

SECTION-VII
JOB SPECIFICATION

TENDER NO: GGPL/KKD/C&P/MDPE/2520/07/VS
VOL II OF III

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

Godavari Gas Pvt. Limited, a JV company of M/s APGDC and M/s HPCL, is engaged in development of CNG & City Gas Distribution Networks (CGDN) in Geographical Areas in East and West Godavari Dist. for distribution of CNG and PNG to various consumer segments.

Presently, Godavari Gas is planning to implement CNG & City Gas Distribution Network (CGDN) to supply Natural Gas to domestic, Commercial, Industrial and Automobile Consumers in the 17 Towns(1.Rajahmundry, 2.Amalapuram, 3.Ramachandrapuram, 4.Mandapeta, 5.Draksharamam, 6.Ravulapalem, 7.Kothapeta, 8. Tuni, 9.Eluru, 10.Bhimavaram, 11. Tanuku, 12.Tadepalligudem, 13.Jangareddygudem, 14.Narsapur,15.Nidadavolu, 16.Bhimadolu, 17.Palakollu) in the Geographical Area (GA) of East and West Godavari Dist..

This tender deals with the Laying, testing and commissioning of underground medium density Polyethylene (MDPE) pipelines of size 125/90/63/32/20mm OD including PE/GI, PE/Steel transition fitting & installation of GI/Cu pipelines for Piped Natural Gas supply to domestic / commercial consumers in GA of East & West Godavari Districts.

1.2SCOPE OF WORK

The scope of work involves providing Piped Natural Gas connections to the 10,000 nos. of Domestic consumers within 17Towns of the Geographical Area (GA) of East & West Godavari Dist.Contract scope will be for 500 nos PNG connections in each area/town.

The scope of work covers laying of underground MDPE as well as above ground GI Pipe laying work. For laying MDPE, the scope covers making of routing drawing, getting approval from GGPL, laying, testing and commissioning of underground medium density Polyethylene (MDPE) service pipelines of various sizes from 125 mm OD to 20mm OD from the nearest PE network branch line for end point consumers of Piped Natural Gas (PNG) in 17 Towns. All materials except MDPE pipes, Meter and Regulators shall be procured by the contractor as indicated in SOR.

The laying of both MDPE pipelines and GI piping works is required to be carried out all 17 Towns including inside premises of apartments and buildings. Gas connectivity through MDPE line for individual houses is also to be carried out by the contractor. Providing connection for commercial consumers is also included in the scope.

For the last mile Connectivity through aboveground GI piping work, the scope includes making routing drawing, obtaining approval of GGPL, supply & installation of above ground GI pipes, Meters & Regulators (both free issue items), copper pipe , isolation and appliance valve , all fittings etc., and testing of the total installation. Commissioning of the total installation will also be carried out by the contractor whenever gas is available. Providing natural gas for buildings using LPG Reticulate system may be required. For such cases, existing available network

may be required to be used for distributing natural gas in place of LPG. The necessary modifications in this respect and replacement of Meters & Regulators are also included in the scope.

The scope further envisages installation of GI piping within a building for which Natural gas piping work is already completed and handed-over to the client. This work will be dealt as per the corresponding SOR item

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

- 2.1 Plan and prepare a schedule for execution and work implementation as per QA/QC plans. Contractor will submit the Construction/ Execution procedures before commencement of work.
- 2.2 In principle permission for laying of the pipe line from the concerned landowning authority (i.e. PWD/NH/Municipal Corporations etc.) shall be obtained by GGPL and handed over to the contractor. All liasioning during execution of pipe line laying with the authorities such as PWD/NH/Municipal Corporations, local officials, traffic police, police, APEPDCL, BSNL, etc. and any other utility companies / agencies such as OFC operators etc. are in the scope of the contractor. The scope also includes liasioning with Society / individual land owners for smooth execution of pipeline laying. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by the incumbent owner/other utility agencies) is in scope of the contractor.
- 2.3 All the route alignment drawings of main pipeline (125/90/63mm) shall be provided by GGPL/consultant. However for 32mm/20mm dia pipeline, preparation of route map, as per site condition shall be done by the contractor and submitted to GGPL/consultant for approval. Execution shall start after due approval.
- 2.4 Receiving, loading, transporting, unloading and stacking of MDPE pipes issue by GGPL as free issue material from GGPL designated storage yard within East and West Godavari Dist. GA limit but upto maximum 50Km from the working site. All toll taxes etc are also included in the scope.
- 2.5 Proper storing, stacking, identification, providing security, and insurance, during storage, laying and upto handing over of pipelines.
- 2.6 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.
- 2.7 DELETED
- 2.8 Wherever required the grass/ turfing, pavement, linings, drains roads and other such 'pucca' area shall be locally removed to facilitated trenching and pipe laying works. The same is to be reinstated to its original stage.
- 2.9 Supply & Installation of Safety/ Warning Signs, barricading of the entire route to be

trenched. Pits to be similarly barricaded along with the warning sign.

- 2.10 To make trenches with stable slopes but restricting minimum disturbance to aboveground/underground services/ installation as per specifications and approved route plans; keep the trenches free from water and soil till placement of pipes;
- 2.11 Supplying, Uncoiling/ stringing the PE pipes of required sizes pipes into trenches as per specification.
- 2.12 Joining the pipe ends with fittings and valves by approved electro-fusion techniques as per specification.
- 2.13 Supplying & Installation of pipe fittings like elbow, tee, reducers, tapping saddles, joints, connectors, transition fittings, valves, sleeves etc. including construction of supports, valves pits, inspection chambers along with all materials etc. as per specification.
- 2.14 Laying pipeline using trench less technology methods with or without casing pipes as per specification and as directed by EIC.
- 2.15 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.
- 2.16 Supplying and laying of warning mat (with tracer wire) and bricks over the PE pipe.
- 2.17 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.
- 2.18 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.
- 2.19 Nitrogen purging (including supply), commissioning & gas charging of tested pipeline as per approved procedure.
- 2.20 Restoration of existing ground features such as grass/ turfing, paving, roads, drains, concrete, floral beds, fencing, tiles, flooring masonry etc. to original condition and to match with adjoining conditions -functionally and aesthetically - upto the entire satisfaction of GGPL/MECON/ any other third party agency designated by GODAVARI GAS PVT. LTD and local authorities, failing which, it will be done at the risk and cost of the contractor.
- 2.21 Obtaining satisfactory completion certificates for the restoration work done from the concerned authorities.
- 2.22 Supply and laying of the above ground GI installation in the building/flat/apartment of consumer. Supply & laying of copper tube, isolation valves & appliance valves.
- 2.23 Collecting Free Issue materials like Regulators, meters & other associated fittings and installing the same including supply of fittings, as required.

