

DEENDAYAL PORT AUTHORITY

An ISO 9001 : 2008 & ISO 14001 : 2004 Certified Port



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No.: EL/WK/2803

Date: 24/07/2023

EXPRESSION OF INTEREST [EOI] for

“Design, Manufacturing, Supply, Installation, Erection, Testing and Commissioning of 66/11kV GIS Substation and Shifting of 11kV Feeders and Power Transformers to New GIS Substation at DPT along with 3 years of comprehensive O&M of GIS Substation”

Executive Engineer (Electrical), DPA invites Expression of Interest for the work of “Design, Manufacturing, Supply, Installation, Erection, Testing and Commissioning of 66/11kV GIS Substation and Shifting of 11kV Feeders and Power Transformers to New GIS Substation at DPT along with 3 years of comprehensive O&M of GIS Substation” from the reputed firms from those who have executed similar work in Government/public sectors and other leading private organizations. The Expression of Interest (EOI) documents containing details of Scope of Work and technical specifications are enclosed herewith.

The interested firms are requested to submit budgetary quotation for the said work in format enclosed at Annexure I. The completed EOI (Expression of Interest) shall be submitted to the office of the undersigned on or before 06/08/2023.

Executive Engineer (E)
Deendayal Port Authority

Annexure I

Bill of Quantities

Name of Work: "Design, Manufacturing, Supply, Installation, Erection, Testing and Commissioning of 66/11kV GIS Substation and Shifting of 11kV Feeders and Power Transformers to New GIS Substation at DPT along with 3 years of comprehensive O&M of GIS Substation".

				Supply Rate	Installation, Testing and Commissioning Rate	Supply Amount	ITC Amount
A	Main Equipment 66/11kV GIS SUB STATION						
1	66kV GIS EQUIPMENT						
i	BUS BAR – DOUBLE	LS	1				
	72.5kV, 1600A, Short Circuit Current Rating of 25kA for 3 seconds, Three Phase encapsulated Unit, SF ₆ Gas Insulated, Metal enclosed Bus Bars, Bus Enclosures running along the length of the Switchgear to interconnect each of the Circuit Breaker Bay Module in Double Main Bus System . Each Phase shall be complete with Inductive Voltage Transformers (VTs) complete with Isolator / Disconnect or cum Earth Switches and Safety Grounding Switch all complete with Manual and Motor Driven Operating Mechanisms, LCC, GIS Duct with SF ₆ Gas Monitoring System and Accessories etc complete in all respects						
ii	BUS COUPLER BAY MODULE:	Set	1				
	72.5kV, 1600A, Short Circuit Current Rating of 25kA for 3 seconds, SF ₆ Gas Insulated Bus Coupler Bay Module comprising of SF ₆ Gas Insulated Circuit Breaker (1600A), Current Transformers (Ratio 300/ 1 - 1A), Bus Bar Isolator / Disconnect or Switches (1600A) combined with						

	Safety Grounding Switches complete with one Manual and Motor Driven Operating Mechanism, Local Control Cubicle (LCC), GIS Duct with SF ₆ Gas Monitoring System and Accessories etc complete in all respects						
iii	TRANSFORMER CIRCUIT BREAKER BAY MODULE:	Sets	3				
	72.45kV, 1600A, Short Circuit Current Rating of 25kA for 3 seconds, SF ₆ Gas Insulated Transformer Circuit Breaker Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker (1600A), Current Transformers (Ratio: 100 / 1 - 1 - 1A), Isolator / Disconnecter Switches (1600A) combined with Safety Earth Switch complete with Manual and Motor Driven Operating Mechanisms, Lightning arrester, Local Control Cubicle (LCC) SF ₆ Gas Monitoring System for complete Bay, suitable cable termination between 10MVA, Transformers and 66 kV GIS. Cable termination kit and dummy plug and Accessories etc complete in all respects						
iv	TRANSMISSION LINE FEEDER BAY MODULE (UG CABLE):	Sets	2				
	72.5kV, 1600A, Short Circuit Current Rating of 25kA for 3 seconds, SF ₆ Gas Insulated Transmission Line Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker (1600A), Current Transformers (Ratio: 1000-500 / 1 - 1A), Isolator / Disconnectors (1600A) Switches with combined Earth Switch complete with Manual and Motor Driven Operating Mechanisms,						

	High Speed Fault Making Grounding Switch complete with group operated Manual and Motor Driven Operating Mechanism, Local Control Cubicle (LCC), SF ₆ Gas Monitoring System. Cable termination Kit and dummy plug and Accessories etc complete in all respects.						
v	BUS BAR MODULE WITH BUS PT BAY	Sets	1				
	66kV 3 phase bus bar PT's with isolation provision and 66kV Bus Bar High speed earth switches						
vi	BUS DUCT						
	72.5kV, 1600A, 25kA, 3 Sec, Single phase, SF ₆ gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) etc. as per the technical specification.	RM	500				
vii	AIR BUSHING						
	72.5kV, 1600A, 25kA SF ₆ /Air BUSHING (Bushing shall be of Polymer /composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure	Nos	6				
2	11kV GIS EQUIPMENT						
i	BUS BAR - SINGLE	LS	3				

	11kV, 1250A, Short Circuit Current Rating of 15kA for 3 seconds, Three Phase encapsulated Unit, SF ₆ Gas Insulated, Metal enclosed Bus Bars, Bus Enclosures running along the length of the Switchgear to interconnect each of the Circuit Breaker Bay Module in Single Main Bus System . Each Phase shall be complete with Inductive Voltage Transformers (VTs) complete with Isolator / Disconnecter cum Earth Switches and Safety Grounding Switch all complete with Manual and Motor Driven Operating Mechanisms, LCC, GIS Duct with SF ₆ Gas Monitoring System and Accessories etc complete in all respects						
ii	BUS COUPLER BAY MODULE:	Set	2				
	11kV, 1250A, Short Circuit Current Rating of 15kA for 3 seconds, SF ₆ Gas Insulated Bus Coupler Bay Module comprising of SF ₆ Gas Insulated Circuit Breaker (1600A), Current Transformers (Ratio 300/ 1 - 1A), Bus Bar Isolator / Disconnecter Switches (1600A) combined with Safety Grounding Switches complete with one Manual and Motor Driven Operating Mechanism, Local Control Cubicle (LCC), GIS Duct with SF ₆ Gas Monitoring System and Accessories etc complete in all respects						
iii	TRANSFORMER CIRCUIT BREAKER BAY MODULE:	Set	3				

