

BUSBAR TRUNKING SYSTEM TENDER DOCUMENT

FOR

Shri Markendey Solapur Sahakari Rugnalaya

& Research Center Niyamit.

**PROJECT: - Solapur Sahakari Rugnalaya Niyamit
on F.P. No. 19/2, Pachha Peth,
Solapur 413005.**

ARCHITECTS

ARCHITECTS UNITED.

**111/9, ERANDAWANE, 14TH LANE PRABHAT ROAD
PUNE - 411004**



VIDYUTSALLAGAR PVT LTD

Electrical Consultant & Engineers

Savitri, 113, Vinayak Society, Sahakar Nagar No. 1, Pune 9.

vidyutsallagar.anup@gmail.com;

020-24224534, 9372465729

**ENQUIRY FOR SUPPLY OF BUSBAR TRUNKING SYSTEM FOR
PROPOSED HOSPITAL AT SOLAPUR**

From: _____

Date: _____

To,

M/s Solapur Sahakari Rugnalaya Niyamit
on F.P. No. 19/2, Pachha Peth,
Solapur 413005.

Kind Attn.

Dear Sir,

**Sub: - Supply of BUSBBAR TRUNKING SYSTEM for SOLAPUR SAHAKARI RUGNALAYA
NIYAMIT AT SLOAPUR.**

We have pleasure in submitting herewith Tender Quotation for the above mentioned works, duly completed in all respects.

1. We represent that we have the adequate experience and expertise in handling and delivering the Work as envisaged in the Enquiry as above in accordance with the quality and time period desired by you.
2. We have read and studied the entire Enquiry Document for the proposed work we agree to abide by them.
3. We agree to execute and complete the proposed work at the rates quoted herewith.
4. We have inspected the site of works and acquainted ourselves with the local conditions. We will not claim any extra amounts for reasons arising out of site conditions. Rates quoted by us include all such eventualities.
5. The rates quoted in the Enquiry shall be valid for three months from the date of opening of the Enquiry.
6. I/we understand that you are not bound to accept the lowest or any tender you may receive. This Tender document shall be a part of the Contract.

Please note:-

1. Bidders are requested to give deviations/comments/assumptions/alternatives clearly in deviation pages / separate pages based on their observations.
2. Technical specifications for which deviations are not provided with the bids or not accepted during negotiations shall not be revised after order.
3. Base BOQ shall not be altered.
4. The bid document shall be filled properly and all relevant information asked for shall be provided in due format.
5. This Tender document shall be a part of the Contract.
6. Bidders are requested to specify the makes and catalogue numbers in BOQ for each item they have considered.

I/ we do hereby offer to execute the work under the Item rate Contract at the respective rates mentioned in the Schedule of Quantities. Cost of this works out to

Rs...../-

(Rs.....
.....Only)

Thanking you,

Yours faithfully,

Seal of Vendor

(Signature of Vendor)

TENDER DETAILS

Sealed item rate tenders are invited on behalf of M/S._Shri Markendey Solapur Sahakari Rugnalaya & Research Center Niyamit for Supply, Installation, Testing & Commissioning of **BUSBAR TRUNKING SYSTEM** for their proposed hospital at Solapur.

- The purchaser reserves the right to accept any tenders received after the expiry of the time notified.
- No hard copy should be submitted to office. Only soft copy is required.
- Last date of tender submission is 03/11/2021 on or before 7.00 pm
- The Owners at their sole discretion can accept any Tender or reject all the received Tenders. This note shall form part of the Contract.
- The Tender is an item rate Tender, though the total value of Contract shall appear on the letter of intent or work order, the successful Contractor shall be paid as per measured, erected and certified quantities of 'Bill of Quantities' on pro rata basis as per the payment terms.

- Please submit your queries on following Email-ids.
vidyutsallagar.anup@gmail.com

In case, any clarification is required, the Bidders shall obtain the same from the Consultant/Client in writing. All such clarifications shall be binding both on the Purchaser/Consultant and the Bidder.

At any time prior to the deadline for submission of Bids, the Purchaser/Consultant may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the tender document by amendments.

The prices & rates quoted by the Bidder's shall be valid & shall be kept open for acceptance for a minimum period of thirty days (30) days from the date of opening of tender.

The acceptance/ rejection of the quotation will rest with the purchaser, who does not bind himself to accept the lowest quotation or any quotation & reserves to himself the full rights for the following without assigning any reason whatsoever.