- 2.24 Supply, fabrication and installation of Warning Plate marker.
- 2.25 Testing of total GI & copper installation.
- 2.26 Commissioning of total GI & copper installation for a unit, wherein gas is made available.
- 2.27 Extending branch pipes from the existing and handed over GI piping network and completing the connection upto kitchen.
- 2.28 Returning surplus Free Issue Material to GODAVARI GAS PVT. LTD store after reconciliation of free issue material and submission of final Reconciliation Document to the satisfaction of GGPL /MECON.
- 2.29 Studying the existing reticulated LPG system, collecting documents for existing system, carrying out modification in existing piping connections as required, changing of meters & regulators (as required), testing the piping system
- 2.30 Handing over the completed works to GGPL for their operation /usage purposes.
- 2.31 Maintaining the completed pipelines/installation for any defect, failures during defect liability period.
- 2.32 Preparation and submission of As-built drawings, details of crossings, measurement sheets and deviation statements on completion / commissioning of work by way of drawing, sketches and tables.

GENERAL TERMS AND CONDITION

- 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.

- 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. PROCUREMENT

3.1.1 CONTRACTOR shall procure and supply all the materials other than OWNER supplied materials, required for permanent installation of underground PE 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.

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 programme 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 GST, Customs etc. as necessary and arrange for transportation of the materials under his scope of supply to site.
- 3.1.10 All purchased items shall be liable for inspection and acceptance by Owner/ Owner's Representative.
- 3.1.11 Compliance with vendor's and supplier's instructions and recommendations for transportation, handling, installation & commissioning.

3.2 Construction

3.2.1 General

3.2.1.1 All construction works shall be carried out as per approved drawings, procedures, specification and applicable codes and standards. Any changes at site shall also need prior approval from the OWNER / CONSULTANT.

Owner will take minimum 10 working days from the date of submission of the documents / drawings submitted by the contractor for owner's comments / approval.

3.2.1.2 Statutory Approvals

The Owner shall provide to the Contractor the basic / in principal approval for laying the pipeline. However, the Contractor at his own initiative shall obtain all permissions, permits and licenses necessary for the performance of the work. **If any such permission, permit or license required for the performance of the work** by the contractor can only be granted at the request or recommendation of the Owner, the Owner shall at the request of the Contractor, provide recommendatory letters to the contractor to obtain or procure the same. The contractor shall not, however be entitled to any additional compensation over and above contracted rates of services for any hardship or increased cost caused by any idleness, suspension or disruption of work or any other account whatsoever as a result of the inability of the contractor to obtain the permission(s), permit(s), license(s) aforesaid to match with the progress of the work nor shall the same constitute a ground for extension of time.

a) The approval from any authority required as per statutory rules and regulations of Central/ State Government agencies etc. shall be the contractor's responsibility unless otherwise specified in the tender document. The application on behalf of the Owner for submission to relevant authorities along with copies of required certificates complete in all respects shall be prepared and submitted (after getting signed from the owner) by the Contractor well ahead of time so that the actual construction/ commissioning of the work is not delayed for want of the approval/ inspection by concerned authorities. The Contractor shall arrange the inspection of the works by the authorities and necessary coordination and liaison work in this respect

shall be the responsibility of the Contractor. However statutory fees paid, if any, for all inspections and approvals by such authorities shall be reimbursed at actual by the Owner to the Contractor on production of documentary evidence.

b) The defective work resulting from poor workmanship and/ or material supplied by contractor, as pointed out by any statutory authority shall be rectified by the contractor at no extra cost to the Owner. Any change/ addition required to be made to meet the requirements of the statutory authorities, the same shall be carried out by the contractor free of charge.

The inspection and acceptance of the work by statutory authorities shall, however, not absolve the contractor from any of his responsibilities under this contract.

3.2.1.3 The Contractor shall comply with all the conditions and requirements issued by Authorities having jurisdiction in the area where the work is to be performed.

It shall be the Contractor's sole responsibility to make arrangements for land for setting up of its string fabrication yards, all storage areas for line pipe and other materials, wherever required, and all other work areas.

The Contractor shall make all arrangements for access to his work site at his own cost and responsibility. If no public road exists Contractor shall arrange on his own for access to his work area at no extra cost to the COMPANY.

The CONTRACTOR shall be responsible for claims if any arising out of damage/ obstruction to public & private utilities like lines of DOT, telecom operators, water lines, electric cables etc. where the claims may cover the restoration costs as well as loss of revenue due to down time.

3.2.1.4 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.

3.2.1.5 Coordination and supervising the work of sub-contractors.

3.2.1.6 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.

3.2.1.7 Installation of all GI piping, supports etc. as per approved drawings.

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

3.2.1.9 CONTRACTOR shall provide complete details of manpower, equipment etc. to be deployed. Mobilizing and providing all equipment, 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.

3.2.1.10 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.

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

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

3.2.1.13 Idle time preservation of pipeline, if required.

3.2.1.14 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.

3.2.2 Branch / service Pipeline

3.2.2.1 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 20 Towns in East & West Godavari Dist.. Contractor shall be deemed to have considered all constraints and eventualities on account of site conditions while formulating his bid. Jobs can be awarded in any location within East and West Godavari Dist. GA. 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.

