HPOIL GAS PRIVATE LIMITED

(A Joint Venture of HPCL & OIL)

CITY GAS DISTRIBUTION PROJECT OF KOLHAPUR DISTRICT, MAHARASHTRA

TENDER FOR SUPPLY OF GI PIPES FOR CITY GAS DISTRIBUTION PROJECT AT KOLHAPUR GA

Tender No.: HOGPL/2024-25/C&P/20
Dated: 01-02-2025

TECHNICAL VOLUME

SECTION - I MATERIAL REQUISITION

DEFINITION

Where used in this document, the following terms shall have the meanings indicated below, unless clearly indicated by the context to this order.

PROJECT: City Gas Distribution Project of Kolhapur District

OWNER/COMPANY/PURCHASER/CLIENT: HPOIL GAS PRIVATE LIMITED (HOGPL)

VENDOR/BIDDER/SUPPLIER/CONTRACTOR: The party, who manufactures and supplies equipment and Provide services to the OWNER or to CONTRACTOR.

MR: Material Requisition.

1. SCOPE OF SUPPLY & SERVICES

The Scope includes manufacturing & supply of Powder Coated GI Pipes on FOT site / warehouse basis conforming to IS: 13871-Heavy (latest edition)/IS 1239 specifications and Meeting other technical requirements as specified in tender document. The scope includes getting approvals from Purchaser /Consultant for QAP / documents, procurement of raw material, manufacturing, testing & Inspection (includes manufacturer appointed TPI inspection), packing, forwarding & transportation, unloading and stacking of all Powder Coated GI pipes to the designated warehouse / Storage yard at HPOIL Gas Pvt Ltd Kolhapur GA, as per tender terms & conditions.

SOR Item No.	Description of item	Unit of Measurement	Quantity
1	Design, Engineering, Manufacturing, Inspection, Testing, Supply, Transportation, loading & unloading and stacking at Kolhapur(HOGPL) site/store of 1" GI Pipes as per Technical volumeof Tender document complete in all respects. GI Pipes with polyesterpowder coating of size, schedule & specification indicated below: Pipes shall confirm IS:1239 (Part-I) Heavy Duty, continuous welded with Min. Tensile strength of 32.63 kgf/sq.mm & galvanized protective coating to protect from corrosion as per IS:4736/ASTMA53 or by Electro-Galvanizing and coated with polyester powder coating with plain End of following sizes as per Technical specification of tender document.		
1.1	1/2" GI Pipe	**Mtrs**	**48875**

2. MATERIAL SPECIFICATION

2.1 MATERIAL

The material used for the manufacturing of GI pipes confirming to IS 1239 (Part -1): 2004 (Latest edition).

This specification covers the requirements for Powder Coated GI Pipes for providing the Piped Natural Gas connections. Unless modified by this specification, requirement of IS 13871 (Part -1), Heavy Duty,shall be valid. The material should also meet the Technical Standards / Specifications notified by Petroleum Natural Gas Regulatory Board (PNGRB).

Service	:	Natural Gas
Working Pressure	:	Up to 7 bar (g)
Test Pressure	:	10.5 bar (g)
Working Temperature	:	0°C to 50°C
Material Description	:	IS:1239 (Part-I) Heavy Duty, Continuous
Welded Min. Tensile Strength	:	32.63 kgf/sq.mm
Min. Elongation	:	6%
Tolerance	:	+ Not limited, -10%
Protective Coating	:	Galvanized uniformly to protect from corrosion as per IS:4736 / ASTM A53 or by Electro Galvanizing
Ends of Pipes	:	Plain End
Inspection	:	100% Pressure Testing shall be carried out at factory of the Supplier.

All pipes and their dimensions, tolerance, chemical composition, physical properties, heat treatment, hydro test and other testing and marking shall conform to the codes and standards.

Material test certificates (physical property chemical composition & heat treatment report) shall also befurnished for the pipes supplied.

2.2 DIMENSIONS, THICKNESS & DIMENSIONAL TOLERANCES

The dimensions & nominal mass of tubes shall be in accordance with Table 5 subject to the tolerances permitted in CL.8.1 & 9 of IS 1239 (Part-I): 2004 (Latest edition). Length of each pipe shall be 6 mtrs; with + 6, - 0 mm tolerance. However, pipe length shall be considered 6 m. only for measurement/ paymentpurpose.

