



CHENNAI PORT TRUST

MEE/ GC2 / 225 / 2013 / Dy.CME(ES&CH)

BUDGETARY OFFER

FOR

**PROVIDING POWER SUPPLY ARRANGEMENTS FROM SHORE TO
SHIP IN CHENNAI PORT TRUST.**

SUBMISSION ON OR BEFORE 03.05.2017

THE CHIEF MECHANICAL ENGINEER

7TH Floor, Centenary Building
Rajaji Salai, Chennai – 600 001.

TECHNICAL SPECIFICATION
SCHEDULE - 'A'

1.0 GENERAL:

Chennai Port Trust is proposed to provide power supply arrangements for ships from shore to Ship at WQ wharfs in Chennai Port Trust.

2.0 SCOPE OF WORKS:

- Supply, Installation of 11 kV, 630 A, indoor, VCB Panel with VCB, Trivector meter, numerical relay, MFM and all other accessories at 33 KV substation and 'B' substation.
- Supply, Installation of 11 kV / 433 V, 1000 KVA outdoor type package substation with Dry type, Resin cast transformer, VCB, ACB, APFC, Trivector meter with standard accessories etc.,
- Supply, Installation of 1000 KVA Static Frequency Convertor (SFC).
- Supply, Installation of 1000 KVA Isolation Transformer.
- Supply, Installation of 400 amps. Isolator switch at wharf with CRCA enclosure.
- Supply, Installation of LT panel with ACBs and MCCBs with all other accessories.
- Supply and laying of H.T. / L.T. / Trailing cables, end termination and Straight through joints. Provision of copper Plate Earthing and G.I. Flats, etc. However, all the materials should be supplied and executed as per relevant IS Standard and IER.
- Testing and commissioning of VCB Panel with VCB, package substation, SFC, Isolation Transformer, Earthing, etc., and produce test certificate.

* The work shall be executed as per the direction of EIC (Engineer In Charge)

Note:-

- (i) The transport arrangement at own cost of the contractor.

3.0 STANDARDS

The design, supply and testing of the various equipment and accessories covered in this specification shall comply as per relevant IS standards with latest amendments.

4.0. TECHNICAL SPECIFICATIONS: -

4.1. HT VCB PANEL AT SUBSTAIONS:

- a) 1 No.630A, VCB out going Panel at 33 KV Substation
- b) 1 No.630A, VCB Incomer Panel and 2 Nos. 630A, VCB out going Panel at 'B' Substation

a)	System rated voltage	11 kV
b)	Phase	3
c)	System maximum voltage	12 kV
d)	Frequency	50Hz
e)	Insulation level	
f)	1.2/50 microsecond Impulse withstand voltage	75 V peak
g)	One minute power frequency withstand voltage	28 kV rms
h)	Rated current	
i)	Continuous	
	- Bus bar	630 A
	- Incoming/outgoing circuit breaker	630 A
ii)	Short time current for 3 seconds	21 kA rms

Circuit breaker

	Quantity	One incomer & Two out going feeder
k)	Rated breaking capacity Symmetrical.	21 KA / 3 Sec.
i)	Rated making capacity	52.5 KA
ii)	Total breaking time	7 cycles maximum
iii)	Operating sequence	As per IS/IEC
l)	Potential transformers	
i)	Quantity	One set for HT outgoing
ii)	Voltage ratio	11KV / 110 V PT of 100VA along with HRC Fuses. 11000/ $\sqrt{3}$: 110/ $\sqrt{3}$

iii)	Reference Standard	As per IS-3156
iv)	Over voltage factor	As per IS-3156
v)	Accuracy class	1.0
vi)	Insulation Level	75 kV Peak / 28 KV rms
vii)	Voltage Factor	1:2
viii)	Rated Burden	100 VA
m)	Current Transformer	
i)	For Relay	10P10/15 VA (Min)
ii)	For Metering	1 / 15VA
iii)	Insulation Level	75 kV Peak / 28 KV rms
iv)	Insulation Class	F
v)	Reference Standards	IS:2705

- (i) Type of charging : Manual as well as motorized Mechanism with 230V AC Operated motor.
- (ii) One No. Shunt trip coil : 24V DC
- (iii) One No. closing coil : 24V DC
- (iv) 2 Nos. 230 V AC space heater with ON-OFF switch and thermostat.
- (v) 3 Nos. epoxy cast resin CTs with 15VA burden STR of 25 KA for 1 sec. metering accuracy class 1 and protection accuracy 10 P10 and having of CTR400/1/1 for Incomer and 300 /1-1 outgoing, Panel.
- (vi) The Trivector meters shall be consist of Amps, Volts, KVA, KW, KWHr, KVAR, PF, Frequency and etc.
- (vii) One set of breaker ON-OFF LED indicating lamp.
- (viii) One No. trip circuit healthy indicating LED indicating lamp with push button.
- (ix) One No. Spring charged LED lamp indication.
- (x) One No. TNC (trip neutral close) switch.
- (xi) Numerical relays consist of IDMTL + Inst 3 O/C + Inst E/F relay – 1No.
Master trip - 1 No.

- (xv) 2 sets of operating handle, spring charging handle and other required accessories shall be supplied.
- (Xvi) One No. Cable Box suitable from receiving of 3CX185 Sq.mm H.T. XLPE Cables.
- (xvii) One No. panel illumination lamp.
- (xviii) Hooter for tripping.

HT panel shall be modular design, panel type suitable for 1 No. 11 KV, VCB for as Incomer mounting on a common under base with suitable cable entry box arrangement for 185 sq.mm XLPE cables. Necessary control Protection and metering circuits are completely assembled, wired and enclosed in a weather and dust proof cubicle. The equipment shall be suitable for outdoor installation in highly humid area. The HT Panel shall be sheet steel enclosed, dust and vermin proof, suitable for indoor use. This shall be suitable to receive power at 11 KV, 50 Hz, 3 phase AC with all equipment fittings and accessories for efficient and trouble free operation. The busbar chamber with 630 A copper busbar, heat shrinkable PVC sleeved / powder coated with colour code. The current density 1.5 Amps/sq. mm. The busbar shall be high conductive electrolyte copper. All the HT busbar shall be supported on hylem / epoxy insulators. The Bakelite sheet of 12 mm thickness (minimum) shall be provided in side enclosures of panel and wherever it is found necessary under relevant IS specification & IER-1956 rules.

All the VCB panels shall have current and Potential transformer.

The proposed VCB panel in the 33 KV substation shall be attached with the existing panels with extended bus bars on both sides.

The panel shall be provided with two earthing terminal, necessary inter-connection, control wiring feruled properly, Earthing, etc. and shall be complete with finishing paint etc. & conform to relevant IS.

Vacuum Circuit Breaker variable setting ranges from 50–100 %. The neutral system comprising of housing of breaker, safety shutters, isolating plugs and socket and VCB trolley with 3 Nos. vacuum interrupters with safe aligning finger type, isolating contacts suitable for vertical isolation and horizontal draw out. VCB included 3 phase, 3 limb, draw out feeder connected PT.

All necessary protection fuses / MCCB for the instruments and relays shall be provided separately inside the enclosures suitable capacity.

The layout drawing dimensional drawings and electrical wiring diagram and operation maintenance manuals in duplicate shall be supplied with VCB. The VCB shall be supplied in conformity with relevant IS & IEC with up to date amendments along with manufacturer's / authorized system house test certificate shall be produced. The VCB panel shall be delivered after third party agency acceptance certificate / IEC.

The firm shall obtain necessary approval of the drawing of HT panel, CSS and L.T. panel from TPI agency / Engineer of Incharge of Ch.P.T. before fabrication.

4.2. 1000 KVA OUTDOOR TYPE PACKAGE SUBSTATION

The work includes design, manufacture, supply, installation, testing and commissioning of package substation suitable for marine atmosphere.

The prefabricated package substation shall be designed for compactness, fast installation, maintenance free operation and maximum safety for operator / workers.

The package substation with all accessories, fittings and auxiliary equipment in an enclosure shall consist of:

- a) HT Compartment
- b) 11 KV / 433 V Dry Type Resin Cast OFF load tap changer Transformer compartment with copper Windings.
- c) LT Compartment
- d) APFC (Microprocessor Based) Capacitor Panel

The panels shall be manufactured as per relevant latest IEC/IS standard and the design and operational features will comply with the provision of latest version of Indian Electricity Act, Indian Electricity Rules, Factory Act and Fire Insurance Regulation.

The specification covers technical and constructional details of outdoor type Package Substation Unit which shall be capable of performing satisfactorily in open atmosphere/heavy dust atmosphere with high relative humidity. The Package Substation Unit shall be compact in size, transportable, light weight rugged and of robust construction and capable to withstand rough use in highly humid areas and suitable for use in outdoor location. It shall be installed and overall dimension shall be kept to minimum as far as practicable.

The Package Substation Unit shall be manufactured as per Manufacturers standard.

Access to the operating bay and to the transformer shall be avoided with double doors. Compartments of HT /LT Doors shall be provided with pad locking arrangement. Internal lighting with door operated switch shall be provided for each compartment separately and safety notices shall be provided.

The main components of a prefabricated-unitized substation are Transformer, High-voltage switchgear-control gear, Low-voltage switchgear-control gear, corresponding interconnections (cable, busbars) & auxiliary equipment. The components shall be enclosed, by either common enclosure. All the components shall comply with their relevant IS/IEC standards. It is mandatory to use Manufacturer's own make switchgear inside the CSS.

Ratings of CSS:

Description	Unit	Value
Rated Voltage / Operating Voltage	kV rms	11

Rated frequency & Number of phases	Hz & nos.	50 & 3
Rated maximum power of substation	kVA	1000 KVA(Cast Resin Type)
Rated Ingress protection class of Enclosure	IP:	IP:54 for LT Switchgear & HT Switchgear compartments and IP-34 for Transformer compartment. Enclosure shall be IP 44.
HV Insulation Level		
Rated withstand voltage at power frequency of 50 Hz	kV rms	28
Rated Impulse withstand Voltage	kV peak	75
Rated current	Amp	630A
Rated short time withstand current	kA rms /	21 sec
Making capacity for switch-disconnector & earthing switches	kA peak	52kA
LV Network		
LV Incomer: 1No. 4 pole 1600A electrically / manually operated fixed type ACB with thermal magnetic release.		

Enclosure GTP:

	<u>Ambient Temperature</u>	40° C
	Type of Ventilation for a) Normal Condition b) Hot Condition	- Natural - Natural
	Compartmentalized	Yes
	Rated temperature enclosure class	K10
	Applicable Standard	IEC62271-202
	Enclosure material	Galvanized sheet Steel
	Thickness of sheet (GI only)	2mm for enclosure. 4mm for PSS Base.

Painting and Fabrication process :

- a) The paints shall be carefully selected to withstand tropical heat rain. The paint shall not scale off or crinkle or be removed by abrasion due to normal handling. For this purpose, powder coating shall be used.
- b) Special care shall be taken by the manufacturer to ensure against rusting of nuts, bolts and fittings during operation. All bushings and current carrying parts shall be cleaned properly after final painting.
- c) The fabrication process shall ensure that there are no sharp edges on the GI sheets used.

All enclosures metal frames of package substation, HV switchgear, transformer, LT switchgear and capacitor panel are to be connected to the earth system. Continuity of the earth system shall be ensured taking into account the thermal and mechanical stress caused by the current it may have to carry. Highest degree of protection to equipment and persons shall be provided. Labels for warning and operating instructions etc. shall be provided.

All equipments and material shall be designed, manufactured and tested in accordance with latest IEC Standards. The high / low voltage prefabricated package substation shall comply with and tested as per IEC 61330/62271-202

The switchgear components shall be capable of withstanding mechanical and thermal stress of short circuit without any damages or deterioration of materials.

For continuous operation of specified ratings temperature rise of various switchgear components shall be limited to permissible values stipulated in the relevant standards/codes and this specification.

Earthing arrangement shall be provided for earthing of each cable, glands, star point of Transformer, chassis & framework of the Compact SS with separate earthing terminals at two ends. Earthing Strip shall be of hot dip GI of size 50mmx6mm for Body& Neutral protected against corrosion and readily accessible. The strip shall be connected to earthing terminals with Stainless Steel nut – bolts. Separate Earthing for Body and Neutral shall be provided (Two each)

The Package Substation Unit will comprise of the following:

The 11 KV , 630 Amps Vaccum circuit breaker for primary control of Cast Resin Dry type copper winding Transformer with over current short circuit and earth leakage protection. The Vaccum circuit breaker compartment contain numerical relay, Trivector meter, MFM and all other accessories.

Double wound outdoor type copper wound dry type Resin Cast transformer

The transformer and HT switchgear and LT switch gear shall be connected with copper bus bar with suitable size to withstand short circuit current.

The LT side of the Transformer to provide 1600 Amps ACB with MFM and all other accessories.

Weather proof sheet steel enclosure with skid base, provision for lifting arrangement.

Measuring instruments with CTs & PTs for HT and LT side.

To avoid entry of rodent in the transformer compartment stainless steel mesh shall be provided from inner side of louvers.

Adequate ventilation shall be provided.

Potential transformer and Current transformers shall be of dry type.

HT – PT $11000/\sqrt{3}$, $110/\sqrt{3}$, CT incomer 300/1/1.

LT – CT shall be providing suitable range i.e. 1600/5A

Internal Arc tested of 21KA / 0.2 sec as per latest IEC 62271-202

2 Nos. 230V AC space heater with suitable rating, ON/OFF switch and thermostat control.

Current density 1.5 A / Sq.mm

4.3. Off Load Tap Changer Transformer

1000KVA, double wound dry type Resin Cast transformer complete with all fittings and accessories. The input /output to the Transformer for specified KV. The output of the Transformer for specified KV. The output of the Transformer to the LT panel shall be by means of bus bar arrangement. A common under base on which the above HT cubicle, Transformer and LT panel are assembled and inter connection made as mentioned above. The under base shall be provided with steel base and fitted with lifting and haulage lugs.

The equipment covered by this specification shall, unless otherwise stated to be designed, constructed and tested in accordance with latest revisions of relevant Indian standards / IEC publications.

IS 1271	-	Classification of Insulating Materials.
IS 2026	-	Power transformers (part I - V)
IS 2099	-	Bushing for alternating voltages above 1000 V
IS 2705	-	Current transformers
IS 3202	-	Code of practice for climate proofing
IS 3639	-	Power transformer fittings and accessories
IS 4257	-	Porcelain bushings for transformers
IS 11171	-	Dry type Transformer
IS 8478	-	Application guide for tap-changers
IS 10028	-	Code of practice for selection, installation and maintenance of transformers.

The transformer shall be dry type Resin Cast only and of latest design with off load Tap changer.

The transformer shall be suitable for operation at full rated power on all tapings without exceeding the applicable temperature rise.

It shall be possible to operate the transformer satisfactorily, with the loading guide specified in IS-6600. There shall be no limitations imposed by bushings, tap changers, auxiliary equipment to meet this requirement.

The transformer shall be designed to be capable of with-standing, without injury, the thermal and mechanical effects of short-circuits between phases or between phase and earth at the terminals of any winding with full voltage applied across the other winding for periods given in relevant standards. There shall be no limitations imposed by any part/component of the transformer off load tap links to meet the short circuit level Specified.

The transformer shall be designed for minimum no-load and load losses within the economic limit and shall be able to have minimum loss at the rated load condition.

All electrical connections and contacts shall be of ample cross sections for carrying the rated current without excessive heating.

The transformer shall be capable of continuous operation at full load rating.

The core-clamping frame shall be provided with lifting eyes having ample strength to lift the complete core and winding assembly.

Off circuit tapings shall be provided on the HV windings. Tap changing is done by means of off-circuit links accessible through openings provided.