Whenever it is stated in this contract that such and such a supply is to be affected or such and such a work is to be carried out, or provided it shall be understood that the same shall be effected/carried out by the supplier within the contract price, unless a different intention is specifically and expressly stated herein or otherwise explicit from the context.

Project information: - Solapur Sahakari Rugnalaya Niyamit
on F.P. No. 19/2, Pachha Peth,
Solapur 413005.

Name of work: - SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF
BUSBAR TRUNKING SYSTEM FOR PROPOSED HOSPITAL AT
SOLAPUR

Purchaser/ owner: - M/S. Shri Markendey Solapur Sahakari Rugnalaya
& Research Center Niyamit.

Electrical consultant: - VIDYUTSALLAGAR PVT LTD
ELECTRICAL CONSULTANT & ENGINEERS
SAVITRI, 113, VINAYAK SOCIETY,
SAHAKAR NAGAR NO. 1, PUNE 9.

Contact Person: - Mr.Anup. A. Karandikar
Project Design Engineer
Mob: - +91 7875054055
E-mail:- vidyutsallagar.anup@gmail.com

Site conditions: - Design ambient temperature
Maximum 45° C
Minimum 14° C
Relative humidity: 50% RH
Altitude above mean sea level: 457M
Installation: Indoor.

DEVIATIONS FROM SPECIFICATIONS

All deviations from technical specifications of contract shall be filled in hereby the bidder.

SECTION	CLAUSE NO.	DEVIATION
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The bidder hereby certifies that the above mentioned are only deviations from technical Specifications of this enquiry.

Thanking you,

Yours faithfully,

Seal of Vendor

(Signature of Vendor)

PAYMENT TERMS SUGGESTED

Stage of payment	Percentage of Material cost as per order	Percentage of Installation cost as per order.
Advance Against Advance Bank Guaranty of 6 month Validity. This will be recovered in 2 or 3 bills after that ABG will be returned	10%	10%
Advance Against Delivery of material on site.	70%	0%
Against Installation	0%	70%
Against Testing	15%	15%
Against total Commissioning To be release against PBG for Defect Liability Period	5%	5%
Total payment	100%	100%

Vendor shall quote material supply and installation cost separately as per BOQ. Client may decide to keep installation in scope of electrical contractor or Busbar trunking system vendor.

Thanking you,

Yours faithfully,

Seal of Vendor

(Signature of Vendor)

BUS BAR TRUNKING

SCOPE: - This specification covers design, manufacturing, testing and delivery of following mentioned fabricated bus bar system, from Basement (Shaft) to Terrace, Aluminium Overhead Bus bars Insulated System enclosed in G.I. enclosure with proper supports. The scope will include the proper engineering of the system. With Clamps suitable for Vertical supports/ Mounting Arrangement complete as required as per site condition. Supporting of the same shall be considered.

- You should treat it as a Turnkey Job that is you should complete all work related to Bus bars, like Supporting, Connections etc. In simple words you should keep system ready with all concern.
- The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.
- It is not the intent to specify herein complete details of design and construction. The Equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to Perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements.
- Transportation of bus bar at Employer's store at site should be part of scope.
- Supervision of unloading of the bus bar is also to be considered in the scope.
- Arranging to repair and/or re-order all damaged and short supply items.
- Packing of the Equipments suitable for (all) weather conditions for proper protection.
- Final check-up, testing and commissioning in presence of Employer's representative.

SPECIFICATION: -

- **Aluminium** – 300 Amp. Bus bar Trunking (Raw Power) 415V, 3P, 4W, 100% neutral, integral 50% Earth
- **Aluminium** – 100 Amp. Bus bar Trunking (Emergency Power) 415V, 3P, 4W, 100% neutral, integral 50% Earth
- Bus Bars should be of E91E grade Aluminium with a maximum current density of 0.8A/sq. mm. Bus bars should be properly supported at regular intervals on supports to with stand required short circuit level. Temperature rise calculations should be made and forwarded to client/consultant for necessary approvals.
- Adequate spacing between phases and phase to neutral to be maintained throughout the length of the bus duct.

BUS BAR TRUNKING 1

▪ RATED CURRENT	300 AMP
▪ RATED VOLTAGE	433 VOLT
▪ FREQUENCY	50 HZ
▪ FAULT LEVEL FOR 1 SEC	36 KA (min)
▪ RATED INSULATION VOLTAGE	1000 V AC
▪ INSULATION	CLASS F- EPOXY
▪ DESIGN AMBIENT TEMP	50° C
▪ DEGREE OF PROTECTION	IP 54
▪ ENCLOSURE	1.6 MM G.I. WITH EPOXY COATING
▪ LENGTH	61 MTR.

