

Scope of work
for Infrastructural services of electrical maintenance works at UGC-DAE CSR,
University Campus Khandwa Road, Indore

Introduction:

University Grant Commission - Department of Atomic Energy Consortium For Scientific Research (UGC- DAE CSR) is an autonomous unit of University Grant Commission, New Delhi. It is situated at Indore district in the state of Madhya Pradesh.

This is national level research Institute where Scientists, Teachers and Students come from all over the country to use the sensitive and sophisticated scientific labs /Instruments for their research purposes.

Institute receives 33 KV power supply from MPPKVVCL . The supply system comprises of 33/433 kV, 750 KVA substation. UGC-DAE CSR, Indore are in requirement of electrical maintenance works contract for the Institute and the CSR, Housing campus, Near Indrapuri Colony, Indore.

The operation & maintenance contract shall be non-comprehensive in nature i.e. required spare parts shall be provided by UGC- DAE CSR, Indore. The initial contract period shall be one year and further extendable for 24 months after review of the performance at the end of each year with same rates, terms and conditions. As per schedule of rates scope of activities are as under,

Activities for operation & maintenance at Institute and Housing complex:

The scope of work includes round the clock operation and maintenance works for 33/0.433 KV Substation, LV panels, power and lighting DBs, electrical maintenance works of all labs & common area at Institute & electrical maintenance of CSR, Housing Complex. Electrical maintenance work of fans, lighting fixtures indoor & outdoor both, watering of earth stations located at substation and labs, this works also includes maintenance of telephone lines & telephone DBs at Institute and Housing Complex. Installation and commissioning of MCB distribution boards, laying of wires and cables and new electrical works at the Institute. This requires deployment of qualified, experienced and competent manpower for carrying out the scheduled preventive

maintenance (daily/weekly/monthly/quarterly/half yearly and yearly). This shall also include annual maintenance, periodic maintenance breakdowns etc. and quick restorations of supply on round the clock basis. *The monitoring and recording of parameters substation is scheduled in general day time shift only.*

S.No.	Description of items
1	Operation, maintenance, periodic maintenance and break down maintenance of 33 KV HT substation installed with 750 KVA, 33/.433 KV transformer. Help for yearly oil filtration and testing works of the transformer are included in the maintenance works.
2	Periodic maintenance and break down maintenance of LV three phase low tension distribution electrical panels installed with 1250 A, 1000 A ACBs and MCCBs of various capacities various places at both the Institute and CSR Housing complex, Indore. Help for yearly testing of all four Air circuit breakers and LV panels MCCBs are included in the maintenance works.
3	Periodic maintenance, routine and breakdown maintenance of 3-phase & signal phase PDBs and LDBs installed various labs, cleaning, tightening of mains, neutral & earth terminals at the Institute & Housing complex as directed by EIC.
4	Watering of earth pits at 33KV double feeder junction point, 33 KV HT yard and 320 KVA DG set body and neutrals and all the laboratories of the Institute and installed at CSR, Housing Campus. Opening and cleaning of the earth pits joints and properly reconnecting the joints as and when required directed by EIC.
5	Attending, repair work and replacement work of faulty 15A/5 A switches and sockets, Tube light fittings 18 watts /36 watts ,9 watts / 18watts /20 watts LED fittings/ retrofit LED fittings , Garden fittings, T- 5 tube fittings, 28 Watts & 18 watts CFL fittings, LED street light fittings, MH flood light fittings, SV lamp fitting installed at Institute and CSR Housing campus as directed by EIC.
6	Attending ceiling fans, exhaust fans, pedestal fans, replacement of capacitors/regulators/ switches/faulty wires and plugs etc. Maintenance and repair work of for motor starters at CSR, Housing complex & at the Institute.
7	Fixing, tightening and wiring of light / power switches and sockets, Indicators, 16 A kit ket fuses on extension boards and also connecting 3 core wires with 15 A Top for making extension boards, repair work of old extension boards as required directed by EIC. This also includes maintenance of telephone lines, cables, RJ-11 and telephone DBs at CSR, Housing complex & at the Institute excluding EPABX. Telephone instrument will be provided by the department .