The lifting lugs and rollers shall be provided. A winding temperature scanner shall be provided and shall be actuated by means of resistance temperature detectors embedded in LV windings of all three phases. It shall have alarm and trip contacts at a specified temperature.

Windings shall be of electrolytic copper conductors (circular in shape) of high conductivity and 99.9% purity.

Windings shall be designed to withstand the specified thermal and dynamic short circuit stresses.

The windings shall be duly sectionalized. Accessible joints brazed or welded and finished smooth shall connect similar sections. No corona discharge shall result on the winding upon testing the transformer for induced voltage test as specified in IS.

The end turns of the high voltage windings shall have reinforced insulation to take care of the voltage surges likely to occur during switching or any other abnormal condition.

The high voltage and low voltage winding are shall be made of copper Conductors.

Output in KVA	:	1000 KVA double copper wound.
Rated No load voltage ratio	:	11KV/433 Volts
No. of phase	:	03
Rated frequency	:	50 Hz
Connections	:	Primary – Delta Secondary – Star with Neutral

Vector Group	:	DYn11
Tapings on HV Side	:	±5% in steps of 2.5%
Type of Tap changer	:	Off circuit tap links on HV side.
Cooling	:	Naturally cooled (AN)
Termination	:	HT Side - Suitable for bus bar. LT Side - Suitable for Bus bar
Fittings	:	2 Nos. earthing terminals, rating & diagram plate, bidirectional rollers, lifting lugs, winding temperature scanner.
Temp. Rise winding over ambient temp	:	90°C
Insulation Class	:	F
Percentage Impedance	:	5%
Paint	:	Enamel (Siemens Grey)
Transformer losses	:	The transformer shall be so designed it should have minimum losses and it shall be submitted by the Bidder along with the Bid with calculation.

4.4. LT SIDE

LT switchgear panel shall be 1 No. 1600A, 4P, 50 KA ACB with microprocessor based over current, short circuit and earth fault release, MFM, indicating lamps and ON/OFF push buttons. shall complete in all respects with all equipment fittings and accessories including internal wiring for efficient and trouble free operation as required. Air Circuit Breakers (ACB) shall be with fault level of 50 KA for 1 Sec., copper bus bar, spring charging operating mechanism, microprocessor based overload, short circuit and earth fault protection releases with wide setting range, LED displays, alarm display for microprocessor fault, interlocking, etc. complete as required. The LT Panel shall be the integral part of the Package substation Unit and suitable for outdoor use. This shall be suitable to receive power at 433 V, 50 c/s, 3 phase AC and restricted earth neutral system and comprising of the followings:

NOTE:

Type Test Certificate of Similar type (ACB) & Rating shall be submitted by the successful tenderer.

OUT GOING:

Outgoing cable LT cable shall be connected to indoor type 1500 KVA SFC panel.

4.5. 500 KVAR APFC Capacitor Panel:

The capacitor panel shall be an integral part of package substation.

The Capacitors control panel shall be of automatic switching type with facilities for manual control. The panel shall be a cubical type metal clad board equipped with Microprocessor based intelligence version APFC relay with 3 phase CT sensing, Switch Fuse Units with HRC fuses (feeder Control), Heavy duty contactors and metering equipment and controlling banks of capacitor mounted in ventilated compartments with IP:54 protections with bottom lowers. The

switch units, contactors, etc. shall be selected to suit Capacitor ratings. The panel shall be capable of switching ON / switching OFF capacitor bank in stages with on delay timer. The APFC relay provided in the panel shall be three phase sensing power factor on 433V bus and there upon switch ON/switch OFF.

The panel shall be inbuilt in Compact SS with separate compartments for incoming outgoing control switches or the capacitor banks. A continuous earth bar shall be provided to which the individual capacitor banks shall be connected. All main bus bar connection shall be of Copper. Panel shall be painted with Epoxy primer and Epoxy paint after an accepted metal treatment process.

The switching of capacitor bank by a re-strike free breaker shall not cause first peak of transient over voltage not to exceed $2\sqrt{2}$ times the applied voltage (rms) for maximum duration of 1/2 cycle and shall be suitable for performing 5000 switching operation/year under these conditions.

LT capacitor banks shall be provided on the LT buses in proposed sub-station to improve the power factor from 0.95 to 0.98 and above lagging.

LT Capacitor banks of suitable rating shall be provided directly at incoming side of incomer breakers of LT panel to compensate the reactive load of transformers and to maintain power factor above 0.98 even when no motor is in operation. Contractor shall furnish the calculation for suitability of capacitor bank range.

The rated voltage of 3 phase capacitor bank shall be 433 V (Phase to Phase) and 230 V (Phase to Ground). The capacitor offered shall be non self-heating type, super heavy duty long life MPP type conforming to IS 2834 and IS 13585.

Capacitors banks are to be built up from individual single phase units suitably interconnected and housed in a metal enclosure to form a single 3 phase bank Capacitor. Capacitors having low Loss/KVAR shall be preferred.

Capacitors shall be suitable for operation at power frequency voltage level and for power frequency plus harmonics such that current does not exceed the values specified in clause 6.2 Annex C & E of IS 13585.

Capacitor modules shall be provided with in-built MCCB to isolate individual faulty units from the total bank. Capacitors are also to be provided 0.2% series Reactor to limit the fault current or inrush current during switching operations along with ON delay timer on individual feeder.

Capacitors shall be provided with directly connected discharge device suitable to reduce the residual voltage from crest value of the rated voltage to 50 volts or less within 1 min after the same is disconnected from the supply.

For enabling the metal container to carry fault current in the event of breakdown of container, this container shall be provided with a connection capable of carrying the fault current.

Relay shall be suitable for operation at low load and current sensitivity shall be equivalent to 1%.

The capacitor should be of rating as indicated in the Bill of Quantities, to provide for a gradual increase in KVAR ratings in steps.

Type tests certificate for similar type & rating of capacitors in accordance with IS 13585 shall be submitted by the successful Bidder.

The routine and acceptance test shall also be performed as per the relevant standards

4.6. Tests

(i) Type test certificate for similar type & Rating of Compact Package Substation manufactured as per IEC 61330/62271-202 be submitted by the successful tenderer.

(ii) The Routine and Field test shall be arranged by the Contractor and carried out on Compact Package Substation as per latest relevant IEC / IS Standards in presence of Third Party Inspection Agency. The Certified copies of test certificates shall be submitted before despatch.

(iii) The package sub-station shall be designed to meet the similar rating of type test.

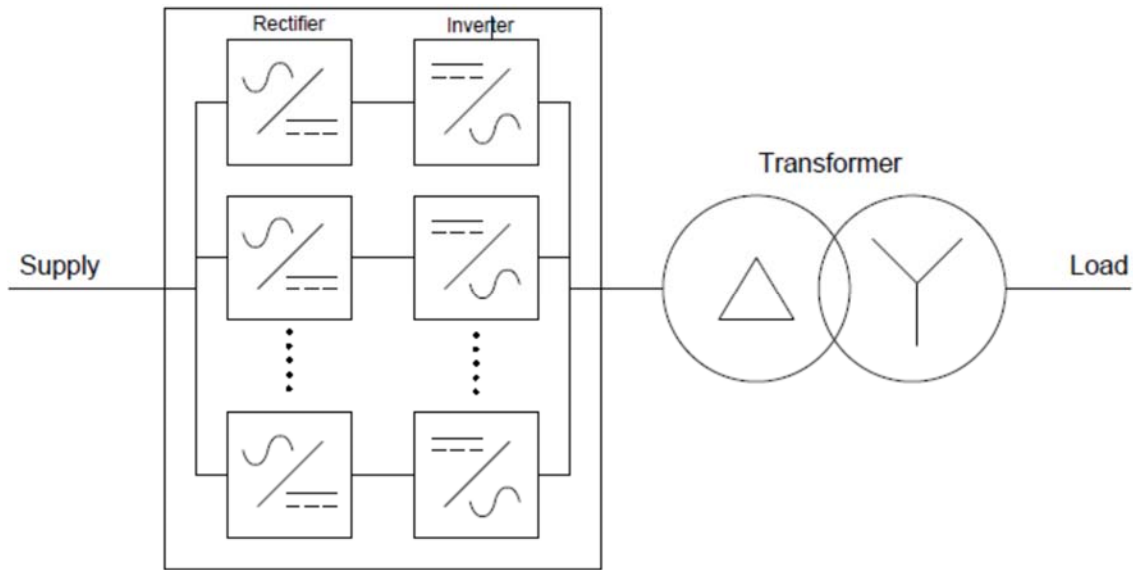
(iv) All the tests shall be carried out as per relevant IS specifications and IER 1956 before charging the Transformer

(v) After installation of CSS / HT VCB panels / LT panels testing and commissioning shall be done as directed by TPI / Engineer in charge.

5.0. 1000 KVA STATIC FREQUENCY CONVERTOR:

The Static Frequency Converter, SFC, allows connection of 60Hz powered equipment to a 50Hz supply network and vice versa. To convert the supply voltage to a different voltage to match the requirement of the load. The system functions by converting the input AC power through a sine wave rectifier to a DC link and then through an AC sine wave inverter to produce a clean, full sine wave output at the new frequency and voltage.

SFC Connection Details:



2. Power

Electronics

The SFC system should be constructed using power electronic modules. These state of the art modules operate as rectifiers to source sinusoidal current from the supply, and inverters to reproduce the AC waveforms on the output.

3. User Interface

The primary user interface should be via a door mounted touch screen Graphical Display Module (GDM). The display is intuitive and is navigated by touching on the desired menu buttons.

4. Four Quadrant Operations:

SFC should be capable to operate in four Quadrant, i.e., power flow should be Bi directional.

5. Event Log:

SFC should have an event log facility. Maximum of 5000 events should be able to download through front panel.

6. MODBUS TCP

MODBUS TCP connection should be provided with SFC converters fitted with the GDM user interface. Connection is via an Ethernet cable to the Ethernet port on the bottom of the GDM.

7. Remote Synchronizing Feature

The SFC should connect to a live AC bus using its in-built synchronizer. This allows uninterrupted power to an AC bus while transferring from alternate AC sources such as standby generators to the SFC.

8. Rectifiers & Inverters

Considering the redundancy SFC should be constructed using pairs of rectifier and inverter power modules (module pairs). The rectifier modules convert the incoming three phase AC voltage into a regulated DC voltage. The DC voltage is then supplied to the inverter modules to be re-created into AC voltage at a different frequency.

These modules should be having independently. That is, if one module fails, it will automatically be withdrawn from service while the remaining modules continue to run. This provides redundancy (at reduced capacity) and very high availability.

9. Power Module Redundancy Feature

One unique feature critical to the reliability of the converted output supply is the built-in redundancy capability which is an intrinsic feature of the modular system design. In an unlikely event where either a single rectifier or inverter module encounters a fault and stop functioning, the master controller that oversees the rectifier/inverter module pairs will reduce the output capacity to the available remaining working rectifier/inverter module pairs.

This reduction of capacity is transparent as typically the converter is not running at full load. The load will not be shed, but it will be transferred seamlessly to the remaining module pairs in the converter. A rectifier module failure will result in the controller automatically transferring the load to the remaining pairs of rectifier/inverters. Advanced Redundancy feature required to improve power electronics reliability and availability improvements.

- ✓ Reduces power output in a failure only by a small fraction of the total system power
- ✓ Allows flexible planning of converter repair/faulty module replacement.

10. Parallel load sharing

SFC should be flexible with regard to paralleling with other voltage sources, either other generators or multiple SFC units. Parallel load sharing should be achieved using frequency and voltage droop profiles programmed into the converter. This allows the converters to share power with other systems without the need for any additional communication signals. In addition, SFC converters of different power ratings can be paralleled, with each one delivering the same percentage of its rated power as required by the load.

11. Power Flow Control

SFC should have advanced power flow control ability to control the power flow from one AC grid to another AC grid.

12. Automatic Output Synchronization

Where two or more SFC units are paralleled together, or the SFC is connected to an AC bus with other generators, starting the SFC into the live bus should be simplified through automatic output synchronization feature. Using this feature whenever an SFC is commanded to run it will first check its output to see if there is a live bus connected (for example when changing from generator supply onboard a vessel to SFC supply). If the output of the SFC is live, then the SFC controller will first phase lock to this exact voltage and frequency before enabling the inverter modules. This enables a full seamless transfer from generator supply to SFC supply on the output bus. If the

output bus is dead when the SFC is given a start command it should ramp up the voltage over 1 second, providing a soft energizing of the output.

13. Remote Synchronization

In addition to the automatic output synchronization feature the SFC should also have a dedicated voltage sensing input to allow the converter to synchronize its output to any other three phase voltage reference. This feature is particularly useful where two separate busses must be synchronized before connecting them together i.e. closing a bus tie breaker on a vessel switchboard.

14. Output Short Circuit Protection

Should a short circuit occur on the SFC output the converter automatically provides current limiting to 200% of nominal current for 2 seconds. This allows discrimination with downstream protection. If the fault is still present after 2 second the SFC should trip offline to avoid damage.

When supplying power to berthed vessels, it is necessary for the SFC to have an output transformer. The transformer will not only provide voltage matching and isolation of the common mode voltages generated by the converter but also very importantly galvanic isolation for the ship from the shore earth. The isolation is required to eliminate earth currents that cause galvanic corrosion between the ship's hull and other metal objects.

Data Sheet for 1000 KVA Static Frequency Converter			
Clause	Parameter	Requirement	Compliance YES or NO
a)	GENERAL		
1	Rating	1000 KVA	
2	Enclosure IP rating	IP 42	
3	Pollution degree rating	2	
4	Operation	Four Quadrant	
5	Power Flow	Bi Directional	
6	Power Flow Control	Required	
7	Design	Modular Design with Rectifier & Inverter Modules	
8	Operating Temperature	0 °C to 50 °C Max	
9	Cooling	Forced Air	
10	Temperature De-rating	Above 40 °C, derate by 2%	

		load per °C to a maximum of 50 °C	
11	Humidity	< 95% non-condensing	
12	Noise	75-85 dBA typical	
13	Electromagnetic Compat	CISPR 11 class A	
14	Enclosure Materials	Electro-galvanized Steel	
15	Colour	RAL 7035	
16	Panel Thickness – Sides	1.5mm	
	Rear Panels	2mm	
17	Enclosure Access	Hinged doors with key lock	
b)	INPUT		
1	Type	IGBT Based	
2	Voltage	208-480 V ± 10%	
3	Power System	3-Phase TN	
4	Frequency	50 Hz or 60 Hz	
5	Frequency Range	± 5 Hz	
6	Max. Continuous Voltage	110%	
7	Overload Capacity	150% for 30 seconds	
8	Overvoltage Category	III	
9	Efficiency	95% Typ	
10	Current Harmonics	<3% THDi (at rated load)	
11	Power Factor	Unity (adjustable)	
c)	OUTPUT		
1	Capacity Rating	1500 KVA	
2	Voltage	440 V with 480/440 V Transformer	
3	Frequency	60 Hz	
4	Voltage Harmonics	< 2.5% THDv (linear load)	

5	Overload Capability	120% for 10 min	
		150% for 30 s	
6	Short Circuit limit	200% for 2 s	
7	Voltage Accuracy	+/- 1%	
8	Frequency Accuracy	+/- 0.1%	
d)	STANDARDS		
1	ISO 90001 Quality Assurance system		
2	IEC62103 / EN 50178		
3	CE Mark		

6.0. ISOLATION TRANSFORMER

DRY TYPE DISTRIBUTION TRANSFORMERS

6.1 Distribution Transformer

SCOPE:

This standard specification covers the general requirements for the design, engineering, manufacture, testing, packing and supply of 1000 KVA, 3 Phase, 50Hz, outdoor type copper wound, step down Dry Type transformer (having general requirements listed in following paragraphs) complete with fittings as detailed elsewhere. The Transformer Data sheet accompanies this specification. Ratings, quantity & configuration may vary at detail design stage for the improvement in performance of the system.

