



BHAGYANAGAR
GAS LIMITED

LAYING OF UNDERGROUND PE PIPELINES AND ABOVE
GROUND GI INSTALLATIONS INCLUDING LAST MILE
CONNECTIVITY AT CONSUMER END AT VIJAYAWADA GA

Bid Document No. BGL/764/2026-27

VOL II OF II



BHAGYANAGAR GAS LIMITED

(A JOINT VENTURE OF HPCL & GAIL)

BID DOCUMENT FOR

**TENDER FOR LAYING OF UNDERGROUND PE PIPELINES AND ABOVE GROUND GI
INSTALLATIONS INCLUDING LAST MILE CONNECTIVITY AT CONSUMER END AT
VIJAYAWADA GA**

**UNDER OPEN DOMESTIC
COMPETITIVE BIDDING**

e- tender

Bid Document No.: BGL/764/2026-27

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Section -6
SPECIAL CONDITIONS OF CONTRACT

1.0 WORK SPECIFICATION: -

All the works are scattered in nature, predominantly excavation, jointing and commissioning of existing Connections. All the specifications for the work shall be as per scope of work & schedule of rates which are self-explanatory. However, whenever required Modifications / Alterations will be done as per the Site / Operation requirement and the decision of the Engineer-In-Charge shall be final and binding on the Contractor.

2.0 CONTRACT VALUE: -

The value of work under this contract shall be as per quantities mentioned in the SOR. Actual work may vary to any extent plus or minus to the attached quantities and the contractor must do so as per BGL's requirement.

3.0 DEFECT LIABILITY PERIOD: One year after the completion of work in all respects as per the Instruction of EIC.

4.0 Price reduction Schedule (LD): as per GCC

5.0 Contract duration:
(18+06) months from the date of FOA/WO as mentioned in scope of work (time schedule).
The infrastructure installation will be completed within the first 18 from the date of award of WO/FOA.
During this period (Maintenance) the customers whose infrastructure was provided during the initial 18 months can also be converted.

6.0 Contract Performance Guarantee:
Contract performance Guarantee /Security Deposit is to be submitted as per clause No. 24 of GCC SD/CPBG@10% of Contract value within 30 days of Workorder.

7.0 CONTRACT AGREEMENT: Contractor shall furnish Contract Agreement Within 15 days from the date of receipt of work order.

8.0 Mobilization: Within 15 days from the date of LOI/FOA.



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SCOPE OF WORK

(ANNEXURE-1 TO SPECIAL CONDITIONS OF CONTRACT)

ANNEXURE-1 TO SCC

1.0 SCOPE OF WORK

Scope of work shall be as detailed in Particular Job Specification, Technical Specifications, Schedule of Rates & various other parts of this Bidding Document may be referred to but not limited to the following.

BGL has laid about 500 Kms of MDPE network in Vijayawada GA. Works assigned in Vijayawada, NH-16 Left and Right sides, the main areas include in NH-16 Right side are Kanuru, Gurunanak Colony, Bharati Nagar, Currency Nagar, Prasadampadu, Ramvarpadu, Poranki, Autonagar, and adjoining areas within the GA allotted to BGL and the main areas included in NH-16 Left Side are Moughalraj Puram, Labbipet, Singhnagar, Payakapuram, Bhavanipuram, RR Peta, Gunadala, Madhuranagar, Ambapuram, PNT Colony and adjoining areas within the GA allotted to BGL shall be carried out by the contractor.

The works under this contract are of a scattered nature and shall not be confined to any particular locality or zone. The DPNG connections, MDPE pipeline laying, GI installation, meter installation, and customer conversions may be located at different locations across the entire Vijayawada Geographical Area (GA). The contractor shall deploy adequate manpower, tools, and resources to execute the works at multiple dispersed locations as instructed by BGL, without claiming any additional cost on account of scattered work locations

The contractor shall primarily focus on the execution of ground connections to ensure timely commissioning and customer conversions. Ground connections shall be accorded top priority, and the contractor shall plan and mobilize resources accordingly while carrying out the remaining works under the contract.

Work Execution Philosophy: -

a. Introduction

- This contract execution philosophy defines the contractor's total responsibilities right from customer acquisition, infrastructure development, conversion and maintenance for Bhagyanagar Gas Limited (BGL). The scope conversion of domestic PNG customers in Vijayawada GA, ensuring safe, reliable, and cost-effective operations.
- The areas allotted are Kanuru, Gurunanak Colony, Bharati Nagar, Currency Nagar, Prasadampadu, Ramvarpadu, Poranki, Autonagar, Moughalraj Puram, Labbipet, Singhnagar, Payakapuram, Bhavanipuram, RR Peta, Gunadala, Madhuranagar, Ambapuram, PNT Colony : The infrastructure laid Vijayawada are given for the broad understanding of bidder and for the purpose of bidding, however the bidder must make his own assessment of the existing infrastructure on as is where is basis, asses the scope of work and quoted rate includes all works, without any extra payment.

- The infrastructure laid are given below for below.

Sr.No.	Key Details/Towns	UOM	Vijayawada GA
1	MDPE Laid	KMs	500
2	MDPE Commissioned	Kms	489
3	Pending network to be retested, Repaired/rectified	Kms	10
4	Domestic Connections Installed GI	Nos	60,000
5	Domestic Connections under billing	Nos	10,000
6	Total Potential of Domestic connections	Nos	1,00,000

b. Project Objectives

- Achieve 90% conversion of new domestic customers for whom infrastructure is provided.
- Achieve minimum 60% conversion of existing customers with full or partial infrastructure laid on as is where is basis.
- All the Connections and Conversions done by the contractor shall be uploaded in Pragyaware app, which includes Meter Installation, RFC and Conversions stages.
- Maintain infrastructure for 03 years during the contract period and transfer to BGL in Good and well-maintained condition. Proper Handing over at the end of the contract period shall be complied.
- Maximize customer conversion with minimum expenditure strategy.
- Ensure transparent onboarding of domestic and commercial customers.

2.0. Execution Strategy

a) Infrastructure Development

- Lay/extend branch MDPE pipeline network for supplying gas to customers abutting the pipeline (both sides) or at the maximum 50 Meters in the branch road.
- Liaise with authorities for permission and road restoration.
- Install GI Piping, meters, regulators, and valves as per BGL standards.

- Commission pipelines with Ground Connection and RFC certification within 30 days in exceptional cases with valid reasons 60 days can be considered from the date of registration
- BGL shall supply GI Pipe, meters, regulators, and MDPE pipes as free issue materials.
- Maintain real-time LMC updates via BGL's Android app.
- The Bidder will make all-out effort to register the customer in the gasified area only. However, BGL may lay MDPE pipeline for about 1.0 KM to potentially non-gasified areas as per the customer demand and viability. The decision is at the sole discretion of BGL.

b) Conversion & Gas Supply

- Convert 90% of new customers within 1 Week of Gas RFC.
- Prioritize customers who are Gas-ready and near gasified lines.
- Strategize to maximize conversions with minimum expenditure.

c) Maintenance

- The quoted price shall include total maintenance of infrastructure for 03 years from the date of award of contract.
- Ensure preventive and corrective maintenance of pipelines, meters, and regulators.
- Maintain service and installation records for audit and compliance.

d) Monitoring & Compliance

- Execution supervised by PMC and verified by TPI and BGL officials.
- PMC shall certify all works executed within 3 days of work execution.
- Adhere strictly to safety, quality, and technical specifications.

3.0. Payment Philosophy

- As per milestone targets (Refer to SCC)
- **Shortfall in conversion will result in deduction from payment paid in subsequent RA bills.**

4.0 Performance Targets

- Domestic Customers: 90% conversion of infrastructure-ready households.
- Existing Customers: Minimum 60% conversion of customers with laid infrastructure.
- New Customers: Conversion within 1Week of Gas RFC.
- Existing customer: Conversion within 2 Week of providing GC.

5.0. Risk Mitigation

- Continuous engagement with customers to minimize refusal rates.
- Multiple follow-ups attempt before declaring customers unwilling.
- Asset recovery and handing over to BGL after refurbishing.

6.0 Conclusion

- This execution philosophy ensures that the contractor delivers a customer-centric, technically sound, financially transparent, and sustainable project. By integrating infrastructure, conversion, and long-term maintenance, BGL's PNG distribution in Vijayawada will achieve its targets efficiently.
- Please note that 90% NG conversions must achieved by Contractor for newly registered Domestic customers & 60% of the domestic customers whose infrastructure has been completed/partly laid. Otherwise, recoveries will be imposed from subsequent RA Bills.

- 1) The scope includes LMC and conversions 6600 Nos of new connections in Vijayawada.
- 2) Conversions of about 12,000 Connections which includes old and new connections in Vijayawada is envisaged for which the GI piping is completed, where in the Ground connections have to be laid by the contractor & scope is to complete the partially laid Ground. connections for conversions. For partially laid GC's TF is to be provided with TF guard on one end and on the other end of the GC, the MDPE Pipe is to be joined with the charged line. Scope of pending GC includes identifying the existing line, excavation, trenching, jointing, testing, charging, restoration etc.
- 3) The scope includes the supply of PNG to New customers in Limited numbers.
- 4) All the works are scattered in nature, predominantly excavation, jointing and commissioning of existing Connections and conversions.
- 5) The scope includes Execution (MDPE and GI laying, Flushing, Testing, Pre-Commissioning, Commissioning, As built submission, NG conversions, MJC Upload in portal etc.), Retesting and commissioning of MDPE and GI network (Already laid)



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The Bidder/contractor must be familiar with the complete Scope of work and must visit the site before bidding. The bidder is deemed to have full understanding of the Scope of work, efforts to be made and the rates offered are deemed to be inclusive of all associated works.



Bhagyanagar Gas Ltd.

**BHAGYANAGAR
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SCOPE OF SUPPLY

(ANNEXURE-2 TO SPECIAL CONDITIONS OF CONTRACT)

ANNEXURE-2 TO SCC

1.0 SCOPE OF SUPPLY

1.1 Owner's Scope of Supply (Free Issue Item)

Owner's scope of supply shall be as specified in Particular Job Specification, Technical Specifications, Schedule of Rates & various other parts of the Bidding Document.

In order to speed up the project Free Issue Materials shall be issued to the Contractor from the designated store(s) of BHAGYANAGAR Gas Ltd. Contractor shall be responsible for lifting the free issue materials from Owner's storage point(s) and transporting the same to work site(s) at his own cost.

Conditions for Issue and Reconciliation of Materials shall be as per Document enclosed as Annexure- 7 to Special Conditions of Contract.

Free Issue Material:

A. For Domestic PNG Connections

- MDPE Pipes
- DPNG meters
- DPNG Regulators
- Service Regulators.
- GI Pipes (all sizes)

1.2 Contractor's Scope of Supply

All materials except what is under Owner's scope of supply as mentioned in Clause No. 1.1 above, and required for successful completion of works in all respects shall be supplied by the Contractor and the cost of such supply shall be deemed to have been included in the quoted price without any additional liability on the part of Owner.



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TIME SCHEDULE

(ANNEXURE-3 TO SPECIAL CONDITIONS OF CONTRACT)



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ANNEXURE-3 TO SCC

TIME SCHEDULE

Name of Work	Time of Completion	
Laying of Above Ground GI Installation, Ground Connections including Last Mile Connectivity (LMC) at Consumer End in Vijayawada GA.. (The time schedule is inclusive of mobilization period)	VIJAYAWADA	(18+06) Months) from date of Fax of Acceptance (FOA)/Work Order

Note:

- 1) (18+06) months from the date of FOA/WO as mentioned in scope of work (time schedule).
- 2) The infrastructure installation will be completed in all respects within the first 18 months from the date of award of WO/FOA.. During this period (Maintenance) the customers whose infrastructure was provided during the initial 18 months can also be converted and subsequently billed. Cost of infrastructure paid for such connections deducted/recovered earlier due to non-conversion shall be paid upon conversion.
- 3) The time of completion shall be reckoned from the date of award of contract, which shall be the date of issue of letter/ Fax of Intent.
- 4) The time indicated is for completing all the works in all respects as per specifications, codes, drawings and instructions of Engineer-in-charge.
- 5) It should be noted that the period of construction given above includes preparation of drawings , procurement and supply of materials including their inspection & testing, mobilization at site, construction, laying, fabrication, erection inspection, testing, rectification (if any), pre-commissioning, commissioning and demobilization works etc. complete in all respects to the entire satisfaction of Owner/ Engineer-in- charge.

(STAMP & SIGNATURE OF BIDDER)



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MEASUREMENT OF WORK

(ANNEXURE-4 TO SPECIAL CONDITIONS OF CONTRACT – TECHNICAL)

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ANNEXURE-4 TO SCC

MEASUREMENT OF WORK

1.0 GENERAL

- 1.1 The mode of measurement shall be as mentioned in relevant standard specification incorporated in the Bidding Document. Any other mode of measurements not covered in above specifications shall be followed in accordance with relevant BIS codes/ Schedule of Rates/ Specifications etc. and/ or as decided by Engineer-in- charge.
- 1.2 Payment will be made on the basis of joint measurements taken by Contractor and certified by Engineer-in-charge. Measurement shall be based on “Approved for Construction” drawings, to be the extent that the work conforms to the drawings and details are adequate.
- 1.3 Wherever work is executed based on instructions of Engineer-in-charge or details are not adequate in the drawings, physical measurements shall be taken by Contractor in the presence of Engineer-in-charge.
- 1.4 Measurements of weights shall be in metric tonnes corrected to the nearest Kilogram. Linear measurements shall be in meters corrected to the nearest centimeters.
- 1.5 The weights mentioned in the drawing or shipping list shall be the basis for payment. If mountings for panels etc. are packed separately, their erection weights shall include all mountings.
- 1.6 Welds, bolts, nuts, washers etc. shall not be measured. Rates for structural steel work shall be deemed to include the same.
- 1.7 No other payment either for temporary works connected with this Contractor for any other item such as weld, shims, packing plates etc. shall be made. Such items shall be deemed to have been included for in the rates quoted.
- 1.8 Measurement will be made for various items under schedule of rates on the following basis as indicated in the unit column.

- | | | | |
|------|--------|---|-----------|
| i) | Weight | : | MT or Kg |
| ii) | Length | : | M (Meter) |
| iii) | Number | : | No. |
| iv) | Volume | : | Cu.M |
| v) | Area | : | Sq.M |

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2.0 PIPING

2.1 Length of pipes shall be measured along the curvilinear centre of the pipelines laid/ installed and shall include all types of fittings, bends etc. but excluding all types of



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valves. Length of valves shall be excluded from piping measurement and shall be considered on number basis.

3.0 FOR PIPELINE CROSSINGS BY HDD (if required) / BORING / MOLING METHOD

Payment shall be made as specified in SOR, PJS and Technical Specification.



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TERMS OF PAYMENT

(ANNEXURE-5 TO SPECIAL CONDITIONS OF CONTRACT)

ANNEXURE-5 TO SCC

1.0 TERMS OF PAYMENT

Pending completion of the whole works, provisional progressive payments for the part of work executed by the contractor shall be made by Owner on the basis of said work completed and certified by the Owner's representative as per the agreed milestone payment schedule and the percentage break-ups given below.

Contractor shall submit his invoices to the Owner's representative monthly in the manner as instructed by Owner. Each invoice will be supported by documentation acceptable to Owner and certified by the Owner's representative. Payments made by owner to the contractor for any part of the work shall not deem that the Owner has accepted the work.

The Contractor may raise the RA bill on monthly basis and payment shall be made as per the following terms:

For MDPE & LMC Connections and other associated works (SOR Item 1 to 9):

- 70% after successful testing and submission of all the relevant reports, Materials reconciliation.
- 20% for As built, laying and testing reports, flushing, testing & commissioning
- 10% after successful use of Gas by the Customers & contact closure and submission of final documents

2.0 Payment Methodology

I. The Contractor may raise invoices on monthly basis. Bidder shall enclose all documents as per checklist issued by BHAGYANAGAR Gas Ltd./ PMC

II. The payment of the contractor will be released within 15 days from the date of receipt of complete invoice as per terms and condition of the contract.

III. All payments against running bills are advance against the work and shall not be taken as Final acceptance of work / measurement carried out till the final bill.

IV. Further break-up of Lump sum Prices, if deemed necessary for any progressive payment of individual item may be mutually arrived at between Engineer-in- Charge and the Contractor.

V. Bills shall be raised by contractor in line with check list attached in Tender document.



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QUALITY ASSURANCE

(ANNEXURE-6 TO SPECIAL CONDITIONS OF CONTRACT)

(For details- Refer our Technical Specification enclosed in Vol.-II of tender document.)



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CONDITIONS FOR ISSUE AND RECONCILIATION OF MATERIAL

(ANNEXURE-7 TO SPECIAL CONDITIONS OF CONTRACT)



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ANNEXURE-7 TO SCC

1.0 CONDITIONS FOR ISSUE OF MATERIALS

Whenever any material is issued by Owner, following conditions for issue of material in addition to other conditions specified in the contract shall be applicable.

- 1.1 Necessary indents will have to be raised by the Contractor as per procedure laid down by the Engineer-in-charge from time to time, when he requires the above material for incorporation in permanent works.
- 1.2 Materials will be issued only for permanent works and not for temporary works, enabling works etc. unless specifically approved by the Engineer-in-charge and the same shall not be taken into account for the purpose of materials reconciliation.
- 1.3 The contractor shall bear all other cost including lifting, carting from issue points to work site/ contractor's store, custody and handling etc. and return of surplus/ serviceable scrap materials to Owner's storage points to be designated by the Engineer-in-charge etc. No separate payment for such expenditure will be made.
- 1.4 No material shall be allowed to be taken outside the plant without a gate pass.
- 1.5 The contractor shall be responsible for proper storage, preservation and watch & ward of the materials.
- 1.6 Reconciliation of Owner supplied materials
- 1.6.1 Every month, the contractor shall submit an account for all materials issued by Owner in the proforma prescribed by the Engineer-in-charge. On completion of the work the contractor shall submit "Material Appropriation Statement" for all materials issued by the Owner in the proforma prescribed by the Engineer-in-charge.

Waste materials like part lengths of pipes and other partly used items are the property of BHAGYANAGAR GAS LTD. and must be returned to the store with the appropriate documentation so that they can be considered as part of the material reconciliation.

Item	Unaccountable	Scrap
Regulator/ Smart Meters	0%	0%
GI Pipes	2%	3% (less than 0.5 mtrs)
PE Pipes	2%	2% (less than 2.0 mtrs)

* In case supplied by Owner

Unaccountable wastage/ scrap shall be at actual as per site assessment subject to maximum as stated above. The percentage allowance shall be accounted on the basis of final measurement book.

- 1.6.2 All unused, scrap materials and salvageable materials shall be the property of the Owner and shall be returned by the Contractor category-wise at his cost to the Owner's designated store yard(s). In case the Contractor fails to do so/ or exceeds the limits of allowances specified above for scrap/ serviceable materials, then recovery for such quantities not returned as well as returned in excess of permitted limit by the Contractor will be done at the penal rate.



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1.6.3 125% of landed cost at the time of final bill/ closing of contract by Engineer-in- charge shall be effected from the

Contractor's bill(s) or from any other dues of the Contractor to the Owner. Contractor shall be responsible for the adjustment/ weighment/ measurement of the surplus materials to be returned to the store. Contractor shall also be responsible for suitable segregation of returned materials into separate stacks of serviceable and scrap materials.

1.6.4 Wherever certain material is covered under Contractor's scope of supply whether part or in full for any item of work covered under SOR, no allowance towards wastage/ scrap etc. shall be accounted for during execution stage.



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CONSTRUCTION EQUIPMENT TO BE DEPLOYED

(ANNEXURE-8 TO SPECIAL CONDITIONS OF CONTRACT)

		
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ANNEXURE-8
CONSTRUCTION EQUIPMENT TO BE DEPLOYED

Sl. No.	Description of Item	Minimum Qty. to be Deployed
i.	Electro-fusion machine with Bar Code and control box with leads	2
ii.	Moling Equipment	As and when required
iii.	PE Squeeze Tools for all diameter Pipes	2
iv.	Universal pipe scrapper 20mm, 32mm / hand scrappers for all diameters	4
v.	Tapping tools for PE service tees	2 sets of all size
vi.	PE pipe cutter/ Guillotine for all diameters	3
vii.	Gas detection equipment, wherever required	As and when required
viii.	Cable and pipe locator	As and when required
ix.	PE closure plugs/ test ends for 20mm / 32mm pipes	As required
x.	Towing heads	As required
xi.	Pipe alignment clamps, jointing of elbow, tee, top loading clamps for top tee	4
xii.	Pipe straightners, re-rounding tools of all pipe sizes	3
xiii.	Jumping Jack compactor	As and when required
xiv.	Roller for asphaltting	As and when required
xv.	Water tanker	As and when required
xvi.	Hammer Drill	3
xvii.	Portable Power Generator 5 kVA	2
xviii.	Piston Drill	2 Gangs
xix.	Conversion Kit	2 Gangs as required
xx.	Pneumatic Test Pumps	2
xxi.	Die sets for thread preparation	2 per gang
xxii.	Soldier Torch	2
xxiii.	Cleaning pads	6
xxiv.	Cleaning Brush	6
xxv.	Lacquer and thinner	As Required
xxvi.	Safety Harness equipments with descent control	2
xvii.	Calibrated Pressure Gauge (0-6 Bar)	6



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Notes:

1. Any other equipment required for completion of pipeline laying work but not specifically mentioned hereinabove, shall be deployed by contractor without any additional cost to Owner. Contractors shall deploy the above-mentioned equipments in good working condition.
 2. Mobilization shall be considered complete only after equipments having quantity specifically mentioned hereinabove (in the min. qty. to be deployed column), are made available at site in good working conditions on as verified by EIC.
- *) Number of equipment indicated hereinabove is a minimum requirement, however for completion of job, if additional equipment is required, same shall be deployed by the contractor at site without any additional cost to Owner.

(SIGNATURE OF BIDDER)



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SCHEDULE OF LABOUR RATES

(ANNEXURE-9 TO SPECIAL CONDITIONS OF CONTRACT)



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ANNEXURE –9 to SCC
SCHEDULE OF LABOUR RATES (FOR EXTRA WORKS)

Sl. Classification Personnel	Rates in INR for 8 hours	Rate per Hour for No. OT, Sunday & Holiday
	Standard Time	(Rs)In Rs
1. Engineer	1500/-	650
2. Surveyor Foreman	1200/-	430
3. Pipe Fitter	750/-	150
4. Pipe Welder	750/-	150
5. Gas Cutter	700/-	170
6. Grinder	700/-	170
7. Mason	520/-	120
8. Plumber	500/-	120
9. Carpenter	500/-	130
10. Painter	500/-	120
11. Electrician	600/-	150
12. Cable Jointer	780/-	190
13. Instrument Technician	1000/-	190
14. Rigger	400/-	110
15. Watchman/Helper	350/-	80
16. Concrete Mixer Operator	350/-	80
17. Heavy Machine Operator	700/-	170
18. Fusion Operation/ Jointer	500	120
19. Civil labour	450	60

(SIGNATURE OF BIDDER)

NOTES: -

The above rates are final and Tenderer is to sign only without deviation.

Sign & Stamp



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GAS LIMITED

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EQUIPMENT HOURLY RENTAL RATES FOR EXTRA WORKS

(ANNEXURE-10 TO SPECIAL CONDITIONS OF CONTRACT)

Sign & Stamp



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ANNEXURE-
10 TO SCC

EQUIPMENT HOURLY RENTAL RATES FOR EXTRA WORKS

SL. DESCRIPTION OF	HOURLY RENTAL
RATES FOR NO. EQUIPMENT	
EXTRA WORKS INCLUDING	
CONSUMABLES	
1) Excavator/ JCB	Rs. 1000/-
2) Moling machine	Rs. 600/-
3) Compressors 210 CFM	Rs. 1500/-
4) Dewatering Pumps	Rs. 600/-
5) Fusion Jointing Machine	Rs. 900/-
6) Power generators (5KVA)	Rs. 250/-
7) Gas cutting set with cylinders	Rs. 150/-
8) Trucks (small)	Rs. 400/-
9) Car/Jeep	Rs. 200/-
10) Tripod with 5 Tons Chain Pulley Block	Rs. 300/-
11) Tractor Compressor	Rs. 600/-

NOTES:-

- 1) Rates are final and Tenderer is to sign only without deviation.
- 2) In case of foreign bidder, Conversion rate applicable on one day prior to price bid Opening date published by the State Bank of India will be considered.
- 3) Rates are inclusive of operators / drivers as applicable
- 4) Rates are inclusive of contractor's overhead & profit
- 5) The recovery rate shall be the rates provided above plus 20%

(SIGNATURE OF BIDDER)



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SECTION - 7 TECHNICAL

- 7.1 : PARTICULARS OF JOB SPECIFICATION
- 7.2 : TECHNICAL SPECIFICATION
- 7.3 : DRAWINGS



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PARTICULARS OF JOB SPECIFICATION

CONTENTS

Sl. No. Description

- 1.0 Project Description & Scope of Work
- 2.0 General Terms and Condition
- 3.0 Procurement
- 4.0 Scope of Supply
- 5.0 Documents, Specifications, Standards & Drawings
- 6.0 Resources/ Facilities
- 7.0 Project Scheduling & Monitoring
- 8.0 Construction
- 9.0 Documentation
- 10.0 Survey and Level/ Setting out Work
- 11.0 Order of Works/ Permissions/ Right of Entry/ Care of Existing Services
- 12.0 Make of Material/ Bought Out Items
- 13.0 Inspection of Supply Items
- 14.0 Escalation
- 15.0 Documents to be submitted along with R.A. Bills
- 16.0 Insurance for Free Issue Material
- 17.0 Special Points pertaining to Specification
- 18.0 Special Points pertaining to SOR
- 19.0 Appendix-I (List of Supplier for Bought Out Items)

1.0 GENERAL & PROJECT DESCRIPTION

1.1 PROJECT DESCRIPTION

M/s Bhagyanagar Gas Ltd. is a joint venture of GAIL (India) Limited & HPCL Ltd. BGL has been set up to implement City Gas Distribution Networks at different geographical areas in the country. Presently BGL is planning to expand City Gas Distribution Networks to supply natural gas to various Domestic, Commercial, Industrial and Automobile Consumers in Geographical Area (GA) of Vijayawada.

This tender deals with the laying, testing and commissioning of underground medium density Polyethylene (MDPE) service pipelines of size 125 / 90 / 63 / 32 / 20 mm OD including PE / GI transition fitting & installation of GI / Cu pipelines including last milestone connectivity for Piped Natural Gas supply to domestic consumers in Vijayawada.

1.2 SCOPE OF WORK

The scope of work involves providing city gas connection (PNG) to domestic/commercial consumers distributed in Vijayawada Geographical Area (GA).

The scope of work covers laying, testing and commissioning of underground medium density Polyethylene (MDPE) service pipelines of size 125 / 90 / 63 / 32 / 20 mm OD from the nearest branch line of various sizes MDPE line to various end point consumers of Piped Natural Gas (PNG) in Vijayawada.

The scope includes tapping or connecting to already laid / charged pipelines at some locations.

The last mile connectivity, at the end points of various domestic consumers, includes Installation and testing of GI pipes (free issue), Meters (meter free issue) and regulators (regulators free issue), Copper service Pipes, Isolation and appliance valves with all types fittings etc.

Further the scope of work also includes identification of existing structures, buildings, roads, pavements / by-lanes, nallahs, culverts, drains, utility lines, electric poles, type of ground surface, and markings by Pradeshp
drawings along with location of all houses by their names and identification number along with preparation



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of drawings.

The broad scope of this tender comprises of but not limited to the following:

- Laying, testing & commissioning of PE service line (of size 125 / 90 / 63 / 32 / 20 mm OD) along with Fittings and valves from the nearest existing branch line of various sizes to the Housing complex / society / individual houses etc. including PE/GI transition pipe. Supply of fittings & PE valves are in the Bidders scope.
- Supply and installation of tapping saddle on existing PE pipe of various sizes of existing network.
- Installation of Regulators, meters & other associated fittings, isolation valve, appliance valve (including supply of fittings).
- Installation of above ground GI installation including riser (PE to GI transition fittings) from regulator at consumer end.
- It is further proposed that in cases where the contractor completed installation of the meter, regulator, and GI pipeline at the customer premises, but the customer subsequently backs out at the time of conversion, the entire installation and material cost pertaining to such connections shall not be paid to contractor or shall be recovered from the respective contractor's running bills if already claimed, so as to ensure genuine customer acquisition by the contractor
- Installation of GI Pipe (free issue) connection within Kitchen of Domestic consumers including installation of meters (free issue), regulators (free issue), appliance / isolation valve (Contractor scope- Installation of GI Pipe, brass fittings, copper tube etc) complete in all respect.
- Conversion of Domestic appliances (like burner, hotplate etc.) for application / use of PNG.
- Supply, fabrication and installation of Warning Plate marker.
- Supply and Installation of TF along TF Guard.

2.0 GENERAL TERMS AND CONDITIONS

- i. Special Condition of Contract shall be read in Conjunction with the General Conditions of Contract, SOR, PJS of work, specifications, Drawings and any other documents forming part of this contract wherever the context so requires.
- ii. Notwithstanding the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the contract so far as it may be practicable to do so.
- iii. Where any portion of the General Condition of Contract is repugnant, to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears, the provisions of the Special Conditions of Contract shall be deemed to over-ride the provisions of the General Condition of Contract and shall to the extent of such repugnancy, or variations, prevail.
- iv. The materials, design and workmanship shall satisfy the relevant INDIAN STANDARDS, the TECHNICAL SPECIFICATIONS contained herein and CODES referred to. Where the technical specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- v. 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.



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- vi. It will be Contractor's responsibility to bring to the notice of Engineer-in-charge any irreconcilable conflict in the contract documents before starting the work(s) or making the supply with reference which the conflict exists.
- vii. In the absence of any specifications covering any material, design of work(s) the same shall be performed/ supplied/ executed in accordance with Standard Engineering Practice as per the instructions/ directions of the Engineer-in- charge, which will be binding on the Contractor.

3.0 PROCUREMENT AND CONSTRUCTION

3.1 PROCUREMENT

- 3.1.1 CONTRACTOR shall procure and supply all the materials other than OWNER supplied materials, required for permanent installation of pipeline and aboveground GI Installation in sequence and at appropriate time. All equipment, materials, components etc. shall be suitable for the intended service. Approved vendor list has been indicated in the bid package for various items. For items which are not covered in the vendor list, CONTRACTOR shall obtain Owner's prior approval for the vendor based on PTR document.
- 3.1.2 CONTRACTOR shall procure all materials, components, equipment, consumable etc. required for successful completion of the pipeline system. CONTRACTOR shall also procure and supply spares required for pre- commissioning and commissioning/ start up as recommended for all items supplied by him as per specifications provided in the bid package. Where no specification is available in the contract, the same shall be prepared by the CONTRACTOR based on the piping material specification and shall be subject to Owner's approval.
- 3.1.3 Material take-off with complete description of size, rating, material, thickness and specifications to be prepared by contractor.
- 3.1.4 Only single offer shall be provided by the bidder fully complying to specifications/ drawings/ requirements for Owner's review and approval. CONTRACTOR shall provide for inspection of the items at vendor's works by the OWNER/ Owner's REPRESENTATIVE or by a reputed inspection agency and shall submit inspection reports for Owner's clearance.
- 3.1.5 Stores management including receipt, warehousing, preserving the material in good condition, issue of material to construction site, reconciling/ handing over surplus material to OWNER for OWNER supplied items.
- 3.1.6 Carryout proper documentation of inspection and quality assurance programs for all equipment and bulk materials duly approved by OWNER. CONTRACTOR shall maintain an accurate and traceable listing of procurement records for the location, quality and character of all permanent materials in the Project.
- 3.1.7 CONTRACTOR shall immediately report to the OWNER of all changes which will affect material quality, and recommend any necessary corrective actions to be taken.
- 3.1.8 Submit periodic manufacturing progress reports highlighting hold ups and slippages, if any, to OWNER and take remedial measures.
- 3.1.9 Interact with authorities such as Sales Tax, Octroi, Excise, Customs etc. as necessary and arrange for transportation of the materials under his scope of supply to site.

3.1.10 All purchase requisitions including purchase orders shall be approved by Owner/ Owner's

Representative. 3.1.11 Compliance with vendor's and supplier's instructions and recommendations for

transportation, handling,



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installation & commissioning.



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3.2 CONSTRUCTION

3.2.1 General

3.2.1.1 All construction works shall be carried out as per "Approved for Construction" drawings, procedures, specification and applicable codes and standards. Any changes at site shall also need prior approval from the OWNER and revision of drawings. Construction drawings will be submitted by the Contractor in a phased manner for owner's approval in accordance with the procurement and construction plan prepared and furnished by contractor & agreed by Owner. Owner will take minimum 7 working days from the date of submission of the documents / drawings submitted by the contractor for owner's comments / approval.

3.2.1.2 Providing schedules, progress reporting, organization chart at construction site, quality assurance plan and developing quality control procedures, as per requirements indicated elsewhere in the bid package.

3.2.1.3 Coordination and supervising the work of sub-contractors.

3.2.1.4 Transportation of appropriate materials and taking delivery of Company supply materials, store, worksite, intermediate storage points, maintaining and operating an adequate material control procedure at worksite.

3.0.1.1 Fabrication of all GI piping, structural components as per approved drawings.

3.0.1.2 All works related to laying and commissioning works shall be performed in accordance with relevant specifications and requirements enclosed elsewhere in the bid package.

3.0.1.3 CONTRACTOR shall provide complete details of manpower, equipment etc. to be deployed. Mobilizing and providing all equipments, manpower (skilled and unskilled), consumable and other resources etc. for each spread as required for the execution of the complete job defined herein and thereafter demobilizing the same upon completion of work.

3.0.1.4 Provide, maintain and operate all temporary facilities required for the construction related works and remove after completion of work. Providing barricading at trench in city area as per instruction of engineer in charge for safety.

3.0.1.5 Hook up / tie-in of pipeline and piping system with other facilities etc.

3.0.1.6 All works related to cleaning, testing, dewatering, swabbing, drying pre- commissioning and commissioning of the work tendered.

3.0.1.7 Idle time preservation of pipeline, if required.

3.0.1.8 All incidental and associated works and any other works not specifically listed therein but are required to be carried out to complete entire work related to pipelines and terminals.

3.0.2 Branch / service Pipeline

3.0.2.1 Familiarization of Pipeline Route

Bidders are advised to make site visits to familiarize themselves with all the salient features of available infrastructure along the proposed pipeline in GA area of Vijayawada. Contractor shall be deemed to have considered all constraints and eventualities on account of site conditions while formulating his bid. Contractor shall not be eligible for any compensation in terms of cost and/ or time, on account of site conditions varying to any extent from whatever described in the Bid Package.



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- 3.0.2.2 The city condition field / other fields may have lots of PVC, PE & utility pipelines or other pipelines & cables being used for city utility / other utilities purposes. CONTRACTOR shall ensure that these lines shall not be damaged/ cut affecting the water / power / communication / other supply to concerned Users / Owners / Authorities. Wherever required temporary necessary precautions had to be maintained for uninterrupted supply.
- 3.0.2.3 Supply, loading, unloading, handling, stacking, storing and transportation to workshop/ work site of all materials that may be used for the construction of pipeline system at their designated stack yard/ dump site/ store and/ or by CONTRACTOR as the case may be.
- 3.0.2.4 Stacking, clearing, grading as required, trenching to all depths in all types of soil including soft & hard rock by chiseling or otherwise cutting etc. to a width to accommodate the PE pipeline as per relevant standards, drawings, specification etc. transportation of PE pipes along the route, stringing, aligning, bending, jointing including testing, inspection, field jointing including supply of all materials as per specifications, laying and lowering of the pipeline, back filling, Supply and installation of pipeline as shown in approved drawings and as directed by OWNER, installation of supports wherever required, supply of select backfill material as required, clean- up, flushing, pneumatic testing, nitrogen purging / pre-commissioning and commissioning of complete pipeline system, including all associated works as per relevant specifications, standards and approved drawings



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3.0.2.5 Sand / soft soil padding around pipe wherever required in areas where trenching has been done in hard soil area / rocky area including supply of sand/ soft soil. The thickness of sand/

3.0.2.6 soft soil padding at the top of pipe shall be minimum 150 mm and bottom of pipe shall be minimum 150 mm or as per drawing enclosed whichever is more.

3.0.2.7 Installation of all inline / valves / fittings / transition fittings as per requirements of approved drawings.

3.0.2.8 Testing & Purging

A) Testing

Pressure testing will be carried out with compressed air. Compressed air will be provided by Contractor for testing purposes and is to be included in the rates.

Measuring instruments shall have been calibrated and their accuracy and sensitivity confirmed. For testing of Network, calibrated pressure gauges of suitable range shall be supplied by the contractor. The pressure gauges shall be calibrated from time to time as desired by Engineer- in-Charge. All testing shall be witnessed and approved by the EIC or his delegated representative. Tie-in joints may be tested at working pressure following commissioning.

For service lines in some cases testing will be carried out for the test duration of 4 hrs. The service testing in this case will be performed after the service installation is complete but before the service tee has been tapped. Also in some cases the tapping of the service tee will be delayed pending the completion and purging of the main pipelines.

B) Purging

Purging shall be carried out in accordance with the principles defined in the American Gas Association publication 'Purging Principles and Practice'.

Nitrogen required for purging will also be provided by the Contractor. Nitrogen shall be supplied in labeled, tested and certified cylinders, and completed with all necessary regulators, hoses and connections, which will be in good condition and working order.

In addition the Contractor shall submit and get approved a Purging Plan before commencing any purging work. The Plan shall include, but not be limited to, the provision of the following materials and equipment: Personal safety equipment, Fire extinguisher, Purging adaptor, Purge stack with flame trap and gas sampling point, Gas sampling equipment (may be gas leak detector), squash-off tool, Polyethylene connecting pipe work.

The Plan shall also include the purging process along with detail on the sequence of events. The process is to also specifically mention the need to lay a wet cloth over the PE main and in contact with the ground, to disperse static electricity during the purging work.

A purge stack with flame trap shall be used when purging services. Care shall be taken to ensure that the purge outlet is so located that vent gas cannot drift into buildings.

3.0.2.9 Markers

Installation of all types of markers including all associated civil works. Any other work not specifically mentioned above but required for making the entire pipeline system ready for operation.



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3.0.2.10 Priorities

The Contractor shall start the execution work as per approved execution methodology / plan / procedure to complete the scope of work and shall deploy adequate manpower, machinery, tool & tackles etc. accordingly.

However, Owner may, at its sole option, assign priority of construction to any part/ segment of the work. Contractor shall comply with such priority of execution and their deployment without any time and cost implication to the Owner.

3.0.2.11 Pre-commissioning and Commissioning Assistance

- Pre-commissioning including supply of all materials, consumables and manpower of the complete pipeline system
- Making the entire system ready for commissioning and providing assistance during the complete duration of commissioning operations.
- Completion of all pipeline activities as detailed in SOR.

3.0.2.12 Installation of Riser and Lateral Pipes in High Rise Building for PNG connection

- The threading of GI pipe shall be NPT and conforming to ANSI B120.1
- Erection, Fabrication, threading, Testing & Installation of GI Pipes & Fittings etc., including NPT threading as per technical specification and sketch attached.
- Preparation and approval of sketches, schedules, execution procedures as per technical specification. All consumables and fittings are under contractor's scope.
- Supply & fixing of MS angle clamps, Ceiling clamps & dowel plugs with screws, grout material, suitable thread sealant i.e. Teflon Tape / lock tight, Supply and fixing of studs & bolts of various sizes ranging from 1/2" to 2" and 3/4" to 2", Jointing of transition fittings to above ground GI pipes, purging, testing and commissioning of the complete installation.
- The entire riser assembly shall be threaded riser assembly and plain ended pipes. Threaded joints are permitted after first isolation valve on laterals where riser is not approachable from balcony and in case if riser is in approach of balcony within 300 mm gap from balcony laterals may be threaded with tee of welded riser on account of workability and future maintenance considerations
- Pipe and required fittings shall be first coupled with threaded (NPT) joints. The threaded joints to be made using male tapered thread and female parallel thread fittings.
- Teflon/PTFE Tape or any other joining compound shall not be used in threaded joints.
- Risers and laterals must be designed to run through the optimal possible route, taking into consideration potential meter positions, design regulations and access for future maintenance. A riser must not be constructed so that the laterals face directly into the wall from the riser.
- Risers and laterals must be laid a minimum of 300 mm from any electrical equipment or installations. On occasions where the pipe has to cross over a cable, this has to be done at right angles and a minimum gap of 25 mm must be maintained between the pipe and cable. Consideration may be given to wrapping the pipe with electrical insulation tape for protection against electrical short circuiting.

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- The riser shall be installed in a vertical line from its point of support to its highest point with a minimum of changes in direction. All riser and lateral pipe shall be clamped to the building at intervals not exceeding 1.5 mtrs. Maximum distance between clamps shall be 1.0 - 1.5 m when pipe goes to the straight, if any tee or fittings lies in between the pipe then clamp shall be placed 150 mm far away from center line of fittings at every sides. However, the same may be changed as per site conditions/as directed by EIC. Minimum gap between pipe & wall shall be 25 mm.
- Only pretested riser shall be erected using pulley. Pretesting shall be done with compressed air @ 2 bar (g) for minimum duration of 30 minutes.
- Installation of lateral GI pipes (free issue) of 1/2" to 2" dia. from riser tapping TEE (Isolation Valve) to customer's kitchen appliances including NPT threading of GI pipes, supply of proper seal outs for threads to join fittings such as elbows, tees, connectors, regulators (free issue), meters (free issue), appliance & isolation valves etc., as per approved procedures and specification including clamping and sealing etc.
- The lateral extending from the riser at right- angles must extend a minimum of 400 mm from the riser before passing through a wall. Where the 400 mm length cannot be achieved, a flexible fitting such as stainless steel hose (anaconda) shall be fitted.
- Where pipe passes through the balcony and the surface is slightly elevated around the service pipe or it's surrounding, sleeves to be provided to prevent the accumulation of water at that point.
- Pipe shall preferably be entered into building above ground and remain in a ventilated location. The location for entry shall be such that it can be easily routed to the usage points by the shortest practicable route.
- Risers and laterals shall be Leak tested with compressed air @ 2 bar (g) for minimum 2 hrs after vertical installation.
- The joints/ fittings of the GI installation shall be painted only after carrying out testing of the installation
- Making temporary but stable platforms/scaffolding/rope ladder etc., required for installation of pipes/fittings at all heights/multi storied flats and locations.
- Any other material & activities not mentioned/covered above, but otherwise required for satisfactory completion/safety of work as defined in tender has to be supplied / done by contractor within specified schedule at no extra cost to owner.

4.0 SCOPE OF SUPPLY

4.1 Owner's Scope of Supply (Free Issue Item)

Owner's scope of supply includes all GI and MDPE pipe, smart meters & Regulators only as required. In order to speed up the project, Free Issue Materials shall be issued to the Contractor from the designated store(s) of Bhagyanagar Gas Ltd. Contractor shall be responsible for lifting the free issue materials from Owner's storage point(s) and transporting the same to work site(s) at his own cost. Receiving, loading, unloading and transporting and stacking of MDPE pipes issue by BGL as free issue material from BGL designated store yard.