Nominal Diameter DN	15 mm
Grade	Heavy
Outer Dia. (Max. / Min.)	21.8 mm/ 21.0 mm
Thickness (mm)	3.2
Nominal weight (Kg/ m)	1.44

2.3 END CONNECTION OF PIPE

GI Pipes shall be supplied with plain end.

2.4 FREEDOM FROM DEFECTS

On visual examination the outside & inside surfaces of pipes shall be smooth & free from defects suchas cracks etc.

2.5 GALVANIZING

2.5.1 Pipes shall be galvanized to meet the requirement of IS: 4736 - 1986 with latest amendment.

2.5.2 Zinc conforming to any grade specified in 1S: 13229- 1991 with latest amendment shall be usedfor the purpose of galvanizing.

2.5.3 Galvanizing bath: The molten metal in the galvanizing bath shall contain not less than 98.5% by mass of zinc.

2.5.4 Mass of zinc coating: Minimum mass of zinc coating determined as per IS: 6745 shall be360gms/m2.

2.5.5 Uniformity of galvanized coating: The galvanized coating when determined on a 100 mm long test piece in accordance with IS 2633: 1986 with latest amendment shall withstand 5 one-minute dips.

2.5.6 Freedom from defect: The zinc coating on internal & external surfaces shall be uniform adhered, reasonably smooth & free from such imperfections as flux, ash& drop inclusions, bare patches, black spots, pimples, lumpiness runs, rust stains, bulky white deposits & blisters. Rejection & acceptance for these defects shall be as per Appendix A of IS 2629: 1985 with latest amendments.

2.5.7 Powder Coating

2.5.7.1 The GI pipe shall be provided YELLOW coloured protective coatings by applying a polyester powder coating over hot dip galvanized pipe as per the standard powder coating procedures.

2.5.8 Samplings

2.5.8.1 All materials of the same type in coating bath having uniform coating characteristics shall be grouped together to continue a lot. Each lot shall be tested separately for the various requirements of the specification. The number of units to be selected from each lot for this purpose shall be IS:4711 1995 with latest amendment.

2.5.8.2 The sample selected shall be according to Clause 6.1 & 6.2 of IS: 4736 – latest edition.

2.5.8.3 The sample found conforming to above requirements shall then be tested for mass of zinc coating in accordance with Clause 5.1 of IS: 4736 1986 with latest amendment.

2.5.8.4 Criteria for conformity: As per IS: 4736 1986 with latest amendments.

2.6 PRESSURE TEST

Hydrostatic pressure test shall be carried out at a pressure of 5 MPA for the duration of at least 3 second and shall not show any leakage in the pipe. Vendor to submit the internal pressure test certificate for the same. Owner Representative or Third-party Inspection Agency appointed by Owner shall witness finish goods testing as per the sample procedure specified in IS: 1239 (Part-1) - latest edition.

2.7 MARKING & DISPATCH

Each pipe shall be embossed with HOGPL's logo, manufacturer's name or trademark, size designation, class of pipe at the interval of not more than 1 meters.

Each packing containing pipes shall carry the following embossed, stamped or written by indelible ink:

a) Manufacturer's name or trademark.
b) Class of pipe -Heavy.
c) Indian standard mark (ISI).
d) Lot number / Batch no. of production.

Each pipe conforming to this standard shall also be marked with BIS standard mark.

All pipes shall be marked in accordance with the applicable codes, standards, and specifications.

Paint or ink for marking shall not contain any harmful metal or metallic salts, such as zinc lead or copperwhich causes corrosive attack in heat.

Pipes shall be dry, clean, and free from moisture, dirt and loose foreign materials of any kind.

Pipes shall be protected from rust, corrosion and mechanical damage during transportation, shipment, and storage.

Both ends of the pipe shall be protected with the following material.

a) Plain End: Plastic Cap.

b) Bevel End: Wood, Metal or Plastic Cover

c) Threaded End: Metal or Plastic Threaded Cap.

d) Steel end protectors to be used on galvanized pipes, shall be galvanized.

2.8 SPECIFICATION FOR PURE POLYSTER POWDER COATING OF GI PIPES

This Specification specifies the requirements for powder coating (Pure Polyester) of GI Pipes suitable to use for carrying Natural Gas directly exposed to sunlight.