- 1) Electrical maintenance of offices, bore well pump & Mono block pump sets starters, Street lighting and compound wall/periphery lighting inside campuses.
- 2) Electrical maintenance of non-operational area in side UGC –DAE CSR, Indore and CSR, Housing Complex, Indore like cabins / rooms, seminar, canteen, library, Hostel Cum Guest house building, Users Guest House building, corridors, Quarters, toilets including street light and periphery lighting as directed.
- 3) Electrical maintenance of all the cabins, laboratories, Garden lights, Gate lights, main gate lights, Attending and rectifying power OFF complaints and restoring it at any time on emergency.
- 4) Verifying the tripping of ELCB and MCBs.
- 5) Replacing of burnt out or damaged bulbs, Tube lights, switches, sockets, holders, fans,

lighting fixtures, switch boards, MCBs, ELCBs, and any works given by Electrical Department.

- 6) Cable laying, wiring and lighting etc. as per the user's/Department's requirement.
- 7) Dismantling of burnt pump motors, burnt ceiling fans, burnt chokes of light fixtures and installing the same after repairs, for which materials will be issued by the department free of cost.
- 8) Repairing / Replacement of the burnt chokes of street light fixtures and changing of fused lamps in the fixture.
- 9) Periodical maintenance of light fittings, street light fittings, ceiling fans, exhaust fans including repairs like replacement of fused lamps and tubes, checking of chokes, capacitors, starters, holders, terminals, control gears, regulators etc.
- 10) Diagnosing the cable fault and rectifying the defects by providing straight through joints, end terminations etc., as directed.
- 11) Maintenance of internal Telephone lines, instruments, junction boxes and wiring for new connections if required.
- 12) Preventive maintenance of above listed installations to be carried out in a well-planned manner with periodicity as detailed in maintenance schedule, as directed.
- 13) Electrical complaints, other than the above mentioned shall also be executed by the contractor, as per the directions.
- 14) The work allotted shall be attended immediately and reported to Head, Electrical Maintenance for its progress.
- 15) Keeping the maintenance records updated and logging the day-to-day works executed.
- 16) Keeping the record of materials received for the day-to-day works and materials used at different locations.
- 17) Helping the UGC-DAE CSR, Indore personnel in the execution of new job requirements and other contractors working at the Institute and CSR, Housing Complex for various units like: Air conditioners, UPS systems, DG set, EPABX & Telephones, Fire Alarm and Smoke detectors maintenances contractor and Fire extinguishers maintenances contractor etc.
- 18) For specific situation where manpower more than minimum manpower is needed for example: Annual shut down, annual inspection of ACBs, electrical panels and 33 kV transformer etc. You will have to arrange the requisite extra manpower in addition to the available defined manpower without additional charges as directed by EIC.
- 19) Contractor shall ensure that all safety norms & regulation are followed by all his workers.
- 20) The work of 33 kV on O/H line and any work related to 33 KV equipment supervisor shall take proper shutdown permit, shall properly isolate discharge it as per the standard procedure before starting the work.
- 21) The wireman / technicians, workers employed by the Contractor working on live system shall have to work in presence of another person.
- 22) **In addition to this any other electrical work allotted by the Electrical Maintenance section shall have to be attended.**

For details of equipments covered under scope of work, please refer enclosed list of annexure as under,

- a. Annexure – A
- b. Annexure –B
- c. Annexure –C

- d. Annexure –D
- e. Annexure -E
- f. Annexure –F
- g. Annexure –G

Preventive maintenance, shut down maintenance and routine maintenance shall be as done as per EIC.

This shall also include responsibility of Contractor to work with service engineer(s) of the Original Equipment Manufacturer (OEM) or their authorized system house for important equipments viz., ACBs, DG sets with AMF panels, in case some major breakdown occurs or for rectification of faults or if it is required to replace the critical spares during currency of contract, the contractor should help to OEM expert team working at the Institute. Contractor should help for oil filtration work of existing transformer. OEM expert team for 33 KV transformer and ACBs shall be provided by the Institute.

Restoration in case of breakdown of equipment in the respective substations, as and when required.