	11kV, 1250A, Short Circuit Current Rating of 15kA for 3 seconds, SF ₆ Gas Insulated Transformer Circuit Breaker Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker (1600A), Current Transformers (Ratio: 100 / 1 - 1 - 1A), Isolator / Disconnecter Switches (1600A) combined with Safety Earth Switch complete with Manual and Motor Driven Operating Mechanisms, Lightning arrester, Local Control Cubicle (LCC) SF ₆ Gas Monitoring System for complete Bay, suitable cable termination between 10MVA, Transformers and 66 kV GIS. Cable termination kit and dummy plug and Accessories etc complete in all respects						
iv	OUTGOING LINE FEEDER BAY MODULE (UG CABLE):	Sets	25				
	11kV, 1250A, Short Circuit Current Rating of 15kA for 3 seconds, SF ₆ Gas Insulated Transmission Line Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker (1600A), Current Transformers (Ratio: 1000-500 / 1 - 1A), Isolator / Disconnectors (1600A) Switches with combined Earth Switch complete with Manual and Motor Driven Operating Mechanisms, High Speed Fault Making Grounding Switch complete with group operated Manual and Motor Driven Operating Mechanism, Local Control Cubicle (LCC), SF ₆ Gas Monitoring System. Cable termination Kit and dummy plug and Accessories etc complete in all respects.						
v	BUS BAR MODULE WITH BUS PT BAY	Sets	3				

	11kV 3 phase bus bar PT's with isolation provision and 11kV Bus Bar High speed earth switches						
vi	BUS DUCT						
	11kV, 1250A, Short Circuit Current Rating of 15kA, 3 Sec, Single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) etc. as per the technical specification.	RM	1000				
vii	AIR BUSHING						
	11kV, 1250A, Short Circuit Current Rating of 15kA SF6/Air BUSHING (Bushing shall be of Polymer /composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure	Nos	9				
3	ISOLATORS & LA						
i	72.5kV, 1600A, 25kA, 3 Sec Centre Break Isolators with earth switch including solid core Post insulator (For 2 incomers)	Set	2				
ii	72.5kV Metal oxide surge arrester 10 K.A Long duration discharge Class III	Nos	18				
4	11kV CAPACITOR BANK						
i	11kV , 450 kVAR Indoor Capacitor Banks complete with Series reactor.	set	2				

5	CONTROL AND RELAY PANELS AND S/S AUTOMATION SYSTEM	LS	1				
a.	66kV C&R PANEL						
i	Bus Coupler/ Tie Breaker Protection Panel with BCU(Bay control unit) for Automation	set	1				
ii	Feeder Protection Panel with BCU(Bay control unit) for Automation	set	2				
iii	Bus Bar Protection Panel with BCU(Bay control unit) for Automation	set	1				
iv	Transformer Protection Panel (10MVA, 66/11kV power Transformer) with BCU(Bay control unit) for Automation	set	2				
v	Transformer Protection Panel (6.3MVA, 66/11kV power Transformer) with BCU(Bay control unit) for Automation	set	1				
b.	11kV C&R PANEL						
i	Bus Coupler/ Tie Breaker Protection Panel with BCU(Bay control unit) for Automation	set	2				
ii	Feeder Protection Panel with BCU(Bay control unit) for Automation	set	28				
iii	Bus Bar Protection Panel with BCU(Bay control unit) for Automation	set	3				
c.	Complete Substation Automation Equipments including Hardware & Software for substation & remote control stations along with Associated equipment with fiber optics and other interface converter equipment. SAS shall cover 6 nos of 66kV GIS and 33 nos of 11kV GIS bays.	Set	1				
6	AC & DC AUXILIARY SYSTEM						
i	500kVA Station transformer	Sets	2				
ii	415V Main Switchboard	Sets	1				
iii	415V Main Lighting Distribution Board	Sets	1				

iv	Emergency Lighting Distribution Board	Sets	1				
v	110V DC Distribution Board	Sets	1				
7	DC BATTERIES, BATTERY CHARGER						
i	110V, 240 AH VRLA DC battery set along with mounting racks	Sets	1				
ii	Electronic Float and Float cum Boost Charger 110 V DC, with mandatory protections and annunciation	Sets	1				
iii	DE MINERALISED PLANT of 30 L/Hr FOR MAKING DISTLED WATER FOR BATTERY BANKS	Sets	1				
8	Illumination System, Switch Board With Receptacles etc.						
a	INDOOR						
i	SQL 36 01 WH or Equilant (CABLE CELLAR ROOM)	nos	109				
ii	40W WH VIVA or Equilant (GIS HALL)	nos	74				
iii	40W LED or Equilant	nos	4				
b	OUTDOOR						
i	14 (1 X 250 MH T) Floodlight with integral gear suitable for Outdoor	nos	4				
ii	Conduits, junction boxes, lighting wires & Safety Items	LS	1				
c	Power Sockets						
i	230V Single phase+Earth(16 or 20A) Power Sockets		12				
ii	3 phase (415V), 63A Power Sockets with plugs (INDUSTRIAL SOCKET)		4				
d	Ceiling Fans						
i	1200mm Sweep Fan		6				
e	Exhaust Fans						
i	Exhaust Fans		5				
ii	Industrial Exhaust Fans for Cable cellar		2				
9	LT POWER AND CONTROL CABLES (FRLS)						
a	POWER CABLES						
i	3.5X300 sq.mm XLPE AL. cable	Mtrs	30				

ii	3.5X70 sq.mm XLPE AL cable	Mtrs	132				
iii	1X35 sq.mm Copper Flexible cable (Battery)	Mtrs	87				
iv	4Cx16 sq.mm AL cable	Mtrs	132				
v	4Cx6 sq.mm AL cable	Mtrs	556				
vi	2Cx6 sq.mm AL cable	Mtrs	680				
b	GLANDS						
i	3.5X300 sq.mm XLPE AL. cable	nos	2				
ii	3.5X70 sq.mm XLPE AL cable	nos	6				
iii	1X35 sq.mm Copper Flexible cable (Battery)	nos	8				
iv	4Cx16 sq.mm AL cable	nos	4				
v	4Cx6 sq.mm AL cable	nos	26				
vi	2Cx6 sq.mm AL cable	nos	34				
c	LUGS						
i	300 sq.mm Al cable	nos	8				
ii	70 sq.mm Al cable	nos	24				
iii	35 sq.mm Al cable	nos	8				
iv	16 sq.mm Al cable	nos	16				
v	6 sq.mm Al cable	nos	172				
d	CONROL CABLE (Copper cable)						
i	10C X2.5 sq.mm	Mtrs	1581				
ii	12C X2.5 sq.mm	Mtrs	285				
iii	16C X2.5 sq.mm	Mtrs	850				
iv	19C X2.5 sq.mm	Mtrs	1335				
e	GLANDS						
i	10C X2.5 sq.mm	nos	66				
ii	12C X2.5 sq.mm	nos	14				
iii	16C X2.5 sq.mm	nos	42				
iv	19C X2.5 sq.mm	nos	60				
f	LUGS						
i	2.5 sq.mm	nos	2640				
10	MECHANICAL AUXILIARY SYSTEM						
a	Ventilation & Air conditioning system for 66/11kV GIS SS	Sets	1				
b	PORTABLE ALUMINIUM FRP LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD	nos	5				

