

SCHEDULE OF WORK QUANTITY AND RATES						
SCHEDULE			1	Tender No :	EL-TRD-TENDER-25-26-38-2	
Name of Work			Vadodara Division : Provision of composite High Voltage Insulated paint Coating under Over line structure in electrified territory of Vaodara Division			
IRPSM ID				15063625355008		
S N	Description	Qty.	Unit	Unit Rate	Total Rate	Total
1	Supply and application of 3 part composite High Voltage Insulated coating under FOB/ROB/Girder Bridge to avoid flashover and Tripping due to less static clearance suitable for 25 KV AC traction as per specification on 01 meter area on either side of catenary/contact wire with minimum coating thickness of 03 mm.	1107	Sq.M	50113	55475091	55475091
			Total Cost of Work			55475091

Explanatory Note of Work

The Price shall cover supply and application of composite insulation coating along with required quantity of suitable thinner, suitable cleaning solvent, suitable primer, cleaning aids etc. of approved specification and with proper surface preparation. The coating of 3mm thickness with proper surface preparation by suitable means and after application of coating shall have BDV > 40 KV AC.

The Contractor shall provide the High Voltage Composite Insulation Coating Compound as per the following technical specification:-

Technical Specification; -

Technical Specification for High Voltage Composite Insulation Coating suitable for 25 KV AC Traction under ROB/FOB/GIRDER BRIDGES.

Description of Properties	Value
Finished Appearance of Coating	Egg white/Gray or any other color with prior approval of customer
Appearance	Paint like viscosity
Cure System	Neutral Air Drying moisture cure
Percent Solid of Finished Coating	>75%
Specific Gravity of Finished Coating in wet condition.	1.10-1.50
Track Free Time of finished coating	30-45 Minutes per coat
Dry Time of Finished Coating	35-50 Minutes
Di-Electric Strength of Composite Insulation Coating @ minimum 3 mm coating thickness (IS 2584)	30 KV AC (withstand for One minute)

Weather ability	Excellent resistance against moisture, saline water and extreme weather conditions.
Guarantee/ Maintenance Period	24 months.
Minimum Breakdown voltage of insulation coating @ 3 mm coating thickness.	>40 KV AC
Salinity Level Withstand	>100kg/m ³
Volume Resistivity	>2.5x10 ¹¹ ohm/in
Temperature Stability	. - 30Deg to 250Deg
Water Absorption	<=0.5%
Adhesion Testing	Excellent of Metallic and Concrete Substrate
Loss Tangent at 50 HZ @ 500 Volts	Max 0.05
Inclined Plane Tracking & Erosion Test	Pass
Gloss level of Finished Coating	Marginal Gloss- Matt Finish

Application Procedure for Insulation Coating:

- 1) Application of High Voltage composite insulation coating compound is a power block activity. Line has to be discharged by means of proper grounding and line protection.
- 2) Surface preparation Initial power block is needed for cleaning scrapping and loosening rust, removing dust or any other foreign contamination and prepare the surface for the application of 1st coat of organic non hygroscopic coating compound.
- 3) Subsequently one and half hour is needed for the 2nd coat of inorganic coating compound.
- 4) Subsequently one and half hour is needed for the 3rd & Final coat of polymer coating.
- 5) The approximate time required for curing of 1st, 2nd & Final coating shall be 45 minutes, 30 minutes and 40 minutes respectively. Second and 3rd/Final coating shall be applied only after the curing time
- 6) Allow composite insulation coating for full curing for 4-6 hrs. Depending on temp. Humidity (power block is not needed).
- 7) The thickness of coating through the surface should be NOT less than 3 mm at any point of surface. The coating thickness shall be measured and recorded by means of Coating Thickness Meter which is suitable for Metal substrates as well as concrete substrates. A separate coating thickness meter is made available for locations having concrete substrates.
- 8) Minimum thickness of Coating should be equal to 3 mm

Note: Joint measurement of coating thickness will be done by Railways and contractor as per Railway's requirement. However, the cost and tools and tackles etc. required for such measurements shall be borne by the contractor.

