI 0-101	ans are used in co	ase of the carrie	Je selecteu													
	for higher outlet velocity as sound is not ch	iteria wille sele	cong.																	
		7550 14 1				1 15 0 00														
2	The motor selected shall be IE 2 efficiency	y TEFC Motors s	suitable for 415	± 10% volts,	50 Hz, AC supply	y and IE 2 effic	ciency. The													
	maximum rating is specified below and con	ntractor can sele	ct a lower ratin	g motor incas	e the desired perfo	ormance is bein	ng met													
		1			1		1													
3	External static pressure shall be 20-25 m		and Tabel a		shall be sheely d	human dan Fa	AVE 1.4													
2	external static pressure shall be 20-25 mi external static pressure shall be 35-540 mr	m (wc) minimi	um and total s	tatic pressure	shall be checked	i by vendor. Fo	r AXF-1-4,													
	external static pressure shall be 35-540 min	m (wc) minimu	m and total sta	tic pressure sr	all be checked by	vendor														
4	The fan capacities shall be as follows:																			
	Equipment Tag Sp	pace	Location	CFM	N	Motor kW			I											
					1				1											
		ir- Normal	Basement 2	8500		3.7		Nos	1							2		2	92.534.00	1,85,
		ir- Normal	Basement 1	6500	1	2.2		Nos	1							2		2	75.353.00	
		Plant Room	Basement 1	2000	1	0.55		Nos	I							1		1	53,026.00	53,
	AXF 6-9 Lift Well Pr	ressurization	Terrace	16500		5.5		Nos								4		4	1.27.748.00	5,10,
		Pressurization	Terrace	22500		7.5		Nos	1							1		1	1,73,889.00	1,73,
	AXF 11-12 Staircase P	ressurization	Terrace	22500	1	7.5		Nos	1							2		2	1.73.889.00	3,47,
	Supplying, installing, testing and commissi	ioning of Ceilin	g Mounted Inl	ine Fans suit	able for installing	in any position	in vertical													
	or horizontal ducts. The casing shall be dou																			
	be DIDW with forward curve impeller fitted	d with maintena	nce free externa	al rotor motor.	The motor shall b	be suitable for 2	220 ± 10%													
	volt single phase 50 cycles AC supply. All u	units shall be co	mplete with du	ct flexible con	nector, speed reg	ulator (with wir	ring of 3 m													
	included between fan & regulator) and volu	ume control dam	per and static	pressure or to	suit the system, s	shall be as follow	ws:													
					1		1													
L	The fan shall have low sound level exceedi	ing not more th	an $40 \text{ db}(\Lambda)$ at	three metre (listance Actual st	tatic to be chec	ked by the													
1	The fair shall have low sound level exceed			unee meue u																
	vendor during the shop drawings.																			
	vendor during the shop drawings.																			
		Las	tion			6D (mm)	1													
	Fan Tag	Loca	ition	c	FM	SP (mmv	1													
	Fan Tao				FM		wg)	Nos								2		2	13 443 00	26
	Fan Tao IF - 01-02	Store (Ba	sement 2)	2	FM 50	10-15	wg)	Nos								2		2	13.443.00	
	Fan Tao IF - 01-02 IF - 03-04	Store (Ba Store (Ba	sement 2) sement 1)	2	FM 50 50	10-15 10-15	wg)	Nos								2		2 2 1	13.443.00	26,
	Fan Tag IF - 01-02 IF - 03-04 IF - 05	Store (Ba Store (Ba Male Toilet (0	sement 2) sement 1) Ground Floor)	2 2 5	FM 50 50 50 00 00 00 00 00 00 00 00 00 00	10-15 10-15 10-15	wg)	Nos Nos								2 2 1		2 2 1	13.443.00 17.803.00	26, 17,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06	Store (Ba Store (Ba Male Toilet (Electrical Ro	sement 2) sement 1) Ground Floor) iom (Ground	2 2 5 2	FM 50 50 00 00 00 00 00 00 00 00 00 00 00	10-15 10-15 10-15 10-15	wg)	Nos Nos Nos								2 2 1 1		2 2 1 1	13.443.00 17.803.00 9.205.00	26, 17, 9,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 05 IF - 06 IF - 07	Store (Ba Store (Ba Male Toilet (G Electrical Ro Male Toilet	sement 2) sement 1) Ground Floor) om (Ground (Mezzanine	2 2 5 2 5 5	FM 50 50 50 00 00 00 00 00 00 00 00 00 00	10-15 10-15 10-15 10-15 10-15	Ma)	Nos Nos Nos Nos								2 2 1 1 1 1		2 2 1 1 1	13.443.00 17.803.00 9.205.00 17.804.00	26, 17, 9, 17,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 08	Store (Ba Store (Ba Male Toilet (C Electrical Rc Male Toilet Electrical Rc	sement 2) sement 1) Ground Floor) om (Ground (Mezzanine iom (Ground	2 2 5 2 2 5 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15	(pwg)	Nos Nos Nos Nos								2 2 1 1 1 1 1		2 2 1 1 1 1 2	13.443.00 17.803.00 9.205.00 17.804.00 9.205.00	26, 17, 9, 17, 9,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 05 IF - 06 IF - 07	Store (Ba Store (Ba Male Toilet (C Electrical Rc Male Toilet Electrical Rc	sement 2) sement 1) Ground Floor) om (Ground (Mezzanine	2 2 5 2 2 5 2 2 2	FM 50 50 50 00 00 00 00 00 00 00 00 00 00	10-15 10-15 10-15 10-15 10-15	(pwg)	Nos Nos Nos Nos								2 2 1 1 1 1 2		2 2 1 1 1 1 2	13.443.00 17.803.00 9.205.00 17.804.00	26, 17, 9, 17, 9,
	Fan Tag IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 08 IF - 09-10	Store (Ba Store (Ba Male Toilet (Electrical Rc Male Toilet Electrical Rc Store (M	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine iom (Ground ezzanine)	2 2 5 2 5 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15 10-15	(ma)	Nos Nos Nos Nos								2 2 1 1 1 1 2		2 2 1 1 1 1 2	13.443.00 17.803.00 9.205.00 17.804.00 9.205.00	26, 17, 9, 17, 9,
	Fan Tao IF - 01-02 IF - 02-04 IF - 03 IF - 07 IF - 07 IF - 09-10 Supplying, installing, testing and commit	Store (Ba Store (Ba Male Toilet (I Electrical Rc Male Toilet Electrical Rc Store (M issioning of dir	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine iom (Ground ezzanine) ect drive dom	2 2 5 2 5 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15	wg)	Nos Nos Nos Nos								2 2 1 1 1 2 2		2 2 1 1 1 1 2	13.443.00 17.803.00 9.205.00 17.804.00 9.205.00	26, 17, 9, 17, 9,
	Fan Tac IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole	Store (Ba Store (Ba Male Toilet (d Electrical Rc Male Toilet Electrical Rc Store (M issioning of dir motor, mountir	sement 2) sement 1) Ground Floor) oom (Ground (Mezzanine) oom (Ground ezzanine) ect drive dom og plate, acces	2 2 5 2 5 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15	wg)	Nos Nos Nos Nos								2 2 1 1 1 1 2 2		2 2 1 1 1 1 2	13.443.00 17.803.00 9.205.00 17.804.00 9.205.00	26, 17, 9, 17, 9,
	Fan Tao IF - 01-02 IF - 02-04 IF - 03 IF - 07 IF - 07 IF - 09-10 Supplying, installing, testing and commit	Store (Ba Store (Ba Male Toilet (d Electrical Rc Male Toilet Electrical Rc Store (M issioning of dir motor, mountir	sement 2) sement 1) Ground Floor) oom (Ground (Mezzanine) oom (Ground ezzanine) ect drive dom og plate, acces	2 2 5 2 5 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15	wg)	Nos Nos Nos Nos								2 2 1 1 1 2 2		2 2 1 1 1 1 2	13.443.00 17.803.00 9.205.00 17.804.00 9.205.00	26, 17, 9, 17, 9,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole weather protection as required. The fan shade	Store (Ba Store (Ba Male Toilet (Electrical Rc Male Toilet Electrical Rc Store (M issioning of dir motor, mountir all be of following	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine) iom (Ground ezzanine) ect drive dom- ng plate, acces ing rating:	2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 5 5 5 5 2 2 2 2 2 2 5	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15	wg)	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 226, 17, 9, 17, 9, 26,
	Fan Tac IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole	Store (Ba Store (Ba Male Toilet (Electrical Rc Male Toilet Electrical Rc Store (M issioning of dir motor, mountir all be of following	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine) iom (Ground ezzanine) ect drive dom- ng plate, acces ing rating:	2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 5 5 5 5 2 2 2 2 2 2 5	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15	wg)	Nos Nos Nos Nos								2 2 1 1 1 1 2 2 2 2		2 2 1 1 1 2 2 2 2 2	13.443.00 17.803.00 9.205.00 17.804.00 9.205.00	26, 17, 9, 17, 9, 26,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 08 IF - 09-10 Supplying, installing, testing and commit permanent spilt capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220±	Store (Ba Store (Ba Male Toilet (Electrical Rc Male Toilet Electrical Rc Store (M issioning of dir motor, mounti all be of followin E6% volts 50 cy	sement 2) sement 1) Ground Floor) iom (Ground ezzanine) ect drive dom ig plate, acces ig rating: cles, 1 phase A	2 2 5 2 2 2 estic propelle sories like wir C supply.	FM 1 50 50 90 00 90 <t< td=""><td>10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15</td><td>wg)</td><td>Nos Nos Nos Nos Nos</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00</td><td>26, 17, 9, 17, 9, 26,</td></t<>	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15	wg)	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