One sets of appropriate range of calibrated instruments like digital insulation tester (250-5kV), digital earth tester, winding resistance meters, multi-meters, high voltage test kit, low resistance meter, variac, remote temperature IR sensor thermometer etc. shall be available at site.

The contractor shall be fully responsible for arranging the one set of low height aluminum ladder for maintenance works, cable crimping tools, ladders etc whenever required at the site . In addition to above, the personal protective equipments (PPE) like helmets, face shields, safety belts, hand gloves, safety aprons, goggles, safety shoes etc. for all working persons shall also be arranged by the contractor in required quantity for deployed manpower at his owncost.

The consumable items like, electrical fuses, indicators, battery electrolyte, distilled water and items specified in the schedule of the tender specification shall be provided by UGC-DAE CSR, Indore.

Arrangement of special plant and machinery like crane, trucks etc. are not envisaged in the scope of work of contractor. UGC-DAE CSR, Indore will provide the available transformer oil,

The spare items required for installations shall be provided free of cost by UGC-DAE CSR, Indore

Contractor shall arrange for electrical safety, first-aid and O&M training annually for their

staff deployed atsite.

Contractor shall also arrange annual electrical safety audit for operation & maintenance activities of the substations covered under contract. In this regard a report shall be submitted to UGC-DAE CSR, Indore. Any other activity required for the upkeep of the installation and as per the standard practice.

2. Required team Setup:

(a) Minimum Required Team Setup:

Staff/manpower for Infrastructural services of electrical maintenance works at UGC-DAE CSR, University Campus Khandwa Road, Indore:

Skilled manpower	Semiskilled manpower
Three	One

Note: Manpower supplied for Infrastructural services of electrical maintenance works at UGC-DAE CSR, University Campus Khandwa Road, Indore must be taken care by the contractor.

(b)

Skilled man power: Technician having Electrical / Wireman Trade ITI certificate from Govt. approved or Govt. recognized Institution or having valid electrical wireman license issued by local authorized Electrical Inspectorate, should have minimum five years of practical experience and should have good knowledge of attending internal electrical and 33 KV overhead line maintenance break downs and repair works independently. (Domestic trade is not acceptable).

(c) Semiskilled manpower: Technician having Electrical / Wireman Trade ITI certificate from Govt. approved or Govt. recognized Institution or having valid electrical wireman license issued by local authorized Electrical Inspectorate, should have minimum three years of practical experience and should have good knowledge of attending internal electrical and 33 KV overhead line maintenance break downs and repair works. (Domestic trade is not acceptable)

(d) The manpower should be available at the Institute on each day for complete year for 24 Hrs x 7 days. For various works along with tools and test kits for attending the breakdowns and execution of maintenance activities at both the premises. Contractor's staff shall have their own arrangement for reaching and leaving the duty at UGC-DAE CSR, Indore.

(e) Any misconduct/misbehavior on the part of the manpower deployed by the Contractor will not be tolerated and such person will have to be replaced by the Contractor at his own costs, risks and responsibilities immediately, with written intimation to in-charge, UGC-DAE CSR, Indore.

(f) The Service provider / Agency / Firm /Contractor should work as per Indian Electricity rules & regulations 1956 and ensure proper safety and also ensure to

maintain adequate no. of manpower as per contract conditions on all days. Providing the replacement of the skilled absent electrical manpower will be the responsibility of the Contractor.

- (g) The complaint should be attended immediately from the time its logged in and there is no limit of breakdown calls to be attended with no extra cost.
- (h) The Service provider / Agency / Firm / contactor should arrange travel arrangement on their own cost between Institute and CSR, housing complex, Indore. No travel expenses will be paid by the Institute.
- (i) Preventive maintenance, shut down maintenance and routine maintenance shall be as done as per maintenance schedule and as per EIC. The electrical drawings of the Institute and the CSR, Housing campus are given the separately in drawing section.

