

NOTICE INVITING TENDER

Tender No.:- SCOPE Minar / MMO / 17-18 /247

07/03/2018

Sub. : Supply, Installation, Testing & Commissioning of Fire Hydrant & Sprinkler LT Panel at SCOPE Minar Laxmi Nagar Delhi-110092.

1. Sealed item rate tenders are invited by Dy. General Manager (Engg.), SCOPE on behalf of Constituents of SCOPE Minar, Laxmi Nagar, Delhi-110092 for the subject work as per the details given below:-

1.1 Name of the work	:Supply, Installation, Testing & Commissioning of Fire Hydrant & Sprinkler LT Panel at SCOPE Minar Laxmi Nagar Delhi-92.
1.2 Estimated Cost	: Rs. 15,32,472/- plus GST @ 18%
1.3 Earnest Money	: Rs 36,166.00
1.4 Time for completion	: Three Months from issue of LOI.
1.5 Cost of Tender	: Rs. 500/-
1.6 Last date of submission of Tenders	: 23/03/ 2018 Up to 3:00 PM
1.7 Place of submission of Manager(Engg.), Sealed Tenders	: Office of Dy. General MMO, SCOPE, SCOPE Minar, Laxmi Nagar, Delhi-110092.
1.8 Date & Time of opening of Tenders	: 23/03/2018 at 4.00 P.M.
1.9 Place of opening of Tenders	: As mentioned above.

2. Tender documents consisting of drawings (if any) Technical specifications, schedule of Quantities, Contract conditions, can be had from the office of Dy. General Manager (Engg.),Core-2 UL floor, SCOPE Minar, Laxmi Nagar, Delhi-110092 on payment of Rs.500/- in the form of D.D. in favor of MMO SCOPE Minar (non-Refundable) on any working day from.12/03/2018 to 22/03/2018 during working hours from 10.00 A.M. to 4.00 P.M. Scope of work and eligibility criteria can be seen from the website of SCOPEwww.scopeonline.in. However, bid shall be submitted on purchased documents only.
3. Tender document shall be issued only to the manufacturers and reputed specialized Contractors working with CPWD/PWD/MES/Railway/PSUs/Autonomous Bodies/SCOPE

who fulfill following pre-qualification criteria & showing the original document in this regard:

3.1 Proof of registration with ESI, PF, GST Registration, PAN No. & valid Electrical Contractor license issued by concerned authority of Govt. of Delhi / State Govt.

3.2 Experience of having successfully completed similar works during the last 5 years ending last day of the month previous to the one in which applications are invited:

Three similar completed works, each costing not less than the amount equal to 40% of estimated cost put to tender.

OR

Two similar completed works, each costing not less than the amount equal to 60% of the estimated cost put to tender.

OR

One similar completed works of aggregate cost not less than the amount equal to 80% of the estimated cost.

- 4 Average annual financial turn over should be at least 1.5 times of the estimated cost during the immediate last 3 consecutive financial year.
- 5 Balance sheet for previous three years with ITR.
- 6 Copies of similar works executed / in hand for multi-storied office building & industry during last three years along with work order & clients performance /completion certificate.
- 7 All the above certificate / documents shall be submitted by the firm duly signed & self attested subject to verification with original documents.
- 8 Profile of the indicating names of Directors / Partners / Proprietor, technical staff, and details of establishment etc.
- 9 NIT & Tender details shall also be available on SCOPE's website www.scopeonline.in stipulating the terms & conditions for the benefit of intending bidders to understand the scope of work, specifications etc. However, bids will be acceptable only if issued from the office of Dy.General Manager SCOPE and purchased by the bidders after verification of the specified pre-qualification criteria.
- 10 The tender shall be submitted in the following manner, in three separate sealed envelopes, duly super scribed the name of work along with following details:-

Envelope-I "EMD"

Envelope-II "Technical and Un-priced Commercial Bid"

Envelope-III "Price Bid"

Envelope – I shall contain 'EMD'. Envelope-II shall contain tender containing Technical & Un-priced Commercial Bid duly signed and stamped on all pages.

Envelope-III shall contain only prices duly signed, i.e., schedule of rates duly filled in.

It is to be noted that the sealed envelope containing Price Bid (Envelope-III) shall contain only the prices without any conditions whatsoever.