	Fan Tac IF - 01-02 IF - 03-04 IF - 03 IF - 03 IF - 05 IF - 07 IF - 09-10 Supplying, installing, testing and commis permanent split capacitor or shaded pole weather protection as required. The fan shi 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission	Store (Ba Store (Ba Male Toilet (C Electrical Rc Male Toilet Electrical Rc Store (M sissioning of dir motor, mountii all be of followir bef% volts 50 cy ing of VFD suit	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine iom (Ground ezzanine) ect drive dom ng plate, acces ig rating: cles, 1 phase A able for HVAC.	2 2 5 2 5 2 2 2 estic propelle sories like wir C supply. application wi	FM 50 50 50 00 00 00 50 1 fans. Each fan e guard, bird scro	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 5 enclosures	wg)	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall by	Store (Ba Store (Ba Male Toilet (C Electrical Rc Male Toilet Electrical Rc Store (M sissioning of dir motor, mountii all be of followin teo% volts 50 cy ing of VFD suit	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine iom (Ground ezzanine) ect drive dom ng plate, acces ig rating: cles, 1 phase A able for HVAC.	2 2 5 2 5 2 2 2 estic propelle sories like wir C supply. application wi	FM 50 50 50 00 00 00 50 1 fans. Each fan e guard, bird scro	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 5 enclosures	wg)	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9,
	Fan Tac IF - 01-02 IF - 03-04 IF - 03 IF - 03 IF - 05 IF - 07 IF - 09-10 Supplying, installing, testing and commis permanent split capacitor or shaded pole weather protection as required. The fan shi 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission	Store (Ba Store (Ba Male Toilet (C Electrical Rc Male Toilet Electrical Rc Store (M sissioning of dir motor, mountii all be of followin teo% volts 50 cy ing of VFD suit	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine iom (Ground ezzanine) ect drive dom ng plate, acces ig rating: cles, 1 phase A able for HVAC.	2 2 5 2 5 2 2 2 estic propelle sories like wir C supply. application wi	FM 50 50 50 00 00 00 50 1 fans. Each fan e guard, bird scro	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 5 enclosures	wg)	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 07 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall by	Store (Ba Store (Ba Male Toilet (C Electrical Rc Male Toilet Electrical Rc Store (M sissioning of dir motor, mountii all be of followin teo% volts 50 cy ing of VFD suit	sement 2) sement 1) Ground Floor) iom (Ground (Mezzanine iom (Ground ezzanine) ect drive dom ng plate, acces ig rating: cles, 1 phase A able for HVAC.	2 2 5 2 5 2 2 2 estic propelle sories like wir C supply. application wi	FM 50 50 50 00 00 00 50 1 fans. Each fan e guard, bird scro	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 5 enclosures	wg)	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 09-10 Supplying, installing, testing and commin permanent split capacitor or shaded pole weather protection as required. The fan shi 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall be following specifications :	Store (Ba Store (Ba Male Toilet (Electrical Rc Store (M Issioning of dir motor, mounti all be of followin 6% volts 50 cy ing of VFD suit e complete in a	sement 2) sement 1) Sround Floor). Iom (Ground ezzanine) drive dom g plate, acces g rating: cles, 1 phase A able for HVAC all respects and	2 5 2 5 2 2 estic propelle sories like wir C supply. application wi 4 suitable for	FM 1 50 0 00 0 00 0 00 0 50 1	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 shall be com een and fixed I 55 enclosures rating and shall	plete with louvers for complying I meet the	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
	Fan Tac IF - 01-02 IF - 02-04 IF - 03-04 IF - 03 IF - 03 IF - 03 IF - 09 IF - 09 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall bi following specifications: a) The VFD shall have a dual 5% impedance	Store (Ba Store (Ba Male Toilet (I Electrical Re Store (M Male Toilet Electrical Re Store (M issioning of dir motor, mountii all be of followir tet volts 50 cy ing of VFD suit re complete in a ce DC link react	sement 2) sement 1) foround Floor) foround Floor) forom (Ground ezzanine) ect drive dom g plate, acces g rating: cles, 1 phase A cles, 1 phase A able for HVAC a all respects and cor (Harmonic fi	2 5 2 5 2 2 estic propelle sories like wir C supply. application wi 1 suitable for itsuitable for	FM 50 50 50 50 50 50 50 50 50 50 50 50 50 50 5	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 50 enclosures rating and shall tive rails of the	plete with louvers for complying I meet the	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 09-10 Supplying, installing, testing and commin permanent split capacitor or shaded pole weather protection as required. The fan shi 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall be following specifications :	Store (Ba Store (Ba Male Toilet (I Electrical Re Store (M Male Toilet Electrical Re Store (M issioning of dir motor, mountii all be of followir tet volts 50 cy ing of VFD suit re complete in a ce DC link react	sement 2) sement 1) foround Floor) foround Floor) forom (Ground ezzanine) ect drive dom g plate, acces g rating: cles, 1 phase A cles, 1 phase A able for HVAC a all respects and cor (Harmonic fi	2 5 2 5 2 2 estic propelle sories like wir C supply. application wi 1 suitable for itsuitable for	FM 50 50 50 50 50 50 50 50 50 50 50 50 50 50 5	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 50 enclosures rating and shall tive rails of the	plete with louvers for complying I meet the	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
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	Fan Tac IF - 01-02 IF - 02-04 IF - 03-04 IF - 03 IF - 03 IF - 03 IF - 09 IF - 09 IF - 09-10 Supplying, installing, testing and commit permanent split capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall bi following specifications: a) The VFD shall have a dual 5% impedance	Store (Ba Store (Ba Male Toilet (Electrical Re Store (Male Toilet) (Electrical Re Store (M issioning of dir motor, mounti all be of followin to followin to followin to followin to followin to followin to followin ce complete in a ce DC link react t the VFD from p	sement 2) sement 1) Ground Floor) hom (Ground (Mezzanine) ect drive dom ng plate, acces grating: cles, 1 phase A able for HVAC all respects and cover line trans protection	2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50 50 5	10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 50 enclosures rating and shall tive rails of the	plete with louvers for complying I meet the	Nos Nos Nos Nos Nos											13.443.00 17.803.00 9.205.00 17.804.00 9.205.00 13.443.00	26, 17, 9, 17, 9, 26,
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	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 09-10 Supplying, installing, testing and commin permanent split capacitor or shaded pole weather protection as required. The fan shr 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall be following specifications : a) The VFD shall have a dual 5% impedance minimize power line harmonics and protect b) All the VFD's should have factory fitted I c) EMC filters, C1 Category, Drive should su	Store (Ba Store (Ba Mate Tolet () Electrical Re Hale Tolet () Estore (Mate Tolet () Estore (M Store (M	sement 2) sement 1) sement 1) om (Ground Hoer) (Merzanine ezzanine) ezzanine) ezzanine) et drive dom g plate, acces g rating: cles, 1 phase A bable for HVAC able for HVAC able for HVAC able for HVAC able for HVAC over line trans protection P ID loops are lication (FA and EA)	2 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		10-15 10-15 10-15 10-15 10-15 10-15 10-15 10-15 55 enclosures 55 enclosures atting and shall tive rails of the saturating.	wa) plete with louvers for complying i meet the DC bus to	Nos Nos Nos Nos Nos Nos Nos								2			13.443.00 17.803.00 9.205.00 9.205.00 13.844.00 9.205.00 13.443.00 8.590.00 8.590.00 65.412.00	26,1 17,7,1 9, 17,7, 9, 26,1 17, 17, 17, 17, 17, 17, 17, 17, 17, 1
	Fan Tac IF - 01-02 IF - 02-04 IF - 03 IF - 03 IF - 03 IF - 03 IF - 09-10 Supplying, installing, testing and commis permanent split capacitor or shaded pole weather protection as required. The fan shat 300 mm dia 900 RPM fan suitable for 2204 Supply, installing, testing and commission with the tender specifications and shall be following specifications: a) The VFD shall have a dual 5% impedant minimize power line harmonics and protect b) All the VFD's should have factory fitted I c) EMC fitters, C1 Category, Drive should sis Supply, installing, testing and commission	Store (Ba Store (Ba Male Toilet () Bectrical Re Male Toilet () Store (M sister) (M all be of followin all be of followin be of followin be of followin complete in a ce DC link react the VFD from p IPS5 enclosure ; upport at least. App Axial Fan	sement 2) sement 1) sement 10 for (Ground (Mezzanine om (Ground ezzanine) ect drive dom g plate, access g rating: cles, 1 phase A bable for HVAC abable for HV	2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10	wa) plete with louvers for complying i meet the DC bus to	Nos Nos Nos Nos Nos Nos Nos								2			13.443.00 17.803.00 9.205.00 9.205.00 13.844.00 9.205.00 13.443.00 8.590.00 8.590.00 65.412.00	26, 17, 9, 17, 9, 26, 17, 17, 17, 17, 17,
