



**TRIPURA NATURAL GAS COMPANY LTD.
AGARTALA, INDIA**

**HIRING OF AGENCY FOR CS PIPELINE COATING HEALTHINESS SURVEY
AND NECESSARY MAINTENANCE JOB FOR CGD PROJECT OF TNGCL**

BID DOCUMENT NO: TNGCL/C&P/CP – Health/SC(6010)/2026-27

DOMESTIC COMPETITIVE BIDDING

VOLUME – II OF II

PREPARED AND ISSUED BY

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SCOPE OF WORK (SOW)

SCOPE OF WORK

1. INTRODUCTION:

Pipe line protected with 3-layer poly-ethylene coating. As per the standard and rules, TNGCL carries out the coating healthiness survey as per the guidelines of OISD. TNGCL also intent to do the interference survey along these pipelines, to know the presence of any type of interference which may be due to railway traction/ HT transmission lines/ foreign pipeline crossing/ more than one pipeline in common ROU/ any other utility either crossing or running parallel to the pipeline etc.

2. PIPELINE DETAILS:

a) DIAMETER OF CS PIPE LINE

CS pipe line is of 4", 6" diameter.

b) COATING:

All the above pipelines have provided with 3-layer poly-ethylene coating.

3. CATHODIC PROTECTION SYSTEM:

- a) Permanent Cathodic Protection is installed.
- b) TR Unit are installed at Khayerpur Station= 1 No
- c) PCP is installed with nos. of TLP at Khayerpur to Chandrapur = 9 Nos.
- d) Manual Test Stations for current and potential measurement are installed at:
 - I. Approx. 700 meters to 1 km interval in cs pipelines.
 - II. All HT overhead power transmission lines of 66 KV or above.
 - III. All major road crossings.
 - IV. Zinc anodes, Ground insulating joints, Surge diverters have been installed.
 - V. Grounding cells have not been provided on the insulation joints with surge diverter.

4. BREIF SCOPE OF WORK:

- a) Conduct (CIPL/DCVG/CAT) survey, Interference survey in CS pipe line.
- b) Subsequently, repair of coating defect, recommendation for mitigation of any type.
- c) Identify the under and over protected zones.
- d) Identify the possibilities of coating disbandment.
- e) Identify the coating defects including location and sizing.
- f) Repair of all the coating defects.
- g) Identify any type of interference along the pipeline including location & remedial measures.

5. The scope of work includes but not limited to the following:

- a) Locating the pipeline by using a pipe locator.
- b) To ascertain exact location, size and magnitude of coating defect throughout the periphery of the pipeline by carrying out the survey. CONTRACTOR has to quantify and categorize the coating defects in the terms of severity as Minor/Moderate/Severe and anodic/cathodic in accordance with NACE standard and criteria.
- c) To rectify all the defects (Severe/ Moderate/ Minor) by excavating the pipeline (exposing the pipeline surface) as per requirement to repair the defects, removal of defective coatings, cleaning and repairing using coating materials, holiday checking , back filling and restoration.

6. SURVEY PROCEDURE:

The CONTRACTOR shall submit a detailed procedure to carry out the survey along with formats to be used during the surveys, calibration certificates of the equipment's to be used for approval prior to starting of work. The procedure qualification will be done at site before commencement of work. During procedure qualification, the CONTRACTOR shall do a sample survey in presence of Engineer in Charge/OWNER's Representative and shall verify the results by excavating the coating defects and only after satisfactory report approved by the EIC, further survey will be allowed. While preparing the procedure the CONTRACTOR shall consider the following guidelines.

The survey work shall be started at least at two regions simultaneously without break till the completion of entire job from the completion of work in one region to starting of work in next region for demobilization / mobilization and discussion with EIC.

The coating repair team should be deployed immediately after the completion of the survey of a region. However, it shall be the CONTRACTOR's responsibility to complete the entire job within the scheduled completion time, for that region he may deploy team with adequate resources.

7. SURVEY EQUIPMENT:

The following equipment should be available with each survey team as a minimum requirement:-

- a) One set of complete survey equipment.
- b) Cu/CuSO₄ reference electrode sifted to poles (M.C.Miller /Equivalent make)
- c) Insulated fine wire wound on reels . The resistance of the wire shall exert no significance effect on the pipe to soil potential readings.
- d) Distance measurer.
- e) High impedance voltmeter (FLUKE or Equivalent.).
- f) Pipe locator (Tinker & Razor / Radio detection make or equivalent).
- g) Holiday detector – Range 15 to 25 KV.
- h) Pipeline Thickness/Coating thickness measurement gauge.