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4.2

Material to be Supplied by Contractor

The procurement and supply, in sequence and at the appropriate time, of all materials and consumables required for completion of the work as defined in this Bid document except the materials specifically listed above, shall be entirely the CONTRACTOR'S responsibility and item rates quoted for the execution of the CONTRACT shall be inclusive of supply of all these materials. The material to be supplied by the Contractor shall be as per specification and preferred make as indicated in Appendix-I or duly approved / recommended for use by Bhagyanagar Gas Ltd. / PMC. The materials will be, but not by way of limitations, as follows:-

All materials except what is under Owner's scope of supply as mentioned in Clause No. 4.1 above, and required for successful completion of works in all respects shall be supplied by the Contractor and the cost of such supply shall be deemed to have been included in the quoted price without any additional liability on the part of Owner.

The following materials to be supplied by the contractor as required to complete the work. However other additional/ Supplementary materials required for execution of the project is to be supplied by the contractor

Material under Contractor's Scope of Supply includes (for all sizes)

A) Coupler / bends / elbows as required

- i) For 20mm (PE)
- ii) For 32 mm (PE)
- iii) For 63 mm (PE)
- iv) For 90 mm (PE)
- v) For 125 mm (PE)

B) End Caps

- i) Ends caps 20mm (PE)
- ii) End cap 32mm (PE)
- iii) End cap 63 mm (PE)
- iv) End cap 90 mm (PE)
- v) End cap 125 mm (PE)

C) Equal Tee

- i) Equal Tee 20mm OD (PE)
- ii) Equal tee 32 mm OD (PE)
- iii) Equal tee 63 mm OD (PE)
- iv) Equal tee 90 mm OD (PE)
- v) Equal tee 125 mm OD (PE)

D) Saddle Tapping Tee

- i) Saddle Tapping Tee 32x20 (PE)
- ii) Saddle Tapping Tee 63x20 (PE)
- iii) Saddle tapping Tee 63x32 (PE)
- iv) Saddle tapping Tee 63 X 20 (PE)
- v) Saddle tapping Tee 90 x 20 (PE)
- vi) Saddle tapping Tee 90 x 32 (PE)
- vii) Saddle tapping Tee 90 x 63 (PE)
- viii) Saddle tapping Tee 125 X 20 (PE)

E) Reducer

- i) Reducers 32x20 (PE)
- ii) Reducers 63x32 (PE)
- iii) Reducers 90x63 (PE)
- iv) Reducers 125x63 (PE)
- v) Reducers 125x90 (PE)



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F) Transition Fitting

- i) PE to G.I. (20 mm to 1/2")
- ii) PE to G.I. (20 mm to 3/4")
- iii) PE to G.I. (32 mm to 1/2")
- iv) PE to G.I. (32 mm to 3/4")
- v) PE to G.I. (32 mm to 1")

G) Warning mat

Warning Mat 250 mm Wide-0.5mm Thick with traceability wire

H) GI Pipe and Fittings

- i) Elbows F End (1/2") (GI)
- ii) Elbows F End (3/4") (GI)
- iii) Elbows F End (1") (GI)
- iv) Elbows F End (1 1/2") (GI)
- vi) M & F Elbows End (1/2") (GI)
- vi) M & F Elbows End (3/4") (GI)
- vii) M & F Elbows End (1") (GI)
- viii) M & F Elbows End (1 1/2") (GI)
- ix) Equal Tee (1/2") (GI)
- x) Equal Tee (3/4") (GI)
- xi) Equal Tee (1") (GI)
- xii) Equal Tee (1 1/2") (GI)
- xiii) Union (1/2") (GI)
- xiv) Union (3/4") (GI)
- xv) Union (1") (GI)
- xvi) Union (1 1/2") (GI)
- xvii) Sockets (1/2") (GI)
- xviii) Sockets (3/4") (GI)
- xix) Sockets (1") (GI)
- xx) Sockets (1 1/2") (GI)
- xxi) Reduced Elbows (3/4" x 1/2") (GI)
- xxii) Reduced Elbows (1" x 3/4") (GI)
- xxiii) Reduced Elbows (1 1/2" x 3/4") (GI)
- xxiv) Reduced Elbows (1 1/2" x 1") (GI)
- xxv) Hex Nipple Size (1/2" x 2") Long (GI)
- xxvi) Hex Nipple Size (1/2" x 3") Long (GI)
- xxvii) Hex Nipple Size (3/4" x 2") Long (GI)
- xxviii) Hex Nipple Size (1" x 2") Long (GI)
- xxix) Hex Nipple Size (1 1/2" x 2") long (GI)
- xxx) Reduced Sockets (3/4" x 1/2") long (GI)
- xxx) Reduced Sockets (1" x 3/4") (GI)
- xxxi) Reduced Sockets (1 1/2" x 3/4") (GI)
- xxxii) Reduced Sockets (1 1/2" x 1") (GI)
- xxxiii) Plugs (3/4") (GI)



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Any fittings not specified above but required for GI, Cu and PE lines is in the scope of contractor.

5.0 DOCUMENTS, SPECIFICATION, STANDARDS AND DRAWINGS

- 5.1 Owner shall furnish tender purpose drawings as listed in content of Volume-III of the tender document and other typical standard drawings attached with respective technical specifications enclosed with Volume-III of the tender document. Contractor shall prepare detail engineering drawing, bill of materials and all construction drawings and submit to Consultant for approval prior to start of the job / any procurement.
- 5.2 Contractor shall prepare isometric drawings, any specific detail drawings (if required by Engineer- in- charge) & bill of materials and submit the same for Owner/ Consultant's approval / record.
- 5.3 Contractor shall prepare drawing for utilities line as required or as per SOR and submit the same for Owner/ Consultant's approval/ record.
- 5.4 No construction small or big shall be carried out without proper construction / standard drawings duly approved by Owner's Engineers at Head-office or site office or Owner's representative duly authorized to do so.
- 5.5 After Completion of construction & commissioning of pipeline system, Contractor shall incorporate all the correction in drawings, prepare and issue the drawings "as built drawings" as listed below to Owner as final submission of drawings. For pipeline alignment sheet, all block valves location & details, pipe book etc. and for tap-off point & consumers premises, piping GAD, Isometric and all civil drawings including hook-up arrangement with Meter Regulator. For final submission only 4 sets of documents shall be handed over by Contractor. Any construction done by Contractor without duly approved drawings shall be wholly at his risk and cost. Contractor shall also submit soft copy of pipe book in excel along with hard copy. Soft copy of all as-built drawings shall be also submitted in AutoCAD.
- 5.6 Specifications
The work shall be carried out by CONTRACTOR strictly in accordance with the following specifications enclosed in Volume-II of this document :-
- 1) Laying of Underground PE Pipeline
 - 2) Installation of Aboveground GI Piping for Domestic Consumers
 - 3) GI Fittings
 - 4) GI Fittings for natural gas
 - 5) Brass Fitting
 - 6) PE Ball Valves
 - 7) Isolation valve & Appliance Valve
 - 8) Warning mats
- 5.7 Drawings
The drawings to the extent available are included in Vol.-III of the bid package for BIDDER's reference purpose only; Bidders are advised to go through these drawings and also visit the site before submitting their bids. The Contractor shall develop all drawings including for all crossings, along with the all connection drawings required for construction works as detailed in respective SCC, PJS & SOR etc.
- 6.0 RESOURCES / FACILITIES
- 6.1 Recruitment of Personnel by Contractor

The Contractor shall not recruit personnel of any category from among those who are already employed by the other agencies working at the sites but shall make maximum use of local labour available.



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6.2 Construction Water and Power Supply

No water and power will be provided by the owner. It should be the responsibilities of the contractor to arrange water and power at his own cost.

6.3 Land for Residential Accommodation

Owner shall not provide any land for residential accommodation of contractors staff and labour.

7.0 PROJECT SCHEDULING & MONITORING

The following schedules/documents/reports shall be prepared and submitted by the Bidder/Contractor for review/approval at various stages of the contract.

7.1 After the Award of Contract

a) Overall Project Schedule

The Contractor shall submit within 1 week of Fax of Intent, a sufficiently detailed overall Project Schedule in the activity network form, clearly indicating the major milestones, interrelationship/ interdependence between various activities together with analysis of critical path and floats.

The network will be reviewed and approved by Engineer- in-Charge and the comments if any shall be incorporated in the network before issuing the same for implementation. The network thus finalised shall form part of the contract document and the same shall not be revised without the prior permission from Engineer-in- Charge during the entire period of contract.

b) Progress Measurement Methodology

The contractor is required to submit within 1 week of award of WORK, the methodology of progress measurement of sub-ordering, manufacturing/ delivery, sub- contracting construction and commissioning works and the basis of computation of overall services/physical progress informed. Owner reserves the right to modify the methodology in part or in full.

c) Functional Schedules

The contractor should prepare detailed functional schedules in line with network for functional monitoring and control and submit scheduled progress covers for each function viz. ordering, delivery and construction.

7.2 Project Review Meetings

The Contractor shall present the programme and status at various review meetings as required.

a) Weekly Review Meeting

Level of Participation : Contractor's/Consultant's RCM/Site In charge & Job

Engineers. Agenda :

- a) Weekly programme v/s actual achieved in the past week & programme for next week.
- b) Remedial Actions and hold up analysis.
- c) Client query/ approval.

Venue : Site Office

b) Monthly Review Meeting

Level of Participation : Senior Officers of BHAGYANAGAR GAS LTD. / PMC and
Participation senior officials of Contractors with RCMs

Agenda :

- a) Progress Status/ Statistics
- b) Completion Outlook
- c) Major hold ups/slippages
- d) Assistance required
- e) Critical issues
- f) Client query / approval



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Venue : BHAGYANAGAR GAS LTD. /PMC Office/ Site at the discretion of Owner/ PMC

7.3 Progress Reporting Performance

A. Monthly Progress Report

This report shall be submitted on a monthly basis on 1st day of the month, as agreed upon covering overall scenarios of the work. The report shall include, but not limited to the following:

- a) Brief Introduction of the work.
- b) Activities executed / achievements during the month.
- c) Schedule versus actual percentage progress and progress curves for Detail Engg. Sub-ordering, Manufacturing/ Delivery, Sub- contracting, Construction, Commissioning and Overall and quantum wise status & purchase orders against schedule.
- d) Area of concern/ problem/ hold-ups, impacts and action plans.
- e) Resources deployment status.
- f) Annexures giving status summary for drawings, MRs, deliveries, sub-contracting and construction.
- g) Procurement status for items to be supplied by Contractor.

B. Weekly Reports

The report will be prepared and submitted by the Contractor on weekly basis and will cover following items:

- a) Activities programmed and completed during the week.
- b) Resource deployed men and machines.
- c) Quantities achieved against target in construction
- d) Record of Man days lost.
- e) Construction percentage progress schedule and actual.

C. Daily Repots

- a) Activity program for the day
- b) Progress of the previous day and commutative progress.
- c) Manpower & machinery deployed.

7.4 Progress Reports

7.4.1 CONTRACTOR shall make every effort to keep the OWNER adequately informed as to the progress of the WORK throughout the CONTRACT period.

7.4.2 CONTRACTOR shall keep the OWNER informed well in advance of the construction schedule so as to permit the OWNER to arrange for requisite inspection to be carried out in such a manner as to minimize interference with progress of WORK. It is imperative that close coordination be maintained with the OWNER during all phases of WORK.



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- 7.4.3 By the 1st of each month, CONTRACTOR shall furnish the OWNER a detailed report covering the progress as of the last day of the previous month. These reports will indicate actual and scheduled percentage of completion of construction as well as general comments of interest or the progress of various phases of the WORK. The frequency of progress reporting by the CONTRACTOR should be weekly.
- 7.4.4 Once a week, CONTRACTOR shall submit a summary of the WORK accomplished during the preceding week in form of percentage completion of the various phases of the WORK, to the OWNER.
- 7.4.5 Progress reports shall be supplied by CONTRACTOR with documents such as chart, networks, photographs, test certificate etc. Such progress reports shall be in the form and size as may be required by the OWNER and shall be submitted in at least 3 (three) copies.
- 7.4.6 Contractor shall prepare daily progress report (DPR) in the desired format and submit it to Engineer-in- charge along with schedule of next day to Engineer-in- charge.
- 8.0 CONSTRUCTION

OWNER reserves the right to inspect all phases of CONTRACTOR's operations to ensure conformity to the SPECIFICATIONS. Owner will have Engineers, Inspectors or other duly authorized representatives, made known to the CONTRACTOR present during progress of the WORK and such representatives shall have free access to the WORK at all times. The presence or absence of a OWNER's representative does not relieve the CONTRACTOR of the responsibility for quality control in all phases of the WORK. In the event that any of the WORK being done by the CONTRACTOR or any SUB-CONTRACTOR is found by OWNER's representatives to be unsatisfactory or not in accordance with the DRAWINGS, procedures and SPECIFICATIONS, the CONTRACTOR shall, upon verbal notice of such, revise the work in a manner to conform to the relevant DRAWINGS, procedures and SPECIFICATIONS.

8.1 Rules & Regulations

CONTRACTOR shall observe in addition to Codes specified in respective specification, all National and Local Laws, Ordinances, Rules and Regulations and requirements pertaining to the WORK and shall be responsible for extra costs arising from violations of the same.

8.2 Procedures

Various procedures and method statements to be adopted by CONTRACTOR during the construction as required in the respective specifications shall be submitted to OWNER in due time for APPROVAL. No such construction activity shall commence unless approved by OWNER in writing.

8.3 Field Inspection

CONTRACTOR shall have at all times during the performance of the WORK, a Competent Superintendent on the premises. Any instruction given to such superintendent shall be construed as having been given to the CONTRACTOR.

8.4 Erection and Installation

The CONTRACTOR shall carry out required supervision and inspection as per quality Assurance plan and furnish all assistance required by the OWNER in carrying out inspection work during this phase. The OWNER will have engineers, inspectors or other authorized representatives present who are to have free access to the WORK at all times. If an OWNER's representative notifies the CONTRACTOR's authorized representative not lower than a Foreman of any deficiency, or recommends action regarding compliance with the SPECIFICATIONS, the CONTRACTOR shall make every effort to carry out such instructions to complete the WORK conforming to the SPECIFICATIONS and approved DRAWINGS in the fullest degree consistent with best industry practice.



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8.5 Construction Aids, Equipment, Tools & Tackles

CONTRACTOR shall be solely responsible for making available for executing the work, all requisite Construction Equipments, Special Aids, Tools, Tackles and testing equipments and appliances. Such construction equipments etc. shall be subject to examination by owner and approval for the same being in first class operating condition. Any discrepancies pointed out by OWNER shall be immediately got rectified, repaired or the equipment replaced altogether, by CONTRACTOR. OWNER shall not in any way be responsible for providing any such equipment, machinery, tools and tackles.

The OWNER reserves the right to rearrange such deployment depending upon the progress and priority of work in various sections.

Tie-end between main line and starting point of terminal is included in the scope of contract, as and when main line section is available for Tie-ins.

9.0 DOCUMENTATION

9.1 "As-Built" Drawings

The Contractor will be required to submit computerized as-built drawings duly certified by EIC in A3 / A2 sheet form at 1:200 scale with four sets of prints plus soft copy. The as-built drawing shall be submitted on area wise as specified. The bill of materials used for the particular area shall be specified on the drawings

9.2 Completion Document – PE & GI

The following documents shall be submitted in hard binder by the BIDDER in FOUR sets, as a part of completion documents:-

- a) Copies of the Inspection reports, Laying Graphs, HDD Profiles (if required) and valve pit drawings (if required).
- b) Pre testing, final Hydrostatic / pneumatic and other Test results and reports.
- c) Consumption statements of PE / GI certified by Owner's Site Engineer.
- d) Material Reconciliation, stores issue & return statements
- e) All other requirements as specified in the respective specifications.
- f) Completion Certificate issued by Owner's Site Engineer.
- g) No claim certificate by the BIDDER.
- h) Completion certificate for embedded and covered up works wherever applicable.
- i) Recovery statement, if any.
- j) Deviation statement.
- k) Statement for reconciliation of all the payments and recoveries made in the progress bills.
- l) Copies of deviation statement and order of extension of time, if granted.
- m) Any other contractual documents required on completion.
- n) Total list of houses in the area allotted to him giving details of connections provided & reasons where connection could not be given / completed.
- o) The details recorded in measurement cards of every domestic house.
- p) Details of houses where extra piping done along with materials used.
- q) Total material consumption report.
- r) Material reconciliation with respect to the materials issued.
- s) Test reports & test certificates of gauges etc.
- t) Any other documents / records required.



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10.0 SURVEY AND LEVEL / SETTING OUT WORK

- 10.1 Before the WORK or any part thereof are begun, the CONTRACTOR's agent and the Engineer-in- Charge's representative shall together survey and take levels of the SITE and decide all particulars on which the survey is to be made, and on which measurements of the WORK are to be based. Such particulars shall be plotted by the CONTRACTOR and after agreement the drawings shall be signed by the Engineer-in-Charge.
- 10.2 The CONTRACTOR shall be entirely responsible for the horizontal and vertical alignment, the level and correctness of every part of the WORK and shall rectify any errors or imperfections therein. Such rectifications shall be carried out by the CONTRACTOR at his own cost, when instructions are issued to this effect by the Engineer-in-Charge or his representative.
- 10.3 The Engineer-in-Charge shall furnish the relevant existing grid point with Bench Mark on the land. It shall be CONTRACTOR's responsibility to set out the necessary control points in and to set out the alignment of the various works. The CONTRACTOR shall have to employ efficient survey team for this purpose and the accuracy of such setting out work shall be CONTRACTOR's responsibility.
- 10.4 The CONTRACTOR shall give the Engineer-in-Charge not less than 24 (twenty four) hours notice in writing of his intention to set out or give levels for any part of the WORK so that arrangements may be made checking the same.
- 10.5 WORK shall be suspended for such times as necessary for checking lines and levels on any part of the WORK.
- 10.6 The CONTRACTOR shall at his own expense provide all assistance, which the Engineer-in-Charge may require for checking the setting out of WORKS.
- 10.7 Before commencement of any activity, contractor's quality control set up duly approved by company must be available at site.

11.0 ORDER OF WORKS / PERMISSIONS / RIGHT OF ENTRY / CARE OF EXISTING SERVICES

- 11.1 The order in which the WORK shall be carried out shall be subject to the approval of the Engineer- in- charge and shall be so as to suit the detailed method of construction adopted by the CONTRACTOR, as well as the agreed joint programme. The WORK shall be carried out in a manner so as to enable the other contractors, if any, to work concurrently.

OWNER reserves right to fix up priorities which will be conveyed by Engineer-in- Charge and the CONTRACTOR shall plan and execute work accordingly.

11.2 Existing Service

- 11.2.1 Drains, pipes, cables, overhead wires and similar services encountered in course of the works shall be guarded from injury by the CONTRACTOR at his own cost, so that they may continue in full and uninterrupted use to the satisfaction of the Owners thereof, or otherwise occupy any part of the SITE in a manner likely to hinder the operation of such services.

- 11.2.2 Should any damage be done by the CONTRACTOR to any mains, pipes, cables or lines (whether above or below ground etc.), whether or not shown on the drawings the CONTRACTOR must make good or bear the cost of making good the same without delay to the satisfaction of the Engineer-in-Charge.



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12.0 MAKE OF MATERIAL / BOUGHT OUT ITEMS

Approved vendors for various major items is enclosed as Appendix-I to Particular Job Specification with this tender documents. The bidder shall consider such names only as indicated in the aforesaid list and clearly indicate in the bid the name(s) as selected against these items. For any other item not covered in the list enclosed with this tender document, prior approval shall be obtained by the contractor for its make/ supplier's name.

13.0 INSPECTION OF SUPPLY ITEMS

All inspections and tests shall be made as required by the specifications forming part of this contract. Contractor shall advise Owner/ Consultant in writing at least 10 days in advance of the date of final inspection/tests. Manufactures inspection or testing certificates for equipment and materials supplied, may be considered for acceptance at the discretion of Owner/ Consultant. All costs towards testing etc. shall be borne by the contractor within their quoted rates. All inspection of various items shall be carried out based on Quality Assurance Plan, which will be submitted by the Contractor and duly approved by Owner/ Consultant.

14.0 ESCALATION

The Unit Rates quoted shall be kept firm till completion of work, and no price Escalation shall be paid.

15.0 DOCUMENTS TO BE SUBMITTED / PRODUCED ALONGWITH R.A. BILLS

- i. Computerized R.A. Bill/ Manual Bill, with IT No./ ST No./ Labour License No. printed thereon.
- ii. ESI/ EPF clearance certificates for the last month along with R.A. Bills.
- iii. Insurance Policy as per relevant clauses of Contract Agreement.
- iv. Attendance Register and Salary Records.
- v. Photocopy of the measurement book to be attached with R.A. Bills.
- vi. Any other document required for the purpose of processing the bills.
- vii. Registration Certificate with Sales tax authorities of state concerned.

16.0 INSURANCE FOR FREE ISSUE MATERIAL

Contractor shall at his own expense arrange, secure and maintain insurance cover for Owner's supplied free issue materials as defined in Tender Document of adequate value as intimated by owner / consultant. Contractor's quoted price shall be inclusive of all costs on account of insurance liabilities covered under the Contract. Contractor to note that the beneficiary of insurance cover shall be Bhagyanagar Gas Ltd. However the cost will be apportioned as per quantity of connections allotted. The contractor may take the insurance as per the following schedule:

- a) Up to 3 months :30%
- b) Up to 6 months : 60%
- c) Beyond 9 months:100%

17.0 SPECIAL POINTS PERTAINING TO SPECIFICATION

The minimum pipeline cover shall be kept as follows:

Pipeline Burial Requirement:

The entire pipeline shall be buried and provided with a minimum cover as given in Table below:

Pipeline Burial Requirements

Location Min. Cover

(m)

- a) minor water crossing (below firm bed level) 1.5
- b) Cased/ Uncased Road/ cart track crossings 1.2
- c) Drainage, ditches at roads crossings 1.0
- d) Residential and other locations including rocky areas 1.0



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Note:

- a) The depth of cover shall be measured from the top of the pipe to the top of the undisturbed surface of soil or the top of graded working strip, whichever is lower. The fill material in the working strip shall not be considered in the depth of cover.
 - b) The cover shall be measured from the top of road or top of rail, as the case may be.
 - c) For water courses that are prone to scour and erosion, adequate safe cover as mentioned above or as advised by concerned authorities (whichever is stringent) shall be provided below the predicted scour profile expected during the life time of the pipeline.
 - d) When scour level is not known, an additional cover of at least 1 m or as advised by concerned authorities shall be provided from the existing firm bed of the river / water course except in case of rocky river bed.
 - e) Minimum cover mentioned above against Sl. no. a), b), c), d) & e) category may be increased based on the statutory requirements from concerned authorities and authorities requirement shall be final and binding to the contractor.
 - f) Soft soil / sand padding of minimum 150 mm thickness or as mentioned in standard drawing (whichever is stringent) to be provided around the pipeline where gravel / hard soil or rocky area is encountered.
 - g) Piping at consumer ends, connection at existing tap-off location and for future connections along with bill of materials.
 - h) Contractor shall develop General Arrangement Drawings (GADs) good for construction for size 32 / 20mm and locations based on typical sketches/ drawings along with bill of materials and submit to Owner for reviews/ approval. Construction work shall be carried out based on construction drawings duly approved by Owner/ Consultant.
 - i) The detailed engineering for above ground installation shall include detail engineering pertaining to all disciplines (if required) along with bill of materials.
 - j) All the documents/ drawings prepared by the Contractor shall be submitted to Owner/ Engineer-in-charge for review and approval. All works shall be executed based on the approved drawings/ documents only.
 - k) Contractor shall obtain all clearance from Government authorities (if required). However bank guarantee/ required fee or charges shall be submitted by Owner.
- 17.1 If any ambiguity arises between SCC (Tech.) & Particular Job Specification in that case later shall govern. However in some cases, decision of Engineer-in-charge shall be final and binding to the contractor.
- 17.2 Following points shall be taken care by the contractor before during execution works.
- Contractor shall be responsible for taking necessary precautions regarding traffic (installation of notice / warning boards).
 - Contractor shall be totally responsible for the occurrence of any accident during excavation of road and shall be liable for damages / expenses due to the same.
 - Concerned authority / Owner shall not be responsible for any loss / damage.
 - One copy of the permission shall be made available with contractor's responsible workman (if required) at the place where excavation is undertaken.
 - While executing the subject work, excavation shall be done in consultation with the concerned authority engineer of that area.
 - Necessary safety measures shall be taken for the gas pipeline since high tension lines and other services carriers are running along with in gas pipeline route in the area.



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18.0 SPECIAL NOTES PERTAINING TO SCHEDULE OF RATES (SOR)

- a) All SOR item shall be quoted by the bidder in the price part of the bid, other-wise bid will be rejected.
- b) The quantities given above against individual items are indicative and shall not be considered to be binding. The quantities may be increased, decreased or deleted at site at the time of actual execution and as per discretion of Owner/ Engineer-in-charge. The unit rate shall be operated to work out the final payment due to Contractor.
- c) The payment will be made as per actual certified measurement at site.
- d) The scope as mentioned in the SOR is of indicative nature only and shall include all activities as detailed in the relevant clauses of the respective Particular Job Specifications, Technical Specifications, Data Sheets & drawings, etc.
- e) Installation of PE Pipes of size 32 / 20 mm is to be laid underground considering for domestic consumers as required in respective city.
- f) Restoration works of pipeline trench made by open cut method are included in Contractor's scope as indicate in SOR. Owner's / Engineer-in-Charge's decision in this regard shall be final and binding to the contractor.

19.0 APPENDIX-I

LIST OF SUGGESTED SUPPLIERS FOR BOUGHT OUT ITEMS PE FITTINGS

- a) M/s Friatech AG, Germany (represented by M/s Sherman Sales in India)
- b) M/s Jain Irrigation systems Ltd. Jalgaon (Fusion, UK)
- c) M/s George Fisher
- d) M/s Agru, Austria
- e) M/s Kimplas piping Systems Ltd., Nashik
- f) M/s Aliaxis Utilities & Industries Pvt.Ltd

PE VALVES

- a) M/s Friatech AG, Germany (represented by M/s Sherman Sales in India)
- b) M/s George Fisher
- c) M/s Agru, Austria
- d) M/s Aliaxis Utilities & Industries Pvt.Ltd
- e) M/s Plasson Ltd., Israel

WARNING TAPE

- a) M/s Sparco Multiplast Pvt. Ltd., Ahmedabad
- b) M/s Singhal Industries, Ahemdabad
- c) M/s Puja Packing, Mumbai
- d) M/s Bina Enterprises, Mumbai
- e) M/s Shree Vijay Wire, Jaipur

GI Pipe and FITTINGS (Powder Coated)

- a) M/s Jainsons Industries, Jalandhar
- b) M/s Jupiter Metal Industries Ltd.
- c) M/s Rajnesh Malleables Ltd., Delhi
- d) M/s Industrial Valves &Components, Delhi
- e) M/s Sarin industries, Delhi
- f) M/s Jinan Meide Casting Co. Ltd, Japan
- g) M/s Ningbo Huaping Metal work Co. Ltd, China
- h) Chowkala Distributors
- i) Jindal Pipes



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COPPER TUBES AND FITTINGS

- a) Paras Industries Ltd.
- b) Rajco Metal
- c) Chandan Enterprises
- d) Mehta Tubes

BRASS FITTINGS

- a) M/s Chandan Enterprises
- b) M/s Paras Industries Ltd.
- c) M/s Umesh Enterprises
- d) M/s Mehta Brothers FLEXIBLE HOSE
- a) M/s KPC Flex Tubes
- b) M/s Vestas Hose Division
- c) M/s Alfa Flexi Tubes

ISOLATION VALVES AND APPLIANCE VALVES

- a) M/s Universal srl
- b) M/s Tiemme Raccorderie Sede
- c) M/s Jainson Industries
- d) M/s Enolgas Bonimu s.a.s.
- e) M/s Fratelli Fortis s.r.l
- f) M/s Giacomo Climbrio
- g) M/s Parker Hannifin S.P.A.
- h) M/s Singapore Valve & Amp; Fittings Pte Limited, Singapore
- i) M/s Rubinetterie Utensilerie Bonomi (RUB)
- j) M/s Zhejiang Valogin Technology Co. Ltd, China
- k) M/s Ningbo Huaping Metal work Co. Ltd, China

CS Ball Valve

- a) M/s Hawa Valves (India) Pvt. Ltd, Navi Mumbai
- b) M/s Larsen & Toubro (Audco), India
- c) M/s Oswal Industries Ltd., India
- d) M/s Virgo Engineers Ltd., Delhi
- e) M/s Boteli Valve Group Co. Ltd., China
- f) M/s Cameron Italy s.r.l., Italy
- g) M/s Dafram S.P.A., Italy
- h) M/s Fangyuan Valve Group Co. Ltd., China
- i) M/s Franz Schuck GmbH, Germany
- j) M/s Kita Mura Valve Manufacturing Co.Ltd., India
- k) M/s Petro Valve S.R. Italy
- l) M/s Piplviesse S.P.A. Italy
- m) M/s Tormene Gas Technology S.P.A. Valvetalia Group, Italy
- n) M/s Valbeot S.R.L. Italy
- o) M/s Steelstrong Valves, India
- p) M/s Microfinish Valves, India
- q) M/s Zed Valves, India



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TECHNICAL SPECIFICATION TECHNICAL

SPECIFICATION FOR
LAYING OF UNDERGROUND PE MAIN PIPELINES



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GAS LIMITED

LAYING OF UNDERGROUND PE PIPELINES AND ABOVE
GROUND GI INSTALLATIONS INCLUDING LAST MILE
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Bid Document No. BGL/764/2026-27

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1.0 GENERAL INFORMATION

1.1 Introduction

Bhagyanagar Gas Limited (BGL), a joint venture of GAIL (India) Limited and HPCL, is engaged in development of CNG (Compressed natural gas) & City Gas Distribution Networks (CGDN) at Vijayawada for distribution of CNG and PNG to various consumer segments. Presently, BGL is expanding the CNG & City Gas Distribution Network (CGDN) to supply Natural Gas to Domestic, Commercial, Industrial and Automobile Consumers in the Geographical Area (GA) of Vijayawada.

1.2 Nature of Contract

The contractor shall be paid on a Price schedule basis. He shall execute the work and perform his obligations under the contract and BHAGYANAGAR GAS LTD shall pay the contractor for measured quantity of each item of work actually carried out under the contract. Payment shall be at the rate for the work set out in the agreed Price schedule.

2.0 SCOPE OF WORK

Generally the following shall constitute the Contractor's scope of work:

- 2.1 The scope of work involves providing city gas connection to about 500 nos. of domestic/commercial consumers in the Vijayawada Geographical Areas (GA).
- 2.2 The scope of work covers laying, testing and commissioning of underground medium density Polyethylene (MDPE) service pipelines of size 125/ 90 / 63 / 32 / 20 mm OD from the nearest branch line of various sizes MDPE line to various end point consumers of Piped Natural Gas (PNG) in Vijayawada. The scope includes tapping or connecting to already laid / charged pipelines at some locations.
- 2.3 Further the scope of work also includes identification of existing structures, buildings, roads, pavements / by-lanes, nallahs, culverts, drains, utility lines, electric poles, type of ground surface, and marking on drawings along with location of all houses by their names and identification number along with preparation of drawings.
- 2.4 Plan and prepare a schedule for execution and work implementation as per QA / QC plans to be issued by BHAGYANAGAR GAS LTD/PMC. Contractor has to submit the Construction/ Execution procedures before commencement of work.
- 2.5 In principle ROU permission for laying of the pipe line from the concerned land owning authority i.e. Local municipal authorities / Govt. Bodies / NHAI, R&B etc.) will be arranged by contractor. BGL will hand over the application form to the contractor. Contractor shall be responsible for obtaining the permission. All liaisoning during pipe line laying execution with any authorities such as Local municipalities, R&B, local officials, traffic police, police, ESCOM, BSNL, Railways, RTO etc. and any other utility companies / agencies such as OFC operators etc. are in the scope of the contractor. The scope also includes liaisoning with Society / individual land / Shop owners for smooth execution of pipeline laying. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner / other utility agencies) is in scope of the contractor.
- 2.6 The route alignment drawings of main pipeline (125 / 90 / 63 / 32 mm) in streets / general areas shall be provided by BGL / Consultant. However inside the premises for 32 mm / 20 mm dia pipeline, preparation of route map, as per site condition shall be prepared by contractor and submitted to BGL/consultant for approval and execution shall start after due approval. Further, the scope also includes preparation of drawing, for any change in route due to site condition for mainline (125 / 90 / 63 / 32 mm), re- route alignment drawing shall also be prepared by contractor.
- 2.7 Receiving, loading, unloading and transporting and stacking of MDPE pipes issue by BGL as free issue material from BGL designated store yard within GA limit.



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- 2.8 Proper storing, stacking, identification, providing security, and insurance during storage, laying and upto handing over of pipelines.
- 2.9 Making trial pits to determine the underground utilities/services such as existing pipelines, Cables (Electrical/Communication), Conduits, U/G drainage, Sewers, tunnels, Subways foundations etc, and deciding optimum routes and depths for laying the pipelines based on the actual site condition / approved pipeline route by EIC/authorities.
- 2.10 Clearing the pipeline route as per requirement for proper movement of workmen, equipment and QA/QC personnel.
- 2.11 Wherever required the grass / turfing, pavement, linings, drains roads and other such 'pucca' area shall be locally removed to facilitate trenching and pipe laying works. The same is to be reinstated as original.
- 2.12 Supply & Installation of Safety/ Warning Signs, barricading of the route to be trenched. Pits to be similarly barricaded with the warning sign.
- 2.13 To make trenches with stable slopes but restricting minimum disturbance to above ground/underground services/ installation as per specifications and approved route plans; keep the trenches free from water and soil till placement of pipes;
- 2.14 Uncoiling/ stringing the PE pipes of required sizes (i.e. 20, 32, 63, 90, 125) pipes into trenches as per specification.
- 2.15 Joining the pipe ends with fittings and valves by approved electro-fusion techniques as per specification.
- 2.16 Installation of pe fittings/installation like elbow, tee, reducers, tapping saddles, joints, connectors, transition fittings, valves, sleeves etc. including construction of supports, valves pits, inspection chambers etc. as per specification.
- 2.17 Laying pipeline using trench less technology methods with or without casing pipes as per specification and as directed by EIC.
- 2.18 Supply & Laying of HDPE duct as casing pipe wherever applicable, along with PE Pipe.
- 2.19 Supply of good quality GI sleeves, concrete casing pipes, sand and other material, fittings to be supplied by the Contractor as per provisions of tender.
- 2.20 Back filling and compaction by jumping jack compactor using approved 'good' soil or using excavated earth or borrow earth as per requirement and specification and replacement of tiles, slabs removed during the excavation. Cleaning all unserviceable material, debris, excess earth near trenches etc. to designated disposal area.
- 2.21 Carrying out pneumatic testing and purging as per specifications and approved procedures; providing all tools, tackles, instruments, manpower and other related accessories for carrying out the testing of pipes.
- 2.22 Nitrogen purging (including supply), commissioning & gas charging of tested pipeline as per approved procedure.
- 2.23 Restoration of existing ground features such as grass/ turfing, paving, roads, drains, concrete, floral beds, fencing, titles, flooring masonry etc. to original condition and to match with adjoining conditions-functionally and aesthetically up to the entire satisfaction of BHAGYANAGAR GAS LTD / PMC / any other third party agency designated by BHAGYANAGAR GAS LTD and local authorities, failing which, it will be done at the risk and cost of the contractor. Obtaining satisfactory completion certificates for the restoration work done from the concerned authorities.
- 2.24 Installation of permanent site markers, warning signs, valve chamber etc.
- 2.25 Returning surplus material to BHAGYANAGAR GAS LTD stores, reconciliation of free issue material / consumables if supplied by BHAGYANAGAR GAS LIMITED and obtaining 'no objection certificates' from BHAGYANAGAR GAS LTD /PMC.



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- 2.26 Handing over the completed works to BHAGYANAGAR GAS LTD for their operation / use purposes.
2.27 Maintaining the completed pipelines/installation for any defect, failures during defect liability period.
2.28 Preparation and submission of As-built drawings, details of crossings, utility graphs, measurement sheets and deviation statements on completion / commissioning of work by way of drawing, sketches and tables.

2.29 Any other activity (i.e.) not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the Scope of work and has to be completed by the Contractor within specified schedule at no extra cost to BGL.

3.0 MATERIAL, LABOUR, PLANT AND EQUIPMENT

3.1 Owner's Scope of Supply (Free Issue Item)

Free Issue Materials shall be issued to the Contractor from the designated store(s) of BHAGYANAGAR Gas Ltd. Contractor shall be responsible for lifting the free issue materials from Owner's storage point(s) and transporting the same to work site(s) at his own cost. In general PE pipe shall be of the following lengths indicated.

20mm/32mm 100 to 300 Mtrs. coils

63 mm 100 Mtrs. Coils

90 mm 50 to 100 Mtrs Coils

125 mm 50 Mtrs. Coils

3.2 Supplied by the Contractor

Contractor will supply all size HDPE casing pipe, GI / concrete sleeves, valves and PE fittings other materials as per SOR & scope of supply necessary to complete the laying of gas main pipelines and service pipelines.

The contractor is to procure all bought out items from approved vendors and accordingly keep BHAGYANAGAR GAS LTD / PMC informed. The inspection of bought out items would be carried out by BHAGYANAGAR GAS LTD / PMC / Third Party Inspection or as instruction by EIC.

The Contractor shall provide the skilled labour, tools, material and equipment necessary for the proper execution of the Work. This will include but not be limited to list of specialized items included in the enclosure furnished herewith.

3.2.1 Equipment & Machinery

All vehicular type machinery shall be in good working order and shall not cause spillage of oil or grease. To avoid damage to paved surfaces the Contractor will provide pads of timber or thick rubber under the hydraulic feet or outriggers of machinery.

In addition to above, the contractor must have dedicated bar coded electro-fusion (Automatically readable) machine with power generator (at any point of time minimum 2 nos.), Pipe Cutters (like circular guillotine), End Scrapers, Pipe Straightener, approved Top loading clamp for fusing saddle tapping tee, clamps of all sizes for Electro-fusion fittings, re- rounding tools and test ends etc. for pipes of diameters 125mm, 90mm, 63mm, 32mm &

20mm for this project. Contractor has to arrange his own all equipments for trenchless crossings such as HDD, Moling & rock cutting equipment, HDPE fusion equipment at the site whenever required.

Contractor must also have to arrange his own equipment for restoration work like water tanker and jumping jack compactor for compaction of backfilled trenches and roller and other required equipment/ machinery for asphaltting/ road works.

In case there is non-availability of approved equipment, tools and tackles during the work at site, suitable penalties, as per special terms and condition of the contract, will be levied and deducted from the running bills.



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3.2.2 Imported Backfill and Material

The Contractor shall be responsible to arrange the supply of approved soft soil / Coarse Sand free from any impurities like clay, mica and soft flaky pieces as per the instruction of EIC/Owner.

For supply of sand in trench for rocky terrain, no separate charges are payable and is included in price schedule item for excavation of hard rock / Morrum. Also supply of sand in valve chambers, Normal chambers & Built up surface, if required, as per the instruction of EIC is not separately payable.

In case specified trench depths are not achieved & if directed by Engineer-in-charge Contractor to provide concrete casing pipes/ slabs or cement concrete, without any cost implication to Owner.

3.2.3 Other Materials

The Contractor shall supply the following items where required.

- All materials required for form work, trench support, temporary trench crossings.
- All sign boards, barricades, tin sheets, lights and protective equipment.
- Permanent markers as shown in the drawings enclosed in the tender.
- Material required for installation of valve chambers.
- GI & Concrete Sleeves
- All minor items not expressly mentioned in the Contract but which are necessary for the satisfactory completion and performance of the Work under this Contract.

3.2.4 Manpower

The contractor shall provide the skilled labour, tools, materials, and equipment necessary for the proper execution.

3.2.5 Acquisition, Receipt, & Storage of Materials

In case of material supplied by owner then the contractor shall collect all materials from BHAGYANAGAR Gas store between working hours following all documentation procedures laid down and as directed by EIC. The contractor shall at the time of receipt of material physically examine all materials and notify the EIC immediately of any damage. Any damage not recorded at the time of inspection done by contractor will be deemed not to have existed at the time of receipt of material. Cost of repair, rectification, replacement will be borne by the contractor. Any defective material found during the time of installation will noted and forwarded to stores for replacement immediately with P.O reference and only with written approval of EIC. The contractor shall ensure that no defective material shall be returned to store at the time of closure of contract.

The contractor shall maintain permanent locked store preferably near site in so that all the material are stored in such a manner so as to prevent and damage to the materials from scratching, gouging, indentation, excessive heat or by contact with any sharp objects and chemicals.

The contractor shall maintain log book at their respective stores stating issue and availability of free issue material as a given day. Further the contractor is required to undertake and submit an inventory of materials every month to Owners/Owners Representative (mandatory)



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4.0 PROGRESS OF WORK

The Contractor shall proceed with the Work under the Contract with due expedition and without delay.

The EIC may direct in what order and at what time the various stages or parts of the work under the Contract shall be performed.

Contractor has to regularly submit daily progress reports, weekly progress reports, graphs with utilities, testing reports, material consumption and inventory reports, deviation statements etc.

5.0 APPROVALS

It is the contractor's responsibility to inform and co-ordinate the concerned local authorities and also other utility agencies before commencement of work at site. To ensure smooth execution of the work on a day to day basis, the contractor has to liaison with respective authorities and obtains necessary approvals.

6.0 REFERENCE SPECIFICATION, CODES AND STANDARDS

The contractor shall carry out the work in accordance with the requirement of latest relevant applicable standards, this specification, Engineering Standards; relevant Oil India Safety Directorate (OISD) norms, Latest PNGRB Guidelines, ASME B31.8-Gas Transmission and Distribution Piping Systems; Australian Standard 3723 - Installation and Maintenance of Plastics Pipe Systems for Gas; and the American Gas Association Document - Purging Principles and Practice. ISO: 4437/ IS:14885 for underground polyethylene pipes and approved procedures Should the contractor find any discrepancy, ambiguity or conflict in or between any of the Standards and the contract documents, then this should be promptly referred to the Engineer-in-Charge (EIC) for his decision, which shall be considered binding on the contractor.

7.0 SAFETY

The Contractor shall conform to the requirements outlined elsewhere in the tender document. In addition, the Contractor shall observe safe working practices in the storage and handling of cleaning fluids, flammable fluids, etc. and ensure smoking or naked flames are not permitted in the vicinity when these materials are being used.

Trench walls shall be battered with sufficient slope in order to minimize a trench collapse. Where there is a danger of an earth slide or collapse, the trench shall remain open for the minimum time possible with proper barricading. The Contractor is to ensure that no person enters a trench, which is of a depth of 1.5 meters or greater, unless the trench has adequate shoring or the sides are battered to such an extent as to prevent a trench collapse

The Contractor shall also protect all work sites with warning signs, barricades and night lighting. The Contractor shall inspect all fenced excavations daily, and maintain them in good order.

The trenches/ pits shall not be kept open in night times. However in case the same is essential the same shall be properly barricaded with proper lighting arrangements & manned.

The Contractor shall provide all safety equipments like helmets, boots, etc. to the labour which are necessary for safe working practice.