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	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 09-10 Supplying, installing, testing and commis permanent split capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall be following specifications : a) The VFD shall have a dual 5% impedant minimize power line harmonics and protect b) All the VFD's should have factory fitted I c) EMC filters, C1 Category, Drive should su supply, installing, testing and commission ventilation fans (at B1, B2) and logic contr Supply, installing, testing and commission second Basement (20n-62) 20 and logic contr	Store (Ba Store (Ba Store (Ba Mate Toliet () Electrical Re Hale Toliet () Electrical Re Hale Toliet () Electrical Re Hale Toliet () Store (M Hale Toliet () Hale Toliet ()	sement 2) sement 1) Sement 10 forund Floor) forund Floor) (Kezzanine carzanine) tect drive dom g plate, acces g rating: (Es, 1 phase A ababie for HVAC all respects and terror (Harmonic fi sover line trans- ordection 10 (Days are 10 (Days are 10 (Days are 10 (Days are) 10	2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10	wa) plete with louvers for complying i meet the DC bus to	Nos Nos Nos Nos Nos Nos Nos								2		2 0 12 2	13.443.00 17.803.00 9.205.00 9.205.00 13.844.00 13.443.00 8.590.00 8.590.00 65.412.00 65.412.00	26, 17, 9, 17, 26, 26, 17, 17, 17, 17, 17, 17, 17, 17, 17, 17
1	Fan Tac IF = 01-02 IF = 02-04 IF = 06 IF = 07 IF = 08 IF = 09.10 Supplying, installing, testing and commis permanent split capacitor or shaded pole weather protection as required. The fan shat 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall be following specifications: a) The VFD shall have a dual 5% impedant minimize power line harmonics and protect b) All the VFD's should have factory. fitted I c) EMC fitters, C1 Catedory, Drive should si Supply, installing, testing and commission ventilation fans (at 81, 82) and logic control Please note that VFD, Fan is considered	Store (Ba Store (Ba Store (Ba Mate Toliet () Electrical Re Hale Toliet () Electrical Re Hale Toliet () Electrical Re Hale Toliet () Store (M Hale Toliet () Hale Toliet ()	sement 2) sement 1) Sement 10 forund Floor) forund Floor) (Kezzanine carzanine) tect drive dom g plate, acces g rating: (Es, 1 phase A ababie for HVAC all respects and terror (Harmonic fi sover line trans- ordection 10 (Days are 10 (Days are 10 (Days are 10 (Days are) 10	2 2 5 2 2 2 2 2 2 2 2 2 2 2 2 2	FM 50 50 50 50 50 50 50 50 50 50 50 50 50	10-15 10	wa) plete with louvers for complying i meet the DC bus to	Nos Nos Nos Nos Nos Nos Nos								2		2 0 12 2	13.443.00 17.803.00 9.205.00 9.205.00 13.844.00 13.443.00 8.590.00 8.590.00 65.412.00 65.412.00	26, 17, 9, 17, 26, 26, 17, 17, 17, 17, 17, 17, 17, 17, 17, 17
1	Fan Tao IF - 01-02 IF - 03-04 IF - 05 IF - 06 IF - 09-10 Supplying, installing, testing and commis permanent split capacitor or shaded pole weather protection as required. The fan sha 300 mm dia 900 RPM fan suitable for 220± Supply, installing, testing and commission with the tender specifications and shall be following specifications : a) The VFD shall have a dual 5% impedant minimize power line harmonics and protect b) All the VFD's should have factory fitted I c) EMC filters, C1 Category, Drive should su supply, installing, testing and commission ventilation fans (at B1, B2) and logic contr Supply, installing, testing and commission second Basement (20n-62) 20 and logic contr	Store (Ba Store (Ba Store (Ba Male Toilet () Electrical Rc Hale Toilet () Store (M Issioning of dir motor, mouth all be of followin all be of followin all be of followin te of volts 50 cy ling of VPD suit ing of VPD suit ing of VPD suit the VPD form p (PSS enclosure ; upport at least App Axial Fan Axial Fan e-22 630 Sam) 7 250 Sgm	sement 2) sement 1) sement 1) form (Found Floor) form (Ground czranine) ect drive dom g plate, access ig rating: des, 1 phase A czessing rating: des, 1 phase A able for HVAC able for HVAC able for HVAC able for HVAC able for HVAC able for HVAC or (Harmonic fi forwer line trans protection (FA and EA) (FA and EA) e number of CC sary control cat item of the BCC	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		10-15 10	wa) plete with louvers for complying meet the DC bus to Motor HP 5 3 v car park	Nos Nos Nos Nos Nos Nos Nos								2		2 0 12 2	13.443.00 17.803.00 9.205.00 9.205.00 13.844.00 13.443.00 8.590.00 8.590.00 65.412.00 65.412.00	26,1 17,7,1 9, 17,7, 9, 26,1 17, 17, 17, 17, 17, 17, 17, 17, 17, 1

		BALANCE WORKS EXCLUDNG VIAD						ci.							
Item	Description		Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
7	Supply, installation, testing and commissioning of Digital cooling thermostats to be inst	alled for controllig air handling units & fan													-
	coil units as described elsewhere in BOQ.														-
7.1	Snap acting thermostat for controlling Axial Fan		Nos								2		2	3.990.00	7,980.00
	TOTAL CARRIED TO SUMMARY OF GA														40,00,573.00
															-
GB	AIR DISTRIBUTION														-
1	Supply, installation and testing of GI sheet metal ducts fabricated in factory as p drawings. Duct shall be supported via Gripples supports as per the specifications :	er SMACNA Standard and approved shop													-
	Duct Size	Recommended Gauge of GI sheet													-
	001 -900 mm	26	Sqm								970		970	577.00	5,59,690.00
	901 -1200 mm	24	Sqm								350		350	685.00	2,39,750.00
	1201 -1800 mm	22	Sqm								1040		1040	790.00	8,21,600.00
	1801 - 2100 mm	20	Sqm								210		210	890.00	1,86,900.00
	2101 - above	18	Sqm								50		50	1,100.00	55,000.00
			Juli										50	1,100.00	-
2	Supply, installation and testing of GI sheet metal ducts Site fabricated as per IS Sta shall be supported via Gripples supports as per the specifications :	ndard and approved snop drawings. Duct													-
	Duct Size	Recommended Gauge of GI sheet													-
	Upto 750mm	24	Sqm								10		10	577.00	5,770.00
	750mm- 1500 mm	22	Sqm								10		10	682.00	- 6,820.00
	1510 mm- 2250 mm	20	Sqm								10		10	790.00	- 7,900.00
	above 2250 mm	18	Sqm								200		200	945.00	1,89,000.00
3	Supply, installation and balancing of Extruded Aluminium construction Supply air Grille		bqm								14		200	545.00	-
3	Supply, instanation and balancing of Excluded Aufmitum construction Supply air Grine will be powder coated in shade approved by Client and installed as per approved sho may be double or single louvered, adjustable or fixed as required by Client		Sqm								14		14	8,400.00	1,17,600.00
4	Supply, installation and balancing of Extruded Aluminium construction Return/Exhaust The grilles will be powder coated in shade approved by Client and installed as per appro grilles may be double or single louvered, adjustable or fixed as required by Client	ir Grilles without volume control dampers. wed shop drawings and specifications. The	Sqm								17		17	6,300.00	1,07,100.00
5	Supplying & fixing of opposed blade GI construction volume control dampers in Rec drawings and specifications.	tangular supply air duct as per approved	Sqm								15		15	5,775.00	86,625.00
6	Supply, installation, testing and balancing of Powder coated/Anodised extruded alum										8				-
0	Supply, installation, testing and balancing or bower loaded/Antoised extruded and bird screen for fresh alongwith GC construction volume control damper. The louvers by Client and installed as per approved shop drawings and specifications.	will be powder coated in shade approved	Sqm								0		8	9,450.00	75,600.00
7	Supply, installation, testing and balancing of Powder coated/Anodised extruded alumin										10				-
	bird screen. The louvers will be powder coated in shade approved by Client and inst specifications.	alled as per approved shop drawings and	Sqm										10	6,825.00	68,250.00
8	Supply, installation, testing and balancing of Powder coated/Anodised extruded alumin make up/exhaust air. The grilles will be powder coated in shade approved by Client an and specifications.	um construction Door Transfer Grille for d installed as per approved shop drawings	Sqm								2		2	8,400.00	16,800.00
9	Currently, installation, testing, and example installation of such substantiation and share with														-
9	Supply, installation, testing and commissioning of motorised damper complete with locations shown in approved shop drawings and as per specifications. The quoted pric resistant inter connecting wiring and also termination of Fire alarm control wiring.														-