3.2.2.2 The working area may have lots of existing PVC, PE & utility pipelines or other pipelines & cables, CONTRACTOR shall ensure that these lines are not damaged/ cut affecting the water / power / communication / other supply to concerned Users / Owners / Authorities. Wherever required, necessary precautions had to be maintained for uninterrupted supply.

3.2.2.3 Receiving the Free Issue Materials from the store of the owner, loading & unloading and transportation to work site / store upto 60 km by the contractor. Supply, loading, unloading, handling, stacking, storing and transportation to their designated stack yard/ dump site/ store or workshop/ work site of all other materials by CONTRACTOR as the case may be.

3.2.2.4 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, 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.

3.2.2.5 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/ 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.

3.2.2.6 Supply & Installation of all inline/ valves/ fittings/ transition fittings as per requirements of approved drawings.

3.2.2.7 Testing & Purging

A) 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 PE 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 MAOP or 9.0 bar(g) as per EIC and there shall be no unaccountable pressure loss during the test period.

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

For main PE 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 may be deferred pending the completion and purging of the main pipelines. For GI pipeline network, the testing will be done at 2 kg/cm² for 4 hours.

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 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.

3.2.2.8 Markers

Supply & 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.

3.2.2.9 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.

3.2.2.10 Pre-commissioning and Commissioning

- 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.

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

Procurement of GI Pipes (heavy duty) as per IS-1239 Part-I duly Zinc coated in accordance with IS 4736 & wrought steel fittings (forged fittings) conforming to IS-1239 Part-II or Malleable fittings as per IS 1879. 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 made of threaded riser assembly. Isolation valve shall be placed in riser as may be required in line with the site condition, so as to provide independent operation for a block of flats/rooms/houses. For all kitchens, irrespective of consenting or uninterested customers, each lateral shall be laid upto an approachable distance (≤ 300 mm) of the intended kitchen area before installing the isolation valve, so as to ensure easy operation of the isolation valve and avoidance of arrangement of hanging supports for future extension of the lateral. All lateral which are not being laid upto a kitchen, must be plugged with end cap/plug. However, to the extent possible, the isolation valve in the lateral should be approachable from inside the house as well as from outside the house. This is to ensure that isolation valve can be attended even if the corresponding customer is not available or the house is locked.

Pipe and required fittings shall be first coupled with threaded (NPT) joints. The threaded joints are to be made using male tapered thread and female parallel thread fittings. All threading shall be NPT threading with threading making machine.

Teflon/PTFE Tape can 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.

All riser and lateral pipe shall be clamped to the building at intervals not exceeding 1.5 meter. If any tee or fittings lies in between the pipe then clamp shall be placed 150 mm far away from center line of fittings on both sides. However, the same may be changed as per site conditions/as directed by SE. 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 the balcony and the surface is slightly elevated around the service pipe or its 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.

No concealed piping work will be accepted. In case of piping are laid in a confined area, proper ventilation measures for the piping area is to be provided.

The GI piping inside house will be done upto the inlet of the gas meter. An isolation valve will be provided prior to the meter. Piping inside kitchen area will be done through 12mm X 0.6mm thk copper tube at the downstream of the gas meter. In case Gas meter is installed outside the kitchen area, then copper tubing will be carried out only after the GI piping, downstream of the

meter,
enters the kitchen.

The copper piping will be supported with closed clamps in place of open ended clamp.

Total 10m of GI piping length and 5m of copper piping length is being considerfor each connection for any individual house and for the lateral length for any flat within a building/apartment. Any additional length required for completing the connection will be charged extra at a rate , as decided by the OWNER from time to time. For this purpose, a consent form from the respective customer must be got signed prior to commencement of the work.

Risers and laterals shall be Leak tested with compressed air @ 2 bar (g) for minimum 4 hrs after vertical installation. Copper piping work / GI piping work at the down stream of the gas meter will be tested at 100mbar for 15 minutes.

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 MDPE pipe, meters & Regulators only as required.

Free Issue Materials shall be issued to the Contractor from the designated store(s) of Godavari Gas Pvt. 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. The scope includes receiving, loading, unloading and transporting the free issue material from GGPL designated store yard within East and West Godavari Dist. GA limit upto maximum 60 Km to working site/contractor's store and stacking them properly. All toll taxes etc are also included in the scope.

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 Godavari Gas Pvt. Ltd. / MECON.

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.

Other than GI pipes and copper pipes, major materials to be supplied by the contractor for completing the network is given below. However other additional/ Supplementary materials required for execution of the project is to be supplied by the contractor

Major Supply Material under Contractor's Scope

A) Coupler / bends / elbows as required

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

B) End Caps

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

C) Equal Tee

- i) For 125/90mm (PE)
- ii) For 63 mm (PE)
- iii) For 32mm (PE)
- iv) For 20 mm (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 125 x 32 (PE)
- v) Saddle tapping Tee 125 X 20 (PE)
- vi) Saddle tapping Tee 90 x 32 (PE)
- vii) Saddle tapping Tee 63 X 20 (PE)

E) Reducer

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

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. (20 mm to 1")
- iv) PE to G.I. (32 mm to 3/4")
- v) PE to G.I. (32 mm to 1")
- vi) PE to G.I. (32 mm to 1 1/2")
- vii) PE to Steel 125 mm to 3"
- viii) PE to Steel 90mm to 3"
- ix) PE to Steel 63mm to 2"

G) Warning mat

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

H) GI 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)
- v) 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) xxxi) Reduced Sockets (1" x 3/4") (GI)
- xxxii) Reduced Sockets (1 1/2" x 3/4") (GI)
- xxxiii) Reduced Sockets (1 1/2" x 1") (GI)
- xxxiiii) GI Plugs 3/4"

Any fittings not specified above but required for GI, Copper 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-II of II of the tender document and other typical standard drawings attached with respective technical specifications enclosed with Volume-II of II of the tender document. Contractor shall prepare detail engineering drawing, bill of materials and all installation drawings and submit to Consultant for approval prior to start of the job / any procurement.

5.2 Contractor shall prepare routing drawing, 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.

Contractor shall indicate various existing utilities line in their drawing.