Specification for Powder coating:

a) Powder material: Pure Polyester

b) Application: Electrostatic Spraying (40 & 90 KV, Manual / Automatic)

c) Baking Schedule: 180° C to 200°C for 10 Minutes (Metal Temperature)

d) Coating Thickness:

- 50-60 Microns (For GI Pipes)
- 70-80 Microns (For ERW Pipes (Heavy Class)) *

* ERW pipes are generally obtained from the manufacturers with a protective layer like a varnish applied on the pipe, to prevent corrosion. In order to obtain a proper application of pure polyester powder coating on the ERW pipes, the varnish has to be removed by use of a suitable method approved

by HOGPL.

TESTING:

Film Type	:	Glossy / Satin
Gloss 60	:	86 & 95% (ASTM D-523- 60)
Cross Hatch Adhesion	:	GT = 0/100. (ASTM D-5870)
Cylindrical bending Test	:	Passes. (ASTM D-522) 5 mm rod dia
Enrichsen cupping (minimum)	:	8 Passes
Pencil Hardness (minimum)	:	2H
Scratch Resistance	:	3 (Kg. Min)
Impact Resistance	:	Direct – 150
Kg. Min (ASTM D-2794)	:	Indirect – 150
Salt Spray Resistance	:	1000 hours (minimum). (ASTM B-117)
Porosity (DIN -53161)	:	Passes.
Humidity Resistance (ASTM D-2247)	:	1000 hours (minimum). Weathering Gloss retention after 1000 hours :60 – 70% (Sun test with water immersion,Xenon 150 K.lux)
Colour	:	YELLOW

Bidder should use powder of reputed manufacturers only (like Berger, Southfield, etc.) and the sameshould be approved by HOGPL prior to commencement of the powder coating activity.

2.9 INSPECTION/ DOCUMENTS

2.9.1. Inspection shall be carried out as per Owner Technical Specification.

2.9.2. Owner Representative or Third-Party Inspection Agency appointed by Owner shall carry out stage wise inspection during manufacturing/ final inspection.

2.9.3. The Third Party inspection cost shall be borne by the Supplier.

2.9.4. The manufacturer shall have a valid license to use ISI monogram for manufacturing of pipe in accordancewith the requirement of IS: 1239 (latest edition).

2.9.5. Vendor shall furnish all the material test certificates, proof of approval license from specified authority asper specified standard, if relevant, internal test / inspection reports as per Owner Tech. Spec. & specifiedcode for 100% material, at the time of final inspection of each supply lot of material.

2.9.6. For any control, test or examination required under the supervision of TPIA/Owner/Owner's representative, latter shall be informed in writing one (1) week in advance by vendor about inspection date and place along with production schedule.

2.9.7. Even after third party inspection, Owner reserves the right to select a sample of pipes randomly from each manufacturing batch & have these independently tested. Should the results of these tests fall outside the limits specified in Owner technical specification, then Owner reserves the right to reject all production supplied from the batch.

2.10 PACKAGING

Packing Size to be mentioned to ensure uniformity in delivery conditions of the material being procured.Bidder shall submit the packaging details during QAP and also complied with at the time of delivery.

3. WORK ASSOCIATED WITH WAREHOUSE / STORAGE YARDS

Bidder will be responsible for making suitable arrangements for unloading & stacking of Powder

Coated GI pipes at Storage yard/warehouse.

The Powder Coated GI pipes within the Warehouse may be stacked by placing them on ridges of sand free from stones and covered with a plastic film or on wooden supports provided with suitable cover. Supply of sand and other materials shall be in Bidder's scope. This cover may consist of dry, germ free straw with a plastic film, otherwise foam rubber shall be used. The support shall be spaced in such a manner as to avoid permanent bending of the pipes. The Powder Coated GI pipe stacks shall consist of limited number of layers so that overstressing & deformation of the pipe is avoided. Each section shall be separated by means of spacers suitably spaced for this purpose.

4. QUALITY ASSURANCE PLAN

QUALITY ASSURANCE PLAN
GI PIPES CONFORMING TO IS:1239 (PART-1):2004 (Latest edition)