9.1	Motorized Dampers.		Sqm								13		13	7.875.00	1,02,375.00
9.2	Control Panel & Wiring (including actuators)		Nos								20		20	9.450.00	1,89,000.00
214	TOTAL CARRIED TO SUMMARY OF GB												_0	5,50,00	28,35,780.00
															- 20,33,700.00
GC	THERMAL INSULATION														
1	Supply and fixing of duct acoustic lining with in supply and return air ducts as per specif	cations.													
1.1	15 mm thick nitrile rubber duct lining		Sqm							1	150		150	1,575.00	2,36,250.00
	TOTAL CARRIED TO SUMMARY OF GC														2,36,250.00
GD	ELECTRICAL INSTALLATION							-		-					

	Description	11	nit AMS											
			пс Амэ	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
]	CONTROL PANELS FOR FANS & FAN SECTION (IP 55)													-
	Design, manufacture, supply, installation, testing and commissioning of the following cubicle type, dead front, sheet steel, w mounted control panels, including anchoring into the wall, wiring terminating into MCCB and copper earthing, in each panel st be provided by the electrical contractor.	vall nall												-
	All outgoing shall be provided with Stop /Manual /Auto selector switch to facilitate operation through BAS. All starters shall provided with potential free Contact for Connections to Building Automation System.	be												-
	The panel shall include the following components & accessories.													-
	a. MCCB as per the ratings given below, suitable for motor duty and able to withstand fault level of 20 KA.	_												-
	b. DOL/SD starter as HP rating													
														-
	c. Terminal block for power distribution as required.													-
	d. Contactor, over load relay with built in single phasing protection.													-
]	e. Phase indicating lights and indicating light for ON status.													-
	f. Digital voltmeter and digital ammeter.													-
	g. For on/off/remote and local operation, 3 pole single throw switch shall be provided in each panel to facilitate override of t automatic operation.	the												-
	h. 3 No. of Single Pole MCB's Shall be provided at the incoming section of the starter panel for DDC Panel , fire damper actuato as a spare.	r 8.												-
	 All starters shall be provided with suitable potential free contract for connections to the Building Automation System. 													-
														-
	j. 220 / 24 V Transformer	_												
J	The number of control panels shall be as follows.													-
1.1	Suitable rating MPCB with DOL starter for upto 5 HP motor	N	os									0		
1.2	Suitable rating MCCB with DOL starter with VFD for upto 5 HP motor	N	os							14		14	22,000.00	3,08,000.0
1.3	Suitable rating MPCB with S/D starter for 7.5 HP motor	N	os							4		4	27,500.00	1,10,000.0
1.4	Suitable rating MPCB with S/D starter for 10 HP motor	N	os							3		3	39.896.00	1,19,688.0
	Note :- All Outdoor panel shall be IP 55													-
	TOTAL CARRIED TO SUMMARY OF GD													5,37,688.0
J														-
	HVAC BOQ FOR ZERO MILE STATION													
	EQUIPMENT & PIPING													-
11	Supply, Installation, testing and commissioning of Air Cooled Variable Refrigerant Volume System suitable for R410A and 415 \pm 10%, 50 Hz, AC supply. The unit shall consist of indoor units and external condensing units and other accessaries as listed belor complete in all respects. The unit shall be fully charged with gas and oil.	w												-
1.1.1														-
	Outdoor Unit Supply, installation, testing and commissioning of Modular type outdoor condensing units equipped with highly efficient scrol/hermetic type DC twin rotary compressors with digital/ invertor technology, special acryl precoated heat exchanger, low noise condenser fan with motor, auto check function for errors in display panel, auto address setting, as per specifications and capacities as mentioned below. (The unit shall be fully charged with gas and all if here shall include pressure testing).													-
														-
j	The units shall be complete with necessary mounting frames													-
	Capacity shall be as under													-
а	26 HP (22TR Nominal Capacity)	N	os									0	7,73,136.00	-
b	24 HP (20TR Nominal Capacity)	N	os									0	7,10,690.40	-
	20 HP (16TR Nominal Capacity)	N	os							T		0	6,60,139.20	-
	18 HP (15TR Nominal Capacity)		os									0	6,48,244.80	
			os									0		
	14 HP (11.6 TR Nominal Capacity)												4,52,176.25	-
f	12 HP (10 TR Nominal Capacity)	N										0	4,10,221.40	
g	10 HP (8.3 TR Nominal Capacity)	N	os						-		3	3	3,36,418.75	10,09,256.2

	BALANCE WORKS EXCLUDING VI						ст.							
Item	REVISED SCHEDULE-F ELE Description		FIRE PROT		ID HVAC S		GGS	KCP		GGS PD	ZM	Total Oty	Pate (INP)	Amount (INR)
	Indoor Units	Unit	AMS	NAR	1143	KDC	663	KUP	KCP PD	GG3 PD	211	Total Qty	Rate (INR)	-
1.1.2														
	Supply, installation, tesing and commissioning of ceiling mounted duct type indoor units each complete with coil, pre-filter, etc. The units casing shall be of steel construction, wall mounted split type indoor units and 220 volt, 1 phase, 50 Hz, AC supply all as													-
	per specifications. The capacities shall be as follows:													-
а	Celling mounted duct type 3500 CFM - 6.0 TR Nominal Capacity	Nos									0	0	2,53,053.36	-
														-
b	Ceiling mounted duct type 3200 CFM - 5.0 TR Nominal Capacity	Nos									6	6	82,368.72	4,94,212.32
с	Ceiling mounted duct type 2800 CFM - 5.0 TR Nominal Capacity	Nos									0	0	82,368.72	-
d	Ceiling mounted duct type 2500 CFM - 4.0 TR Nominal Capacity	Nos									0	0	75,975.48	
e	Celling mounted duct type 2400 CFM - 4.0 TR Nominal Capacity	Nos									0	0	75,975.48	-
f	Ceiling mounted duct type 2300 CFM - 4.0 TR Nominal Capacity	Nos									0	0	75,975.48	
g	Ceiling mounted duct type 2000 CFM - 3.0 TR Nominal Capacity	Nos									0	0	81,625.32	-
h	Ceiling mounted duct type 1600 CFM - 3.0 TR Nominal Capacity	Nos									0	0	81,625.32	-
i	Wall mounted split type 2.0 TR Nominal Capacity	Nos									0	0	48,023.64	-
j	Wall mounted split type 1.5 TR Nominal Capacity	Nos									3	3	45,198.72	1,35,596.16
k	Wall mounted split type 1.0 TR Nominal Capacity	Nos									0	0	42,373.80	-
1	Ceiling mounted duct type - 2.5 TR Nominal Capacity	Nos									0	0	49,120.00	
m	Celling mounted duct type - 2.0 TR Nominal Capacity	Nos									0	0	42,109.00	-
												0		
n	Ceiling mounted duct type - 1.5 TR Nominal Capacity	Nos									0		38,363.00	-
0	Ceiling mounted duct type - 1.0 TR Nominal Capacity	Nos									0	0	38,139.00	-
1.1.3	Supply, installation, tesing and commissioning of Corded Remote controllers for operation of indoor units.	Nos									14	14	4,014.36	56,201.04
1.1.4	Supply, installation, tesing and commissioning of Central Remote controller for complete system including all VRV indoor and outdoor units.	Nos									1	1	1,26,378.00	1,26,378.00
1.1.5	Supply, installation, tesing and commissioning of Imported fittings Y-joints, T-joints, distributer and headers for all Indoor units at both the floors layout as per layout drawings.	Nos									12	12	12,191.76	1,46,301.12
1.2	Refrigerant Piping													-
	Supply, installation, testing and commissioning of Interconnecting refrigerant pipe work with elastomeric nitrile rubber/closed cell													-
	expanded polythene tubular insulation between each set of indoor & outdoor units as per specifications, all piping should be laid on Galvanised/Powder Coated tray supported by Galvanised M S Hangers & Clamps.													
a)	41.3 mm O.D. (insulation : 19 mm)	Mtrs									3	3	1,561.14	4,683.41
b)	34.9 mm O.D. (insulation : 19 mm)	Mtrs									4	4	995.92	3,983.68
c)		Mtrs									52	52	802.40	-
	28.6 mm O.D. (insulation : 19 mm)													-
d)	22.2 mm O.D. (insulation : 13 mm)	Mtrs									19	19	798.86	15,178.34
e)	19.1 mm O.D. (insulation : 13 mm)	Mtrs									21	21	520.38	10,927.88
f)	15.9 mm O.D. (insulation : 13 mm)	Mtrs									100	100	428.34	42,834.00
g)	12.7 mm O.D. (insulation : 13 mm)	Mtrs									29	29	335.12	9,718.48
h)	9.5 mm O.D. (insulation : 13 mm)	Mtrs									79	79	244.26	19,296.54
i)	6.4 mm O.D. (insulation : 13 mm)	Mtrs									37	37	149.86	5,544.82
1.3	Control cum transmission wiring			-			1							-
а	Supply.installation,testing and commisioning of contl cum transmission wiring of 2 core x 1.5 sqmm FRLSZH copper in suitable GI conduits between indoor and outdoor units. Supply.installation,testing and commisioning of contl cum transmission wiring of 2 core x 1.0 sqmm copper in suitable GI	Mtrs									202	202	356.36	71,984.72
b	Supply,instanation,testing and commissioning or condicum transmission wiring or 2 core x 1.0 sqmm copper in suitable G1 conducts between indoor and outdoor units.	Mtrs									0	0	164.00	-
1.4	DX wall mounted Split Unit													-
1.4.1	Providing, fixing, testing and commissioning of Hi wall split unit air conditioing air cooled type with evaporator coil, fan and fan motor, air cooled condenser with hermatically sealed recipcating compressor, condenser coil and complete with electrical Wiring as required (Voltage stabilizers are not to be provided)													-

					REVISED SCHEDULE-F ELE													
Item			Description			Unit	AMS	NAR	INS	KDC	GGS	KCP	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
					ainting of the same is also included in the engineer-in-chage before proceeding													-
a)	Nominal capacity 1.5 TR					Nos									0	0	66,906.00	
b)	Nominal capacity 2.0 TR					Nos										0	66,906.00	
																0		
c)	Nominal capacity 2.5 TR					Nos										U	66,906.00	