5.3 No installation small or big shall be carried out without approved / standard drawings.

5.4 After Completion of work & commissioning of pipeline system, Contractor shall incorporate all the correction in drawings, prepare and submit the "as built drawings" in 4 sets of hard copies and soft copies in two CDs. Soft copy of all as-built drawings shall be submitted preferably in AutoCAD, however drawing made manually are also acceptable.

5.5 Specifications

The work shall be carried out by CONTRACTOR strictly in accordance with the specifications enclosed in Volume-II of II of this document.

5.6 Drawings

Tender drawings are included in Vol.-II of the bid package for BIDDER's reference purpose only. Bidders are advised to visit the site before submitting their bids. The Contractor shall develop all routing and isometric drawings 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.

6.2 Construction Water and Power Supply

No water and power will be provided by the owner. It is the responsibility 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 or office/store purpose for contractors' staff and labour.

7.0 PROJECT SCHEDULING & MONITORING

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

7.1 After the Award of Contract

a) The Contractor shall submit within 1 week of Fax of Intent, the total organogram for both site and controlling office along with experience details of the crew. Within 1 week of allotment of the work front, shall submit the work schedule along with manpower planning for approval of client / consultant.

b) The contractor is required to submit within 2 weeks the planning for procurement and name of vendors being considered.

7.2 Project Review Meetings

The Contractor shall present the programme and status at review meetings to be held on monthly basis, highlighting target Vs. achievement, major hold-ups, remedial measures etc.

7.3 Progress Reporting Performa

Contractor shall submit on regular basis the Daily Progress Report comprising

i) Activity programme for the day, Progress of the previous day and commutative progress, ii) Manpower & machinery deployed.

The monthly Report also should be submitted by the contractor comprising i) target vs. achievement, ii) Major achievements, iii) New fronts added in working, iv) manpower and equipment deployment schedule, v) areas of concern, vi) Record of mandays lost, vii) Photographs of the work.

7.5 Progress Reports

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

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.

7.5.2 By the 10th (tenth) of each month, CONTRACTOR shall furnish the OWNER the monthly 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.

7.5.3 Progress reports shall be supplied by CONTRACTOR with photographs 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 2(two) copies.

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 an 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 work front. 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 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 the best industry practice.

8.5 Construction Aids, Equipment, Tools & Tackles

For satisfactory execution of the work, CONTRACTOR shall be solely responsible for making available, all requisite Construction Equipment, Special Aids, Tools, Tackles and testing equipment and appliances. Such construction equipment 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.

9.0 DOCUMENTATION

9.1 "As Built" Drawings

The Contractor will submit as-built drawings in **A3/ A2** sheet form at 1:200 scale with four sets of print-outs plus soft copy in two sets of 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

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.

10.0 ORDER OF WORKS/PERMISSIONS/RIGHT OF ENTRY/CARE OF EXISTING SERVICES.

10.1 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 to the CONTRACTOR and he shall plan and execute work accordingly.

10.2 Existing Service

10.2.1 Drains, pipes, cables, overhead wires and similar services encountered in course of the works shall be guarded from damage by the CONTRACTOR at his own cost, so that they may continue in full and uninterrupted use to the satisfaction of the Owners thereof.

10.2.2 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.

11.0 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 as indicated in the aforesaid list for procurement of bought-out items. In case any other make is proposed, the Owner reserves the right to accept or reject it after due review. 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.

12.0 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.

13.0 ESCALATION

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

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

- i) Computerized R.A. Bill/ Manual Bill, with GST No./LabourLicenceNo. printed thereon.
- ii) ESI/ EPF clearance certificates for the last month alongwithR.A.Bills.
- iii) Insurance Policy as per relevant clauses of Contract Agreement.
- iv) Photocopy of the measurement sheets
- v) Any other document required for the purpose of processing the bills.
- vi) Registration Certificate with tax authorities of state concerned.

15.0 INSURANCE FOR FREE ISSUE MATERIAL

15.1 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 GGPL. The total approximate cost of free issue material is expected to be around Rs. 30 lacs. However the cost will be apportioned as per quantity of connections allotted. The contractor may take the insurance as per the following schedule:

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

15.2. Insurances in India

15.2.1 Contractor shall at his own expense arrange, secure and maintain insurance with Indian insurance companies to the satisfaction of the owner as may be necessary and to its full value for all such amounts to protect the works in progress from time to time and the interest of Owner against all risks as detailed herein. The form and the limit of such insurance as defined herein together with the under writer works thereof in each case should be as acceptable to the Owner. However, irrespective of work acceptance the responsibility to maintain adequate insurance coverage at all times during the period of Contract shall be that of Contractor alone. Contractor's failure in this regard shall not relieve him of any of this responsibilities and obligations under Contractor.

15.2.2 Any loss of damage to the equipment during inland transportation, storage, erection and commissioning till such time the Work is taken over by Owner shall be to the account of Contractor. Contractor shall be responsible for preferring of all claims and make good for the damage or loss by way of

repairs and/ or replacement of the parts of the Work damaged or lost. Contractor shall provide the Owner with a copy of all insurance policies and documents shall be submitted to the owner immediately upon the Contractor having taken such insurance coverage. Contractor shall also inform the Owner regarding the expiry cancellation and/ or changes in any of such documents and ensure revalidation/ renewal etc., as may be necessary well in time.

15.2.3 The risks that are to be covered under the insurance shall include, but not be limited to the loss or damage in handling, transit, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire, war risk etc. The scope of such insurance shall cover the entire value of supplies of equipment, plants and materials.

15.2.4 All cost on account of insurance liabilities covered under this Contract will be to Contractor's account and will be included in Contract Price. However, the Owner may from time to time, during the currency of the Contract, ask the Contractor in writing to limit the insurance coverage risk and in such a case, the parties to the Contract will agree for a mutual settlement, for reduction in Value Of Contract to the extent of reduced premium amounts.

Contractor as far as possible shall cover insurance with Indian Insurance Companies.