STANDARDS:

The design and manufacture of totally enclosed Dry type Transformer shall comply with the applicable clauses of the latest editions of relevant standards. In case of any conflict, the requirements of this standard specification shall prevail.

6.2 Constructional Details:

- (i) The Transformer shall be step down Dry type with OCTL suitable for outdoor Installation at Zero meter from Sea Level. This shall be provided with Bolted enclosure and construction to suit IP 44.
- (ii) The transformer shall be housed in 1.0 mm thick CRCA sheet steel enclosure mounted on 4 nos.bi-directional rollers fitted on cross channels to facilitate the movement of the transformer in both direction. Enclosure shall be provided with

metal screen at top and bottom for ventilation. Degree of protection of enclosure shall be IP-44. Transformer Inspection Cover/doors shall be open able type and shall be provided with limit switches and wired accordingly to trip the HT Breaker if the same is opened when the transformer is ON.

- (iii) All the fasteners and bolts shall be of with SS 304/316.
- (iv) The Transformer shall be double wound core type with cold rolled grain oriented silicon steel laminations perfectly insulated on both sides for low losses and clamped to minimize vibrations and noise. Core fastening bolts shall be insulated to reduce losses and avoid hot spots. All parts of the magnetic circuit shall be effectively connected to earth system.
- (v) The winding shall be designed for full load current to withstand the thermal and electromagnetic stresses arising due to maximum fault level. The current carrying winding joints shall be electrically brazed.
- (vi) High Voltage and Low Voltage windings shall be made of copper and insulation shall be of class H, High voltage and low voltage windings, shall be completely impregnated and cast under vacuum into moulds. This process shall form the insulation system of uniform glass fiber epoxy laminate of highest electrical and mechanical quality, into which windings shall be void less embedded. Both the high voltage and low voltage windings of each phase shall be separately cast as one rigid tubular coil.
- (vii) The contractor is to ensure that the transformer offered by him fits in the allocated space in the sub-station area of the building.
- (viii) Thermistor sensors shall be provided to measure the temperature of the low voltage winding inside the cast coils. The temperature protection equipment shall be suitable at 48/24 V. D.C. supply. The temperature rise of winding shall not exceed by 115 deg C by resistance on continuous full load above maximum ambient temperature of 50 deg C.

Service conditions

- Altitude: Chennai sea level. (Must prevail the Buyer's site conditions.)
- Maximum ambient temperature:
Never over 50° C and never below - 5° C. (Must prevail the Buyer's site conditions.)

In addition, an ambient air temperature near

6.3 Terminals and Marshalling Box:

- (i) H.T. cable box shall be suitably dimensioned to accept terminations of XLPE cable from top entry as specified in the tender.

- (ii) Terminal chamber for bus duct termination shall have a gasket cover plate bolted to it. A separate cover plate shall be provided to facilitate the connection and inspection. Phase sequence of Bus bars in connection chamber shall be as specified in data sheet.
- (iii) Marshalling box shall be weather-tight. All protective devices and neutral CTs shall be wired by means of PVC insulated armoured cables upto marshalling box.

6.4. Testing :

Routine shall be performed on the transformers as per IS in the presence of purchaser's representative and certified test reports submitted. Minimum two weeks' notice shall be given to the purchaser to witness the tests at the vendor's works.

Routine Tests:

The routine tests as per IS / IEC shall be conducted at vendor premises.

6.5. Accessories

The transformer shall be a single tank type with termination on bushings or cable end box as specified both on HV and MV side. The MV side shall be suitable to receive bus bar trunking or MV cable inter-connection suitable for full load current of the transformer.

6.6. Fittings

The transformer shall be complete with the following fittings: -

- (a) Off Circuit Tap Links
- (b) RTD temperature controller with 3 PT-100 sensors.
- (c) Lifting lugs for all transformers.
- (d) Bi-directional /Unidirectional Rollers to be specified.
- (e) Rating diagram and terminal marking plate for all transformers.
- (f) Earth terminals (1 No) for body earthing for all transformers.
- (g) necessary hardware, clamps, lugs etc. for termination on HV/MV for all transformers

6.7. Painting :

All metal parts shall be thoroughly cleaned to remove rust, scale, grease etc. and painted with two coats of approved colour shade over one coat of rust resisting primer. The paint shall not scale-off, crinkle or removed due to normal handling.

All metal surfaces not accessible for painting shall be made of corrosion resistance material.

6.8. Rating Plate Details :

Each transformer shall be provided with a rating plate giving the details as per IS:2026 (Part I). The marking shall be indelible and the rating plate shall be located on the front side. Exact value of transformer %ge Impedance, as determined by tests shall be marked on it and also on the final submission of nameplate.

SPECIFICATIONS OF STEP DOWN DRY TYPE TRANSFORMER

Sl. No.	Description	Unit	Data
1.	Name of Manufacturer		ABB / SIEMENS
2.	Reference Standards		IS 2026/ IEC 60076-11
3.	Rated Power	KVA	1000
4.	No Load Volts Ratio	kV	0.480 / 0.433
5.	No. of Phases	Nos.	3
6.	Frequency	Hz.	50
7.	Vector Group		Dyn 11 With Neutral brought out
8.	Type of Cooling		AN
9.	Impulse withstand voltage / Power Frequency withstand voltage	KVp/KVrms	
10.	Impedance Voltage		% 5% +/- IS Tolerance
11.	Off Circuit Tap Links		% -5% to +5% in step of 2.5%
12.	No Load Losses at rated Frequency and 100 % rated voltage	KW	
13.	Load Losses at Normal Ratio, Rated Current and at 75°C	KW	
14.	Insulation Class		H
15.	Max. Temp. rise of winding by resistance method over an Ambient Temp. of 50°C	°C	115
16.	Termination Arrangement		
	a) HV side (Cable box)		
	b) LV side		
17.	Enclosure Protection Class		IP – 4X or Higher

7.0. INDOOR TYPE L.T.PANEL:

The L.T. panel shall be of metal enclosed, indoor floor mounted free standing weather proof compartmentalized. The L.T. panel switch board frame load bearing members shall be fabricated using suitable mild steel structural section or pressed and shaped CRCA sheet of thickness not less than 2 mm. Frame shall be enclosed in CRCA of thickness not less than 2 mm. Suitable size of brick pedestal shall be provided.

5 way L.T. panel shall comprising of the following:

Incomer	
1600A, 4P, ACB, 50 KA	: 1 No.
Outgoing	
630A, 4P, MCCB, 50 KA	: 4 Nos.

The ACB variable setting ranges from 50 –100 % and the MCCB shall be microprocessor based over load release and short circuit protection. All the MCCB shall be as per IS 13947 it shall be of 415V, 4P, 630A - 50 KA the variable setting ranges from 80 –100 % All the breakers shall have current limiting and isolation features.

The incoming feeder with 1600A ACB shall be provided with the following instruments.

- i) 1 no. 0-1000A digital flush type Ammeter with C.T. and selector switch.
- ii) 1 no. 0-600 volts, flush type digital AC Voltmeter with control fuses and selector switch.

All the outgoing feeders shall be provided with the following instruments:

1 no. suitable range flush type digital AC Ammeter with CT and selector switch for all outgoing switches.

The bus bars shall be rated to the requisite Amps and shall be drawn with high conductivity electrolytic tinned copper bus bars of sufficient and uniform cross section so that a current density of 150Amps per sq. cm. is not exceeded at normal current rating. The neutral bus bar shall be rated at 50% of the phase bus bar. The bus bar shall be of pvc sleeved with bar risers clearly marked with an appropriate colour code to enable immediate identification of the phases and neutral. The bar risers and joints shall be supported properly and cadmium coated bolts and nuts shall alone be used. The bus bars shall be supported by suitable non-hygroscopic insulators and separated by insulating barriers and shall effectively withstand electromechanical stresses in the event of short circuit fault. The bus bar chamber shall have detachable front and rear dust tight covers. The switchboard and the bus bars shall be extensible on both sides to allow for additional units to be added at a later date. No looping shall be done. The copper flats for jumper and connections shall be provided suitably.

8.0. SUPPLY AND INSTALLATION OF ISOLATOR SWITCH AT WHARF: 2 Nos.

The 400A Isolator switch with extended handled shall be of metal enclosed, outdoor floor mounted free standing weather proof compartmentalized. The Isolator switch board frame load bearing members shall be fabricated using suitable mild steel structural section or pressed and

shaped CRCA sheet of thickness not less than 2 mm. Frame shall be enclosed in CRCA of thickness not less than 2 mm. It shall be fixed in the Isolator pit in the wharf.

9.0 H.T. & L.T. CABLES SUPPLY AND LAYING:-

9.1 SUPPLY OF 11 KV 3 core x185 sq. mm XLPE H.T. CABLES

This includes supply at site HT, 11 KV, XLPE(E) armored Cables with aluminium Conductor of size 3 core x 185 sq. mm. with ISI mark conforming to IS: 7098 (part II)- 1985 with latest amendments of approved makes. Cable shall be supplied max. permissible length to avoid cable joint. The price quoted by the contractor shall be inclusive of all taxes, levies, excise duty, transportation, insurance charge, octroi, etc. and shall be firm. No escalation in the rate of cable shall be accepted at a later stage. The rate quoted shall be per meter length of the cable. Running meter shall be embossed on the cable. The quantity of the cable measurements shown are tentative and varies according to site condition. The contractor is required to assess the actual requirement before procuring the cable.

Note:-

Test certificates from the manufacturers for the cable shall be submitted along with the supply of cable by the contractor.

9.2 LAYING OF 11 KV 3 core x185 sq. mm XLPE H.T. CABLES:

Laying of H.T. 11KV, XLPE (E) 3C x 185 sq. mm aluminium conductor armoured cables are to be laid as per IS: 1255 and as detailed under:

(i) The cable shall be laid in the existing cable trench / Pre cast cable trench by opening the slab covers and re closing the same without damaging the slab after laying of the cable.

(ii) The cable shall be laid through cement Concrete road / cement concrete / Rail way line crossing the size of the excavation/ cutting is not less than 60 cm width x 90 cm depth to lay each run of the cable. For cement Concrete road / cement concrete / Rail way line crossing Hume pipe shall be provided and shall be supplied by the Contractor. The size of RCC Hume pipe shall not be less than 16 cm in diameter for each cable. The RCC Hume pipe shall be laid at an angle to avoid sharp cable bends at the point of entry and exit. A spare RCC Hume pipe of the same size shall simultaneously be laid for future augmentation / requirement.

9.3. H.T Cable Straight through joint:

H.T. straight jointing of cable shall be done with heat shrink jointing kits of approved make. All jointing accessories and other material shall conform to IS Specifications wherever available. On both sides of joint a loop of sufficient length of 3 to 5 Mtrs. shall be kept for future requirement.

This also includes housing of straight through joint in a R.C.C. chamber of adequate size and strength duly fitted with the pipe of suitable size at an entry and exit point of chamber to facilitate easy movement of cable. The chamber shall be covered with RCC slab of suitable thickness and strength.

The cable shall be provided with suitable identification indicator mark. The work includes all labour and required material and shall be done as required by E.I.C.

9.4 End termination of H.T. cables:

This includes providing and fixing end termination to HT 11 KV 3 C x 185 sq. mm. XLPE(E) aluminium conductor armored cable with heat shrink type indoor end termination kit with all accessories and other material shall be supplied by the contractor and confirming to relevant IS specification the additional length of cable shall be provided for loop of sufficient length (3 to 5 mtrs.) for future requirement before commencing and termination work. The work includes all labour and required material and shall be done as directed by E.I.C.

The work includes end termination of cables of HV cable with epoxy cable jointing kits & materials, lugs of all other accessories of approved make and labour etc. The work shall be done as directed by E.I.C. The complete work shall be carried out as per standards of CEA. The heat shrink joints and end termination of the cables shall be installed by highly skilled personnel.

9.5 SUPPLY AND LAYING OF 3 ½ Core 185 sq.mm L.T. CABLES:

The cable measurements are tentative and may vary according to site condition. Supply of 3 ½ core 185 Sq.mm, Aluminium XLPE L.T. underground cable of 1.1KV voltage grade having stranded compacted aluminium conductor with, XLPE insulation, R, Y & B colour for phases and Black colour for Neutral core, extruded PVC inner sheathed, single layer of galvanized steel wire / strip armoured, over all PVC sheathed conforming to IS 7098 Part I 1985 with latest amendments with ISI mark.

Laying of cables inside the substation / building/ trench shall be done after removing the trench covers carefully. After laying the cable inside the trench, the trench shall be closed properly with the same cover which was removed already. If any damage is the responsibility of the contractor. The damaged slab should be replaced as original. Any hole or breaking the wall etc. if required for laying cable it shall be done by the contractor. After completing the cable laying work the hole or breaking in the wall shall be closed as per original with civil materials by the contractor.

Laying of cables outside the substation / building through RCC cable trench / Precast cable trench and Cutting of cement concrete / Cutting of concrete road / railway crossing not less than size 60 cms. width x 60 cms. depth to Earth. The cement concrete / Cutting of concrete road and railway crossing the cable shall be laid through RCC Hume pipe. The size of RCC Hume pipe shall not be less than 16 cm in diameter for each cable. The RCC Hume pipe shall be supplied by the contractor. If the cables laid across the road / railway crossing the cables shall be laid through separate RCC Hume pipe for each run of the cable.

Note:

Test certificates from the manufacturers for the cable shall be submitted along with the supply of cable by the contractor.

9.6 L.T Cable Straight through joint:

The 3 ½ core 185 Sq.mm, Aluminium XLPE L.T. cable L.T. straight through joint of cable shall be done with heat shrink joint kits of approved make. All jointing accessories and other material shall confirm to IS Specifications wherever available. On both sides of joint a loop of sufficient length of 3 to 5 Mtrs shall be kept for future requirement.

The work includes all labour and material required and shall be done as required by E.I.C.

9.7 END TERMINATION OF L.T. CABLES:

The end termination for 1100 Volt grade L.T. cables shall be of cable glands, crimping type lugs and other materials and accessories of approved make including labour etc. and shall be supplied by the contractor. The crimping type lugs shall be installed by highly skilled personnel. The complete work shall be carried out as per standards.

9.8 SUPPLY OF 4 CORE X185 SQ. MM. L.T. COPPER TRAILING CABLE:-

The cable measurements are tentative and may vary according to site condition. Supply of 4 core X 185 Sq.mm, copper trailing L.T. underground cable of 1.1KV voltage grade having multi stranded compacted copper conductor with elastomeric (Rubber) insulation, R, Y & B colour for phases and Black colour for Neutral core, heat resisting compound up to 180 degree Centigrade it shall be braided and varnished. Conforming to IS 9968 (Part I) 1988 with latest amendments with ISI mark.

Note: i) Test certificates from the manufacturers for trailing cables shall be submitted along with the supply of cables and TPI acceptance report before dispatch of the cables.

The end termination for 1100V grade trailing cable shall be of crimping type lugs shall be supplied by the contractor. The crimping type lugs shall be installed by highly skilled personnel. This cable laid from Isolator switch at wharf to ships.

10.0 SUPPLY , INSTALLATION OF EARTH PITS AND EARTHING AND SUPPLY AND LAYING OF G.I. FLAT:-

The earth system shall be designed and installed so as to meet the requirement of CEA. The value of resistance of earth system should not exceed value acceptable to the Central Electricity Authority.

The earth value shall be obtained accordance with relevant standards and the earth values shall be measured after installation in the presence of Trust Engineer.