c	Water Cooler with purifier	nos	1				
d	Office furniture	LOT	1				
e	BEST QUALITY & APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT IN FRONT OF ALL PANELS, BOARDS ETC. (2000X1000X3)mm Size	Nos	60				
f	FIRE ALARM SYSTEM: - Fire detection should be such that all the smoke / fire sensors installed in the system should be given individual ID and if any of sensors observe abnormality, its ID should display on LCD screen of detection panel with alarm and annunciation so that the operational personnel target that particular place for fire extinction covering all the rooms in GIS Building	LS	1				
i	Electronic Fire detection panel						
ii	Fire detectors and smoke detectors suitably distributed on the roof of buildings along with wiring up to panel, alarm and annunciation system						
g	NITROGEN INJECTION (Nitrogen injection fire prevention & extinguishing system for transformer)	Set	1				
h	FIRE EXTINGUISHING SYSTEM (Fire protection for GIS and Control room buildings etc. (Portable type fire extinguisher system))	LS	1				
i	Carbon-di- oxide type fire extinguisher of 2 kgs. Capacity, CO2 gas as per IS 15222	set	1				
ii	Carbon-di- oxide type fire extinguisher of 4.5 kgs. Capacity, CO2 gas as per IS 15222	nos	12				
iii	Mechanical Foam type fire extinguisher 9Lts	set	1				
iv	ABC powder type fire extinguisher of 6 Kgs	nos	5				

v	Fire buckets round bottom type enamel painted, white inside & Red out side and Letter "FIRE" in black out side and handle with mounting bracket.	set	1				
vi	Fire buckets with stand (Set of 4)	set	1				
i	Visual Monitoring System(VMS) for watch and ward of Transformers, 66 kV GIS cum Control Room Building & 11kV Switchgear, Sub Station Premises and Main Gate of the Sub Station	LS	1				
j	Water wash Jet system for outdoor Equipments	LS	1				
11	EARTHING & LIGHTNING SYSTEM AND ACCESSORIES						
i	M. S. Electrodes 32 mm dia.(3M rod)	nos	10				
ii	M.S. Rod 32 mm dia. for Riser	ton	0.53				
iii	M.S. Rod 32 mm dia. for main earthmat	ton	6.67				
iv	75 x 12 mm G. I. Flat	ton	1.86				
vi	100mm Dia 3000mm long CI Pipe Neutral Earth Electrode with 150mm Dia hole filled with bentonite and carbon powder Mixture (Transformer)	nos	6				
vii	Braided Copper 35 x 3 mm for double flexible risers from flat risers to equipment	nos	8				
ix	200x200 8mm DIA GI ROD(Equipotential Earthmat)	ton	0.49				
12	EOT Crane						
i	66kV GIS Hall 5.0 MT with permanent fixed ladder from ground to EOT Crane	Sets	1				
13	66kV OUTDOOR Equipments						
i	Metering current transformer	Nos.	6				
ii	Metering Potential transformer	Nos.	6				
iii	All types of Hardware & Fittings/Spacers/Clamp & Connectors for 66 kv side of GIS S/S including Power transformers	Lot	1				

iv	All types of Hardware & Fittings/Spacers/Clamp & Connectors for 11 kv side of GIS S/S including Power transformers	Lot	1				
iv	Tariff Metering Panel and RTU system as per GETCO Specification (Main & Check per Set)	Set	2				
v	66kV Cable sealing end	Nos.	18				
vi	66kV, 1CX630 sq.mm XLPE Copper conductor corrugated cable	meters	1200				
vii	66kV Indoor Termination kit suitable for 1CX630sq.mm XLPE, AL cable for GIS Trafo bay	Nos.	15				
viii	66kV Outdoor Termination kit suitable for 1CX630sq.mm XLPE, AL cable for Transformer	Nos.	27				
ix	11kV, 3CX300 sq.mm XLPE Copper Conductor cable (for connectivity from 11kV side of Power transformer to 11kV GIS Panel)	meters	250				
x	11kV Indoor Termination kit suitable for 3CX300sq.mm XLPE, AL cable for Incomer bay	Nos.	8				
xi	11kV Outdoor Termination kit suitable for 3CX300sq.mm XLPE, AL cable for Transformer	Nos.	7				
xii	Portable Earthing Rod	Nos.	6				
xiii	3 phase Link box with SVL	Nos.	4				
xiv	3 phase Link box with out SVL	Nos.	4				
14	Shifting of Existing 11kV Feeders to New 66/11kV GIS SS (15 Feeders)						
i	11kV, 3CX150 sq.mm XLPE Aluminium cable	meters	10000				
ii	11kV End Termination kit suitable for 3CX150sq.mm XLPE, AL cable	Nos.	15				
iii	11kV Straight Through Joints kit suitable for 3CX150sq.mm XLPE, AL cable	Nos.	50				
iv	11kV, 3CX300 sq.mm XLPE Aluminium cable	meters	300				
v	11kV End Termination kit suitable for 3CX300sq.mm XLPE, AL cable	Nos.	3				

vi	11kV Straight Through Joints kit suitable for 3CX300sq.mm XLPE, AL cable	Nos.	3				
vii	11kV, 3CX400 sq.mm XLPE Aluminium cable	meters	1500				
viii	11kV End Termination kit suitable for 3CX400sq.mm XLPE, AL cable	Nos.	3				
ix	11kV Straight Through Joints kit suitable for 3CX400sq.mm XLPE, AL cable	Nos.	4				
x	HDPE Pipe (150 mm Diameter)	meters	3000				
15	Erection hardwares (Power connectors, conductor, etc)						
i	ACSR DRAKE conductor	meters	70				
iii	66kV Long rod suspension insulators	Nos.	6				
iv	Terminal connector for CSK to receive ACSR DRAKE conductor suitable for horizontal take off	Nos.	18				
v	Terminal connector for PT to receive ACSR DRAKE conductor suitable for horizontal take off	Nos.	6				
vi	Terminal connector for CT to receive ACSR DRAKE conductor suitable for horizontal take off	Nos.	6				
vii	Terminal connector for LA to receive ACSR DRAKE conductor suitable for horizontal take off	Nos.	6				
16	LIGHTNING PROTECTION						
i	20 x 3 mm GI Flat for horizontal and down conductor for control building	meters	245				
ii	31M Lightning Cum lighting Mast(30M mast height+1m spike)	Nos.	1				
iii	M. S. Electrodes 32 mm dia.(3M rod) for control building Lightning protection	Nos.	7				
iv	10mm dia 1000mm Long Air Termination Spike	Nos.	7				
v	Insulated Fixing clamps	Nos.	120				
vi	Test Joint	Nos.	7				