Following material will be arranged by contractor for successful application of composite insulation coating compound under the FOBs/ROBs, Girder Bridges assembly:

1) Safety items i.e. mouth mask, eye protection, gloves etc.

2) Cleaning material i.e. mixing mug, surface scrapper, rough/fine abrasive sheet, wire brush, paint brush size 38 mm, cotton waste, lint free cloth, non-polar solvent, hygroscopic binder, siloxane prime coat, industrial grade dilutants, organic non-hygroscopic coating compound inorganic coating in 4.5 Kgs. Pail & Final Coat of Polymer Coating.

General requirement with the scope:

1) The Contractor on award of contract shall deploy experienced staff for the work. He shall submit list for such staff and supervisors working with him before starting the execution of work.

2) The supervisor and technical staff shall be certified by successful tenderer. The contractor has to take insurance for the staff working under him.

3) The work shall be carried out by ladder trolley.

Measurement, Inspection and Approval of Sample:

1) The minimum thickness of coating through the surface should be NOT less than 3.0 mm. The coating thickness shall be measured and recorded by means of Coating Thickness Meter which is suitable for Metal substrates as well as concrete substrates. A separate coating thickness meter shall be made available by the contractor for locations having concrete substrates. Joint measurement of coating thickness will be done by Railways and contractor as per Railway's requirement. However, the cost and tools and tackles etc. required for such measurements shall be borne by the contractor. At least 5 reading will be measured per sq meter.

2) Samples of coating shall be sent to ERDA or similar NABL accredited laboratory for measurement/ test as per relevant technical specification of High Voltage Composite Insulation coating. This cost will be borne by the contractor OR The existing certificate from ERDA or similar NABL accredited laboratory for measurement/ test as per relevant technical specification of High voltage composite insulation coating shall be accepted .

3) The work of surface preparation and application, testing and commission of composite high voltage insulation coating compound, will be inspected at site in all respect as per Railway's requirement and at every intermediate stage and after final completion by the authorized representative of Sr.DEE/TRD in the presence of authorized representative of contractor. All the equipment required for testing should be arranged by the contractor. The cost of all such tests carried out shall be borne by the contractor.

4) Depending on site conditions, atmospheric pressure as well as surrounding pollutants, the 2nd coating i.e Inorganic Coating and 3rd Coating i.e. Polymer Coating may be used interchangeably to provide optimum results. The average coating thickness will NOT be less than 3.0 mm.'

5) The High Voltage Composite Insulation coating shall be approved/recommended by RDSO/CORE, and the tenderer shall submit copy of approval/recommendation and reports of relevant tests carried out by RDSO/CORE along with their offer.

6) The product once applied will provide a service life of 02 Years Periodic inspection after the first year should be carried out by the successful tenderer along with Railway representative

General

- 1 Items details in the Schedule of Quantity and rates shall be read in conjunction with explanatory note of schedule of tender for respective items.

All items of provision mentioned in SOR covers Design, Manufacture, Supply of materials,

- 2 Erection, Testing and commissioning as required including small parts such as bolts, nuts, lock nuts, washers etc.

Basic Quantities and component of material required making up a unit of work for items mentioned in the explanatory notes are indicated for guidance purpose only. It is the sole

- 3 responsibility of the contractor to supply the system as per design and therefore he shall work out the exact quantities of component required for completing the work and satisfactory operation of the system.

All the equipment and materials to be supplied by the Contractor against various schedule items should confirm to RDSO's / CORE's/CEE W.RLY's/I.S. specification and drawings. Material should

4 be procured from sources approved by RDSO/CORE/CEE-W.Rly. Where such list is not available decision of the engineer in-charge is final and acceptable.

Contractor should note that all specifications as per the latest amendments to

- 5 RDSO's/CORE/W.Rly./IS and other relevant standard specifications shall be applicable unless specified otherwise.

The Contractor shall arrange all necessary tools, equipment's, instruments and other facilities for

6 execution liaison, checks and tests and commissioning as specified and decided by The engineer in-charge.

Testing and Commissioning: The successful tenderer shall demonstrate various efficiency and other related parameters as specified in the specification but not limited to during testing and

7 commissioning validated with calculations and / or software as desired by the representative of the Electrical Engineer.