

DEENDAYAL PORT AUTHORITY

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



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No.: EL/WK/2803

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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/ $\sqrt{3}$ /110V/ $\sqrt{3}$ /110V/ $\sqrt{3}$ 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/ $\sqrt{3}$ /110V/ $\sqrt{3}$ /110V/ $\sqrt{3}$	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	<u>Earthwork</u> <u>Excavation:</u> 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	<u>Back Filling with soil:</u> (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	<u>PCC 1:4:8 using 40mm downgraded aggregate:</u> 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	<u>RCC M20 for Footing, base raft, Footing beam, Grade beam, Grade slabs and Pedestals etc:</u> 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 chloropyrifos 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 $\geq 10\text{KV}$ for fittings & internal Surge protection for Driver of $\geq 4\text{KV}$, 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

Addendum - I

ADDENDUM/ CORRIGENDUM

TENDER NO. EL/AC/2803

Name of Work: Design, Manufacturing, Supply, Installation, Erection, Testing and commissioning of 66/11 kV GIS Substation and Shifting of 11 kV Power Transformer to New GIS Substation at DPA.

Sr. No.	Section No.	Page No.	Clause No.	Subject	Existing Clause	Amendment
1	NIT & Section I	8 & 17	4.1 (G)	Similar Work	Similar works means having experience in "Supply, Installation, Testing and Commissioning of 66 KV or above GIS system with associated Sub-Station (Electrical installations at GIS substation includes 66 KV or above Circuit Breaker bays and Bus Bars) at Port Sectors/Central Govt./State Govt. /PSU/other reputed organizations within India.	The Similar Work is amended as below: Similar Work means "Supply, Installation, Testing and Commissioning of 66 KV or above AIS/GIS System with associated Substation (Electrical installations at AIS or GIS or Both Sub-Station includes 66 KV or above Circuit Breaker Bays and Bus Bars)" at Port Sectors/Central Govt./State Govt./PSU/other reputed organizations within India.
2	NIT	8	At (g) of NIT	Pre-Qualification Criteria	(g) Similar works means having experience in "Supply, Installation, Testing and Commissioning of 66 KV or above GIS system with associated Sub-Station (Electrical installations at GIS substation includes 66 KV or above Circuit Breaker bays and Bus Bars) at Port Sectors/Central Govt./State Govt. /PSU/other reputed organizations within India.	This is amended as below: "In case of Bidder is having Similar Work experience in the AIS System, the Bidder shall have the Experience of supply, installation, testing & commissioning of GIS system with at least one Number of GIS Circuit Breaker Bay of 66KV or above (GIS circuit breaker bay shall be considered as a bay used for controlling a line or a transformer or a reactor or a bus section or a bus coupler and comprising of at least one "Circuit breaker, one dis-connector and three nos. of single phase CTs / Bushing CTs) and working successfully for the last one year for which Documentary Evidence (viz., copy of Work Order, Completion Certificate & Performance Certificate etc.) shall be submitted along with the Bid."
3	I	17	4.1	Pre-Qualification Criteria	-	The Amendment at Sr. No. 2 above is added below Clause 4.1(G) of Section - I and as Clause 4.1(H).



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ADDENDUM/ CORRIGENDUM

TENDER NO. EL/AC/2803

Name of Work: Design, Manufacturing, Supply, Installation, Erection, Testing and commissioning of 66/11 kV GIS Substation and Shifting of 11 kV Power Transformer to New GIS Substation at DPA.

Sr. No.	Section No.	Page No.	Clause No.	Subject	Existing Clause	Amendment
4	I	28	35	Time Schedule	The Contract shall be effective from the date of issue of Work Order and the work shall be completed within fifteen (15) months from the date of issue of Work Order. The contract period is extendable to a period of up to two months on the same rate, terms and condition on mutual consent.	This shall be read as under: The Contract shall be effective from the date of issue of Work Order and the work shall be completed within fifteen (15) months from the date of issue of Work Order.
5	III	91	3 (C)	Payment against Civil Works	The payment towards Civil works will be released for the completed items of the work as per BOQ, through running account monthly bill on the basis of progress report submitted.	The payment towards Civil works will be released for the completed items of the work as per BOQ, through running account monthly bill on the basis of progress report submitted to the PMC/Engineer-in-Charge and finally accepted by the Civil Engineering Department, DPA.
6	V	86	Sr. No. 1 (a)	HV Gas Insulated Breakers	Siemens / Schneider / GE / Hitachi / Crompton Greaves	66 kV & above Voltage class: Siemens/ Hitachi/ GE Up to 33kV Voltage class: Siemens/ Schneider/ ABB
7	V	86	Sr. No. 2	Power Transformers	Voltamp / Siemens / ABB / Schneider / PrimeWeiden / Hitachi	Voltamp/ Crompton Greaves/ Bharat Bijlee/ BHEL/ Siemens/ ABB/ Schneider/ Hitachi