Note: - All equipment should be calibrated, rugged, weatherproof suitable for field conditions.

8. PROCEDURE FOR COATING REPAIR:

The job is to be carried out as per the stage inspection format

9. EXCAVATION & BACKFILLING:

Without regard to soil conditions and/ or topography of the ground the trench shall be excavated and finished to the dimensions as directed by the Engineer-In-Charge for earth and rock with a view to expose the pipeline and to provide for sufficient working space for carrying out the work of manual removal of old coat and wrap and wrapping all round the circumference of pipeline. The actual width and depth of the trench shall be excavated as per the directions of the Site-Engineer/ Engineer-In-Charge so as to enable the free movement while coating with a coating machine by coating gang and enable the gang to freely remove the old coat and wrap, to carry out cleaning, new priming and coating etc. Safety of working person as well as pipeline shall be taken into consideration. The figures indicated in the SOR are only indicative and may vary as per the site conditions. The pipeline excavated length shall be such as to carry out the intended length of coat with required side overlapping to be provided.

10. COATING REPAIR USING COLD APPLIED TAPES:

Surface preparation

- a) The old /damaged coating shall be totally removed carefully with scrappers.
- b) After the coating is removed the pipe surface shall be prepared by wire brush/emery paper/scrappers etc. or a combination of all above with full removal of loose paint coating, rust, oil, grease, dirt etc. to the satisfaction of "EIC".

Application of Primer

- c) Priming shall be carried within immediately after cleaning/ surface preparation of the pipeline. Before applying the primer, the pipe surface shall be cleaned with a clean cloth ensuring that the surface is free from dust particles.
- d) Stir the Primer in its original container and apply a uniform coat of primer to the cleaned surface of the pipeline (and where applicable to the adjacent mill coating) with a good quality paint brush. Consumption of the primer is approx. 0.2 Ltrs per sq.mtr of surface
- e) Allow the primer to dry for 30 minutes or on required. During drying time of the primer, enough precaution must be taken to ensure that no dust particles are falling on the fresh primed surface.
- f) Thumb-Test is to be done and if found ok. Wrapping may be started within 08 (eight) hours of application of primer.

Wrapping

- g) **Inner Wrap:** Wrap Densolen tape S25 HT or equivalent with hand wrapping machine Densomat Under proper tension and without wrinkles spirally around the pipe into the sticky primer with grey side of the tape facing the steel surface and with a 50 % overlap. Remove interleaving during application. The wrapping shall start and finish to give 50mm overlap on to the adjoining factory applied coating.
- h) **Outer wrap:** Wrap the Densolene tape R25 HT or equivalent with the wrapping machine under proper tension and without wrinkles spirally around the pipe with butyl adhesive facing the inner wrap with a minimum of 50% overlap. Ensure that the outer wrap completely covers the inner wrap.
- i) The cold applied tapes shall be kept in shade and the coated pipeline section shall also be protected from direct sunlight by using tarpaulin/ polythene sheet/ gunny bags filled with soil, if not backfilled immediately.

For Tees/ Bends:

- j) Cut the inner wrap in 50mm width and apply in small pieces of length (as required) manually with 50% overlap and with good tension.
- k) Apply the outer wrap in similar manner and two cross strips of outer wrap on the final outer B)

Supply & Installation Of Manual Test Station: Supply & Installation of Manual Test Station complete with lower bend and with PCC foundation including terminal plate, diagram plate, locks, cable identification ferrules and proper cable termination with lugs, painting & numbering of Test Station etc. as per drawing specification (with IP55) complete in all respect in line with tender provisions and as per instruction of EIC.

Repairing of Manual Test Stations: Repairing of Manual Test Stations foundation with supply and replacement of foundation bolts and nuts including labour, tools, tackles consumables like cement, sand aggregates etc. complete in all respect as per scope of work, specifications and direction of EIC.

Supply and fixing of diagram plate in the existing test station: Supply and Fixing of diagram plate in the existing test station of all types complete in all respect including labour, tools, tackles, consumables etc. as per scope of work specifications and the direction of EIC.

Supply, installation, testing and commissioning of Anode Lead Junction Box (ALJB): Supply, installation, testing and commissioning of Anode Lead Junction Box (ALJB) including required backelite plate brass nut bolts, port type resistor & shunt arrangement, civil works with materials as per EIC.