17	Any item is not quoted by the bidder, but required for successful completion & commission of the scope of work shall be deemed to have been covered in other items cost and the contractor shall not be paid extra cost on the same account.						
B TESTING & MAINTENANCE EQUIPMENT							
1	Portable partial discharge monitoring kit.	nos.	1				
2	Megger 5kV (Motorized)	nos.	1				
3	Megger 1kV (Motorized)	nos.	1				
4	Digital Multi meter	nos.	1				
5	Circuit Breaker Operational Analyzer	set	1				
6	Digital Manometer	nos.	1				
7	Micro Ohm Meter Portable Type suitable for measuring Contact Resistance of High Voltage Equipment	set	1				
8	Automatic Capacitance and Tan Delta (°) Kit	set	1				
9	Automatic Turn Ratio Tester	set	1				
10	DC Winding Resistance Kit	set	1				
11	Primary Current Injection Set (1000A)	set	1				
12	Circuit Breaker Time Analyzer	set	1				
13	Universal Relay Testing Kit	set	1				
14	SF ₆ Gas Purity Detector for SO ₂ , H ₂ O, CF ₄ , HF, Air etc	set	1				
15	Gas leakage detector	set	1				
16	SF-6 Gas filling & Evacuating Plant having Vacuum Pump capacity 60 Cu.m / H, Compressor capacity 15 cu.m / Hour (Delivery).	set	1				
C MANDATORY SPARES							
1	MANDATORY SPARES FOR POWER TRANSFORMER						
i	66KV bushing complete in all respects.	Nos.	1				
ii	11KV bushing complete in all respects	Nos.	1				
iii	Buchholz relay complete with float and contact (main tank)	set.	1				

iv	Local and Remote Winding Temperature Indicator with contact and sensing device	set	1				
v	Oil Temperature Indicator with contact and sensing device (Local and Remote)	set	1				
vi	Set of valves of all sizes (Complete set for 1 Transformer)	set	1				
vii	Complete set of gaskets used per Transformer	Nos.	1				
viii	Pressure relief device	Nos.	2				
ix	Magnetic Oil Level Gauge	Nos.	2				
x	Oil surge relay	Nos.	1				
xi	Plank/dummy plates for radiators opening	L/S					
xii	Oil temperature sensing cable with capillary	Nos.	2				
xiii	Pressure relief device for OLTC	Nos.	1				
xiv	Breather Assembly (for Conservator and OLTC)	set.	1				
2	COMMON SPARES, MAINTENACE TOOLS FOR 66kV GIS	LS	1				
2.1	SPARES FOR 66kV GIS						
i	SF ₆ Gas Pressure Relief Devices 3 Nos. of each type	set.	1				
ii	Pressure Gauge along with Coupling Device	Nos.	1				
iii	Rubber Gaskets, "O" Rings and Seals for SF ₆ gas	Nos.	1				
iv	Density Monitor for SF ₆ Gas	Nos.	1				
v	All Types of Control Valves for SF ₆ Gas	Nos.	1				
vi	Molecular Filter for SF ₆ Gas with Filter Bags	20% of each type	20				
vii	SF ₆ Gas	20% of total weight	20				
viii	Enclosure, Insulators and Bus Bar to replace one section of each Phase of Bus Bar Compartment	Nos.	1				
ix	Locking Device to keep the Disconnectors (Isolators) and Earthing Switches in CLOSE or OPEN Position incase of removal of the Driving Mechanism	set.	1				
x	Gas Evacuating and Refilling Device with storage capacity of a complete set of 66KV GIS	set.	1				

	Bay including Gas Sections of all Bus Bar and Associated Equipments						
xi	Gas Leakage Monitor	Nos.	1				
xii	Dew Point Meter and Portable PD Monitoring System for Gas Insulated Switchgear	Nos.	1				
2.2	SPARES FOR CIRCUIT BREAKER						
i	Complete circuit breaker pole of each type and rating complete with interrupter, main circuit enclosure, with marshalling box and operating mechanism	Nos.	1				
ii	Rubber gasket, 'O' rings and seals of SF6 gas of each type	set.	1				
iii	Trip Coils with Resistor as applicable (3 Nos. of each type)	set.	1				
iv	Closing Coils with resistor as applicable (3 Nos. of each type)	set.	1				
v	Molecular Filter for SF6 Gas with Filter Bags	10% of total quantity	10				
vi	Density/ pressure monitoring system (3 Nos. of each type)	set.	1				
vii	Relays, Power Contactors, push Buttons, timers & MCB etc. of each type and rating	set.	1				
viii	Closing & Tripping assembly/ valve (3 nos. of each type)	set.	1				
ix	Pressure Switches (3 nos. of each type)	set.	1				
x	Operation Counter	No.	1				
xi	Rupture disc/ diaphragm (3 nos. of each type)	set.	1				
xii	Spring operating mechanism, complete with all necessary connecting apparatus.	set.	1				
xiii	Coupling device for pressure gauge cum switch for connecting gas handling plant (3 Nos. of each type)	set.	1				
2.3	SPARES FOR ISOLATOR AND EARTH SWITCH						

i	Complete set of 3 Nos. of single phase/1 Nos. of three phase disconnecter including main circuit enclosure and driving mechanism	set.	1				
ii	Complete set of 3 Nos. of single phase/1 Nos. of three phase earthing switch including main circuit enclosure and driving mechanism	set.	1				
iii	Copper contact fingers for disconnecter male and female contact for one complete (3 phase) disconnecter of each type and rating	set.	1				
iv	Copper contact fingers for earthing switch male and female contact for one complete (3 phase) disconnecter of each type and rating	set.	1				
v	Limit switches and auxiliary switches for complete three phase equipment						
	a) For isolator	set.	3				
	b) For earth switch	set.	1				
vi	Rotor housing bearing assembly for complete three phase equipment						
	a) For isolator	set.	2				
	b) For earth switch	set.	1				
vii	Bearing for three phase equipment						
	a) For isolator	set.	3				
	b) For earth switch	set.	1				
viii	Interlocking coil with resistor, timers, key interlock for complete three phase	set.	1				
ix	Relays, Power Contactors, push Buttons, timers & MCB etc.of each type and rating						
	a) For isolator	set.	3				
	b) For earth switch	set.	1				
x	Auxiliary Switch Assembly with NO + NC (3 nos. of each type)	set.	1				
2.4	SPARES FOR CURRENT TRANSFORMER						