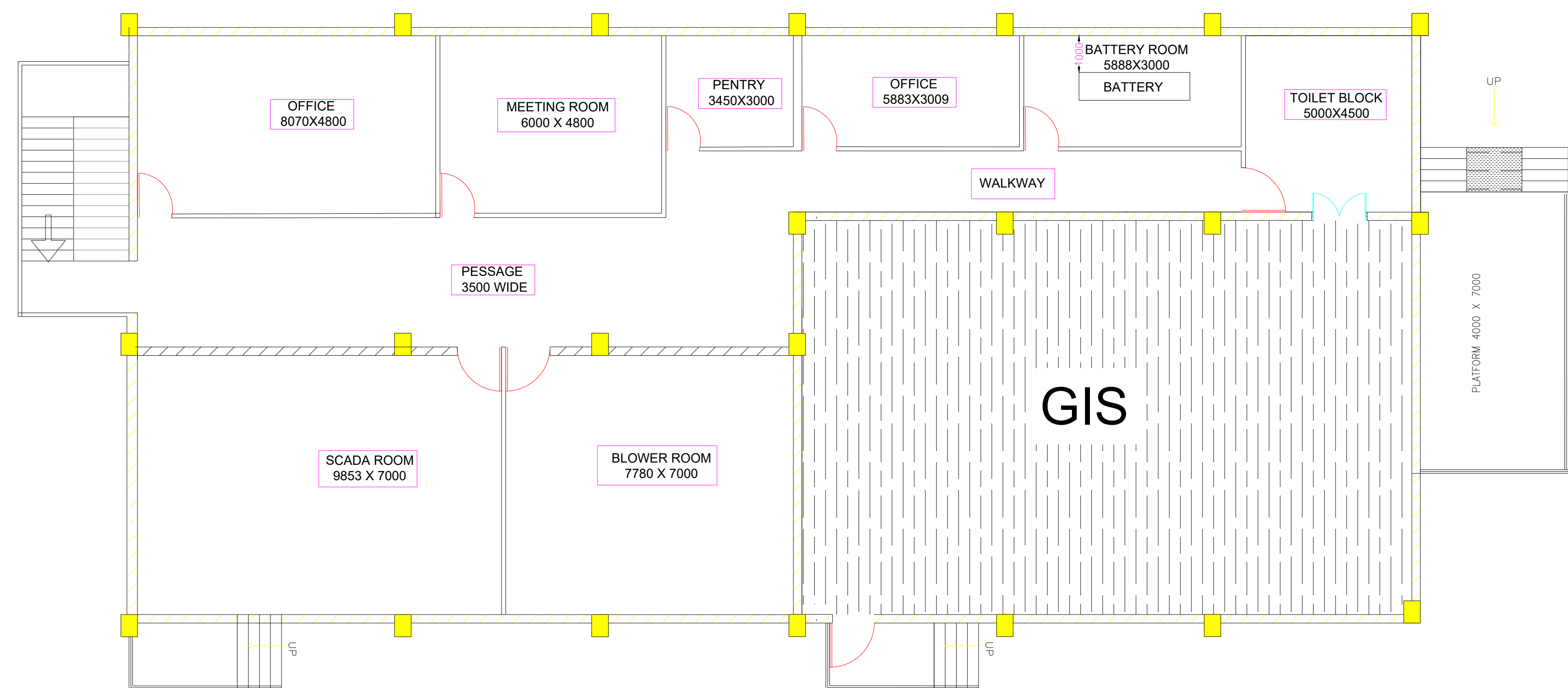


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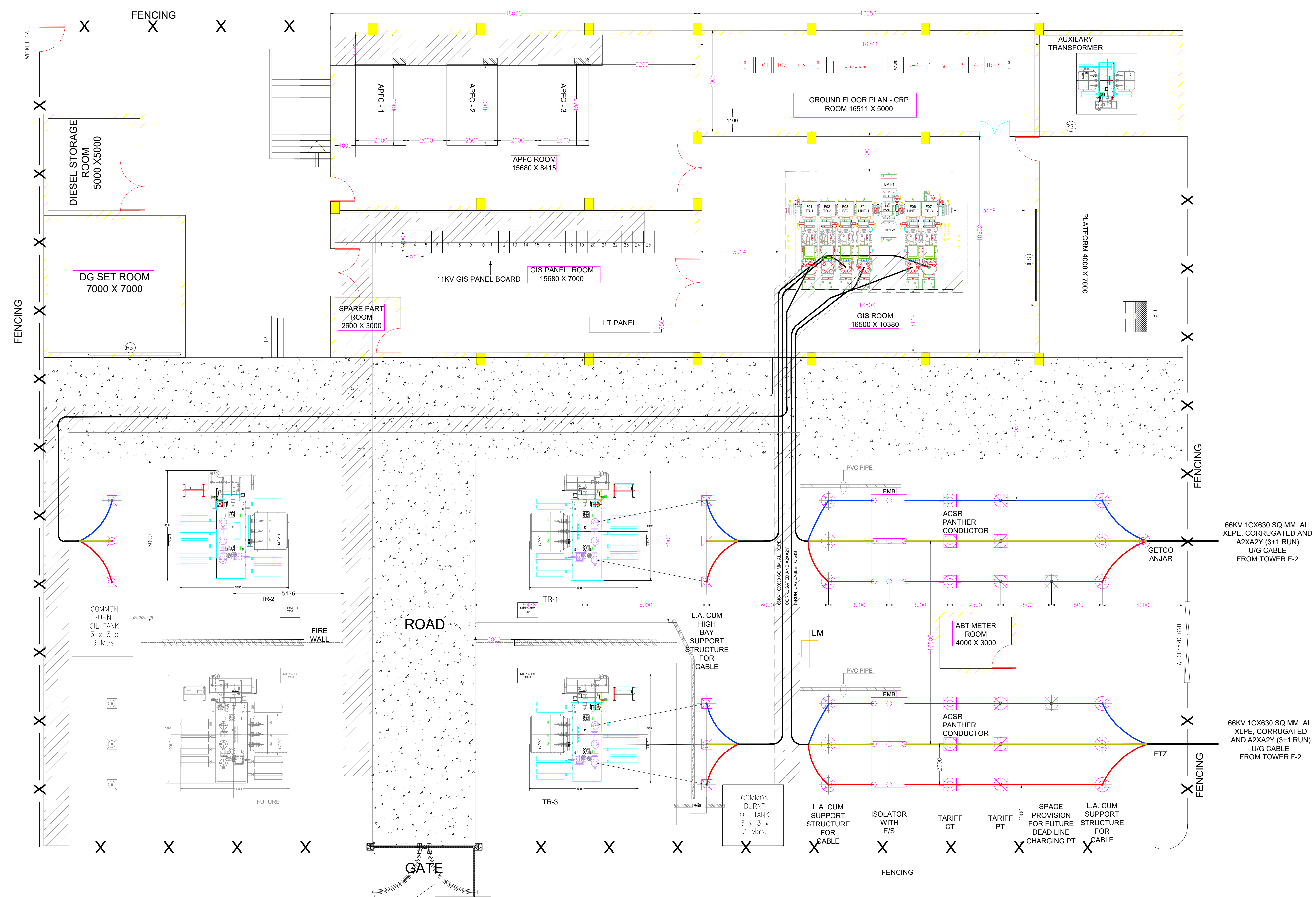
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FIRST FLOOR PLAN



Pre-Bid Clarifications on the 66 KV GIS Sub-Station

Sr. No.	Tender Clause	Pg./Cl. No.	Description as per Tender	Query raised	Clarification of DPA
1	Pre-Qualifying Criteria: Similar Work Definition	8	Similar works means: Similar works means having experience in "Supply, Installation, Testing and Commissioning of 66 KV or above GIS system with associated Sub-Station (Electrical installations at GIS Sub-Station includes 66 KV or above Circuit Breaker Bays and Bus Bars) at Port Sectors/Central Govt./ State Govt./PSU/ other reputed organizations within India."	We request you to consider 33 KV or above GIS system with associated Sub-Station.	Please refer Sr. No. 1 of Tender condition holder good Addendum.
2	Joint Venture Clause No. 3	8	The similar works reckoned are those executed by the tenderer as prime contractor or proportionately as member of joint venture or as a sub- contractor, authorized and approved by the Employer of the work(s) against which the tenderer has claimed his experience. If the similar work is executed as sub-contractor, it is mandatory to upload the sub-contract permission letter obtained from the Govt./Public Sector officer in case work belongs to the Govt./Public Sector, or from the owner of the project in case work belongs to private organization. Also, the completion certificate/form 3A authenticated by concern Govt./Public Sector officer or owner of the project shall be uploaded along with TDS certificate deducted for that particular work issued by the competent authority shall be submitted along with bid submission.	We request you to amend the clause, we have competed similar work from IOCL, we will not get sub-contractor authorized and approved letter from Clint. We re request you to Amend the clause we can submit payment proof and tax deducted at source (TDS) certificate Form 26 AS.	Tender condition holds good.
3	Payment Terms	34		Since the project Cost is at 48.95 Cr., we request you to consider 10 % Mobilization advance.	Tender condition holds good.
4	Third Party Inspection Clause No. 46-I	44	I, The Third Party Inspection Agency shall be arranged by DPA and cost of Third Party Inspection mentioned below shall be borne by DPA.	If Third Party inspection Agency Appointed it will be who's scope.	The Third Party Inspection Agency will be in the scope of DPA.