16.0 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

Note:

i) 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.

ii) The cover shall be measured from the top of road or top of rail, as the case may be;

iii) 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.

iv) 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;

v) 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 their requirement shall be final and binding to the contractor.

vi) Soft soil / sand padding of minimum 150 mm thickness or as mentioned in drawing (whichever is stringent) to be provided around the pipeline where gravel / hard soil or rocky area **if** encountered.

- Piping at consumer ends, connection at existing tap-off location and for future connections alongwith bill of materials.

Contractor shall develop General Arrangement Drawings (GADs) good for construction for size 32 / 20mm and locations based on typical sketches/ drawings alongwith 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.

- The detailed engineering for above ground installation shall include detail engineering pertaining to all disciplines (if required) alongwith bill of materials.

- 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.

- Contractor shall obtain all clearance from Government authorities (if required). However bank guarantee/ required fee or charges shall be submitted by Owner.

16.1 Following points shall be taken care by the contractor before / during execution works.

i) Contractor shall be responsible for taking necessary precautions regarding traffic (installation of notice / warning boards).

ii) 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.

iii) Concerned authority / Owner shall not be responsible for any loss /damage.

iv) One copy of the permission shall be made available with contractor's responsible workman (if required) at the place where excavation is undertaken.

v) While executing the subject work, excavation shall be done in consultation with the concerned authority engineer of that area.

vi) Necessary safety measures shall be taken for the gas pipeline, since high tension lines and other services carriers are running alongwith gas pipeline route in the area.

17.0 SPECIAL NOTES PERTAINING TO SCHEDULE OF RATES (SOR)

- i) All SOR item shall be quoted by the bidder in the price part of the bid, other-wise bid will be rejected.
- ii) 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.
- iii) The payment will be made as per actual certified measurement at site.
- iv) 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.
- v) The total executed value of the contract must be monitored and the contractor must inform to GGPL/ MECON prior to reaching of total executed value to the awarded contract value.

18.0 CONVERSION OF EXISTING LPG RETICULATED SYSTEM TO PNG SYSTEM

18.1 Conversion of existing LPG reticulated system to PNG system by the following steps:

- Studying the existing LPG system and preparing the complete plan to convert it into PNG system with minimum disturbance to end users. This needs to be done in consultation with RWA/Society representative and the plan need to be get approved from MECON / GGPL.
- Testing of the existing LPG piping (GI/MS) upto isolation valve of the consenting owners as per testing procedure, purging with nitrogen gas, replacement of LPG regulator, meter etc. Regulators and meters shall be free issue material. The item includes all required supply and installation to complete the work.
- Replacing of service regulators of the existing LPG system (if required) Regulators shall be of free issue material.

19.0 APPENDIX-I TO PARTICULAR JOB SPECIFICATION

LIST OF APPROVED SUPPLIER FOR BOUGHT OUT ITEMS PE FITTINGS

- 1) M/s Jain Irrigation systems Ltd. Jalgaon
- 2) M/s George Fisher, Germany
- 3) M/s Kimplas Piping Systems Ltd., Nashik
- 4) M/s Aliaxis Utilities & Industry Pvt. Ltd (Formerly Glynwed pipe systems)
- 5) M/s Friatech AG, Germany
- 6) M/s Agru, Austria

PE VALVES

- 1) M/s Friatech AG, Germany
- 2) M/s George Fisher, Germany
- 3) M/s Plasson Ltd., Israel
- 4) M/s Agru, Austria
- 5) M/s Aliaxis Utilities & Industry Pvt. Ltd (Formerly Glynwed pipesystems)

GI PIPES

- 1) Goodluck steel tubes ltd, Ghaziabad
- 2) Indus tubes ltd , New Delhi
- 3) Jindal pipes ltd , New Delhi / Bengaluru
- 4) Jyotindra steel & tubes ltd, Firozabad
- 5) Rama Steel tubes ltd, New Delhi
- 6) Surya Roshni ltd, Bhadurgarh
- 7) Vishal Pipes Ltd. New Delhi
- 8) Advance Steel Ltd. New Delhi
- 9) Swastik Pipe Ltd, New Delhi / Bengaluru
- 10) Indian seamless metal tubes ltd., Pune
- 11) Appolo tubes., Bengaluru

WARNING MAT WITH TRACING WIRE

1. M/s SparcoMultiplast Pvt. Ltd., Ahmedabad
2. M/s Singhal Industries, Ahemdabad
3. M/s Puja Packing, Mumbai
4. M/s Bina Enterprises, Mumbai

GI FITTINGS

- 1 M/s Jainsons Industries, Jalandhar
- 2 M/s Jupiter Metal Industries Ltd.
- 3 M/s RAJNESH Malleables Ltd., Delhi
- 4 M/s Industrial Valves & Components, Delhi
- 5 M/s Sarin industries, Delhi
- 6 M/s Excel metal & Engineering Industries, Mumbai
- 7 Modern Stores & Engineering Concern, Kolkata
- 8 Jinan Meide Casting Co. Ltd, China

COPPER TUBES AND FITTINGS

1. Paras Industries Ltd., Jamnagar
2. Rajco Metal, Mumbai
3. Chandan Enterprises, Mumbai
4. Mehta Tubes, Mumbai

5. COFIT Industries, Bengaluru

BRASS FIITING

1. M/s Chandan Enterprises, Mimbai
2. M/s Paras Industries Ltd., Jamnagar
3. M/s Umesh Enterprises, Mumbai
4. M/s Mehta Tubes, Mumbai