Staff/manpower for Infrastructural services of electrical maintenance works at UGC-DAE CSR, University Campus Khandwa Road, Indore:

Shifts	Skilled manpower	Semi-skilled manpower
(A) 8.00 AM to 4.30 PM	01	01
(B) 4.30 PM to 1.00 AM	01	Nil
(C) 1.00 AM to 9.00 AM	01	Nil

Note: Manpower supplied for Infrastructural services of electrical maintenance works at UGC-DAE CSR, University Campus Khandwa Road, Indore must be taken care by the contractor.

In day to day routine, maintenance team shall also make the observations at various Electrical installations, substation, Housing campus and take remedial actions in consultation with UGC – DAE CSR, Indore.

Recoveries and Penalty clause shall be applicable on non-deployment of required staff and for non-performing the scheduled activities.

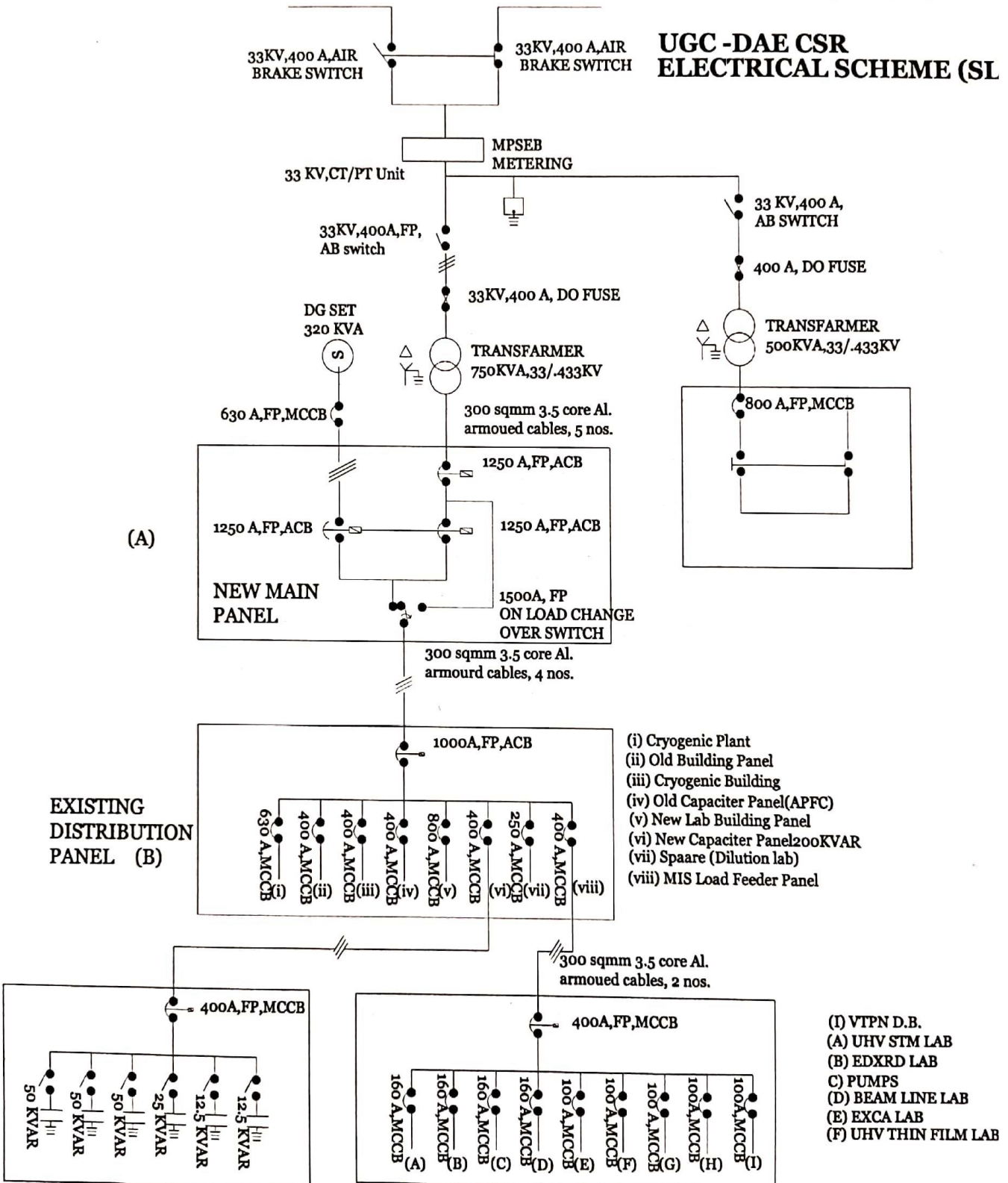
All the minor or major break down will have to attend and will have to be rectified by the contractor.