i	66kV, single phase current transformer ratio 1000-500 / 1 - 1A complete with mounting hardware	Nos.	2				
ii	66kV, single phase current transformer ratio 300/ 1 - 1A complete with mounting hardware	Nos.	2				
iii	66kV, single phase current transformer ratio 100 / 1 - 1 - 1A complete with mounting hardware	Nos.	2				
2.5	SPARES FOR VOLTAGE TRANSFORMER						
i	66kV, single phase voltage transformer ratio 66kV/√3/110V/√3/110V/√3 with mounting hardware	Nos.	2				
3	11kV GIS Switchgear mandatory spares & Tools						
3.1	CURRENT TRANSFORMER						
i	11 KV single phase current transformer ratio 100-50/1A	Nos.	1				
ii	11 KV single phase current transformer ratio 600/1A	Nos.	1				
3.2	VOLTAGE TRANSFORMER						
i	11KV single phase voltage transformer ratio 11KV/√3/110V/√3/110V/√3	Nos.	1				
3.3	CIRCUIT BREAKER						
i	Tripping coil	Nos.	1				
ii	Closing coil	Nos.	1				
iii	Spring charge motor	Nos.	1				
iv	3-ph Vacuum circuit breaker Module	Nos.	1				
3.4	11kV Manufacturer Recommended Tools	set.	1				
4	SPARES FOR 110VDC BATTERY CHARGER & DCDB	LS	1				
i	Set of relays (1 No. of each type)	set.	1				
ii	Set of contactor (1 No. of each type)	set.	1				
iii	Set of switches (1 No. of each type)	set.	1				
iv	DP MCB (five nos. of each type and rating)	set.	1				
5	SPARES OF LT SWITCHGEAR	LS	1				
i	Auxiliary Relays (1 No. of each type)	set.	1				

ii	CTs and PTs (1 No. of each type)	set.	1				
iii	Switches/Push buttons (1 No. of each type)	set.	1				
iv	MCCB (1 no. of each type and rating)	set.	1				
v	Voltmeters	Nos.	1				
vi	Ammeter	Nos.	1				
ix	O/C & E/F relay	Nos.	1				
xi	Auxiliary contactors (1 No. of each type)	set.	1				
vi	Busbar						
	a) Busbar insulators	Nos.	5				
	b) Interphase barrier	Nos.	2				
	c) Busbar strip (Aluminium)	Mtrs.	5				
6	SPARES FOR RELAY AND PROTECTION PANELS 66kV	LS	1				
i	Numerical Differential Relay with Software (excluding external Trip Relay)	Nos.	1				
ii	Numerical Restricted Earth Fault Relay with Software (excluding external Trip Relay)	Nos.	1				
iii	Numerical Directional Over Current Earth Fault Relay	Nos.	1				
iv	Numerical Breaker Failure Relay	Nos.	1				
v	Trip Circuit Supervision Relay	Nos.	2				
vi	Self Reset Trip Relay (1 No. of each type)	set.	1				
vii	Hand Reset Trip Relay (1 No. of each type)	set.	1				
viii	Timer Relay (1 No. of each type)	set.	1				
ix	DC Supervision Relay	Nos.	1				
x	Auxiliary Relays (1 No. of each type)	set.	1				
xi	High Speed Tripping relay	Nos.	1				
7	SPARES FOR SUB STATION AUTOMATION SYSTEM	LS	1				
i	Bay Control Unit (1 No. of each type)	set.	1				
ii	Ethernet Switch of each type	set.	4				
iii	Networking Cable (CAT-5)	Mtrs.	100				
iv	DC-DC Converter (1 no. of each type and rating)	set.	1				

v	Power supply unit (1 No. of each type and rating)	set.	1				
vi	Miniature/Switching relays (1 No. of each type and rating)	set.	1				
vii	PLC relays (1 No. of each type and rating)	set.	1				
viii	Complete server with monitor, key board, mouse etc.	set.	1				
ix	Network Switch	Nos.	1				
x	Hub	Nos.	2				
xi	Voltage, frequency, MW, MVA, MVA _r , current and transformer tap position transducers (1 No. of each type used)	set.	1				
xiii	Logger printing paper for one year	set.	1				
8	SPARES FOR EOT CRANE	LS	1				
	Spares for 66kV GIS Hall Crane						
i	Pair of brake shoe with lining for each size of brake used viz. D.C. operated E.M. or Hydraulic thruster operated.	set.	4				
ii	Pair of brake linings with rivets for each size of brake used.	set.	4				
iii	Main springs for each size of brake used.	Nos.	4				
iv	Brake coils for each size of brake used.	set.	4				
v	Thruster of each size used.	Nos.	2				
vi	Pair of oil seals for each gear box used on crane.	set.	4				
vii	Contactors of each size used.	set.	4				
viii	Fixed & moving contacts of each size contactor used.	set.	2				
ix	3 Nos. Coils for each size of contactor used.	set.	2				
x	3 No. fuse links of each sizes used on crane	set.	4				
xi	Complete set of lamps for lightning and signals	set.	1				
xii	Fuse links of each size used	set.	4				
xiii	Indicating lamps	set.	1				
9	SPARES FOR FIRE DETECTION AND FIRE EXTINGUISHING SYSTEM	LS	1				
i	Fitted Nitrogen Cylinder	Nos.	2				

ii	Pipes with fittings	Nos.	1				
iii	Heat Sensor assembly	Nos.	1				
iv	Fire Survival cable sufficient for one system	Nos.	1				
v	PNRVB	Nos.	1				
vi	Limit switch for fire detector	Nos.	3				
vii	Fire Detectors	Nos.	6				
ix	Heating Element	Nos.	2				
D	Operation and Maintenance of GIS 66/11kV Substation with all the equipments along with deployment of suitable manpower, relevant tools and tackles for total 3 years from the date of final charging of the substation	Months	36				
TOTAL of ELECTRICAL WORK (A+B+C+D)							

E CIVIL WORKS FOR GIS 66/11kV SUBSTATION					
S.NO	Description	Unit	Qty	Unit Rate	Amount
Excavation Work: (Cutting, Filling, Levelling & Foundation of S/s)					
1	Earthwork Excavation: General earthwork excavation in all types of soil for levelling & lowering the ground upto the required level, stacking the excavated earth & disposable material where ever indicated in site temporarily, filling depressions wherever necessary, Stacking the sufficient earth for refilling and other use as instructed, Side trimming, watering, consolidating, shoring, bailing out water, etc. complete.	Cum	2,600.00		
2	Back Filling with soil:(Land levelling) Filling with borrowed or available soil other than backfilling in layers by not exceeding 150 mm thk including watering and consolidating, compacting by using rollers, complete and necessary compaction test etc, as per Engineers instruction. As per the preliminary report submitted the identified land, there is requirement of filling of around 1.5M to elevate the same to road level.	Cum	1,690.00		
3	PCC 1:4:8 using 40mm downgraded aggregate: Providing and laying PCC 1:4:8 using 40mm down size aggregates for Size stone masonry, foundation, footing, flooring etc., including base preparation, necessary formworks & compaction, curing etc., complete.	Cum	84.50		
4	RCC M20 for Footing, base raft, Footing beam, Grade beam, Grade slabs and Pedestals etc: Providing and laying in position RCC M-20 grade, for foundations and footings, rafts, footing beam, grade beam, grade slabs and pedestals using 20mm down graded aggregates at all levels incl. necessary tools & tackles & curing as mentioned in drawings.	Cum	689.00		