1.4.2					d with nitrile rubber insulation of 9 mm covered with PVC flexible conduits for	Mtrs									60	60	2,750.58	1,65,034.8
1.5	Condensate Drain Piping:																	
	Providing, fixing and testing GI drain piping for condensate from indoor unit to nearest suitable drain system as per site condition as per instructed at site engineer complete with all required fittings and pviding clean out plug at suitable location when required complete with 6mm thick elastomeric nitrile rubber insulation over GI pipe:																	-
а	40mm Dia.					Mtrs									32	32	565.22	18,087.0
b	32mm Dia. 25mm Dia.					Mtrs Mtrs									38	38	461.38 416.54	17,532.4 11,246.5
С			1			MILES									21	27	416.54	11,246.5
2	Supply, installing, testing an	d commissioning of INVERT	ER AIR COOLED	SPLIT AIR (CONDITIONING UNITS as described in													-
	Note : Copper piping betw	veen indoor & outdoor uni	ts duly insulated	d with close	d cell tublar nitrile foam insulation of													-
а	4 TR Cassette Type split air	conditioning units as describe	ed above (R410a)	(Cooling Only	()	Nos									4	4	1,89,505.00	7,58,020.0
b	3.0 TR Ductable Type split a	ir conditioning units as descri	ibed above (R410	a/ R407c) - I	Non Inverter	Nos									0	0	76,942.00	-
c	5.5 TR Ductable Type split air conditioning units as described above (R410a/ R407c) - Non Inverter														2	2	1,16,838.00	2,33,676.0
d	8.5 TR Ductable Type split air conditioning units as described above (R410a/ R407c) - Non Inverter					Nos									0	0	1,82,381.00	-
e	11 TR Ductable Type split air conditioning units as described above (R410a/ R407c) - Non Inverter					Nos									0	0	2,23,701.00	
															0	0	2,23,701.00	-
3	Supplying, installing, testing with direct driven Tube axi discharge, fire rated flexible	al fan. The fan shall be equ	ipped with moun	ting bracket,	ial fans as per specifications. Fan shall be inlet & outlet cone required at suction 8 e fans needs to be included.													-
3.1	The motor shall be Class H rating and suitable for 415±10% volts 3 phase 50 cycles, AC supply. The motor selected shall be 1 efficiency at full load. Fan shall be selected for minimum efficiency of 65%.																	-
3.2	Fan and casing shall be suita rated for 250 Deg C for 2 ho	able for normal & smoke exh our as per [BS-7346 Part-2 :	aust application.M 1090]	lotor shall be	mounted inside the fan casing & thermally	r												-
3.3	External static pressure shall be 15-20 mm (WC) minimum and Total static pressure shall be check by vendor and motor shall b compatible to operate on VFD. EA-1-4, 7-10 shall have External static pressure shall be 35-40 mm (WC) minimum and Tota static pressure shall be check by vendor																	-
3.4	Fan if used for any case other than in case of fire shall be selected for lower noise level and shall not exceed 65 DB (A) at 3 distance from the fan. If required contractor to add sound attenuator to meet the desired noise level. Fan shall be selected f minimum efficiency of 65% and motor shall be compatible to operate on VFD.																	-
3.5	Fan used in case of fire can b	be selected for higher outlet	velocity as sound	is not criteria	while selecting.													-
3.6	The fan capacities shall be as	s follows:					-											-
	Equipment Tag	Space	Location	CFM	Motor kW													-
						l	1									L .		-
	EA 1-2 EA 3-4	Exhaust Air- Normal Exhaust Air- Normal	Basement 2 Basement 2	16000 20500	7.5	Nos Nos	-								2	2	3,30,017.00 3,63,569.00	6,60,034.0 7,27,138.0
	EA 5 EA 6	Pump Room Hotel Pump Room Metro	Basement 2 Basement 2	5500 2000	2.2 2.2	Nos									1	1	1,26,500.00 1,02,628.00	1,26,500.0
	EA 7 -10	Exhaust Air- Normal	Basement 1	20500	11	Nos									4	4	3,63,569.00	14,54,276.0
	EA 11	BOH	Street Level Concourse	3000	1.1	Nos	-								1	1	91,360.00	91,360.0
	EA 12 EA 13	Electrical UPS Room STP Exhaust	Level	1500 20000	0.55	Nos Nos									0	0	87,266.00 2,40,224.00	- 2,40,224.0
															1	1	2,40,224.00	2,40,224.0
4		mplete with totally enclosed	fan cooled moto	r belt drive,	g in both Horizontal or vertical position as notor mount, fire rated flexible connectior hall be as follows													-

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(tem			Description		REVISED SCHED			AMS				GGS	KCD	KCD DD	CCE PP	714	Total Oh:	Rate (INR)	Amount (INR
4.1	distance from the fan. If re minimum efficiency of 60-	Fan used for any purpose other than in case of fire shall be selected for lower noise level and shall not exceed 65 DB (A) at 3 distance from the fan. If required contractor to add sound attenuator to meet the desired noise level. Fan shall be selected f minimum efficiency of 60-65% and also these fan will operate through VFD. AXF1-14 and 25-32 Fan used in case of fire can I selected for higher outlet velocity as sound is not criteria while selecting.							NAK	1N5	KDC	665	KCP	KCP PD	GGS PD	214	Total Qty	Rate (INR)	Amount (INR
4.2		e IE 2 efficiency TEFC Motor d below and contractor can si																	
						5													
4.3		all be 20-25 mm (WC) minir re shall be 35-40 mm (WC) r				15-18 shall													
4.4	The fan capacities shall be a	as follows:																	
	Equipment Tag	Space	Location	CEM	Motor kW														
	AXF 1	Fresh Air- Normal (Lift Fresh Air- Normal (Platform Technical	21000	7.5		Nos									1	1	1,98,333.00	1,98,333
	AXF2-3	staircase) Fresh Air- Normal (Floor	18000	5.5		Nos									2	2	1,98,333.00	3,96,66
	AXF4-7	staircase)	Floor	19500	7.5		Nos									4	4	1,98,333.00	7,93,33
	AXF 8-9	Fresh Air- Normal (staircase)	Technical Floor	15000	5.5		Nos									2	2	1,65,300.00	3,30,60
	AXF 10 AXF 11-13	Fresh Air- Normal (Fresh Air- Normal (Platform Street Level	15000 17500	5.5		Nos Nos									1	1	1.65.300.00	1,65,30 5,94,99
	AXF 14	Fresh Air- Normal (2.4 M	Street Level	19500	5.5 5.5		Nos									1	1	1,98,333.00 1,98,333.00	1,98,33
	AXF 15 AXF 16-17	Fresh Air- Normal (2.4 M Fresh Air- (Car Parking)	Street Level Basement 2	34000 16000	11 7.5		Nos									1	2	2,84,193.00 2,85,298.00	2,84,19
	AXF 18-19	Fresh Air- (Car Parking)	Street Level	20500	11		Nos	1				1				2	2	3,19,354.00	6,38,70
	AXF 20 AXF 21	Fresh Air- (Pump Room Fresh Air- (Pump Room	Basement 2 Basement 2	2000	2.2 0.75		Nos Nos									1	1	1,27,843.00 87,266.00	1,27,84 87,26
	AXF 22-23 AXF 24	Fresh Air- (Car Parking) Fresh Air- (BOH)	Basement 1	20500	11		Nos									2	2	3,19,354.00 98,030.00	6,38,70 98,03
	AXF 24 AXF 25	Fresh Air- (UPS Room)	Street Level Concourse	1500	0.55		Nos									0	0	98,030.00	98,03
	AXF 26	STP Fresh air	Level Underground	20000	11		Nos									1	1	2,63,317.00	2,63,31
	complete with internally mo TEFC Motors suitable for 41	ng and commissioning of c ounted motor, fan belt drive, $5 \pm 10\%$ volts, 50 Hz, AC su er rating motor incase the de	flexible connection	iency. The maximum rat	d complete with follow	wing:													
5.2	Complete with internally mo TEFC Motors suitable for 41 contractor can select a lower Forward curved fan mounte Minimum 20-25 mm (WC)	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha	flexible connection oply and IE 2 effic sired performance with efficiency no	n, vibrations isolators an iency. The maximum rai is being met t less than 60-65%	d complete with follow	wing:													
5.1 5.2 5.3	complete with internally mo TEFC Motors suitable for 41 contractor can select a lowe Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vendo	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding.	flexible connection oply and IE 2 effic sired performance with efficiency no	n, vibrations isolators an iency. The maximum rai is being met t less than 60-65%	d complete with follow	wing:													
5 5.1 5.2 5.3 5.4	Complete with internally mo TEFC Motors suitable for 41 contractor can select a lower Forward curved fan mounte Minimum 20-25 mm (WC)	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding.	flexible connection oply and IE 2 effic sired performance with efficiency no	n, vibrations isolators an iency. The maximum rai is being met t less than 60-65%	d complete with follow	wing:													
5.1 5.2 5.3 5.4	complete with internally mo TEFC Motors suitable for 41 contractor can select a lowe Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vendo	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream.	flexible connection oply and IE 2 effic sired performance with efficiency no	n, vibrations isolators an iency. The maximum rai is being met t less than 60-65%	d complete with follow	wing:													
5.1 5.2 5.3 5.4	complete with internally mo TEFC Motors suitable for 41 contractor can select a lowe Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vend Pre filter (MERV 8) in exhau	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream.	flexible connection oply and IE 2 effic sired performance with efficiency no	n, vibrations isolators an iency. The maximum rai is being met t less than 60-65%	d complete with follow	wing:													
5.1 5.2 5.3	complete with internally mo TEFC Motors suitable for 41 contractor can select a lowe Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vende Pre filter (MERV 8) in exhau The rating of fan sections si	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream. hall be as follows:	flexible connection opply and IE 2 effici sired performance with efficiency no I be considered.	r, vibrations isolators ar iency. The maximum rai is being met t less than 60-65% However, actual total st	Id complete with follow	and e calculated	Nos										0	71.100.00	