Any accident causing injury to any person or damage to property or equipment shall be reported to the EIC.

Where the EIC determines that the work is being performed by the Contractor in an unsafe manner, he may suspend the Work until corrective action is taken by the Contractor.

For further details refer Attached Health Safety and Environment (HSE) technical specification.

8.0 ROUTE SURVEY

8.1 Route Plans with pipe size of approved route shall be issued to the contractor at the start of the works.

8.2 The planned route drawings of main pipeline (125 / 90 / 63 / 32 mm) in streets / general areas shall be provided by BGL / Consultant. However inside the premises for 32mm / 20mm dia pipeline preparation of route map, as per site condition shall be prepared by

contractor and submitted to BGL/consultant for approval and execution shall start after due approval. Further, the scope also includes preparation of drawing, for any change in route due to site condition for mainline (125 / 90 / 63mm), re- route alignment drawing shall also be prepared by contractor. Any change in routing from the issued drawings due to site constraint will be notified to EIC & his specific written approval shall be obtained before carrying out the job.

9.0 ORGANIZATION OF WORK

9.1 All construction work will be carried out as per direction of EIC, and this will be the primary point of contact between the contractor and BHAGYANAGAR GAS LTD on site. All work will be issued and sanctioned through the EIC and site control exercised by Site Engineer BHAGYANAGAR GAS LTD / PMC. The contractor shall ensure that technical quality standards are maintained, that construction is carried out cost effectively and that a good customer and public image of BHAGYANAGAR GAS LTD is maintained.

9.2 Contractor shall designate RCM who will be the single point coordinator to interact with EIC / Consultant / TPIA and authorized to attend review meetings, receive materials, authorized to sign documents, claims and receive payments etc.. Contractor shall submit the organization chart stating that in charge of projects, store, QA/QC and take approval from the owner.

9.3 The contractor will appoint his own supervisors of minimum number instructed by EIC. These personnel will be responsible to the SE for monitoring construction standards and for ensuring that all detailed technical requirements are met on each and every job which is undertaken. The contractor's supervisor (s) will have day to day liaison with the SE, and will provide the SE with technical reports and audits, and other management information as is required on work progress and construction quality standards.

9.4 The contractor's supervisor shall have mobile/phones to ensure that they can be contacted at all times. The contractor will also nominate one person who can be contacted if necessary out of hours, for the duration of the works. The contractor's supervisor will have access to transport at all times to allow them to visit sites and attend meetings with PMC/ BHAGYANAGAR GAS LTD as is required. The normal day to day issue of work instructions, communication between PMC / BHAGYANAGAR GAS LTD and the contractor's supervisor and the SE. No deviation from the approved technical specification / issued construction drawings shall be undertaken without written approval of EIC.

9.5 Contractor shall maintain a Project site office, Material store with following facilities: Telephone, Mobile phones, printers / Scanning / Xerox machines, Computer with e-mail facility, transportation facility

10.0 STRUCTURES, SERVICES AND OTHER PROPERTY

10.1 Location of Underground Utilities

The contractor shall locate all buried utility pipes, underground cables, water mains and other obstructions intersecting or adjacent to the Works, and shall make available the necessary labour to expose and record the depth of cover over all obstructions in advance of excavation. This shall be done far enough in advance of excavation to facilitate gradual change in grade or position found necessary to clear any obstructions.

In addition, the contractor shall excavate trial pits as necessary to determine the pipe route. The number of trial pits will be agreed with the EIC in advance of any excavation. Restoration of the abandoned trial pits and trenches shall be the contractor's responsibility. No payments shall be made for such type of jobs.

It is contractor's responsibility to interact with other utility agencies regarding their existing utilities and finalize the route along with these agencies and Owner / Owner's representative

There will be no additional payments in respect of abandoned trenches incurred because of insufficient or inadequate trial pits, or any associated lost time or delays.

10.2 Protection of Structures and Utilities

The Contractor shall at his own cost, support and protect all buildings, walls, fences or other structures and all utilities

e.g. Electrical cables, Telephone Cables, Water pipelines, Sewer pipelines etc. and property which may, unless so protected, be damaged as a result of the execution of the works. He shall also comply with the requirements in the specification relating to protective measures applicable to particular operations or kind of work. Special care shall be taken while laying Pipelines near the trees.

10.3 Interference with Traffic, Street Drainage and General Public

The Work shall be executed in such a manner as to cause a minimum of inconvenience to persons requiring to use public or private roads, lanes, thoroughfares, walkways, rights-of use or passages through which the Works are to be executed. The trench shall be back filled, compacted, levelled and extra earth shall be removed immediately after laying of pipeline to avoid public inconvenience. Closure of roads, etc. shall not be permitted without the approval of the EIC.

The Contractor shall comply with all local Authorities requirements to traffic, and keep roads open to traffic, and maintain access to and within any private property. Wherever the pipe route crosses driveways, access tracks or entrances to private properties, the Contractor shall give the owner, occupier or relevant authority at least 24 hours prior notice of intended commencement of excavation and shall be restricted to pass through.

The Contractor shall not, in any circumstance, use a private driveway, access track or entrance without the prior approval of the EIC.

The Contractor shall provide suitable access where necessary in the form of temporary bridges, culverts, flumes, etc. of a size and type approved by the EIC.

The Contractor shall comply with all relevant road Laws. Where limits and/or speed limits have been placed in the vicinity of the Works, the Contractor shall provide for the necessary movement of plant and equipment in accordance with the requirements of the relevant authority.

The Contractor shall not obstruct any drainage pipes or channels in any road but shall deviate them where necessary and use all proper measures to provide for the free passage of water.

The Contractor shall deliver the completed works after proper cleaning of the site.

The contractor shall conduct his operations at all times, with a view to minimizing as far as practicable noise from plant and other objectionable nuisance (e.g. oil leakage).

11.0 TRENCHING

The schematic diagram with the detail of trench is enclosed. The Contractor shall perform the excavation works so as to enable the pipe to be laid in conformity with the levels, depths, slopes, curves, dimensions and instructions shown on the Drawings, Specifications or as otherwise directed by the EIC.

Contractor shall excavate and maintain the pipeline trench on staked centerline as per approved alignment sheets taking into account the horizontal curves of the pipelines.

While trenching care shall be taken to ensure that all underground structures and utilities are disturbed to the minimum. Suitable crossing shall be provided and maintained wherever necessary to permit general public, property owners or his tenants to cross or move stock or equipment from side of the trench or another.

Trenching shall be made with sufficient slopes on sides in order to minimize collapsing of the trench. On slopes wherever there is danger of landslides, the pipeline trench shall be maintained open only for the time strictly necessary. BHAGYANAGAR GAS LTD may require excavation by hand tools, local rerouting and limiting the period of executing of the works. Before trench cuts through water table, proper drainage shall be ensured, both near the ditch and ROU in order to guarantee the soil stability.

The Contractor shall ensure that trench bottom is maintained in the square form as far as possible, with equipment, so as to avoid/ minimize the hand grading at the bottom of the trench. The Contractor shall do all such handwork in the trench as required to free the bottom of trench from loose rock, pebbles and to trim protruding roots from the bottom and sidewalls of the trench.

11.1 Depth of Trench

The minimum depth of cover shall be measured from top of pipe to the top of undisturbed surface of the soil or top of the graded working strip or top of road or top of rail, whichever is lower.

The depth of the trench will be such as to provided minimum cover as stipulated below:

- a) For Distribution Main and Service Lines
 - i. Minor Water Crossing/ Canal 2.5 meter
 - ii. Uncased/ Cased Road Crossing 1.5 meter
 - iii. Rail/ Road Cased Crossing 1.5 meter
 - iv. Normal Areas 1.0 meter

The minimum depth as mentioned above may be greater than as may be required by Government / Public authorities under jurisdictions. The Contractor shall perform such work without extra compensation, according to the requirement of concerned authorities.

In case the depth could not be achieved due to practical problems and the same is demonstrated, EIC after examining thoroughly and considering the codes and standards may allow the contractor to provide suitable protection by way of concrete casing pipes or slabs without extra cost to BHAGYANAGAR GAS LTD.

11.2 Width of Trench

The width of the trench shall be wide enough to provide bedding around the pipe and to prevent damage to the pipe inside the trench. Unless otherwise directed by the EIC and where ground conditions permit, the minimum distance from the inside edge of the trench wall to the outside of the pipe shall be as per Drawing. No payment will be made for extra width of trench for any reason.

11.3 Trench Base

The trench bottom shall be cut or trimmed to provide a uniform bedding for the pipe, and shall be free of stones, metal, wood, vegetation, clods of earth or other debris before placement of the pipe.

Hard rock is defined as trench material with a single piece dimension exceeding 1.0 m in length which cannot be removed other than by the use of pneumatic chisel / drill or sledge hammer and chisel.

Excavation through soil mixed with boulders that have been used for a road base will not be considered as hard rock for the purposes of payment.



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11.4 Clearances

Unless otherwise approved, the following clearances shall be maintained between the external wall of the gas pipe and the external surface of other underground assets in the vicinity of the Works.

- 150-300 mm where the gas pipe crosses other assets, other than electrical cables, whereupon the clearance shall be 300 mm.
- 300mm where the gas pipe is on a similar alignment to the other assets

Where the above clearances cannot be achieved, or in other special circumstances, the EIC may approve/specify protection with concrete/MS coated pipe, etc. The protective material shall be supplied and installed by the Contractor at his cost.

11.5 Under Ground Interferences

The Contractor shall locate and expose manually all underground facilities if any during trenching. Safety barriers, if required shall be erected to prevent any damages or accident. On locations where pipeline is laid under the existing facilities and near the approaches to the crossing, the trench shall be gradually deepened to avoid sharp bends. All sewers, drains, ditches and other natural waterways encountered while trenching shall be maintained open and functional by providing proper temporary installations if required. Suitable dewatering pumps shall be deployed to dewater, if required.

Whenever it is permitted by Authorities and / or BHAGYANAGAR GAS LTD to open cut paved road crossing, or where line is routed within the road pavement, the Contractor shall remove the paving in accordance with the restrictions and requirements of the authorities having jurisdiction thereof as directed by BHAGYANAGAR GAS LTD. After laying the pipeline, backfilling shall be immediately performed and all the areas connected with the works shall be temporarily restored.

In case of damage to any of above referred structures / utilities the contractor shall be responsible for repairs / replacement at his own cost, which shall be carried out to satisfaction of concerned authorities, resident and PMC / BHAGYANAGAR GAS LTD.

11.6 Others

Throughout the period of execution of such work, the Contractor shall provide and use warning signs, traffic lights or lanterns, barricades, fencing, watchman etc. as required by the local authorities having jurisdiction and / or BHAGYANAGAR GAS LTD.

For all roads, paths, walkways etc. that are open-cut, the Contractor shall provided temporary diversions properly constructed to allow the passage of normal traffic with the minimum of inconvenience and interruptions. The paving shall be restored to its original condition after the pipeline is installed.

The Contractor shall excavate to additional depth at all the points where the contour of the earth may require extra depth, or where as deep trench is required at the approaches to crossings of roadways, railroads, rivers, streams, drainage ditches without any extra cost implication to BHAGYANAGAR GAS LTD.



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The Contractor shall excavate all such aforesaid depths as may be required at no extra cost of BHAGYANAGAR GAS LTD. The trench shall be cut to a grade that will provide a firm, uniform and continuous support for the pipe.

The Contractor shall take conducive measures to ensure the protection of underground utilities as per the instructions of BHAGYANAGAR GAS LTD or relevant authorities. Where the pipeline crosses underground utilities/ structures, Contractor shall first manually excavate to a depth and in a such a manner that the utilities/ structures are located, then proceed with the conventional methods.

The locations, where the pipeline has to be laid more or less parallel to an existing pipeline cable and / or other utilities in the Right-of-way the Contractor shall maintain proper distances

And perform the work to the satisfaction of BHAGYANAGAR GAS LTD and other utility agencies. In such locations, the Contractor shall perform work in such a way that even under the worst weather and flooding conditions, the existing pipeline/ utilities remain stable and shall neither become undermined nor have the tendency to slide towards the trench.

11.7 Bedding

The contractor shall ensure that the pipe when placed in the trench is supported and surrounded by a bed of screened excavated soil, which shall be stone free and have a maximum grit size of 5mm in order to ensure no damage occurs to the pipe.

However in case of rocky soil, the bedding shall be done with approved / good quality packing sand, subject to the approval of the EIC, the size distribution of the sand shall be the same as per soil. The packing sand shall be placed to a minimum thickness of 150mm around the pipe in case of rocky terrain.

Unless directed by the EIC the quantity of bedding & surrounding sand shall confirm to specifications. There shall be no void space in packing sand around the pipe.

12.0 LAYING

Laying of MDPE pipelines shall commence only after ensuring proper dimensions and clean surface of the trench. The trench bottom shall be free from the presence of cuts, stones, roots, debris, stakes, rock projections up to 150mm below underside of pipe and any other material which could lead of perforation / tearing of the pipe wall. After ensuring above the PE pipe coil shall be uncoiled smoothly through proper equipment's / care inside the trench ensuring no damage to pipe coil during laying. The Contractor must ensure that pipe caps are provided before lowering of pipeline. The trench after this can be released for back filling leaving adequate lengths open at the ends, for jointing.

Where given specific approval by the EIC a pipe may pass through an open drain or nallah. Where this is permitted the pipe shall be installed inside a concrete or steel sleeve for protection. The sleeve material shall be procured and laid by the Contractor. In general the GI Sleeve / concrete sleeve material specification of reputed make. The payment for the length of pipe in the sleeve will be made as per SOR. All other work necessary to break through the walls of the obstruction, and to seal the annulus between the pipe and the sleeve and the sleeve and the wall, shall be deemed to be included in the rates.

Open ends of pipe placed in the trench shall be securely capped or plugged to prevent the ingress of water or other matter. The Contractor is to ensure that nothing enters the inside of the pipe during the laying process as this could cause a future blockage or regulator malfunction due to dust, etc.

Valves shall be installed at locations shown on the Design Plan or as directed by the EIC and joined with PE pipes by electro-fusion techniques. The valves shall be supported on a bed of fine fill of grit size not greater than 5mm to achieve equivalent support as the incoming and outgoing pipe work.



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Laying graphs with details of depth, length, offsets from fixed references, other utility crossings, fittings, size of casing pipe used for the pipeline shall be prepared on daily basis and submitted to Site Engineers of the Owner for approval. These details will be further.

13.0 JOINTING OF POLYETHYLENE PIPE

Only Bar coded electro-fusion machine (Automatically Readable) with in-built memory to store the jointing data that can read the bar code of the fittings shall be used for jointing of MDPE pipe / fittings. Manual feeding electro- fusion machines are not acceptable for jointing purpose.

The Contractor has to submit the certificate of calibration of Fusion machine at the time of start of work and at fixed intervals as per the instruction of owner. Contractor shall ensure that the machine are always available at site, no stoppage of work due to the non availability of machines.

The contractor shall flush the Pipeline with air to remove dust, water, mud etc. before fusing the joints.

Before jointing, the Contractor shall place packing sand under the pipes on both sides of the joint to keep the pipes in line and at the correct alignment during the jointing process. Alignment clamps with the correct size shells should be used to align the pipe during the electro-fusion cycle.

The Contractor shall ensure that polyethylene pipe is only cut with an approved PE pipe cutting tool. Before fusion is attempted, shall remove the oxidized surface of the pipe to be inserted into the electro-fusion coupling. The tool must remove a layer of 0.1 mm to 0.4 mm from the outer surface of the PE pipe. It may also be noted that no fusion will be allowed without clamping device and only the approved cutting tools (Hack Saw shall not be allowed for cutting the Pipe) shall be used.

The contractor has to supply all the consumables required for carrying fusion of the joints (like cloth/ paper napkin, acetone etc.).

If, upon inspection, the EIC determines a joint is defective, Contractor shall remove the joint by an approved method. The cost of this work shall be borne by the Contractor.

Contractor shall arrange generator for power supply for fusion machine. Taking power connection from electric poles, connections or residential premises is strictly not permitted.

Only, Approved Jointers shall carry out fusion of all joints. Contractors shall provide the list of jointers to be used on the job and make arrangements for qualification Testing of the jointers in presence of Owner / Owner's representative . All approved Jointers shall bear Identity cards signed by Owner/Owner's representative.

14.0 BACKFILLING

Backfilling shall be done after ensuring that appurtenance have been properly fitted and the pipe is following the ditch profile at the required depth that will provide the required cover and has a bed which is free of extraneous material and which allows the pipe to rest smoothly and evenly. Dewatering shall be carried out prior to backfilling. No backfilling shall be allowed if the trench is not completely dewatered.

Prior to backfilling it should be ensured that the post padding where required of compacted thickness 150mm is put over and around the pipe immediately after lowering.

Backfilling shall be carried out immediately after the post padding where required has been completed in the trench, inspected and approved by BHAGYANAGAR GAS LTD/ PMC, so as to provide a natural anchorage for the pipe, avoiding, sliding down of trench sides and pipe moment in the trench. If immediate backfilling is not possible, a padding of at least 200mm of earth, free of rock and hard lumps shall be placed over and around the pipe and coating.



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The backfill material shall contain no extraneous material and / or hard lumps of soil, which could damage the pipe and / or coating or leave voids in the backfilled trench. In case, it is required and directed by EIC, screening of the backfill material shall be carried out with specified equipment before backfilling the trench.

The surplus material shall be neatly crowned directly over the trench and the adjacent excavated areas on both sides of the trench to such a height which will, in BHAGYANAGAR GAS LTD / PMC opinion of provide adequately for future settlement of the trench backfill during the maintenance period and thereafter. The down shall be high enough to prevent the formation of the depression in the soil when backfill has settled into its permanent position should depression occur after backfill, Contractor shall be responsible for remedial work at no extra cost to Company. Surplus material, including rock, left from this operation shall be disposed off to the satisfaction of land owner or authority having jurisdiction at no extra cost to BHAGYANAGAR GAS LTD.

Where small pieces of rock, gravel, lumps of hard soil or like materials are encountered at the time of trench excavation, sufficient earth or select backfill materials shall be placed around and over the pipe to form a protective cushion extending at least to a height of 150mm above the top of the pipe. Select backfill materials for padding that are acceptable shall be screened soil, containing no gravel. All these works shall be carried out by Contractor at no extra cost to BHAGYANAGAR GAS LTD. Loose rock may be returned to the trench after the required selected backfill material has been placed, provided the rock placed in the ditch will not interfere with the use of the land by landowner, or tenant.

In case where hard rock is encountered or as desired by EIC sand padding is to be provided up to height of 150mm around the pipe.

When the trench has been dug through drive ways or roads, all backfilling shall be executed with suitable material in layers as approved by PMC / BHAGYANAGAR GAS LTD and shall be thoroughly compacted. Special compaction methods as specified may be adopted. All costs incurred there upon shall be borne by the Contractor.

Trenches excavated in dikes which are the properties of railways or which are parts of main roads shall be graded and backfilled in their original profile and condition. If necessary, new and/ or special backfill materials shall be supplied and worked-up to.

After laying of PE pipe lines, back filling with available soft soil up to depth of minimum 300mm, placing brick as per given drawing or instruction of BHAGYANAGAR GAS LTD / PMC, back filling with available soil up to minimum depth of 200 mm above bricks, putting approved warning mat of 0.5mm thick and 250 mm wide with traceability provision (as per attached specification) and as indicated in the drawing. The warning mat is to be unrolled centrally over the pipe section and thereafter further backfilling will commence. Backfilling activity shall include proper compaction by jumping jack compactor and watering in layers of 150mm above the warning mat.

Proper crowning of not more than 150 mm shall be done. All the excavated material required to be used during the Restoration process shall be stacked and kept separately and properly. Wherever Road cutting/ Tiles removal/ PC cutting has been done during excavation for laying, the area shall be back filled and compacted immediately so that no inconvenience is caused to the general public.

Electro-fusion of joints is to be undertaken immediately after lowering and the activity shall not be kept pending for lack of Electro-fusion jointing. The backfilling shall be considered complete only after the joint is completed. Debris and other surplus material shall be removed immediately after the back filling.



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15.0 MOLING

The Moling shall be carried out as per the requirement specified by BHAGYANAGAR GAS LTD/ PMC, and approved procedures. The contractor has to carry out thorough survey of the underground utilities before going for the Moling, to avoid the damage to the other utilities.

No extra payment will be made for any trial / abandoned pits made during the survey. The supply of all equipment, power required for carrying out moling work, is in contractor's scope. The type of moling to be carried out i.e., Manual/ Machine with or without casing shall be at the discretion of BHAGYANAGAR GAS LTD / PMC. A prior approval is to be taken before starting the Moling.

For manual Moling the contractor shall ensure that the size of the hole shall not be more than 20% of the size of the casing / carrier pipe whichever is applicable. After completion of Manual Moling the hole shall be properly compacted / filled with soil by watering and by approved procedures, the pits shall be backfilled, compacted & restored . The rate for such crossing work by using casing pipe & carrier pipe or only carrier pipe shall be payable as per Schedule of Rates. No separate payment shall be made for pulling the carrier pipe.

The rates for Moling, as indicated in SOR, are payable as per the size of the casing / carrier pipe and are inclusive of excavation of pits, backfilling, compaction, restoration, jointing and insertion of carrier pie.

Any damages occurred to other utilities during the Moling operation shall be immediately notified and rectified by the contractor without any cost implication to BHAGYANAGAR GAS LTD.

The length of the Hole (excluding the sizes of the pits on both ends) shall be considered for the measurement of Moling length. However, intermediate pits, if any, will consider in the moling length.

16.0 HORIZONTAL DIRECTIONAL DRILLING

The above techniques is required to be carried out by the Contractor where conventional trenching / Moling is not possible viz. railways, major waterways, highways, roads etc. Details of such crossings shall be obtained by the Contractor, and construction drawings shall be prepared by the Contractor in consultation with PMC/ BHAGYANAGAR GAS LTD. Execution of the work shall be based on the PMC / BHAGYANAGAR GAS LTD approved drawings. The contractor has do the thorough survey of the underground utilities before commencement of HORIZONTAL DIRECTIONAL DRILLING to avoid the damage to the other utilities. No extra payment will be made for any trail / abandoned pits made during the survey. The supply of all equipments is in Contractors scope. Work to be carried out in accordance with API - 1102.

Once the work is allotted, Any delay in mobilizing / non - availability of HDD machines as per site requirement and conditions shall result in levying of penalties on daily basis as per SCC. The type of HDD to be carried out i.e. conventional (with or without casing) shall be at the discretion of BHAGYANAGAR GAS LTD/ PMC. And prior approval is to be taken before starting the HDD.

The rates for HDD, as indicated in SOR, are payable as per the size of the carrier pipe and are inclusive of excavation of pits, backfilling, compaction, jointing and insertion of carrier pipe and restoration of pits. For HDD with casing pipe no separate payment shall be made for pulling of the carrier pipe, the rate quoted by the Contractor shall be inclusive of pulling carrier pipe.

Any damages occurred to other utilities during the HDD operation shall be immediately notified and rectified by the Contractor without any cost implications to BHAGYANAGAR GAS LTD.

The length of the HOLE (excluding the sizes of the pits on both ends) shall be considered of HDD length.



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17.0 CASING PIPE

The tentative sizes of the HDPE casing pipe for Moling / HDD shall be as follows:-

Size of MDPE pipe	Size of HDPE
20 / 32 mm	63 mm
63 mm	125 mm
90mm	180mm
125mm	250mm

18.0 RESTORATION

Wherever the restoration is required, the roads, footpaths (including roads and footpaths inside colonies) shall be restored to original condition, and the same shall be done as per concerned local authorities norms and to the satisfaction of the concerned local Authority. Curing of the installed concrete, wet sack cloth is to be placed on the finished surface and kept damp for a period of 36 hours.

Where slabs and blocks are to be restored, the level of the compacted sub base is to be adjusted according to the slab/block thickness. The slabs or blocks should be laid on moist bedding material, which should be graded sand, mortar or mortar mix. The slabs or blocks should be tapped into position to ensure they do not rock after laying.

The restored slabs or blocks should match the surrounding surface levels. Joint widths should match the existing conditions, and be filled with a dry or wet mix of mortar.

The restoration of roads shall be carried out as per specifications given by the concerned authority. Turf shall be replaced in highly developed grassed area. In lesser-developed grassed areas topsoil should be replaced during the restoration process.

Where permanent surface restorations cannot be completed immediately, the Contractor shall provide and maintain a suitable temporary running surface for vehicular traffic and pedestrians. The Contractor will be responsible for the maintenance of all restoration carried out, for the duration of the Contract guarantee period.

The Contractor is to ensure the restoration work is properly supervised, and that the material used is suitable for the purpose and properly compacted. Where the required standards are not achieved the Contractor will be required to replace the defective restoration work.

Note that Payment for pipe laying will only be authorized on initial satisfactory restoration, and where the sites has been cleared of all surplus materials, etc.

Contractor has to obtain the clearance certificate from the concerned local authorities after completion of the restoration work. The restoration specification specified in the tender is only a typical specification and the contractor has to carry out restoration as per latest version of the (PWD/ IRC) specification to its original condition and also to the entire satisfaction of land owner (Private/Public). The expenditure incurred towards testing of the material used for restoration as per applicable standards, shall be borne by the contractor.

19.0 TESTING

Pressure testing will be carried out with compressed air. Compressed dry air will be provided by Contractor for testing purposes and is to be included in the rates.

For main pipelines work the Contractor shall perform progressive pressure testing to avoid having to find leaks in long lengths of pipe. The test pressure shall be around 1.5 times of 6.0 bar(g) / as per Instruction of EIC and there shall be no unaccountable pressure loss during the test period.



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Test procedure with sketches showing the pipeline to be tested, vent points, gauge location, and inlet pressure print is to prepared & got approved by EIC.

For main line the test duration shall be 24 hrs. With these tests the pressure should be allowed to stabilize for a period of 30 minutes after pressurization. The holding period may then commence and continue for 24 hours. Measuring instruments shall have been calibrated and their accuracy and sensitivity confirmed. For testing of Network, calibrated pressure gauges of suitable range shall be supplied by the contractor. The pressure gauges shall be calibrated from time to time as desired by Engineer-in- Charge. All testing shall be witnessed and approved by the EIC or his delegated representative. Tie-in joints may be tested at working pressure following commissioning.

For service lines in some cases testing will be carried out independently of the testing of the mains for which the test duration may be reduced to 4 hrs. The service testing in this case will be performed after the service installation is complete but before the service tee has been tapped. Also in some cases the tapping of the service tee will be delayed pending the completion and purging of the main pipelines.

20.0 PURGING

Purging shall be carried out in accordance with the principles defined in the American Gas Association publication "Purging Principles and Practice".

Nitrogen required for purging will also be provided by the Contractor. Nitrogen shall be supplied in labelled, tested and certified cylinders, and completed with all necessary regulators, hoses and connections, which will be in good condition and working order.

In addition the Contractor shall submit and get approved a Purging Plan before commencing any purging work. The Plan shall include, but not be limited to, the provision of the following materials and equipment: Personal safety equipment, Fire extinguisher, Purging adapter, Purge stack with flame trap and gas sampling point, Gas sampling equipment (may be gas leak detector), squash-off tool, Polyethylene connecting pipe work.

The Plan shall also include the purging process along with detail on the sequence of events. The process is to also specifically mention the need to lay a wet cloth over the PE main and in contact with the ground, to disperse static electricity during the purging work.

A purge stack with flame trap shall be used when purging services. Care shall be taken to ensure that the purge outlet is so located that vent gas cannot drift into buildings.

21.0 VALVE PIT

The valve pit shall be constructed in accordance with enclosed drawings.

The construction of valve chambers shall be taken up immediately after installation of valve.

21.1 Workmanship

The excavation work shall be done at a location given by Engineer-in-Charge. All care shall be taken not to damage existing facilities and surface of construction shall be restored to its original state.

22.0 POLE MARKERS

22.1 Pole Marker:(As per typical Drawings) shall be installed at regular intervals as per the instructions of the EIC immediately after laying of the pipeline. The installation of the type of the Pole Marker shall be decided by the EIC depending on the site condition. The Markers shall be painted before installation as per the approved procedure. The supply of the paint and painting as per the specification is in contractor's scope.

22.2 The artwork shown in the drawing is typical for all the markers. The contractor must take prior approval for the artwork from EIC before installation of Markers. The artwork must have BHAGYANAGAR GAS LTD's logo and specify the location of the pipeline from the marker.



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Guidelines :

- Interval between any two RCC markers for mainline shall be as per instruction of Site in charge.
- Pole marker or RCC marker shall be installed near to valve chambers on mainline respectively for indication & as per instruction of EIC.
- The entry and exit pits for laying of pipeline by HDD/ Moiling for road crossings shall be marked by pole markers or RCC markers depending upon the site condition.
- In addition to the above, pole markers shall be installed outside societies / Areas as per instruction of EIC.
- For the distribution network of 32 mm & 20 mm pipe, plate markers as per drawing and shall be installed as per the site condition and direction of the site in charge.

23.0 READY FOR COMMISSIONING/ASSISTANCE IN COMMISSIONING

Contractor has to install all the Valve/ Service Regulator modules and make the line ready for commissioning and pressurize the line with Nitrogen 4 bar positive pressure and hand over the line to BGL if Gas is not available at that particular time. If gas is available, it is the duty of the contractor to commission the line and hand over the line to BGL. Contractor shall provide the required personnel, Vehicles, labour, supervision, tools, equipment, instruments and technical assistance for performance tests and commissioning activities as per requirement of BHAGYANAGAR GAS LTD / PMC.

24.0 STANDARD OF WORK

- 24.1 All work carried out under this contract shall be to standards, codes of practice, construction procedures and other technical requirements as defined in the technical specifications.
- 24.2 The manpower deployed on the respective work shall be adequately trained & shall have necessary skills to execute / supervise the work. However, the assessment on the qualification of the personnel shall be at the discretion of EIC.
- 24.3 Fusion operators and other skilled personnel shall be approved by BHAGYANAGAR GAS LTD/ PMC and identification cards duly signed by EIC shall be issued to them. Only those personnel who are approved by EIC shall be allowed to execute the critical activities like joining of PE Pipes.

25.0 RECORDING (AS-BUILT DRAWINGS)

The Contractor will be required to submit computerized as-built drawings duly certified by EIC in A0/ A1 sheet form at 1:200 scale with THREE sets of prints plus 3 sets soft copy (In CD). The as-built drawing shall be submitted on area wise as specified. The bill of materials used for the particular area shall be specified on the drawings. The Contractor shall use the area and crossing survey drawings prepared by them as reference. On-site sketches, picking up key reference points, shall be made during the installation of services. The lengths, depths of installed pipe work, changes in direction, major fittings, etc, shall be recorded together with appropriate references to other services crossed and in the proximity of the gas pipe.

Distance of pipeline from permanent property /structure should be provided at least every 50 meters. If there is any change in alignment/orientation and offset distance etc. of the pipeline in between the above said 50 meters, the same shall be clearly mentioned in the as laid.

Gas objects (off valve, tees, elbows, couplers, T.F, etc shall be shown as block objects (which from a single node to connect) with respect owners symbol and legend. The as built drawing shall be as per the legends provided by EIC.

Details & offset distances from other utilities present should be given in as laid drawing. If there is any change in the depth of pipeline, the same shall be clearly marked with details in the as laid drawings. The details of additional protection provided must be mentioned.



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Details of the PE stop off valve and other fittings used should be shown with adequate information and orientation. Technical deviation (if any) should be provided with reference to the buildings and permanent structure around, and the same should be cited clearly with all relevant details. Complete details of nallah crossings should be shown in a separate sketch

Name of roads, major landmarks and buildings should be mentioned appropriately for reference. Proper Chain age shall be mentioned on all the drawings to be referred with continuation reference.

Land based features shown on the drawing shall match the exact distance as they were on real ground with respect to scale ratio (1:200)

The details shall be prepared in standard format using Map Info/AUTOCAD Map and submitted in CD ROM. Contractor shall also make the item wise material consumption report for the respective areas in a soft copy and to be submitted along with the as-built drawings.

26.0 CIVIL AND STRUCTURAL WORKS

The contractor has to supply the adequate materials and skilled man power for the completion of all the civil & structural works. The contractors shall also ensure that the work carried out as per the detail mentioned in the schedule of rates.

Special care should be taken at the time of labours working in depths/lifting of the skids by hydras/ cranes considering all the safety guidelines.

The contractors has to ensure that sample of all the material shall be inspected and approved by EIC before carrying out installation or erection work. The contractor has to submit the test certificates for all the materials to be used at the site .the construction shall be carried out strictly as per the drawings provided by the BHAGYANAGAR GAS LTD.

27.0 SERVICE REGULATOR MODULE SUPPLY AND INSTALLATION

The contractors has to ensure that sample of all the material shall be Contractor has to install the Service regulator module where ever required , in side the colonies/ for a group of societies as per the instruction of the EIC. After the line tested, before commissioning the network, these regulator modules are to be installed . All the necessary fittings including TF, Brass Fittings Filter should required for making the Service regulator module is in the scope of the contractor. Service regulator will be the Free issue material. Diagram showing the Service regulator module is given in the diagrams.



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TECHNICAL SPECIFICATION FOR
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DOMESTIC,CONSUMERS



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1.0 GENERAL INFORMATION

1.1 INTRODUCTION

The main intent of the specification is installation of above ground GI pipes (free issue), meters and regulators (free issue items) and supply and installation of all types of fittings, isolation valves, appliance valve, copper tubing from the outlet of 'PE/GI transition fitting' up to the DOMESTIC consumers 'Appliance / stove/ oven valve' as per the Distribution Schedule including the Suraksha hose.

In case of large commercials and industries completely assembled metering skids would be supplied to the contractor who would be required to install and provide inlet & outlet connection.

This technical specification defines the basic guidelines to develop an acceptable design and suitable construction methodology for carrying out different activities listed out in the schedule of rates of this tender.

Compliance with these specifications and / or approval of any of the Contractor's documents shall in no case relieve the Contractor of his contractual obligations.

2.0 SCOPE OF WORK

Generally the following shall constitute the contractor's scope of work:

- 2.1 Plan and prepare a detailed execution schedule and procedure for implementation based on QA / QC formats plans issued by BHAGYANAGAR GAS LTD. / PMC.
- 2.2 Contractor has to submit the Construction/Execution procedures before commencement of work to owner / owner's representative for approval.
- 2.3 Selection of route and marking on walls / floors between 'transition fitting' to 'cooking oven / stove / appliance' making openings and making provisions for fixing clamps. Making temporary but stable platforms / scaffolding / rope ladder etc., required for installation of pipes / fittings at all heights / multi storied flats and locations. Providing safety equipment to workers / plumbers.
- 2.4 Receipt of regulators, domestic meters, as a free issue items from Owner's Stores, loading, transportation, unloading at project site. Proper storing, stacking, identification, providing security and insurance during and before installation and commissioning of pipelines. Obtaining the approvals for optimum route and permission for work from the concerned authority and EIC.
- 2.5 Contractor shall procure all material, except free issue material from the outlet of PE/GI transition fitting upto the Domestic / Commercial customers Appliance / Stove/Oven valve for satisfactory completion to the owner/Owner's representative.
- 2.6 Installation of GI pipes of ½", ¾", 1" dia. Between transition fittings and customer's kitchen which would include NPT threading of pipes, and jointing of fittings such as elbows, tees, connectors, regulators, meters, isolation valves etc., as per laid procedures and specification including supply of GI fittings & Teflon tapes for sealing of joints. Painting of GI Pipes & fittings as per specification.
- 2.7 Supply & Installation of GI pipes of ½" (12 mm) OD from the downstream of Meter up to the isolation valve prior to the customers appliance, including the installation of isolation valves, brass fitting at the downstream of meters and at the entry of isolation valves with application of lacquer paint etc. to the satisfaction of EIC.
- 2.8 Supply & Installation of clamps for fixing pipes, isolation valve, appliance valve, box for regulator, Sleeves wherever required, painting of steel pipes & fittings. Providing consumables grout material, repair / restoration of walls / floors / holes including the materials required for conversions along with tools and tackles etc., complete as per specification.
- 2.9 Conversion of all types of LPG kitchen appliances to NG based appliances inclusive of supply of nozzles. Signing of Joint Meter Records (JMRs)/ updating in BGL software.
- 2.10 To demonstrate to the customer regarding use, safety and maintenance related aspects of NG based appliances and installations.



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- 2.11 Testing & Commissioning of installations including purging as per specification and handling over the installation of BHAGYANAGAR GAS LTD. / customer to the entire satisfaction of BHAGYANAGAR GAS LTD. / PMC.
- 2.12 Dismantling of scaffolding / temporary structures and cleaning of site.
- 2.13 Restoration of walls, flooring and other damages while executing the above ground installation.
- 2.14 Preparation and submission of above ground installation card for each house / commercial establishment indicating the list of materials used, reasons of not providing connections, testing pressure and date etc.. Deviation statements, if any, on completion / commissioning of work.
- 2.15 Any other activity not mentioned / covered explicitly above, but otherwise required for satisfactory completion / operation / safety / statutory/ maintenance of the works shall also be covered under the Scope of work and has to be completed by the Contractor within specified schedule at no extra cost to BHAGYANAGAR GAS LTD..
- 2.16 Following activities are also in contractor scope
- Receive customer's request and complaints logged
 - Carry out joint technical feasibility survey for request received.
 - Attend and resolve customer complaint

3.0 MATERIAL, LABOUR, PLANT AND EQUIPMENT

3.1 Owner's Scope of Supply (Free Issue Item)

In order to speed up the project free Issue Materials (GI pipe, Regulators and Smart meters) shall be issued to the Contractor from the designated store(s) of BHAGYANAGAR Gas Ltd. Contractor shall be responsible for lifting the free issue materials from Owner's storage point(s) and transporting the same to work site(s) at his own cost.

3.2 Supplied by the Contractor

The contractor has to supply GI Fittings, PE valves, Isolation valve, appliance valve Suraksha hose, Fittings, Clamps, Cu pipes and fittings, sleeves, supports etc. and other materials required for said works. The contractor shall provide the labour, tools (such as Hammer Drill, Piston Drill, Pipe cutters, Dies for threading, Pipe wrenches, spanners, all types of clamps, Plant and equipment necessary for the proper execution of the work. This will include but not be limited to list of specialized tools & tackles enclosed herewith. Contractor shall submit the specification of all the material to be supplied by him to EIC for approval and get the material checked & approved by him before commencement of execution.

The contractor is to be procure all bought out items from approved vendors and accordingly keep BHAGYANAGAR GAS LTD. / PMC informed. The inspection of bought out items would be carried out by BHAGYANAGAR GAS LTD. / PMC / Third Party Inspection or as instruction by EIC.

3.2.1 Plant and Equipment

All vehicular type machinery shall be in good working order and shall not cause spillage of oil or grease. To avoid damage to paved surfaces the contractor will provide pads of timber or thick rubber under the hydraulic feet or outriggers of machinery.

3.2.2 Sealant, grout

The contractor shall be responsible to arrange the supply of any consumable sealant or ready mix grout material required for execution of work. The sealant / grout supplied by the contractor shall be compatible with the area to be restored / rectified. No separate payment for the supply of sealant and grout shall be made to the contractor.

3.2.3 Clamps, Rawal Plugs, Screws, Nozzles etc.

The Clamps, Rawal Plugs, Screws, Nozzles, etc shall be approved lot wise by EIC prior to installation. Re-drilling of existing appliance nozzles is strictly not permitted.

The indicative sketch of the Brackets for Meter and GI Pipe Clamps is enclosed herewith.



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3.2.4 Consumable Items

Special consumables such as Teflon Tapes, Solder wire, Flux, lacquer, thinner, shall be supplied by the contractor and are included for within the rates. These consumables shall be of reputed companies and required grades / class and duly approved by EIC.

3.2.5. Other Materials

The contractor shall supply the following items where required.

All materials required for formwork, NPT threading, testing etc. All signs, barricades, lights and protective equipment.

All material required for working at higher floor levels (i.e., scaffolding, Ladder, safety belts etc.). Special consumable such as grease for maintenance of domestic appliances and all paints or painting of G.I pipes, clamps, sleeves, brackets for meters, consumables such as Teflon Tapes, Petrol, diesel, fuels and oils required are to be supplied by the contractor and are included for within the rates.

All minor items not expressly mentioned in the contract but which are necessary for the satisfactory completion and performance of the work under this contract.

4.0 Acquisition, Receipt, & Storage Of Materials

In case of materials supplied by owner, then the contractor shall collect all materials from BHAGYANAGAR Gas store between working hours following all documentation procedures laid down and as directed by EIC. The contractor shall at the time of receipt of material physically examine all materials and notify the EIC immediately of any damage. Any damage not recorded at the time of inspection done by contractor will be deemed not to have existed at the time of receipt of material. Cost of repair and rectification replacement will be borne by the contractor. Any defective material found during the time of installation will be noted and forwarded to stores for replacement immediately with P.O reference and only with written approval of EIC. The contractor should ensure that no defective material shall be returned to store at the time of closure of contract.

The contractor should maintain permanent locked store, preferably near site in so that all the material is stored in such a manner so as to prevent and damage the materials from scratching, gouging, indentation, excessive heat or by contact with any sharp objects and chemicals.

The contractor shall maintain logbooks at their respective stores stating issue and availability of free issue material as a given day. Further the contractor is required to undertake and submit an inventory of materials every month to Owners/Owners Representative (mandatory)

5.0 ISSUE OF WORK INSTRUCTIONS

- 5.1 The contractor will be required to carry out GI installation in the areas where MDPE laying is under progress. However, testing of GI installation shall be done in conjunction with laying of MDPE Service Lines to respective premises. A general scheme of distribution to domestic consumer is indicated in the sketch enclosed herewith, for reference. It may vary in case of individual and multi-storied flats. A general scheme of distribution to small commercial consumers is indicated in the sketch enclosed herewith for reference.
- 5.2 All skilled personnel like plumbers, conversion technicians shall be approved and certified by EIC. Those who are certified and possess the identify cards duly signed by EIC shall only be authorized to take up respective jobs. The contractor has to arrange the identify cards. In case it is found that contractor personnel other than authorized are carrying out these works, applicable penalty will be levied to the contractor as per contract.



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5.3 The rates to be quoted by contractor shall be inclusive of all preparatory / bye works, platforms, materials, labour, skills , supervision, tools , taxes, duties, levies, salaries, wages, overheads, profits, escalations, fluctuations in exchange rates and no change in the rates shall be admissible during tenancy of the contract.

5.4 The schedule of items of SOR have been described in brief and shall be held to be complete in all respect including safety requirements as per clause 9.0, tests, inspection, QA/ QC works, enabling and sundry works. The payment shall be made against completed and measured works only. No extra works whatsoever shall be considered in execution of these items.

5.5 A general scheme of distribution to domestic consumer is indicated in enclosed drawing .It may vary in case of individual and multi-storied flats.

6.0 PROGRESS OF WORK

The contractor shall proceed with the work under the contract with due expedition and without delay. The EIC may direct in what order and at what time the various stages or parts of the work under the contract shall be performed.

Weekly progress reports shall be submitted in the formats approved by PMC/ BHAGYANAGAR GAS LTD. indicating broadly the laying, testing, RFC, conversions and extra piping.

Material consumption statement to be submitted once a month.