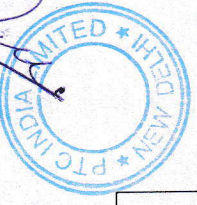
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5	EMD Clause No. 2	4	In case of Micro and Small Enterprise (MSEs) holding valid certificate issued by any agencies/organization under The Ministry of Micro, Small and Medium Enterprises indicating the list of activity related to the subject tender as per National Industrial Classification - 2008 mentioned in the table below only shall become eligible for exemption from payment of Tender fee/EMD. Such bidder shall upload the scanned copy of valid certificate along with Bid Securing Declaration Form (Form - 6 in Section - IV) in preliminary bid.	In case of Joint ventures if any one partner has the Micro and Small Enterprise (MSEs) valid certificate please clarify EMD is exempted? If not, we request you consider the same.	In case of JV, the valid & relevant MSME certificate of the Lead Partner is eligible to get exemption.
6	Last Date & Time for Receipt of Bids	11		Since all OEM components is involved in the tender, we request you to postpone the Bid Submission date by 15 Day More	Bidders may check on the DPA website. h-procurement.pw.gov
7				What is the soil filling area and height at new 66 KV Substation area.	Quarry spall & G.S.B. Filling
8				Distance between existing substation and new 66 KV Substation as existing power transformers (12.5 MVA & 10MVA), 66 KV Las, CTs, PTs, Isolators are to be shifted to new 66 KV Substation). (Point No. 2)	The approx. distance is 1200 Mtr. However, the bidder may visit the site to understand the distance.
9				What is the length of 66 KV Line IN Line Out (LLO) length. (Point No.6). Need confirmation from customer on scope of removal of existing transformer foundations and Oil soak pits is in bidders' scope or customer scope,	LLO is not applicable. Hence, Tender conditions holds good.

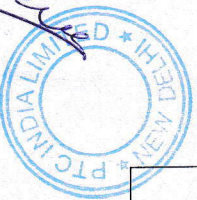


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10	66 KV Switchyard Civil Work Clause no. 13	177-178	New Substation 66 KV Gas Insulation Switchgear Civil Work with Material Supply and Working of all Foundations, Fabrication, Contraction, Beam/Row Column, Plaster, Fencing, Plumbing, Painting, RCC Road Work by Contractor as per direction of Engineer-In-charge	Need confirmation from customer on scope of removal of existing transformer foundations and Oil soak pits is in bidders' scope or customer scope,	It's in the contractor's scope.
11				No of Bays of existing 11 KV GIS Switchboard for making SCADA provision.	15 Ways.
12				The distance between old & new 66 KV Substation is 1100 Meters. We need to take details of route to lay 3 Runs of 3 C X 300 Sq. mm. Cables.	Bidder may visit the site to take details.
13				At Railway crossing Horizontal Directional Drilling (HDD) is to be done. Please take the length of end to end.	Bidder may visit the site to take details.
14				As per BOQ 3 KM FO cable is given. Take the details of FO cable route i.e. whether there is existing cable trench / pipe rack are available or this cable is to be buried.	FO cable is to be put in the conduit & to be laid inside the cable trench to be constructed by the contractor under his scope.
15				As per Specification, 1 No. 66 KV Transmission line Tower is to be erected. Need to ensure, this tower is coming in customer site or others site.	The tower will be outside the substation boundary



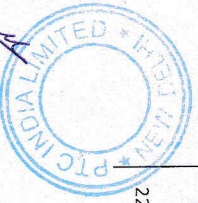
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16				As transmission Tower needs Pile foundations, please check pile foundations are required for Building / Transformer foundations.	The tower will be on Pile Foundation but for the Building/ Transformer foundation, Tender condition holds good.
17	Drawings, Data, Manuals & calculations Clause No. an.3	129	Drawings, Data, calculations and Manuals shall be submitted in triplicate with the bid and in quantities and procedures as specified in General Conditions on Contract and/or elsewhere in this specification for approval and subsequent distribution after the issue of Letter of Intent.	Request to provide SLD and site layout drawings.	Preparation of all drawings / documents as required shall be in bidder's scope.
18	Clause No. 4.7	203	Foundation of PS Type D/C Transmission Line Tower. It shall be on Pile Foundation as per GETCO Standards	As it is port area it required pile foundation. But is not mentioned in BOQ.	Tender condition holds good.
19				Whether it is buried cable trench or cable tray work.	RCC Cable trench with Cable trays
Sr. No.	Tender Clause	Pg./Cl. No.	Description as per Tender	Query raised	Clarification of DPA
20	Technical Specification 1	93	SF-6 gas insulated line bay module comprising of 3 Nos. of single phase gas insulated voltage transformer	Our complete GIS shall be three phase enclosed. Pls clarify	The GIS system shall be 3 phase enclosed with PTs
21	Technical Specification 1	93	The Bus Coupler in Double Bus Bar Bay will consist of 1 No. of bus coupler bay module and comprising of 3 Nos. of Isolator switches with earthing, 3 Nos. of single phase CT	CTs shall be 3phase encapsulated. Pls clarify.	The CTs shall be encapsulated
22	Technical Specification 1	93	The specification covers scope of design, engineering, fabrication, manufacturing, shop assembly, inspection and testing before supply, transportation, delivery at destination unloading & storage	Anchoring bolts are not applicable for Siemens make 145 KV GIS.	This shall be designed specific

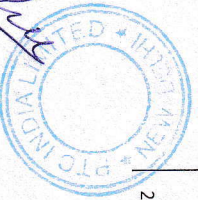


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			at site, site erection, site testing, commissioning and putting in to successful operation complete with all materials, support structures, anchoring bolts		
23	Modular design & future extension	94	Irrespective of bus bar design, provision is to be made available for isolation of individual bay without disturbing adjacent bay.	Request you to accept shutdown of 1 bus & adjacent bay in case of fault in individual bay. Pls. clarify	Tender condition holds good.
24	Modular design & future extension	95	Line & Bus disconnectors	Please note that our Busbar & Bus disconnectors are in the same gas compartment & Line Disconnecter and Cable termination module shall be in same gas compartment. This arrangement is accepted in GETCO already hence request you to accept the same.	This shall be designed specific
25	Modular design & future extension	95	The bus enclosure & GIS shall be sectionalized in a manner that maintenance work on any bus dis- connector can be carried out by isolating and evacuating affected bay & affected Dis connected bus bar only. In this condition, other bus bar & bays must be in energized condition.	Request you to accept shutdown of 1 bus & adjacent bay in case of fault in Bus Disconnecter	Tender condition holds good.
26	Maintenance and repair of Circuit Breaker and other equipment.	96	Manufacturer shall submit the study report of VFTO generated for GIS installation for all KV classes.	VFTO is applicable only for GIS above 375 KV. Hence, not applicable for this package.	The VFTO is not applicable.
27	Physical Arrangement	99	Walkways	Our Siemens make GIS is easily accessible, hence no walkway is required. However, we shall provide	Tender condition holds good.