NO.	COMPONENTS/ OPERATIONS	CHARACHTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD	VENDOR	TPIA
1	2	3	4	5	6	7	8	9	10	11
RAW MATERIAL INSPECTION										
1.1	RAW MATERIAL	IDENTIFICATION	Major	Co-relation with MTC	100%	IS: 1239 / P.O Spec	IS: 1239 / P.O Spec	T.C.	P	R
		CHEMICAL COMPOSITION	Major	Chem Analysis	One Heat	IS: 1239 / P.P. Spec	IS: 1239/P.O. Spec	IIR	P	R
		PHYSICAL PROPERTIES (T.S., Y.S., % Eiong.)	Major	Lab Test	One Heat	IS: 1239 / P.O. Spec	IS 1239/P.O. Spec	IIR	P	R
		VISUAL & DIMENSIONS	Major	Visual & Measur	100%	IS: 1239 / P.O. Spec	IS: 1239 / P.O. Spec	IIR	P	R
IN PROCESS INSPECTION										
2.1	PIPE MANUFACTURING	SURFACE DEFECT	Major	Visual	100%	IS:1239/P.O. Spec	IS 1239/P.O Spec	IIR	P	R
		DIMENSIONS (O.D. THK. LENGTH etc.)	Major	Measure	As Per Relevant Std	IS 1239/P.O. Spec	IS 1239/P.O. Spec	IIR	P	R
		MASS (Kg Mtr.)	Major	Measure	As Per Relevant Std	IS: 1239/P.O. Spec	IS:1239/P.O Spec.	IIR	P	R
2.2	END PREPARATION	END TYPE & DIMENSIONS	Major	Visual & Measur	100%	IS: 1239/P.O Spec	IS:1239/P.O Spec	IIR	P	R
2.3	PHYSICAL PROPERTIES	TENSILE ELONGATION & BEND FLATTENING TEST AS APPLICABLE	Major	Lab. Test	As Per Relevant Std	IS: 1239 / P.O. Spec	IS 1239/P.O Spec	HR	P	R

NO.	COMPONENTS /OPERATIONS	CHARACHTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENTS	ACCEPTANC E NORMS	FORMAT OF RECORD	VENDOR	TPIA
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
2.4	LEAK TEST	HYDRAULIC	Critical	Leak Test	100%	IS: 1239/P.O. Spec	IS 1239/P.O. Spec	IIR	P	W
2.5	GALVANIZING	ZINC COATING UNIFORMITY & MASS	Major	Mass of Zinc Coating & Uniformity	2 Sample per Shift	IS:4736	IS:4736	IIR	P	W
2.6	FINISH PAINTING & MARKING	OVERALL FINISH PAINTING & MARKING	Major	Visual	100%	IS: 1239 / P.O. Spec	IS 1239/P.O. Spec	HR	P	R
FINAL INSPECTION										
3.1	FINISHED PRODUCT	FINISH DIMENSIONS	Major	Visual &Measure	Random As Per IS:4711	IS: 1239 / P.O. Spec	IS: 1239 / P.O. Spec	IR	P	w
		PHYSICAL PROPERTIES (TENSILE, ELONGATION & BEND FLATTENING TEST AS APPLICABLE)	Major		Random As Per !S:4711	IS: 1239/P.O. Spec.	IS: 1239 / P.O. Spec	IR	p	W
		LEAK TEST (HYDRAULIC TEST)	Critical	Leak Test	Randomly (10% of lot qty)	IS: 1239 / P.O. Spec.	IS: 1239 / P.O. Spec.	IR	P	W

LEGENDS H-HOLD | P-PERFORMANCE | R-REVIEW | W-WITNESS | TC-TEST CERTIFICATE | IIR-INTERNAL INSPECTION REPORT | CA-CONTROL AUTHOIRTY | TPIA - THIRD PARTY INSPECTION AGENCY
Note:
1. The above testing and acceptance criteria are minimum requirements; however, manufacturer shall ensure that the product shall also comply to the additional requirements as per Particular Technical specifications (PTS).
2. The supplier shall submit their own detailed ITP prepared on the basis of above Technical specification for approval of Owner/ Owner's representative.
3. Owner / Owner representative shall review / approve all the documents related to ITP / Quality manuals / Drawings etc. submitted by supplier
4. Contractor shall in coordination with Supplier / Sub vendor issue detailed Production and Inspection schedule indicating the dates and the locations to facilitate Owner / Owner's representative and TPIA to organize Inspection.
5. Special manufacturing procedures have to be specially approved or only previously approved procedures have to be used in case of conflict between specifications more stringent condition shall be applicable.
6. Owner/Owner's representative including TPIA will have the right to inspect any activity of manufacturing at any time.
7. All reference Codes / Standards. Documents, P.O. Copies shall be arranged by vendor / supplier for reference of TPIA / HOGPL at the time of inspection.
8. At the time of delivery of material in stores, vendor will submit copy of all related document of inspection along with release note, dispatch clearance note & MTC.