SLD of UGC –DAE CSR , Indore

33 KV NAVLAKHA FEEDER

33 KV RAJENDRA NAGAR FEEDER

UGC -DAE CSR ELECTRICAL SCHEME (SL)



New 200 KVA CAPACITOR PANEL(C)

NEW DISTRIBUTION PANEL(D)

- (I) VTPN D.B.
- (A) UHV STM LAB
- (B) EDXRD LAB
- C) PUMPS
- (D) BEAM LINE LAB
- (E) EXCA LAB
- (F) UHV THIN FILM LAB

Annexure-A

List of equipments at 33 KV Double feeder junction point

1. The 33 KV double feeder junction point receives power from Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company Limited (MPPKVVCL), South Zone 220/33 KV Substation through 33 KV double circuit double feeder lines. The location of the four pole 33 KV double feeder junction point is approxi. 70 mtrs away from the Institute near to Khandwa Road at DAVV, Indore campus . 33 KV Double feeder junction point comprises of two numbers 33 KV, 400 A air break switches installed on each feeder circuit. This 33 KV double feeder junction point is also having lightning arresters and earth pits . A list of equipments for 33 KV Double feeder junction point is as under ,

The 33 KV double feeder junction point consist following equipments,

S.no	Equipments	Qty .	Unit
1	Sets of 33 KV drop fuses	02 nos	Sets
2	400 A air break switches	02 nos	Sets
3	33 KV Disc insulators	21 sets	Each sets
4	33 KV Pin Insulators	06 nos	Each
5	33 KV Bus	01 sets	Each sets
6	33 KV lightning arresters	02 sets	Each sets
7	Earth stations	09nos	Each

Annexure-B

List of equipments at 33/0.433KV, 750 KVA substation

S.no	Equipments	Qty	Unit	Make	Remarks
1	750 KVA, 33/0.433KV Transformer, ONAN	01 nos	Each	M/s Kirloskar Electric Co.Ltd	In operation
2	33 KV HT two numbers power cables of size 240 Sqmm	01 nos	Each	Ploycab	
3	Sets of 33 KV drop fuses	02 nos	Sets	Atlas	
4	400 A air break switches	02 nos	Sets	Atlas	
5	33 KV Disc insulators	21 sets	Each sets	BHEL	
6	33 KV Pin Insulators	15 nos	Each	BHEL	
7	33 KV Bus	02 sets	Each sets		
8	33 KV lightning arresters	02 sets	Each sets		
9	Earth stations	17 nos	Each		
10	33 KV CT / PT unit and metering unit	01set	Each set		
11	D.G. set 320 KVA with canopy	01 no	Each	Kirloskar Oil Engine Ltd	
12	Diesel tank 1000 lts	01 no	Each		

Annexure -C

Lists of equipment for Main LT panel;

S.no	Equipments	Qty		Make
1	Motorized Air Circuit Breaker (ACB), CN-CS 1250 H , ACB 1250 A ,4 pole ACBs with closing coil , 50 HZ ,Shunt trip , with microprocessor Based Release protection against overload - Phase & Neutral, Short-Circuit, Instantaneous, Earth Fault Settable , Overload delay Settable Instantaneous setting Short-Circuit and Earth Fault protection Individual Fault LED indication, with neutral CT and auxiliary contacts	03 nos	Each	L&T
2	1500 A on load change over switch	01 nos	Each	L&T
3	Auto mains failure relay	01 nos	Each	ComAp
4	Metering devices	01nos	Each Set	Conzerv
5	Bus Bars	Complete set	Each Set	
6	Indicators	18 nos	Each	ESBEE
7	HRC fuses	12 no	Each	L&T
8	MCB	01 no	Each	L&T
9	Metering CT	03 nos	Each set	