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			additional A type ladder for accessibility. Requesting your Concurrence.	
28	Interlocks	104	Mechanical & electrical interlocks must be provided to ensure absolute and reliable protection against potentially harmful Mal-operation of the switchgear.	The GIS shall be with mechanical interlock
29	Gas insulated bus	106	Gas Insulated Bus	GIB is not applicable for this package.
30	Circuit Breaker	108	Controlled switching device	CSD is not applicable for 66 KV GIS.
31	Metal enclosed Surge arrestor.	123	Surge Arrestor with disconnecting link.	We offer Surge Arrestor with disconnecting link however to remove the link minimal gas work has to be done.
32	Insulated gas and gas leakage rate.	124	Leakage Rate	Leakage rate should be less than 0.1% per annum
33	Modular design and future extension.	94	local control cubicle.	Local control Cubicle shall be Bay mounted only.
34	NIT	8	Similar works means having experience in "Supply, Installation, Testing and Commissioning of 66 KV or above GIS system with associated Substation (Electrical installations at GIS Sub-Station includes 66 KV or above Circuit Breaker Bays and Bus Bars) at Port Sectors/ Central Govt./State Govt./PSU/ other reputed organizations within India.	We request you to kindly consider the Similar Work as : Similar works means having experience in "Design, Supply, Installation, Testing and Commissioning of one no. of 132 KV or above AIS/ 66KV or above GIS substation with construction of control room building. store, staff quarters and at-least 1 no. of 66 KV or above Hybrid GIS Transformer Bay module on both HV and LV Side in

Tender condition holds good.
Please refer Classification of DPA at Sr.No. 1 above

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			single substation, with minimum successful operational performance of One year of the Hybrid module, for which certificate issued by not below the rank of Superintending Engineer at Port Sectors/Central Govt./State Govt./PSU/ other reputed organizations within India.	
35	Special Conditions of contract	48	Terms of Payment	Tender condition holds good.
36	Make List of Electrical Items.	85	HV Gas Insulated Breakers / GIS	Tender condition holds good. Please refer to No. 4 of Addendum.
37	Make List of Electrical Items.	85	Power Transformers	Please refer to No. 5 of Addendum.
38	Make List of Electrical Items.	85	HT XLPE Cables	Tender condition holds good.
39	Make List of Electrical Items.	85	LT XLPE Cables.	Tender condition holds good.
40	Make List of Electrical Items.	85	PROTECTION RELAYS	Tender condition holds good.



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41	Scope of Work and Technical Specification.	159	Technical Specification of item No. 3 Oil	instead of Natural Ester Vegetable Oil, due to its superior insulation quality and easy handling during maintenance.	Tender condition holds good.
42	Bill of Quantities.	201	Power/Distribution Transformer.	As you are aware that the present installation in your premises is in highly corrosive area, where in the equipment has been dilapidated due to weather condition. Dismantling and re-shifting it to new location, will not ensure its proper functioning. The condition of the equipment's will be determined only once it is shifted to new location. However, kindly ensure this re-instated equipment's performance will not be covered under our defect liability / Warrantee Period.	Performance warranty for the re-located / shifted equipments shall be out of the defect liability / warrantee period specified under the relevant clause of this tender.
43	65 KV Outdoor Equipment for Metering Yard	202		As you are aware that the present installation in your premises is in highly corrosive area, where in the equipment has been dilapidated due to weather condition. Dismantling and re-shifting it to new location, will not ensure its proper functioning-The condition of the equipment's will be determined only once it is shifted to new location. However, kindly ensure this re-instated equipment's	All the equipments have been resently commissioned. Also, the structures are new. So, all of them can be easily dismantled, shifted & re-erected/ re-installed in the proposed Sub-Station. However, if GETCO allows for indoor Metering, it



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				performance will not be covered under our defect liability / Warrantee Period. Further it is mentioned to re-use the support structures of the existing equipment's, which will not be possible as due to corrosive environment, most of the structures will not be dismantled properly due to rusting. Kindly make provision for installation of new structures at new S/S.	shall be done by the contractor under their scope. In that case, the structures with all equipments shall be removed, shifted to a location as will be directed by the EIC.
44	Civil Work : Pile Foundation			Since the Load bearing capacity of the soil at site very low, hence it will be required to do the Pile foundations. But Pile foundations are not considered in Civil BOQ of the tender. Request to suggest and clarify	Tender condition holds good
45	11 kV HT Switchboard			Kindly provide details of existing 11kV HT Switchboard regarding the IEC 61850 compatibility and SCADA interface compatibility with the new proposed system	Switchgear is of Siemens make & SCADA compatible
46	Single Line Diagram (SLD)			Kindly provide SLD (Single Line Diagram) of the existing Electrical Distribution system enabling us to quantify the work as per the Scope of work of the tender.	Clarification at Sr. No. 49 may be referred
Sr. No.	Tender Clause	Pg./Cl. No.	Description as per Tender	Query raised	Clarification of DPA
	Existing SCADA		Supply, Erection, Testing and Commissioning of SCADA equipment and materials as per respective Tech. Spec. No. 8 and suitable for Control & Monitoring of 66 KV GIS Switchgear Modules, 11 KV New GIS Switchboard, 11 KV Existing GIS Switchboard with Switches & OFC (02 lengths), Station Auxiliaries, etc. from SCADA over IEC :	Kindly provide the existing SCADA & Protection	No SCADA system exists. However, existing 11 KV Board is to be integrated with the



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47	Clause No. 6.1	205	61850 Communication protocol with UPS for SCADA with at least 1 Hr. back up, all required Hardware, Accessories, Communication Cables, Patch Cables, SCADA Furniture, etc. as per Tech. Spec. No. 8 and latest GETCO specifications & practice with minimum spec, but not limited to it.	details.	SCADA system to be supplied under the scope of this tender
48	Civil Work : Pile Foundation			Pile Foundation: Given the presence of marshy soil and SBC on the lower side, we recommend pile foundation. We request that you add the necessary quantity for pile foundation in the Civil BOQ.	Tender condition holds good.
49	Single Line Diagram (SLD)			Kindly Provide existing Single Line Diagram (SLD).	SLD is attached at Annexure - I
50	Technical Specification of Item No. 2	135	Horizontally insulated horizontal draw out.	Not applicable for GIS.	Clarification at Sr. NO. 96 may be referred
51	Technical Specification of Item No. 2	135	3 Nos. of CT 300/1+1+1+1+1 A (PS class/PS class/SP20/0.2/PS class) 20 VA burden CT with 0.2 accuracy, PS class for differential, PS class for REF, SP20 for over current and earth fault, SP20 protection class for metering, one no PS class asspare.	Please confirm requirement of 5th PS Class core. Please delete 5th PS Class Spare Core as not possible for such lower ratio CT. VA Burden will be as per sizing calculations.	The CTs shall be provided with 4 nos. of PS Class cores
52	Technical Specification of Item No. 2	135	1 No. 3 phase 11 KV/VN3 /110 V/VN3/110 V/VN3 draw out PT with burden and class 0.2/3P accuracy.	PTs for GIS Panels are metallized resin cast Plug-in type without any HT Fuse in the primary side. Kindly change the same for safety reasons.	Clarification at Sr. No. 96 may be referred
53	Switchgear Panel	137	Uniform width not exceeding 500 mm irrespective of feeder	2500 A rated Panels shall have more width than 500 mm. due to higher rating as per type tested designs.	Width as per valid Type Test Report