Repairing of ALJB: Repairing of ALJB including supply of new locks and latch for the outer enclosure, shunt, variable resistance, brass links, ALJB doors including welding mechanical, fittings, hinges, labour, tools tackles, consumables like lugs, MS/Brass nuts, bolts, washers, insulation tape etc. complete in all respect as per approved drawings, specification and as per direction of EIC

Painting of Manual Test station : Including removing of old paint, rust etc., surface preparation to get the smooth level surface, supply and application of 01 coat of ready- mix red oxide primer of approved make, 02 coats of ready mixed first quality paint of approved brand. (Final dry paint thickness not less than 100 micron), Numbering of Test Station as per scope of work, specification and as per direction of EIC.

Painting of Anode Lead Junction Box (ALJB): Including removing of old paint, rust etc., surface preparation to get the smooth level surface, supply and application of 01 coat of ready-mix red oxide primer of approved make, 02 coats of ready mixed first quality paint of approved brand. (Final dry paint thickness not less than 100 micron), Numbering of Test Station as per scope of work, specification and as per direction of EIC.

11. SUBMISSION OF REPORTS:-

- a) The CONTRACTOR shall submitted One (01) set weekly progress reports.
- b) Two (02) sets of survey and repair of coating defects along with photograph (before and after repair) reports in a hard binding.
- c) Two (02) sets of final report of the complete work in a hard binding along with two (02) sets of soft copies in the form of CD to be submitted to TNGCL.

12. REQUIREMENTS OF 'HEALTH, SAFETY AND ENVIRONMENT [HSE] MANAGEMENT SYSTEM' TO BE COMPLIED BY BIDDERS

- a) Preferably, the Contract should have a documented 'HSE Policy' to cover commitment of their organization to ensure health, safety and environment aspects in their line of operations.
- b) The Contractor shall ensure that the TNGCL's 'Health, Safety and Environment [HSE]' requirements are clearly understood and faithfully implemented at all level, at sites.
- c) Contractor shall promote & develop consciousness for health, safety & environment among all personnel working for the Contractor. Regular work-site meetings shall be arranged on 'HSE' activities to cover hazards involved in various operations during executing their jobs, location of First Aid Box, trained personnel to give First Aid, Assembly Points and fire protection measures.
- d) Contractor shall adhere consistently to all provisions of 'HSE' requirements. In case of non-compliance of continuous failure in implementation of any of the 'HSE' provisions, TNGCL may impose stoppage of work and a suitable penalty for noncompliance.
- e) The decision of imposing work-stoppage, its extent & monetary penalty shall rest with TNGCL.
- f) All fatal accidents and other personnel accidents shall be investigated for root cause by TNGCL and Contractor shall extend all necessary help and cooperation in this regard. Recommend corrective and preventive actions of findings will be communicated to Contractor for taking suitable actions should be taken by the Contractors to avoid recurrence of such incidences.
- g) Contractor shall ensure that all their staffs and workers, including their sub-Contractor(s), shall wear 'Personal Protective Equipment's [PPEs]' such as safety helmets, safety shoes, safety belts, protective goggles, gloves, etc., as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.
- h) Contractor shall assign competent & qualified personnel for carrying out various tasks/jobs as per requirement.
- i) All equipment's should be tested and certified for its capacity before use.
- j) Contractor shall ensure storage and utilization methodology of materials that are not detrimental to the environment. Where required, Contractor shall ensure that only the environment-friendly materials are used.
- k) All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules and regulations relating to the hazardous material substances and waste. Contractor shall not dump release or otherwise discharge of dispose of any such materials without the express authorization of TNGCL.

- l) Contractor should obtain all work permits before start of activities [as applicable] like hot work, confined space, work at heights, storage of chemicals/explosive materials and its use & implement all precautions mentioned therein.
- m) Contractor should display at site office and work locations caution boards, provide posters, banners for safe working to promote safety consciousness, etc.
- n) Contractor should carryout audits/inspections/supervisions at the sub-Contractor's works and submit the reports for review

13. RELEVANT CODES FOR 'PERSONAL PROTECTION EQUIPMENTS'

IS: 2925 - 1984 Industrial Safety Helmets
 IS: 47701 - 1968 Rubber Gloves for Electrical Purpose
 IS: 6994 - 1973 [Part-I] Industrial Safety Gloves [Leather & Cotton Gloves]
 IS: 1989 - 1986 [Part-II] Leather Safety Boots & Shoes
 IS: 5557 - 1969 Industrial & Safety Rubber Knee Boots
 IS: 6519 - 1971 Code of Practice for Selections, Care & Repair of Safety Footwear
 IS: 11226 - 1985 Leather Safety Footwear Having Direct Molding Sole
 IS: 5983 - 1978 Eye Protectors
 IS: 9167 - 1979 Ear Protectors
 IS: 3521 - 1983 Industrial Safety Belts & Harnesses