FLEXIBLE HOSE

1. M/s KPC Flex Tubes, Faridabad
2. M/s Vestas Hose Division, New Delhi
3. M/s Alfa Flexi Tubes, Bahadurgarh

ISOLATION VALVES AND APPLIANCE VALVES

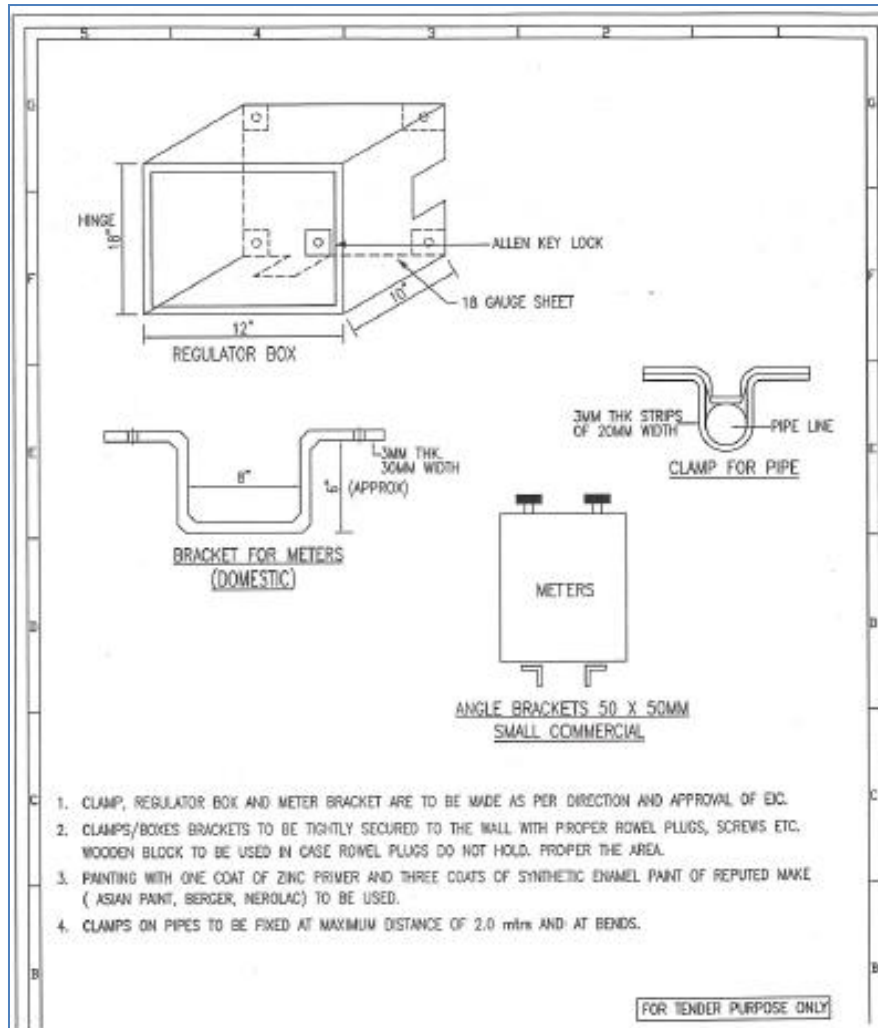
1. M/s Universal srl, Italy
2. M/s TiemmeRaccorderieSede, Italy
3. M/s Jainson Industries, Jalandar
4. M/s EnolgasBonimus.a.s., Italy
5. M/s Fratelli Fortis s.r.l, Italy
6. M/s GiacomoClimbrio, Italy
7. M/s Parker Hannifin S.P.A., USA
8. M/s Singapore Valve & Amp; Fittings Pte Limited, Singapore/Bengaluru
9. M/S RubinetterieUtensilerie Bonomi (RUB), Italy
10. M/s ZhegiangValoginTechnology Co. Ltd., China

PAINT

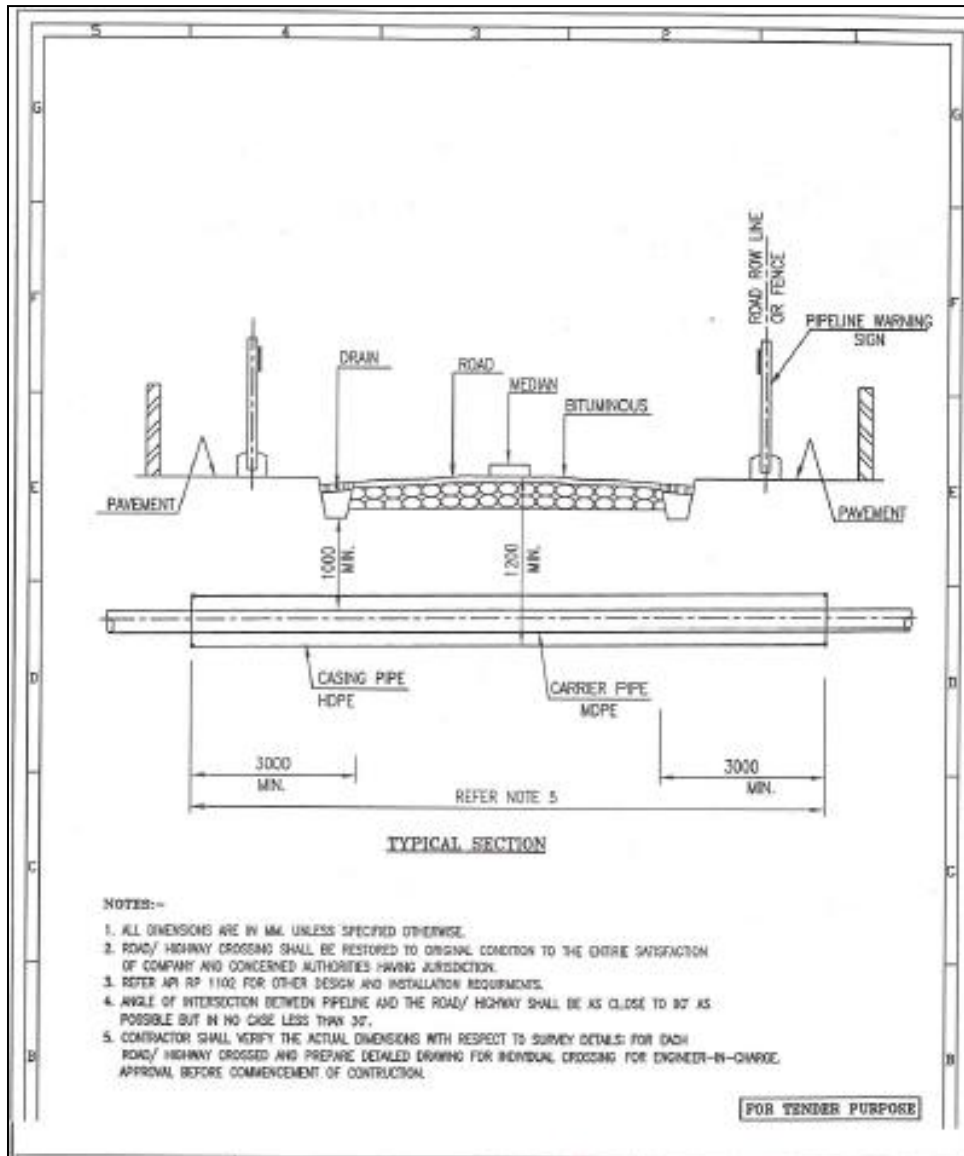
1. Asian Paints
2. Berger Paints
3. Kansai Nerolac Paints