All noncurrent carrying parts with conducting surface such as power transformer, frame works of circuit breakers and medium / low voltage switch gears, instrument transformer cases, cable glands, cable supports, any steel works of the substation buildings should be efficiently grounded for the protection of equipment and operating personnel by connecting to the earth ring bus with two distinct and separate earth leads.

The earth connection shall be made of copper of adequate size and section of the conductor conforming to IS 3043 to safely carry the maximum fault current for a short period without burning the conductor and pass on the fault current is in excess of this, additional earth connections under fault condition and at no time the potential shall exceed 10 volts between the equipment and earth. The earth system shall be mechanically robust and joints shall be capable of retaining low resistance even after many passages of fault current. The G.I. flats of size 50x 6mm shall be interconnected of earth pits.

Interconnections and joints for earth conductors shall be riveted and soldered for retaining low resistance.

Each earth bar should be connected to the main earth through a bolted removable link. All ground connections shall be compounded and braided.

The earth electrodes shall be driven to a depth of not less than 2.7 meters below the ground level and at least 3 meters away from the building and any other earth electrodes treating the soil surrounding the electrodes with the salt, coke and charcoal in accordance with IS 3043.

A suitable brick cemented enclosure for neutral and body earth will be as per IE Rule (i.e.) 450mm x 450mm with 125mm wall thickness. The depth of the masonry work will be not less than 600mm below the ground level and with suitable cover provided by the contractor enclosing the earth electrodes and shall be able to take up the load of lorries, etc., operating in that area. The top surface of the earth pit shall be in level with the finished surface level of the surrounding area.

Maintenance free earthing shall be carried out in accordance with Indian Electricity Rules and Regulations amended till date and also the Earth electrodes shall be provided in conformity with BIS 3043 / BS 7430 of the latest version expecting the specified values detailed herein.

The earth electrodes shall be of high tensile low carbon steel circular rods, molecularly bonded copper or clad copper on the outer surface 17 mm dia. and not less than 3.0 m length and shall be driven to a depth in the ground below the ground level and 3 meters away from any other earth electrodes or as per latest BIS 3043. The premixed power set carbon based backfill compound shall be poured in the bore with water and re-close the bore. The earth pits are to be interconnected 50x6mm G.I. flat. The ground enhancing back fill material shall be a compound having a low resistivity. All the materials, terminals and works specified herein and shall be the entire responsibility of the firm.

Cast iron pipe earthing with 600x600x6mm copper Plate earthing for CSS - 4 Nos. and 4 Nos. for Isolation Transformer

Maintenance free earthing 2 Nos for L.T. panel and 2 Nos. for SFC panel.

Supply and laying of 50 x 6 mm GI flats from CSS and LT panel to all Earthings as per IS.

11.0. DRAWING LIST:-

Necessary drawings shall be prepared and submitted to TPI agency / EIC for approval before fabrication of panel and commencement of work

All catalogues, technical drawings, details etc., for all the proposed Compact substation, H.T. & L.T. panels with operation and maintenance manuals with spares list shall be furnished to the Trust's Engineer by the contractor.

12.0. SPECIFICATION OF SAFETY EQUIPMENTS:

The following safety equipment shall be supplied and installed by the contractor in the substation as per the IER.

FIRE EXTINGUISHERS:

One number of portable chemical fire extinguishers of carbon tetra chloride conforming to IS 935 latest version shall be supplied and installed at the proposed 11KV substation.

FIRE BUCKETS:

One set of fire buckets with M.S. angle stands the set consists of 4 Nos. of round bottom fire buckets painted with red and marked fire and filled with clear dry river sand shall be supplied and installed at convenient locations at proposed 11KV CSS. The fire extinguishers and fire buckets shall be provided conspicuously marked to comply with Indian Electricity Rules 4.3 of 1956.

FIRST AID CHART AND BOX:

The first aid boxes and charts equipped fully with such contents as stipulated by the CEA conspicuously marked shall be supplied and installed in the switch gear room at 11KV proposed substations.

INSTRUCTION FOR RESTORATION OF PERSONS SUFFERING FROM ELECTRIC SHOCK:

Instruction in English and Tamil for providing artificial respiration as per CEA regulations shall be supplied and affixed in a frame board at convenient location in the proposed 11KV substations.

Safety posters for vigilance against electrical accidents as per CEA regulation shall also be provided by the contractor.

RUBBER MAT:

Suitable size of tested flexible rubber mat conforming to IS 5424 of 1994 shall be provided around the compact substation and L.T. panel by the contractor by own cost.

RUBBER GLOVES:

One pair of rubber gloves conforming to IS 4770 of 1991 and tested to 15KV shall be supplied and provided in the proposed 11KV substations.

CAUTION BOARD:

Required number of Danger board / sticker of H.T. Voltage in three languages English / Tamil / Hindi are to be provided on the panel.

13.0. LETTER PAINTING:-

All incomer cables / all outgoing cables / P.T. & C.T. VCBs details shall be painted / sticker at the front and rear sides of the compact s s / LT panel specifying the full details and furnishing the amperage, voltage, size of the cable in the red letters on white back ground. Should be written in CSS, L.T. & H.T., panels by the contractor by own cost.

14.0. TESTS:-

The 11 KV / 433Volt Compact substation, HT and LT panels shall be tested for routine tests as per relevant IS. Type test certificates shall also furnished along with routine test certificates. Manufacturer's test certificates shall be furnished for major components.

15.0. COMPLETION PERIOD:

Entire work shall be completed with in 8 months from the 7th day of issue of order.

16.0 LIST OF APPROVED MAKES FOR ELECTRICAL SPARES (54 ITEMS)

S.No.	ITEM	Name of Manufacturers
1	Volt meter and Ammeter	AE / MECO / YOKINS / NIPPEN
2	Selector switches, Push buttons Emergency Switches	KAYCEE / L & T / GE / BCH / LEGRAND
3	HRC Fuses	L & T / GE / SIEMENS / ABB / INDO KOPP
4	Indicating light	AE / KAYCEE / VAISHNAV / L & T /SIEMENS
5	MCB	L & T / LEGRAND / SIEMENS / ABB / SCHNEIDER / HAVELLS
6	Sub Distribution Board	L & T / LEGRAND / SIEMENS / SCHNEIDER / HENSEL / HAVELLS
7	EL MCB	L & T / SCHNEIDER / LEGRAND / SIEMENS / ABB / HAVELLS
8	FRLS PVC insulated copper conductor single/multi core stranded wires of 650/1100 volt grade	HAVELLS / FINOLEX / RPG /UNIFLEX /NICCO /RR Kables
9	Steel Conduit/PVC Conduit	BEC / AKG / NIC / AVONPLAST /MODI

S.No.	ITEM	Name of Manufacturers
10	Switches, TV & Telephone Socket outlets, Boxes	MK / CLIPSAL / LEGRAND / NORTH WEST /ANCHOR/ HAVELLS
11	Light Fixtures	PHILIPS / BAJAJ / WIPRO / CROMPTON/ HAVELLS
12	Lamps and Tubes	PHILIPS / WIPRO / BAJAJ / CROMPTON/ HAVELLS
13	Ceiling fans/Wall bracket fans / Exhaust Fans	HAVELLS / CROMPTON GREAVES / USHA / ORIENT/ ALMONARD
14	Cable lug & Cable Gland	DOWELLS / JHONSON / RAYCHEM
15	Terminal Blocks	WAGO & CONTROLS / PHOENIX CONTACTS / OBO BETTERMANN
16	Multi-function Meter	ABB / SIEMENS / L&T / HPL SOCOMEC/CONZERVE (ENERCON)
17	DWC HDPE Pipe	DURA LINE / CARLON / EMTELLE
18	Contactors	L&T / SCHNEIDER / SIEMENS/ABB / BCH
19	MCCB	L&T / SIEMENS / SCHENEIDER / ABB
20	VCB / SF6/ Isolator	SIEMENS / AREVA / ABB / SCHNEIDER
21	Push Buttons	SIEMENS / ABB / TELEMECANIQUE / L&T / SCHNEIDER
22	Relays	L&T / ABB / SIEMENS / SCHNEIDER/AREVA
23	Timers	L&T / SIEMENS / TELEMECANIQUE/ABB
24	Indicating Light	L&T / SIEMENS / TELEMECANIQUE / ABB / GE
25	Indicating Instruments	AE / MECO / CONZERVE / L&T
26	HT Cable	FINOLEX / RPG / UNIFLEX / TORRENT / HAVELLS / UNISTAR /NICCO
27	LT Cable (XLPE and FRLS)	UNISTAR / FINOLEX/ NICCO / HAVELLS / RPG / UNIFLEX

S.No.	ITEM	Name of Manufacturers
28	Termination Kit	BIRLA 3M / RAYCHEM /DENSON
29	CTs	L&T / AREVA / JYOTI / KAPPA / PRAGATHI
30	PTs	AREVA / KAPPA / PRAGATHI
31	HT Panels	SIEMENS / SCHNEIDER / ABB / AREVA
32	LT Panels	SIEMENS / L&T / SCHNEIDER / ABB
33	Cable Trays (FRP)	LEGRAND / ERCON / NEEDO / SUMMIP
34	ACB	SCHNEIDER / SIEMENS / ABB / L&T
35	Selector Switch	KAYCEE / L&T / SIEMENS / BCH / GE / SALZAR
36	Capacitor Banks	EPCOS / L&T / SCHNEIDER
37	Trivector Meter (Digital)	L&T / SCHNEIDER / SIEMENS / HPL SOCOMECC
38	Capacitor Panels	ABB / L&T / EPCOS / SCHNEIDER
39	Power Factor Correction Relay	EPCOS / L & T / ABB
40	Elastomeric Mat	PREMIER POLYFILM LTD / POLYELECTROSAFE / CHALLENGER
41	MS & GI Conduits Accessories	STEEL MARK / NIC
42	Transformer	ABB / SCHNEIDER / SIEMENS
43	Compact SS	ABB / SCHNEIDER / SIEMENS
44	LED Luminouar	PHILIPS/ CROMPTON/ HAVELLS/ BAJAJ
45	Insulation Tape	ANCHOR/ STEEL GRIP
46	Flush type	ANCHOR/ WONDER/ MK/ HAVELLS
47	Button Holder and Pendent Holder.	ANCHOR/ WONDER/ OSWL/ OSWIN/ HAVELLS

S.No.	ITEM	Name of Manufacturers
48	Electronic choke / HPSV Lamp choke	PHILLIPS/ CROMPTON/ BAJAJ / HAVELLS
49	Fan Capacitor	KELTRON/ POWER/ TIPCON, USHA/ CROMPTON
50	Tube light starter	PHILIPS/ CROMPTON/ BAJAJ/ SURYA
51	Single Phase energy meter LCD[AC single phase 2 wire LCD KWH meter]	L&T/ HPL/ SECURE
52	5 Pin Socket	ANCHOR/ WONDER/ HAVELLS/MK
53	Single phase / three phase Energy meter	L & T / SECURE / HPL / GENUS
54	JET Motors/ Submersible motor	SUGUNA/ CROMPTON/ TEXMO/CRI
55	Static Frequency Convertor	ABB / GE
56	Isolation Transformer	ABB / SIEMENS

16.0. STATUTORY APPROVALS

The approval from any authority required, as per statutory rules and regulations of Central/State Government shall be the Contractor's responsibility.

Note : For any clarifications, the firm may contact **Dy. CME(ES&CH)** at IInd floor, Old Administrative office, Chennai Port Trust, Telephone No 25312542

**CHIEF MECHANICAL ENGINEER
CHENNAI PORT TRUST**

SCHEDULE OF QUANTITIES & PRICES
SCHEDULE – 'A1'

Sl. No.	Description of the work	Unit	Qty	Rate in Rupees	Amount in Rupees
1.	Supply, Installation, of 11 KV, 630A, 25KA, 3 Phase 50 HZ Vacuum circuit breaker with P.T and all other accessories (outgoing Feeder) at 33 KV substation and 'B' substation as per Technical specification schedule 'A'. a) Supply b) Installation	No. No.	4 4		
2.	Supply, Installation, of 11 KV / 433V, 1000 KVA, Package Outdoor Sub-Station comprising of: <u>HV Compartment</u> comprising of 1 No. of 11 KV, 630A, 25 KA, 3 Phase 50 HZ Vacuum circuit breaker with P.T. and standard accessories as per Technical specification schedule 'A'. <u>Transformer compartment:</u> 11 KV/433V, 1000 KVA, DYn II, Dry type Resin cast Transformer with standard accessories. <u>LV compartment</u> comprising of 1 No. of 415V, 1600A, 4 pole, 50KA, ACB and 1No. APFC unit with standard accessories as per Technical specification of Schedule 'A'. Compact substation shall be positioned with necessary M.S channel fabrication work and flooring work. a) Supply b) Installation	Set Set	1 1		
3.	Supply, Installation, testing and commissioning of 1500 KVA Static Frequency Converter with IP42 (SFC) as per Technical specification a) Supply b) Installation	Set Set	1 1		
4.	Supply, Installation, testing and commissioning of 1000 KVA Isolation Transformer as per Technical specification a) Supply b) Installation	No. No.	1 1		

5.	Design, Supply and Installation of 5 way, L.T. distribution panel with ACBs and MCCBs as per Technical specification schedule 'A'. a) Supply b) Installation	Set Set	1 1		
6.	Design, Supply and Installation of 400A TPN, Isolator switch with extended handle as per Technical specification schedule 'A'. a) Supply b) Installation	No. No.	2 2		
7.	Supply of H.T. 11KV, 3 C X185 Sq.mm. XLPE U.G. Alu. cable as per Technical specification of schedule 'A'.	Mtr.	1,550		
8.	Laying of H.T. 11KV, 3 C X185 Sq.mm. XLPE U.G. Alu. cable as per Technical specification of schedule 'A' a) Through cable Trench b) Through Earth with RCC Troughs c) Through Concrete road / Tar road cutting through RCC Hume pipes.	Mtr. Mtr. Mtr.	1200 250 100		
9.	Supply and installation of Heat Shrinkable Straight through joint kit for H.T. 11KV, 3X185 sq mm XLPE UG Aluminum Cables a) Supply b) Installation	No. No.	3 3		
10.	Supply and installation of Indoor type heat shrinkable End termination kit for H.T. 11KV, 3X185 Sq mm XLPE UG Aluminum Cables. a) Supply b) Installation	No. No.	4 4		
11.	Supply of 3.5 core X 185 Sq.mm. LT Aluminum XLPE cable including end terminations accessories as per Technical specification of schedule 'A'.	Mtrs.	2,200		
12.	Laying of 3.5 X core 185 Sq.mm. LT Aluminum XLPE cable in the on wharf with equal intervals from Indoor LT panel to FP -1 and FP - 2 including end terminations.	Mtrs.	2,200		

13	Supply of elastomeric copper trailing cable from 2 Nos. wharf pit to 2 Nos. ship with end terminations as per Technical specification of schedule 'A'. a) Supply b) Laying	500 500			
14	Supply of following electrical materials and accessories as per IER (i) 11 KV grade rubber hand gloves (ii) First aid box (iii) Shock treatment chart and safety rules board with suspension clamp (iv) Fire extinguisher- 1 No. and Fire bucket 4 Nos. with pedestal stand.	Pair No. No. Set.	1 1 1 1		
15.	Providing of Cast iron pipe earthing with Copper plate in accordance with BIS 3043 / BS 7430 or latest 4 Nos. for CSS and 4 Nos. for Isolation Transformer as per Technical specification of schedule 'A' a) Supply b) Installation	No. No.	8 8		
16.	Providing of maintenance free earthing in accordance with BIS 3043 / BS 7430 or latest for LT panel and SFC panel as per Technical specification of schedule 'A' a) Supply b) Installation	No. No.	4 4		
17.	Supply and laying of 50mm x 6 mm G.I. flat for 1000 KVA, Package outdoor Sub-Station, H.T. VCB panel and L.T. panel earth as per Technical specification of schedule 'A' a) Supply b) Installation	Mtr. Mtr.	700 700		
18.	Providing electrification work at compact substation room with suitable light fitting including all other accessories.	L.S.	L.S		
19	Testing and commissioning of the entire system.	L.S.	L.S		

20.	Charges for CEA approval	L.S.	L.S.		
				Total	
				VAT @ %	
				Service Tax %	
				Total Amount in Rs.	

Firm's Sign and Seal

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General Conditions of Contract
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Section VI. General Conditions of Contract

1.0 Definitions

1.1 The following words and expressions shall have the meanings hereby assigned to them:

“Employer” means the Board of Trustees of Port of “Chennai Port Trust” or its representatives or *Chief Mechanical Engineer* or any other person or firm nominated by the Employer or as specified in SCC.