7.0 WORK SHEETS

7.1 The quantities and other details will be checked by PMC/ BHAGYANAGAR GAS LTD.'s site engineer and the same shall be incorporated in measurement cards, signed & dated as certified on site. The cards will then be approved by the EIC.

7.2 Measurement sheets shall be prepared based on the measurement cards and checked and certified by the site engineers for billing purpose.

7.3 If measurement sheets submitted are illegible, incomplete or incorrectly booked, they will be returned to the contractor.

8.0 PERMISSIONS / APPROVALS

Contractor shall be responsible for obtaining approval from authorities like VMC / HMDA and any other concerned authority, if required for completion of the work. Contractor must take the prior appointment from the resident for carrying out the work.

9.0 REFERENCE SPECIFICATION, CODES AND STANDARDS

The contractor shall carry out the work in accordance with this specification, BHAGYANAGAR GAS LTD.'s Engineering Standards: ASME B31.8 - Gas Transmission and distribution piping systems; Australian standard 3723 - Installation and Maintenance of Plastics Pipe Systems for Gas; Oil India Safety Directorate Norms(OISD),Latest PNGRB guidelines and the American Gas Association Document - Purgig Principles and Practice.

Should the contractor find any discrepancy, ambiguity or conflict in or between any of the Standards and the contract documents, then this should be promptly referred to the Engineer - in- charge (EIC) for his decision, which shall be considered binding on the contractor.

10.0 SAFETY

The contractor shall take care of all safety norms applicable for such works at site. Contractor shall provide all safety appliances e.g., safety helmets, gloves, safety belts, ladders, staging, shoes, goggles etc.



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All necessary care shall be taken while working at heights and workmen with proper skills and work permits only shall be deployed. Proper barricading and warning signs shall be installed. Adequate care shall be taken while taking supports from balconies, chajjas / protection parapets and like structures to be sure of strength and adequacy of the same.

No night working shall be permitted, without proper lighting and prior approval of EIC.

11.0 RIGHT-OF-USE SURVEY AND MARKING

The route of the pipeline to be installed shall be decided with consent of the consumer and SE / EIC. Contractor must ensure that the persons/ workers/ supervisors/workers at site shall have proper identity cards prior to entering the premises of the consumer.

No temporary or permanent deposit of any kind of material resulting from the work shall be permitted in the approach and any other position which might hinder the passage and / or natural water drainage or any area where there is objection from consumer, The contractor shall obtain necessary permissions from landowners and tenants and shall be responsible for all damages caused by the construction and use of such approaches, pavements, gardens, rooms, walls, roof etc., at no extra cost to BHAGYANAGAR GAS LTD..

A survey will be conducted jointly by BHAGYANAGAR GAS LTD. / PMC and the contractor at each premises or housing colony to be supplied. The survey record will note customer details, the potential gas supply points and proposed meter positions and estimates of material quantities. The contractor's representatives will make as sketch of the agreed pipe routes, if necessary.

The contractor will be responsible for contacting the customer and making the necessary arrangements for access, and appointments to carry out the work. BHAGYANAGAR GAS LTD. will not be responsible for any time lost due to broken appointments or disputes with customers.

The contractor shall confine its operations within limits of the Right - in-use. The contractor shall restore any damage to property outside ROU, attributable to him.

The contractor shall also carryout all necessary preparatory work if needed to permit the passage of men and equipment. Lights, curbs, signs shall be provided wherever and / or required by the PMC/ BHAGYANAGAR GAS LTD. necessary to protect the public.

12.0 PROTECTION OF STRUCTURES AND UTILITIES

The contractor shall at his own cost, support and protect all buildings, walls, fences or other structures and all utilities and property which may, unless so protected, be damaged as a result of the execution of the works. He shall also comply with the requirements in the specification relating to protective measures applicable to particular operations or kind of work.

While painting contractor must take care of the consumer premises while carrying out the job/ such as spillage on floor, walls, ceilings, sun shades etc. if the same does occur, the contractor is to immediately make good to original.

13.0 G.I ABOVE GROUND SERVICE PIPE

The GI service pipe installation work includes all work necessary to connect from the PE / GI transition fitting on the down-stream of the PE service, to the customers appliance, including the installation of appliance valve and isolation valves, Suraksha hose, Meters, Regulator. The contractor shall be required to provide all equipment, tools and materials necessary to execute the work in an efficient and effective manner. Amongst other things he will be required to provide ladders, scaffolding pipe, dies, tripods, vices, fittings and teflon tape, drills for concrete and other masonry, drills for timber and laminated surfaces inside customers property, bending tools, clamps, sleeves to facilitate the pipe passing through floors and walls, paint for pipe marking etc. Meter and regulator shall be provided by BHAGYANAGAR GAS LTD.



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All GI risers on the outside of buildings shall be fully supported to carry the weight of piping. Risers shall be supported by a flanged foot, or similar device, capable of supporting the total weight of the riser. The riser shall rise in a vertical line from its point of support to its highest point with a minimum of changes in direction. The threading of GI pipe shall be NPT and conforming to ASME / ANSI B1. 20.1.

Contractor has to supply different types / sizes of approved clamps (Mild Steel) for fixing GI pipes suiting to the site conditions and the same shall be painted before fixing, as per the painting specifications. Every fresh lot of the clamps, brackets, regulators boxes and other consumables shall be approved by the EIC prior to start of installation. All riser and lateral pipe shall be clamped to the building at intervals not exceeding two meters.

All riser and lateral pipe shall be clamped to the building at intervals not exceeding 1.5 meter. Maximum distance between clamps shall be 1.0-1.5m when pipe goes to the straight, if any tee or fittings lies in between the pipe then clamp shall be placed 150 mm far away from center line of fittings at every sides. However, the same may be changed as per site conditions/as directed by EIC. Minimum gap between pipe and wall shall be 25 mm. The joints/fittings of the GI installations shall be painted only after carrying out testing of the installation.

Where pipe passes through a balcony floor, the floor surface shall be made slightly elevated around the service pipe or its surrounding sleeve to prevent the accumulation of water at that point. Where a short piece of sleeve is used around the gas pipe, the sleeve should be embedded in the concrete with a mix of mortar and the void between the pipe and sleeve filled with a suitable sealant. The sealant should be beveled such as to prevent an accumulation of water. Supply of clamps for all sizes of the GI pipes are in contractor's scope. Contractor has to take prior approval for design of clamps, paintings etc.

Pipe shall preferably enter a building aboveground and remain in a ventilated location. The location for entry shall be such that it can be routed to the usage points by the shortest practicable route. The contractor shall ensure that gas supply shall not be provided to the customer in any concealed piping.

14.0 COPPER ABOVE GROUND SERVICES PIPE

The Copper service pipe installation work includes all work necessary to connect from the downstream of Meter upto the isolation valve and flexible hose prior to the customers appliance, including the installation of valves, including application of lacquer paint etc. The contractor shall be required to provide all equipment, tools and material necessary to execute the work in an efficient and effective manner. Amongst other things he will be required to provide ladders, scaffolding pipe, drills for concrete and other masonry, drills for timber and laminated surfaces inside customers property, bending tools, clamps, sleeves to facilitate the pipe passing through floors and walls, etc.

During installation the COPPER pipe is to be cut to proper length with a tube cutter, the burrs removed with a file, cleaning of outside surface of pipe & inside surface of fitting, applying flux to the tube and fitting around the outer / inner ends, inserting the tube in to the fitting, applying heat to the assembled joints using conventional Blow torch to melt Solder wire and lacquering.

Lacquer is to be applied to the copper tubes by mixing lacquer with thinner in approved proportions and applied by dipping method or with brush. It should be applied only once at a time and drying time of minimum one hr. is to be given.

Contractor has to supply different types / sizes of approved clamps for fixing COPPER pipes suiting to the site conditions and the same shall be painted, if required, before fixing, as per the painting specifications. Contractor has to take prior approval of EIC for quality of the clamps, solder, flux, lacquer, thinner etc. The approval shall be taken for every fresh lot of clamps from EIC before installation at site.



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All riser and lateral pipe shall be clamped to the building at intervals not exceeding one meter.

Where pipe passes through a balcony floor, the floor surface shall be made slightly elevated around the service pipe or its surrounding sleeve to prevent the accumulation of water at that point. Where a short piece of sleeve is used around the gas pipe, the sleeve should be embedded in the concrete with a mix of mortar and the void between the pipe and sleeve filled with a suitable sealant. The sealant should be beveled such as to prevent an accumulation of water. Supply of clamps for all sizes of the COPPER pipes is in contractor's scope. Contractor has to take prior approval for design of clamps, painting etc.

Pipe shall preferably enter a building aboveground and remain in a ventilated location. The location for entry shall be such that it can be routed to the usage points by the shortest practicable route.

The rates, mentioned in SOR are applicable from ground floor to 2nd floor. However, it may be noted that all the piping done inside the premises shall be considered as ground floor piping, the payment for such work shall be as per the SOR. After installation of the entire piping system, final painting shall be done to the satisfaction of EIC.

All copper piping shall be clamped to the building at intervals not exceeding 500mm. These solder wire shall be of reputed company, lead free as per BS 29453: 1994 (Soft solder alloys) and supplied in coils. Solder for use with Cu tube & fittings generally melt within the temperature range of 1800C to 2500C. The contractor has to furnish the certificate of confirmation of standards before start of work.

15.0 TESTING OF GI INSTALLATION

- 15.1 The installation from PE/ GI transition fitting up to regulator shall be tested at the [pressure of 1.5 x 7.0 (MAOP) bar (g)].
- 15.2 The testing of GI riser pipe up to regulator shall be done with the isolation valve in open condition and open end plugged.
- 15.3 The GI pipe shall be painted with one coat prior to installation in riser, however the ends / joints shall be painted only after carrying out testing of the installation.
- 15.4 The GI installation from regulator outlet to appliance valve (except meter) shall be tested at a pressure of 2.0 bar (g) for a hold period of 1/2 hours and all the joints shall be checked with soap solution.
- 15.5 The meter shall be removed while carrying out the testing and joints of the meter shall be tested on line with soap solution after completion of the work. Proper test ends shall be made along with gauges and got approved by EIC. For the installation to be tested by manometer or diaphragm gauge the meter shall not be dismantled/removed and testing shall be carried out at 100 m bar with holding period of 15 min with no pressure drop.
- 15.6 The calibrated pressure gauges of suitable range shall be supplied by the contractor for testing.
- 15.7 The pressure gauges shall be calibrated from time-to-time as desired by Engineer In- charge but positively once in every six months.
- 15.8 Valves supplied by BHAGYANAGAR GAS LTD., shall not be used for testing purpose.
- 15.9 The details of testing shall be properly recorded in the measurement cards.

16.0 INSPECTION

Any defect noticed during the various stages of inspection shall be rectified by the contractor to the entire satisfaction of Engineer-in-Charge before proceeding further. Irrespective of the inspection, repair and approval at intermediate stages of work, contractor shall be responsible for making good any defects found during final inspection/ guarantee period/ defect liability period as defined in general condition of contract.

17.0 PURGING & COMMISSIONING

Payment for the tapping of live mains and GI piping prior to the actual purge is included in normal laying & testing. The connection may involve the fitting of a temporary bypass, disconnection etc.



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18.0 INSTALLATION OF METERS

The work in this section includes :

- 18.1 Installation of domestic and non-domestic / small commercial meters with associated inlet and outlet connections (GI/Brass fitting), on the wall with approved meter brackets and angles.
- 18.2 Supply of approved meter brackets and angle brackets, properly painted with one coat of Zinc primer and two coats of synthetic enamel paint of approved make. A sketch of the brackets is enclosed herewith. It is required that one sample of each type of bracket is got approved beforehand.
- 18.3 Firmly securing the meters on the wall with good quality supply of proper rowel plugs, screws etc. In case the rowel plugs are not holding than wooden blocks or other fixing arrangements like cement etc. to be used for proper grouting.
- 18.4 The same rates will apply irrespective of whether the meter is situated inside or outside the property. Where a bank of meters is constructed the rate shall be for each complete meter installed.
- 18.5 The above activities along with restoration of the area to original shall be carried out to the complete satisfaction of consumer and EIC.
- 18.6 The meter installation will be preferred in open/ventilated space so as to prevent Gas accumulation and easy dispensation of Gas to atmosphere in case of any smell/ leakage of Gas. The meter installation will not be provided in any fixed enclosures, cabinets (below or above the slab) or confined space in the customer premises.
- 18.7 The contractor shall ensure that GI installation and rubber hose shall not be exposed to direct heat of Gas burners. The installation should have minimum clearance of about 1 m from electric [point mains and switches. Minimum distance between appliance valve and Gas Burners shall be 0.3 meters. The isolation valve shall be installed after entering the customer premises /kitchen but before the meter installation.
- 18.8 It is further proposed that in cases where the contractor completed installation of the meter, regulator, and GI pipeline at the customer premises, but the customer subsequently backs out at the time of conversion, the entire installation and material cost pertaining to such connections shall not be paid to contractor or shall be recovered from the respective contractor's running bills so as to ensure genuine customer acquisition by the contract.
- 19.0 PAINTING OF GI PIPES

The pipeline along with fittings and clamps are to be painted after proper surface preparation and painting as follows. One coat of Primer application (Appropriate Zinc based primer) Two coats of synthetic enamel paint - canary yellow of minimum of 30 microns per coat of reputed make like Asian, Berger, Nerolac. All painting materials including primers and thinners brought to site by contractor for application shall be procured directly from manufacturers / dealers as per specifications and shall be accompanied by manufacturer's test certificates. Paint formulations without certificates are not acceptable. Engineer-in-Charge at his discretion, may call for tests for paint formulations. Contractor shall arrange to have such tests performed including batch wise test of wet paints for physical & chemical analysis. All costs there shall be borne by the contractor. The painting work shall be subject to inspection and certification by Engineer-in- Charge at all times. After installation of the entire piping system, final touching shall be done to the satisfaction of EIC.



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20.0 BOX FOR REGULATOR

Boxes will be supplied and installed outside for regulators after due approval of the sample. The boxes will be installed as per requirement and as per instructions of BHAGYANAGAR GAS LTD.

The box brackets are to tightly secured to the wall with good quality proper Rowel plugs, screws etc. Wooden blocks to be used in case rowel plugs, do not hold properly.

All the boxes shall be thoroughly cleaned, painted with approved colour code.

As the boxes are installed outside it is to be ensured that they are painted properly to avoid rusting / weathering.

A sketch of regulator box is enclosed herewith.

21.0 CONVERSION OF DOMESTIC APPLIANCES

The work in this section includes,

- The changing of nozzles and associated controls in accordance with manufactures instructions for both domestic and imported burners/ ovens/grills/hotplate.
- The changing of old appliance connection hoses and nozzles and re-greasing taps as necessary.
- The contractor has to supply all types of nozzles / jets required for all types of appliances including imported burners, Grills, Ovens.
- Cleaning and performing minor maintenance of appliances.
- Testing for gas escapes and the soundness and performance of the appliance.
- Instructing the customer in the safe use of natural gas and for fixing of safety and conversion labels.
- Contractor must attend the complaints regarding appliances till the total area is handed over to BHAGYANAGAR GAS LTD.'s operation and maintenance.
- All consumables (Nozzles, greases etc.) are in contractor's scope.
- Changing or repairing of any items damaged during conversion.
 - It may be noted that the rates will apply to all appliances found in both domestic and commercial premises. The contractor will be required under the Rates to provide both Pin gauges and standard sized nozzles.
 - It is further proposed that in cases where the contractor completed installation of the meter, regulator, and GI pipeline at the customer premises, but the customer subsequently backs out at the time of conversion, the entire installation and material cost pertaining to such connections shall not be paid to contractor or shall be recovered from the respective contractor's running bills if already claimed, so as to ensure genuine customer acquisition by the contractor

22.0 RESTORATION

Contractor has to restore the area where ever he has carried out drilling, clamping etc. to its original condition to the satisfaction of the consumer and to ensure no passage to the premises and seepage. If the work was carried out in Govt. Flats (PWD), contractor has to restore the area according to CPWD specifications. For government flats the contractor has to obtain a clearance certificate form the concerned authorities maintaining the flats, after completion of the work.

Where slabs and brick work are to be reinstated, the level of the compacted sub base is to be adjusted according to the slab / block thickness. The slabs or brick work should be laid on moist bedding material, which should be graded sand, mortar or mortar mix. The slabs or brick work should be tapped into position. The restored slabs or brick work should match the surrounding surface levels. Joint widths should match the existing conditions, and be filled with a dry or wet mix of mortar.

Wherever any items of the consumer is damaged / broken during working, the same will be made good or replaced to the total satisfaction of the consumer.



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The contractor will be responsible for the maintenance of all restoration carried out, for the duration of the contract guarantee period.



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The contractor is to ensure the restoration work is properly supervised, and that the material used is suitable for the purpose and proper. Where the required standards are not achieved the contractor will be required to replace the defective reinstatement work.

Note that Payment for GI / Copper piping will only be authorized on satisfactory restoration, and where the sites has been cleared of all surplus materials etc.,

23.0 SUBMISSION OF FINAL RECORDS

Contractor shall submit the following documents in three sets each:

- a) Total list of houses & commercial establishments in the area allotted to him giving details of connections provided & reasons where connection could not be given / completed.
- b) The details recorded in measurement cards of every domestic house.
- c) Details of houses where extra piping done along with materials used.
- d) Total material consumption report.
- e) Material reconciliation with respect to the materials issued.
- f) Test reports & test certificates of gauges etc.
- g) Any other documents / records required.

- 24.0 The Scope of work under this contract broadly includes Meter Reading, (for DPNG) & Data Verification for Piped Natural Gas (PNG) in authorized Geographical area of BGL. Billed domestic customers of Vijayawada is around 9000 nos.
. BGL may allocate other authorized GA locations of BGL, if required. In case of non-performance of a bidder working in a particular GA, entire (100%) scope may be allocated to the other bidder. BGL may allocate the work to the agency in other GAs on PAN India basis.



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TECHNICAL SPECIFICATION FOR
GI Pipes



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TECHNICAL SPECIFICATION FOR GI PIPES

Service	Natural Gas
Working Pressure	Up to 7 bar (g)
Pressure Test	10.5 bar (g)
Working Temperature	0°C to 50°C
Material Description	IS:1239 Part I Heavy Duty, Continuous welded
Min.Tensile strength	30kgf/sq.mm
Min Elongation	6%
Tolerance	+ Not Limited ,-10%
Galvanizing	Galvanised uniformly to protect from corrosion as per IS:4736/ASTM A53 or by Electro Galvanising
End Of Pipes	Plain End
Powder Coating	CANARY YELLOW coloured coating of polyester powder coating.



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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 dip 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 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.



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TECHNICAL SPECIFICATION FOR GI FITTINGS

Service	Natural Gas
Working Pressure	4 - 6 bar (g)
Pressure Test	As per clause 11.1b of IS:1879-1987 with latest Amendment on each and every fittings
Working Temperature	0°C to 50°C
Material Description	IS:14329-1995, latest amendments Grade BM 300
Tolerance amendments	As per IS 1879 -1987 with latest
Protective Coating	Fitting should be galvanized as per IS:4759 -1996 with latest amendments.
Weight	As per section 2-10 of IS:1879- 1987 with latest amendments
Inspection	100% Pressure Testing shall be carried out at factory.
Thread Type	NPT type conforming to ASME B1.20.1 (External & internal threads shall be tapered. The outlet fittings shall be chamfered)



BHAGYANAGAR
GAS LIMITED

LAYING OF UNDERGROUND PE PIPELINES AND ABOVE
GROUND GI INSTALLATIONS INCLUDING LAST MILE
CONNECTIVITY AT CONSUMER END AT VIJAYAWADA GA

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1.0 GENERAL NOTES

- 1.1. All fittings 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 fittings supplied.
- 1.3. Zinc conforming to any grade specified in IS 13229-1991 with latest amendment shall be used for the purpose of galvanizing
- 1.4. Galvanizing bath : The molten metal in the galvanizing bath shall contain not less than 98.5 % by mass of zinc.
- 1.5. Mass of zinc coating : Minimum mass of zinc coating determined as per IS :6745 shall be 610 - 700 gms/m²
- 1.6. 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.
- 1.7. Pressure Test: Vendor shall carry out pneumatic pressure test as per clause 11.1b of 1879 -1987 with latest amendments on each and every fitting. Vendor to submit the internal quality control certificate for the same. Owner shall witness pneumatic testing as per the sampling procedure specified in 1879 with latest amendments.
- 1.8. Compression Test : The test shall be conducted to judge the malleability of the pipe fittings and shall be carried out as per clause 12 of 1879-1987 with latest amendments.
- 1.9. Sampling: Owners representative of third party agency inspection agency appointed by owner shall witness the test as per clause 14 of 1879 -1987 with latest amendments.
However vendor to 100% inspection of visual ,dimensional and pressure test. Vendor shall furnish Internal test certificate at the time of final inspection to the owner.

2.0 MARKING AND DESPATCH

- 2.1. All fittings 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. All fittings shall be dry, clean and free from moisture, dirt and loose foreign materials of any kind.
- 2.4. All fittings shall be protected from rust, corrosion and mechanical damage during transportation, shipment and storage.



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3.0 INSPECTION / DOCUMENTS

- i) Inspection shall be carried out as per 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/ licence from specified authority as per specified standard, if relevant, internal test / inspection reports as per 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 tube randomly from each manufacturing batch and have these independently tested. Should the results of these tests fall outside the limits specified in 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.

4.0 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.



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TECHNICAL SPECIFICATION FOR
BRASS FITTINGS



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C O N T E N T
S

Sl.No.	Description
1.0	SCOPE
2.0	MATERIAL
3.0	DIMENSIONAL TOLERANCE
4.0	THREADS
5.0	FREE FROM DEFECT
6.0	PRESSURE TEST
7.0	MARKING
8.0	INSPECTION/ DOCUMENT
9.0	BRASS FITTING DRAWING



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TECHNICAL SPECIFICATION FOR BRASS FITTINGS

1.0 SCOPE

This specification covers the requirements for Brass Fittings. The fittings should be suitable for use with normal working pressure of 100m bar & maximum working pressure of 200m bar. Unless modified by this specification, requirement of BS:746 shall be valid.

All pressure mentioned in this specification are Gauge Pressures.

2.0 MATERIAL

The material used for the manufacturer of Brass fittings shall confirm to IS:319 or EN 1254- 1(latest). Free cutting extruded brass rod. Vendors shall use materials having valid BIS or BS monogram. Material used for the solder should conform to BS EN 29453 and should be lead free. Solder material shall be generally melting within the temperature range 180 to 250 c Threading on the Brass Fitting shall be done by BS 21.

3.0 3.0 DIMENSIONAL TOLERANCES

i) Dimensions tolerances of various types of fittings shall be as per BS:746.

Diameter	Tolerance on mean Diameter w.r.t. the nominal diameter		Resulting Diametrical Difference	
D	Outside Dia of male end	Inside dia of male end	Max (mm)	Min(mm)
12 mm	+0.04	+0.15	0.20	0.02
	-0.05	+0.06		

ii) Union nuts shall be of hexagonal type.

iii) The Minimum wall thickness of a fitting shall be in accordance as given below

4.0 THREADS

i) Fittings shall be threaded to dimensions & the tolerances as specified in BS:21 unless specified otherwise.

ii) Provisions for tightening shall be made on all straight fittings.

iii) All male & female threads are tapered.

iv) Chamfering

The outlet of the fittings shall have a chamfer, the chamfer shall have an included angle of $90^\circ \pm 5^\circ$ for internal threads & $70^\circ \pm 10^\circ$ for external threads.



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5.0 FREE FROM DEFECT

The fittings shall be free from internal fins or other irregularities which might restrict the free flow of fluid & shall be so designed that resistance to the flow of fluid through the fittings is minimized.

Carbon in Bore

The internal surface of brass capillary fittings for soldering or brazing shall not contain any detrimental film nor present a carbon level high enough to allow the formation of such a film during installation. The maximum total carbon level on internal surface shall not exceed 1.0 mg/dm² when tested in accordance with specification. Test shall be carried out as per EN 1254-1.

Resistance to Dezincification

The fitting shall be manufactured from alloys containing more than 10% Zinc. So fittings shall be required to be resistant to dezincification it shall be carried as per EN-1254-1.

Stress Corrosion Resistance Test

A stress corrosion resistance is to be carried out as per method defined in ISO 6957 using test solution of pH 9.5 but without pickling.

6.0 PRESSURE TEST

All fittings shall be leak tested at a pressure of 1 bar (g) for a period of 5 minutes & no leakage is permitted during this period.

7.0 MARKING

Each fittings shall be embossed with manufacturers name or trade mark. Each packing containing fittings shall carry the following stamped or written in indelible ink.

- a) Manufacturers name or trade mark
- b) Designation of fittings
- c) Lot number

8.0 INSPECTION/ DOCUMENT

- i) Inspection shall be carried out as per Technical Specification.
- ii) Purchaser's representative or Third party inspection agency appointed by the Purchaser 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 any. Internal testing / inspection reports as per Technical Specification & specified code for 100% material, at the time of final inspection of each supply lot of material.



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



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9.0 BRASS FITTING DRAWING

SI No.	Drawing Nos.	Description
1.	MEC/23R8/01/S3/D2/CF/00/9015/R0	Brass Disconnecting Union ($\frac{3}{4}$ " NPT x 12mm, Straight)
2.	MEC/23R8/01/S3/D2/CF/00/9016/R0	Brass Disconnecting Union ($\frac{1}{2}$ " NPT x 12mm, Straight)
3.	MEC/23R8/01/S3/D2/CF/00/9017/R0	Brass Adopter ($\frac{1}{4}$ " NPT x 12mm, Straight)
4.	MEC/23R8/01/S3/D2/CF/00/9018/R0	Meter Inlet Union ($\frac{3}{4}$ " x $\frac{3}{4}$ ")
5.	MEC/23R8/01/S3/D2/CF/00/9019/R0	Meter Outlet Union ($\frac{3}{4}$ " x 12mm, Straight)



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TECHNICAL SPECIFICATION FOR
PE BALL VALVES



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CONTENTS

1.0 INTENT OF SPECIFICATION

2.0 MATERIAL SPECIFICATION FOR ISOLATION VALVE

Item	: PE BALL VALVE
Application	: Natural Gas Distribution Services
Code	: ASME B16.40 / EN 1555-4
Rating	: PE100 SDR 11
Operating Pressure	: 4 - 6 bar (g)
Operating Temp.	: 0°C to 60°C
End Connection	: PE materials (Spigot Type)
Stem Extension	: Not Required
Valve Design	: Full Bore
Ball position Indicator	: Open/Close Limits required



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INSPECTION / DOCUMENT

Inspection shall be carried out as per client/consultant's approved Inspection Plan / QAP.

Third party inspection agency appointed by vendor on prior approval of owner shall carry out stage wise inspection during manufacturing / final inspection.

Vendor shall furnish all the material test certificates, proof of approval / licence from specified authority as per specified standard, if relevant, internal test / inspection reports as per owner Technical Specification and specified code for 100% material, at the time of final inspection of each supply lot of material.

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.



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TECHNICAL SPECIFICATION FOR
ISOLATION & APPLIANCE BALL VALVES



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- 2.0 MATERIAL SPECIFICATION FOR ISOLATION VALVES
- 3.0 MATERIAL SPECIFICATION FOR APPLIANCE VALVES



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1.0 INTENT OF SPECIFICATION

The intent of this specification is to establish minimum requirements to manufacturing of Isolation & Appliance Ball Valves used for supply of natural gas.

2.0 MATERIAL SPECIFICATION FOR ISOLATION VALVES

2.1. Technical Data Sheet

2.1.1 Item-Isolation Ball Valve with Full Bore, NPT Female (Confirming to ANSI B1.20.1) ends for natural gas application).

2.1.2 Sizes : $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{2}$ ", 2".

2.1.3 Body : Hot Pressed/ Forged Brass, Nickel/ Chrome Plated.

2.1.4 Ball : Hard Chrome/ Nickel Plated Hot Pressed/ Machined Brass Bar with Teflon Seat.

2.1.5 With operating Knob and locking arrangement with sealing wire and lead seal (Without Key). Valve full open/ close position shall be at 90°.

2.1.6 Maximum Operating Pressure : 4.0 - 6.0 Bar (g)

2.1.7 Hydrostatic Test Pressure : 10.5 Bar (g)

2.1.8 Markings

Markings shall be provided & shall include :

Manufacturer's name or trade mark Model designation. Rate working pressure in Bar. Direction of flow, if necessary.

2.1.9 Leakage: The permissible external/ internal leakage shall be specified by the vendor, with reference to relevant code. However, in no case the leakage in both the cases shall exceed 1 ml/ min at maximum working pressure specified.

2.1.10 Mechanical Strength

- i) The body of the valves shall be capable of withstanding without deformation or leakage 125 Nm torque, as applied to a pipe being connected to the valve.
- ii) Valve shall be capable of withstanding without deformation or leakage 340 Nm bending moment or an angular displacement of 10° whichever occurs first, if applied to a pipe connected to the valve.
- iii) The valves shall be capable of withstanding 25 Nm impact without breakage or leakage.



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3.0 MATERIAL SPECIFICATION FOR APPLIANCE VALVES

3.1. Technical Data Sheet

3.1.1 Item

Application Ball Valve of Full Bore with ½" NPT (Confirming to ANSI B1.20.1) Female as an inlet and the outlet shall be having Ni/ Cr plated brass or steel a nozzle (Serrated to suit ¼" rubber tubing/ hose connection) and the material is required for Domestic Natural Gas Service.

3.1.2 Body : Total body including the nozzle shall be of Hot Pressed/ Forged Brass, Nickel/ Chrome Plated.

3.1.3 Ball - Hard Chrome/ Nickel Plated Hot Pressed/ Machined Brass Bar with Teflon Seat.

3.1.4 With a metallic operating/ knob/ lever for full open/ close at 90° position.

3.1.5 Maximum Operating Pressure : 35 milli Bar (g)

3.1.6 Hydrostatic Test Pressure : 1.0 Bar (g)

3.1.7 Markings

Markings shall be provided & shall include :

- i) Manufacturer's name or trade mark
- ii) Model designation
- iii) Rate working pressure in Bar
- iv) Direction of flow, if necessary

3.1.8 Leakage

The permissible external/ internal leakage shall be specified by the vendor, with reference to relevant code. However, in no case the leakage in both the cases shall exceed 1 ml/ min at maximum working pressure specified.

3.1.9 Mechanical Strength

- i) The body of the valves shall be capable of withstanding without deformation or leakage 75 Nm torque, as applied to a pipe being connected to the valve.
- ii) Valve shall be capable of withstanding without deformation or leakage 125 Nm bending moment or an angular displacement of 10° whichever occurs first, if applied to a pipe connected to the valve.
- iii) The valves shall be capable of withstanding 25 Nm impact without breakage or leakage.



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TECHNICAL SPECIFICATION FOR
WARNING MATS



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SPECIFICATION FOR THE WARNING MATS

Purpose	For using as a warning sign for Under Ground Natural Gas Pipeline
Width	250 mm +/- 2 mm for Underground Gas Pipeline
Thickness	0.5 mm thk. (500 microns +/- 8 %)
Tracer Wire	Double copper wire-with anti-corrosive coating, in sinusoidal wave pattern.
Material of the mat	The material shall be of high density Polyethylene
Colour of the mat	Yellow colour + black text
Art Work	A sample piece of 30mm wide and 200mm long of every batch shall be checked by immersing in 20% solution of Ammonium Sulphide for period of 2weeks at a temperature of 15°C for colour intactness of the strip. Art work would be finalized after placement of order.

Mechanical Properties of HDPE:

1. Tensile strength - Min. 120 kg/cm²
2. Elongation at break - Min.200%

Bundle length: 0.5 mm thick warning mat shall be 50 m

Test certificates: Vendor has to submit all test

certificates Inspection: Manufacturer has to submit

QAP



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STANDARD TECHNICAL SPECIFICATION FOR MLC Pipes & Associated fittings

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1. INTENT OF SPECIFICATION.
2. SCOPE OF WORKS.
3. DEFINITIONS.
4. MATERIAL SPECIFICATION FOR MLC PIPE
5. MECHANICAL PROPERTIES.
6. FITTINGS.
7. MARKINGS.



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1. **Intent of Specification:** The intent of this specification is to establish minimum requirements to manufacture and supply of Multi-Layer Composite (MLC) Pipe used for supply of natural gas.

2. **Scope of Works:** The scope will include manufacture/ supply, inspection/ testing/ marking/ packaging/ handling and dispatch of MLC pipe, as indicated in the Material Requisition & Schedule of Rates, meeting all the requirements as laid down in manufacturing standard ISO 17484-1 (latest edition). All codes and standard for manufacture, testing, inspection etc. shall be of latest edition.

3. **Definitions**

Owner SS	Manufacturer	Shall mean Bhagyanagar gas Limited Means the Manufacturer of the MLC pipe Means the present <<Standard Specification>> and all its appendix, if any.
Third Party Agency	Inspection	Means the Inspection Agency to be Approved by BGL & Approved by PNGRB

4. **Material specification for MLC pipe**

4.1.1 **General:** Materials intended for the stress-bearing layers and inner layers shall conform to the material requirements of the reference product standard(s) specified in Annex A of ISO 17484-

1. The pipe manufacturer shall declare the reference material standard applicable to his product, as listed in Annex A of ISO 17484-1.

Adhesives are not considered as stress-bearing layers.

4.1.2 **Metallic materials:** Aluminium materials used shall be in accordance with EN 573-3.

4.1.3 **Color of pipe:** The outer layer of pipes shall be yellow.

5. **Mechanical Properties**

5.1.1 **Long-term pressure strength:** The test shall be carried out in according with clause 5.4.1 of the ISO 17484

5.1.2 **Strength of the joint line of M-pipe:** When the outside diameter of the pipe is increased by 10%, no failures relative to the joint line of the metal layer shall occur. The test shall be carried out in accordance with Annex B of ISO 17484-1.

5.1.3 **Resistance to slow crack growth of the outer layer (cone test) for M-pipes**

When tested in accordance with ISO 13480, the crack growth rate of the outer layer shall be less than 10 mm/day. The test shall be carried out on pipe produced from material used for the outer layer. This test shall be performed as per EN331 (latest edition).

5.1.4 **Physical properties:** Pipes shall fulfil the requirements for physical properties as given in the table below.

Characteristic	Requirements	Tests		
		Parameter	Value	Reference
Resistance to gas constituents	≥ 20 h No delamination	Conditioning	1 500 h/(23 ±2) °C	Annex C of ISO 17484-1
		Temperature	80 °C	
		Pressure	0.4 PD	
	No delamination	Conditioning	1 500 h/(23±2) °C	
		Temperature	(23+21 °C	
		Cone test	10% expansion	
Thermal durability	No visual crack in outer layer	PE or PE-X		Annex D of ISO 17484-1
		At 110 °C	0.5 Year	
		At 110 °C	0.25 Year	
		At 110 °C		



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		Strain	3%	
		n		

Oxidation Induction time (OIT)	≥ 20 Min	Temperature	$(200 \pm 2) ^\circ\text{C}$	ISO 11357-6
Delamination P-pipes	No Crack or Delamination	Expansion	10% (by cone with 15° angle)	Annex B of ISO 17484-1
		Temperature	$(23 \pm 2) ^\circ\text{C}$	
Delamination M-pipes	Peel strength ≥ 15 N/CM	Temperature	$(23 \pm 2) ^\circ\text{C}$	Annex E of ISO 17484-1
		Cycling Test	$(-20 \pm 2) ^\circ\text{C}$ / $(+60 \pm 2) ^\circ\text{C}$	
		Number Cycling	10	
Odorant Permeability	No perception of THT smell by Experienced observer	Odorant Exposure time Temperature	THT 60 days $(23 \pm 2) ^\circ\text{C}$	Annex F of ISO 17484-1
A Test may be carried out $210 ^\circ\text{C}$ providing that there is clear correlation with the result at $(200 \pm 2) ^\circ\text{C}$ in case of dispute, the reference temperature shall be $(200 \pm 2) ^\circ\text{C}$.				

6. Fittings

6.1.1 **General:** Fittings shall comply with the requirements of clause 6 of ISO 17484-1.

The reference in ISO 17484-1 clause 6 to ISO 10838 (all parts) and ISO 14531-3 should be replaced by ISO 17885, Plastic piping systems Mechanical fittings for pressure piping systems - Specification, except clause 9.3, Fitting assemblies.

6.1.2 **Construction:** The fittings for multilayer pipes shall be able to make a mechanical connection with the multilayer pipe by pressing or clamping.

6.1.3 **Fitness for purpose:** Fittings shall comply with the requirements given in Table 3 of ISO 17484

7. MARKINGS

Markings Legend shall be repeated at intervals of 1M and should be of different color from that of external pipe surface & shall include:

- I. Manufacturer's name or trade mark.
- II. Owner's name as Bhagyanagar Gas limited to be marked on each pipe
- III. Design pressure (Pd) in Bar(g).
- IV. Material designation: Layer construction and type of material required: description from outside to inside e.g. PEX-AI-PEX or PE80-PEX.
- V. Standard reference number "ISO 17484".

7.1.1 Packaging

ML C pipe	200 m. coil	Wrapping with polythene & Gunny sheet & tied with plastic strips
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MLC Pipes & Fittings (Approved vendors):

1. M/s Jindal PE-X tubes private limited



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2. M/s Unipro piping systems private limited (Authorized dealer of M/s Zhejiang Mingshi Xingxin HVAC Technology Co. Ltd.)
3. M/s KITEC Industries (INDIA) Pvt. Ltd.

For procuring any other item(s) {i.e. not listed above} for which the vendor/ supplier name is not appearing in above preferred make list, bidders can supply those item(s) from such vendors/suppliers who have earlier supplied same item(s) for the intended services and the offered item(s) is in their regular manufacturing/ supply range and the same may be accepted subject to following: -

- a) The Vendor/ Supplier of bought out item(s) is a Manufacturer/ Supplier of said item(s) for intended services and the same are in their regular manufacturing/ supply range.
- b) The vendor/supplier should not be in the Holiday list of Client/ EIC/ Other PSU.