SECTION VIII

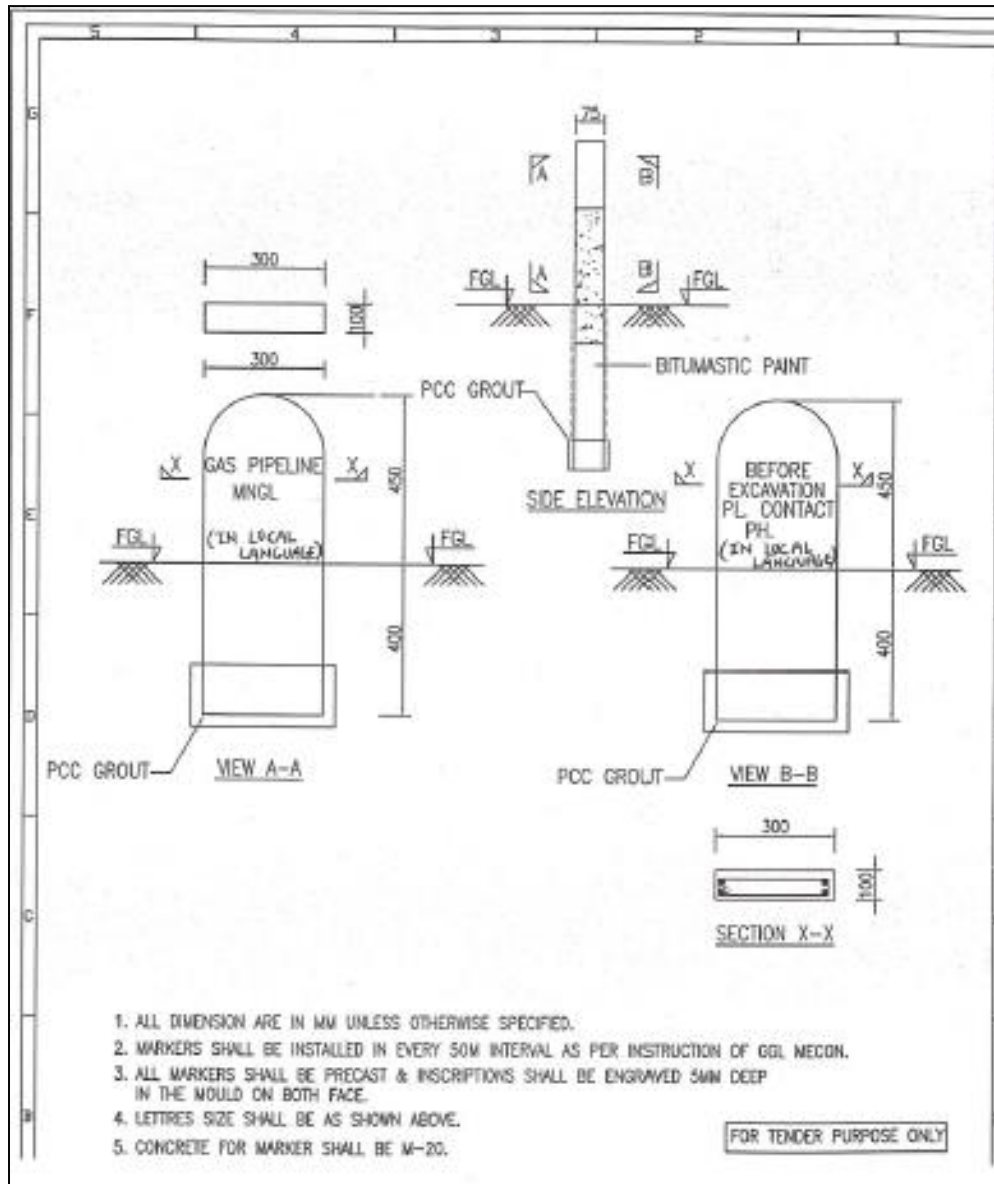
DRAWINGS



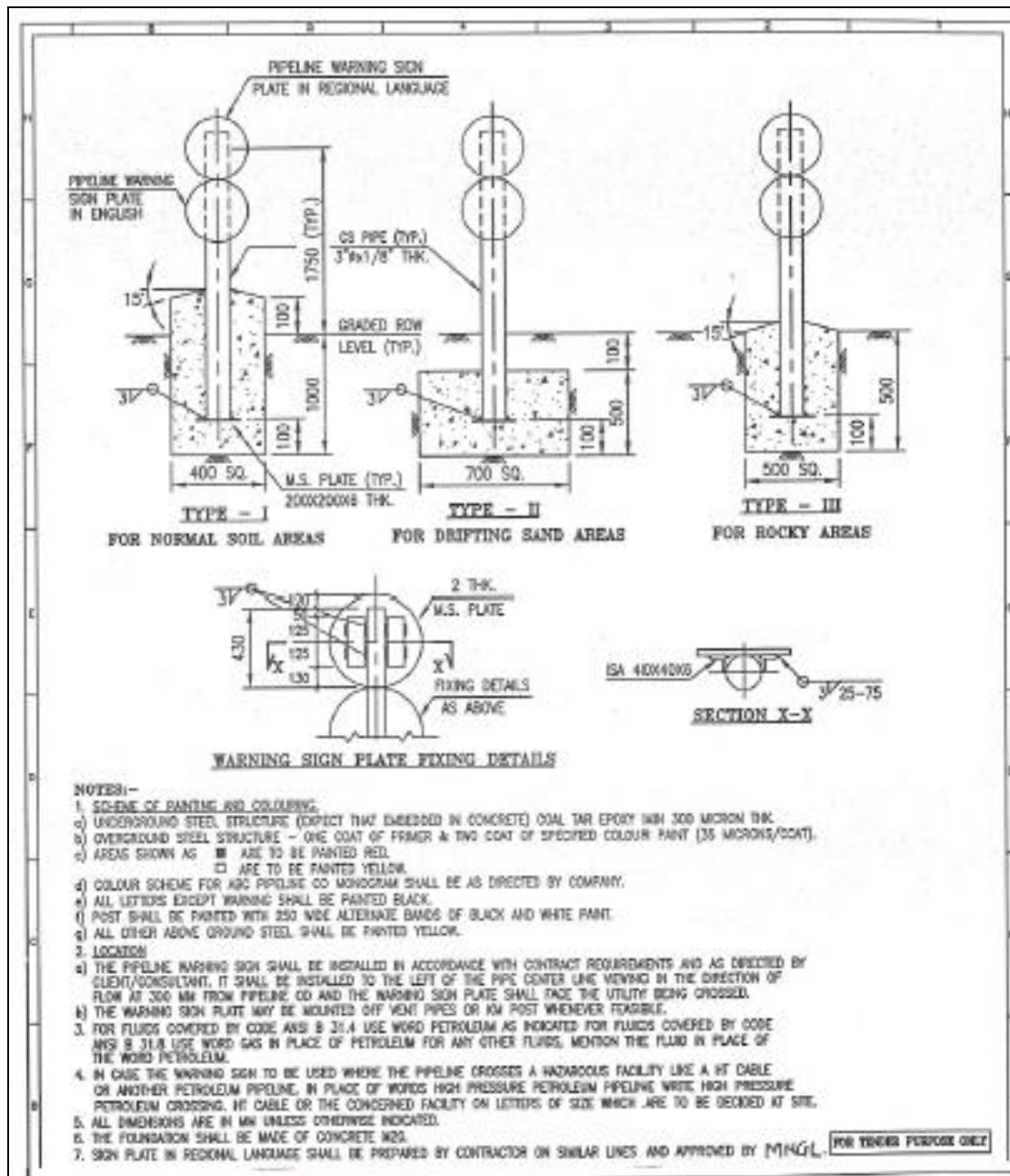
Drawings of Meter Box, Meter