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.

“Contractor” means the natural person, private or government entity, or a combination of the above, whose Tender to perform the Contract has been accepted by the Employer and is named as such in the Contract Agreement or his representative who is duly authorized to deal with the Contract.

“Contract Documents” means the documents listed in the Contract Agreement, including any amendments thereto.

“Contract Price” means the price payable to the Contractor as specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions there from, as may be made pursuant to the Contract.

“Day” means calendar day.

“Completion” means the fulfillment of the supply of Goods and Related Services by the Contractor in accordance with the terms and conditions set forth in the Contract.

“Commercial Use” means, use of Goods, which the contractor contemplates or of which it is commercially capable after enacting at Project site.

“GCC” means the General Conditions of Contract.

“Goods” means all of the commodities, raw material, machinery and equipment, and/or other materials that the Contractor is required to supply to the Employer under the Contract.

“Employer’s Country” is INDIA.

“Tender” means the offer of the Contractor along with all other relevant documents as referred to in the Contract.

“Related Services” means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other such obligations of the Contractor under the Contract.

“SCC” means the Special Conditions of Contract.

“Subcontractor” means any natural person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Contractor, under intimation to the Employer.

“The Project Site,” where applicable, means the place named in the SCC and in pursuant to ITT clause 14.5 a (iii).

(q) **“Engineer”** means Employee of Employer or any other person or firm, nominated by the Employer or as specified in **SCC**.

2.0 Contract Documents

2.1 Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.

3.0 Fraud and Corruption

The Employer as well as Tenderers, Contractor, Sub-Contractors and Consultants observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, the Employer : **defines, for the purposes of this provision, the terms set forth below as follows:**

“Corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution; and

“fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;

“collusive practice” means a scheme or arrangement between two or more Tenderers, designed to establish Tender prices at artificial, non competitive levels; and;

“coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

will black list a firm or individual, including declaring them ineligible, either indefinitely or for a stated period of time, to be awarded, if it at any time determines that they have, directly or through an agent, engaged, in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing and

(c) will have the right to require that Contractors to permit the Employer to inspect their accounts and records and other documents relating to the Tender submission and contract performance.

4.0 Interpretation

4.1. If the context so requires it, singular means plural and vice versa.

4.2. Entire Agreement

The Contract constitutes the entire agreement between the Employer and the Contractor and supersedes all communications, negotiations and agreements (whether written or oral) of the parties with respect thereto made prior to the date of Contract.

4.3. Amendment

No amendment or other variation of the Contract shall be valid unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party thereto.

4.4. Non waiver

Subject to GCC Sub-Clause 4.5(b) below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

4.5. Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

4.6 Employer's Lien

The Employer shall have lien on and over all or any money that may become due and payable to the contractor under those present and/or also on and over Performance Guarantee lodged under this contract which may become payable to the contractor under the conditions on that behalf herein contained for or in respect of any money of any set of all or any of these moneys or Performance Guarantee against any debit or sum that may become due and payable to the Employer by the Contractor either alone or jointly with another or other and either under this or under any other contracts or transactions of any nature whatsoever between the Employer and the Contractor.

4.7 Execution

The contractor/contractors shall and will in consideration of the payment to be made to him/them as hereinafter provided construct, execute, and to the works described in the specifications and in the manner and upon the terms set forth in the specification and in the manner and in accordance with the drawings at the respective rates entered in the Price Schedule in accordance with such other drawings and instructions as may pursuant to the provisions hereinafter contained from time to time be pointed out, furnished and given to him/them by the Employer and/or the Engineer and under the subject to the terms, stipulations and provisions of Contract.

5.0 Language

- 5.1. The Contract as well as all correspondence and documents relating to the Contract exchanged by the Contractor and the Employer, shall be written in "ENGLISH". Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified, in which case, for purposes of interpretation of the Contract, this translation shall govern.
- 5.2 The Contractor shall bear all costs of translation to the governing language and all risks of the accuracy of such translation, for documents provided by the Contractor.

6.0 Joint Venture, Consortium or Association

Not Applicable.

7.0 Eligibility

- 7.1 A Contractor or Subcontractor shall be deemed to have the nationality of a country if it is a citizen or constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country.

8.0 Notices

- 8.1. Any notice given by one party to the other pursuant to the Contract shall be in writing to the address specified in the **SCC**. The term "in writing" means communicated in written form with proof of receipt.
- 8.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

9.0 Governing Law

- 9.1. The Contract shall be governed by and interpreted in accordance with the laws of India, unless otherwise specified in the **SCC**.

9.2. Dock Safety

For the work carried out within dock area in the vicinity of any wharf or quay, the contractors shall abide by all the provisions of the Dock Workers (Safety, Health & Welfare) Regulation 1990.

9.3 Labour/ Minimum wages

a) The contractor or his sub-contractors shall not employ a young child who has not completed his fifteenth year of age. He/They shall also not employ an adolescent who has not completed his eighteenth year unless he is certified fit for the work as an adult as prescribed under Clause (b) of sub-section (2) of section 69 of the Factories Act, 1948.

b) The contractor or his sub-contractors shall also see that all the provisions set forth under the Minimum Wages Act as amended from time to time are fully complied with by him/them and shall maintain necessary registers and records for payment of wages, overtime, etc. made to his/their workmen as required by the Conciliation Officer (Central), Ministry of Labour, Government of India or such authorised persons appointed by Central or State Government.

c) The contractor/contractors shall also see that the provisions regarding employment of young persons covered by the Employment of Children Act, 1938 and the Factories Act, 1948 as amended from time to time shall be fully complied with.

d) Notwithstanding anything herein contained the contractor shall comply with all the provisions of the contract labour (Regulation and Abolition) Act, 1970 and Rules and Regulations made there under as amended from time to time if applicable.

e) The rates quoted by the contractors in the Price Schedule shall be deemed to include expenses whatsoever that the contractor may be required to incur for compliance with the provisions of the above Acts.

f) In pursuance of Section 21 of the above Act and Rule 25(2)(V)(A) framed thereof, the Tenderers should note that in cases where the workmen employed by them to perform the same and similar kind of work as the workmen directly employed by the Employer, the wage rate of all category of workmen shall be in accordance with the statement of the Employer's Schedule of Rates revised from time to time. The wage rates in respect of categories of workmen which are not included in the Employer's Schedule shall not be less than those specified in the Schedule of "Fair Wages". The current statement of the Employer's Schedule of Rates is annexed hereto.

g) The contractor shall make his own arrangements for the engagement of all labour, preferably local.

h) The Contractor shall also comply fully with the provisions of the payment of Wages Act, 1936.

i) If any enhancement in the rates of Wages become payable as a result of the implementation of the Chief Labour Commissioner's interpretation of the Contract Labour (Regulations and Abolitions) Central Rules, 1971 including an increase of the Wages, the same shall be borne by the contractor/contractors. The contractor shall be responsible for the observance by his sub-contractors, of the foregoing provisions/precautions.

j) The contractor shall make necessary arrangements for the representative of the Employer and/or his representative to witness the payment made by the Contractor to his labourers. The contractor shall also submit periodical returns of labour employed by him and wages paid, to the Employer's representatives.

9.4 Fair wages :

a) The contractor shall pay the labourer engaged by him on the work not less than fair wages which expression shall mean whether for time or piece work the respective rates of wages as fixed by the Central Public Works Department as Fair Wages payable to the different categories of labourers. However, subject to the other provisions of any other law for the time being in force in the country, the minimum rates of wages for any person/persons below 18 years of age and for disabled persons be 70% respectively of the rates payable to adult workers of the appropriate category.

b) The Contractor shall notwithstanding the provision of any contract to the contrary cause to be paid in fair wages to the labourers directly engaged on the works including any labour engaged by the sub-contractors in connection with the said work, as if the labourer had been immediately employed by him.

c) Display of notices regarding wages, etc.,

The Contractor shall, before he commences his work of contract, display and correctly maintain and continue to display and correctly maintain in a clean and legible condition at conspicuous places on the work site notices in English and in the local Indian language spoken by the majority of the workers stating therein the rates of wages which have been fixed as fair wages and the hours of work for which such wages are earned and send a copy of such notices to the Employer.

d) Wages book and wage slips

The contractor shall maintain:

X) A wage book of each worker in such forms as may be convenient but the same shall include the following particulars:-

- i) Rate of daily or monthly wages.
- ii) Nature of work on which employed.
- iii) Total No. of days worked during each wage period.
- iv) Total amount payable for the work during each wage period.
- v) All deductions made from the wages with an indication in each case of the ground for which the deductions are made.
- vi) Wages actually paid for each wage period.

Y) A Wage slip for each worker employed on work provided that the Employer may grant exemption from the maintenance of the wage slips, if in his opinion not more than 19 persons are likely to be employed directly or indirectly on the work but in any case he will have to maintain wage books as specified in Clause.

e) Preservation of books and slips

The wage books and the wage slips shall be preserved for a period of not less than 12 months after the date of last entry made in it.

f) Inspection of books and slips

The contractor shall allow inspection of the aforesaid wage books and wage slips to any of his workers or to an agent at a convenient time and place after due notice is received to the Employer or any other person authorised by him on his behalf.

(g) Powers of the Employer to make Investigation/enquiries

The Employer or any other person authorised by him on his behalf shall have power to make enquiries with a view to ascertaining the enforcement due and proper observance of the "Fair Wages Clause". He shall also have the power to investigate into any complaint regarding any default made by the contractor or sub-contractor in regard to such provision.

The Employer shall have the right to deduct from the money due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-payment of the aforesaid fair wages, except on account of any deductions that may be permissible under any law for the time being in force.

(h) **Representation of parties**

- a) A worker shall be entitled to be represented in any investigation or enquiry under this clause by :
 - i) An Officer of registered Trade Unions of which he is a member.
Any Officer of Federation of Trade Union to the Trade Union referred to in the previous sub-clause is affiliated.
Where the worker is not a member of any registered Trade Union, or of any approved Trade Union by an Officer of a registered Trade Union connected with industry in which the worker is employed.
- b) An employer shall be entitled to be represented in any investigation or enquiry under these regulations by an officer of an Association of Employers' of which he is a member.
- c) No party shall be entitled to be represented by a legal practitioner in any investigation or enquiry under these regulations.

9.5 **Work men compensation**

The contractor shall indemnify the Employer in the event of the Trustees being held liable to pay compensations for injury to any of the contractor's servants or workmen under the Indian Workmen's Compensation Act, 1923 as amended from time to time and shall take out an Insurance Policy covering all risks under the Act and shall keep the same renewed from time to time as necessary for the duration of the contract and produce the same to the Employer On Demand whenever so required.

9.6 **ESI Clause**

The details of employees proposed to be engaged shall be furnished to this office before the commencement of the work.

- (a) As per the Govt. Notification dated 20.07.2009, Chennai Port Trust has registered under the ESI Act on 26.09.2012 with ESI Corporation and provision of ESI Act, 1948 are applicable to Chennai Port Trust, a Social Security Act, is applicable to Factories using power and employing 10 or more personnel and establishment employing 20 or more persons and drawing wages/salary upto Rs.15,000/- per month. Workers covered under ESI Act, are entitled for full medical care for self and family. Besides, cash benefit in the event of sickness, maternity and employment injury. Accordingly, the contractual/casual employees drawing wages upto Rs.15,000/- per month employed either directly by Port Trust or through contractor are covered under ESI Act, 1948. It is obligatory on the part of the employer to calculate and remit ESI contribution comprising of employers' share of 4.75% plus employees' share of 1.75% which is payable on or before 21st of the following month, to which the salary relates.

- (b) In case of Contractor employs more than 20 employees, they should register their name with ESI as per ESI Act, 1948 and obtain ESI Code. Both Employers share of 4.75% and Employees contribution of 1.75% (recovered from employees), totally 6.5% to be paid as contribution to ESI in their Code on or before 21st of following month to which the salary relates and acknowledgement for the same shall be submitted to the Port while claiming the bill. The bill without the acknowledgment of ESI contribution will not be entertained. In case the contractor has not paid the ESI contribution same will be recovered in the running bill and paid to the ESI Corporation in contractor's code. The delay in payment of contribution payable under the Act may be recovered as an arrear of Land Revenue.
- (c) In case the contractor employs less than 20 employees, the list of employees' names, their father's name, identification proof, one passport photo shall be submitted to the Port Trust. The contribution of ESI amount, both Employers share of 4.75% and Employees contribution of 1.75% (recovered from Employees salary), totally 6.5% shall be paid by the Contractor in the Chennai Port Trust Code on or before 21st of the following month to which the salary relates or otherwise payment to the contractor will be withheld. If the contractor fails to comply with the above instruction, then the Principal Employer (Chennai Port Trust) will make payment to the ESI Corporation. Such amount will be deducted from any amount due to the contractor. The delay in payment of contribution payable under the Act may be recovered as, then either the Employer or the Contractor may give notice an arrear of Land Revenue.

10.0 Settlement of Disputes

- 10.1. The Employer and the Contractor shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 10.2. If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract. Arbitration proceedings shall be conducted in accordance with the rules of procedure specified in the **SCC**.
- 10.3. Notwithstanding any reference to arbitration herein,
the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- (b) the Employer shall pay the Contractor any amount due the Contractor.

11.0 Scope of Supply

11.1 The Goods and Related Services to be supplied shall be as specified in the Schedule of Requirements.

12.0 Delivery and Documents

12.1 Subject to GCC Sub-Clause 33.1, the Delivery of the Goods and Completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Schedule of Requirements. The details of shipping and other documents to be furnished by the Contractor are specified in the **SCC** to the Address specified in accordance with GCC clause 8.1. The Goods and related services shall be delivered to the Project site in accordance with ITT clause 14.5.

13.0 Contractor's Responsibilities

13.1. The Contractor shall supply all the Goods and Related Services included in the Scope of Supply in accordance with GCC Clause 11, and the Delivery and Completion Schedule, as per GCC Clause 12.

13.2 Phasing of work :

The contractor will be required to furnish a phased programme of the works as to how he intends to complete the work to the Employer immediately on receipt of the work order and to proceed with the preliminary preparations. The contractor shall indicate separate definite times for completion of various parts of the work. He will be required to adhere to such programme so as to complete the entire work within the stipulated completion period. Within fifteen days from the receipt of acceptance of offer letter, the successful Tenderer/ contractor shall submit a detailed computerised squared network chart (PERT/CPM Chart) with month wise milestones indicating clearly the physical and financial progress of the work free of cost to the Employer. The Employer will monitor the progress of work in accordance with the chart so submitted. Should there be any sort of delay attributed to any reason whether on part of this Employer or on the Contractor; the contractor shall make available a revised squared Network Chart PERT/CPM with original actual scheduled dates and fresh revised dates separately for each milestone as and when requested by the Employer free of cost. This arrangement will continue till the deliveries, erection and commissioning are enacted and the contract work completed. The PERT/CPM chart should be computerised and easily reproducible/modified. The soft copy of the PERT/CPM network should also be made available to the Employer free of cost along with the prints of the chart.