- 11 Tenderers are advised to submit their offers strictly based on the, design parameters, specific requirements, terms & conditions and technical specifications given in the tender document.
- 12 Earnest Money mentioned above should be paid by crossed Demand Draft / Pay order from any Nationalized / Scheduled Bank in favor of “**MMO SCOPE Minar**”. Tenders without Earnest Money Deposit will be summarily rejected and the representative of such tenderers will not be allowed to attend tender opening.
- 13 The tender Envelope (II) containing Technical & Un-priced Commercial Bids shall be opened on the due date in the presence of tenderers or their authorized representatives who wish to remain present. The price bids (Envelop - III) shall be opened after all the technical bids are brought at par.
- 14 Pre-bid Conference shall be held at 3:00PM on 16.03.2018, if required.
- 15 SCOPE reserves the right to reject any or all tenders without assigning any reasons.

(ShubhRatna)
Dy.General Manager (Engg.)

SCOPE OF WORK:

This specification covers design, fabrication, testing, inspection, supply and supervision of erection & commissioning of Metal enclosed Switchgears for FIRE Hydrant and SPRINKLER panels at SCOPE Minar, Laxmi Nagar, Delhi-110092.

TECHNICAL SPECIFICATION FOR LT PANEL

1. This specification covers design, fabrication, testing, inspection, supply, supervision of erection & commissioning of Metal enclosed Switchgears.

2. Applicable Standards:

The switchgear and its components shall conform to the latest applicable standards specified below. In case of conflict between the standards and this specification, same shall be brought into notice of Engineer in charge.

- i. Switchgear General Requirements.....IS:13947/BS:5486/IEC:947
- ii. Factory Built Assemblies of SWGR and Control gear for voltages up to and including 1000VAC&1200VDC.....IS:8623/BS:5486/IEC:60439
- iii. Air Break Switches.....IS:13947-P3/BSEN 60947/IEC:947-3
- iv. Miniature Circuit Breakers.....IS:8828/BSEN:60898
- v. Low Voltage Fuses.....IS:13703/BSEN 60947-4/IEC:60947-1
- vi. Contactors.....IS:13947/BSEN 60947-4/IEC:60947-1
- vii. Starters.....IS:13947/BSEN 60947-4/IEC:292-1 to4
- viii. Control Switches / Push Buttons..IS:6875/BSEN 60947/IEC60044
- ix. Current Transformers.....IS:2705/BS:7626
- x. Voltage Transformers.....IS:3156/BS:7625/IEC:60186.
- xi. Indicating instruments.....IS:1248/BS:89/IEC:51
- xii. Marking and Identification of Conductors and Apparatus Terminals..IS:11353/BS:159
- xiii. A.C. Electricity Meters.....IS:722, 8530/BS:5685/IEC 145, 211
- xiv. Degree of Protection.....IS:13947/IEC:947-P1
- xv. Selection installation and maintenance of switch gear and control gear IS:10118
- xvi. Code of practice for phosphating iron and steel.....IS:6005/BS:3189
- xvii. Specification for copper rods and bars for electrical purposes.....IS: 613
- xviii. Control transformers for switch gear and control gear voltage not exceeding.....1000V ACIS:
12021 Circuit Breakers.....IS-13118, BS-5311, IEC-56 & 694 BSEN-60942 (P-2)
- xix. Control Switches.....IS-6875/BSEN60947, IEC-947
- xx. Relays.....IS: 3231/IS3842/BSEN60947-5-1/IEC60255
- xxi. Wrought aluminum and aluminum alloy bars, rods, tubes and sections for electrical purposes.....IS: 5082
- xxii. Marking and arrangement for switchgear, bus bars main connection and auxiliary wiring.....IS-5578&IS-11353

The LV Switch Board shall be Type Tested as per standards IEC 60439-1/CPRI. The drawings of the type tested assemblies shall be made available for inspections.

3. Switch Board Configurations:

- a) The Switchboard shall be configured with Air Circuit Breakers, MCCB's, MPCB MCB's, ISOLATORS and other equipment as called for in the schedule of quantities.
- b) The MCCBs shall be arranged in multi-tier formation. The incoming Air Circuit Breakers shall be arranged in Single tier formation only but Double

tier formation to facilitate operation and maintenance may be used for outgoing air circuit breakers only.

- c) The Switchboards shall be of adequate size with a provision of 20% Spare Feeders (subject to at least one of each type) & spare space to accommodate possible future additional switch gear.

4. Construction Details:

The switchgear shall be metal enclosed, modular type suitable for indoor floor mounting and shall have following features.