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TENDER DRAWING

DRAWING INDEX		
S.NO	DESCRIPTION	DRAWING NO
1	Schematic drawing for domestic PNG Consumer connections	MEC/23R8/01/S3/D2/CF/00/9001/R0
2	Standard details of Restoration of Asphalt Roads	MEC/23R8/01/S3/D2/CF/00/9002/R0
3	Standard details of Brick Valve Chamber - type-1	MEC/23R8/01/S3/D2/CF/00/9003/R0
4	Standard details of Brick Valve Chamber - type-2	MEC/23R8/01/S3/D2/CF/00/9004/R0
5	Sketch for RCC Route Marker	MEC/23R8/01/S3/D2/CF/00/9005/R0
6	Drawing of Plate Marker	MEC/23R8/01/S3/D2/CF/00/9006/R0
7	Typical Trench Details for pipeline	MEC/23R8/01/S3/D2/CF/00/9007/R0
8	Typical domestic connections layout of NG distribution	MEC/23R8/01/S3/D2/CF/00/9008/R0
9	Typical Domestic GI Connection Scheme Single Regulator For Ground, First, Second & Third Floor.	MEC/23RT/01/31/D4/GI/LY/0004/R1 (5 Sheets)
10	Half round Concrete Sleeve	MEC/23R8/01/S3/D2/CF/00/9009/R0
11	Typical Natural gas installation inside kitchen	MEC/23R8/01/S3/D2/CF/00/9010/R0
12	Scheme of gas supply to small/large/domestic consumers	MEC/23R8/01/S3/D2/CF/00/9011/R0
13	Sketch for Regulator, box , brackets & clamps	MEC/23R8/01/S3/D2/CF/00/9012/R0
14	Scheme for high pressure service installation	MEC/23R8/01/S3/D2/CF/00/9013/R0
15	Copper fittings for natural gas service	MEC/23R8/01/S3/D2/CF/00/9014/R0
16	Brass disconnecting union 3/4" NPTT X 12 mm (straight)	MEC/23R8/01/S3/D2/CF/00/9015/R0
17	Brass disconnecting union 1/2" NPTT X 12 mm (straight)	MEC/23R8/01/S3/D2/CF/00/9016/R0
18	Brass adopter 1/4" NPT x 12 mm (straight)	MEC/23R8/01/S3/D2/CF/00/9017/R0
19	Meter inlet union 3/4" x 3/4"	MEC/23R8/01/S3/D2/CF/00/9018/R0
20	Meter outlet union 3/4" x 12mm	MEC/23R8/01/S3/D2/CF/00/9019/R0



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GAS LIMITED

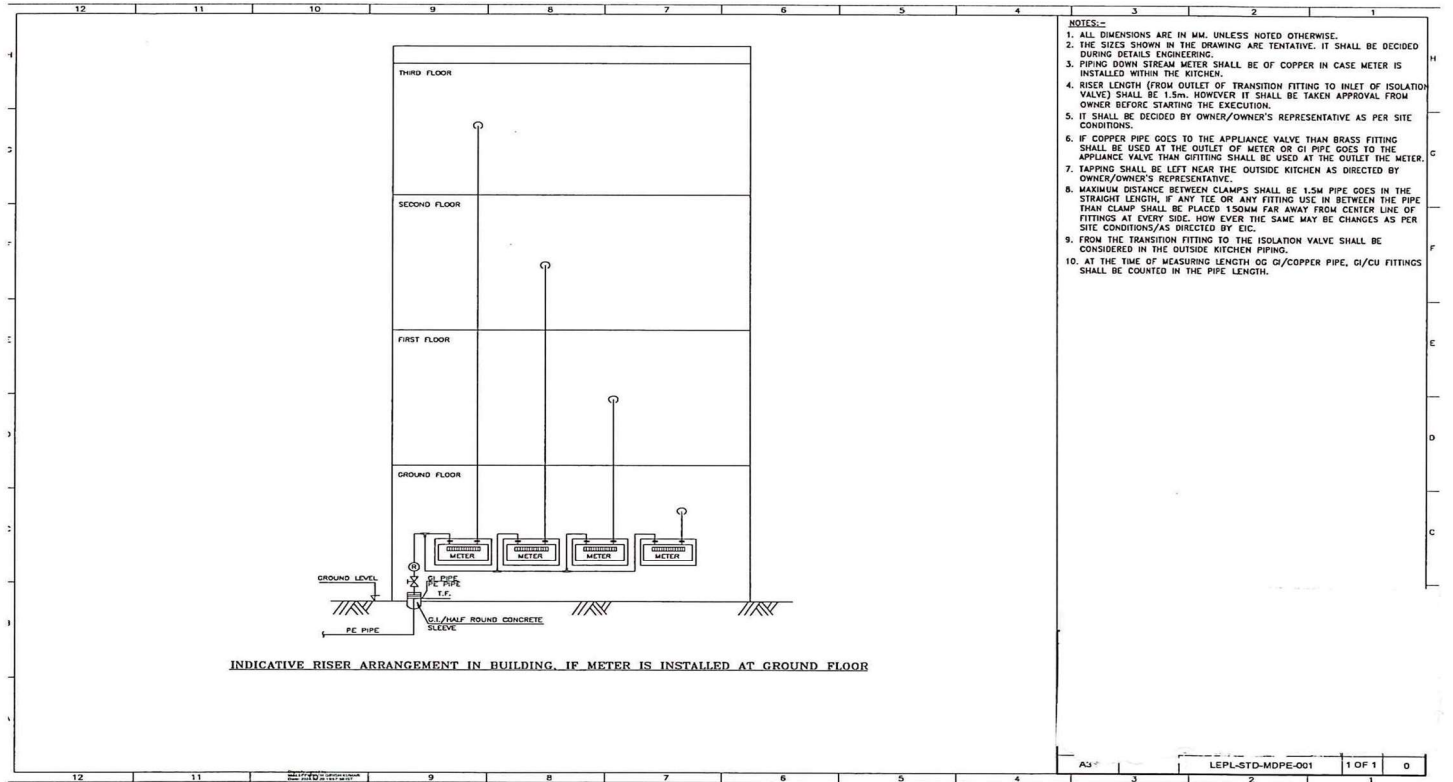
LAYING OF UNDERGROUND PE PIPELINES AND ABOVE
GROUND GI INSTALLATIONS INCLUDING LAST MILE
CONNECTIVITY AT CONSUMER END AT VIJAYAWADA GA

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21	Schematic diagram of housing for single service regulator	MEC/23R8/01/S3/D2/CF/00/9020/R0
22	Schematic diagram for single stream service regulator	MEC/23R8/01/S3/D2/CF/00/9021/R0
23	Road / Highway cased crossing for MDPE pipe	MEC/23R8/01/S3/D2/CF/00/9022/R0
24	Details Of Hard Barricading	MEC/23R8/01/S3/D2/CF/00/9023/R0

LAYING OF UNDERGROUND PIPE LINES AND ABOVE



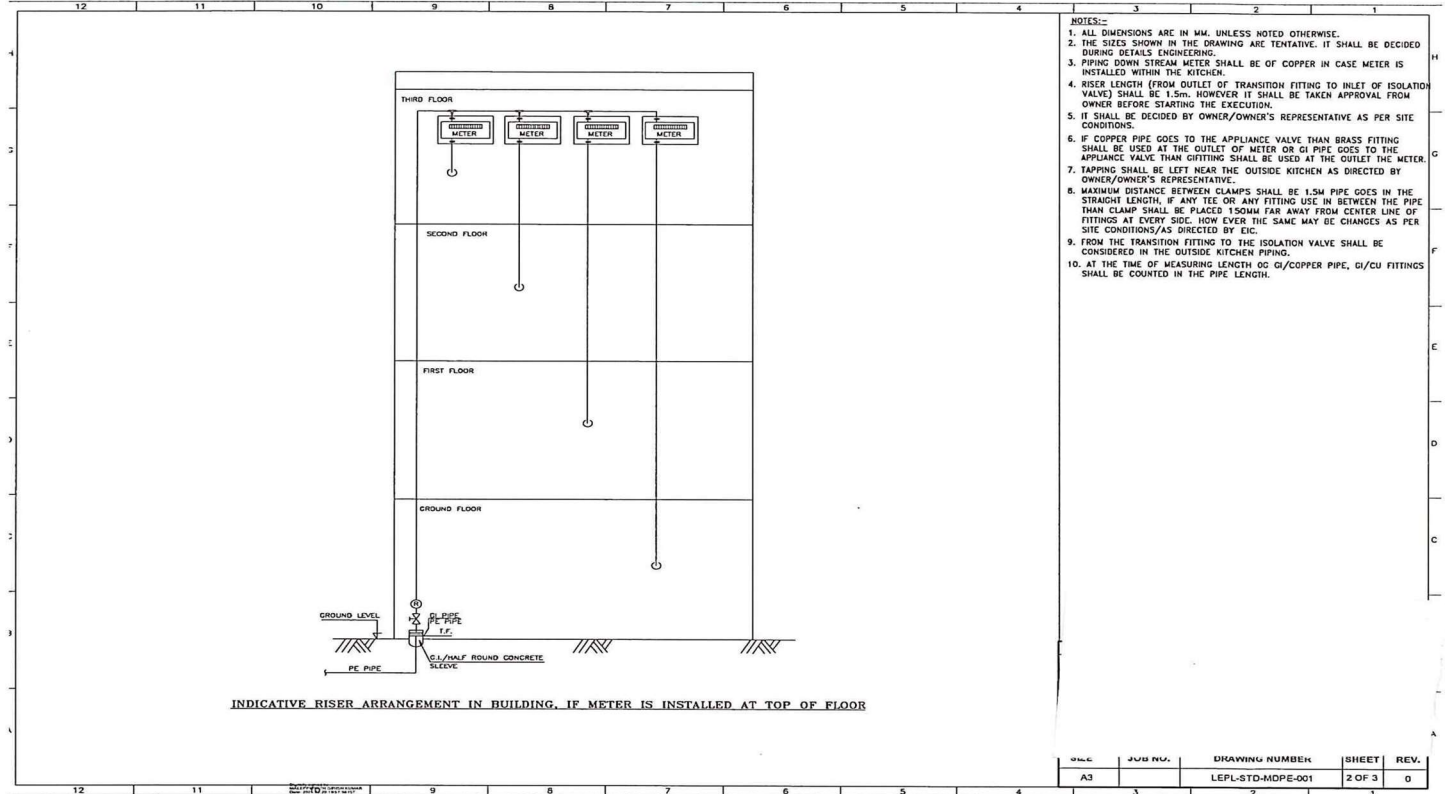


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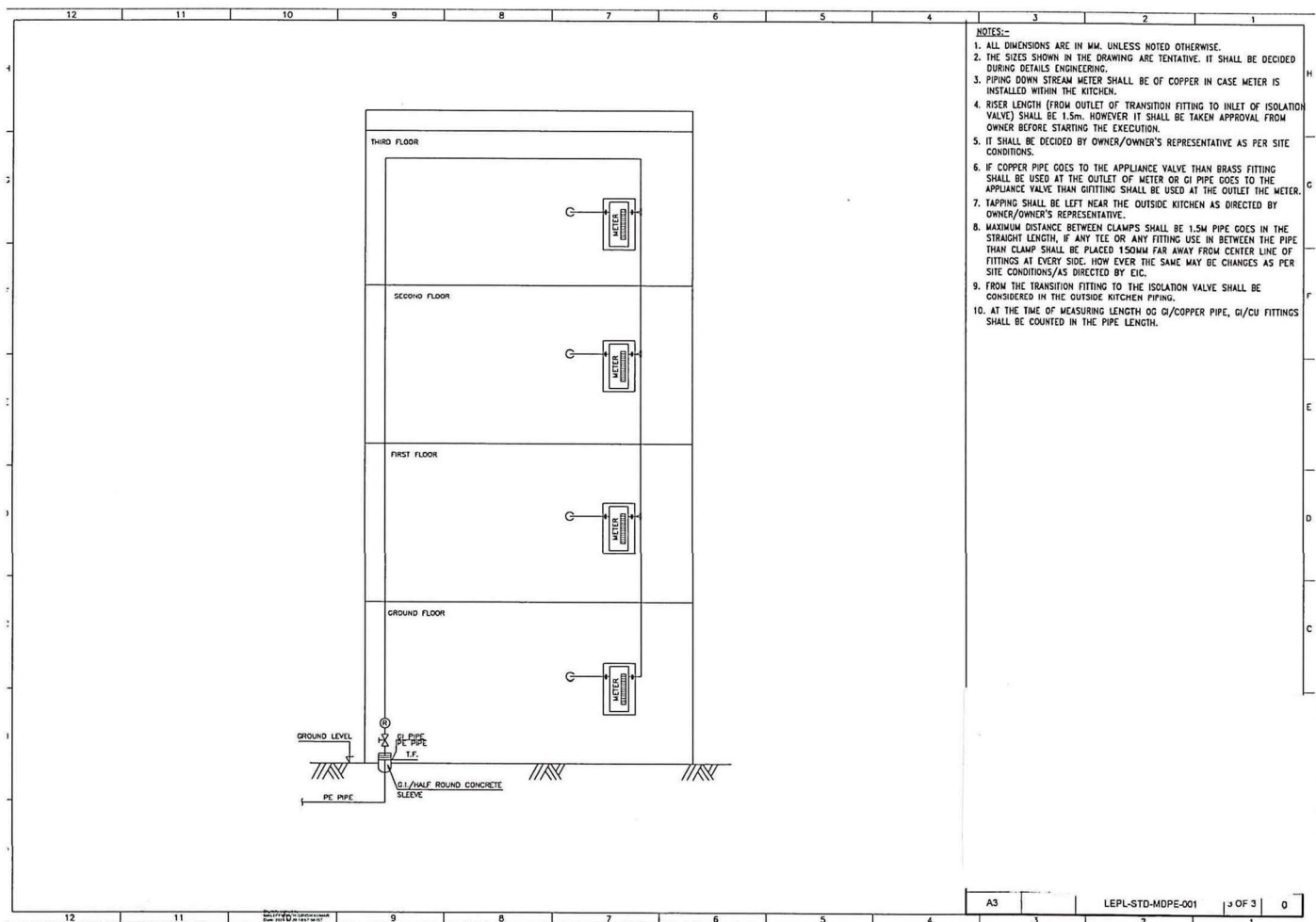


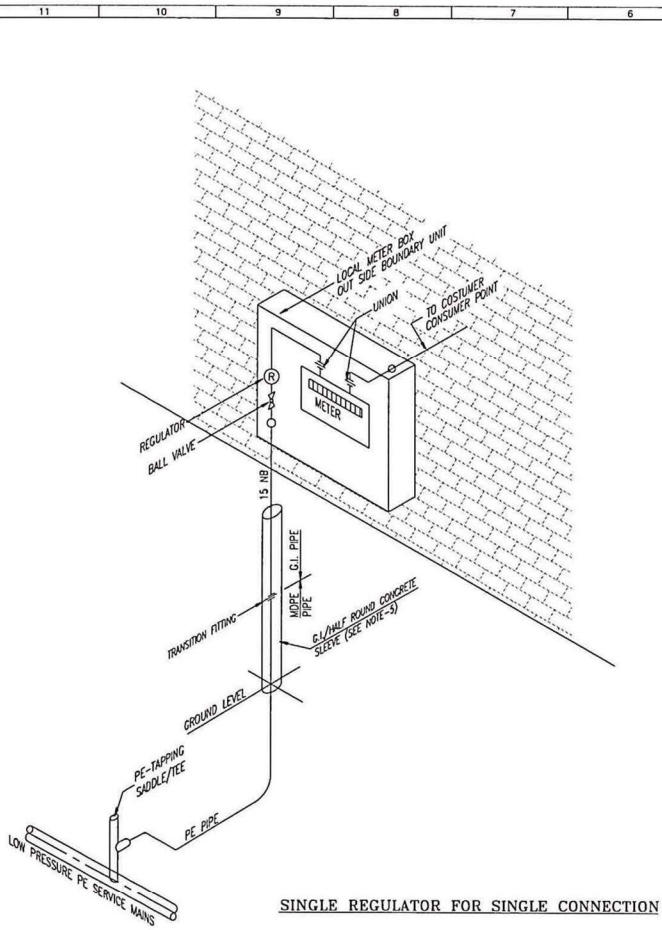
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 7. MAXIMUM DISTANCE BETWEEN CLAMPS SHALL BE 1.5M PIPE GOES IN THE STRAIGHT LENGTH, IF ANY TEE OR ANY FITTING USE IN BETWEEN THE PIPE THAN CLAMP SHALL BE PLACED 150MM FAR AWAY FROM CENTER LINE OF FITTINGS AT EVERY SIDE. HOW EVER THE SAME MAY BE CHANGES AS PER SITE CONDITIONS/AS DIRECTED BY EIC.

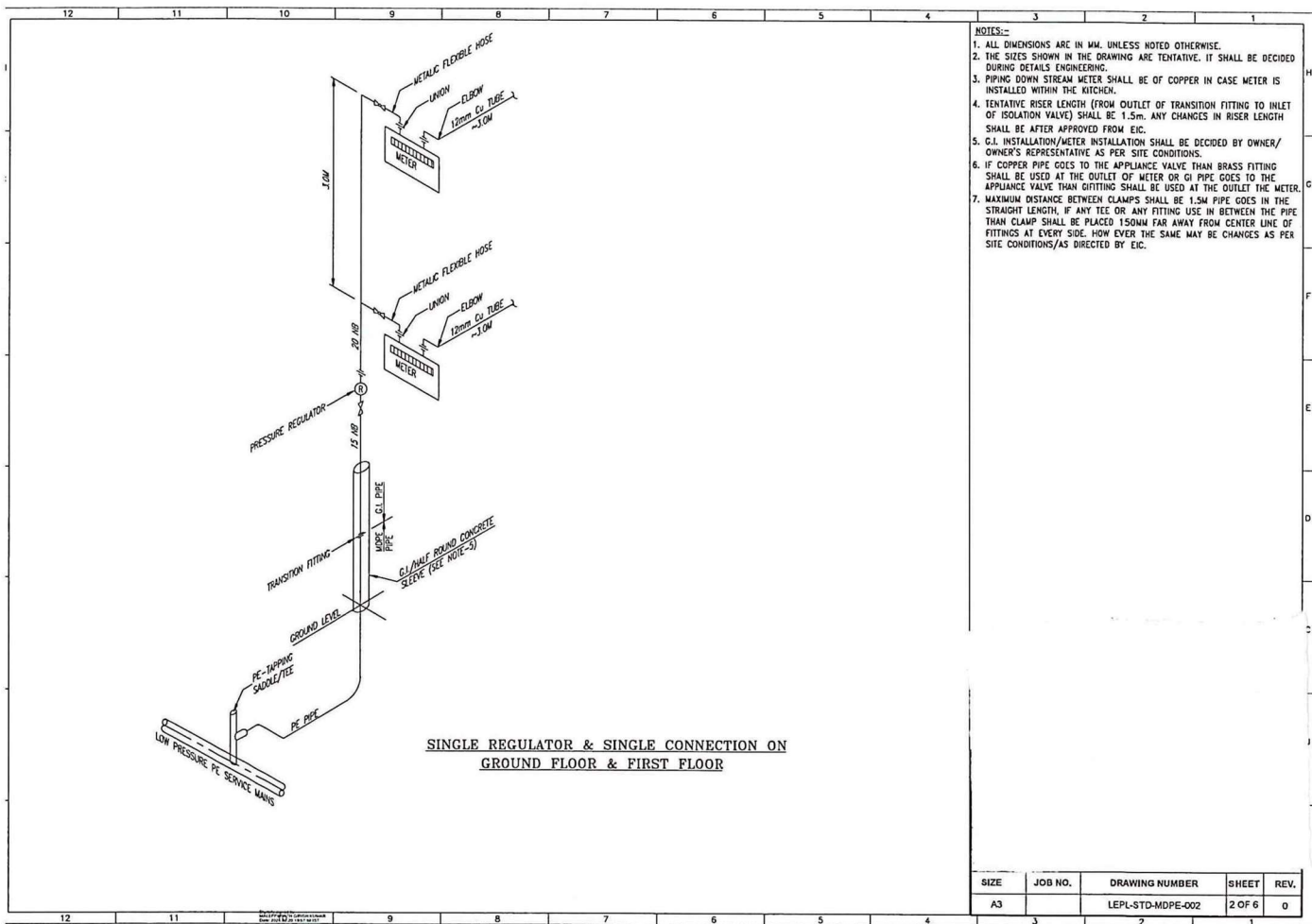


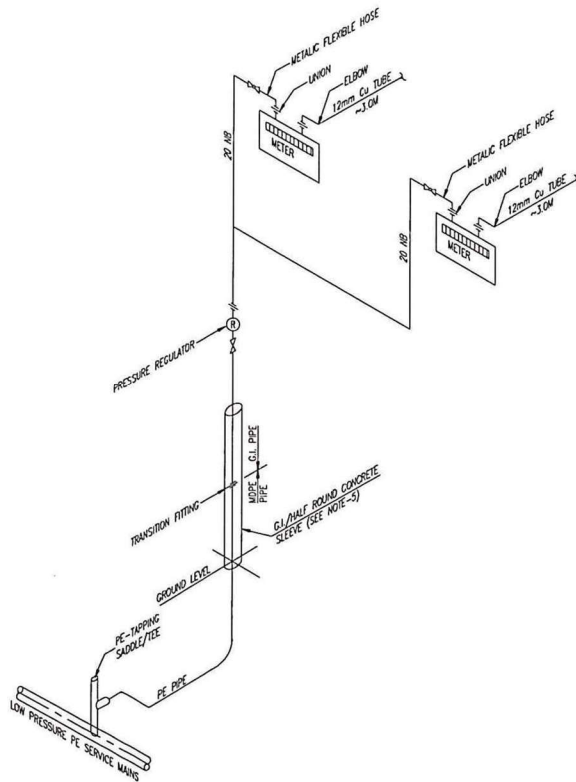
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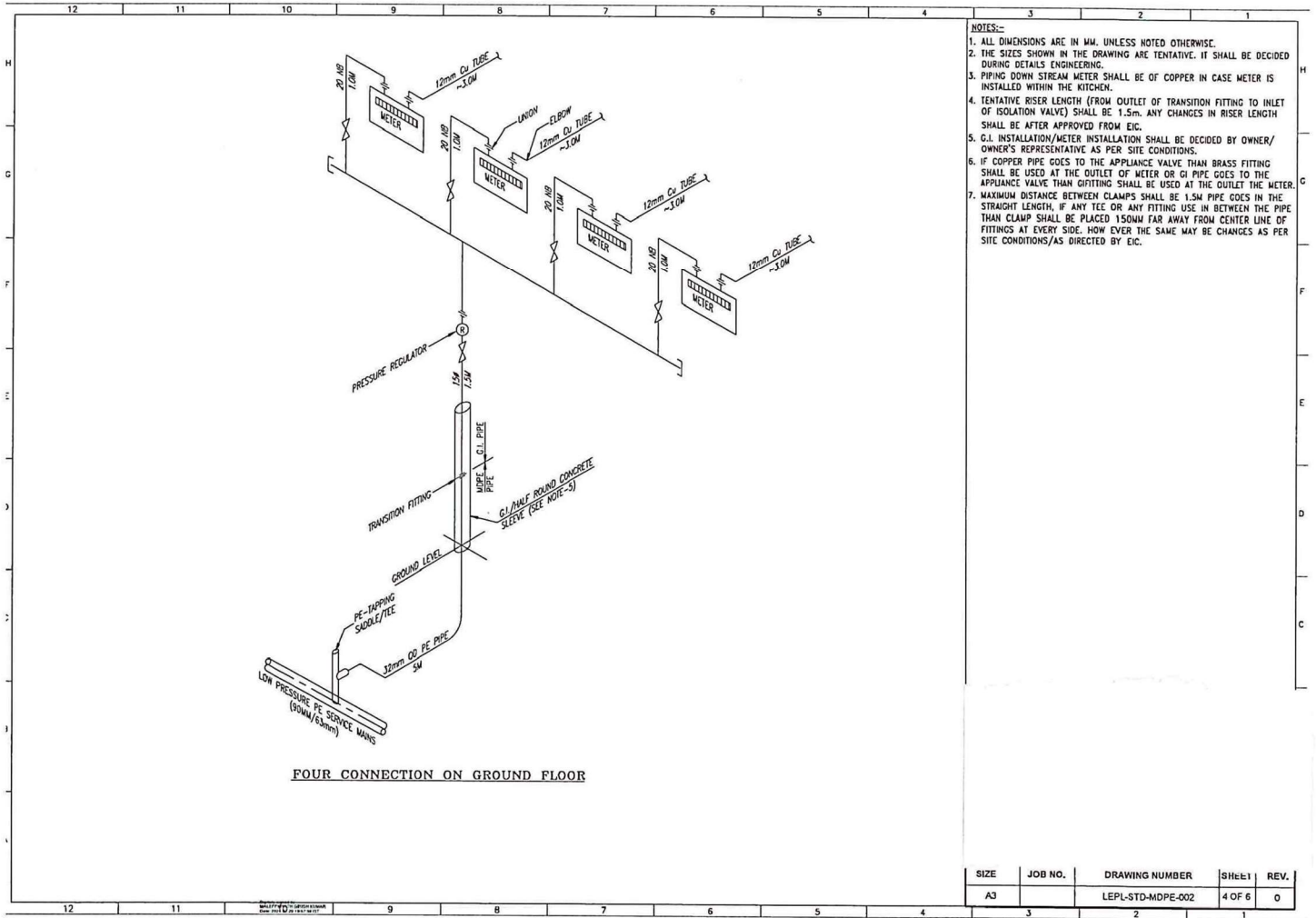


SINGLE REGULATOR & DOUBLE CONNECTION ON GROUND FLOOR

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SIZE	JOB NO.	DRAWING NUMBER	SHEET	REV.
A3		LEPL-STD-MDPE-002	3 OF 6	0



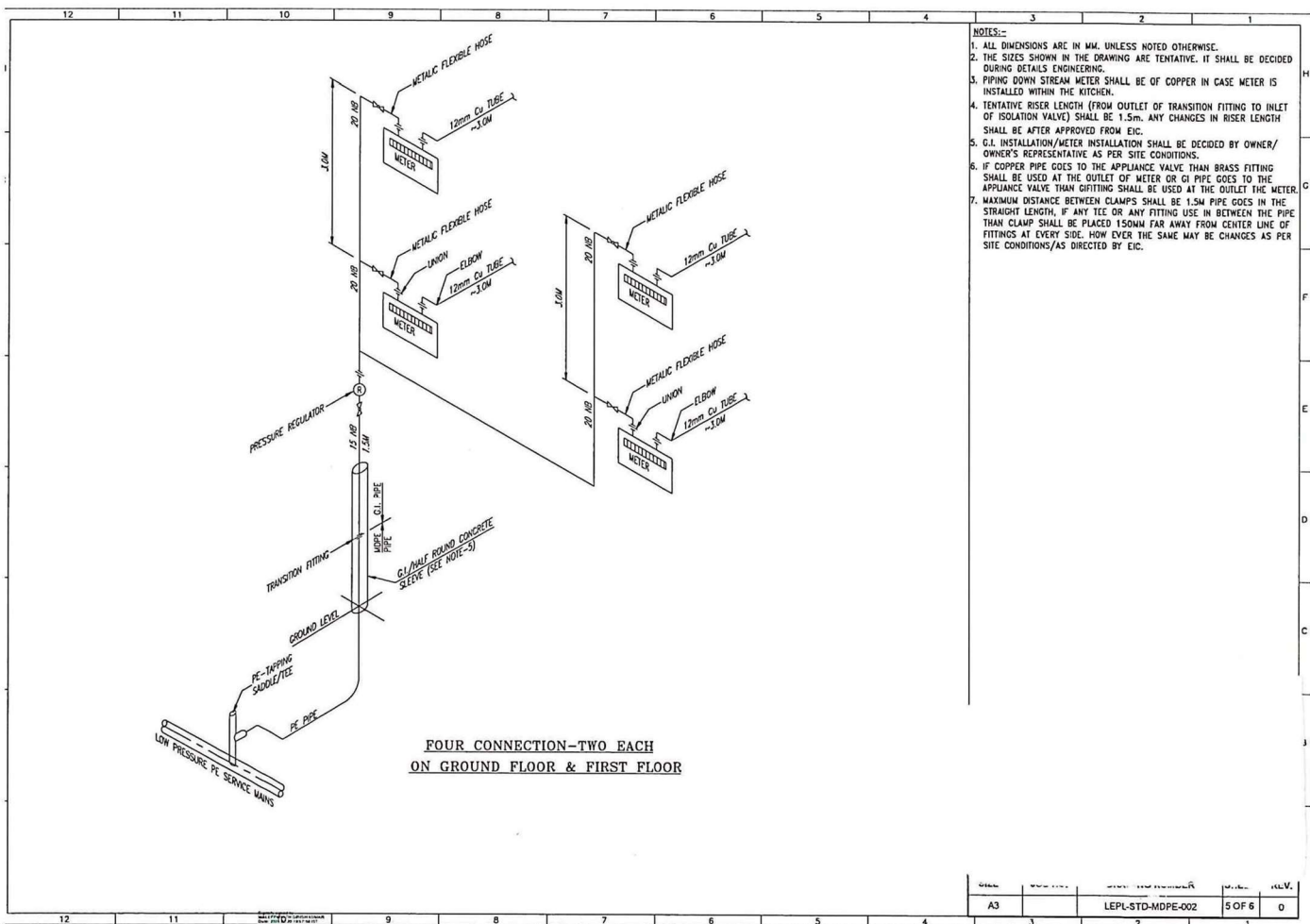


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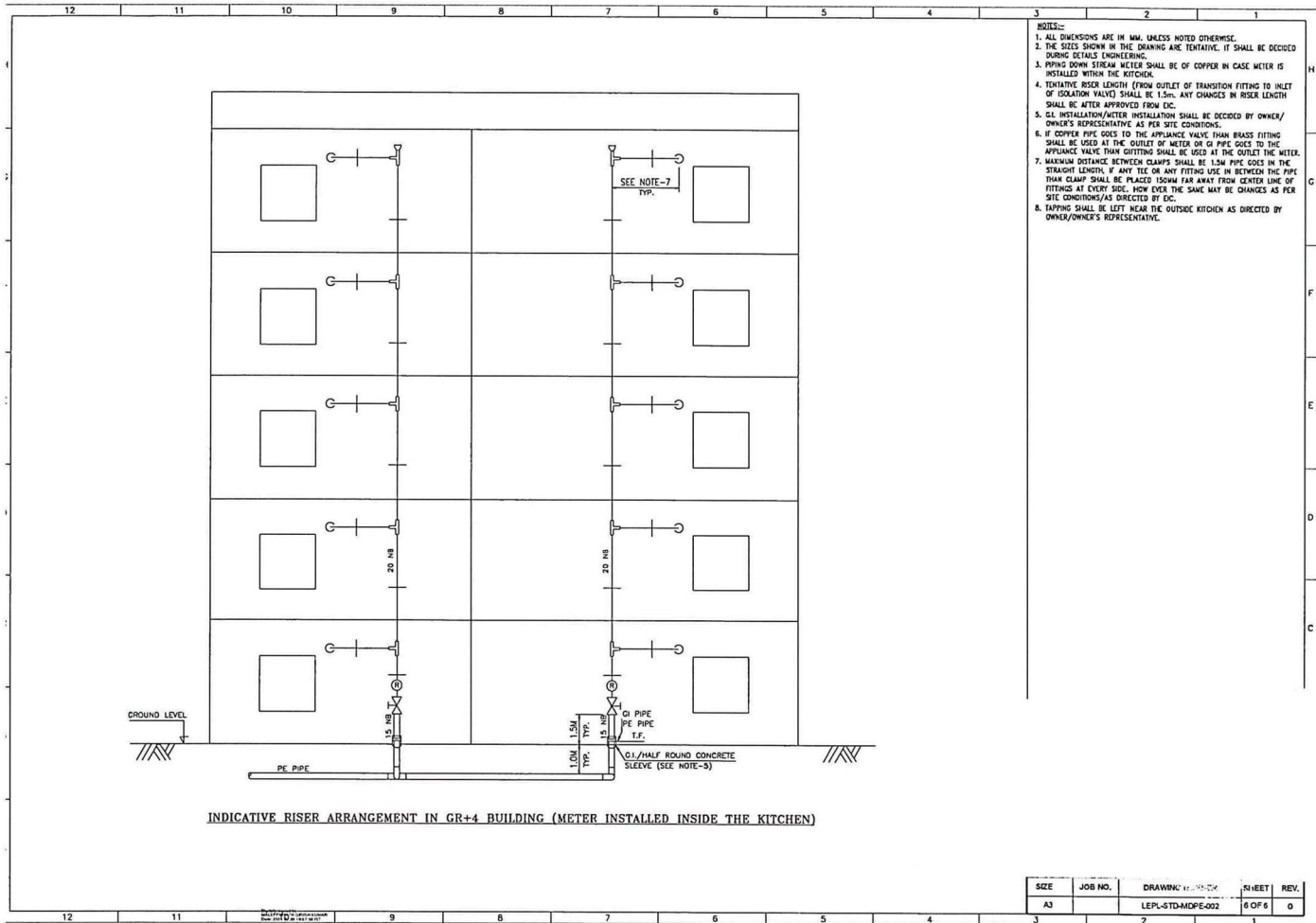


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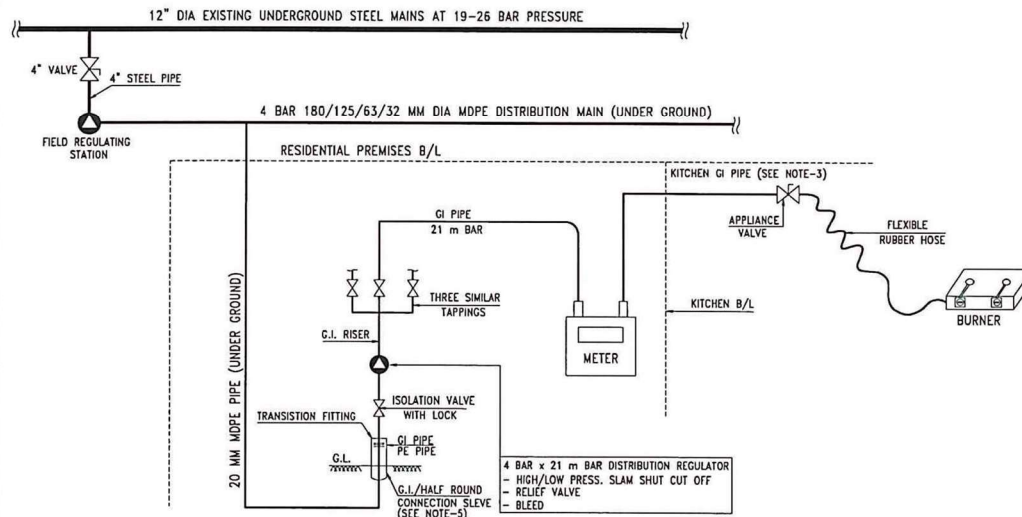
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SCHEMATIC DRAWING FOR DOMESTIC CONNECTION

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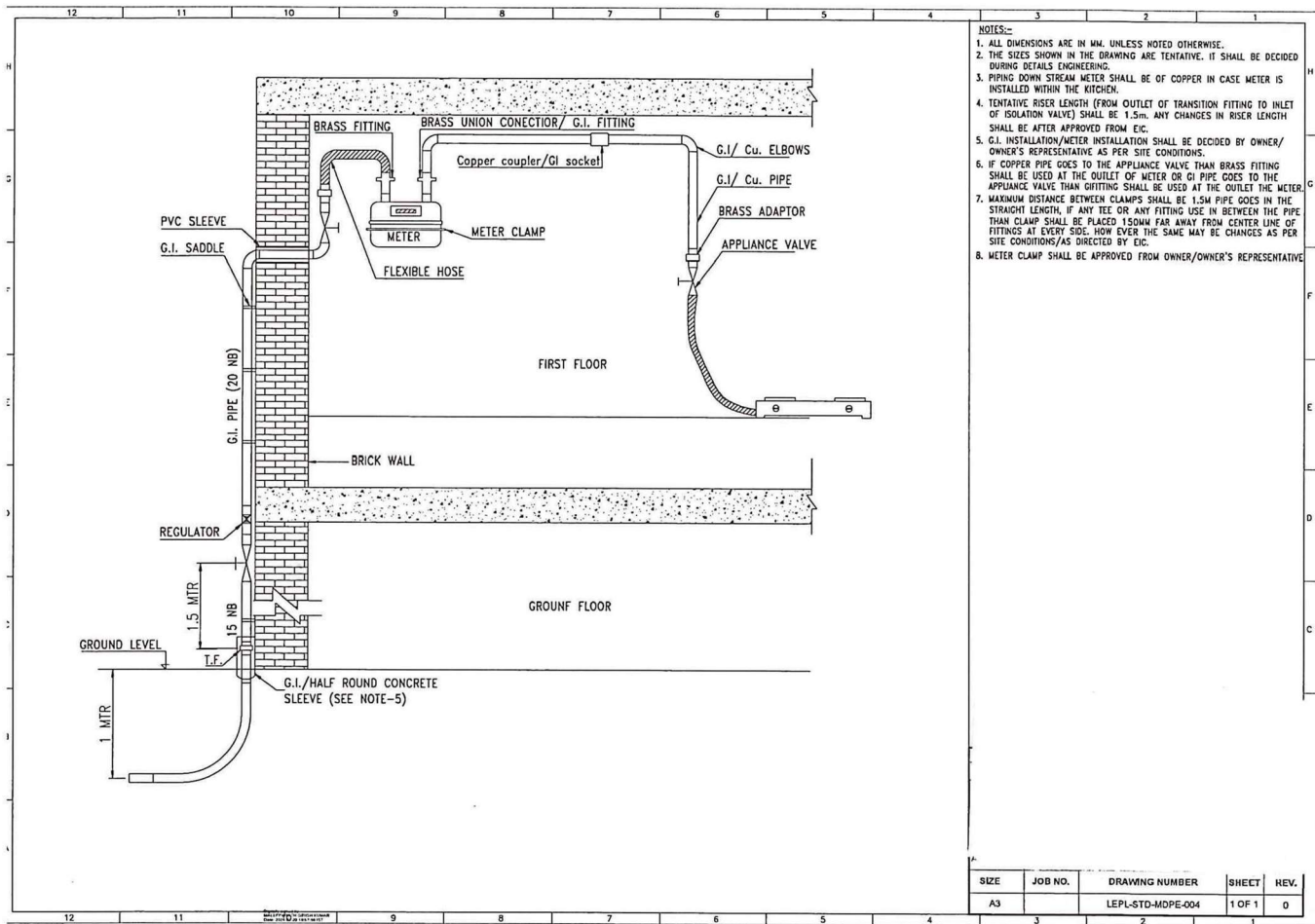


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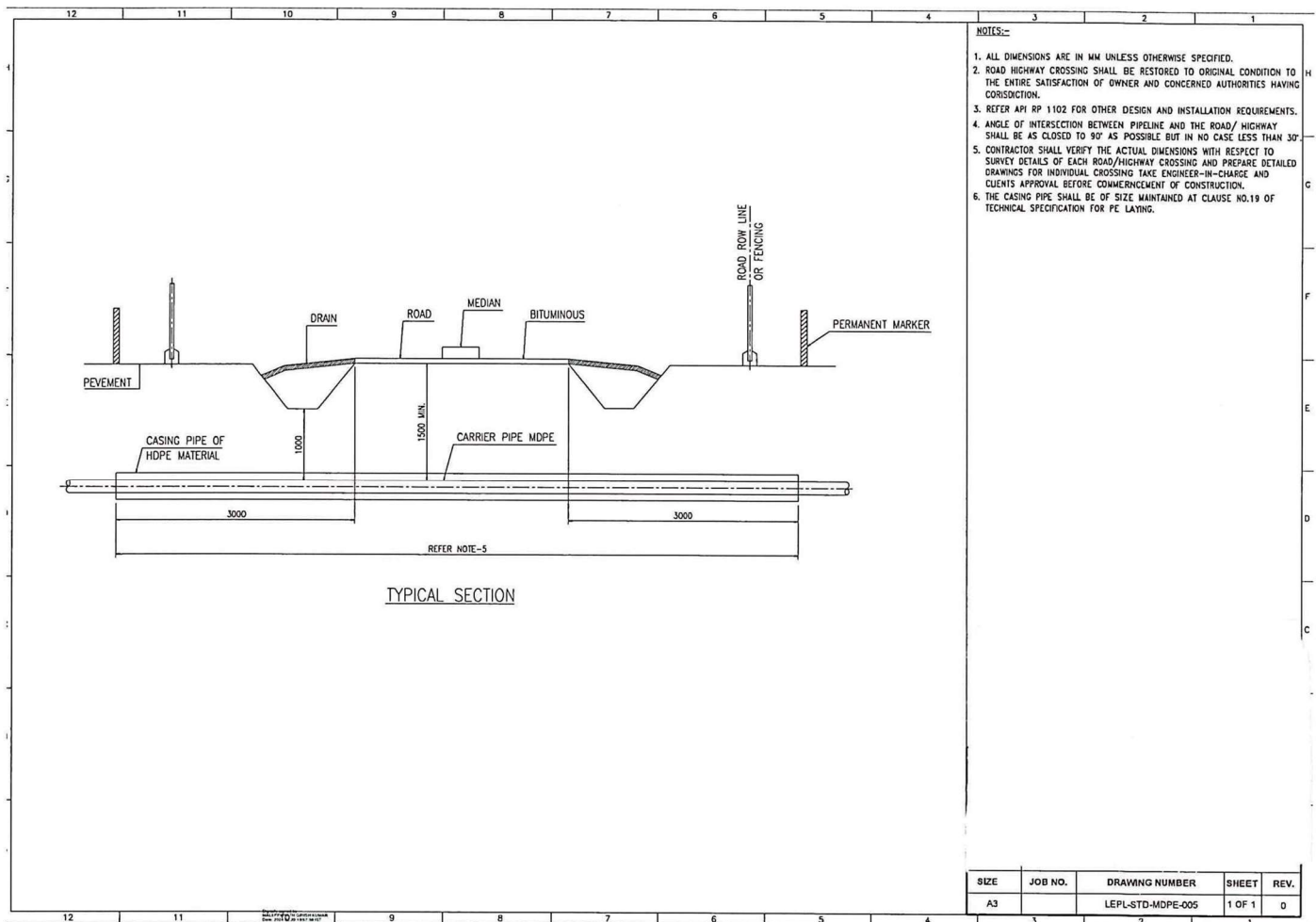


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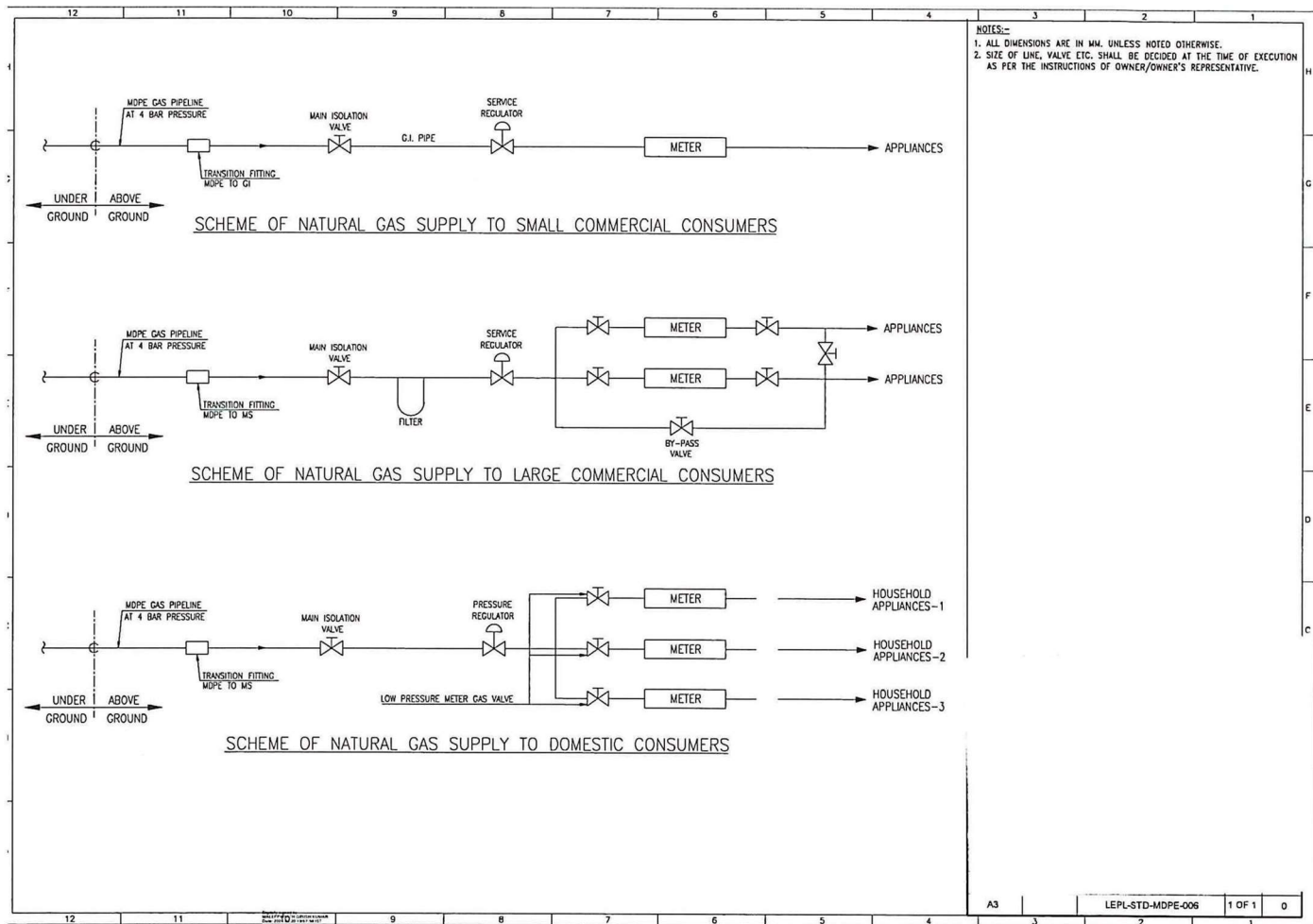


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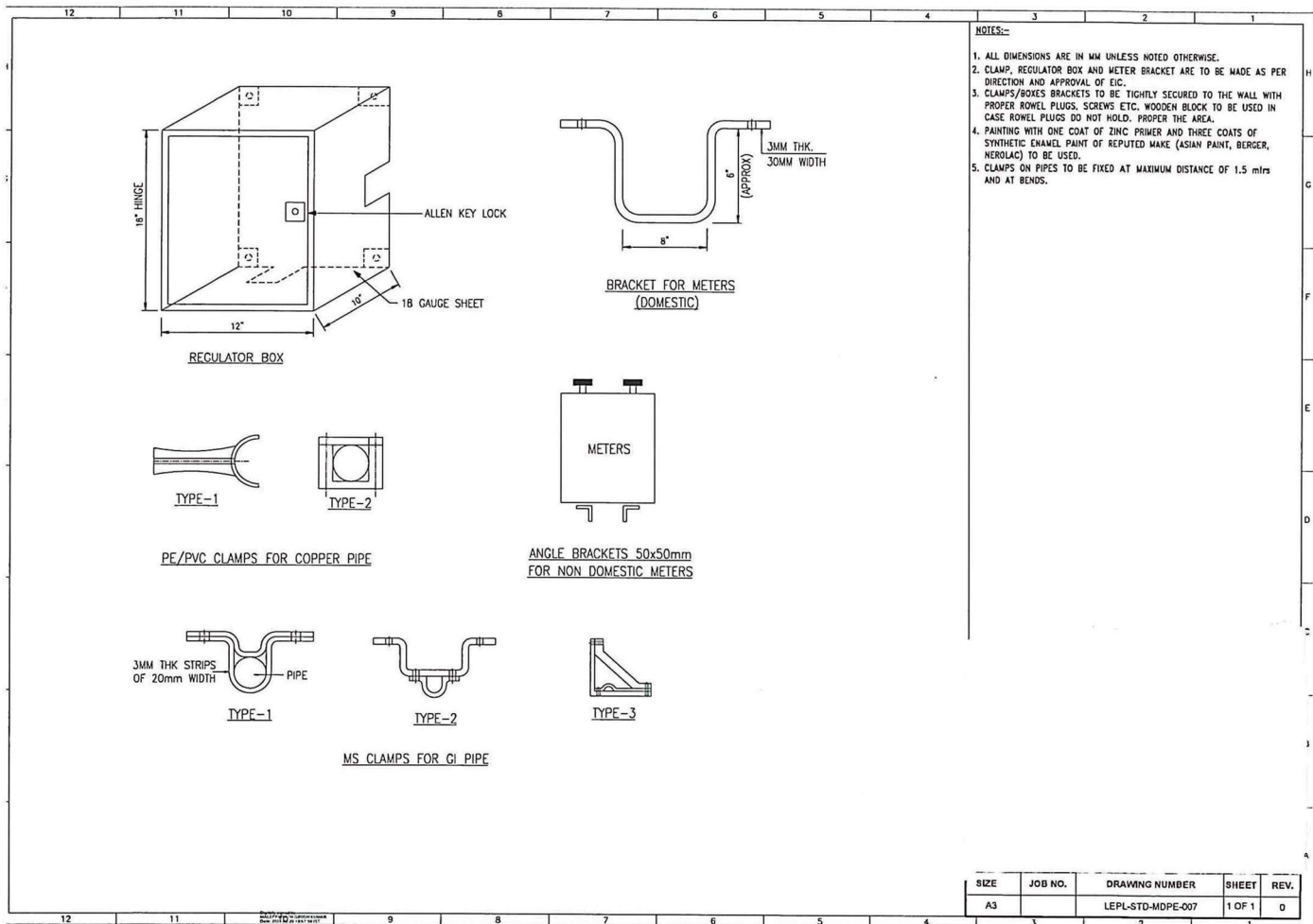