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			rating		Kindly accept the same as per type tested designs of OEM. For 1250 A panels, 500 mm. width is sufficient.	shall be provided.
54	Switchgear Panel	137	Rear wall with gas flow path and top explosion provision	It varies from OEM to OEM design. In our case, the ventout is from the rear of CB chamber but the arc goes to the top of switchboard. Request to delete this point.	Accepted, but the Gas exhaust shall not affect the Operational Staff.	
55	Switchgear Panel	138	During internal arc, the hot gases from circuit breaker or cable compartment should not affect or travel through the bus-bar compartment in any manner.	This is very specific to some OEM designs and the method of arc evacuation varies from OEM to OEM panel design. The path to channelize the plasma may be from busbar compartment to reduce the let-through energy. Hence, kindly delete this point.	Tender condition holds good.	
56	Operational Reliability	138	Long-time proven components like welded-in bushings, welded-in bellows and the Siemens vacuum switching technology are integrated in this innovative global concept.	This is OEM specific point. Request to kindly remove.	Noted but ensure that the operational reliability shall be proven without loss of SF-6 Gas.	
57	Circuit Breakers	139	Vertically mounted interrupters.	Every OEM has different orientation of Vacuum Interrupter and the same are type tested. Kindly allow for horizontally mounted interrupters.	Acceptable as per valid type tested design.	
58	Bus-bars and Insulators	142	The bus-bars are flat at ends, making it easy for extension in future for any switchgears.	Kindly accept tubular Busbars as per OEM type tested design. However, future extension provision shall be provided.	Bus bar can be as per the valid type tested design with provision for future extension.	
				Only CT Circuit shall be 2.5		



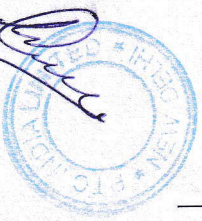
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59	Earthing and Earthing Devices	143	All metallic cases of relays, instruments and other panel mounted equipment shall be connected to earth by independent stranded copper wires of size not less than 2.5 Sq. mm.	sq. mm. VT Circuit and control circuit shall be 1.5 sq. mm. due to compact size of GIS panels which is sufficient to carry the LV loads. Size more than this, if forcefully provided, will result in hindering the closing of LV door due to heavy bunch of wiring. Citing this practical constraint and user friendliness, request to accept 1.5 Sq. mm. cable for VT and control circuit.	Tender condition holds good.
60	Capacitive Voltage Presence Indicator	143	Capacitive voltage detection is performed with an LRM socket module (LRM = low resistance modified). In this LRM socket module, fixed voltage indicators are mounted to verify safe isolation from supply phase by phase.	This is an old technology which is obsolete now, only CVD based VPIS is provided. Kindly remove.	State of the art technology with proven performance record are acceptable.
61	Instrument Transformers.	144	Access to Line VT shall be possible only after it is earthed thus providing operator's safety.	Considering Safety Aspect, request to clearly mention, if Two Position Disconnect switch is mandatory for Line VTs disconnection or not?	Two position with Earthing provision with switch is must.
62	Instrument Transformers.	144	All voltage transformers shall have suitable HRC current limiting fuses	HRC Fuses are not applicable for Metalized Resin cast PTs used for GIS Panels. Hence, request to remove.	HRC fuses are not applicable for GIS panel PTs
63	Instrument Transformers.	144	Bus voltage transformer shall be provided in a separate Bus PT panel.	As per OEM optimized design, request to kindly accept Bus VTs on top of any feeder. This will save space inside the Substation. Since VTs are touchproof type in GIS	The provision in GIS system shall be designed specific



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			Panels, there is no impact at all while mounting the VTs on top of any panel.	87T & 64R shall be the part of the CRP. However, CT cores shall be provided for the same.
64	Low-voltage compartment.	144	There shall be numerical protection relay(s) (50, 50 N, 51, 51 N, 95, 86) in each incomer.	
65	Numerical Protection Relays.	145	Relay shall have minimum 18 tricolored LEDs.	The numerical relay shall be with maximum of 11 nos. dual color LEDs
66	Numerical Protection Relays.	145	Minimum 3000 Nos. of event records shall be stored in Non-volatile memory and failure of control supply shall not result in deletion of any of these data.	Tender condition holds good.
67	Numerical Protection Relays.	145	Minimum total storage time for 20 Nos. of disturbance records shall be 200 Seconds.	Tender condition holds good.
68	Numerical Protection Relays.	145	Relay shall have minimum 22 Binary inputs to take care of status of all devices, trip circuit supervision inputs and Auxiliary fault alarms. Relay shall have minimum 10 Binary outputs.	BI/BO shall be adequate with atleast 10% spare after fulfilling the complete requirement of the protection, control & monitoring from SCADA for



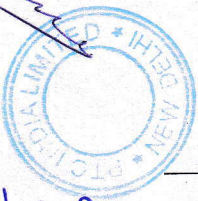
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					complete feeder.
69	Power Cable Termination.	147	Cable termination required will be conventional heat shrinkable type.	Cable Termination for GIS panels shall be Solid Silicone insulated Touchproof type only . Kindly change and accept the same. Heat Shrinkable terminations are for AIS Panels. If installed in GIS panels, it will result in flashover.	The cable termination kits for GIS shall be solid silicon insulated touch proof type
70	Type Tests.	148	The GIS offered should be fully type tested, in the type test reports the GIS manufacturing location should be same as the location from where complete GIS is offered and shall be supplied by the manufacturer for this project. Any local manufacturing or assembling of the SF-6 vessel or complete GIS panel in India and same not type tested from recognized labs shall not be acceptable.	For 2500A Panels, the tanks shall be brought from the parent and assembly shall be done at India Works of OEM. Request to accept the same ,else the OEM will be out of this bid.	Parent type tested design is acceptable. However, the complete panel shall have valid Type Test Report and shall be of the of same make as per Valid Type Test Report.
71	Technical Particulars for 11 KV GIS Numerical Relays.	154	Indication of Nos. in Master Trip Relay - 16 LEDs.	Not applicable.	For Master Trip relay indication is not applicable
72	Technical Particulars for 11 KV GIS Numerical Relays.	154	Make of high speed Master Trip relay - Function is part of 7SR220 Relay.	OEM Specific, kindly remove.	The high speed Master Trip relay shall be design specific of OEM.
73	Technical Particulars for 11 KV GIS Numerical Relays.	154	Number of N/O And N/C contacts provided for High speed Master Trip Relay - Above 22 BI & 12 BO.	16DI+10DO	BI/BO shall be adequate with atleast 10% spare after fulfilling the complete requirement of protection, control & monitoring from