i	<u>RCC M-20 for Columns, Floor beams & lintels, lift walls, chajjas & roof slabs & staircases etc:</u> Providing and laying in position RCC M-20 grade, for Columns, Cable trench, Transformer foundation, beams and fire wall of all shapes using 20mm downgraded aggregate, including the cost of material, labour, mixing, transportation, placing, vibrating, curing, and necessary tests like slump cone, cube test etc, complete.	Cum	1,592.50		
ii	<u>M15 Pre Cast Slab, Lintels, Sills etc:</u> Providing and fixing pre cast M-15 Slabs above over cable trenches, Drains, Lintels, Sills & Ducts Cover.etc complete including necessary steel template and lifting hooks etc including placing in its places as per the drawings of all sizes.	Cum	15.00		
5	<u>Reinforcement Work:</u>				
i	<u>Reinforcement with HYSD bars Fe 500:</u> Providing and fixing Reinforcement with approved quality HYSD bars of various dia of Grade Fe500 including the cost of material, labor for straightening, cutting, bending, placing in position, binding wire, etc at all levels and locations. complete as per specifications (Any ISI Make)	MT	338.00		
6	<u>Bitumen Impregnated Shalitek Board 12 mm thick:</u> Providing and fixing in position 12 mm thick bitumen impregnated flexible fiber board at various locations of Expansion joints as per detail provided in drawing and as per instructions etc,	RM	35.00		
7	<u>Fixing of Foundation bolts, Anchor rods etc:</u> Fixing of foundation bolts (GI, MS, CI) anchor rods in foundations, pedestals, columns and in walls etc at all locations including necessary templates with line and level as per drawings and Engineers instruction.	MT	0.25		
8	<u>Grout:</u> Providing and grouting for pocket, foundation / anchor bolts, sleeves, anchors of any shape and size, for any member, including required form work, roughening, cleaning & curing, etc. complete as directed Engineers instruction and as per the drawing.	Cum	0.50		
9	<u>Structural Steel Work:</u> Supplying, fabricating and installing Equipment structures ,SF6 duct supporting material inserts in concrete in the form of M.S angles, plates, holding bolts, angle frames, pipe sleeves etc. with anchors in the form of rods or flats, including lifting hooks rungs etc as per the drawing and as per instruction of site in charge.	MT	3.50		
10	<u>MASONRY WORKS:</u>				
i	<u>Brick Masonry 230mm thick:</u> Providing & Constructing 230mm thick brick masonry in C.M 1:6 using table moulded, wire cut well burnt, uniform size approved quality bricks at all levels including racking, scaffolding, curing etc complete as directed.	Cum	625.60		
ii	<u>Brick Masonry 115mm thick:</u> Providing & Constructing 115mm thick brick masonry in C.M 1:4 using table moulded, wire cut well burnt, uniform size approved quality bricks at all levels including racking, scaffolding, curing etc complete as directed	sqm	13.00		

11	<u>WATER PROOFING WORKS:</u>				
i	<u>Water Proofing using (Water Proofing Membrane):</u> Supply & laying of cement slurry Water proofing using membrane for roof slab including all necessary layers and leak testing etc of Lloyds or other brand etc as per the drawings etc,	sqm	1,157.00		
ii	<u>Waterproof Plaster for toilet floors:</u> Supply and provide water proofing to side walls from exterior surface to retaining walls and other under ground structures as per specification using 12 mm thick plaster as protective coat (Plan area will be measured).	sqm	30.00		
iii	<u>Water proofing at terrace (Brick Bat Coba):</u> Supplying and providing water proof treatment to terrace slab by integral cement water proofing . Laying Slurry coat consisting of neat cement admixed with proprietary services water proofing compound to penetrate into services and to fill up all the porosities in the slab surface, laying a layer of 75mm average thickness well burnt brick bats in cement mortar 1:5 etc complete.	sqm	1,157.00		
12	<u>FLOOR FINISH:</u>				
i	<u>Vitrified Tile Flooring:</u> Supplying and laying of 600 X 600 X 8mm thk. Vitrified tiles of Western make incl. 20mm thk. 1:4 cement mortar for bedding of various shades of Johnson / Oreva / Spartek and good make as per the instruction of Engineers and as per the drawings including skirting	sqm	1,235.00		
ii	Providing and laying acid/alkali resistant tile of approved make and quality in flooring, dado, kerbs etc. as per spec. and direction.	sqm	79.85		
iii	Anti-Skid tiles for Bath & FOL	sqm	37.64		
13	<u>PLASTERING WORKS:</u>				
i	<u>Plastering 12 to 15mm, 18mm thk thick in C.M 1:6 for Walls,Columns,Beam Sides.</u> Preparing surface, providing and applying lime rendered plaster for internal walls /columns/ beam sides/ shear walls/ external face of walls, chajjas, stairs etc. with 15mm thick	sqm	7,150.00		
ii	<u>Ceiling Plastering 10 to 12mm thick In C.M 1:4.</u> Preparing surface, providing and applying lime rendered plaster for ceiling with 10-12mm thick cement mortar 1:4 joint less finish including scaffolding, curing etc., complete at all levels.	sqm	1,560.00		
14	<u>PAINING WORKS</u>				
i	<u>White Wash for Walls, Columns, foundations, pedestals & Ceilings etc:</u> Providing applying three coats of "Snow cem" or white wash of approved make (Asian, Berger, Birla make) for plastered walls, columns, foundations, pedestals and ceilings etc as per the instructions of in-charge.	sqm	8,710.00		

ii	<u>Water bound distemper for Walls & Ceilings:</u> Providing applying one or more coats of Acrylic Emulsion over smooth surface including scraping and application of two coat of primer coat for walls, stairs, columns and ceilings etc as per the instruction of Engineer in-charge.(Apex or equivalent)	sqm	2,400.00		
iii	<u>Epoxy Paint Over Grano Flooring:</u> Providing and applying epoxy paint above grano flooring, IPS flooring, battery rooms etc by approved make as per the drawings and instruction of Engineers.	sqm	79.85		
15	<u>DOORS AND WINDOWS:</u>				
i	Providing, fabricating and fixing in position aluminium door including frame in single/ double wings shutters using approved IS aluminium anodized section supplying and fixing minimum 5.0 mm plane glass, having clear vision including all fixtures and fasteners and necessary Ironmongeries.	sqm	221.00		
16	<u>False Ceiling</u>				
	Supply & fixing of metal false ceiling of 600 x 600 sq.mm at all levels & locations including all necessary fittings, fixtures & accessories of 'Hunter Doughles ' make or any other make as mentioned in the drawings and as per instruction of the Engineer	sqm	195.00		
17	<u>NON STRUCTURAL METAL WORKS:</u>				
i	<u>S.S.Railing (Stair Case Hand Rails)</u> Supplying, providing and Fixing in position Staircase Handrail made out of S.S.Sections including all necessary brackets, fixtures, bolts and with two coat of primer. etc complete.	MT	0.59		
ii	<u>SS Gate (Swing Type): 2 Nos.</u> SS gate with outer frame of 50 NB tube, 50 X 25 mm welded mesh of 6mm size for a 5 m wide, in two leafs supported on steel pillar post shall be provided with necessary locking arrangement etc as per drawing and Engineers instruction.	MT	2.00		
18	<u>Chain link Fencing:</u> Chain link galvanised fence fabric with 4mm dia wire and 50mm mesh size conforming to IS: 2721 shall be used with mesh size 50 X 50mm and of height 1.5 m above GL with 600 mm high galvanized barbed wire in 3 rows at the top.	Sq.m	737.50		
i	<u>Fencing Posts / Flats etc:</u> Providing fabricating and fixing in position structural steel (conform to IS : 2062) angles, flats for chain link fencing above brick toe wall in true line & level including the primer coat.The fence post shall be of MS angle section 65 X 65 X6 spaced at 2.5 m c/c. Strain post 75 X75 X6 at every 30.0 mtr. c/c or at change of direction shall be provided. The post are grouted with PCC 1:2:4 concrete and neat finishing etc. complete as per instruction of Engineer in-charge.	MT	3.50		