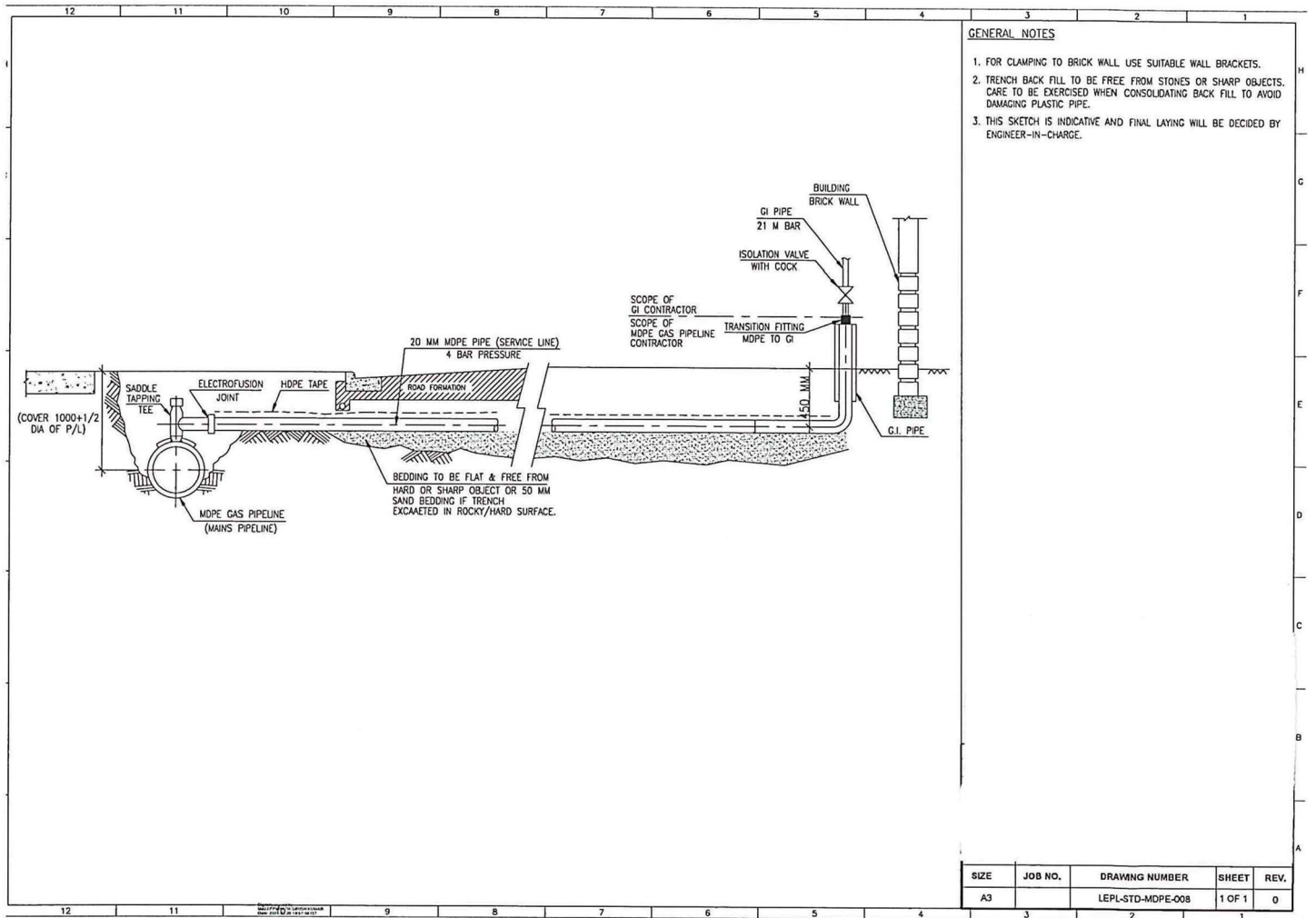
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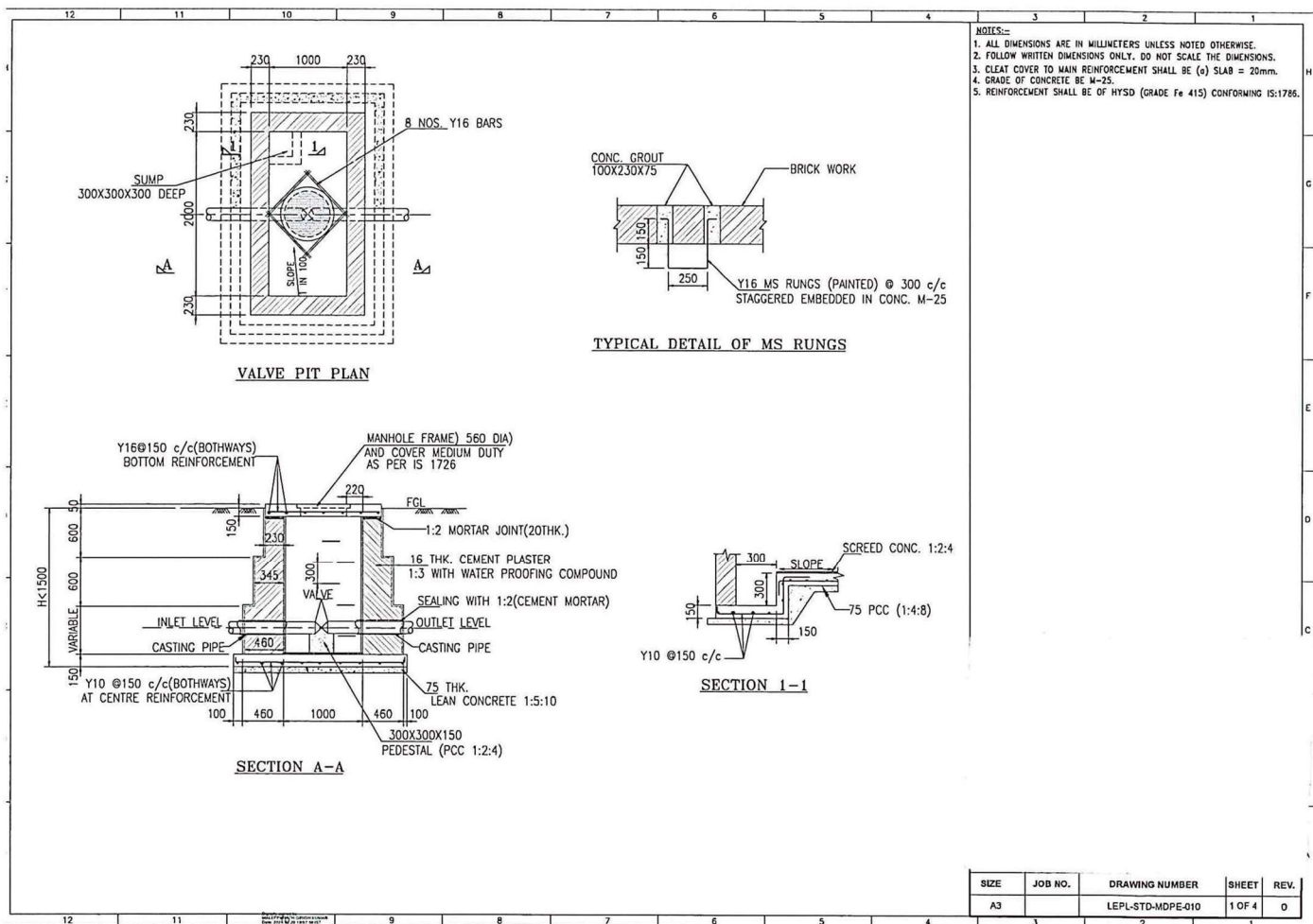


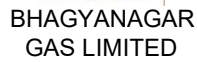
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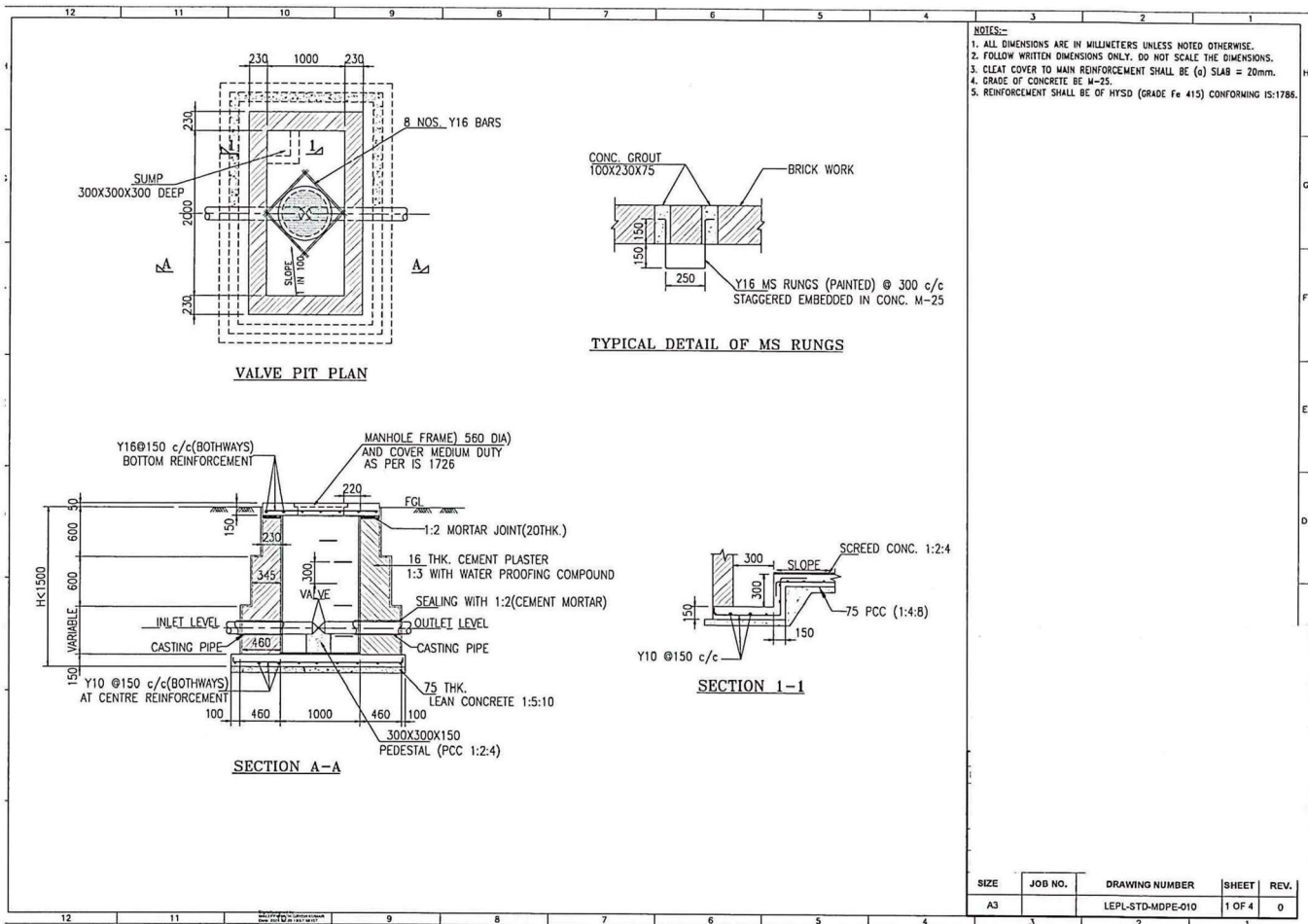
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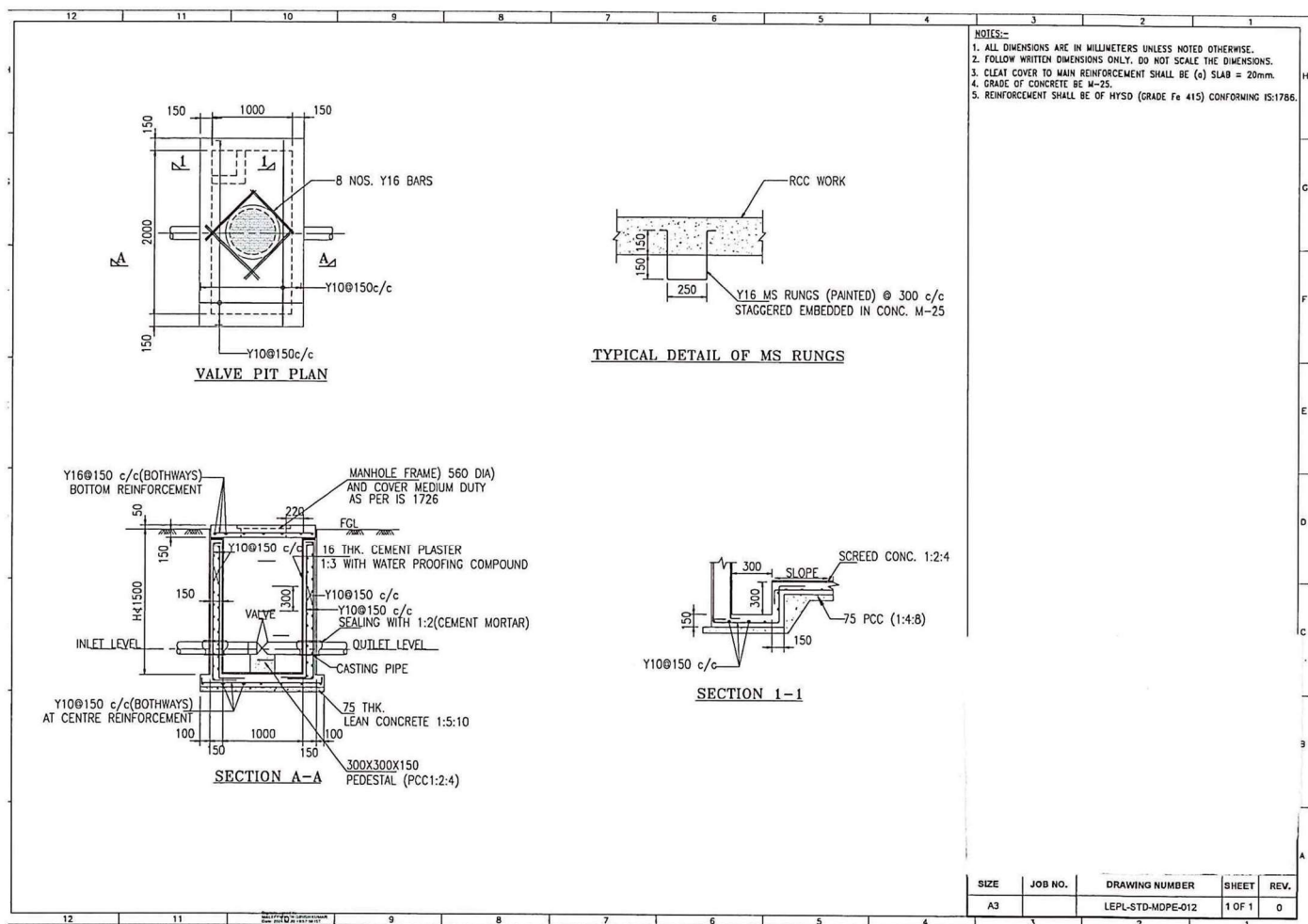


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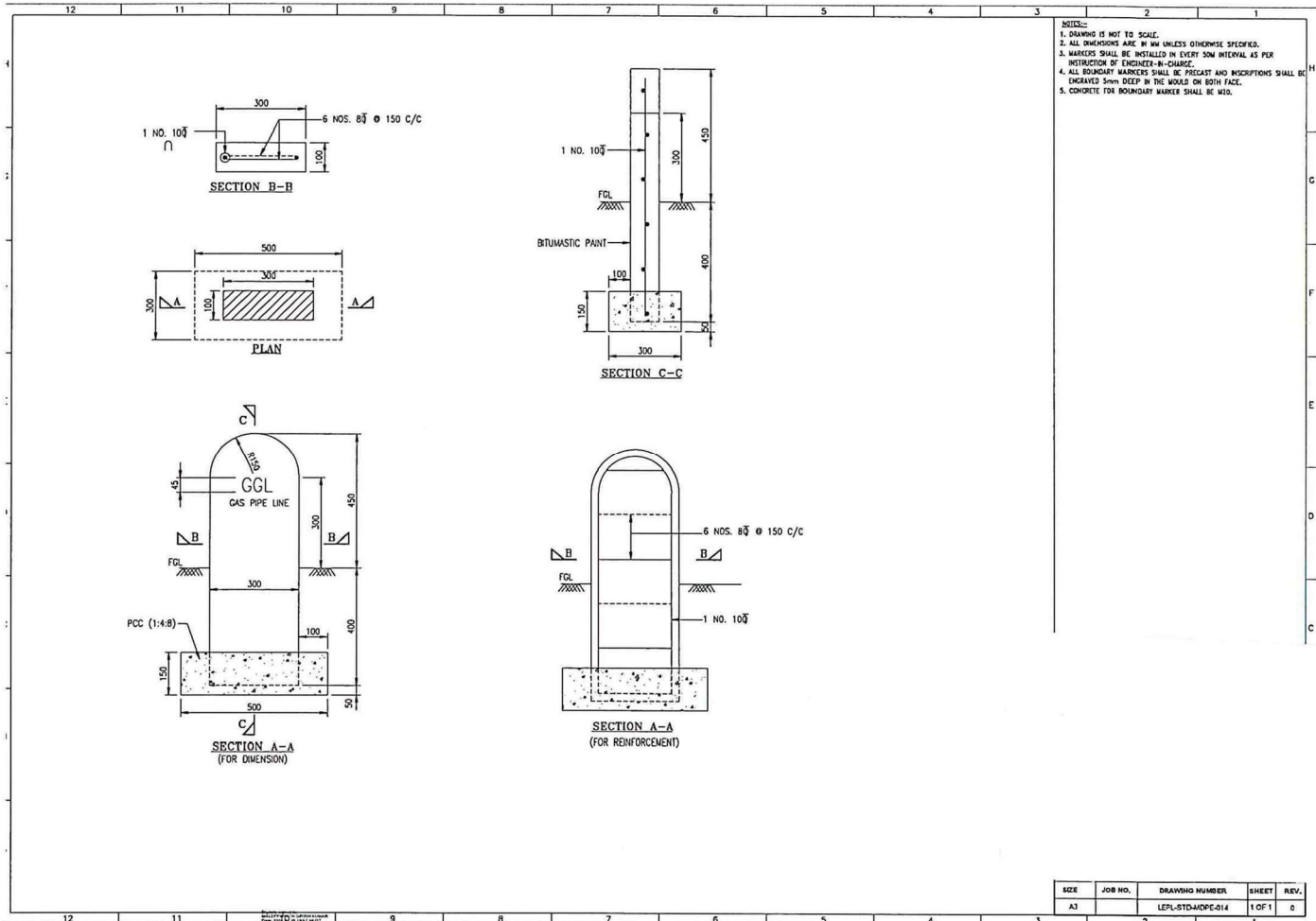


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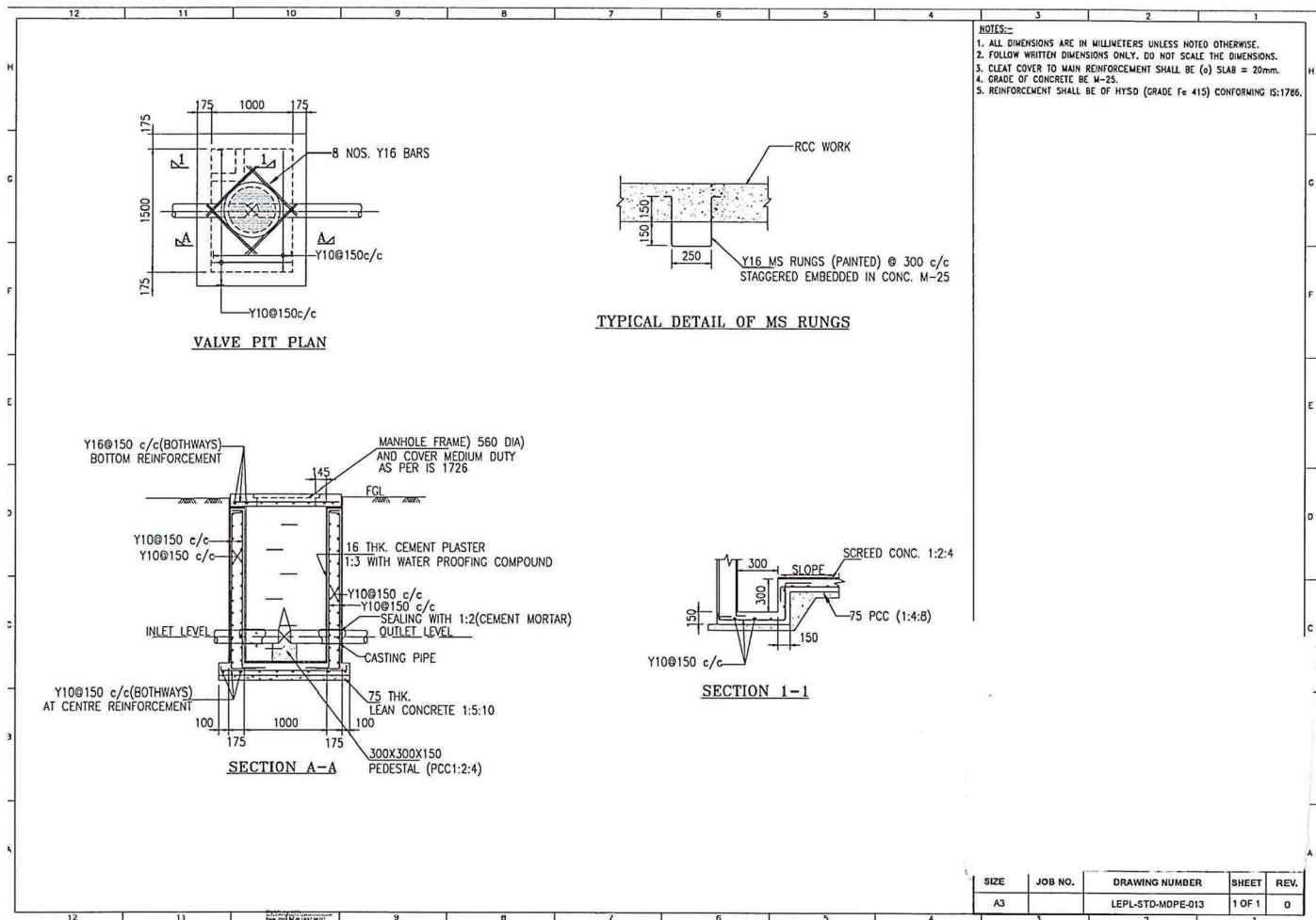


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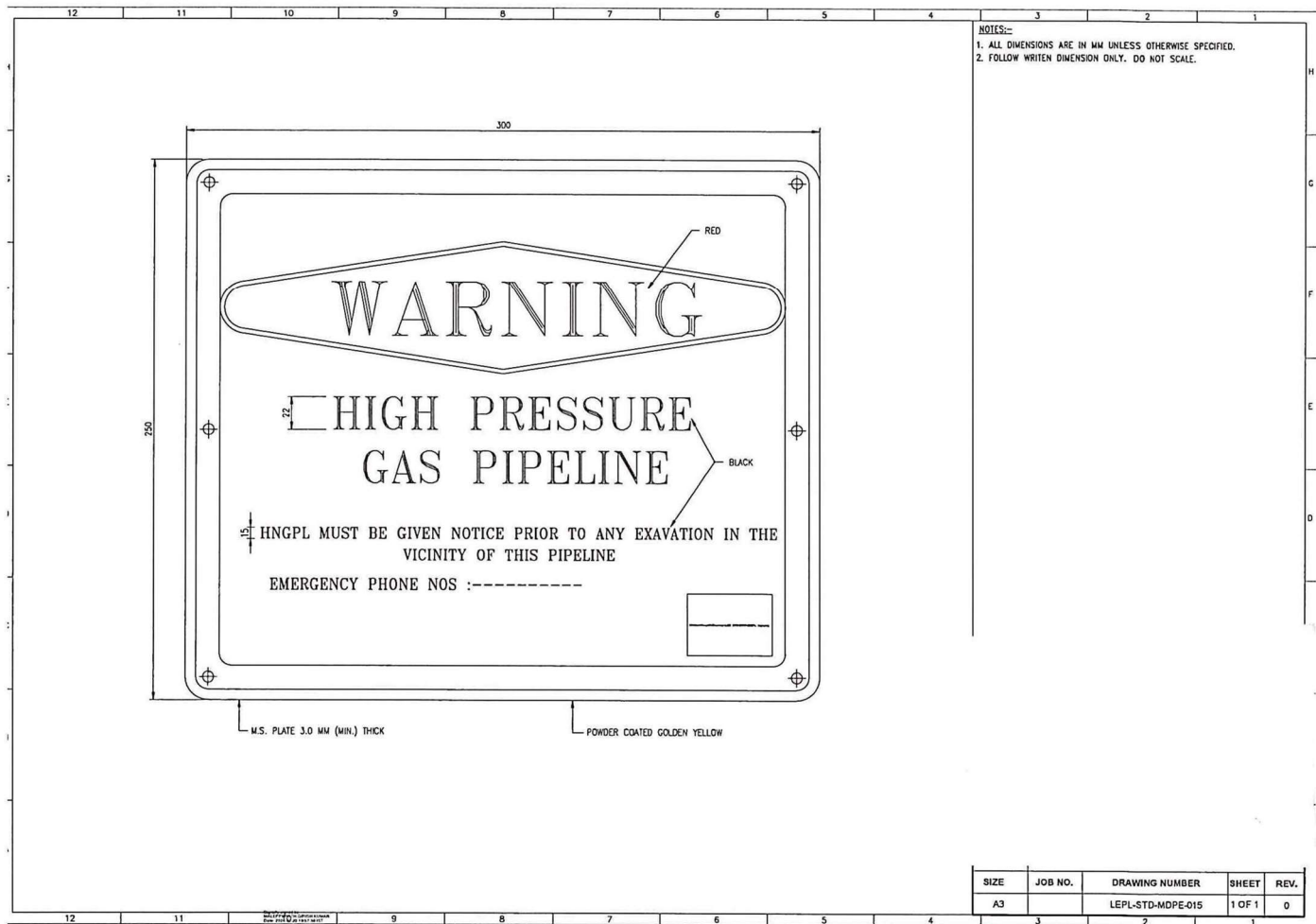


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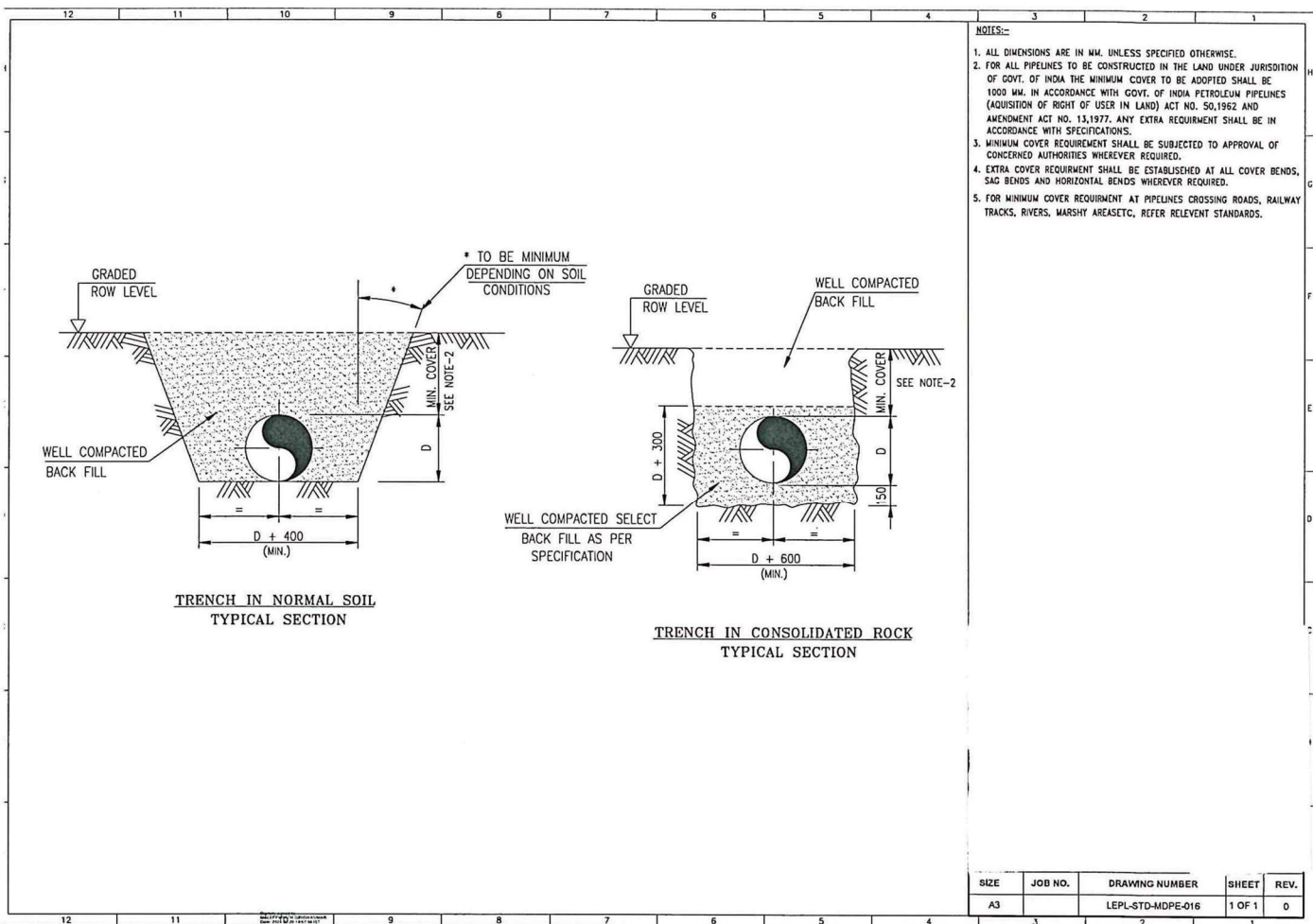


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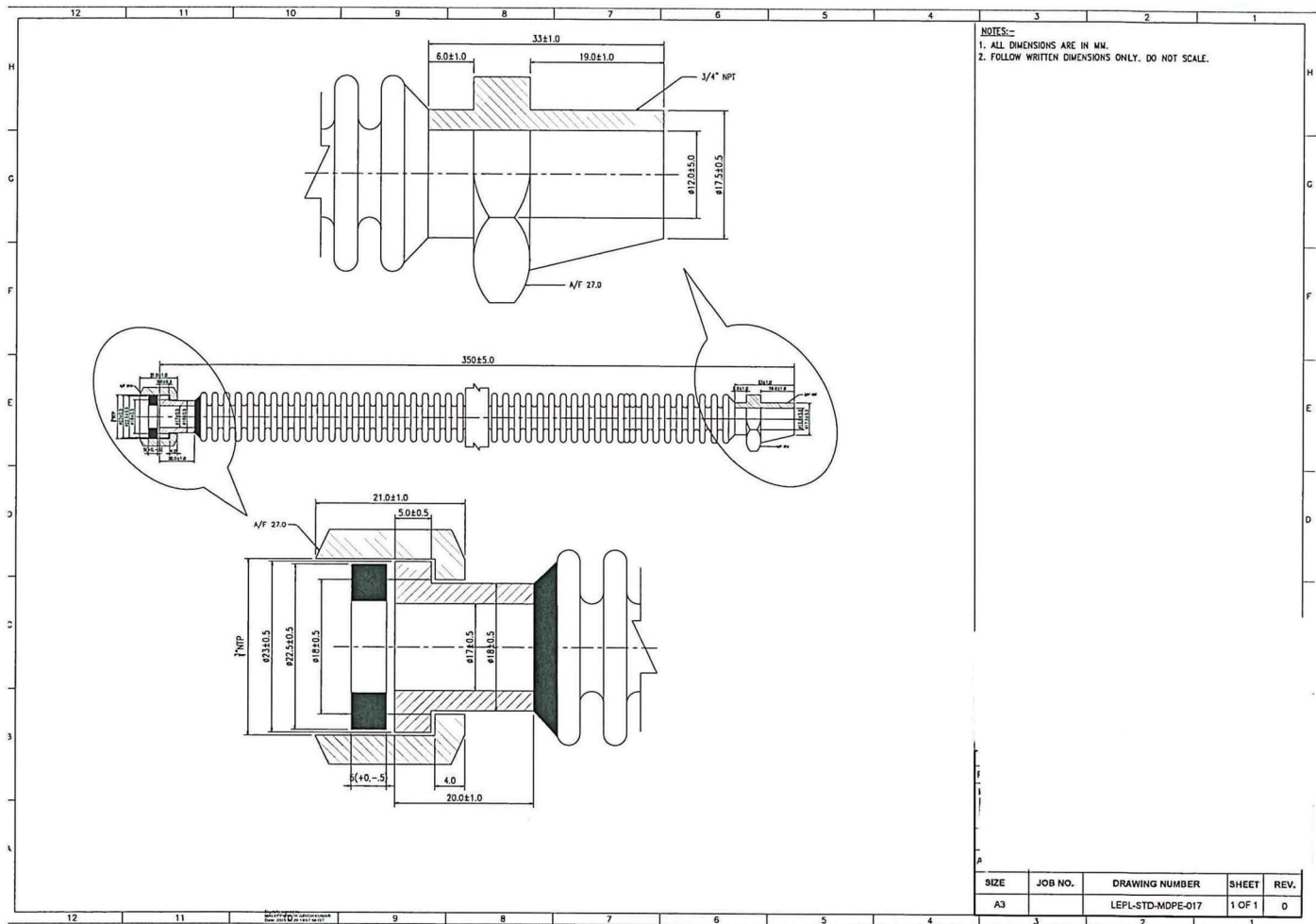


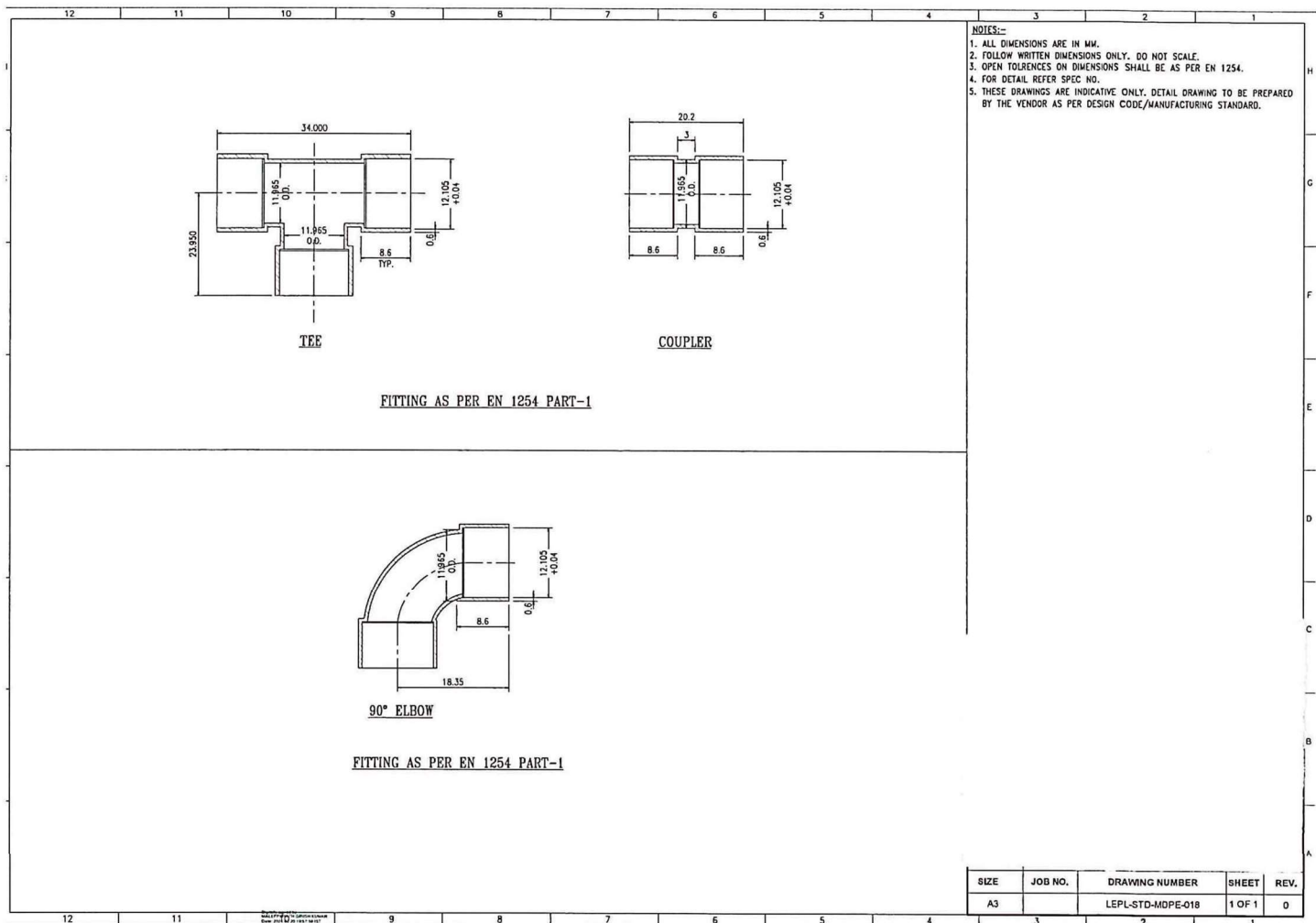
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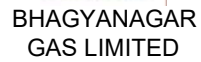
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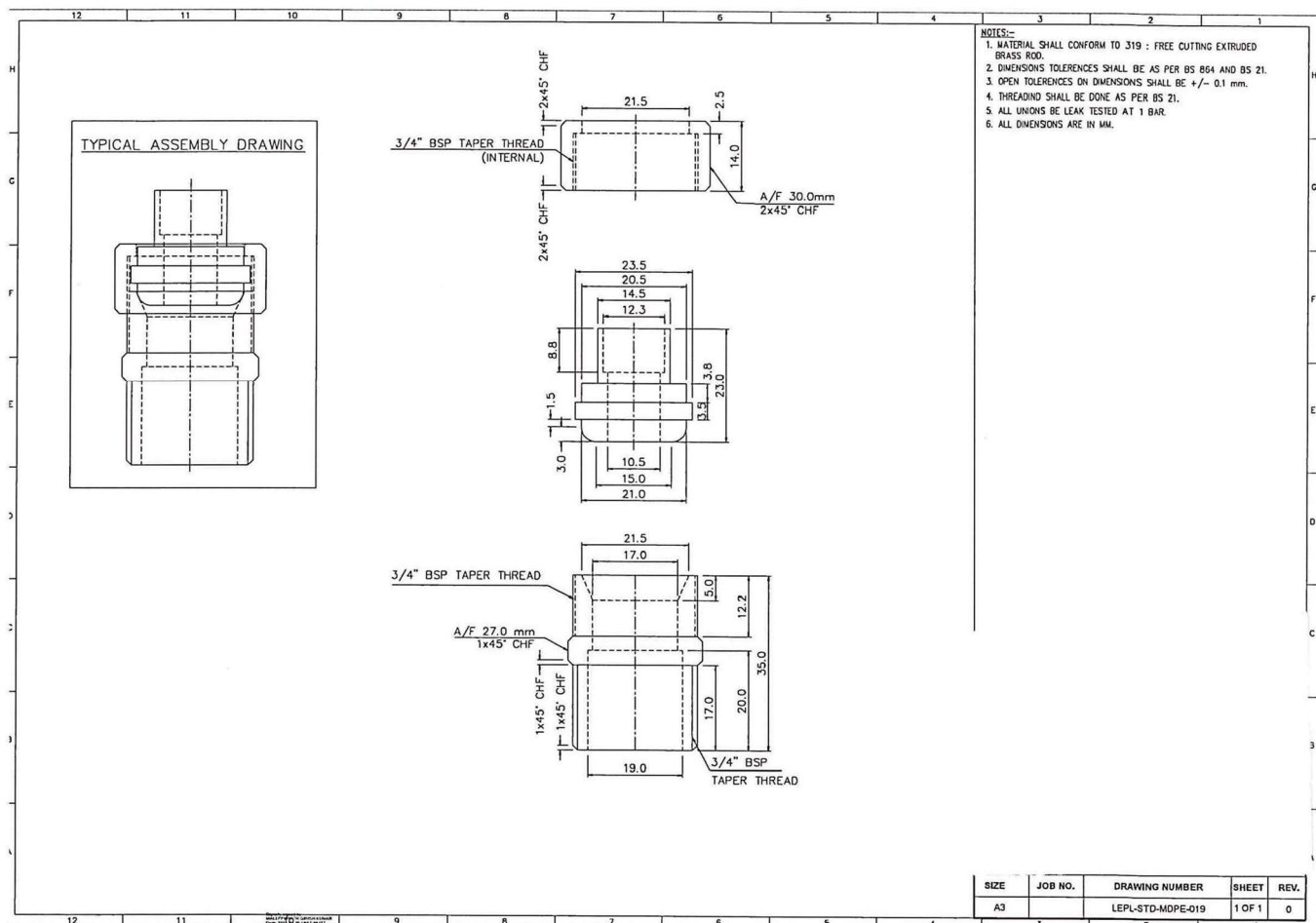