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					SCADA for complete feeder.
74	11 KV GIS TECHNICAL SPECIFICATION. Clause No. 04	154	Manufacturer's Design/type Ref - 11 KV GIS / 8DJH ST E	OEM Specific requirement. ABB has a different model name.	The 11 KV GIS shall be design specific of the OEM.
75	11 KV GIS TECHNICAL SPECIFICATION. Clause No. 08	155	Rated current - 1250 A.	2500 A for Incoming, Bus-coupler and Busbar 1250 A for all outgoing. Kindly confirm.	The incoming and bus coupler of 11 KV GIS shall be of 2500 Amp ratings & outgoing shall be 1250 Amp
Sr. No.	Tender Clause	Pg./Cl. No.	Description as per Tender	Quarry raised	Clarification of DPA
76	SCOPE OF WORK AND TECHNICAL SPECIFICATION	90	This also envisages the construction of a new Substation Building, filling up the plot area identified for new 66 KV Substation.	As per scope and technical specification, Filling up the plot area identify for new 66kv substation, Please provide the level detail	Present R.L. (+) 8 to (+) 8.20 filling with Dust 0.75 mtr. With compound wall during execution of work.
77	Section-VII, BOQ Sr. No. A 4.4	203	Disconnection, Dismantling, Packing, Loading, Shifting, Unloading, Installation, Testing and Commissioning of 66 KV, Oil type Tariff Metering CT for Incoming 66 KV Lines, including Support Structures, Hardware and Accessories.	Section-VII, BOQ Sr no. A 4.4 Dismantling can be done but same tariff metering CT could not be used as per new demand, CT ratio will change.	Tender Conditions holds good.
78	Section-VII, BOQ Sr. No. A 5	204	Control and Protection Panels with Numerical Relay, Bay Control Unit all with latest state of art technology suitable for Control & Monitoring of GIS Switchgear Modules from SCADA over IEC : 61850 Communication Protocol as per Technical Specifications and latest GETCO specifications & practice.	Section-VII, BOQ Sr no. A.5 Please clarify the actual requirement	The C&R Panel will be used to control all incoming bays, Bus-coupler and Transformer units in 66KV voltage level. The C&R panel shall be SCADA compatible.



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79	11 KV Indoor GIS Switchboard	197	Supply, Installation, Testing and Commissioning of 11 KV, 2500 A, 26.3 KA for 3 Sec. Indoor type GIS Switchgear with Numerical Protection relays suitable for monitoring and controlling from SCADA over IEC : 61850 Protocol, in line with the tender SLD, with all required accessories, first fill SF-6 Gas, test plugs, Conforming to the Tech. Spec. No. 2. Offered GIS shall be supplied with all required accessories / modules to facilitate future expansion on both the sides.	Existing 11kv GIS Switchboard detail required for integration with SCADA & modification	The technical specification of the existing 11KV GIS breaker 15 Way.
80	Section-VII, BOQ Sr. No. A.6.2	205	Supply, Laying, Termination & Commissioning of 6-F, Double Sheath Armoured Outdoor, Single Mode Optic Fiber Cable fully compliant with IEC: 60794-3, with heavy duty HDPE duct.	Section-VII, BOQ Sr no. A.6.2, 6F Armoured FO cable should be Multimode	The revised BOQ shall be "Supply, Laying, Termination & Commissioning of 6-F, Double Sheath Armoured Outdoor, Multi Mode Optic Fiber Cable fully compliant with IEC: 60794-3, with heavy duty HDPE duct." <i>pendentive on tender SLD & layout on</i>
81				Please provide the Tender SLD	The tender SLD is attached as Annexure-A1 & A2
82	Section-VII, BOQ Sr. No. A.10	206	Supply, Installation, Testing and Commissioning of SCADA compatible 415 V, Main LT Distribution Board for Station Auxiliaries as per SLD and Tech. Spec. Incomer Feeder shall be fixed type 1000 A, ACB with LSIG Numerical Protection Relay suitable for controlling & monitoring from SCADA. Outgoing shall be MCB/MCCB as per required ratings with status monitoring Indicating Lamps on Panel.	Section-VII, BOQ Sr no. A.10, LT AC Distribution SLD required.	The contractor has to prepare the LT AC Distribution SLD as per new system.
83	Section-VII, BOQ Sr no. C, 22.4 (ii)	219	Spares for 66 KV Control Relay and Protection Panels / SCADA: (ii) Bay Control Unit of each make and model no.	Section-VII, BOQ Sr no. C, 22.4 (ii), It should be Bay Control & Protection Unit.	The BCPU shall be applicable for 66 KV CRP panel/ SCADA

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84	Section-VI, Scope of Work Clause no. ai1	124	GIS to Transformer/Reactor :- 1) For 66/11 kV Transformers (As specified in SLD / S/ECT DRG / BOQ): 66 KV side : by GIS SF-6 to air bushing to OIP condensers bushing of transformer by conductor. GIS SF-6 to air bushing shall be polymer type only.	As per technical specification, Clause ai.1 & 2, we have not envisaged that requirement of SF6 to air bushing & Bus duct, as from GIS to Power transformer & incoming line will come through UG cable. Pls. confirm	Tender Conditions hold good.
85	Section-VI, Scope of Work, Technical particulars of GIS Clause no. aq & clause no. ae.2	120 & 134	20. CT Ratio 300 -150/1-1 (during detail engineering) & Metering, OC, EF protection - 600 300/1	Ambiguity in CT ratio, aq. in technical particulars of GIS switchgear & ae.2 Rating & Diagram plate. Please confirm	The CT Ratio of both the cases, i.e. Feeder bay and Switch gear should be same i.e., 600-300/1-1
86	Section-VI, Scope of Work, Technical specification for item no.8	179	<u>Battery & Battery Charger</u> - Capacity will be 250 Amp-Hours - Maximum current output will be 25Amps trickle charge.	Battery charger ampere capacity required.	The technical specification of Battery and Battery Charger is given in tender, "Maximum current output will be 25Amps trickle charge"
87				SBC of the soil is very low @1.5 T/Sq.Mt so require Pile Foundation for GIS Building structure.	Tender condition holds good.
88			Project Single line diagram	Tender scope as per attached layout & SLD	Clause at Sr.No. 81 may be referred
89	Special Tools, Tackles and Equipment clause no. I(5) of Section-VI	103	Online PD monitoring system is specified in special tools of GIS CI I (5).	As per the GETCO Specification for GIS, Online PD monitoring system is applicable for 220KV and above voltage level only hence, the same is not applicable for the 66KV SS under current tender	The PD monitoring system is not applicable for 66 KV GIS S/s.