14.0 Contract Price

Prices charged by the Contractor for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Contractor in its Tender, with the exception of any price adjustments authorized in the **SCC**.

Normally no variable rates in the Price Schedule will be entertained. However, if any Tenderer insists on such provision whereby variations in costs of controlled materials only over or under certain basic rates are intended to be on Employer's account, all such basic rates should be submitted with the tender. A suitable clause will then be inserted in the Formal Agreement mentioned in ITT Clause 43 whereby the successful Tenderer shall be required to obtain prior written approval of the Engineer for any expenditure against which the Employer may become liable for extra payment, shall be required to submit to the Engineer such periodical statements and documentary evidence as may be directed by him from time to time. The books of the successful Tenderer shall be open for inspection by a responsible officer of the Employer. Variation in the rates of other materials and labour will not be entertained.

15.0 Terms of Payment

- 15.1. The Contract Price, (including any Advance Payments, if applicable,) shall be paid as specified in the **SCC**.
- 15.2. The Contractor's request for payment shall be made to the Employer in writing, accompanied by invoices describing, as appropriate, the Goods delivered and Related Services performed, and by the documents submitted pursuant to GCC Clause 12 and upon fulfilment of all other obligations stipulated in the Contract.
- 15.3. Payments shall be made promptly by the Employer, but in no case later than Twenty Eight (28) days after submission of an invoice and other relevant Documents/ certificates and on request for payment by the Contractor and after the Employer has accepted it.
- 15.4. The currencies in which payments shall be made to the Contractor under this Contract shall be those in which the Tender price is expressed.
- 15.5. The Contractor shall note that no interest be payable by the Employer on Retention Money or for any Delayed Payments unless otherwise stipulated in **SCC**.
- 15.6. According to the provisions of the Income Tax Act, as amended by Section 28 of the Finance Bill, 1972, an amount equal to 2% of the sum payable and surcharge of 10% thereon or any rate as applicable as per Tax laws as on the date of payment, under the contract will be deducted from each bill as Income Tax on income comprised therein or at the time of payment thereof in cash or by issue of cheque or demand draft or by any other mode, whichever is earlier. For purpose of this deduction gross amount of the bill after deduction only of the amount of rebate for prompt payment, if any, will be taken into account. The amount on which the tax is to be deducted will be rounded off to the nearest multiple of ten rupees and any paise included in the amount will be ignored and if the last figure in the amount is less than five rupees it will be reduced to next lower amount which will be multiple of ten, but if the last figure in the amount is five rupees or more, the amount will be a multiple of ten. The Amount of tax will be rounded off to the nearest rupee, and fifty paise will be ignored. Any stipulation by the Tenderers that Income Tax so deductible from the bills should be borne by the Employer will result in the summary rejection of his tender.

15.7 No payment of any bills or any advances will be made till the stamped acceptance letter /the contract agreement is executed and the PERT/CPM chart indicating various activities, events, month wise

milestones, scheduled contractual completion periods for each activity is furnished.

16.0 Taxes and Duties

16.1. For Goods manufactured outside India, the Contractor shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside India.

16.2. For goods Manufactured within India, the Contractor shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Employer at Project site.

16.3. If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in India, the Employer shall use its best efforts to enable the Contractor to benefit from any such tax savings to the maximum allowable extent but not mandatory on the part of Employer and as Specified in **SCC**. If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in India, the Employer shall have a claim on such exemptions. The contractor shall quote his prices by considering all such exemptions.

16.4 The price shall be firm inclusive of all taxes and duties. Service Tax will be extra as applicable.

17.0. Performance Guarantee

17.1. As specified in the **SCC**, the Contractor shall, within twenty-one (21) days of the notification of contract award, provide a performance guarantee for the performance of the Contract in the amount specified in the **SCC**.

17.2. The proceeds of the Performance Guarantee shall be payable to the Employer as compensation for any loss resulting from the Contractor's failure to complete its obligations under the Contract.

17.3. As specified in the **SCC**, the Performance Guarantee, if required, shall be denominated in the currency(ies) of the Contract, or in a freely convertible currency acceptable to the Employer; and shall be in one of the format stipulated by the Employer in the **SCC**, or in another format acceptable to the Employer.

17.4. The Performance Security shall be discharged by the Employer and returned to the Contractor not later than Fourteen (14) days following the date of Completion of the Contractor's performance obligations under the Contract, during the Contract period, unless specified otherwise in the **SCC**.

18.0 Copyright

18.1 The copyright in all drawings, documents, and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor, or, if they are furnished to the Employer directly or through the Contractor by any third party, including Contractor's of materials, the copyright in such materials shall remain vested in such third party.

19.0 Confidential Information

19.1. The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor such documents, data, and other information it receives from the Employer to the extent required for the Subcontractor to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Contractor under GCC Clause 19.

19.2. The Employer shall not use such documents, data, and other information received from the Contractor for any purposes unrelated to the contract. Similarly, the Contractor shall not use such documents, data, and other information received from the Employer for any purpose other than the performance of the Contract.

19.3. The obligation of a party under GCC Sub-Clauses 19.1 and 19.2 above, however, shall not apply to information that:

now or hereafter enters the public domain through no fault of that party;

can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; or

otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.

19.4. The above provisions of GCC Clause 19 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.

19.5 The provisions of GCC Clause 19 shall survive completion or termination, for whatever reason, of the Contract.

20.0 Subcontracting

20.1. The Contractor shall notify the Employer in writing of all subcontracts awarded under the Contract if not already specified in the Tender. Such notification, in the original Tender or later shall not relieve the Contractor from any of its obligations, duties, responsibilities, or liability under the Contract.

20.2 Subcontracts shall comply with the provisions of GCC Clauses 3, 7 and 19.

21.0 Specifications and Standards

21.1. Technical Specifications and Drawings

The Goods and Related Services supplied under this Contract shall conform to the technical specifications and standards mentioned in Section V, Schedule of Requirements and when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the Goods' country of origin.

The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Employer, by giving a notice of such disclaimer to the Employer.

(c) Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Schedule of Requirements. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Employer and shall be treated in accordance with GCC Clause 33.

21.2 In case the contractor fail to Supply the said materials as herein provided or in case he/they shall fail to replace any parts of any materials that may be rejected as herein provided with other of approved quantity within two weeks from the date of such rejection, the Engineer shall be at liberty forthwith to procure and obtain the same in the open market and the cost thereof and all expenses thereby incurred shall be charged to the contractor or the Engineer may fix such other subsequent date or dates as he may think fit by which the delivery of the said material shall be completed. If the rejected materials be not forthwith removed, the Engineer shall be at liberty to charge ground rent for such time as the material shall lie on the site to lift the materials and keep a watchman at night or remove the materials to less inconvenient site (charging rent for new site) and all expenses thereby incurred in connection with the rejected materials shall be charged to the contractors.

21.3 If during the progress of the work, the Employer and/or the Engineer shall decide and notify in writing to the contractor that contractor has executed any unsound or imperfect work, or has supplied anything inferior in quality to that specified, the deficiencies shall at his own expenses, within seven days of his receiving the notice or otherwise within such time as may be reasonably necessary for making it good, proceed to alter, reconstruct or remove such work, or Supply fresh materials upto the standard of the specifications

21.4 The specifications and drawings are to be considered as explanatory to each other and should anything appear in the one that is not described in the other no advantage shall be taken of any such omission. Should any discrepancies or inconsistencies however appear or should any misunderstanding arise as to the meaning and import of these specifications or drawings or as to the dimensions or the quality of the materials or due to proper execution of the works as to the measurements or quality and valuation of the works executed under this contract or as extras thereupon the same shall be explained by the Employer and/or his representatives whose explanation shall be final and binding upon the contractor/contractors

who shall execute the work according to such explanation and also to liaise with the inspecting agency at the manufacturing site and point of delivery site and without extra charge or deduction to or from the price specified in Price schedule and shall also do all such works and things as may be necessary for the proper completion of works as implied by the specifications and drawings even though such works and things are not specifically shown and described therein. The Tenderers should visit the site and make themselves thoroughly acquainted with the nature and requirement of work before finalizing the designs and detailed Engineering.

22.0 Packing and Documents

22.1 The Contractor shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

22.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in the **SCC**, and in any other instructions ordered by the Employer.

22.3 All works required by the Employer and/or the Engineer to be packed or protected for transportation to India, shall be securely placed and protected by the contractor. Packing cases shall be of a size convenient for shipment and cases containing easily damageable articles shall be bind as specified. The contractor will be held responsible for the inefficiency of the packing and protection.

(a) The cases, crates and packages shall be permanently branded, not painted with the shipping marks. The marking shall be carried out with a view to the mark remaining unobliterated when the consignment reaches destination but as a further precaution, a reproduction, of the shipping marks shall be placed inside each case, crate and packages.

(b) Packages or bundles, which cannot be permanently branded, shall have metal label, with the above particulars stamped or attached to them by strong wire.

23.0 Insurance

23.1. Unless otherwise specified in the **SCC**, the Goods supplied under the Contract shall be insured fully against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery, in accordance in the manner specified in the **SCC**.

23.2 The contractor shall insure with the General Insurance Corporation of India or any other insurance company approved by IRDA or its branches in appropriate foreign currency, if any, subject to the conditions that the premium will be payable to the

corporation in Rupees such materials, tools, plants and things ordered from the works till they are delivered at site and then those for the works may for the time being on site and shall keep them insured in his own name and that of the Employer against destruction or damage by accident, fire, flood and tempests for the full value of such materials, plants and things until the same to be taken over by the Employer under GCC Clause 25 and he shall from time to time, when so, required by the Employer produce the policy and receipt for the premium. All money received under any such policies shall be applied in or towards the reconstruction or preparation of the materials, plant and things destroyed or damaged, but this provision shall not affect the contractor's liabilities under contract.

24.0 Transportation

24.1 Unless otherwise specified in the **SCC**, responsibility for arranging transportation of the Goods shall be in accordance with the specified in the SCC.

25.0 Inspection Tests, Taking over and Commissioning

25.1 The Trust will engage a Third Party Agency at its own expense to carry out all such tests and/or inspections of the Goods and Related Services as are specified in the **SCC**.

25.2 The inspections and tests may be conducted on the premises of the Contractor or its Subcontractor, at point of delivery, and/or at the Goods' final destination, or in another place in India as specified in the **SCC**. Subject to GCC Sub-Clause 25.3, if conducted on the premises of the Contractor or its Subcontractor, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Employer.

25.3 The Employer or its designated representative shall be entitled to attend the tests and/or inspections referred to in GCC Sub-Clause 25.2, provided that the Employer bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all travelling and board and lodging expenses or otherwise specified in **SCC**.

25.4 Whenever the Contractor is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Employer. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Employer or its designated representative to attend the test and/or inspection.

25.5 The Employer may require the Contractor to carry out any test and/or inspection not required by the Contract but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications codes and standards under the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impede the progress of manufacturing and/or the Contractor's performance of its other obligations under the

Contract, due allowance will be made in respect of the Delivery Dates and Completion Dates and the other obligations so affected unless otherwise specified in **SCC**.

- 25.6 The Contractor shall provide the Employer with a report of the results of any such test and/or inspection.
- 25.7 The Employer may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Contractor shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Employer, and shall repeat the test and/or inspection, at no cost to the Employer, upon giving a notice pursuant to GCC Sub-Clause 25.4.
- 25.8 The Contractor agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Employer or its representative, nor the issue of any report pursuant to GCC Sub-Clause 25.6, shall release the Contractor from any warranties or other obligations under the Contract.
- 25.9 The contractor/contractors shall furnish at his/their own cost electrical instruments, tools, measuring tapes and other implements and labour required for the proper setting out of the work and shall set out and be entirely responsible for such setting out. He/They may have obtained the lines and lay outs from the Employer or his representatives and shall at once alter or amend any mistake or deficiencies in such setting out being ordered to do so by the Employer and/or his representatives. The contractor/contractors shall provide all men, materials, appliances and things which the Employer or his representatives may require for measuring or inspecting the work
- 25.10 The supply, delivery and installation of the items at site shall be deemed to have been accepted by the Employer when the same shall have been stored and erected on site and the Employer shall have certified in writing that it has fulfilled the contract conditions and such certificates shall not be unreasonably withheld, or shall the Employer delay the issuing of such certificates on account of minor omissions, or defects, which do not affect the commercial use, without any serious risk, of the supplies, provided always that the contractor undertake to make good such omissions and defects at the earliest possible moment
- 25.11 In the event of the equipment/plant put into commercial use before the actual completion of works as per the contract, the contractor shall be eligible for Substantial Completion. However, a pre-defined period (say 2 months) shall be granted to the contractor to complete the balance minor works as per the list of pending works as on the date of substantial completion. If the contractor completes all the works within the predefined period, the date of taking over shall be the date of substantial completion. Otherwise, date of taking over shall be date of completion of all works.
- 25.12 All materials, plant and other things, the Supply of which form the part of the contract work shall on delivery at Project Site become the property of the Employer. All the contractor's materials, brought to and delivered at site for use of the contract works,

shall from time of their being so brought, vest in and be the property of Employer and shall be used solely for the purpose of the works and shall not on any account be removed or taken away by the contractor or any other person without the express permission in writing of the Engineer but the contractor shall nevertheless be solely liable or responsible for the loss or destruction thereof or damage which may be caused thereto during the continuance of this contract. Upon the completion of the contract the property, if any, surplus of such materials, shall revert to the contractors or unless they shall be due owing to or accruing or to accrue to the Employer from the contractors any money under, or in respect of or by reason of the contract in which case the Employer shall be at liberty to sell and dispose of such surplus materials as they shall think fit and to apply the proceeds in or towards the satisfaction of such money or moneys so due owing to or accruing or to accrue to them as aforesaid.

- 25.13 The Goods, whether Installed or not, shall immediately, in consideration of Payment of the First Installment of the Contract Price to the Contractor by the Employer; provided always that the Contractor shall have a particular possessory lien on the Goods, to the extent the value thereof exceeds the total value of the Installment Payments made by the Employer to the Contractor
- 25.14 Notwithstanding the above provision, the contractor shall be responsible for all damages to and loss of all aforesaid items furnished by the Contractor and any item furnished to the Contractor by the Employer to enable the Contractor to complete the Installation and for all temporary structures facilities and for all parts of the installation completed or in progress until the certificate of final taking over has been issued in accordance with GCC clause 25.10 and 25.11
- 25.15 If the contractor neglects to make the tests on completion within the time stipulated by the contractor, the Employer shall nevertheless have the right of using the installations at the contractor's risk until the 'test on completion' is successfully carried out.
- 25.16 All the contract works until taken over by the Employer in accordance with GCC Clause No. 25.10 and 25.11 shall stand at the risk of the contractor who shall be responsible for and make good at his own cost all loss or damage caused by or due to fire, weather or any other cause whatsoever and the contractor shall hand over the contract work complete in every respect at the termination of the Agreement.
- 25.17 Until the work shall be or be deemed to be taken over as provided in respective Clause, Employer in respect of all injury to any person or damage to any property of the Employer or of other occasioned by the negligence or default of the contractor or his employees, or sub-contractors or of the Employer' employees, if any, working under the contractor's supervision by defective design or work by the non-compliance by the contractor with the terms of this contract.
- 25.18 The contractor shall indemnify and save harmless the Employer against all actions, suits, demands, claims, costs or expenses arising in connection with injuries suffered

by persons employed by the contractor or his sub-contractors on the work including the Employer' employees, if any, working under the contractor's supervision. The contractor shall during the progress of the contract work insure himself and Employer and keep himself and them insured with the Life Insurance Corporation of India or any other insurance company under IRDA or their branches against all liabilities in respect of such injuries to persons employed as aforesaid and shall at all times when required by the Employer produce the policy for such insurance and the receipts for the last premium payable in respect thereof provided that his obligation to insure shall not apply if the Employer has made other proper and adequate provisions to meet all such liability.