5.1 5.2 5.3 5.4	complete with internally mc TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vende Pre filter (MERV 8) in exhau The rating of fan sections si FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cat be IDDW with forward curv voit single phase 50 cycles	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream. hall be as follows: Space	flexible connection opply and IE 2 effic sired performance with efficiency no I be considered. Location Concourse Goncourse Gonucted Ini Gonucted I	r, vibrations isolators ar iency. The maximum ral is being met t less than 60-65% However, actual total st CFM S000 ine Fans suitable for in Jined and table for vin lined and table for inn c flexible connector, sp	d complete with follow ting is specified below atic pressure shall be set of the set of the set of the set of the off the set of the set of the set of the set of the set regulator (with w	e calculated Motor kW 2.2 n in vertical he fan shall 220 ± 10% iring of 3 m	Nos										0	71,100.00	
5.1 5.2 5.3 5.4 5.5 6	complete with internally mo TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vendo Pre filter (MERV 8) in exhau The rating of fan sections sil FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cat be DIDW with forward curv volt single phase 50 cycles included between fan & reg	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ist air stream. hall be as follows: Space ASS DB Room ig and commissioning of Cell sing shall be double skin, inte i unyeller fitted with mainter AC supply. All units shall be ulator) and volume control d	flexible connection pply and IE 2 efficiency no isred performance with efficiency no I be considered. Location Location Concourse ing Mounted Ini manaly acoustical ance free externa complete with du mper and static p	r, vibrations isolators ar iency. The maximum rai is being met Less than 60-65% However, actual total st CFM 5000 Ine Fans suitable for in // Ined and constructed pressure or to suit the sy	specified with follow specified below static pressure shall be specified below specified below	e calculated Motor kW 2.2 n in vertical he fan shall 220 ± 10% irring of 3 m wws:	Nos										0	71,100.00	
5.1 5.2 5.3 5.4 5.5 6	complete with internally mc TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vende Minimum 20-25 mm (WC) and confirmed by the vende The filter (MERV 8) in exhau The rating of fan sections si FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cas be DDW with forward curv voit single phase 50 cycles included between fan 8 reg The fan shall have low sour vendor during the shop dra FAn Tag	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream. hall be as follows: Space ASS DB Room ig and commissioning of Cell sing shall be double skin, inte impeller fitted with mainter AC supply. All units shall be ulator) and volume control di nd level exceeding not more wings.	flexible connection oppy and IE 2 efficiency performance with efficiency no I be considered. Concourse Ing Mounted Ini rmally acousticali ance free externs complete with du imper and static p than 45 db(A) at cation	, vibrations isolators ar iency. The maximum ral is being met t less than 60-65% However, actual total st CFM 5000 ine Fans suitable for in y lined and constructed in rotor motor. The moto ct flexible connector, sp three metre distance. A CFM	d complete with follow ing is specified below ratic pressure shall be SP(mmwg) 20-25 stalling in any position of galvanised steel. T shall be subable for or galvanised steel. T shall be subable for ctual static to be che SP (mm	and and and and and and and and and and											0		
5.1 5.2 5.3 5.4 5.5 6	complete with internally mo TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounter Minimum 20-25 mm (WC) and confirmed by the vend Pre filter (MERV 8) in exhal The rating of fan sections sil The rating of fan sections sil FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cat be DIDW with forward curv volt single phase 50 cycles included between fan & reg The fan shall have low sour vend or during the shop dra Fan Tag F- 01.02 IF - 03.04 IF - 03.04	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ist air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, inte impeller fitted with mainter AC supply. All units shall be ulator) and volume control d nd level exceeding not more wings. Excert fitted with anister Fresh / Ext	Itexible connection oppy and IE 2 efficiency no is deperformance with efficiency no I be considered. I be considered. Concourse ing Mounted Ini rmaily acoustical ance free externa complete with du imper and static p than 45 db(A) at cation aust air Service aust air Service	, vibrations isolators ar iency. The maximum rai is being met Less than 60-65% However, actual total st CFM 5000 ine Fans suitable for in µ ined and constructed µ ined and constructed µ ined and constructed pressure or to suit the sy three metre distance. A <u>CFM</u> 900 900	d complete with follow ing is specified below attic pressure shall be SP(mmwg) 20-25 stalling in any position of galvanesd steel, rshall be suble for ead regulator (with w steen, shall be as follo ctual static to be che SP (mm 10-11 0-11	and and e calculated e calculated understand	Nos									22	0	71,100.00	37,54
5.1 5.2 5.3 5.4 5.5 6	complete with internally mc TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vende The rating of fan sections si FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cat be DDW with forward curv volt single phase 50 cycles included between fan & reg The fan shall have low sour vendor during the shop dra FA Tag FA - 13	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. st air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, inthe impeller fitted with mainter AC supply. All units shall be ulator) and volume control d nd level exceeding not more wings. Exception 1000 for the state of the state	flexible connection opply and IE 2 efficiency no isired performance with efficiency no I be considered. I be considered. I be considered. Concourse Ing Mounted Ini Concourse Ing Mounted Ini complete with du more a startic for a startic than 45 db(A) at cation aust air Service aust air Service aust air Service	n, vibrations isolators ar iency. The maximum ral is being met is being met is being met is being met is being met experiment of the set is the set of the set is the set of the set is the set of the set is the set of the set is the set of the set is the set of the set is the set of the set is the set of the set is the set of the set is the set of the set of the set is the set of the set of the set is the set of the set of the set of the set is the set of	d complete with follow ing is specified below attic pressure shall be SP(mmwg) 20-25 stalling in any position of galvanesd steel, rshall be suble for ead regulator (with w steen, shall be as follo ctual static to be che SP (mm 10-11 0-11	and and e calculated e calculated understand	Nos Nos									22000	2 2 0	18,772.00 18,772.00 18,772.00	37,54 37,54
5.1 5.2 5.3 5.4 5.5 6	complete with internally mc TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vende The rating of fan sections si FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The car be DDW with forward curv volt single phase 50 cycles included between fan & reg The fan shall have low sour vendor during the shop dra FA 1-3 FA 1-4 FO 100 F - 01 (20 F	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ist air stream. hall be as follows: Space ASS DB Room ig and commissioning of Cell sing shall be double skin, inthe impeller fitted with mainter AC supply. All units shall be ulator) and volume control di nd level exceeding not more wings. Fresh / Ext Fresh / Ext Fresh / Ext Fresh / Ext Fresh / Ext Fresh / Ext	flexible connection opply and IE 2 efficiency no ising performance with efficiency no i be considered. Concourse Concourse Concourse ing Mounted Ini Concourse Complete with du more a startic free externs complete with du more and static for a startic than 45 db(A) at Cation aust all Service aust all Service aust all Service aust all Service aust all Service aust BOH area aust BOH area aust BOH area	n, vibrations isolators ar iency. The maximum ral is being met is being met is being met is being met is being met is being met isolation is being met isolation is being in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set in the set of the set of the set in the set of the set of the set in the set of the set of the set in the set of the set of the set of the set of the set in the set of	d complete with follow ting is specified below atic pressure shall be set of the set of the set of the set of the set of the set of the set of the set regulator (with w stem, shall be as follow tcual static to be che SP (mm 10-11 10-11 10-11 10-11 10-11 10-11 10-11 10-11 10-11 10-11 10-11	Motor kW 2.2 n in vertical he fan shall 220 ± 10% irring of 3 m ows: cked by the s 5 5 5	Nos Nos Nos Nos Nos									2220000	0	18,772.00 18,772.00 18,772.00 18,772.00 18,772.00	<u>37,54</u> 37,54