- **BUS BAR TRUNKING 2**

▪ RATED CURRENT	100 AMP
▪ RATED VOLTAGE	433 VOLT
▪ FREQUENCY	50 HZ
▪ FAULT LEVEL FOR 1 SEC	25 KA (min)
▪ RATED INSULATION VOLTAGE	1000 V AC
▪ INSULATION	CLASS F- EPOXY
▪ DESIGN AMBIENT TEMP	50° C
▪ DEGREE OF PROTECTION	IP 54
▪ ENCLOSURE	1.6 MM G.I. WITH EPOXY COATING
▪ LENGTH	61 MTR.

- For Making Bus bars and main connections the following colours or Letters or both as given in IS: 375 shall be used.

Sr. No	Bus Bar Main Connections	Colour	Letter or
1	Three Phase	Red, Yellow & Blue	R-Y-B
2	Two Phase	Red & Blue	R-B
3	Single Phase	Red	R
4	Neutral Connection	Black	N
5	Connection to Earth	Green	E
6	Phase Variable (such as in connection to reversible motor)	Gray	Grey or GY

COMPLIANCE:

The busbar trunking system shall comply with IEC61439 1&6, it shall be of low impedance and air insulated type technology (available as feeder or plug-in). Valid Type test certificate confirming the same (from agencies such as ASTA Certificate Services, ASEFA, KEMA) for all ratings and tap off boxes is essential and shall be submitted for review and approval. In addition to this, test Certificates confirming compliance to RoHS and Environmental Profile are required. In case of fire the busbar system shall not release toxic gases and busway shall not contain any PVC material.

CONSTRUCTION:

Galvanised sheet steel outer casing capable of acting as an integral earth conductor is required. The casing shall be crimp closed to ensure proper IP and better performance.

IP RATING:

Minimum IP 54 degree of protection in accordance with IEC60529 is required. Valid Type Test Certificate confirming the same from reputed agency such as ASTA, KEMA-KEUR for all ratings is required.

IMPACT WITHSTAND:

IK08 Impact resistance (IK) shall be as define in standard IEC62262.

JOINT:

There shall be a mechanical and electrical joining system that ensures automatic and simultaneous joining of all live conductors and the continuity of the protective earth conductor, as well as it's connection with the casing. The joint unit also absorbs the difference in conductor and casing thermal expansion for each length. The systems with nut and bolt type arrangements with holes for connection on conductor are not acceptable.

TEMPERATURE:

Rated current at 45 degrees C (Inc) for standard circuit operation.

SHORT CIRCUIT RATING

The whole busbar trunking system shall be capable of withstanding the short circuit capacity of the electrical installation without damaging the electrical, mechanical, and thermal stress under fault condition at a service voltage of 415V 50Hz. Co-ordination of the distribution should be guarenteed such that the Circuit breaker / trunking combination will limit the peak current to a value less than the rated peak current of the busbar trunking. This is also required view guideline given in National Building Code 2016. Type Test Certificate confirming short circuit withstand and short circuit peak current for all ratings from reputed agency such as ASTA, KEMA-KEUR, UL as per IEC61439-1&6 is essential. A Type Test report confirming Degree of Protection in accordance with IEC 60529 is must.

ALUMINIUM CONDUCTOR

Live conductors shall be of Bimetallic Aluminium as per EN-AW6101. Conductors shall be supported on fibreglass reinforced polyester isolators.

NEUTRAL BUS BAR

Internal neutral conductor shall be 100% unless otherwise stated, which can meet with the requirements of various power systems in the installations.

TAP-OFF UNITS

Tap-off outlets shall be connected to the isolators to form a block, holding the bars. They shall have a shuttered outlet which is opened and closed automatically when tap-off units are plugged in or removed. Tap-off outlets are spaced at 0.5 to 1 meter and available on both sides. Protection level of the tap off outlet shall be at least IP55 by construction. The Riser or Plug IN elements having outlets on both sides are essential. Tap OFF outlet having finger safe design.

Tap-off box up to 63A shall be made of plastic which shall be self-extinguishing, halogen free in nature and offer high resistance to fire and shall have extremely high temperature withstand. They can be handled and removed under off-load conditions with the trunking energised. Tap Off Box design shall be such that when the cover is opened there shall be no

access to live parts. Tap Off Box design will also facilitate automatic opening and closing of shutter on tap off outlet, systems not having such design/feature will not be acceptable.