25.19 In the event of any claim being made or action brought against the Employer including the contractor and arising out of the matters referred to and in respect of which the contractor is liable under this clause, the contractor shall be promptly notified thereof and he shall with the assistance if he so requires of the Employer but at the sole expense of the contractor conduct all negotiations for the settlement of the same or any litigation that may arise there from. In such case the Employer shall at the expense of the contractor afford all available assistance for any such purpose.

25.20 All the works shall be carried out under direction and to the satisfaction of the Employer and / or his representative but the contractor shall be responsible for the correctness of the work according to the drawing, excepting such works as have been carried out by the Engineer and/ or his representative.

26.0 Liquidated Damages/Late Delivery Charges

26.1 Except as provided under GCC Clause 31 and 33, if the Contractor fails to deliver any or all of the Goods by the Date(s) of delivery or perform the Related Services within the period specified in the Contract, the Employer may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the **SCC** of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in those **SCC**. Once the maximum is reached, the Employer may terminate the Contract pursuant to GCC Clause 35. Contract price shall be inclusive of price plus all taxes and duties payable for computing Liquidated Damages.

26.2 Penalty

Employer may deduct a sum as specified in SCC as Penalty during the Comprehensive Annual Maintenance and Service Contract.

27.0. Warranty

27.1 The Contractor warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

- 27.2 Subject to GCC Sub-Clause 21.1(b), the Contractor further warrants that the Goods shall be free from defects arising from any act or omission of the Contractor or arising from design, materials, and workmanship, under normal use in the conditions prevailing in INDIA.
- 27.3 Unless otherwise specified in the **SCC**, the warranty shall remain valid for twelve (12) months after the Goods or any portion thereof as the case may be, have been taken over at the Project Site.
- 27.4 The Employer shall give notice to the Contractor stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect such defects.
- 27.5 Upon receipt of such notice, the Contractor shall, within the period specified in the **SCC**, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Employer.
- 27.6 If having been notified, the Contractor fails to remedy the defect within the period specified in the **SCC**, the Employer may proceed to take within a reasonable period such remedial action as may be necessary, at the Contractor's risk and expense and without prejudice to any other rights which the Employer may have against the Contractor under the Contract.
- 27.7 The guarantee period will be effective for a period of twelve (12) months and it will be in force from the date of final acceptance of the items of work completed under the contract by the Employer and the contractor shall be responsible for any defects that may develop under proper use arising from faulty materials, designs, workmanship in the work but not otherwise and shall at his own cost remedy such defects when called upon to do so by the Engineer who shall state in writing in what respect any portion is faulty.

If it becomes necessary for the contractor to replace or renew any defective portions of the Supply of the items under this clause, the provisions of this clause shall apply to the portions of the Supply so replaced or renewed until the expiry of six months from the date of such replacement or renewal or until the above mentioned period of 12 months, whichever may be later. If any defects are not remedied within a reasonable time, the Employer may proceed to do the work at the Contractors' risk and expenses but without prejudice to any other rights which the Employer may have against the contractor in respect of such defects.

If the replacement or renewals are of such a character as may affect the efficiency of the items Supplied, the Employer and/or the Engineer shall have the right to give to the contractor within one month of such replacement or renewal notice in writing the 'Test on Completion' be made in which case test shall be carried out as provided in accordance with GCC Clause 25.15 thereof. Should such guarantee not be sustained the cost of the test shall be borne by the contractor.

All inspection, adjustments, replacement or renewal carried out by the contractor during the period referred to in this clause shall be subject to the conditions of this contract which shall be binding on the contractor in all respects during the guarantee and the additional warranty period.

28.0 Comprehensive Annual Maintenance Contract : Not applicable

29.0 Patent Indemnity

29.1 The Contractor shall, subject to the Employer's compliance with GCC Sub-Clause 28.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:

(a) the installation of the Goods by the Contractor or the use of the Goods in the country where the Site is located; and

(b) the sale in any country of the products produced by the Goods.

Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Contractor, pursuant to the Contract.

29.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GCC Sub-Clause 28.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

29.3 If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf.

29.4 The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

30.0 Limitation of Liability

30.1 Except in cases of criminal negligence or willful misconduct,

(a) the Contractor shall not be liable to the Employer, whether in contract, transport or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall

not apply to any obligation of the Contractor to pay liquidated damages to the Employer and

- (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement

31.0 Change in Laws and Regulations

- 31.1 Unless otherwise specified in the Contract, if after the date of 28 days prior to date of Tender submission in accordance with ITT clause 24, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed in the place of India where the Site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with GCC Clause 14.

32.0 Force Majeure

- 32.1 The Contractor shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 32.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Contractor that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Contractor. Such events may include, but not be limited to, acts of the Employer in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- 32.3 If a Force Majeure situation arises, the Contractor shall promptly notify the Employer in writing of such condition and the cause thereof. Unless otherwise directed by the Employer in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

33.0 Change Orders and Contract Amendments

- 33.1 The Employer may at any time order the Contractor through notice in accordance GCC Clause 8, to make changes within the general scope of the Contract in any one or more of the following:
 - (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Employer;

- (b) the method of shipment or packing;
- (c) the place of delivery; and
- (d) the Related Services to be provided by the Contractor

33.2 The quantities indicted in the Price Schedule are estimated only and are liable to be altered or omitted to the extent in accordance with ITT clause 37.1 and GCC 33.1. The work shall be measured upto the end of each mile stone by the Employer along with the contractor/contractors or any other person or persons appointed on his/their behalf (TPI), such person/persons not being in the service of the Employer. Should the contractor/contractors or any appointed agent on his/their behalf fails/fail to attend on the day or days, fixed by the Employer (of which three days' notice shall be given) for taking measurement the same shall always be confirmed to actual work and for that alone shall the contractor/contractors be allowed to claim. The several works shall be measured by a standard measure without reference to any local custom that may obtain excepting the contrary may be directed in the specifications.

34.0 Extension of Time

34.1 If at any time during performance of the Contract, the Contractor or its subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services pursuant to GCC Clause 12, the Contractor shall promptly notify the Employer in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Contractor's notice, the Employer shall evaluate the situation and may at its discretion extend the Contractor's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.

34.2 Except in case of Force Majeure, as provided under GCC Clause 32, a delay by the Contractor in the performance of its Delivery and Completion obligations shall render the Contractor liable to the imposition of liquidated damages pursuant to GCC Clause 26, unless an extension of time is agreed upon, pursuant to GCC Sub-Clause 34.1.

35.0 Termination

35.1 Termination for Default

- (a) The Employer, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Contractor, may terminate the Contract in whole or in part:
 - (i) if the Contractor fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by the Employer pursuant to GCC Clause 33;
 - (ii) if the Contractor fails to perform any other obligation under the Contract; or
 - (iii) if the Contractor, in the judgment of the Employer has engaged in fraud and corruption, as defined in GCC Clause 3, in competing for or in executing the Contract.
- (b) In the event the Employer terminates the Contract in whole or in part, pursuant to GCC Clause 35.1(a), the Employer may procure, upon such terms and in such manner as it

deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Contractor shall be liable to the Employer for any additional costs for such similar Goods or Related Services. However, the Contractor shall continue performance of the Contract to the extent not terminated.

35.2 **Termination for Insolvency.**

- (a) The Employer may at any time terminate the Contract by giving notice to the Contractor if the Contractor becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Contractor, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Employer

35.3 **Termination for Convenience.**

- (a) The Employer, by notice sent to the Contractor, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Employer's convenience, the extent to which performance of the Contractor under the Contract is terminated, and the date upon which such termination becomes effective.
- (b) The Goods that are complete and ready for shipment within twenty-eight (28) days after the Contractor's receipt of notice of termination shall be accepted by the Employer at the Contract terms and prices. For the remaining Goods, the Employer may elect:
 - (i) to have any portion completed and delivered at the Contract terms and prices; and/or
 - (ii) to cancel the remainder and pay to the Contractor an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Contractor.

35.4 **Liquidation and Re-Entry :**

In the event of the contractor/contractors going into liquidation or passing an effective resolution for winding up or upon the contractor/contractors making an arrangement with or assigning in favour of his/their creditors or upon his/their assigning this contract or upon execution being levied on the contractor/contractors goods or upon the EMPLOYER certifying under his hand and in his opinion the contractor/contractors has/have

- i) Abandoned the contract or
- ii) Suspended the progress of the work for seven days after receiving from the Employer's written notice to proceed without any lawful excuse under conditions, or
- iii) Failed to make proper progress with the work for seven days after receiving from the Employer's written notice to employ more men, or
- iv) Failed to remove materials from site or pull down the rebuilt work for seven days after receiving from the Employer's written notice that the said materials

or works are condemned and rejected by the Employer under GCC Clause 35, of these conditions, or

- v) Failed to give the Employer proper facilities for inspecting the works or any part of them for three days after receiving from the Employer, written notice demanding the same, or Failed to submit any work or materials to proper test for three days after receiving written notice from the Employer requiring the same, or
- vi) Failed to complete all or any part of the work by the time or extended time for completion, or
- vii) Failed to complete all or any part of the work by the time or extended time for completion.

Then the Employer may enter upon the site and works and expel the contractor/contractors there from and may themselves use the material and plant upon the premises for the completion of the work and employ any other contractor/contractors to complete or may themselves complete the work, upon such entry the contract shall be determined save the rights and power conferred upon the Employer hereby. The Employer's certificate under this clause shall be conclusive proof as between the contractor/contractors and Employer of the statement contained in it.

36.0 Assignment

36.1 Neither the Employer nor the Contractor shall assign, in whole or in part, their obligations under this Contract, except with prior written consent of the other party.

37.0 Export Restriction

37.1 Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Employer, to the country of the Employer, or to the use of the products/goods, systems or services to be supplied, which arise from trade regulations from a country supplying those products/goods, systems or services, and which substantially impede the Contractor from meeting its obligations under the Contract, shall release the Contractor from the obligation to provide deliveries or services, always provided, however, that the Contractor can demonstrate to the satisfaction of the Employer that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the products/goods, systems or services under the terms of the Contract. Termination of the Contract on this basis shall be for the Employer's convenience pursuant to Sub-Clause 35.3.

38.0 Site Activities

- 38.1 The contractor/contractors shall give the customs, State Government, municipal, police, petroleum, road, railway, and all other authorities all notices, etc. that may be required by law and obtain all requisite licences for temporary obstructions, transportation, loading and unloading activities, enclosures, and for any other purposes whatsoever and pay all fees, taxes, duties, and charges which may be leviable on account of his/their own operations in executing the contract. He/They shall make good any damage to adjoining property whether public or private and supply and maintain any flags, horns, sirens, light etc. in whatever manner required in day or at night or for the purposes of warning/indication of work in progress or of imminent danger etc. He shall be allowed rent free the use of such grounds as is available on the site of works as in the opinion of the Employer may be absolutely necessary and on the completion of work or termination of this contract he shall vacate the premises and remove all surplus material.
- 38.2 The Employer shall indicate the storage space at site, for storing the material but the contractor shall satisfy himself as to the suitability of such sites and protection and such provision shall not release the contractor from liability to make good any loss or damage which may hamper such work until the same shall have been taken over.
- 38.3 Suitable access to and possession of the site shall be afforded to the contractor by the Employer in reasonable time. In the execution of the work, no persons other than the contractor or his duly appointed representatives, sub-contractor and workmen shall be allowed to do work at site except by the special permission in writing of the Employer and/or his representative.
- 38.4 The contractor shall comply with all precautions as per International Labour Organisation (I.L.O.) Convention (No.62) as far as they are applicable to this contract.
- 38.5 The contractor/contractors shall on completion of the work when directed by the Employer remove all plants, tools, materials, and rubbish which may have been used or may have accumulated during the progress of the work, other than those permanently taken into the works of all such rubbish or surplus materials or plants which the Employer may require the contractor/contractors to remove by the contractor or his sub-contractors within twenty-four (24) hours after receipt of written notice from the Employer requiring him/them to remove the same, and in default of compliance with such notice the Employer may forthwith remove all such rubbish or surplus materials or plant at the risk and cost of the contractor/contractors
- 38.6 The contractor will be allowed to tap/use electric power to the extent of as specified in **SCC**, if electric Supply from the Employer's network is available at work site, subject to the contractor's complying with the rules and regulations of temporary load and safety precaution laid down by the Employer from time to time. Use of power is restricted to single phase for electrical drilling machine, temporary lighting and testing of the lighting installation etc. For any other requirements, the contractor shall request

the Employer. Upon suitability, the Employer shall provide the same at cost to the Contractor.

- 38.7 No work shall be carried out between sunset and 6.00 a.m. and on Sunday or Employer's holidays except with the previous sanction in writing from the Employer, granting to which will be entirely at his discretion and cannot be claimed by the contractor/contractors as matter of right and the refusal to grant such permission will not be accepted as a ground of excuse for not completing the work within the period hereinafter mentioned.
- 38.8 No living accommodation shall be made available for the contractor's staff and labour. The contractor/ contractors shall at his/their own expense provide the necessary transport to and from the site of the work and accommodation for his/their employees, the intention being that the sum named in the tender shall be inclusive of all expenses, whatsoever in connection with the contractor's/ contractors' staff and labour force.
- 38.9 Notwithstanding that all reasonable and proper precautions may have been taken by the contractor/contractors at all times during the progress of the work, the contractor/contractors shall nevertheless be wholly responsible for all damages, whether to the works themselves or to any other Employer's property or to the lives or persons or property of others during the progress of the works and period of maintenance.
- 38.10 The contractor/contractors shall at his/their own cost provide all labour and materials, haulage, stores, consumables, templates, staging, scaffolding, tarpaulins and all plants and tools whatsoever required to carry out and complete the work to the satisfaction of the Engineer and shall fence, with bamboo or other good materials of sufficient strength, all excavation, trenches, open culverts etc. and shall light the same at night and keep sufficient watchmen to the satisfaction of the Engineers at work site. He/They shall construct proper enclosures and fences for the protection and convenience of the work and the public during the progress of work.

The make and brand of the materials offered wherever applicable must be clearly stated and in case of unknown make or brand proper description should be submitted even if not so specified.

The contractor must make his own arrangement for obtaining all the materials required for completing the work. The rates to be entered for the items in the Price Schedule should be inclusive of Supply, manufacture and assembly, testing, completion, delivery, storage at site, installation of new equipment and commissioning of all the works. The contractor/contractors shall make his/their own arrangements to obtain from the authorities concerned the petrol, oils, spare parts etc. required by him for the efficient and regular operation of the transport used by him/them to carry out and complete the work comprised in the contract, without

delay whatsoever. The Employer will only issue a certificate if required to the contractor to enable him to request the concerned authorities, to provide all assistance within the law to him/them under this contract. The non-Supply of these materials by the authorities will not be taken as an excuse for not completing the contract within the stipulated period.

- 38.11 The contractor shall employ at least one qualified, experienced and competent representative whose name or names shall have previously been communicated in writing to the Employer and/or his representative by the contractor to supervise the delivery, unloading and storage and carrying out the work and also to liaise with the inspecting agency at the manufacturing site and point of delivery site. The said representative shall be present at site during working hours and any written orders or instructions which the Employer and/or his representative may give to the said representative of the contractor shall be deemed to have been given to the contractor, the said representative or representatives shall arrive at site on a date to be arranged by the Employer and/or his representative. Further all the correspondence pertaining to technical, financial, legal and the other matters shall be addressed to him.