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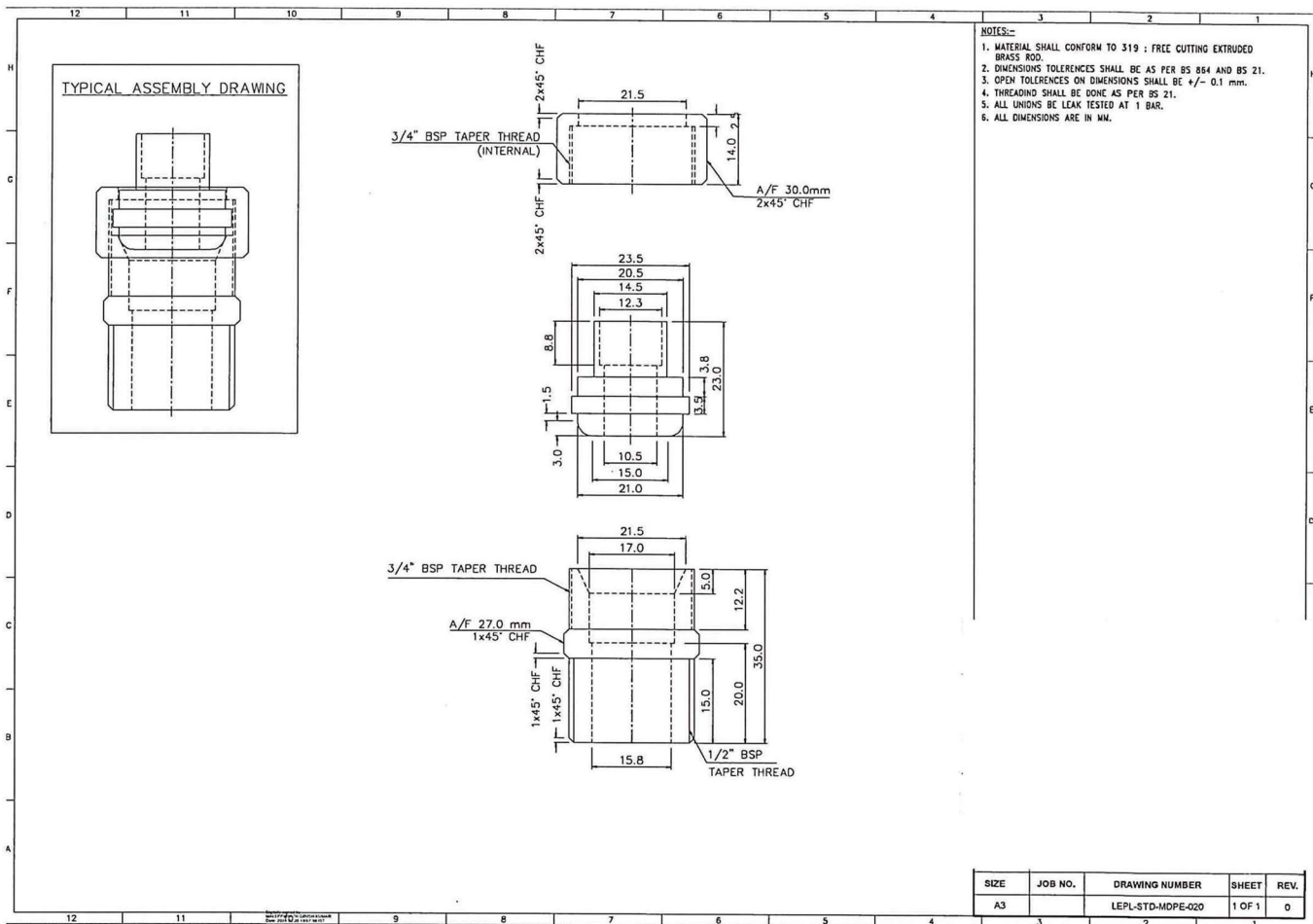


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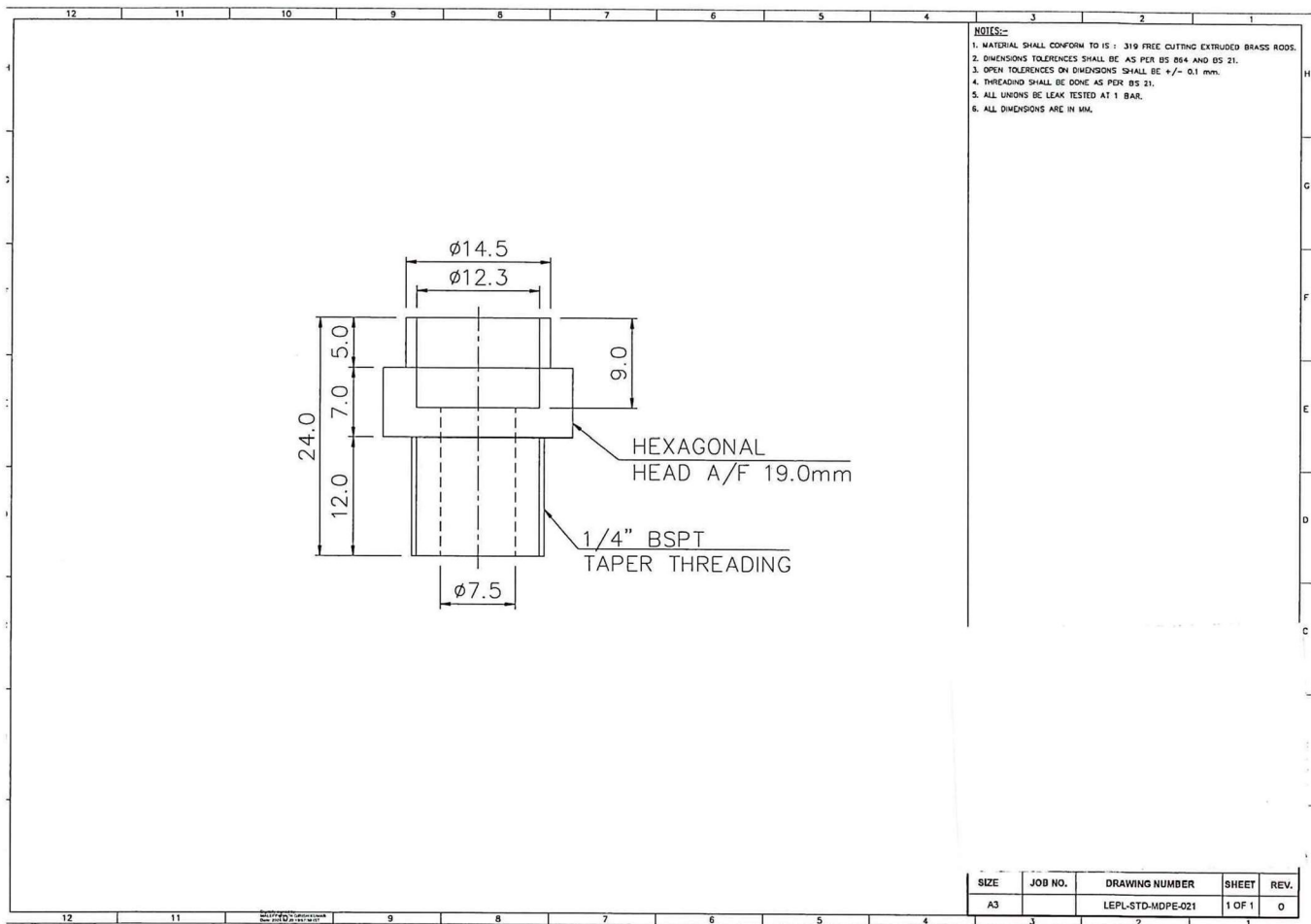


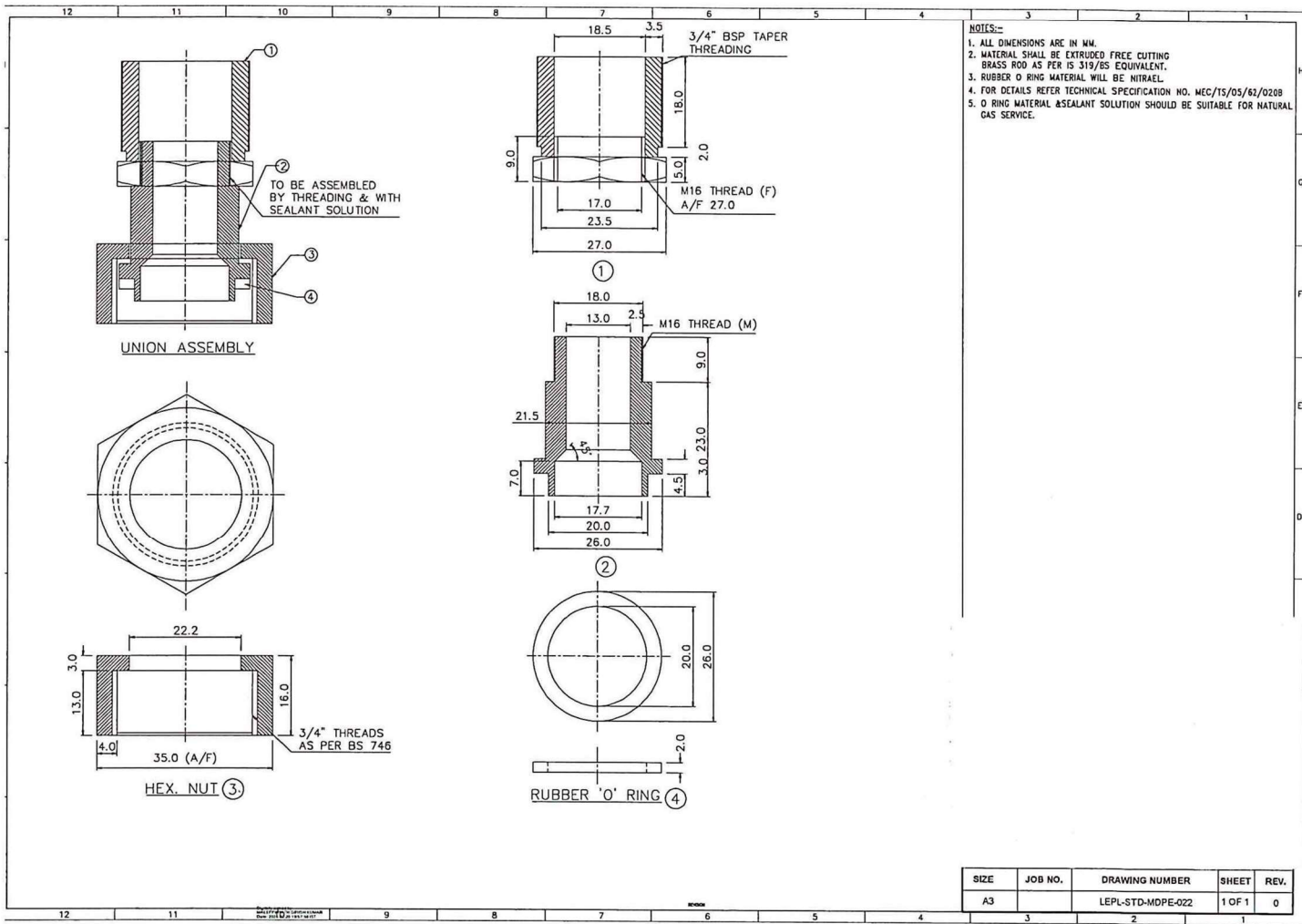
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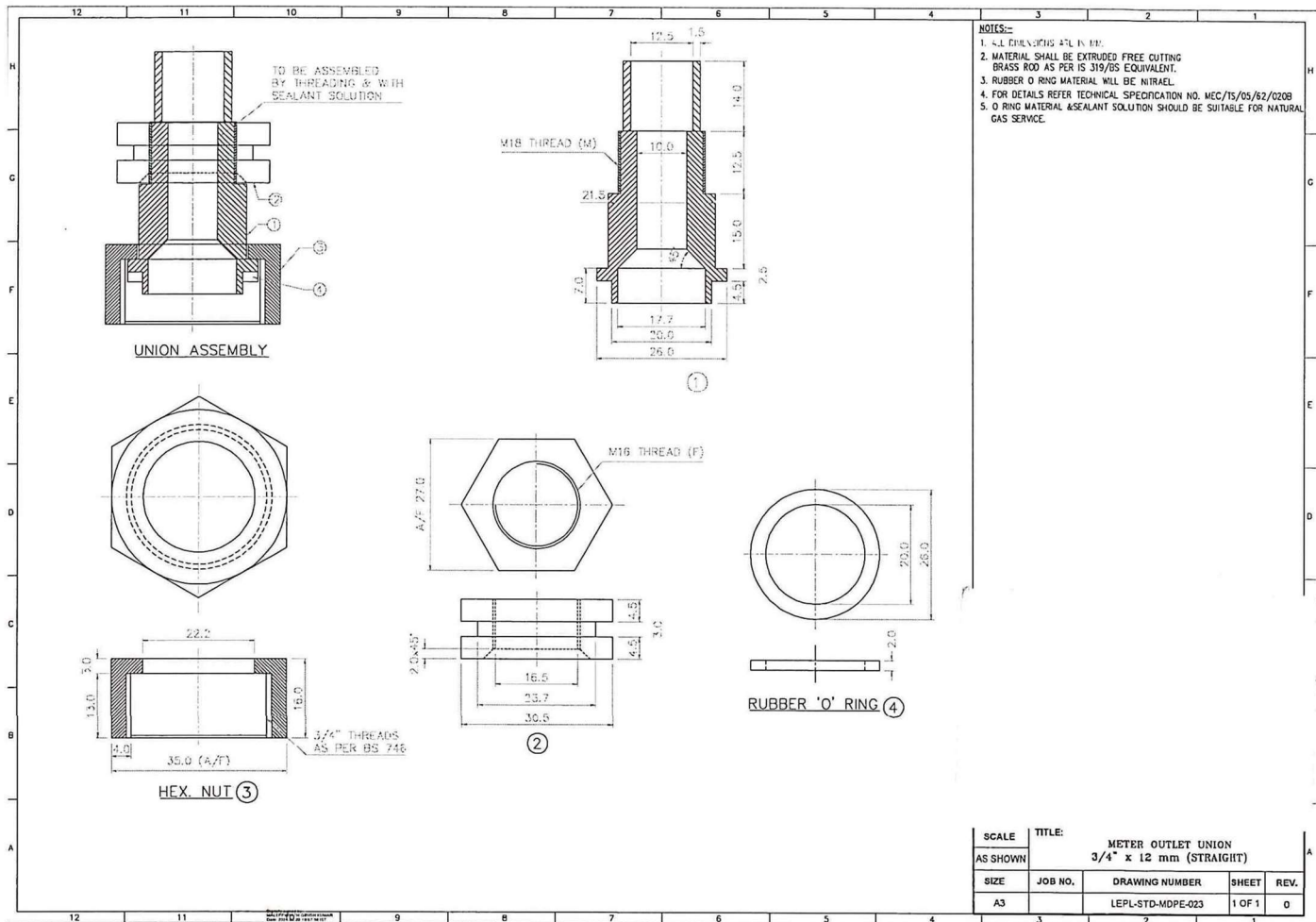


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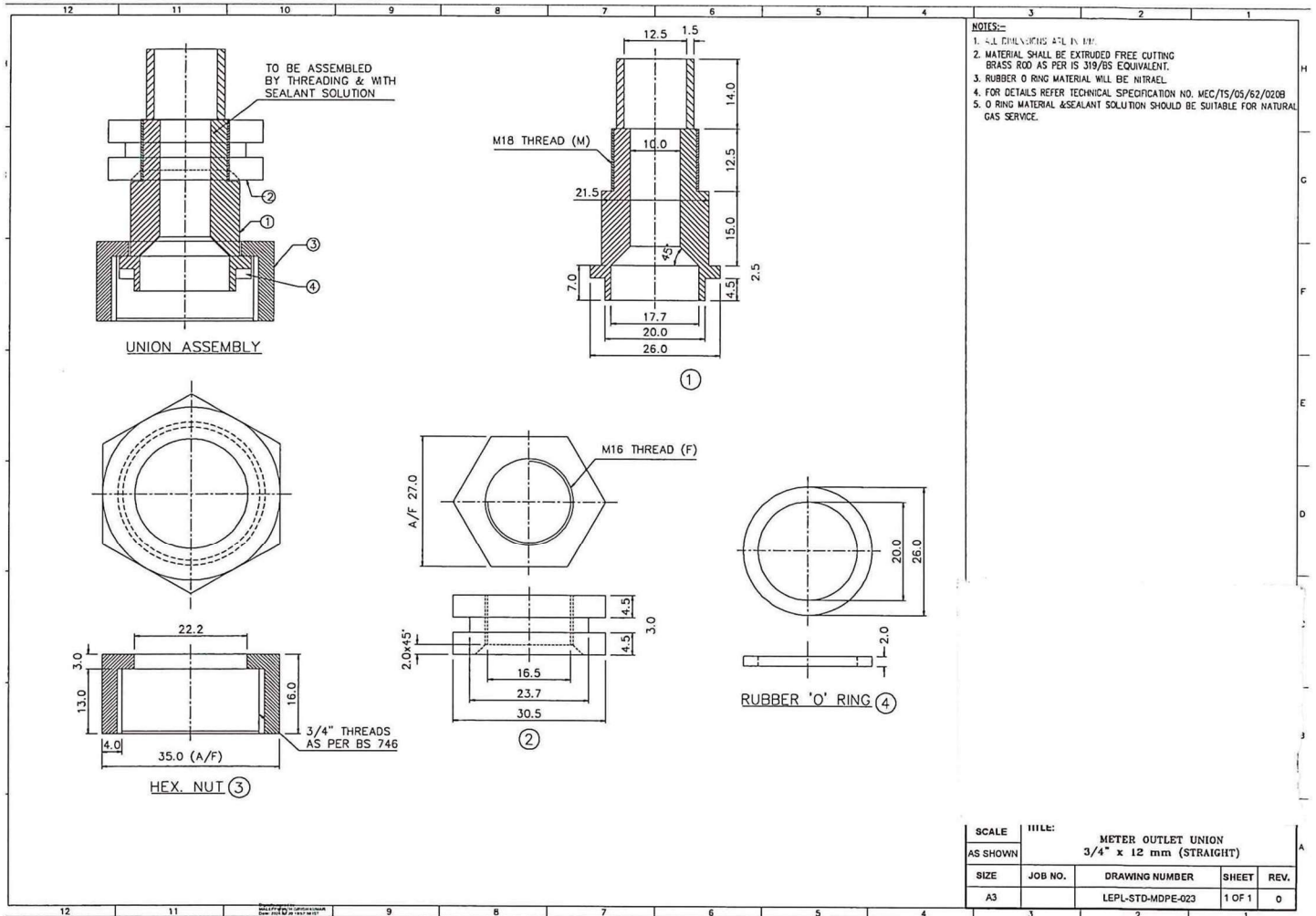


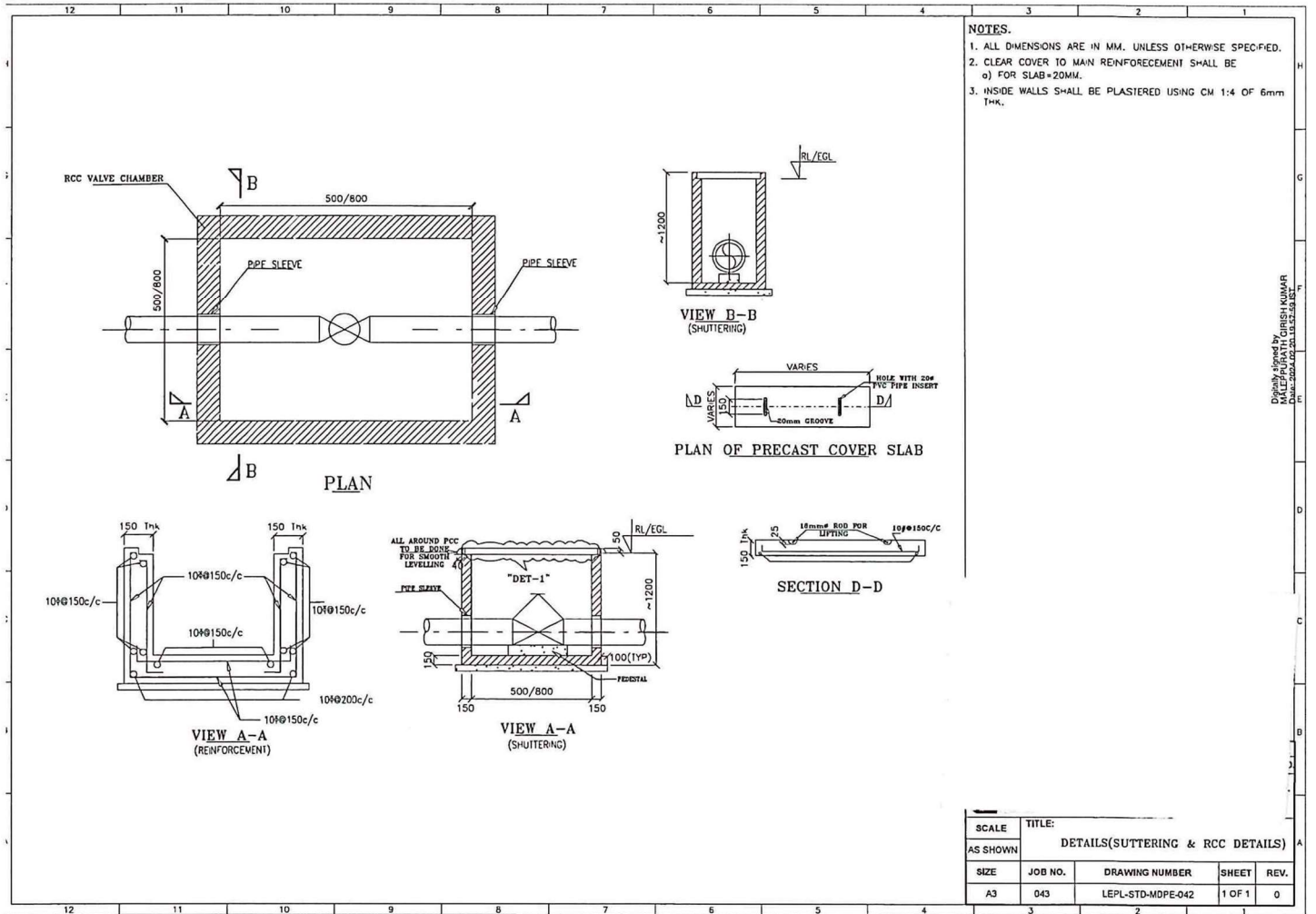
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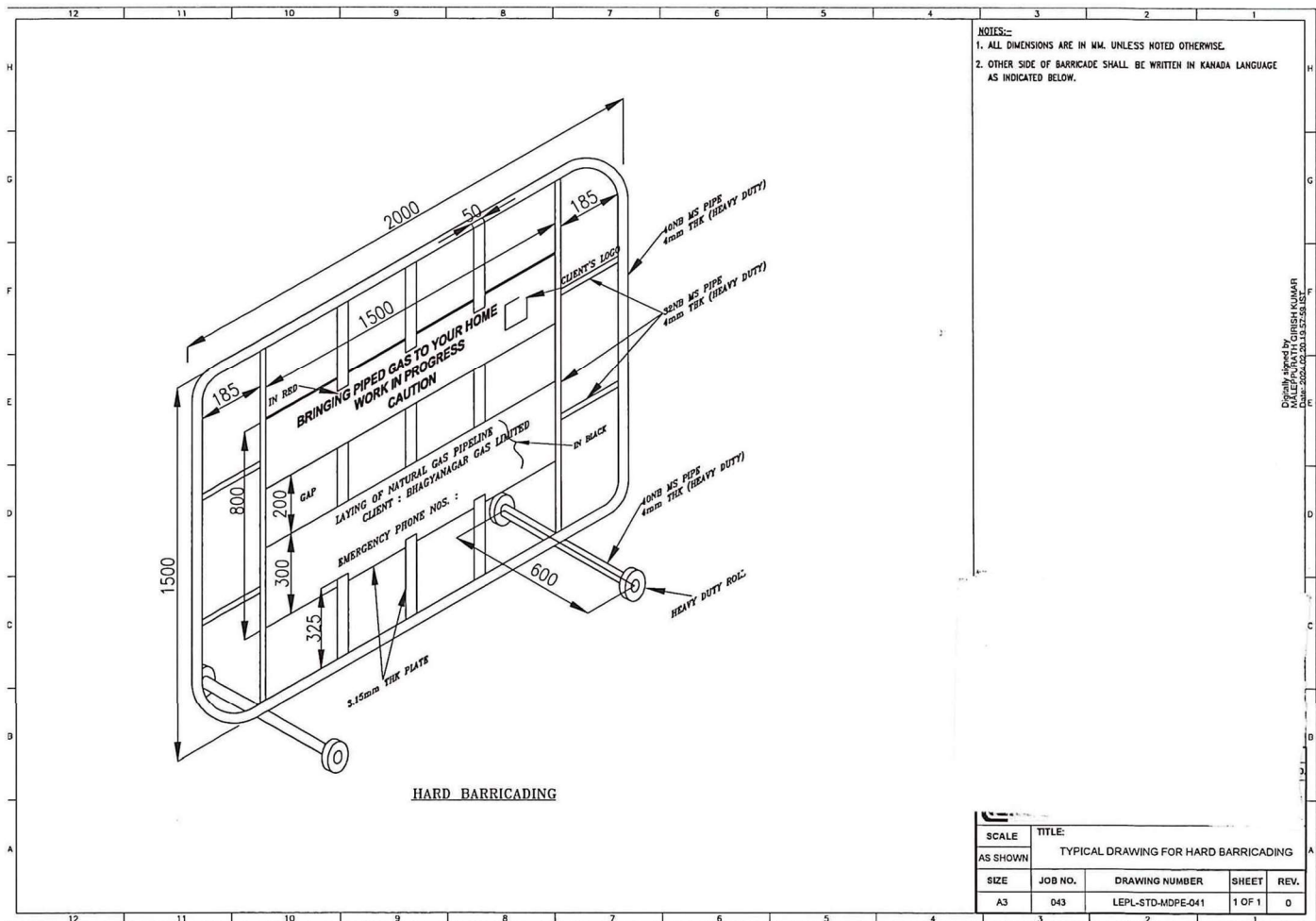


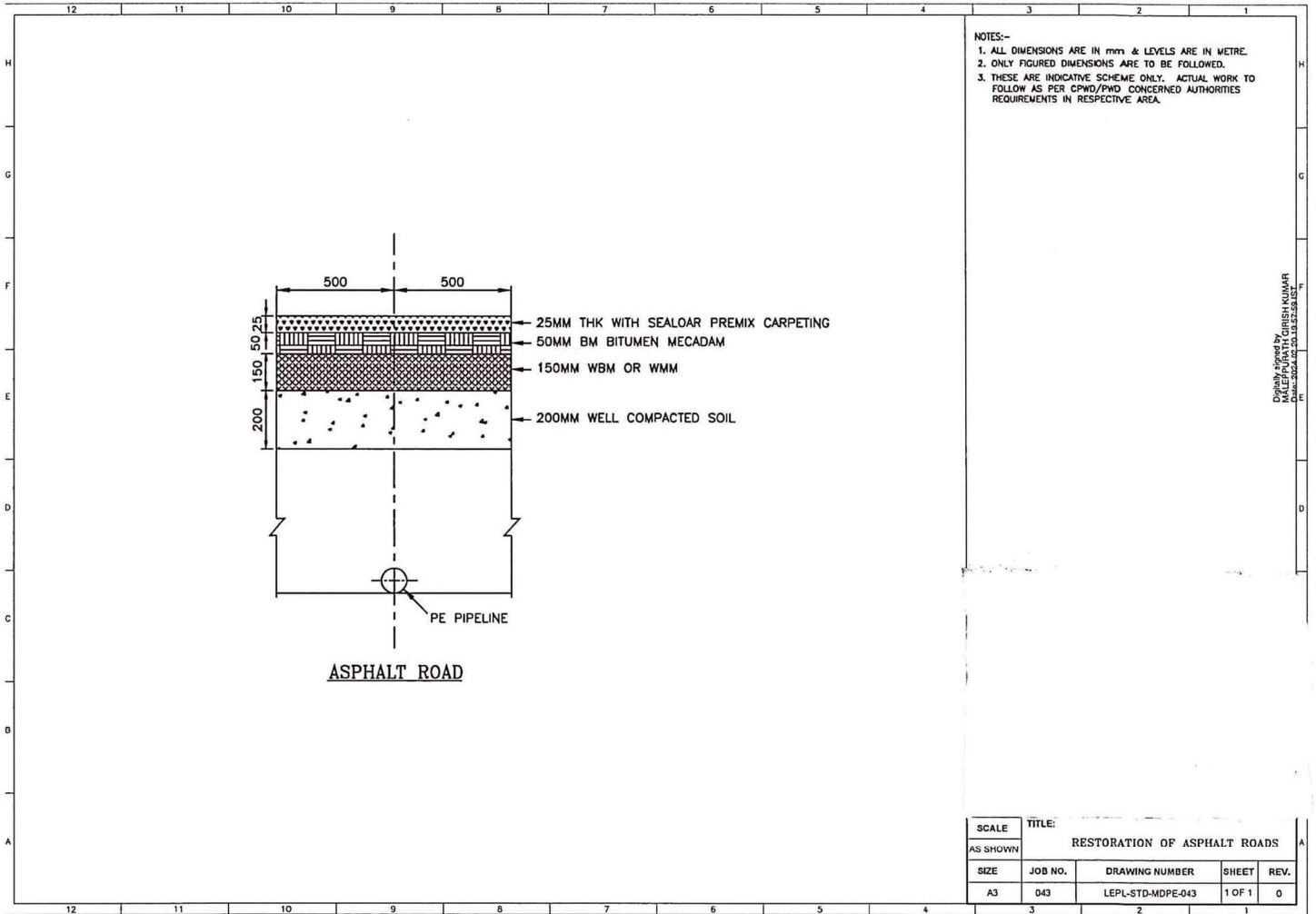
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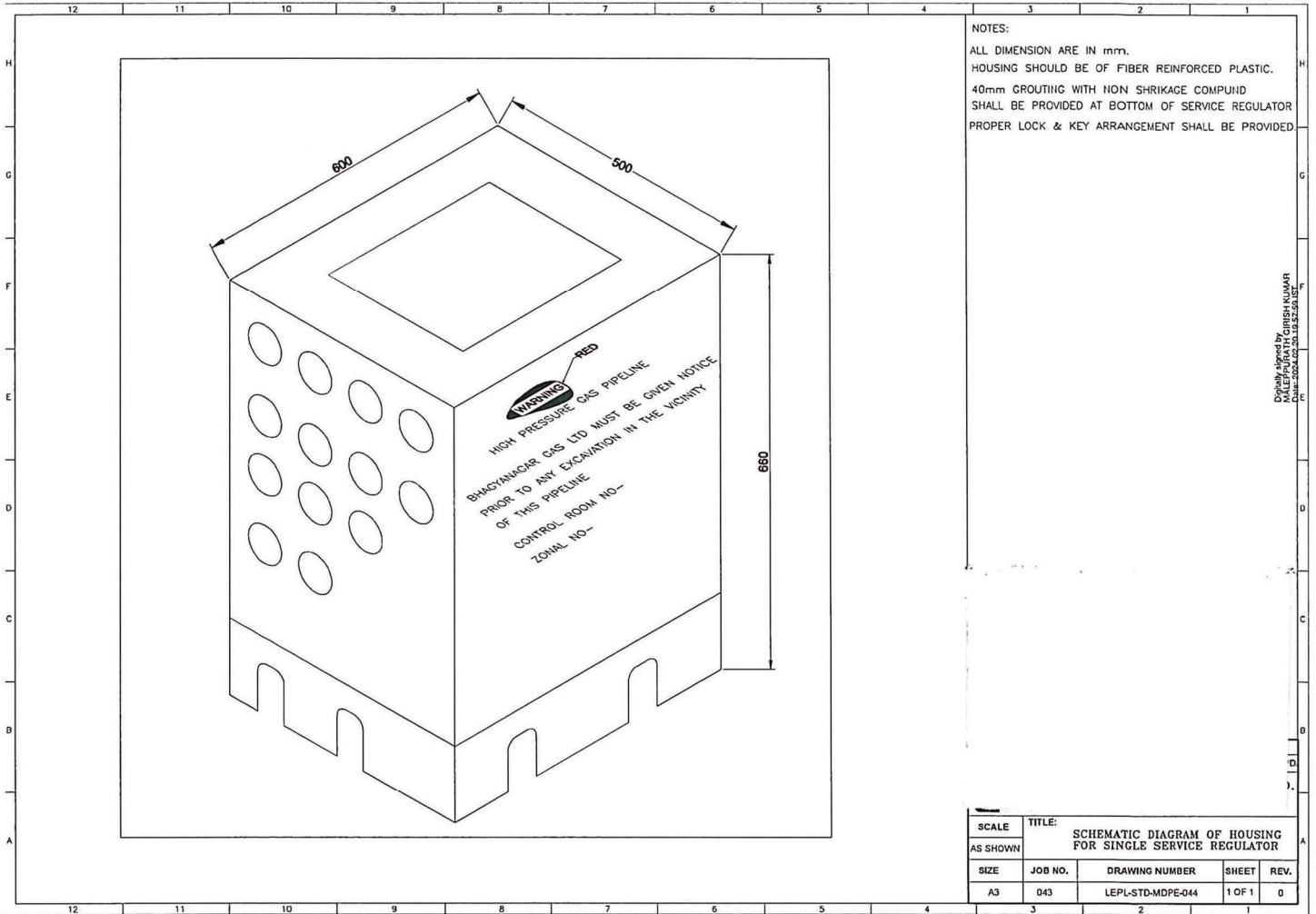
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NOTES:
ALL DIMENSION ARE IN mm.
HOUSING SHOULD BE OF FIBER REINFORCED PLASTIC.
40mm GROUTING WITH NON SHRINKAGE COMPOUND
SHALL BE PROVIDED AT BOTTOM OF SERVICE REGULATOR
PROPER LOCK & KEY ARRANGEMENT SHALL BE PROVIDED

Digitally signed by
MALEPUKATH CHIRISH KUMAR
Date: 2026.07.15 19:12:29 IST

SCALE	TITLE: SCHEMATIC DIAGRAM OF HOUSING FOR SINGLE SERVICE REGULATOR				
AS SHOWN	JOB NO.	DRAWING NUMBER	SHEET	REV.	
A3	043	LEPL-STD-MDPE-044	1 OF 1	0	

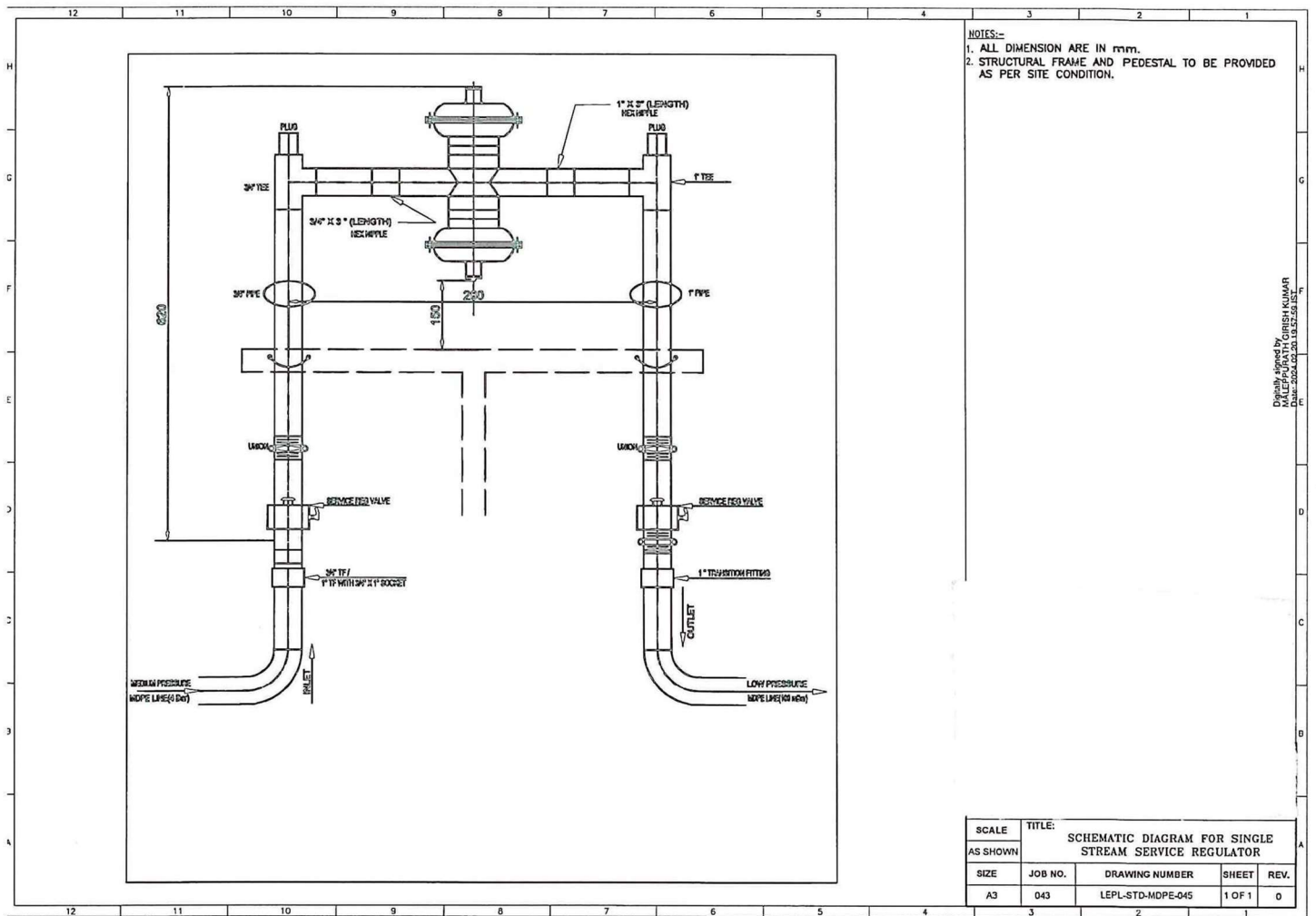


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SCHEDULE OF RATES



**TENDER FOR LAYING OF UNDERGROUND PE PIPELINE AND
ABOVE GROUND GI INSTALLATION INCLUDING LAST MILE
CONNECTIVITY (LMC) AT CONSUMER END AT VIJAYAWADA GA
Bid Document No: BGL/764/2026-27**

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BHAGYANAGAR GAS LIMITED				
Schedule of Rates				
Tender Name:- Laying of Underground PE pipeline and above ground GI Installation last mile connectivity at consumer end at Vijayawada GA				
Tender No- BGL/764/2026-27				
ITEM NO.	ACTIVITY	UOM	QTY	Existing UNIT RATE EXCL. GST (Rs.)
1.0	PE PIPELINE			
1.1	Laying of MDPE Pipeline of PE100 grade with SDR 11/SDR 17.6 having different sizes by open cut method/moling in all kind of soil, asphalt roads etc in Vijayawada Geographical Area (GA). The restoration for Asphalt road / concrete roads / pavements / foot paths will be paid separately as per respective SOR items. The trenching can be made by using mechanical excavator or manually depending upon the site condition. The minimum depth of trench cover shall be minimum 1000mm measured from top of the pipeline to top of natural ground level of at that location. Item also includes dewatering from the trench before/after laying of the pipes if required without creating any problems to the surrounding areas. The following are in the scope of this item:			
a)	Surveying of route and detours required at the time of execution, preparation of construction drawings showing survey details and submit same to BGL/PMC for review/approval.			
b)	Carrying out preliminary activities such as preparation of drawings wherever required for crossing etc.			
c)	Receipt, Loading, shifting, unloading and storing of MDPE pipes issued by BGL as free issue material from BGL designated store, limit stacking as per requirement at working site/Bidder's stock yard /Work shops.			
d)	Trenching of the required width and depth in all kind of the surface (except excavation at hard rock) as per drawings and instructions of EIC. Excavation at hard rock area will be paid separately under respective SOR item no.1.9			
e)	Uncoiling, stringing, laying and alignment of the MDPE pipes of the required sizes in trench. Supplying and Providing soft soil / sand for bedding and all around PE pipeline of minimum 150 mm thickness for rocky bed.			
f)	Jointing of the pipes by using Electro-Fusion techniques by qualified personnel with proper tools and tackles. The scope of work against this item also include Electro-fusion jointing of Valve, fittings wherever required and as directed by EIC			



**TENDER FOR LAYING OF UNDERGROUND PE PIPELINE AND
ABOVE GROUND GI INSTALLATION INCLUDING LAST MILE
CONNECTIVITY (LMC) AT CONSUMER END AT VIJAYAWADA GA
Bid Document No: BGL/764/2026-27**

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g)	Preparation and getting approval of schedule , execution procedures,drawings/sketches/wherever required,making trial pits to determine the underground utilities/services etc., restoration of the abandoned trial pits to original condition.				
h)	GPS Co-ordinate to be taken of laid PE pipeline and GPS instrument to be in Contractors scope.				
i)	Supply and fixing all kind of fittings/accessories such as PE Bends,Couplers,end caps, Tee,Reducer, PE to GI pipe and PE to steel pipe Transition fittings for connectivity, Saddle Tapping of all sizes i.e 125 x 90mm , 125 x 63 mm , 125 x 32 mm , 125 x 20 mm, 90 x 63 mm , 90x 32 mm, 90x 20 mm, 63x 32 mm, 63x 20 , 32 x 20 mm and tee tapping of sizes 125 mm , 90 mm , 63 mm 32mm , 20 mm as as required on new PE pipeline, charged, uncharged existing pipeline network, Warning Mat or any other fittings required to make complete pipeline work . Supply and installation of GI PIPE(Medium Class) as TF Guard with 2.5 inch dia for GI piping connectivity and 4 inch (for carrier steel pipe dia<4") for steel piping connectivity with upto 300 mm above ground level and maximum upto 600 mm below ground level. Supply and installation of 8" steel pipe with epoxy coating (for carrier steel pipe dia>=4") for steel piping connectivity with upto 300 mm above ground level and maximum upto 600 mm below ground level. Supply of sand and filling the annular space inside the TF guard with sand.				
j)	The scope of work against laying of 20 mm pipe also includes works like making of PCC pedestal of grade (1:2:4) and size (8"X6"X4"), supply and installation of GI Sleeve (Heavy (C-Class) as per IS-1239), filling of sand and installation of TF (along with supply).				
k)	Item also includes supply and providing 100 mm thick PCC 1:2:4 slab /concrete for laying depth lower than 1000mm, insitu encasing / medium grade GI sleeve for maintenance purpose, as and where required. All the cost for this is covered under this item.				
l)	During the execution of the work, construction area need to be barricaded to ensure proper safety. Proper hard barricades / tapes/ reflectors/signage boards/night lighting as required to be installed at site as per Instruction of EIC/ site Engineer/ authorities. Supply of hard Barricade is in the scope of the contractor. Barricading the work area as per local authorities norms & to the satisfaction of the BGL/PMC,installation of safety signs board.				
m)	All the route alignment drawings of main pipeline (125/90/63mm) shall be provided by BGL /Consultant. However, for 20/32mm dia pipeline preparation of route map as per site condition shall be prepared by Bidder and submitted to BGL /consultant for approval and execution shall start only after due approval. Further, the scope shall also includes preparation of drawing, for any change in route due to site condition for mainline (125/90/63/32mm), re-route alignment drawing shall also be prepared by contractor.				
n)	During the execution of the work, the construction area shall be barricaded to ensure the smooth execution of work and safety of the public/ working area.				
o)	Barricading the pipeline construction area prior to execution of the works as per drawing no. PMC-STD-MDPE-041 enclosed with tender document and to the entire satisfaction of BGL/PMC				
p)	After laying of Pipeline, back filling shall be done with available softsoil upto depth of minimum 300mm and brick shall be placed as per approved drgs. or as per instruction of BGL /Consultant, then backfilling with available soil upto minimum depth of 200mm above bricks and then laying of warning mat and backfilling the balance depth. Dressing the backfilled and compacted soil and backfilling & compaction of remaining trench depth with available soil. Supply of warning mat is in the scope of the contractor and included in this item. However, supply & laying of Bricks shall be paid as per SOR item 3.0.				
q)	Once pipeline network is completed, flushing, pneumatic testing is required to be carried out as per the detailed specification. After testing, nitrogen purging is required to be done for complete network as per the specification.				
r)	Carrying out all works required to make the PE pipeline ready for commissioning /Gas-In as per specification. Commissioning the pipeline as per specification & approved procedure, providing tools & tackles, instruments, manpower, Consumables and other accessories as per instructions of Engineer - In -Charge.				
s)	Item also includes grading of the pipeline route if, any required. The dismantling of the any structure falling in pipe line route and making it good after completion of the work shall be carried out by the contractor without any additional cost.				