Annexure -D

List of equipments at Distribution panel - I (LV panel)

S.no	Equipments	Qty	Unit	Make
1	Motorized Air Circuit Breaker (ACB), ACB 1000 A ,4 pole ACBs with closing coil , 50 HZ ,Shunt trip , with microprocessor Based Release protection against overload - Phase & Neutral, Short-Circuit, Instantaneous, Earth Fault Settable , Overload delay Settable Instantaneous setting Short- Circuit and Earth Fault protection Individual Fault LED indication, with neutral CT and auxiliary contacts	01nos	Each	GE
2	MCCB 250 A to 800 A microprocessor Based Release protection against overload - Phase & Neutral, Short-Circuit, Instantaneous, Earth Fault Settable , Overload delay Settable Instantaneous setting Short- Circuit and Earth Fault protection Individual Fault LED indication, with neutral CT and auxiliary co	04nos	Each	L&T
3	MCCB 250 A to 400 A with Overload delay Settable Instantaneous setting Short-Circuit protection	04nos	Each	English Electric
4	MCCB 630 A with microprocessor Based Release protection against overload - Phase & Neutral, Short- Circuit, Instantaneous, Earth Fault	04nos	Each	ABB

	Settable , Overload delay Settable Instantaneous setting Short-Circuit and Earth Fault protection .			
5	Metering devices	02 nos	Sets	
6	Bus Bars	Complete set	LS	
7	Indicators	9 nos	Each	
8	HRC fuses	01 no	Each	
9	MCB	01 no	Each	

List of equipments Distribution panel –II (LV panel)

S.no	Equipments	Qty	Unit	Make
1	In comer MCCB 400 A with Overload &Short-Circuit protection	01nos	Each	L&T
2	Outgoing MCCB 160A Overload &Short- Circuit protection	04nos	Each	L&T
3	Outgoing MCCB 100A Overload &Short- Circuit protection	04nos	Each	L&T
4	Bus Bars	Complete set	LS	
5	Indicators	3 nos	Each	

Annexure –E

List of equipments:

• **400 A Change over switch**

S.no	Equipments	Qty	Unit	Make
1	On load change over switch 400 A	01	Each	HPL

• **Old building distribution Panel -I**

S.no	Equipments	Qty	Unit	Make
1	MCCB 400 A with Overload & Short-Circuit protection	03	Each	L&T
2	MCCB 100 A with Overload & Short-Circuit protection	05	Each	L&T
3	Metering devices	10nos	Each	AE
4	Bus Bars	Complete set	LS	
5	Indicators	18 nos	Each	
6	HRC fuses 100 A	12 no	Each	

• **List of equipments for old building distribution panel -II**

S.no	Equipments	Qty	Unit	Make
1	Incomer MCCB 400 A with Overload & Short-Circuit protection	01	Each	L&T
2	Switch Fuse unit 250 A	01	Each	L&T
3	Combination of MCCB 100 A and Switch Fuse unit 100 A	07	Each	L&T
4	Metering devices	10nos	Each	AE
5	Bus Bars	Complete set	LS	
6	Indicators	27 nos	Each	
7	HRC fuses 100 A	12 no	Each	
8	Metering CT & control wiring	27 nos	Each set	

- **List of equipments at Cryogenic Building Panel**

S.no	Equipments	Qty	Unit	Make
1	MCCB 400 A with Overload & Short-Circuit protection	01	Each	L&T
2	Switch fuse unit 200A	04	Each	L&T
3	Switch fuse unit 100 A	08	Each	L&T
4	Switch connector unit 400 A	01	Each	L&T
5	Metering devices	10nos	Each	AE
6	Indicators	39 nos	Each	
7	Bus Bars	Complete set	LS	
8	Metering CT & control wiring	15 nos	Each set	

- **List of equipments at Cryogenic Plant Panels**

S.no	Equipments	Qty	Unit	Make
1	Switch fuse unit 630A	01	Each	L&T
2	Switch fuse unit 400 A	01	Each	L&T
3	Switch fuse unit 250 A	01	Each	L&T
5	Metering devices	02nos	Each	AE
6	Indicators	09 nos	Each	
7	HRC fuses	09 no	Each	
8	Bus Bars	Complete set	LS	
9	Selector switches	02 nos	Each	