The contractor shall have to execute electrical work of cranes under Supervision of Electrical contractor having valid Electrical's contractor Licence issued by the State Governments of India & work is required to be executed under the Supervisor having Supervisory Certificate of competency issued by the State Governments of GOI & copy of all documents to be submitted to Mechanical Engineer's office. The contractor shall obtain the Electrical inspection Certificate for effective power supply to the machines.

38.12 **Employment of Labour :**

The contractor/contractors shall employ such sufficient number of trustworthy, skilful and experienced assistants or Supervisors, Foremen, Mistries and Watchmen as may be approved by the Engineer and shall at all times employ a competent, qualified and experienced Engineer and careful and skilled workmen in or about execution of the said work to the satisfaction of the Engineer or any Engineer, Supervisor, Mistry, Watchmen to whom the Engineer and/or his representative shall object to on the ground of bad behaviour incompetence or negligence shall be removed by the contractor/contractors from the work within 24 hours after receipt of written order signed by the Engineer and/or his representative shall be again allowed on the work except with the written permission of the Engineer and/ or his representative. The contractor/contractors shall arrange to meet the Engineer or his Assistants on the works whenever required.

38.13 **Protective Personal Gear Such As Helmet, Face shield, Footwear, Gloves, Etc.:**

The contractor/contractors shall, at his/their own expense, provide footwear and gloves for all labour employed on concrete mixing work, gas cutting, welding etc, and all other types of work involving the use of tar and cement, glass shields for welders and diving equipment for divers, etc. to the satisfaction of the Employer or his representative and on his/their failure to do so, the Employer shall be entitled to provide the same and recover the cost thereof from the contractor/contractors.

Safety Provision :

- i) The contractor should take necessary safety measures to carry out the job, without causing any accident, in the work premises, which will ultimately cause loss to Employer either directly or indirectly.
- ii) The contractor should apply for written permission to carry out the hot jobs with full details of the work, date, duration of work etc.
- iii) All the required safety gear and fire fighting accessories be made available by the contractor at the site of work for any emergency.
- iv) The permission copy should be sent to Port Fire and Safety Officer, and the Safety section in advance.
- v) The hot jobs should be started only after the concerned supervisory staff of the concerned department is satisfied with the safety arrangements made at site.

The contractor shall supply to his workmen and staff cotton arm bands of approved quality and colour for wearing them on their arms while carrying out the work. These arm bands should be of distinctive type and serially numbered and the contractor shall maintain a register of issue of arm bands and names of workmen to whom these have been issued.

Notwithstanding anything herein contained the contractor shall comply with all the provisions of the contract labour (Regulation and Abolition) Act, 1970 and Rules and Regulations made there under as amended from time to time if applicable.

The rates quoted by the contractors in the Price Schedule shall be deemed to include expenses whatsoever that the contractor may be required to incur for compliance with the provisions of the above Act.

In pursuance of Section 21 of the above Act and Rule 25(2)(V)(A) framed thereof, the Tenderers should note that in cases where the workmen employed by them to perform the same and similar kind of work as the workmen directly employed by this Employer, the wage rate of all category of workmen shall be in accordance with the

statement of the Employer's Schedule of Rates revised from time to time. The wage rates in respect of categories of workmen which are not included in the Employer Schedule shall not be less than those specified in the Schedule of "Fair Wages".

The contractor shall make his own arrangements for the engagement of all labour, preferably local.

The Contractor shall also comply fully with the provisions of the payment of Wages Act, 1936.

If any enhancement in the rates of Wages become payable as a result of the implementation of the Chief Labour Commissioner's interpretation of the Contract Labour (Regulations and Abolitions) Central Rules, 1971 upto and including an increase of 10% of the Wages, the same shall be borne by the contractor/contractors.

The contractor shall be responsible for the observance by his sub-contractors, of the foregoing provisions/precautions.

The contractor shall make necessary arrangements for the representative of the Employer and/or his representative to witness the payment made by the Contractor to his labourers. The contractor shall also submit periodical returns of labour employed by him and wages paid, to the Employer's representatives.

Supply of water: The contractor shall, as far as practicable having regard to local conditions, provide on the site to the satisfaction of the Engineer's representative, an adequate Supply of drinking and other water for the use of the contractor's staff and workmen.

Festivals and religious customs : The contractor shall in all dealings with labour in his employment, have due regard to all recognised festivals and observe days of rest as applicable to the outdoor staff of the Mechanical Engineering Department of Employer.

Epidemics: In the event of any outbreak of illness of an epidemic nature, the contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities for the purpose of dealings with overcoming the same.

Disorderly conduct, etc. : The contractor shall at all time take all reasonable precautions to prevent any unlawful riotous or disorderly conduct by or among his employees, officers, or agents and for the preservation of peace and protection of person and property in the neighbour hood of the works against the same.

Accidents: The contractor shall, within twenty four (24) hours of the occurrence of any accident at or about the site or in connection with the execution of the work, report such accidents to the Employer or his representative. The contractor shall also report such accidents to the concerned constituted authorities.

The contractor shall use water free of cost from the nearest Employer's tap or hydrant dependent on the availability as directed by the Engineers.

Every precaution shall be taken by the contractor/contractors to prevent the breeding of mosquitoes on the works during the construction and all receptacles used for storage of water, soaking bricks, etc. must be suitably protected for this purpose or must be emptied at the close of the work everyday. All water used for during concrete must contain saponified crosel in solution of not less than 1:2000 or more than 1:1000 so that the solution will have a markedly cloudy appearance and will give a reasonably strong odour.

38.14 The contractor/contractors shall give notice to the Employer or the Engineer or his assistant whenever any work is to be buried in the earth or made inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial in default whereof the same shall at the opinion of the Employer or the Engineers or his assistant be either opened up for measurement at the contractor/contractors expenses and no allowance shall be made for such work. Should any dispute or difference arise after the execution of any work as to measurements etc. which cannot be conveniently tested or checked the Employer's or the Engineers' or his Assistants notes shall be accepted as correct and be binding on the contractor/contractors.

38.15 **Safety of Existing Underground Services**

The contractor shall take due care and adopt such measures to ensure that the existing underground services of the Employer as well as Public Utility Bodies viz. Electric Boards/Companies, BSNL/MTNL, local municipality, Gas Co., etc., are not damaged during the excavation work of cables trench, pole pits, foundation pits etc. The drawing showing the approximate route of such service will be available with the Superintendent, Electrical Construction Division of this office and shall be consulted before starting the work. Exact location of a service shall be ascertained by taking trial pits at strategic points as directed by the Employer or his representative. The work in the vicinity of such services shall be carried out to meet the specific requirements of a party to whom the service belongs. Any damage caused to a service, irrespective of the fact that the utmost precautions are taken to avoid damage shall be at the entire risk and cost of the contractor.

39.0 Employer's Decision

39.1 The whole of the work under this contract shall be carried out under the direction of the Employer and his decision upon all questions relating to the details of

construction or the meaning of the drawings, Specifications, Price Schedule and the methods of carrying out the work shall be final and any dispute arising under in connection with this contract or the carrying out thereof including any question as to construction and meaning of this contract or any clause therein shall be final and binding upon the contractor or his sub-contractors whether such decision shall have been given by way of certificate or otherwise and whether it shall have been given during the progress of the work or after completion of the same.

40.0 Employment and Employer's Personal

40.1 The successful Tenderer shall furnish information before the award of contract, whether he himself or any of his partners, directors or employees had held Class I post with the Employer within the period of last two years.

40.2 The Employer shall be at liberty to terminate the contract if the successful Tenderer himself or any of his partners, employees or any of his directors who having held Class I post with the Employer. prior to his retirement has failed to obtain the Chairman's specific permission to undertake an occupation or any outside employment before the expiry of two years from the date of his retirement, in accordance with the provision of Class I Employees, (Acceptance of Employment after retirement) Regulations.

41.0 Licences

41.1 Import Licence, Permits, etc.

The contractor will make his own arrangements for obtaining materials required for the manufacture of the items and for the efficient and regular operation of the work. The Engineer will, however, forward his application for import licences, to the proper authorities if desired by him certifying the nature of the work to be carried out but under no circumstances the non-Supply of such controlled or other materials by the authorities will be taken as an excuse for not completing the contract, if awarded, within the stipulated period.

Section - VII

Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

GCC 1.1(a) and 1.1(q)

*Chief Mechanical Engineer,
Chennai Port Trust,,
No.1 Rajaji Salai,
Chennai – 6
The Employer is: Trustees of Port of “Chennai”*
The Project Site(s)/Final Destination(s) is/are:

GCC 1.1 (p)

Dy.Chief Mechanical Engineer,
Electric Supply & Coal Handling Division,
Chennai Port Trust, Rajaji Salai,
Chennai – 600 001.
in pursuant to ITT clause 14.5 a(iii)..

GCC 4.2 (a)

Incoterms is not applicable to this tender, since the procurement is from local bidders (INDIAN BIDDERS).

GCC 4.2 (b)

Incoterms is not applicable to this tender and QUOTED RATE SHOULD BE INCLUSIVE OF ALL TILL DELIVERY, INSTALLATION, TESTING AND COMMISSIONING AT CHENNAI PORT TRUST, CHENNAI.

GCC 8.1

For **notices**, the Employer's address shall be:

Attention: Chief Mechanical Engineer
Chennai Port Trust,,
No.1 Rajaji Salai, Chennai – 600 001
City: Chennai
PIN Code: 600 001
Country: India
Telephone: (044) - 225362070
Facsimile number: (044) – 25360955
Electronic mail address: cmechennaiport@gov.in

GCC 9.1

The governing law shall be the law of Government of India or its constituents and all legal disputes shall be subjected to the jurisdiction of High Court of Madras.

GCC 10.2

The rules of procedure for arbitration proceedings pursuant to GCC Clause 10.2 shall not be applicable to this contract.

The decision of Chief Mechanical Engineer shall be final with an appealing authority as Chairman of the Port. The decision of the Chairman shall be binding on either parties.

GCC 12.1

Details of Shipping / dispatch and other Documents to be furnished by the Contractor are a railway consignment note, a road consignment note, insurance certificate, Manufacturer's or Contractor's warranty certificate, inspection certificate issued by nominated inspection agency, Contractor's factory shipping details etc.

The above documents shall be received by the Employer before arrival of the Goods and, if not received, the Contractor will be responsible for any consequent expenses.

GCC 14.1

The prices charged for the Goods supplied and the related Services performed shall *not* be adjustable.

No escalation of what so ever nature shall be payable in the contract except that the contract price shall be adjustable on account of any changes in statutory Taxes and duties.

GCC 15.1 and 15.5

No Advance Payment will be made.

For Item Nos.1 (a), 2 (a), 3 (a), 4 (a), 5 (a) and 6 (a)

Supply

- (i) 70% payment will be made after the receipt of entire supply materials in good condition at site and acceptance by the Trust.
- (ii) 30 % payment will be made after installation and taking over of entire systems.

For Item Nos.1 (b), 2 (b), 3 (b), 4 (b), 5 (b), 6 (b) and all other items:

100% payment will be made after taking over of entire systems.
The payment will be made on production of pre-receipted bill in the Trust's format and being certified by the Employer's representatives.

The tenderer shall quote the Bank Account details for the payment through ECS along with PAN, MICR No., IFSC Code, etc.

Any claim for interest will not be entertained by the ChPT with respect to any payment or balance which may be in their hands owing to any disputes between themselves and the Contractor or with respect to any delay on the part of the ChPT in making payment.

NOTE: On successful tenderer shall submit the Schedule of materials with rate for payment purpose on approval of Engineering in charge.

GCC 16.3

It shall be the responsibility of the successful Tenderer to pay all the applicable taxes & duties. If any exemption from Taxes and duties are possible, the same are required to pass on to Ch. PT (Chennai Port Trust).

GCC 17.1

Security Deposit/Performance Guarantee shall be submitted by the successful bidder within 21 days. The amount of the Security deposit shall be: 10% of total Contract Value in the form of a Bank Guarantee (B.G), from a Nationalised/ Scheduled Bank, having their branch in Chennai. The validity of such guarantee issued, towards performance of the Contract, shall be up to a period of one year from the date of successful commissioning and testing of the entire system further claim period of 3 months thereafter. The Bank Guarantee towards Performance Guarantee for supply will be released after completion of guarantee period.

GCC 17.3

The **Performance Guarantee** shall be in the form of “a Bank Guarantee”

BG shall be issued by a Nationalized/Scheduled Bank (as per schedule of Reserve Bank of India) having branch anywhere in India enforceable/encashable at Chennai only in the name of the Chairman, Chennai Port Trust but not from co-operative banks.

The Performance security shall be denominated in the INR.

GCC 17.4

Discharge of the Performance Guarantee shall take place: Upon issuance of a letter to that extent by the Employer and on satisfactory completion of the Contract period.

GCC 22.2

The packing, marking and documentation within and outside the packages shall be as stated under GCC Cl No. 22.1 to 22.3 and clearly mention the **final destination** mentioned under clause TIS 14.5 (a) (iii).

GCC 23.1

The **insurance** coverage shall be as follows:-

The entire equipment shall be insured during transit of materials from the Place of dispatch to the Place of Destination and till handing over / taking over of the equipment to the satisfaction of the Employer. The charges shall be borne by the Tenderer.

GCC 24.1

The Contractor is required to arrange for transporting the entire equipment from the place of manufacturer to a specified place of final destination, defined as the Project Site (i.e. Chennai Port Trust).

GCC 25.1

All the **Inspections and Tests** mentioned under shall be carried out:-

The TPI shall be appointed by the Employer, for the approval of drawings, Stage Inspections and during testing and commissioning at site. Based on the QAP (Quality Assurance Plan) submitted by OEM and approved by the TPI agency. Payment will be released based on TPI report.

GCC 25.2, 25.3 and 25.5

The **Inspections and tests** shall be conducted for the approval of drawing, inspect the site and works duly certify the work for payment.

GCC 26.1

The Liquidated Damage/Late Delivery Charges: The Liquidated Damages/Late Delivery Charges shall be deducted from any amount payable to or to be payable to the contractor/supplier including encashment of Bank Guarantee or any securities/guarantees, if any available with the Port Trust.

The maximum amount of Liquidated Damages/Late Delivery Charges shall be worked out based on the total contract/supply order value inclusive of all taxes and duties thereon.

In case of part/portions of the contract work/supply order completed and taken possession by the Trust and the Trust operates/can be made for operation of the part portion/supply order, the calculation of Liquidated Damages will be restricted to the uncompleted/undelivered value of the work/supply order subject to the amount of the maximum percentage prescribed for the Liquidated Damages/Late Delivery Charges of the total value of the contract/supply.

The Liquidated Damages/Late Delivery Charges shall be ½% of the contract value per week or part thereof (a week is defined as 7 days inclusive of holidays) subject to a maximum of 10% of the total contract value.

If the contract/supply order is delayed after giving due notice, the contract/supply order may be cancelled by the competent authority with the condition that any additional expenditure incurred by the Port Trust in completing the work/supply order will be recovered from the contractor/supplier of the cancelled contract/supply order for non-performance/delay in the execution of the contract/supply.

GCC 27.3

The period of validity of the **Warranty** shall be **24 months** from the next day of issue of taking over Certificate by the Chief Mechanical Engineer.

GCC 27.5 & 27.6

The period for repair or replacement shall be **Three (3)** days in normal course. However, if spare parts are required, the period shall be as determined by the Employer.

Defect Liability Period shall be extendable to the extent of idling of Equipment/Facility (non-commercial use) due to non rectification of defects during the original or extended defect liability period; Reasonable period of response may be decided on case to case basis and indicated by the Employer after considering the nature and type of defect, its remedial process and scope of contract.

GCC 27.8

Scope shall be as defined in Section V, Schedule of Requirements.