Tap-off box design shall be din rail type with provision to use modular protection devices and shall have cable gland and drilling zone and stainless-steel screws.

HOUSING:

The design of housing shall be such to improve heat dissipation and reduce hysteresis & eddy current losses. It shall be provided with a suitable protective finish of epoxy powder coating. Housing shall be light in weight for ease of installation and maintenance. Housing shall be non-corrosive and shall be epoxy painted Color indication (RYBN) should be there on the housing for phase sequence identification. The bus bar trunking housing shall be totally enclosed non-ventilated, extruded aluminum/GI for protection against mechanical damage and dust accumulation. Also, manufacturer to confirm their proposed housing to provide a low impedance ground path with almost 50% Grounding Capacity of Rated Current. Totally enclosed housing for bus trunking shall be manufactured by the bus trunking/busbar trunking system manufacturer. Modifications of bus bar trunking at site to make it totally enclosed by third party / other than the bus bar trunking manufacturer shall not be acceptable.

SEISMIC TEST

The busbar trunking system shall pass seismic tests with actual physical product and being certified complying with UBC seismic Zone 4 condition by an international recognized earthquake research body, e.g. Asian Pacific Network of Centres for Earthquake Engineering Research (ANCER).

EARTHING STRIPS

The Bus duct shall be provided with 2 Nos external earthing strips of aluminium of appropriate size as per short circuit withstand specified and as per IEC 61439. Earthing strips shall be riveted or bolted to the enclosure at regular intervals. In case housing of bus trunking is being used as earthing, the manufacturer shall provide a test certificate.

SUPPORT OF BUS BAR TRUNKING

Hanger spacing shall be noted on layout drawings and shall not exceed manufacturer's recommendations. For all the riser, spring hangers shall be used on every floor height not exceeding 4m. For floor height exceeding 4m, two sets of spring hangers shall be used per floors. For risers, at the bottom fixed type of vertical hangers shall be used. All the risers at the top end shall have end caps to provide safety and maintain ingress protection.

PACKING:

Vendor shall be responsible for any damage during transit due to improper or insufficient packing. Packing shall be constructed out of sound material and dimensions suitable to the goods, size and weight. Fragile material shall be security braced within container or amply fastened to prevent shifting or battering. Cushion lining of appropriate material shall be provided wherever necessary. Loose material MS parts Nuts bolts etc, shall be packed separately in gunny bags with polythene bags sealed and tagged. Components containing glass shall be provided with shock absorbing material cover like thermo Cole. In case of bulk materials Vendor shall supply the same in minimum sub-assemblies within the transport. Care shall be taken for preventing any seepage of water in case required to prevent any corrosion during transport. All spare parts shall be separately packed and treated for long storage in site condition. Each crate/package shall contain a packing list in waterproof envelope. Vendor/Contractor shall supply any material found short inside the packing at no extra cost. All packing material shall become property of Contractor as the purchaser. All packages shall be clearly, legibly and durably marked on at least two sides, Destination address, Dimension and weight, Sign showing "Side up " with arrow Sign, "Fragile and Handle with care" for delicate equipment, Slings and sling positions, Important handling and unpacking instructions.

Transport:

No material shall be dispatched without prior consent shipping clearance by the purchaser. The vendor shall intimate in advance date of dispatch and probable date of delivery at Site so that unloading arrangements can be made, particularly for heavy material. In case any equipment is to be transported in sub-assemblies or parts, vendor shall furnish all particulars and match marking. Such sub-assemblies shall be well within transportation and handling limitations. The transporters shall be provided with proper address and other details, working hours etc. The crate or packages shall be properly secured to avoid movements during transit to minimise possibility of damage.

SAFETY REGULATIONS

All the work to be executed based on the Permit To Work (PTW) format issued by Client

Readily accessible First aid kit including adequate sterilised cotton and dressing shall be provided. Any injured person shall be taken to nearest hospital. All workmen working at heights shall be provided with safety belts and anchoring arrangements at the site. Portable ladders shall be of heights less than 8 feet. In case of ladders additional manpower shall be employed for holding the ladders. Workers engaged in welding and related work shall be provided with protective eye shields and gloves. All electrical connections taken for construction purpose shall have earthing provided for equipment earthing. Open/temporary jointing of the cables shall be avoided. Live wires shall not be laid on ground/road or taken on surface without protective cover.