ii	Providing and fixing Chain link fence Barbed wire as directed by engineer in charge in arm of vertical post angle at top.	RM	885.00		
iii	brickwork for fencing toe wall 450mm height and 230mm width	cu.m	30.53		
iv	Providing and laying PCC 1:2:4 using 20mm down size aggregates for Size stone masonry, foundation, footing, flooring etc., including base preparation, necessary formworks & compaction, curing etc., complete.	cu.m	35.00		
19	<u>Rail for Transformer and other areas etc:</u> Charges for Supply & fixing of 110 lbs rail and fixing in correct line and level rail on insert plates including cutting rail to required length, welding, fixing necessary guide angles, consumables like welding rod, etc	MT	2.00		
20	<u>Anti-termite Treatment:</u>				
	Providing & laying Anti termite Treatment including cost of anti termite chemical with 1 % aquas emulsion of chlorpyrifos 20% EC for the bottom and sides of foundations, trenches, column etc., the top surface of filled up earth inside the plinth, the junctions of walls, columns etc as per drg and instruction of Engineer in-charge.	sqm	1,157.00		
	NOTE - i) Plinth areas of building of ground floor only shall be measured for payment.				
	ii) To make 1% aquas emulsion add 19 Litres Of water in 1 litre of chlopyrifos 20% EC.				
	iii) The contractor shall furnish from the specialised agency carrying out the work under this item a written guarantee on stamp paper in favour of the OWNER for the satisfactory performance of the treatment for a period of 10 years.				
	in) The Consumption of Anti termite Chemicals shall be verified from IS: 6313				
21	<u>ACCESS ROADS AND PAVEMENTS:</u>				

i	ROAD Preparing the sub-grade by trimming the surface to the required level, grade and camber by excavation or filling not exceeding 60 cms. Sub base course by using 90-45 mm metal of uniform thk for 200thk including murrum layer(25/50mm thk).	WORK:-WBM cu.m	13.00		
ii	Preparing the sub-grade by trimming the surface to the required level, grade and camber by excavation or filling not exceeding 60 cms. Sub base course by using 63-45 mm metal of uniform thk for 150thk.	cu.m	9.75		
iii	Preparing the sub-grade by trimming the surface to the required level, grade and camber by excavation or filling not exceeding 60 cms. Sub base course by using 53-22.4 mm metal of uniform thk for 75thk.	cu.m	4.87		
iv	Preparing the sub-grade by trimming the surface to the required level, grade and camber by excavation or filling not exceeding 60 cms. Sub base course by using Bituminus Maccadam surface of uniform thk for 75thk.	cu.m	4.87		
v	Pre-mix Supply and laying of 25mm thk. Pre-mixed chip carpet uniformly to the required level as per drawing where ever necessary as per the instruction of Engineers.	Carpet: sq.m	325.00		
vi	Road side Shoulder Laying old cement concrete interlocking paver blocks of any design/shape laid in required line,level,curvature,colour and pattern over and including 50mm thick compacted bed of course sand, filling the joints with fine sand etc.	Works: sq.m	130.00		
vii	Base course (150 mm) in two stages each of consolidated thk. Of 75mm with murrum packing (first stage with 63-40mm size jelly and second stage with 40-25mm jelly)	cu.m	19.50		
22	Antiweed Treatment Providing and applying Antiweed treatment using approved make chemicals as per manufacturer's specifications & as per direction of Engineer in charge. The contractor shall be required to maintain the area free of weeds for a period of TWO year from the application.	Work: sqm	2,238.00		
23	PLUMBING (i) Supplying and installation of Counter type washbasin of normal size with, C.P waste, C.P bottle trap, C.P flexible inlet connections, C.P stop cocks, brackets, C.P ball chain rubber plug in including necessary accessories, complete	WORKS: No	2.00		

	(ii) Supplying and installation of Indian W.C (wall Hung) of size normal with PVC Seat cover with rubber buffer, C.I. Brackets, complete fittings, flush pipes, 'P' or 'S' Trap, connection including necessities, complete.	No	2.00		
	(iii) Supplying and installation of Arabian (Orissa pan) type W.C. of size 580 mm x 440 mm with, 'P' or 'S' trap, complete fittings, flush pipes, C.P flexible inlet connection including necessities, complete.	No	2.00		
	(iv) Supplying and installation of White glazed large flat back urinal of size 600 mm x 330 mm x 315 mm with complete fittings, flush pipes, C.P flexible outlet connections including necessities, complete.	No	2.00		
24	Rain water pipes: The Item coverage for rain water pipe shall include, but not limited to: (i) Supplying and installation of rain water pipes 100 / 110mm dia. including necessary bends, clamps, other fittings;	RM	187.20		
25	RCC Hume Pipes: Providing & laying RCC NP2 class pipe for laying cables, road crossing of drains, etc. including excavation upto required depth & width, laying of pipe, collar jointing, curing, back filling the trenches, compaction and making good.				
	a) 300 mm dia	RM	10.00		
	b) 450 mm dia	RM	10.00		
26	Providing & laying RCC NP3 class pipe for laying cables, road crossing of drains, etc. including excavation upto required depth & width, laying of pipe, collar jointing, curing, back filling the trenches, compaction and making good the same etc. complete				
	a) 450 mm dia	RM	10.00		
	b) 600 mm dia	RM	5.00		
27	Providing & fixing in position, manually operated , Steel Rolling Shutters of approved make made from MS laths 18G 3"(75mm) size including necessary fixtures fittings, top hood, brackets, guide channels, shutter suspension shaft with tested springs,.	Sq.M	22.50		

	Note – (I) The measurement for Rolling Shutters as per structural openings only Hood will not be measured separately.				
28	Providing and Fixing in position PVC “Sintex” make water storage tank 1500litrs with all necessary fittings of inlet outlet overflow scourvent pipe brass ball cock for inlet etc. including erecting on roof slab	No.	2.00		
TOTAL of CIVIL WORKS (E)					

Important Note:

- I. Any item is not quoted by the bidder, but required for successful completion & commissioning of the scope of work shall be deemed to have been covered in other items cost and the contractor shall not be paid extra cost on the same account.**
- II. Above Quantities are Tentative and may vary during detailed engineering of Project. However, these shall be considered for Evaluation of Bid.**
- III. The payment to the Contractor shall be made as per approved Bill of Material after detailed engineering on the Unit Rates quoted, hence the Bidder is advised to quote for Items that in his opinion are required in addition to above Items for successful completion and commissioning of the Scope of Work.**

TOTAL of ELECTRICAL WORKS (A+B+C+D)	
TOTAL of CIVIL WORKS (E)	
GRAND TOTAL of ALL WORKS (A+B+C+D+E)	

(In Words: Rupees _____**)**

(NOTE: The rates should be inclusive of all taxes, duties, fees, cess etc. and all incidental charges; but exclusive of GST)

**Signature & Seal
of Contractor**

**Executive Engineer (E)
Deendayal Port Authority**

Make List for Electrical Items		
Sr. No.	Description	Recommended Makes
1	HV VCB	SIEMENS / CROMPTON GREAVES/ABB/Schneider
1(a)	HV Gas Insulated Breakers	SIEMENS /Schneider/ABB
2	POWER TRANSFORMERS	VOLTAMP/CROMPTON GREAVES /BHARAT BIJLEE/ BHEL/ SIEMENS/ABB/ Schneider/T&R
3	DISTRIBUTION TRANSFORMERS	EMCO/KIRLOSKAR/PATSON/VOLTAMP/ABB/Schneider/T&R
4	RESIN CAST TRANSFORMERS	
	A) RESIN CAST IMPREGNATED	VOLTAMP / KIRLOSKAR / EMCO
	B) DRY CAST	VOLTAMP/KIRLOSKAR/EMCO
5	HT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ NICCO/GLOSTER/ UNISTAR/ UNIVERSAL
6	LT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ NICCO/ RALLISON/PRIMECAB/ HAVELLS/ UNIVERSAL/ UNISTAR/AVOCAB
7	LT ACB	SIEMENS/L&T/SCHNEIDER/C&S
8	PROTECTION RELAYS	AREVA/L&T/SIEMENS/ABB/C&S
9	LT PANEL	CPRI APPROVED
10	CHANGE OVER SWITCH	SIEMENS/L&T/ABB/C&S/SCHNIDER/ LEGRAND / INDOASIAN
11	SFU FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/L&T/ABB/C&S
12	SFU FOR DISTRIBUTION PANELS & FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/HAVELLS
13	MCCB FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/L&T/ABB
14	MCCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNIDER/ LEGRAND/ INDOASIAN/HAVELLS
15	MCB/ELCB/RCCB/ RCCBO FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/HAGER L&T/ABB
16	MCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/ HAVELLS/ STANDARD
17	MCB DISTRIBUTION BOARD	STANDARD / HENSEL/LEGRAND / INDOASIAN / HAVELLS

18	MULTI FUNCTION DIGITAL METER FOR MAIN LT DISTRIBUTION PANELS/DIGITAL KWH METERS	L&T/ENERCON/SECURE/L&G/ RISHABH
19	ANALOG VOLT/AMPARE METER FOR DISTRIBUTION PANELS AND FEEDER PILLERS	RISHABH/AE/ENERCON/L&T
20	SLECTOR SWITCH FOR VOLTMETER/AMPARE METER	L&T/SIEMENS/C&S
21	POWER CONTACTOR & OVER LOAD RELAYS	L&T/SIEMENS/ABB
22	QUARTZ TIME CLOCK SWITCH	L&T/INDOASIAN/SIEMENS
23	PVC WIRE WITH COPPER CONDUCTOR	RR KABEL/KEI/POLYCAB/MILEX/GUJCAB/ STANDARD/ FINOLEX/ ANCHOR
24	FLUSH TYPE SWITCHES, SOCKETS, HOLDERS AND CEILING ROSES & ELECTRONIC REGULATORS	ANCHOR/MK/NORTHWEST/VINAY/PANAMA/HAVELLS
25	DOOR BELLS/CALL BELLS	ANCHOR/LEGEND/MK/NORTHWEST
26	MODULAR SWITCHES, SOCKETS, PLATES & BOXES	ANCHOR / MK / NORTHWEST / LEGRAND /HAVELLS/ INDOASIAN/ SIEMENS
27	PVC CONDUIT/OVAL CONDUIT & CASSING CAPPING AND ACCESSORIES	PRECISION/VULCAN/FINOLEX/ GARWARE/ RESTOPLAST/ SWASTIK/ BPI
28	GLS LAMPS & FLUORESCENT LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
29	HPSV, HPMV & METAL HELIDE LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
30	IGNITORS FOR HPSV, METAL HELIDE LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
31	LUMINARIES	PHILIPS/BAJAJ/WIPRO/CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
31a	LED Luminaries	Philips /Bajaj/Wipro/CG/Surya/Pyrotech/Syska/Nessa having surge Protection $\geq 10KV$ for fittings & internal Surge protection for Driver of $\geq 4KV$, LED Chip only OSRAM/CREE/Philips Lumileds/Citizen/Nicia with LM-79,80 CERTIFICATION
32	CEILING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC

33	WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
34	EXHUAUST FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
35	HEAVY DUTY INDUSTRIAL WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
36	WATER COOLER	VOLTAS/SHRIRAM USHA/BLUE STAR
37	AIR CONDITIONERS	VOLTAS/CARRIER/BLUESTAR/USHA/ HITACHI/LG/ SAMSUNG/ONIDA
38	REFRIGERATORS	VOLTAS/CARRIER/BLUESTAR/USHA/ HITACHI/LG/ SAMSUNG/WHIRLPOOL
39	VOLTAGE STABILIZER	VEELINE / CAPRI
40	INVERTERS	SUKAM / MICROTEK Note: Havells, ABB, SMA, Fronius, Delta or equivalent make Inverters are subject to submission of relevant documents of successful operation in various Government Orgnizations
41	D.G. SETS A) ENGINE B) ALTERNATOR	CUMMINS/GREAVES/KIRLOSKAR/ CATERPILLAR/ ASHOK LEYLAND/VOLVO STAMFORD/CROMPTON GREAVES /JYOTI/ KIRLOSKAR ELECTRIC
42	ELECTRIC MOTOR	ALSTOM/CROMPTON GREAVES /SIEMENS/ KIRLOSKAR/ABB
43	WATER PUMPS	SWASTIK / KSB
44	WATER GEYSER	BAJAJ/USHA / CROMPTON GREAVES / SPHEREHOT / RACOLD
45	LUGS & CABLE GLANDS	DOWELLS / JAINSON / BRACO
46	Computer System	HP, DELL, Lenono or equivalent
47	UPS	Wipro, Emerson, Luminous, Microteck or equivalent
48	Printer + Scanner	Canon, HP or equivalent