- **List of equipments at LHe Plant Panels (I)**

S.no	Equipments	Qty	Unit	Make
1	Switch fuse unit 400 A	01	Each	L&T
2	Switch fuse unit 250 A	02	Each	L&T
3	Switch fuse unit 200A	02	Each	L&T
4	Metering devices	10nos	Each	AE
5	Bus Bars	Complete set	LS	
6	Indicators	15	Each	
7	HRC fuses	15 nos	Each	
8	Selector switches	10 nos	Each	
9	Metering CT & control wiring	15 nos	Each set	

- **List of equipments at Cryogenic Plant Panels (II)**

S.no	Equipments	Qty	Unit	Make
1	Switch fuse unit 250 A	01	Each	L&T
2	Switch fuse unit 125 A	04	Each	L&T
3	Metering devices	02nos	Each	AE
4	Bus Bars	Complete set	LS	
5	Indicators	15	Each	

- **List of equipments at New building panel**

S.no	Equipments	Qty	Unit	Make
1	MCCB 800 A , 4 P	01	Each	L&T
2	MCCB 400 A , 4 P	04	Each	L&T
3	MCCB 250 A , 4 P	08	Each	L&T
4	Metering devices	02nos	Each	Neptun
5	Indicators	3 nos	Each	
6	Bus Bars	Complete set	LS	

- **List of equipments at New building various labs panels ; 05 nos**

S.no	Equipments	Qty	Unit	Make
1	MCCB 250 A , 4 P	01	Each	L&T
2	MCCB 100 A , 4 P	03	Each	L&T
3	MCB 63 A , TPN	04	Each	L&T
4	Metering devices	02nos	Each	Neptun
5	Indicators	3 nos	Each	
6	Bus Bars	Complete set	LS	

- **List of equipments at Work shop and Dilution Panels**

S.no	Equipments	Qty	Unit	Make
1	Switch fuse unit 250A	01	Each	L&T
2	Switch fuse unit 100A	04	Each	L&T
3	Metering devices	02nos	Each	AE
4	Bus Bars	Complete set	LS	
5	Indicators	3 nos	Each	

- **List of equipments at Dilution Panels (I)**

S.no	Equipments	Qty	Unit	Make
1	SFU 250A	01	Each	L&T
2	SFU 100A	03	Each	L&T
3	MCB	04	Each	L&T
4	Metering devices	02nos	Each	AE
5	Indicators	3 nos	Each	
6	Bus Bars	Complete set	LS	

- **List of equipments at Dilution Panels (II)**

S.no	Equipments	Qty	Unit	Make
1	MCCB 100A	02	Each	L&T
2	MCB	04	Each	L&T
3	Metering devices	02nos	Each	AE
4	Indicators	3 nos	Each	
5	Bus Bars	Complete set	LS	

- **List of equipments at Dilution Panels (III)**

S.no	Equipments	Qty	Unit	Make
1	MCCB 100A	02	Each	L&T
2	MCB	04	Each	L&T
3	Metering devices	02nos	Each	AE
4	Indicators	3 nos	Each	
5	Bus Bars	Complete set	LS	

- **List of equipments at UHV –STM lab**

S.no	Equipments	Qty	Unit	Make
1	MCCB 160A	01	Each	L&T
2	MCCB 100A	02	Each	L&T
3	MCB	02	Each	L&T
4	Metering devices	02nos	Each	AE
5	Indicators	3 nos	Each	
6	Bus Bars	Complete set	LS	

Annexure -F

List of equipments at Automatic Power Factor Correction panels (APFC panel): 02 nos