14. Construction Aids, Equipments, Tools & Tackles:

- a) Contractor shall be solely responsible for making available for executing the work, all requisite construction equipments, special aids, barges, cranes & the like, all tools, tackles & testing equipment's & appliances, including imports of such equipment, etc. as required. In case of import of the same the rates applicable for levying of custom duty on such equipment, tools & tackles and the duty drawback applicable thereon shall be ascertained by the Contractor from the concerned authorities of Govt. of India. It shall be clearly understood that Employer shall not in any way be responsible for arranging to obtain custom clearance and/or payment of any duties and/or duty draw backs etc. for such equipment's so imported by the Contractor and the Contractor shall be fully responsible for all taxes, duties and documentation with regard to the same. Tenderer in his own interest may contact, for any clarifications in the matter, concerned agencies/Deptt./Ministries of Govt. of India. All clarifications so obtained and interpretations thereof shall be solely the responsibility of the Contractor.

15. TERMS OF PAYMENT

- a) The payment shall be made as per following:
 - i) 100% payment shall be released against completion of survey work along with necessary maintenance job/rectification job.

16. DURATION OF CONTRACT / CONTRACT PERIOD

The time schedule to complete the entire job shall be 45 days. The completion time shall be reckoned from the date of issuance of letter of intent and it is inclusive of mobilization period. 01 (one) week shall be given to OWNER for the acceptance of final report and shall be included in the completion time. The CONTRACTOR shall deploy at least two teams comprising of survey personnel and coating repair personnel with adequate resources for each team in order to complete the work within stipulated time. The entire work shall be

completed within the contractual period mentioned above. Date of acceptance of FINAL REPORT/ issue date of completion certificate shall be treated as the date of COMPLETION OF CONTRACT.

17. Penalty:

1. Penalty deduction against non-performance during CAT Survey/CIPL/DCVG Survey:

- i. If work is not completed within the time period of 45 days, penalty of Rs. 1000.00 per day shall be imposed on service provider. Maximum penalty shall be limited to 10% of total contract value.

Note-

- 1. Any liaisoning/ permission required for excavation/road cutting/restoring shall be in the scope of service provider. However, charges/ fees for such requirements shall be deposited by TNGCL to Govt. Authority by cheque or DD.
- 2. TNGCL can be do 100% survey CAT or A Frame or DCVG or CIPL as per requirement and decision of EIC shall be final.

To take thickness of CS pipe line in different location as per requirement of the site during survey work.

SPECIAL CONDITIONS OF CONTRACT (SCC)

- 1.1. Tripura natural gas company has been authorized to lay, operate or expand City Gas Distribution Network in the authorized geographical area of West Tripura, Agartala and Gomati under PNGRB Regulation 2008.
- 1.2. TNGCL has laid several kilometres of Steel & MDPE pipelines in the geographical area of West Tripura, Agartala and Gomati. These pipelines shall be supplying Piped Natural Gas (PNG) to various Industrial, Commercial & Domestic consumers. The CGD network in these areas shall be expanding continuously and infrastructure to supply PNG to various consumers along with CNG stations shall be augmented periodically.
- 1.3. The main objective of TNGCL operations is to supply uninterruptable gas to its esteemed customers and maintain the CGD network in healthy condition so that it is available for operation always with minimum possible break down time.
- 1.4. The contract for Cathodic Protection Works of CGD Network West Tripura, Agartala and Gomati will be executed on Hiring of Services basis.
- 1.5. Special Conditions Contract (SCC) shall be read in conjunction with the General Conditions of Contract (GCC), Schedule of Prices, specifications of work, drawings and any other document forming part of this Contract wherever the context so requires.
- 1.6. Notwithstanding the sub-division of the document into these separate sections and volumes, every part of each shall be deemed to be supplementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.
- 1.7. Where any portion of the GCC is repugnant to or at variance with any provisions of the Special Conditions of Contract, then unless a different intention appears, the provisions(s) of the Special Conditions of Contract shall be to deemed override the provision(s) of GCC, only to the extent that such repugnancies of variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of GCC.
- 1.8. Wherever it is mentioned in the specifications that the contractor shall perform certain work or provide certain facilities, it is understood that the contractor shall do so at his cost and the value of contract shall be deemed to have included cost of such performance and provisions, so mentioned.
- 1.9. The materials, design, and workmanship shall satisfy the relevant Indian Standards, the job specifications contained here-in and codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- 1.10. In the absence of standards/ specifications/ code of practice for detailed specifications covering any part of the work covered in this Bidding Document, the instructions / directions of Engineer-in-Charge will be binding on the contractor.
- 1.11. Quantity shown in the Schedule of Rates is indicative only. The bidder shall not