- a) Shall be fabricated by using CRCA (Cold Rolled Cold Alloy) sheet steel.
- b) All cubicles / panels shall comprise of rigid welded structural frames made of pressed and formed CRCA sheet steel of thickness not less than 2.5 mm.(12SWG) Cladding of the frames and doors shall be made out of 2mm(14SWG)& 1.6 mm.(16SWG) thick sheet steel respectively. All cable gland plates shall be made out of 3 mm (10SWG) thick sheet steel plates.
- c) All cubicles shall be provided with ISMC-75 channel base frame.
- d) Height of panel shall not exceed 2250 mm. Normal operating height shall not exceed 1800 mm. The height of the operating handle, push buttons etc shall be restricted between 300 mm and 1800 mm from finished floor level.
- e) Shall be single/double front execution as specified in specific requirements and shall be of dead front type. Whenever specified in specific requirements, single front execution panel shall not need rear access for operation or maintenance purpose.
- f) Shall have designation labels both on front and rear sides. Shall be provided with neoprene gaskets for removable covers, doors, between panels and base frame and all around the perimeter of adjacent panels. Gaskets shall be fixed with CNC machines on the cover of the panels to render the panel dust and vermin proof and provide required degree of protection as stipulated in schedule of quantities. The unused openings within the switchboards shall be closed using suitable grommets.
- g) Switchgear panel shall be readily extendable on both sides by addition of vertical sections after removal of the end covers Switchgear panel shall be suitable for top/bottom, cable/bus bar entry as specified. There shall be adequate space for ease of termination of aluminum/copper conductor multi core cables, selected with 60% derating factor.
- h) The switchboards shall be designed for use in high ambient temperature and humid tropical conditions as specified. Ease of inspections, cleaning and repairs while maintaining continuity of operation shall be provided in the design.

Switchgear shall be divided into distinct vertical sections each comprising:

- a) A completely enclosed bus bar compartment running horizontally.
- b) Enclosed vertical bus bars serving all modules in vertical section.
- c) A separate horizontal enclosure for all auxiliary power and control buses, if required. Vertical cable alley of minimum 300 mm wide covering entire height with undrilled detachable gland plate Minimum feeder section width shall be 300mm & height 250mm
- d) Operating devices shall be incorporated only in the front of switchgear.
- e) Each shipping section shall have metal sheets at both ends.
- f) Cable alley shall be provided with suitable hinged doors.

- g) Rear of single front switchgear shall be provided with removable panels with captive screws. The panel covers shall be provided with suitable arrangement for removing the cover.
- h) All doors shall be with concealed type hinges and captive screws. Doors shall be provided with right angle turn type door lock.
- i) Each vertical section shall be equipped with a space heater controlled by thermostat.
- j) Each switchgear cubicle shall be provided with interior lighting with a 20 W fluorescent tube or 25 W clear glass lamp with pin type holder with on/off MCB control.
- k) A 240 V, 1-phase, AC Industrial type, metal clad plug point shall be provided in the interior of each cubicle with on-off MCB for connection of hand lamps/blowers.
- l) Interchangeability: All identical equipment and corresponding parts be fully interchangeable without any modifications.
- m) Switchboard shall be provided with "Danger Notice Plate" conforming to relevant Indian Standards.
- n) Each switchgear cubicles shall be fitted with label in front and back identifying the circuit, switchgear type, rating and duty. All operating device shall be located in front of switchgear only. Each switchgear shall also be fitted with a label indicating the switchgear rating and duty. Each relay, instrument, switch, fuse and contactor shall be provided with a separate label.
- o) Labeling shall be Aluminum Anodized with White Letters of suitable size against Black background.

5. Main and Auxiliary Buses:

Bus bar and interconnections shall be of high conductivity electrolytic grade Aluminium / Copper as indicated in the bill of quantities complying with requirement of IS : 5082 – 1981 and of rectangular cross section suitable for carrying the rated full load current and short circuit current and shall be extendable on either side. Bus bars and interconnections shall be insulated with heat shrinkable sleeve of 1.1 KV grade and shall be colour coded. Bus bars shall be supported on glass fibre reinforced thermosetting plastic insulated supports (Non Hygroscopic, Non Carbonising, Corrosion Resistance SMC) at regular intervals to withstand the force arising from in case of short circuit in the system. All bus bars shall be provided in a separate chamber and all connections shall be done by bolting. Additional cross sectional area to be added to the bus bar to compensate for the holes. All connections between bus bars and breakers shall be through solid copper / aluminium strips of proper size to carry full rated current and insulated with insulating sleeves. Maximum current density for the bus bars shall be 0.8 A/sq.mm for aluminium and 1.4A/sq.mm for copper bus bars.