APFC Panel (I): 200 KVAR

S.no	Equipments	Qty	Unit	Make
1	MCCB 400 A, TP with Overload & Short-Circuit protection	01nos	Each	L&T
2	MCCB 125A , TP	03nos	Each	L&T
3	MCB 63A, TP	01nos	Each	L&T
4	MCB 32A,TP	02nos	Each	L&T
5	50KVAR Cont. with Thyristor module	03nos	Each	Neptune
6	25 KVAR Cont. with Thyristor module	01nos	Each	Neptune
7	12.5 KVAR Cont. with Thyristor module	02nos	Each	Neptune
8	7 % Harmonics reactor with 200 % linearity for 50KVAR capacitor	03nos	Each	
9	7 % Harmonics reactor with 200 % linearity for 25KVAR capacitor	01 nos	Each	
10	7 % Harmonics reactor with 200 % linearity for 12.5KVAR capacitor	02nos	Each	
11	Indicators	15 nos	Each	ESBEE
12	Automatic Power factor Correction relay	01	Each	L&T
13	Push buttons with elements	12	Each	
14	Control Contactor	06	Each	L&T
15	Heavy duty power capacitor 50 KVAR capacitor	03	Each	L&T
16	Heavy duty power capacitor 25KVAR capacitor	01	Each	L&T
17	Heavy duty power capacitor 12.5 KVAR capacitor	02	Each	L&T
18	MCB DP & SP	07	Each	
19	Panel Fan	01	Each	
20	Bus Bars	Complete set	LS	
21	CT	One set	Each set	

List of equipments at APFC panel (II): 200 KVAR

S.no	Equipments	Qty	Unit	Make
1	Switch fuse Unit 400 A	01nos	Each	L&T
2	Switch fuse Unit 63 A	08nos	Each	L&T
3	Capacitor contactor	08 nos	Each	L&T
4	Indicators	15 nos	Each	ESBEE
5	Automatic Power factor Correction relay	01	Each	L&T
6	Push buttons with elements	16	Each set	Neptune
8	Heavy duty power capacitor 25KVAR capacitor	01	Each	L&T
9	Panel Fan	01	Each	
10	HRC fuse	03	Each	
11	CT	One set	Each set	
12	Bus Bars	Complete set	LS	

Annexure –G

- **List of equipments at Guest house building**

Guest house building Main DB : - I

S.no	Equipments	Qty	Unit	Make
1	Switch fuse unit 400 A	01	Each	L&T

Guest house building Main DB : - II

S.no	Equipments	Qty	Unit	Make
1	MCCB 160A	01	Each	L&T
2	MCCB 100A	06	Each	L&T
3	MCB TPN	02	Each	L&T
4	Metering devices	02nos	Each	AE
5	Indicators	3 nos	Each	
6	Bus Bars	Complete set	LS	

- **List of equipments at Staff quarters panels: -**

I. Quarter Type –A,

II. Quarter Type B &C.

I. Staff quarters panels: - Type –A (02nos)

S.no	Equipments	Qty	Unit	Make
1	SFU 100A TPN	06	Each	L&T
2	ELCB + MCB TPN	04	Each	L&T
3	Metering devices	02nos	Each	AE
4	Indicators	3 nos	Each	
5	Bus Bars	Complete set	LS	

II. Quarter Type B&C

S.no	Equipments	Qty	Unit	Make
1	SFU 63A TPN	01	Each	L&T
2	ELCB + MCB SPN	08	Each	L&T
3	Metering devices	02	Each	AE
4	Indicators	03	Each	
5	Bus Bars	Complete set	LS	

- PDBs and LDBs of labs and Common areas of Institute and CSR Housing complex
- PDBs & LDBs:- 190 nos which includes three phase and single phase installed at Institute and CSR Housing complex .
- Maintenance of various types of light fittings: All Tube lights fittings 18 watts and 36 watts, 9/10 watts and 18/20 watts LED fitting/ retrofit LED fittings, LED Flood light fittings, CFL fittings, Garden light fittings, overhead fittings, MH fittings, SV Lamp fittings installed at the Institute and the CSR , Housing Complex , Indore
- Maintenance of various types fanes : Ceiling fans, exhaust fans, pedestal fans, wall mounting fanes replacement of capacitors/regulators/ switches/faulty wires and plugs etc
- Maintenance of lights and power wiring at the Institute and CSR , Housing Complex , Indore .
- Maintenance of GI and Copper earth pits at Institute and CSR , Housing Complex , Indore .
