



Bhagyanagar Gas Ltd.

BHAGYANAGAR GAS LIMITED

{A joint venture of M/s GAIL (India) Ltd. and M/s Hindustan Petroleum Corporation Ltd.}

HYDERABAD (INDIA)

**CITY GAS DISTRIBUTION PROJECT AT
HYDERABAD, VIJAYAWADA & KAKINADA**

**BID DOCUMENT
FOR
SUPPLY OF GI PIPES**

UNDER DOMESTIC COMPETITIVE BIDDING

Bid Document No.: MEC/23R8/01/51/S2/GI/00/0009

VOLUME - II OF II



**PREPARED AND ISSUED BY
MECON LIMITED**

(A Govt. of India Undertaking)
Bengaluru, India

JULY, 2016



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SECTION -I

MATERIAL REQUISITION (MR)



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MATERIAL REQUISITION

Project : City Gas Distribution project at Hyderabad, Vijayawada and Kakinada

Client : M/s Bhagyanagar Gas Limited, Hyderabad

Items : **Powder Coated GI Pipes**

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Sl. No.	Description				Destination		
	Pipe Size, NB (Inch)	Schedule	End	Type	Hyderabad	Vijayawada	Kakinada
	GI Pipes with powder coating of size, schedule & specifications indicated below : Pipes Shall confirm IS:1239 (Part-I), Heavy Duty, Continuous Welded with Min. Tensile Strength of 30 kgf/sq.mm & Galvanised Protective Coating to protect from corrosion as per IS:4736/ ASTM A53 or by Electro Galvanising, with Plain End of following sizes as per Technical specification of this tender.				Quantity (Running meters.)		
1	1 ½"	Heavy	Plain	Galvanized	500	1000	1000
2	1"	Heavy	Plain	Galvanized	3000	1000	1000
3	¾"	Heavy	Plain	Galvanized	4000	2000	1000
4	½"	Heavy	Plain	Galvanized	42000	28000	20000



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SECTION -II

TECHNICAL SPECIFICATION



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TECHNICAL SPECIFICATION

FOR

GI PIPES (with Powder Coating)



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TECHNICAL SPECIFICATION FOR GI PIPES

SCOPE:

This specification covers the requirements for GI Pipes for providing the Piped Natural Gas connections. Unless modified by this specification, requirement of IS 1239 (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	:	30 kgf/sq.mm
Min. Elongation	:	6%
Tolerance	:	+ Not limited, - 10%
Protective Coating	:	Galvanised uniformly to protect from corrosion as per IS:4736 / ASTM A53 or by Electro Galvanising
Ends of Pipes	:	Plain End
Inspection	:	100% Pressure Testing shall be carried out at factory

1.0 GENERAL NOTES

- 1.1 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.
- 1.2 Material test certificates (physical property chemical composition & heat treatment report) shall also be furnished for the pipes supplied.
- 1.3 Pipe shall be supplied in random lengths of 6 to 7 meters only.
The dimensions and nominal mass of tubes shall be in accordance with Table 3, 4 & 5 subject to the tolerances permitted in CL 8.1 and 9 of IS 1239 (Part -1)
- 1.4 Galvanised pipes shall be coated with zinc by hot DLF process conforming to IS:4736 / ASTM A53 or by electro galvanising.
- 1.5 Zinc conforming to any grade specified in IS 13229-1991 with latest amendment shall be used for the purpose of galvanizing
- 1.6 **Galvanizing bath** : The molten metal in the galvanizing bath shall contain not less than 98.5 % by mass of zinc.
- 1.7 **Mass of zinc coating** : Minimum mass of zinc coating determined as per IS :6745 shall be 360 gms/m².
- 1.8 **Uniformity of galvanized coating** : The galvanized coating when determined on a



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100mm long test piece in accordance with IS 2633 : 1986 with latest amendments shall withstand 5 one minute dips

1.9 **Freedom from defect** : The zinc coating on internal and external surfaces shall be uniform adhered reasonably smooth and free from such imperfection as flux, ash and drop inclusion , bare patches, black spots, lumpiness runs , rust stains, bulky white deposits and blisters. Rejection and acceptance of these defects shall be in accordance with Appendix A of IS 2629: 1985 with latest amendments.

1.10 **Powder Coating**

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.

2.0 MARKING AND DESPATCH

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

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

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

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

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

- Plain End : Plastic Cap
- Bevel End : Wood, Metal or Plastic Cover
- Threaded End : Metal or Plastic Threaded Cap

2.6 Steel end protectors to be used on galvanised pipes, shall be galvanised.

2.7 BGL logo shall be marked / embossed on the pipes.

3.0 SPECIFICATION FOR PURE POLYESTER 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:

- Powder Material : Pure Polyester.
- Application : Electrostatic Spraying. (40 & 90 kV, Manual / Automatic)
- Baking Schedule : 180⁰C to 200⁰C for 10 minutes (Metal Temperature)
- 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



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polyester powder coating on the ERW pipes, the varnish has to be removed by use of a suitable method approved by BGL / PMC.

TESTING:

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

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



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4.0 INSPECTION / DOCUMENTS

- i) Inspect shall be carried out as per Bhagyanagar Gas Ltd Technical Specification and Inspection Plan / QAP.
- ii) Bhagyanagar Gas Ltd representative or third party inspection agency appointed by Bhagyanagar Gas Ltd shall carry out stage wise inspection during manufacturing / final inspection.
- iii) Vendor shall furnish all the material test certificates, proof of approval/ license from specified authority as per specified standard, if relevant, internal test / inspection reports as per Bhagyanagar Gas Ltd Technical Specification and specified code for 100% material, at the time of final inspection of each supply lot of material.
- iv) Even after third party inspection, Bhagyanagar Gas Ltd reserves the right to Select a sample of tubes randomly from each manufacturing batch and have these independently tested. Should the results of these tests fall outside the limits specified in Bhagyanagar Gas Ltd Technical specification, then Bhagyanagar Gas Ltd reserves the rights to reject all production supplied from the batch.
- v) For any control test the date and place of inspection shall be provided by the vendor in writing to the Owner /Owner representative along with Production Schedule.

5.0 PACKING

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