5.1 5.2 5.3 5.4 5.5 6	complete with internally mo TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vendo Pre filter (MERV 8) in exhat The rating of fan sections si FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cas be DDW with forward curv voit single phase 50 or tos included between fan & reg Inducted between fan & reg The ratin duft in the shot of the son of up the shot forward curv voit single phase 50 or tos Inducted between fan & reg Inducted between fan & reg The fail have tow sou vert on during the shop dra Foi 100 TF - 0100 TF - 05 TF - 07 TF - 07 TF - 07 TF - 07	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, inte e impeller fitted with mainten AC supply. All units shall be ulator) and volume control d mole exceeding not more wings. Fresh / Ext Fresh (Ext Fresh (Ext Fresh (Ext	flexible connection byly and IE 2 efficiency no byly and IE 2 efficiency no l be considered. Location Location Concourse may acoustical may acoustical more ree extern complete with du umper and static p than 45 db(A) at cation aust air Service sola	, vibrations isolators ar iency. The maximum rai is being met : less than 60-65% However, actual total st 	d complete with follow ing is specified below attic pressure shall be specified below	wing: and and e calculated e calculated with the family of the fami	Nos Nos Nos Nos Nos										2 2 0 0	18,772.00 18,772.00 18,772.00 18,772.00 18,772.00 10,295.00	37,54 37,54 10,29
5.1 5.2 5.3 5.4 5.5	complete with internally mc TEFC Motors suitable for 41 contractor can select a low TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vendo Pre filter (MERV 8) in exhau The rating of fan sections si FAN Tag EA 1-4 Supplying, installing, testin or horizontal ducts. The cas be DIDW with forward curv voit single phase 50 cycles included between fan & reg The fan shall have low sou vendor during the shop dra FAN Tag IF - 01,02 IF - 03,04 IF - 04 IF - 05 IF - 05 IF - 05 IF - 05	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ust air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, into the impelier fitted with mainter ACS supply. All units shall be ulator) and volume control di model exceeding not more wings. Comparison of the state of the state of Fresh / Exc Fresh / Exc Fresh / Exc Fresh / Exc Fresh and Toilet (STHE)	flexible connection byly and IE 2 efficiency no byly and IE 2 efficiency no l be considered. I be considered. Location Concourse mally acoustical mangly acoustical mangly acoustical mangly acoustical mangly acoustical than 45 db(A) at cation aust air Service solar panel- HE & PWD)- HE & PWD)-	, vibrations isolators ar iency. The maximum ral is being met : less than 60-65%. However, actual total st CFM 5000 ine Fans suitable for in willned and constructed of rotor motor. The moto in family and constructed ir otor motor. The moto in the favilie connector, sp ressure or to suit the sy three metre distance. A 900 1300 1300 1300 1500 550 550 400	d complete with follow ing is specified below attic pressure shall be set of the set of the set of the set of the set attic pressure shall be set of the set of the set of the set of the set of the set regulator (with we set of the se	wing: and and e calculated e calculated work work calculated work work work calculated work work calculated work work calculated work work calculated work work calculated calculated calculate	Nos Nos Nos Nos Nos Nos Nos Nos										2 2 0 0	18,772.00 18,772.00 18,772.00 18,772.00 18,772.00 10,295.00 10,295.00	37,54 37,54 10,29 10,29
5.1 5.2 5.3 5.4 5.5 6	complete with internally mc TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vende The rating of fan sections si FAN Tag FA 1-4 Supplying, installing, testin or horizontal ducts. The car b DDW with forward curv voit single phase 50 cycles included between fan & reg The fan shall have low sour vendor during the shop dra Fan Tag F - 01, 02 F - 01, 02 F - 01, 03 F - 07, 08 F - 10 F - 10	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ist air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, int e impeller fitted with mainter AC supply. All units shall be ulator) and volume control d nd level exceeding not more wings. Fresh / Ex Fresh / Ex	flexible connection pipy and IE 2 efficiency no ind efficiency no i be considered. Location i be considered. Concourse for downted Ini Concourse ing Mounted Ini complete with du mper and static p than 45 db(A) at cation aust air Service ust of Service aust air Service aust air Service aust air Service aust air Service aust BOH area sust BOH area solar panel- solar panel- # & PWD)-	r, vibrations isolators ar iency. The maximum rat is being met is being met is tess than 60-65% However, actual total st CFM 5000 ime Fans suitable for in jined and suble for for in gran suitable for in in fexible connector, sp pressure or to suit the sy three metre distance. A CFM 900 1600 1200 550	d complete with follow ting is specified below ratic pressure shall be set of the set of the set of the set set of the set of the set of the set of the set regulator (with w stem, shall be as follow cutual static to be che set of t	Motor kW 2.2 n in vertical he fan shall 220 ± 10% iring of 3 m ows: cked by the s s s s s s s s s s s s s s s s s	Nos Nos Nos Nos Nos Nos Nos Nos Nos										2 2 0 0	18,772.00 18,772.00 18,772.00 18,772.00 10,295.00 7,025.00 5,935.00	37,54 37,54 10,29 10,29 7,02 5,93
5.1 5.2 5.3 5.4 5.5 6	complete with internally mc TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Forward curved fan mounte Forward curved fan mounte Forward curved fan mounte Formulation of the sections select a low Pre filter (MERV 8) in exhat The rating of fan sections select a low FAN Tag FAN TAG FAN	unted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. ist air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, inte impeller fitted with mainter AC supply. All units shall be ulator) and volume control d nd level exceeding not more wings. Fresh / Ext Fresh /	Itexible connection pily and IE 2 effici sired performance with efficiency no I be considered. I	, vibrations isolators ar iency. The maximum rai is being met : Less than 60-65% However, actual total st CFM 5000 ine Fans suitable for in lined and constructed in and constructed ressure or to suit the sy three metre distance. A CFM 900 1300 1200 650 500 200 450 700	d complete with follow ing is specified below attic pressure shall be SP(mmwg) 20-25 stalling in any positio of galvaised steel. SP (mm 10-11 10	wing: and e calculated e calculated d ca	Nos Nos Nos Nos Nos Nos Nos Nos Nos Nos										2 2 0 0	18,772.00 18,772.00 18,772.00 18,772.00 10,255.00 7,025.00 9,935.00 8,115.00 10,295.00	37,54/ 37,54/ 10,29/ 10,29/ 7,022 5,933 8,111/ 10,29/
5.1 5.2 5.3 5.4 5.5 6	complete with internally mc TEFC Motors suitable for 41 contractor can select a low TEFC Motors suitable for 41 contractor can select a low Forward curved fan mounte Minimum 20-25 mm (WC) and confirmed by the vendo Pre filter (MERV 8) in exhat The rating of fan sections si FAN Tag EA 1-4 EA 1-4 Supplying, installing, testin or horizontal ducts. The cas be DIDW with forward curv volt single phases 50 cycles included between fan & reg The fan shall have low sour vendor during the shop dra Fan Tag TF - 01,06 FF - 03,04 FF - 04,05 FF - 04,05 FF - 04,05 FF - 04,05 FF - 05,05 FF - 0	sunted motor, fan belt drive, 5 ± 10% volts, 50 Hz, AC su er rating motor incase the de d inside double skin housing external static pressure sha or at the time of bidding. st air stream. hall be as follows: Space ASS DB Room g and commissioning of Cell sing shall be double skin, int e impeller fitted with mainter AC supply. All units shall be ulator) and volume control d hd level exceeding not more wings. Comparison of the state of the state of the state Fresh / Ext Fresh /	flexible connection pply and IE 2 effici- ired performance with efficiency no I be considered. I be considered. Concourse Ing Mounted Ini rmaily acoustical ing Mounted Ini rmaily acoustical ing Mounted Ini rmaily acoustical ing Service aust air Service aust air Service aust air Service aust air Service aust BOH area aust BOH area	, vibrations isolators ar iency. The maximum ral is being met : less than 60-65%. However, actual total st CFM 5000 ine Fans suitable for in willined and constructed of rotor motor. The moto in the fixible connector, sp ressure or to sult the sy three metre distance. A 900 1300 1600 1600 1600 1600 1600 1600 16	d complete with follow ing is specified below attic pressure shall be set of the set of the set of the set of the set attic pressure shall be set of the set of	wing: and and e calculated e calculated we ve calculated e calculated ve ve ve ve ve ve ve ve ve ve	Nos Nos Nos Nos Nos Nos Nos Nos Nos										2 2 0 0	18,772.00 18,772.00 18,772.00 18,772.00 10,295.00 10,295.00 7,025.00 5,935.00 8,115.00	10,29 10,29 7,02 5,93 8,11

		REVISED SCHEDU								· · ·						
Item	Description			Unit	AMS	NAR	INS	KDC	GGS	КСР К	CP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR
7	Supplying, installing, testing and commissioning of direct drive propeller fans (H permanent split capacitor or shaded pole motor, mounting plate, accessories like weather protection as required. The fan shall be of following rating:															-
	450 mm dia 900 RPM fan suitable for 220±6% volts 50 cycles, 1 phase AC supply.			Nos									4	4	3,233.80	- 12,935.
	300 mm dia 900 RPM fan suitable for 220±6% volts 50 cycles, 1 phase AC supply.			Nos									16	16	8,160.50	- 1,30,568.
8	Supplying, installing, testing and commissioning of direct drive domestic prope permanent split capacitor or shaded pole motor, mounting plate, accessories like weather protection as required. The fan shall be of following rating:															-
	90-100 CMH, Noise level 38 DB, fan suitable for 220±6% volts 50 cycles, 1 phase AC	supply.		Nos									1	1	8,000.00	- 8,000.