Maximum allowable temperature for the Bus bar to be restricted to 85 deg C. All bus bars, bus taps shall be insulated with close fitting sleeve of hard, smooth, dust and dirt free heat shrunk PVC insulation of high dielectric strength to provide a permanent high dielectric non-aging and non-tracking protection, impervious to water, tropical conditions and fungi. The insulation shall be non-inflammable and self-extinguishing and in fast colors to indicate phases. The joints shall be insulated in such a way as to provide for accessibility of contact bolts for maintenance. The dielectric strength and properties shall hold good for the

temperature range of 0 to 90 degree centigrade. If the insulating sleeve is not colour, bus bars shall be colour coded with colored bands at suitable intervals.

Both main horizontal bus bars and vertical bus bars serving modules shall be insulated. Bus bar joints shall be of the bolted type and shall be insulated. Spring washers shall be provided to ensure good contact at the joints. Bus bars shall be thoroughly cleaned at the joint locations and suitable contact grease shall be applied just before making a joint.

Bus bars shall be located in air-insulated enclosures. Direct access to, or accidental contact with busbars and primary connections shall not be possible. All apertures and slots shall be protected by baffles to prevent accidental shorting of bus bars by the entry of maintenance tools. To provide a tight seal between cubicles, bushings or insulating panels shall be provided for bus bars crossing from one cubicle to another. The bus bar system may comprise of a system of main horizontal bus bars and auxiliary vertical bus bars run in bus bar alley on either side in which the circuit could be arranged with front access for cable entrances.

The bus bars shall be supported on non-breakable, non-hygroscopic epoxy resin or glass fibre reinforced polymer insulated supports able to withstand operating temperature of 110° C at regular intervals, to withstand the forces arising from a fault level as stipulated in schedule of quantities. **The material and the spacing of the Bus bar supports should be same as per the type tested assembly.**

The minimum clearances to be maintained for enclosed indoor air insulated bus bars for medium voltage applications shall be as per IEC guidelines Bus bars calculations sheet: This should give panel wise bus bars used in the project. Manufacturer should give current at 30 deg. Ambient and temperature rise calculation. If any software is used for calculation then printout of the same should be submitted.

After isolation of the power and control connections of a circuit, it shall be possible to safely carry out maintenance in a compartment with the bus bars and adjacent circuits alive.

All draw out contacts shall be of silver plated copper. Clamping arrangement shall be provided for incoming & outgoing cables. Busbar shall be extendable on either side.

6. Pretreatment and Painting:

All metal work of the fabricated panel shall undergo a seven-tank process of degreasing, pickling in acid, cold rinsing, phosphate, passivating etc., in 7 tank treatment plant before painting. The sheet metal shall undergo a 7 tank Pre treatment of before powder coating. The processes are as follows.

- a. Degreasing.
- b. Water rinse.
- c. De-rusting (Acid treatment).
- d. Water rinse.
- e. Passivation.
- f. Water rinse.
- g. Phosphating.

Powder Spraying should be done with 100kV gun. Precaution should be taken for even spraying of powder at all surface of sheet metal. Excess powder if any, should be removed by vacuum pump.

Fabricated parts should undergo powder coating and oven baking. Powder coating thickness should be more than 100 microns and less than 150 microns.

All unpainted parts should be zinc coated or blue / yellow passivated.

The treated panel shall be painted in 2 coats of high corrosion resistant primer. The primer shall be baked in oven. The finishing treatment shall be by synthetic enamel or epoxy paint with powder coated finish, as specified. In case of powder coated finish above is not applicable.

7. Switchboard Interconnections:

All connection and tap offs shall be through adequately sized connectors appropriate for fault level at location. This shall include tap off to feeders and instrument/control transformers.

For unit ratings up to 100 amps, PVC insulated 105 deg withstand, copper conductor wires of adequate size to carry full load current shall be used. The terminations of such interconnections shall be crimped. Solid connections shall be used for all rating of 100 amps above.

All connections, tappings, clamping, shall be made in an approved manner to ensure minimum contact resistance. All connections shall be firmly bolted and clamp with even tension. Before assembly joint surfaces shall be filed or finished to remove burrs, dents and oxides and silvered to maintain good continuity at all joints. All screws, bolts, washers shall be zinc plated. Suitable grade nuts and bolts shall be used for bus bar connections.

8. Draw out Features:

Air Circuit Breakers shall be provided in fully draw out cubicles, unless otherwise stated. These cubicles shall be such that draw out is possible without disconnection of the wires and cables. The power and control circuits shall have self-aligning and self-isolating contacts. Mechanical latches shall be integrated in ACB at service, test and isolated position to ensure that Breaker is firmly latched in respective position. It shall not be possible to move the breaker from the position unless latch is manually operated.