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t)	Final clean-up of construction area used for laying of pipeline works including disposal of debris ,cutting of trees full filling all the requirments of various statutory/ enviroment authorities to the entire satisfaction of concerned authorities and surplus material to designated disposal areas. (which is to be identified by the Bidder).				
u)	Submission of all documents required for contract closure in numbers as mentioned in contract.				
v)	Any other activities not mentioned / covered explicitly above ,but otherwise required for satisfactory completion/ operation /safety/statutory/maintenance of the work shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to BGL. All the work shall be executed in accordance with the provision of contract.				
x)	In case, the minimum required depth is not possible due to site condition ,necessary mitigation measures (for minimum top cover of 600 mm) shall be required to be taken by contractor in consultation with EIC as per PNGRB Guidelines .No additional payment shall be admissible against the same.				
y)	Reconciliation of materials, handing over the completed Pipeline Network to BGL for their operation & maintenance team and submisssion of As-built Drgs and other related documents as per contract.				
a)	20 mm PE 100 pipe	M et er s	75 0.0 0	₹ 276.1 7	₹ 2,07, 123.7 5
b)	32 mm PE 100 pipe	M et er s	3,0 00. 00	₹ 296.0 6	₹ 8,88, 165.0 0
c)	63 mm PE 100 pipe	M et er s	1,0 00. 00	₹ 306.0 0	₹ 3,06, 000.0 0
d)	90 mm PE 100 pipe	M et er s	37 5.0 0	₹ 327.4 2	₹ 1,22, 782.5 0
e)	125 mm PE 100 pipe	M et er s	18 7.5 0	₹ 348.0 8	₹ 65,26 4.06
	Note:				
	The length of MDPE lines are tentative.				
i	Incase,contractor prefers to lay the pipeline through HDD method in place of method as per SOR item-1.1 , contractor shall required to lay the pipe upto a depth not more than 1.4 m.The payment shall however be made as per SOR item No: 1.1 only.				
ii	If in a single trench, more than one MDPE Pipe is laid, then 100% of laying rate of MDPE pipe of largest dia plus 0.25 times of laying rate of each of other MDPE lines will be paid.				



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iii	For restoration of asphalt / concrete roads, the item for construction of asphalt top / concrete top / red stone / paver shall be paid as per SOR item 2.00				
iv	The above items include activity for open cut trenching only for all types of soils except rock. The decision regarding use of open cut/moling /HDD method at various locations shall be made by Engineer In -Charge based on permissions from authority etc.				
v	The items as envisaged for following activities will be paid under different SOR items indicated below: a) PE pipe connectivity for individual houses (Not apartments) b) Laying of PE pipe inside building premises/ housing society/apartment complex, wherein cover for laid pipe may be less than 600 mm.				
1. 2	Same as item 1.1 above, but by open cut/moling method in all types of built up surfaces like concrete pavements, all kind of pathways, CC road (having thickness up to 150mm) etc., by excavators with rock breakers or Pneumatic or Power Jack hammers.				
a)	20 mm PE 100 pipe	M et er s	50 0.0 0	₹ 393.9 8	₹ 1,96, 987.5 0
b)	32 mm PE 100 pipe	M et er s	1,6 25. 00	₹ 409.2 8	₹ 6,65, 071.8 8
c)	63 mm PE 100 pipe	M et er s	50 0.0 0	₹ 443.7 0	₹ 2,21, 850.0 0
d)	90 mm PE 100 pipe	M et er s	31 2.5 0	₹ 478.1 3	₹ 1,49, 414.0 6
e)	125 mm PE 100 pipe	M et er s	17 5.0 0	₹ 535.5 0	₹ 93,71 2.50
1. 3	Same as item 1.1 above, but trenching in all kind of soil/rock by using manual / machine moling technique (without casing) for PE pipe sizes as per specification: The Bidder Scope also includes restoration of pits. Bricks and Warning mat are not required to be laid in above pipe line. Note: Deployment of manual / machine moling will be decided by EIC.				
a)	20mmPE 100 Pipe	M et er s	75 0.0 0	₹ 367.2 0	₹ 2,75, 400.0 0
b)	32mm PE 100 Pipe	M et er s	1,8 75. 00	₹ 417.6 9	₹ 7,83, 168.7 5



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c)	63 mm PE 100 pipe	M et er s	50 0.0 0	₹ 487.3 1	₹ 2,43, 652.5 0
d)	90 mm PE 100 pipe	M et er s	25 0.0 0	₹ 522.5 0	₹ 1,30, 623.7 5
e)	125 mm PE 100 pipe	M et er s	12 5.0 0	₹ 574.5 2	₹ 71,81 4.38
1. 4	MDPE Pipe Laying using Horizontal Directional Drilling (HDD) Technique Without Casing				
	Laying of all PE pipe (PE 100 SDR11/SDR17.6), Including supply of HDPE casing pipe, Couplers, End caps etc.as per job specification..				
	Laying of PE pipe with HDD technique will also include supply of Couplers, etc., required for completion of the job. Scanning & Survey of underground utilities with requisite equipment / manpower, submission of Auto-cad proposed HDD profile drawings and design for approval, execution of the work as per standard procedure attached with proper capacity of machine including excavation of pits and subsequent backfilling, compaction, jointing and insertion of PE pipe, testing & commissioning, restoration of the pits to original condition, submission of As-Built drawing as per specifications and the instruction of Engineer-in-charge. If any additional temporary space is required for positioning of equipment for HDD adjacent to pipeline route, same needs to be arranged by the Contractor. Item also includes liaisoning with all local authorities, permission if any required, shall be obtained by the Bidder. In case of HDD with casing, item 1.5, supply of HDPE /Steel casing pipes are also included in the scope of Bidder. Bricks and Warning mat are not required to be laid above the pipe line.				
a)	32mm PE 100 Pipe	M et er s	-	₹ 487.3 1	₹ -
b)	63 mm PE 100 pipe	M et er s	30 0.0 0	₹ 626.5 4	₹ 1,87, 960.5 0
c)	90 mm PE 100 pipe	M et er s	25 0.0 0	₹ 905.0 0	₹ 2,26, 248.7 5
d)	125 mm PE 100 pipe	M et er s	22 5.0 0	₹ 1,216 .35	₹ 2,73, 678.7 5
1. 5	MDPE Pipe Laying using Horizontal Directional Drilling (HDD) Technique With Casing				



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	Laying of all PE pipe (PE 100 SDR11/SDR17.6), Including supply of HDPE casing pipe, Couplers, End caps etc.				
	Laying of PE pipe with HDD technique will also include supply of Couplers, etc., required for completion of the job. Scanning & Survey of underground utilities with requisite equipment / manpower, submission of Auto-cad proposed HDD profile drawings and design for approval, execution of the work as per standard procedure attached with proper capacity of machine including excavation of pits and subsequent backfilling, compaction, jointing and insertion of PE pipe, testing & commissioning, restoration of the pits to original condition, submission of As-Built drawing as per specifications and the instruction of Engineer-in-charge. If any additional temporary space is required for positioning of equipment for HDD adjacent to pipeline route, same needs to be arranged by the Contractor. Item also includes liaisoning with all local authorities, permission if any required, shall be obtained by the Contractor.				
a)	32 mm pipe (in 75 mm dia. HDPE Casing Pipe, PE 63/80 PN6.0)	M et er s	20. 00	₹ 3,177 .56	₹ 63,55 1.20
b)	63 mm pipe (in 125 mm dia. HDPE Casing Pipe, PE 63/80 PN6.0)	M et er s	10 0.0 0	₹ 3,631 .29	₹ 3,63, 129.0 0
c)	90 mm pipe (in 180 mm dia. HDPE Casing Pipe, PE 63/80 PN6.0)	M et er s	10 0.0 0	₹ 4,085 .74	₹ 4,08, 574.0 0
1.6	Same as 1.1 except wherein pipe cover is less than 600 mm which may occur in building complexes / Housing Societies having concrete flooring / pavements / pathways / on bridges of Nala crossings, where it is not feasible for laying of PE pipe with a cover more than 600mm				
a)	Dismantling and breaking of the concrete surface/tiled surface to the extent feasible and Laying of PE pipe with GI sleeve with concrete encasing all around for the trench width upto the existing surface level. The item includes Jointing of MS 8" MS pipe sleeve by welding. Supply of GI sleeve and Carrying out Plain Cement Concrete encasing (1:2:4) shall be paid separately				
i)	20 mm PE 100 pipe with 2" inch GI sleeve	M et er s	10 0.0 0	₹ 308.5 1	₹ 30,85 0.80
ii)	32 mm PE 100 pipe with 2" inch GI sleeve	M et er s	70. 00	₹ 308.5 1	₹ 21,59 5.56
iii)	63 mm PE 100 pipe with 4" inch GI sleeve	M et er s	55. 00	₹ 333.0 7	₹ 18,31 9.02
iv)	90 mm PE 100 with 6" GI sleeve	M et er s	10. 00	₹ 346.8 0	₹ 3,468 .00



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v)	125mm PE 100 with 8" MS Pipe	M e t e r s	10. 00	₹ 375.7 0	₹ 3,757 .00
b)	Supply and Installation of GI sleeve of Heavy grade as per IS 1239 /IS 3589 (wherever required as per instruction of the Engineer-In-Charge).				
i)	GI Sleeve - 2" NB	M e t e r s	17 0.0 0	₹ 481.9 5	₹ 81,93 1.50
ii)	GI Sleeve - 4" NB	M e t e r s	45. 00	₹ 719.1 0	₹ 32,35 9.50
iii)	GI Sleeve -6" NB	M e t e r s	11. 00	₹ 1,071 .00	₹ 11,78 1.00
iv)	MS Pipe - 8" NB (OD219.1 x 6.3mm thk., Fe 330)	M e t e r s	11. 00	₹ 1,517 .25	₹ 16,68 9.75
c)	PLAIN CEMENT CONCRETE(1:2:4) around encasing pipe where the laying depth is less than 600mm .				
	Supplying and laying plain cement concrete with stone aggregate 20mm down grade (including shuttering if required) for encasing of PE pipe with / without GI sleeve and restoring it to the original floor/pavements/pathways.	C u m	25. 00	₹ 3,898 .61	₹ 97,46 5.25
1. 7	Liasioning with Land Owning Agencies for Permission				
	Submission of applications as per approved drawing provided by owner / owner's representative (Initial Route survey, preparation of drawing, measuring and providing details of surface type shall be in scope of contractor with approval from owner / owner's representative), obtaining and submission of demand note, coordination, Liaisoning, obtaining written permission from land owing agencies like GHMC, HMWSSB, HMDA, R&B, NHAI, Local authorities, ESCOM, Traffic Police, Indian Railways, Police etc. and any other government agencies who maintains the public lands (all fee paid to authorities excluding demand charges or Bank Guarantees shall be reimbursed against documentary evidence). This rates are not applicable for Private lands i.e. Apartments etc. Permissions required from various authorities like NHAI / Railways / Irrigation (Canal) etc. falling enroute shall be inclusive in the item rate. The liasioning payment will not be applicable for private societies & service line laying work.	M e t e r s	13, 00 0.0 0	₹ 20.66	₹ 2,68, 515.0 0
1. 8	Excavation of Hard Rock: wherever hard rock of single piece of rock exceeding 1m length removable using mechanical means such as rock breakers / excavators (blasting prohibited)/pneumatic jack hammer drill etc. Scope also includes disposal of rocky earth to the designated location approved by local authorities. However, the payment for trenching and laying of the pipeline shall be as per item no.1.0	C u m	17. 00	₹ 1,912 .50	₹ 32,51 2.50
1. 9 0	Excavation of PCC/RCC of thickness more than 150 mm thickness: wherever PCC/ RCC removable using mechanical means such as CC breakers / excavators (blasting prohibited) /pneumatic jack hammer drill etc. Scope also includes disposal of rubble, unserviceable material to the designated				



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	location approved by local authorities. However, the payment for trenching and laying of the pipeline shall be as per item no.1.1 Note: No deduction towards any reduction in scope of excavation to the extent of the CC/RCC thickness is applicable from the SOR item No.1.1				
a)	Excavation at cement concrete (PCC)	C u. m	60. 00	₹ 1,228 .25	₹ 73,69 5.00
b)	Excavation at R.C.C work including stacking of steel bars	C u. m	60. 00	₹ 1,806 .25	₹ 1,08, 375.0 0
2. 0 0	Restoration of asphalted roads / concrete roads / pavements / foot paths				
a)	Asphalt road : Restoration of bitumen Asphalt road after laying of MDPE pipe line as per the tender drawing, specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done to fullest satisfaction of GHMC / HMWSSB / NHAI / HMDA , R&B etc. and to get NOC from the concerned authorities/Society.	M e t e r s	17 0.0 0	₹ 592.8 8	₹ 1,00, 788.7 5
b)	Restoration of the all kind of pathway by using excavated material such as tiles/pavers/granite/red stone etc by providing PCC 1:4:8 of 50mm thickness below after compaction of the filled soil, fixing the Tiles/Paver/Granite etc and matching it to the existing surface. Item includes providing of extra finished material if required.such as Tiles/Paver/Granite etc matching to original pathways.	M e t e r s	17 0.0 0	₹ 459.0 0	₹ 78,03 0.00
c)	RCC/PCC road/ pavement: Restoration of concrete road and pavements shall be done by providing PCC 1:4:8 of 75 mm thick and RCC 1:2:4 of 100 mm thickness with 8mm dia reinforcement @200mmC/C. The cost of Shuttering, compacting the base surface etc.. are in the scope of this item.	M e t e r s	1,7 00. 00	₹ 558.4 5	₹ 9,49, 365.0 0
3. 0	Supply & Laying of Bricks				
	Supply and placing of Class 35 bricks in trenches as per the direction of EIC and as per specifications. Item includes cost of transportation, loading & unloading, Custody and labour for placing the bricks in trenches .	M e t e r s	50 0.0 0	₹ 68.85	₹ 34,42 5.00
4. 0	Supply of hard barricading				
	Supply, placement & handling hard barricading, as per the drawing given in the tender document. The item includes supply of all material for fabrication, welding, painting, lettering etc. complete in all respect. On completion of work the barricading are to be returned back to BGL designated yard. On supply of barricading at site, 75 % of rate shall be paid and balance 25% shall be paid after completion of the job & handing over of the barricading at BGL designated yard. Before start of fabrication works written approval from EIC to be taken.	N o s	13. 00	₹ 6,037 .38	₹ 78,48 5.94
5. 0	Supply and installation of Isolation Valves				
	Supply of isolation valves with Purging facility (as per data sheet) and installation of valves in the valve pits as per typical drawing and specification enclosed and instructions of Engineer-in-charge. set of extended valve handle/levers for each valve size shall be supplied by the respective successful bidder, and is covered under the scope of this item.				



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	Construction of Valve Pits with CC blocks/Bricks of Grade M 7.5 as per the enclosed drawing and specification . The item includes supply of all the material including Heavy duty Pre-cast RCC cover, shuttering, reinforcement, labour, curing, Construction of pedestal under valve and filling with sand upto the valve etc., as per the drgs/ specification and instruction of EIC. - Having Internal size of Minimum 600 x 600 mm - Having Internal size of Minimum 1000 x 1000 mm				
a)	PE Valve 32mm dia	N os .	9.0 0	₹ 14,36 8.23	₹ 1,29, 314.0 7
b)	PE Valve, 63 mm dia	N os .	2.0 0	₹ 15,38 0.33	₹ 30,76 0.65
c)	PE Valve, 90 mm dia	N os .	2.0 0	₹ 21,34 8.86	₹ 42,69 7.71
d)	PE Valve 125mm dia	N os .	2.0 0	₹ 23,10 5.30	₹ 46,21 0.59
6. 0 0	Fabrication & Installation of Markers				
i)	RCC warning Markers				
	Supply, fabrication and installation of RCC route markers as per the attached drawing and as per instructions of EIC along the route including transportations of Marker. Item also includes excavation of pit in all type of soil, Concrete Grouting of Marker and removing of debris from site and restoration work with all completeness.	N os .	30 0.0 0	₹ 612.0 0	₹ 1,83, 600.0 0
ii)	Pole Markers with Foundation				
	Supply, fabrication and installation of pole markers as per the attached drawing and as per the instructions of EIC including all associated civil works such as excavation and construction in all types of soils grouting with concrete, cleaning, stencil lettering and restoration work. Item also includes grouting with 1:2:4 concrete, painting, letter writing with stencil letter as per approved drg. with all completeness.	N os .	15. 00	₹ 2,295 .00	₹ 34,42 5.00
iii)	Warning Plate Markers				
	Supply, fabrication and installation of WARNING PLATE as per the attached drg and specification. Item includes application of approved quality of primer and paint, lettering with stencil and fixing on walls / any other support using Dowel pins etc.	N os .	25 0.0 0	₹ 418.4 6	₹ 1,04, 613.7 5
7. 0	MDPE TO GI CONNECTIVITY FOR INDIVIDUAL HOUSES - FOR 20 mm & 32 mm upto 5 m length excluding asphalt road crossing width (For Service Lines)				



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	Laying of MDPE Pipeline of sizes 20mm & 32 mm upto 5m length (excluding asphalt road crossing width from road edge to road edge covered separately under item 8 in case road crossing is required for connectivity) for MDPE pipeline connectivity between GI and MDPE piping.The following works are additionally included in the scope of this item:	N os	2,0 00. 00	₹ 3,060 .00	₹ 61,20 ,000. 00
a)	Excavation and Making of two no of pits of required size and depth up to 1.5m (excavation for depth beyond 1.5m shall be paid extra over and above this item through separate SOR item no.9.0) in all kinds of soil, asphalt roads, concrete pavements, concrete and tiled floors, all kind of pathways etc for making connection with the existing MDPE pipeline of sizes ranging from 125 mm NB to 32 mm NB laid by others at one end and supply & joining TF at other end.				
b)	Trenching of the required width and depth in all kind of the surface and laying of PE pipes of sizes 20 mm & 32mm for maximum length up 5m from saddle /tee connectivity at one end for connecting with the existing PE network and TF for GI pipe connectivity at the other end including crossing of MDPE pipes below the drains as required depending on the drain depth but not less than 1000 mm cover.Supply of TF is in the scope of contractor. Backfilling as per specification is to be done.				
c)	Alternatively, as per site conditions, if drain crossing from below the drain is not feasible then crossing through the drain can be carried out by supplying and providing GI sleeve (2" GI sleeve for 20 mm PE pipe and for 32 mm PE Pipe) over the PE pipe and crossing the drain just below its top cover. In soil/all type of surfaces where cover is less than 600 mm, GI sleeve and if the cover is between 600-800 mm, PCC 1:2:4, width 150 mm concrete shall be provided. Drain dismantling /groove cutting for laying the pipe across the drain including grouting of the GI Sleeve is in the scope of this item.				
d)	Flushing to be done and then Pneumatic testing at 6 Kg/cm2 or more up to 9 kg/cm2 (as asked by BGL/PMC) for four hours from Saddle tap off to Transition Fittings (TF) or from TF to PE pipe to tee joint excluding Tee as the case may be (In case of Tee, tee weld joints shall be golden joints)				
e)	Supply and installation of 2.5 inch dia x 1000 mm length GI PIPE(Medium Class) for 20 NB MDPE pipe as TF Gaurd or 4 inch x 1000 mm length GI PIPE(Medium Class) for 32 NB MDPE pipe as TF Gaurd, 300-400 mm above ground level and 600 mm below ground level, filling the annular space inside the TF guard with sand and filling sand externally for the excavated width and depth all around the TF upto the PE pipe bend. Supply of sand & RCC guard is included in this item				
f)	Restoration of the pits inside the house where 20mm/32mm laid and all kind of dug-up surfaces (concrete/asphalted/tiled) upto 5 m length to the original condition				
	<u>Note:</u> Road crossing width is excluded in the 5 m laying length for the item 7.0				
8.0	Excavation of pit beyond 1.5 m and upto 3 m depth for carrying out item 8.0 and dewatering the pit for making connectivity.	C u m	17. 00	₹ 601.2 9	₹ 10,22 1.93
9.0	PNG Connection to Domestic Consumers				
9.1	Installation of GI Pipes as per IS-1239 (C-Class/ Heavy) for PNG connection				
	Installation of heavy duty GI pipes (as per IS:1239) with Riser Isolation Valve & other required additional Isolation Valve as per site requirement of approved make at all floors of all sizes as per instructions of EIC, including installation of welded riser, alongwith all required fittings such as Lateral control valve sockets, elbow, tee, reducer, bend, union, GI plug, endcap etc, fixed vertically as well as horizontally for providing PNG connection to house hold in various type of Buildings including Highrise buildings. Item includes pneumatic testing of the assembled section as per the specification and standard procedure of testing & gas commissioning of the complete installation, making required arrangement for fixing of the pipes such as scaffolding, rope ladder, safety belt with Kevlar rope etc, supply and fixing of approved clamp, screw (SS screw of approved make), dowel plug, steel supports with rods, fastners etc. If required, making holes by core cutting etc and making good the holes with grout of the matching colour/shade also included. All threading shall be NPT threading with NPT Die & Tools (Dai). All GI pipe fittings and clamps shall be powder coated of approved colour and shade. All the materials except free issue material are in contractor's scope required to complete the entire work. No separate payment shall be given for core cutting.				



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	Finalisation of optimum route with consent of customer, from transition fitting to cooking oven/ appliance.				
	Making temporary but stable platforms/ scaffolding/ rope ladders and all other safety devices.				
	Supply and Installation of GI Fittings, warning plate including NPT threading, painting as specified (installation of meters & regulators forms a separate SOR item).				
	Drillings of holes through walls (Brick, RCC), Granite, Marble, Glass Cutting with proper heavy duty hammer drill machine tools and tackle and core cutting other using proper sealant /grout material colors to match the original replacement of damages during drilling, restoring the area to original condition. All Holes drilled thru wall/Slabs/RCC/Tiles shall be provided with PVC sleeves and the sleeves shall be sealed with suitable grout/sealant.				
	Supply & Fixing of approved clamps, Dowell Plugs with screws, grout material, suitable thread sealant i.e. Teflon Tape/ lock tight, drilling of holes through tiles/ wood/ marble/ Granite etc. jointing of PE to above Ground service GI pipes, testing, purging with Nitrogen and commissioning of the complete installation as per specification.				
	Touch up Painting of pipe wherever required on pipes & fittings after proper surface finish by one coat of approved primer paint and two coats of approved synthetic enamel paint complete as per specification & direction of EIC. Restoring the wall surface to original condition				
	All above activities to be carried out as per specification to the complete satisfaction of consumer & as desired by Engineer-in-charge.				
	Handing over the completed works to Client for operation/ use, reconciliation of material area wise.				
	Any other activity not mentioned/ covered, explicitly above, but otherwise required for satisfactory completion/ safety/ statutory/ maintenance of works shall also be covered under scope of work and has to be completed by contractor within specified schedule time. Note: Supply of GI Pipes (all Dia) & Riser/Approach & Isolation Valves will be issued as FIM only.				
a)	1/2 " NB	M et er s	31, 00 0.0 0	₹ 198.9 0	₹ 61,65 ,900. 00
b)	3/4 " NB	M et er s	2,5 00. 00	₹ 237.1 5	₹ 5,92, 875.0 0
c)	1 " NB	M et er s	50 0.0 0	₹ 270.8 1	₹ 1,35, 405.0 0
d)	1 1/2" NB	M et er s	10 0.0 0	₹ 279.9 9	₹ 27,99 9.00
e)	2" NB	M et	10	₹ 276.7 2	₹ 27,67 2.00



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		er s	0.0 0		
9. 2	Retesting & Commissioning of GI Piping for PNG Connection				
	Retesting, if required, commissioning of the GI piping network of various size from 1/2" to 2" NB having riser, headers as well as laterals. Item include checking of the network by air pressure, repair if any leakage observed and to make network ready for GAS-IN by providing manpower tools & tackles, gasket etc. purging with nitrogen and taking the gas inside the network. The total length of the network being tested shall be consider for payment.				
a)	All size GI network from 1/2" to 2"	M et er s	36, 00 0.0 0	₹ 22.95	₹ 8,26, 200.0 0
9. 3	Multi Layer Piping				
	Supply, installation, Testing & Commissioning of Multi Layer Composite (MLC) Pipes: Supply and installation of MLC pipes as per ISO 17484-1 latest standard and installation of from Meter control Valve to Meter till Appliance ball valve as per technical specification alongwith associated accessories /fittings including brass fittings at the out let of the meter and at the entry of appliance valve, outlet of Meter control Valve and inlet of Domestic regulator as per satisfaction and instruction of EIC. The MLC pipe and fittings shall be procured from approved vendors or from those vendors, who have supplied these items for similar application earlier and with prior approved of Owner/ PMC. MLC Pipe shall be installed from the downstream of meter upto the isolation /appliance valve before the customer's appliance as per requirement and to the satisfaction of EIC. The contractor to provide all equipment tools & tackles and associated material required necessary to execute the work in an efficient manner by cutting, cleaning, bending, fixing with clamp etc. The work includes supply of all tools, tackles and consumables including clamps for fixing the MLC pipe and restoration of the work area to the satisfaction of the customer. MLC pipe size will be min. 14.0 mm OD / 10 MM (ID) or above. The scope includes drilling in walls and Tiles, placing sleeves and neatly sealing around the sleeves.	M et er s	14, 00 0.0 0	₹ 400.0 0	₹ 56,00 ,000. 00
	Note: The supply of Meter control & Appliance Valve & Meter Brass Union is included in SOR Item No. 11				
1 0 0	Installation of Service Regulator / Module: Installation & Fixing of services regulators i.e. Wall mounted/Foundation mounted with associated inlet and outlet connection fittings with required supports. Restoring the area to original complete as per specification. SERVICE REGULATOR is a free issue materials				
	Regulator to be covered with Boxes as per drawing and as per directions of EIC, including civil foundation, supports, fixtures, crash gaurd, sand filling etc. with proper grouting using proper scaffolding.				
a)	Service Regulator (0.5 - 6 bar to 100 mbar) - 10 SCMH and above capacity	N os .	20. 00	₹ 4,478 .31	₹ 89,56 6.20
b)	Service Regulator (0.5 - 6 bar to 100 mbar) - 40 SCMH and above capacity	N os .	15. 00	₹ 5,150 .06	₹ 77,25 0.85
c)	Service Regulator (0.5 - 6 bar to 100 mbar) - 100 SCMH and above capacity	N os .	10. 00	₹ 5,922 .56	₹ 59,22 5.65
1 1.	Providing PNG connections				



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	Fixing of DOMESTIC METER at all floors with supply & fixing of associated inlet and outlet connections/ fittings,Meter Control Valve ,brackets, fasteners and other supports with grouting as required, by using proper scaffolding. DOMESTIC METER is a free issue material. The brass fittings shall be used for connecting meter outlet.				
	REGULATORS : Installation of all type of regulators at all floors of various capacity 2.5 to 10 SCMH with supply & Fixing of associated inlet and outlet connections/ fittings, brackets and other supports with grouting as required, by using proper scaffolding. Restoring the area to original complete as per specification. REGULATOR & ADAPTOR is a free issue material. Domestic Meter regulators - 2.5SCMH-100 mbar to 21 mbar (Supply of regulator and Adopter is free issue Material) Domestic Riser regulators - 2.5 to 10 SCMH regulators,- Pressure 4 bar to 21 mbar (Only supply of Regulator is free issue Material)				
	Supply and installation of Appliance Valves of approved make as per the technical specification given in tender document and as directed by EIC: In kitchens, wherein immediate usage of gas is not intended, the appliance valves shall be sealed by placing a plastic cap at its outlet and seal it by wrapping a plastic strip around the valve and then crimping with plastic sealhead.				
	Installation and execution of PNG connection GI-Tap-off (Meter Isolation Valve) till Appliance Valve with testing and commissioning. Note: .GI Piping will be paid in Item No.9.1	N os	6,6 00. 00	₹ 688.5 0	₹ 45,44 ,100. 00
1 2. 0 0	Conversion of LPG to PNG				
a)	Supply and fixing suraksha Rubber hose,conversion of burner LPG to NG which includes supply and changing of the nozzles/jets and associated controls for domestic and imported appliances. Drilling in LPG jets not allowed. The scope also includes preparation of Hole through Granite / Marble/Kitchen Slabs by Drill Machine for Installation of Suraksha Hose without damaging the platform. Payment is per Stove and MJC submission in the BGL portal.	N os	12, 00 0.0 0	₹ 229.5 0	₹ 27,54 ,000. 00
	If the contractor carries out the GI installation work in all respect (including installation of meter and regulator) in a gasified area and does not do the conversion of burners even though there is no problem in doing the conversion, then a penalty of 2 times of the SOR rates will be charged to the contractor's in thier final bills.				
1 3. 0 0	RETESTING AND COMMISSIONING OF ALREADY LAID MDPE NETWORK.				
	Completing of testing and commissioning work pending for MDPE pipelines network laid earlier (in kuchha road, built up sections, HDD, Moling, open cut etc. the scope of work includes the following:-				
	Identifying the damages if any, locating the damage by sectionalizing the network with squeezers & holding pressure. This process shall be repeated by dividing the sections in half with squeezers and holding the pressure, till the damage is within 10 meters. The scope includes excavation and restoration of pits. Flushing, Pneumatic Testing at 6 bar (g), Nitrogen purging, Commissioning i.e Gas charging as per specification for already laid lines and lines laid for making the left out connectivity and the network loop complete in all respects and as applicable including preparation and submission of As Built Drawings and compilation of all inspection reports for final documentation for existing and newly laid pipelines in four sets of hard copy and two no CD in Autocad				



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	format. However, The payment for opening of the 10m trench and repair / replacement of the existing pipe of 10m length only shall be paid as per Sl.no.1.1. The required road crossing and laying of new line for connectivity to the eralier laid pipeline shall be paid separately as per SOR item no.8). Flushing, Pnematic Testing at 9 bar to 10 bar (g), Nitrogen purging, Commissioning i.e Gas charging as per specification for already laid lines and lines laid for making the left out connectivity and the network loop complete in all respects and as applicable including preparation and submission of As Built Drawings and compilation of all inspection reports for final documentation for existing and newly laid pipelines in four sets of hard copy and two no CD in Autocad format.				
a)	32 mm PE 100 pipe	M et er s	1,1 00. 00	₹ 113.7 9	₹ 1,25, 173.4 0
b)	63 mm PE 100 pipe	M et er s	50 0.0 0	₹ 129.7 3	₹ 64,86 2.50
c)	90 mm PE 100 pipe	M et er s	20 0.0 0	₹ 140.4 5	₹ 28,09 0.80
d)	125 mm PE 100 pipe	M et er s	20 0.0 0	₹ 154.7 6	₹ 30,95 2.00
1 4. 0 0	Supply and Welding / Jointing all kind of fittings/accessories such as PE Bends, Couplers, end caps, Tee, Reducer or any other fittings required including Excavation and Restoration of pits for the existing laid lines for completion of network. The joints covered under in this item is only the interconnection between exsiting line and line already laid and also any joints required on the existing line.				
	Carrying out the connectivity by Electrofusion welding including supply of MDPE fittings for the alredy laid pipeline by others by HDD/open cut/moling etc to make the network complete as per specification and drawing. Note: The laying for making the connectivity complete shall be paid separately covered under respective SOR items				
a)	20 mm PE 100 pipe laid for ground connectivity with 32 mm , 63 mm, 90 mm, 125 mm existing pipeline inlcuding jointing at other end with TF & TF Guard/ pedestal complete in all respects including sand filling.	se ts	10 0.0 0	₹ 1,900 .00	₹ 1,90, 000.0 0
b)	32 mm PE 100 pipe connectivity with 63 mm, 90 mm, 125 mm existing pipeline	N os	80. 00	₹ 1,653 .80	₹ 1,32, 304.2 4
c)	63mm PE 100 pipe connectivity with 63mm, 90mm, 125mm existing pipeline	N os	40. 00	₹ 2,065 .63	₹ 82,62 5.12



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d)	90mm PE 100 pipe connectivity with 90 mm, 125 mm existing pipeline	N os	20. 00	₹ 2,477 .45	₹ 49,54 9.06
e)	125 mm PE 100 pipe connectivity with 125 mm existing pipeline	N os	10. 00	₹ 2,889 .27	₹ 28,89 2.70
	Note : Flushing , testing, Nitrogen Purging and commissioning is not covered in this item and shall be paid separately in SOR item 14				
1 5. 0	INSTALLATION OF BALANCE LEFT OUT WORKS				
	Installation of Domestic 2.5 SCMH Meter & Regulator at all floors with supply & fixing of associated inlet and outlet connections/ fittings, brackets, fasteners and other supports with grouting as required, by using proper scaffolding. DOMESTIC METER is a free issue material. The brass fittings shall be used for connecting meter outlets. Work shall be executed in complete as per direction of Engineer-in-Charge.				
1 5. 1	Installation of Domestic 2.5 SCMH Meter & Regulator including clamp and Meter adapters of Brass make, supply of meter adapters are in Contractor scope.	N os	30 0.0 0	₹ 425.0 0	₹ 1,27, 500.0 0
1 5. 2	Installation of lateral 1/2" GI Piping (from Raiser to Meter Inlet & or from Meter Outlet to Appliance Valve), if any for successful completion as per the directions of EIC. Supply & installation of MCV & Appliance Valve are in contractor's scope.	M et er s	1,2 00. 00	₹ 213.1 4	₹ 2,55, 768.0 0
1 6. 0	CIVIL WORKS				
1 6. 1	SITE CLEARANCE				
	DEMOLITION OF R.C.C./BRICKS/STONE MASONARY				
	Site clearance by demolition of R.C.C./Brickwork/Stone masonry/ Stone soling, Flexible pavements (including steel bars) etc.,alongwith removing the debris and disposal of unserviceable material to any lead and staking of serviceable materials, handing over serviceable material to concerned department if required as per technical specifications and direction of Engineer-in-charge.	M 3	4.0 0	₹ 561.5 1	₹ 2,246 .04
1 6. 2	EARTH WORK IN EXCAVATION/ SITE GRADING AND BACKFILLING				
	Earth work in excavation,site grading and backfilling in all kinds of soil including soft rock in any plan dimension up to 3.0M depth including disposal of excavated surplus and unserviceable earth up to any lead in all conditions. Soil to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings, as per technical specifications and directions of the Engineer-in-charge.	M 3	14. 00	₹ 331.5 0	₹ 4,641 .00
1 6. 3	EARTH WORK IN EXCAVATION/ SITE GRADING IN HARD ROCK				



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	Earth work in excavation in hard rock by mechanical means for all type and size of foundations in any plan dimension up to required depth including disposal of excavated material up to any lead in all conditions, and disposal of surplus and unserviceable material. Surface to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings and directions of the Engineer-in-charge.	M 3	4.0 0	₹ 1,912 .50	₹ 7,650 .00
1 6. 4	EARTH WORK IN FILLING				
	Earth work in filling with good quality imported earth from approved source in the layers of 150 mm and compacted up to 95% to its MDD up to 3 m depth and any plan dimension including all testing, watering, rolling each layer with 1/2 tonne roller or wooden or steel rammers, and dressing / filling up ground depressions etc. complete in all respect as per scope of work, detailed construction drawings, as per technical specifications and directions of the Engineer-in-charge.	M 3	6.0 0	₹ 882.8 1	₹ 5,296 .86
1 6. 5	PLAIN CEMENT CONCRETE				
	Supplying and laying plain cement concrete with stone aggregate 20mm down grade (including shuttering if required) in all types of concrete works including levelling courses below foundations, columns, pedestals, pedestal bases, pipe supports, floors, chambers, cable trench, under floors and any other locations, at all levels and locations as per drawings, specifications and directions of the Engineer-in-charge.				
	i) 1:2:4	M 3	4.0 0	₹ 5,217 .30	₹ 20,86 9.20
	ii) 1:4:8	M 3	10. 00	₹ 4,743 .00	₹ 47,43 0.00
1 6. 6	REINFORCED CEMENT CONCRETE				
	Providing and laying RCC (reinforced cement concrete) of grade M-25 with 20mm and down grade crushed stone aggregate in all types of structures like Beams, foundations, walls, columns, pedestals, pedestal bases, pipe supports, sleepers, cable trench, RCC retaining wall foundation for boundary wall including construction joints, shuttering at all depths and levels complete as per drawings, specifications and directions of the Engineer-in-charge.				
	i) Sub structures	M 3	4.0 0	₹ 7,777 .76	₹ 31,11 1.02
	ii) Super structures	M 3	8.0 0	₹ 9,052 .25	₹ 72,41 8.00
1 6. 7	REINFORCEMENT STEEL				
	Supplying and Fabricating and Fixing in position HYSD Steel Reinforcements/ TMT Grade Fe-415 conforming to IS1786-1985 at all levels (all depth & heights) and positions including the Cost of transport, Straightening, Cutting, Bending, Cranking, Binding, Welding, Provision of necessary Chairs and Spacers, Preparation of bar bending schedule, getting the same approved by EIC etc., complete as per Drawings and Specifications and including Cost of	M T	2.0 0	₹ 68,08 5.00	₹ 1,36,



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	binding wire, Labour etc., all complete in all respects as per scope of work, detailed construction drawings, technical specifications and direction of Engineer-in-charge. The chairs and spacer bars provided will not be Measured for payment.				170.00
16.8	CEMENT CONCRETE BLOCK WORK				
	Providing and laying cement blocks (solid blocks) masonry Grade M 7.5 with 200 mm thick blocks upto plinth level and super structure in cement mortar 1:4 (1 cement : 4 coarse sand).	M 3	8.00	₹ 6,011.37	₹ 48,090.96
16.9	PAVER BLOCK FLOORING				
	Supply , construction and handing over of CC inter locking paver block 80 mm thick, I shape, rough finish, M-30 strength of approved brand laid over the sand bed of minimum 50 mm thick. The CC interlocking blocks to be of uniform Grey colour or as approved by EIC complete in all respects as per scope of work, detailed construction drawings, technical specifications and directions of the Engineer-in-charge.	M 2	8.00	₹ 688.50	₹ 5,508.00
16.10	SAND FILLING				
	Supplying and filling Sand Dust in maximum 300 mm thick layers and compacting by rolling, ramming, consolidating and dressing the surface including cost of sand (zone-II/Zone-III sand only) complete in all respect as per scope of work, detailed construction drawings as per technical specifications and directions of the Engineer-in-charge.	M 3	4.00	₹ 765.00	₹ 3,060.00
16.11	STONE DUST FILLING				
	Supplying and filling Stone Dust in maximum 300 mm thick layers and compacting by rolling, ramming, consolidating and dressing the surface including cost of sand (zone-II/Zone-III sand only) complete in all respect as per scope of work, detailed construction drawings as per technical specifications and directions of the Engineer-in-charge.	M 3	8.00	₹ 794.75	₹ 6,358.00
17	Domestic Registration				
a)	Collection of PNG Domestic Registration form , KYC & POS of either RS- 7000/- or EMI Scheme for Individual Houses & Seperate Charges for Builder Segment customers. Engage potential customers through awareness campaigns. Maintain real-time LMC updates via BGL's Android app. Provide monthly reports of unwilling customers for BGL verification. Note: Scope works are defined in Commercial documents.	N os .	5,00.00	₹ 225.00	₹ 11,25,000.00
18	Disconnection/Dismantling/Removal of Threaded/Welded GI pipe and their Fittings & Copper Pipes and after servicing reuse for PNG connections.				
i	Providing services for safe disconnection, isolation, de-pressurization (if applicable), dismantling and removal of installed DPNG meter, regulator, including removal of existing GI pipeline installed before and after the meter up to Transition fitting(TF)/isolation valve, along with all associated fittings, valves, supports, clamps and accessories. Scope includes collection, segregation, tagging, proper packing, loading, transportation and reuse main items like meter with adaptors. valves, regulators and usable pipes after general servicing and installed for another customers. Wherever certain materials are not serviceable shall be after proper tagging to BGL designated store and handing over to BGL. Item also includes reinstatement/restoration of all civil works affected during dismantling such as masonry cutting, plastering, grouting, flooring and painting to match existing finish.	N os .	5,00.00	₹ 500.00	₹ 25,00,000.00



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	The bidder shall collect the final meter reading and obtain a joint report duly signed by the customer/owner and the bidder. The bidder shall also capture clear photographs of the existing infrastructure before and after removal. All such documents, including photographs and the joint inspection report, shall be submitted along with the Inspection Report at the time of submission of the RA bill. All activities shall be executed with due safety precautions, and in compliance with PNGRB norms, statutory regulations and BGL technical specifications, complete in all respects.				
	Note: Meter, Regulator, GI, Cu, pipes and fittings dismantled shall be after servicing will be reused and or returned back to BGL store after material reconciliation against each PO. The decision of BGL/PMC is final.				
SUB TOTAL AMOUNT (BASIC VALUE) (Rs.)					₹ 4,07, 20,18 6.69
GST @18%					₹ 73,29 ,633. 60
GRAND TOTAL AMOUNT INCLUSIVE OF ALL TAXES & DUTIES AND GST (Rs.)					₹ 4,80, 49,82 0.29



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BHAGYANAGAR GAS LIMITED					
SUB:Laying of Underground PE pipeline and above ground GI Installation last mile connectivity at consumer end at Vijayawada GA					
TENDER NO: BGL/764/2026-27					
Bidder's Name:					
Part	Description	Total Estimated Cost (inclusive of all applicable taxes & duties & other levies [if any] payable by the Contractor under the Contract, or for any other cause except final GST) in Rupees	Quoted Variation		
			"INCREASE" OR "DECREASE" (Refer note no 1 below)	Percentage In Figures (upto two decimal places)	Percentage In Words (upto two decimal places)
(1)	(2)	(3)	(4 a)	(4 b)	(4 c)
B	Refer Detailed SOR sheet attached herewith	₹ 4,07,20,186.69			
2	Notes: Bidder's total price to be arrived by applying quoted %age increase/ decrease on total estimated cost given at col. No. 3 above.				
3	Applicable GST (CGST&SGST/UTGST or IGST) rate on Total price (in %)				
4	Service Accounting Codes (SAC) as per GST act [To be filled by bidder]				
Notes:					
1	Under Column '4a', the bidder has to indicate clearly either "INCREASE" or "DECREASE" as applicable. In case the column is left blank, it will be considered as "DECREASE" in terms of percentage.				