9	Supply, installing, testing and commissioning of VFD suitable for HVAC application with the tender specifications and shall be complete in all respects and suitable f following specifications :															-
	a) The VFD shall have a dual 5% impedance DC link reactor (Harmonic filters) on th minimize power line harmonics and protect the VFD from power line transients. The of the vFD from power line harmonics and protect the VFD from power line transients.		DC bus to													-
	 b) All the VFD's should have factory fitted IP55 enclosure protection c) EMC filters, C1 Category, Drive should support at least 3 PID loops are required 															-
			Motor													
	-		HP													
	Application, wherever required and as mentioned in the drawing		15	Nos	_								12 10	12	1,13,509.00 84,122.00	13,62,108 8,41,220
	Application- wherever required and as mentioned in the drawing		10 7.5	Nos Nos									10	10	76,349.00	6,10,792
			5	Nos									1	1	65,412.00	65,412
			3	Nos									3	3	65,412.00	1,96,23
			1.5	Nos	-								5	5	44,329.00	2,21,64
10	Supply, installing, testing and commissioning of Adequate number of CO sensors, P ventilation fans (at B1, B2) and logic controller with necessary control cabling will for	LC with power / control cabling fo m a part of the same.	r car park													
	Please note that VFD, Fan is considered in separate item of the BOQ. Electrical star contractor.	ter panel shall be provided by main	electrical													
10.1					-									1	8.49.211.00	8,49,21
10.1	Second Basement (Zone-01 1283 Sqm, Zone-02 1900 Sqm) First Basement (Zone-01 1850 Sqm, Zone-02 1830 Sqm)			Lot									- 1	-	0.49.211.00	0,45,21
	CO sensor shall be provided one no per 250 Sqm															
11	Supply, installing, testing and commissioning of Sequential Controller to operate should capable to start/stop and run equal time.	Hi-wall split AC's in Server/ UPS r	room. PLC	Nos									3	3	39,896.00	1,19,68
	TOTAL CARRIED TO SUMMARY - ZA															181,65,818
ZB 1	AIR DISTRIBUTION Supply, installation and testing of GI sheet metal ducts fabricated in factory as drawings. Duct shall be supported via Gripples supports as per the specifications :	per SMACNA Standard and appro	oved shop													
	Duct Size	Recommended Gauge of G	I sheet		-											<u> </u>
	1 - 900 mm	26	1 SHEEL	Sqm	1	1		1	1				1500	1500	577.00	8,65,500
-	901 -1200 mm	24	-	Sqm	_				_		_		1310	1310 1800	685.00	8,97,350
	1201 -1800 mm	22		Sqm					+				1800 425	1800 425	790.00 890.00	14,22,000
	1801 - 2100 mm 2101 - above	20		Sqm Sqm	-								1000	1000	1,100.00	3,78,25
2	Supply, installation and testing of GI sheet metal ducts Site fabricated as per IS shall be supported via Gripples supports as per the specifications :	Standard and approved shop draw	ings. Duct										1000		1,100.00	
	Duct Size	Basemmended Causer of C	Tchoot						1		_					
	Duct Size Upto 750mm	Recommended Gauge of G	1 SHEET	Sqm		-			1				10	10	577.00	5,770
	750mm- 1500 mm	22		Sqm									10	10	682.00	6,820
_	1510 mm- 2250 mm	20		Sqm							_		10	10	790.00	7,900
	above 2250 mm	18		Sqm					-				10	10	945.00	9,45
3	Supply, installation and balancing of Extruded Aluminium construction Supply air Gr will be powder coated in shade approved by Client and installed as per approved s may be double or single louvered, adjustable or fixed as required by Client			Sqm									40	40	8,400.00	3,36,00
4	Supply, installation and balancing of Extruded Aluminium construction Return/Exhau The grilles will be powder coated in shade approved by Client and installed as per ap grilles may be double or single louvered, adjustable or fixed as required by Client			Sqm									40	40	6,300.00	2,52,00
5	Supply, installation and balancing of Extruded Aluminium construction square / rour core & anti smudge ring & volume control dampers. The diffusers will be powder coa as per approved shop drawings and specifications.	nd shape supply air diffusers with a ted in shade approved by Client an	removable d installed	Sqm									10	10	9,450.00	94,50

	BALANCE WORKS EXCLUDING VIA						ст.				-		
	REVISED SCHEDULE-F ELEC												
1tem 6	Description Supply, installation and balancing of Extruded Aluminium construction square / round shape return air diffusers with removable	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
Ū	core & anti smudge ring & without volume control dampers. The diffusers will be powder coated in shade approved by Client and installed as per approved shop drawings and specifications.	Sqm								10	10	6,825.00	68,250.00
7	Supply, installation and balancing of Extruded Aluminium construction Supply Air Multi Slot Diffuser complete with air pattern controllers & Hit & Miss volume control damper. The diffusers will be powder coated in shade approved by Client and installed as per approved shop drawings and specifications. Number of slots will vary as per volume of air to be handled.	Sqm								1	1	15,750.00	15,750.00
8	Supply, installation and balancing of Extruded Aluminium construction Raturn Air Multi Slot Diffuser complete with air pattern controllers. The diffusers will be powder coated in shade approved by Client and installed as per approved shop drawings and specifications. Number of slots will vary as per volume of air to be handled.	Sqm								1	1	15,750.00	- 15,750.00
9	Supply, installation and balancing of Extruded Aluminium construction Supply/Return air Linear Grilles. The grilles will be powder coated in shade approved by Client and installed as per approved shop drawings and specifications. The grilles may be double or single louvered, adjustable or fixed as required by Client with removable core. Quoted price shall be inclusive of volume control damoer behind supply and collar.	Sqm								1	1	5,250.00	5,250.00
10	Supplying & fixing of opposed blade GI construction volume control dampers in Rectangular supply air duct as per approved drawings and specifications.	Sqm								40	40	5,775.00	2,31,000.00
11	Supply, installation, testing and balancing of Powder coated/Anodised extruded aluminium construction inlet air louvers with bird screen for fresh air alongwith GI construction volume control damper. The louvers will be powder coated in shade approved by Client and installed as per approved shop drawings and specifications.	Sqm								40	40	9,450.00	- 3,78,000.00
12	Supply, installation, testing and balancing of Powder coated/Anodised extruded aluminium construction exhaust air louvers with bird screen. The louvers will be powder coated in shade approved by Client and Installed as per approved shop drawings and specifications.	Sqm								40	40	6,825.00	2,73,000.00
13	Supply, installation, testing and balancing of Powder coated/Anodised extruded aluminium construction Door Transfer Grille for make up/exhaust air. The grilles will be powder coated in shade approved by Client and installed as per approved shop drawings and specifications.	Sqm								2	2	8,400.00	16,800.00
14	Supply, installation, testing and commissioning of motorised combined smoke & fire damper. The quoted price shall include control panel alongwith fire resistant inter connecting wiring and also termination of Fire alarm control wiring.												-
a	Smoke & Fire Dampers. Control Panel & Wiring (including actuators)	Sqm Nos								1	1	7,875.00	7,875.00 9,450.00
15	Supply, installation, testing and commissioning of motorised damper complete with control panel, inter connecting wiring at locations shown in approved shop drawings and as per specifications. The quoted price shall include control panel alongwith fire resistant inter connecting wiring and also termination of Fire alarm control wiring.												-
	Motorized Dampers. Control Panel & Wiring (including actuators)	Sqm								30 44	30 44	5,775.00	1,73,250.00
16	Control rates a writing including &class(s) Supply, installation, testing and balancing of Ex. Al or PVC construction Exhaust Valves for air as per specifications and approved shop drawings. The valves will be in shade approved by Client and installed as per approved shop drawings and specifications.	Nos								27	27	1,260.00	34,020.00
17	Supply, fabrication and installation fire resistant double resin sleeve fire rated flexible connection of size as per approved shop drawing.	Sqm								10	10	4,725.00	- 47,250.00
	Note: All exposed surfaces & duct shall be painted in black mat finish by the HVAC contractor.												
	TOTAL CARRIED TO SUMMARY -ZB												70,66,985.00
ZC	THERMAL INSULATION												-
1	Supply and fixing of duct acoustic lining in supply and return air ducts and room lining as per specifications.												
1.1	15 mm thick nitrile rubber/ crosslinked polyethylene duct lining	Sqm								100	100	1,575.00	- 1,57,500.00
1.2	20 mm thick nitrile rubber/ crosslinked polyethylene for wall lining	Sqm								100	100	2,625.00	2,62,500.00
2	Supply and fixing of external insulation on supply & return air ducts as per specification. Material of insulation shall be closed cell crosslinked polyethelene/Nitrile rubber as per thickness given below:												-
2.1	Insulation of 13 mm thickness	Sqm								100	100	788.00	- 78,800.00
2.2	Insulation of 19 mm thickness	Sqm	-	-						100	100	1,155.00	1,15,500.00
2.3	Insulation of 25 mm thickness on supply & return air ducts exposed to air. Quote price shall include cost of UV protection coating on the insulation.	Sqm								50	50	1,260.00	-
3	Supplying and fixing of 25 mm thick pre-moulded pipe section of T.F. quality expanded polystyrene (24 Kg / M ³ density) insulation or chilled water and condensate drain piping/fittings including valves, flanges, union etc. as per the approved shop drawings and specifications. Pipe shall be finished with 26 Gauge G.I Cladding.												-
3.1	MS pipes of 40 mm dia	Mtrs								1	1	577.00	- 577.00
3.2	MS pipes of 32 mm dia	Mtrs								1	1	462.00	- 462.00
	MS pipes of 25 mm dia	Mtrs								1	1	346.00	346.00

Item	Description	Unit	AMS	NAR	INS	KDC	GGS	КСР	KCP PD	GGS PD	ZM	Total Qty	Rate (INR)	Amount (INR)
3.4	MS pipes of 20 mm dia	Mtrs									1	1	290.00	290.00
3.5	Condensate drain pipes of 50 mm dia	Mtrs									1	1	630.00	- 630.00
3.6	Condensate drain pipes of 40 mm dia	Mtrs									1	1	565.22	565.22
											1	1		-
	Condensate drain pipes of 32 mm dia	Mtrs									55	55	461.38	25,375.90
3.8	Condensate drain pipes of 25 mm dia	Mtrs									20	20	416.54	8,330.80
ZD	TOTAL CARRIED TO SUMMARY -ZC ELECTRICAL INSTALLATION													7,13,876.92
														-
1	CONTROL PANELS FOR AXIAL FANS (IP 55 rated)													
	Design, manufacture, supply, installation, testing and commissioning of the following cubicle type, dead front, sheet steel, wall mounted control panels including anchoring into the wall, wiring, incoming, earthing & terminating into MPCB in each panel shall be provided by the electrical contractor.													-
	The panel shall include the following components & accessories.													-
	MPCB as per the ratings given below, suitable for motor duty and able to withstand fault level of 20 KA.													-
	DOL / SD starter as per HP gratings given.													-
														-
	Terminal block for power distribution.													
	Contactor, over load relay with built in single phasing protection.													
	Phase indicating lights and indicating light for ON status.													
	144 mm x 144 mm voltmeter and digital ammeter.													-
	Time delay relay for delayed automatic restart of motor.													
	For on/off/remote and local operation, 3 pole single throw switch shall be provided in each panel to facilitate override of the automatic operation.													-
	The number of control panels shall be as follows.													
1.1.1	Suitable rating MCCB, outgoing to VFD operated motor upto 5 HP motor	Nos									9	9	22,000.00	1,98,000.00
														-
	Suitable rating MPCB with DOL starter upto 5 HP motor	Nos									0	0	24,200.00	-
.1.3	Suitable rating MPCB with S/D starter for 7.5 HP motor	Nos									0	0	27,500.00	
.1.4	Suitable rating MCCB, outgoing to VFD operated motor of 7.5 HP motor	Nos									8	8	25,300.00	2,02,400.00
.1.5	Suitable rating MCCB, outgoing to VFD operated motor of 10 HP motor	Nos									10	10	30,800.00	3,08,000.00
.1.6	Suitable rating MCCB, outgoing to VFD operated motor of 15 HP motor	Nos									12	12	50,000.00	6,00,000.00
														-
														13,08,400.00
	TOTAL CARRIED TO SUMMARY -ZD		1									1		-

MAHA-METRO

Signature and Seal of Bidder