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90	Electrical Data clause no. q of Section-VI	107	The Ratings of 66KV GIS, 11KV GIS are As per Electrical data (q) GIS Bus-Bar rating shall be 2000A	The Ratings of 66KV GIS, 11KV GIS are ambiguous in various clauses of the tender specification and BOQ. As per Electrical data (q) GIS BB rating shall be 2000A however, at some other locations it is specified as 2500 Amps. We are considering Switchgear rating as below. DPT to confirm 66KV GIS: Bus Rating - 1600 Amps. 11KV GIS: Bus Rating - 2500 Amps.	For 66 KV it shall be 1600 Amp. For 11 KV Clarified at Sr. No. 75
91	Electrical Data clause no. q of Section-VI	108	The Ratings of 66KV GIS, 11KV GIS are As per Electrical data (q) GIS BB short circuit rating shall be 40KA for 3 Sec.	The Ratings of 66KV GIS, 11KV GIS are ambiguous in various clauses of the tender specification and BOQ. As per Electrical data (q) GIS BB short circuit rating shall be 40KA for 3 Sec however, at some other locations it is specified as 31.5KA for 3 Sec. We are considering Switchgear Short circuit rating as below. DPT to confirm 66KV GIS: Bus Rating - 31.5KA for 3 Sec 11KV GIS: Bus Rating - 26.1KA for 3 Sec	The 66 KV GIS Bus rating shall be 31.5 kA for 3 sec & that of 11 KV GIS shall be 26.3 kA for 3 sec
92	Principal Parameters clause no. (s) of Section-VI	111	The Ratings of Clause (s) "Principle parameters"	The Ratings of Clause (s) "Principle parameters" are ambiguous. Rated current and Short circuit rating of the 66KV GIS, 11KV GIS and LT Panel board are applicable as per the point no. 4 & 5 above. Hence, this clause shall not be applicable for the ratings.	Clarification at Sr. No. 90 & 91 may be referred

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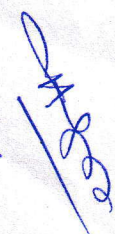
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93	Technical Requirement for controlled switching device as per clause no. (i) of Section-VI	113	In the specification (PDF Page 113), Control switching device:	In the specification (PDF Page 113), Control switching device is specified. It is to be noted that it is not applicable in general and it is used / applicable for selective 400KV and above system only. Controlled switching device are applicable for the systems $\geq 400KV$ Only. Hence, the same shall not be considered.	The control switching device is not applicable for 66 KV GIS system.
94	11. 66 KV Metering side Equipment for item no. 4 :-	177	Installation of outdoor type 60 KV, 10 KA Lightning Surge Arrestor (1 Phase) complete in every way with outdoor junction boxes suitable, connectors, hardware, accessories, terminals for LV wiring complete in every way.	As per the GIS specification. LA are specified to be the part of GIS however, in the given situation, all LA's shall be outdoor type only. We are not considering LA as part of GIS. Instead these shall be Outside / Outdoor type only.	The LA shall be for outdoor application
95	Technical specification of item NO. 2		3 Nos. of CT 300/1+1+1+1+1A (PS Class/PS class/SP20/0.2/PS class) 20 VA burden CT with 0.2 accuracy, PS Class for differential PS class for REF SP20 for over current and earth fault, SP20 protection class for metering, one no PS class asspare,.	In 11 KV GIS CTs with 5 core are specified. However, it is not possible to accommodate 5C CT in GIS and same is in not required also.	Clarified at Sr. 51
96			Horizontally insulated horizontal draw outt	In 11 KV PT's are specified to be draw-out time. However, in GIS panel draw-out type PT's are not applicable.	The 11 KV PTs shall be plug-in type.
97	11 KV GIS TECHNICAL SPECIFICATION	142		As per the "Functional compartments" of 11KV GIS specification, PT's are required in all the feeders. However, PT's shall be required only in Incomer and Buses at the max. PT's to be provided in Incomer and Buses only. Necessary voltage for metering in all outgoing feeders shall be extended from the respective bus pt	The PT's shall be provided at the Incomer and Buses.


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98	Numerical Protection Relays	145	Specification for Numerical protection relays are ambiguous for following reasons: 1. The communication protocol specified at one location are DNP 3.0, Modbus - RTU, IEC-103 <u>OR</u> IEC-61850 protocol however, at other locations only IEC-61850 protocol is specified with redundant ports. 2. Numerical relays are specified to be PRP/ HSR compliant. This is un-warranted for 66KV SYSTEM and beyond the GETCO specification and normal utility standards.	1. IEC-61850 Communication protocol only shall be considered. 2. As per GETCO specification, Numerical protection relays are not to be compliant with PRP / HSR protocols. Hence, the same is not considered	The communication protocol shall be IEC : 61850 and the PRP / HSR protocol for Numeric Relays are not applicable.
99	Electrical Data clause no. q of Section-VI	108	The Ratings of 66KV GIS, 11KV GIS are As per Electrical data (q) GIS BB short circuit rating shall be 40KA for 3 Sec.	11 KV GIS STC rating as per electrical data shall be 40KA for 3 Sec however, as per the technical specification it shall be 26.3KA for 3 sec	Clarified at Sr. No. 91
100	11 KV GIS TECHNICAL SPECIFICATION. Clause No. 08	155	Rated current - 1250 A.	11KV GIS current rating: as per PDF Page 156: 800-1250 A As per Electrical data (q): 3150 Amps As per Specification: 2500 AMPs Following ratings are considered for 11 KV GIS Board 11 KV GIS Bus rating: 2500 Amps. Incomer & Bus Coupler - 2500 Amps. Outgoing feeders - 1250 Amps.	Clarification at Sr.No. 75 may be referred
101	11 KV GIS TECHNICAL SPECIFICATION Clause No. 4	154	Manufacturer's Design/Type Ref 11 KV GIS / 8DJH ST E.	As per the 11KV GIS specification, make and model no. is specified as 8DJH STE . Since Siemens has phased out 11KV GIS with model no. 8DJH STE, DPT to add ABB / Schneider / GGL makes for 11KV GIS	Clarification at Sr. No. 74 may be referred.



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102	Numerical Protection Relays	145	Upgradable to process bus in future as per IEC : 61850-9-2 standard.	Relay upgradable to process-bus as per IEC - 61850-9-2 protocol is unwarranted as the primary equipments would change in this case. Offered Numerical relays will not be upgradable as the primary equipments like CT, PT, Switchgear also will be required to have interface suitability for the same which is unwarranted at this stage.	The numerical relays shall be without upgradability.
103	66 KV Bus Coupler Panels Clause No. A	172	Low impedance, PRP / HSR compliant Bus bar protection scheme is specified for 66KV System.	As per the CEA guidelines, GETCO Specification and practice, Bus Bar protection is provided for 132KV and above systems. Hence, the same shall not be applicable in current tender. Hence, the same shall not be considered	Clarification at Sr. No. 98 may be referred.
104	66 KV Metering side Equipment for Item no. 4	177	Indoor type 72 KV SF-6 Circuit Breaker (3 phase) 2500 A, 31.5 KA SF-6 CB. 150/1 A, 31.5 KA 10 VA CT class 0.2 S for metering class.	In 66KV Metering side equipments (item no. 4) following are specified that are un-warranted: 2500 Amps, CB, 150/1A (4C) CT's. Circuit Breaker and Protection CT's are not applicable for 66KV Metering side equipments under item no. 4 of the tender BOQ. Hence, the same are not considered.	The Metering CTs will be for metering core with 0.2 S accuracy class.
105	66 KV Switchyard Civil Work, Sr. No.5	177	NIFPS foundation - 4 Nos.	As per the civil specification quantity for NIFPS foundations are 4 Nos. however, New NIFPS shall be 1 and old NIFPS shall be two hence, total NIFPS foundations required shall be 3 only. Only 3 Nos. of NIFPS are applicable.	The 3 nos. of NIFPS foundations are required.