seek any revision in the price quoted on account of any such variation in the quantity. Quantity may increase or decrease during execution of job.

- 1.12. Bidder is advised to visit the site and familiarize himself of the existing facilities and environment and shall collect all other information which he may require for preparing and submitting the bid and entering into the contract. Claims and objection due to Ignorance of the existing conditions or inadequacy of information will not be considered after submission of the bid and during implementation.
- 1.13. The bidder has to make own arrangements for food, transportation and accommodation for the manpower deployed by him during the period of the contract.
- 1.14. TNGCL reserves the right to reject any one or all the personal employed by the bidder on the basis of their performance, conduct and discipline.
- 1.15. Contractors' personnel, who would carry out the works, shall strictly follow all safety rules, discipline and regulations. They should be conversant with the safety precautions to be followed inside premises. The contractor shall abide by the advice and guidance of the safety officer in the plant. In addition, the bidder shall follow the safety codes framed from time to time. Smoking and tobacco/pan chewing inside the premises is strictly prohibited. No contractor's men are allowed to possess match boxes, lighters, cigarettes, transistors or any other material near the Gas installations, which may cause fire hazard.
- 1.16. TNGCL is not responsible for any accident/damage caused to the men and materials of the contractor during the course of attending the job.
- 1.17. The bidder shall execute the whole work in respect to workmanship and materials otherwise in every aspect in strict accordance with the specifications. The bidder shall also confirm exactly and faithfully to the designs, drawings and instructions in writing in respect of the work assigned by the Engineer-In-Charge (EIC).

SCHDULE OF RATES (SOR)

SCHEDULE OF RATE

SL. NO	PARTICULARS	QTY.	UOM	AMOUNT (INR)
1.	REPAIRING OF MANUAL TEST STATION	5	NOS	
2.	SUPPLY & INSTALLATION OF METALLIC TEST STATION	5	NOS	
3.	SUPPLY & FIXING OF DIAGRAM PLATE	9	NOS	
4.	SUPPLY & REPAIR OF DAMAGED/ MISSING LOCK	12	NOS	
5.	SUPPLY & FIXING OF NEOPRENE GASKET IN METALLIC TEST STATION	10	NOS	
6.	PAINTING OF METALLIC TEST STATION/ ALJB/ CJB	2	NOS	
7.	SUPPLY & REPLACEMENT OF PERMANENT REFERENCE CELL	1	NOS	
8.	SUPPLY & INSTALLATION OF PRE-PACKED MG ANODE (10 KG)	6	NOS	
9.	SUPPLY & INSTALLATION OF ZN ANODE/ ZN GROUNDING CELL (2 X 10 KG) EACH	2	NOS	
10.	REPAIRING OF ALJB	1	NO	
11.	MAINTENANCE OF ANODE GROUND BED	1	NO	
12.	REPAIR OF COATING	20	METERS	
13.	SUPPLY & INSTALLATION OF SURGE DIVERter	2	NOS	
14.	SUPPLY & INSTALLATION OF CATHODE JUNCTION BOX	1	NOS	
15.	CARRYING OUT CIPL ON-OFF SURVEY	5.6	KM	

SL. NO	PARTICULARS	QTY.	UOM	AMOUNT (INR)
16.	CARRYING OUT DCVG SURVEY	5.6	KM	
17.	CARRYING OUT CAT SURVEY	5.6	KM	
18	DATA LOGGING FOR 24 HOURS	2	EA	
19	AC-DC INTERFERENCE SURVEY	5.6	KM	
20	PSP MONITORING AND MAINTENANCE AT TLP	9	NOS	
21	SOIL RESISTIVITY SURVEY	25	NOS	
22	SUPPLY & INSTALLATION OF SSD	1	NO	
			AMOUNT	
			GST @18%	
			TOTAL AMOUNT INCLUSIVE OF GST	