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106	66 KV Switchyard Civil Work, Sr. no. 7	177	66KV LA Foundation - 23 Nos.	Foundation quantity of 66KV LA are 23 Nos. - To be clarified for so much of quantity. Only 18 Nos. of 66KV LA foundations shall be applicable.	Total 18 Nos. of LA foundations are required.
107	Technical Specification of item No. 3.2 3.5	166	This includes Disconnection, Removal, Shifting from existing position to new Substation, Installation, Testing and Commissioning of 02 Nos. (1 No. 18 MVA & 01 No. 12.5 MVA) of 66/11 KV Power Transformers with NGR, NIPS, RTCC and other accessories including Oil Sump, Oil Filtration, Refilling including top up complete in all respect earthing, protection etc. as per requirement & as directed.	500KVA existing transformer has to be shifted however, some temperature control + protection wiring as per Engineer - incharge is specified. What exactly shall be the scope. Does existing transformer have Oil pocket if the OTI is to be fixed. WT CT if WTI is to be provided? Only shifting of existing, installation, testing and commissioning of 500KVA transformer is to be considered, "temp. control + protection wiring as per engineer incharge" shall be ignored.	As per the existing provision in the 500 KVA distribution transformer, the system may be connected after shifting and installation.
108	Technical Specification of Battery & Battery Charger for item no. 8	180	- Output suitable to charge lead acid battery bank of 220 V DC	As per the battery specification there is ambiguity of the control voltage 110V DC or 220V DC? Station DC Aux. control voltage shall be 110V DC	The control voltage shall be 110 Volt DC.
109	Technical Specification of Battery & Battery Charger for item no. 8	180	As per specification Capacity will be 250 Amp-Hours. As per BOQ Supply, Installation, testing and commissioning of 110 V, 240 AH VRLA DC Battery set along with mounting racks.	Battery rating is ambiguous. As per the specification it is 250AH however, as per BOQ it is 240AH. 240 / 250 AH as per the Standard OEM rating for VRLA shall be considered.	it shall be 250 AH.

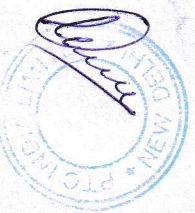


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110	G. HVAC /VRF System (Item No. 13 of BOQ)	191	<p>G.1.1. This specification covers supply, installation, testing and commissioning and handing over to Customer of Air conditioning system for the Local Control rooms & Maintenance Room in the GIS halls.</p> <p>G.1.2. Air conditioning system shall be designed to maintain the inside DBT below 24°C. Bidder shall submit necessary design calculations for customer's approval.</p> <p>G.1.3. At least 50 % spare Air-Conditioning capacity shall be provided for Local Control rooms in the GIS halls.</p> <p>G.1.4. Controllers shall be provided in Local Control room inside GIS hall for controlling and monitoring the AC units in these rooms.</p> <p>G.1.5. Each Local Control room inside GIS hall shall be provided with temperature transducer to monitor the temperature of the Local Control rooms in the GIS halls. The Temperature transducer shall have the following specification: Sensor : Air temperature sensor (indoor use) Output : 4 to 20mA Temperature range : - 5°C to 60°C Resolution : 0.1°C Accuracy : 0.5°C or better</p>	<p>HVAC/VRF system is specified for GIS Hall & Control building. However, as per BOQ separate split AC are specified for different rooms. Hence, scope and requirement of AHU, HVAC, Split AC, VRF systems are to be clarified. AHU shall be applicable for 66KV GIS Hall only. Split AC's are to be considered as per BOQ instead of HVAC / VRF system.</p>	<p>The VRF with AHU shall be for GIS system and the remaining with split ACs.</p>
111	Technical Requirement for controlled switching device	112	<p>The provision for bypassing the Controlled switching device shall be provided through BCU and SCADA both so that whenever the CSD is not healthy due to any reason (including auxiliary supply failure), uncontrolled trip/close command can be extended to the circuit Breaker.</p>	<p>Control & Relay Panels Separate BCU and Numerical protection relays are specified. As per GETCO standard practice and specification in 66KV System Comprehensive Bay Control & Protection unit (BCPU) is used. Hence, separate BCU and it's spare are unwarranted. Needs to be clarified. BCPU as per the GETCO specification shall be provided.</p>	<p>Clarification at Sr. NO. 83 may be referred.</p>



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112 Spares for 66 KV Control Relay and Protection Panels / SCADA	219	Design, Manufacture/Assemble, Supply, Installation, Testing and Commissioning of Control Relay Panel with associated equipment/accessories and shall comply with the latest editions (including amendments thereto) of all currently applicable statutes, regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the latest applicable standards. Nothing in this specification shall be construed to relieve the Contractor from his responsibility. The Control & Relay Panel (CRP) shall be considered as a Protection and Back up control panel to SCADA system.	Control & Relay panel component list is like conventional panel like semaphore, Annunciator, etc. However, the panel been SCADA controlled type the same are not applicable.. Shall be in line with GETCO specification for SCADA controlled panel.	It shall be as per GETCO specifications for SCADA controlled panel.
113 Pre-Qualifying Criteria: Similar Work Definition	8	Similar works means: Similar works having experience in "Supply, Installation, Testing and Commissioning of 66 KV or above GIS system with associated Sub-Station (Electrical installations at GIS Sub-Station includes 66 KV or above Circuit Breaker Bays and Bus Bars) at Port Sectors/Central Govt./ State Govt./PSU/ other reputed organizations within India."	We kindly request the acceptance of our OEM experience for Gas Insulated Switchgear (GIS) work as part of the eligibility requirements.	Please refer classification of DPA at so no. 1 above.
114 Pre-Qualifying Criteria: Similar Work Definition	8	Similar works means: Similar works having experience in "Supply, Installation, Testing and Commissioning of 66 KV or above GIS system with associated Sub-Station (Electrical installations at GIS Sub-Station includes 66 KV or above Circuit Breaker Bays and Bus Bars) at Port Sectors/Central Govt./ State Govt./PSU/ other reputed organizations within India."	Request for acceptance of GIS retrofitting experience in technical qualification: 1. Request for inclusion of GIS retrofitting experience. 2. Request for acceptance of PMC Work completion Certificate.	Tender Conditions holds good.
Sr. No.	Pg./Cl. No.	Description as per Tender	Query raised	Clarification of DPA



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