Bracket & Clamps



Road/Highway Crossing for MDPE Pipes



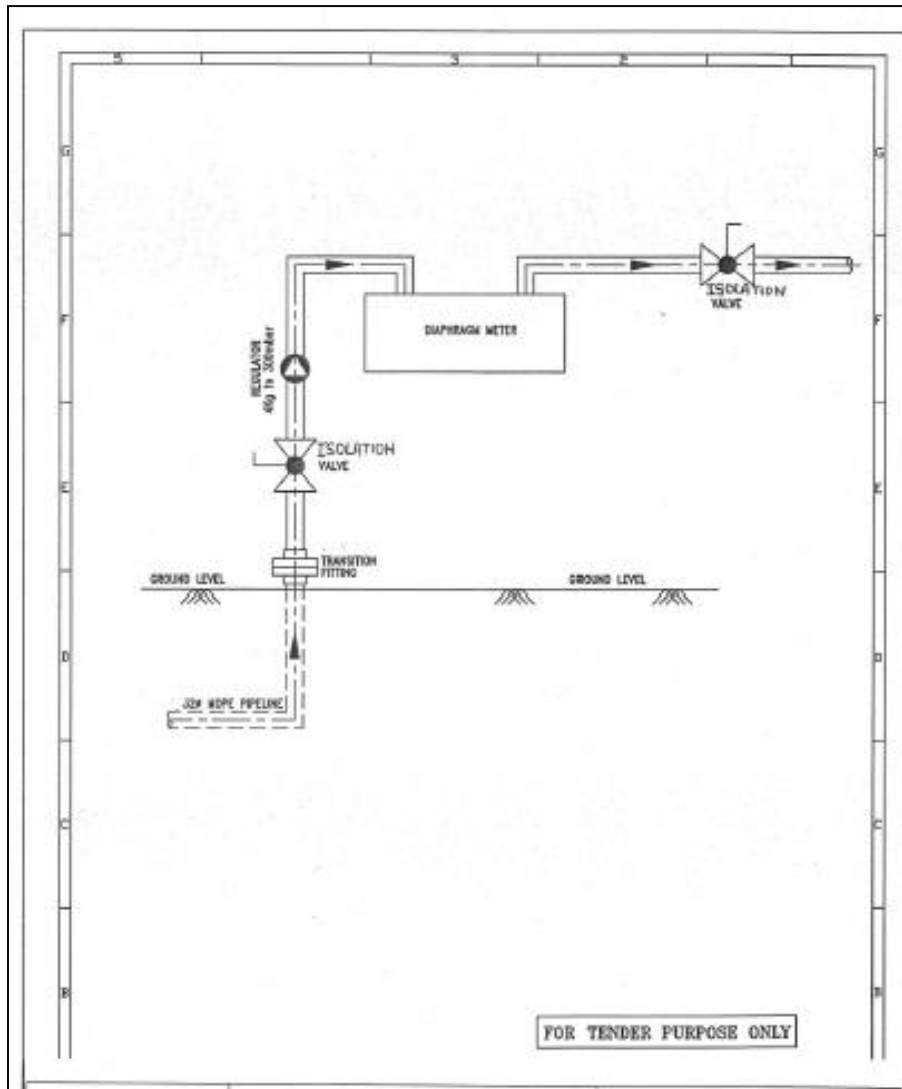
Typical details of Markers



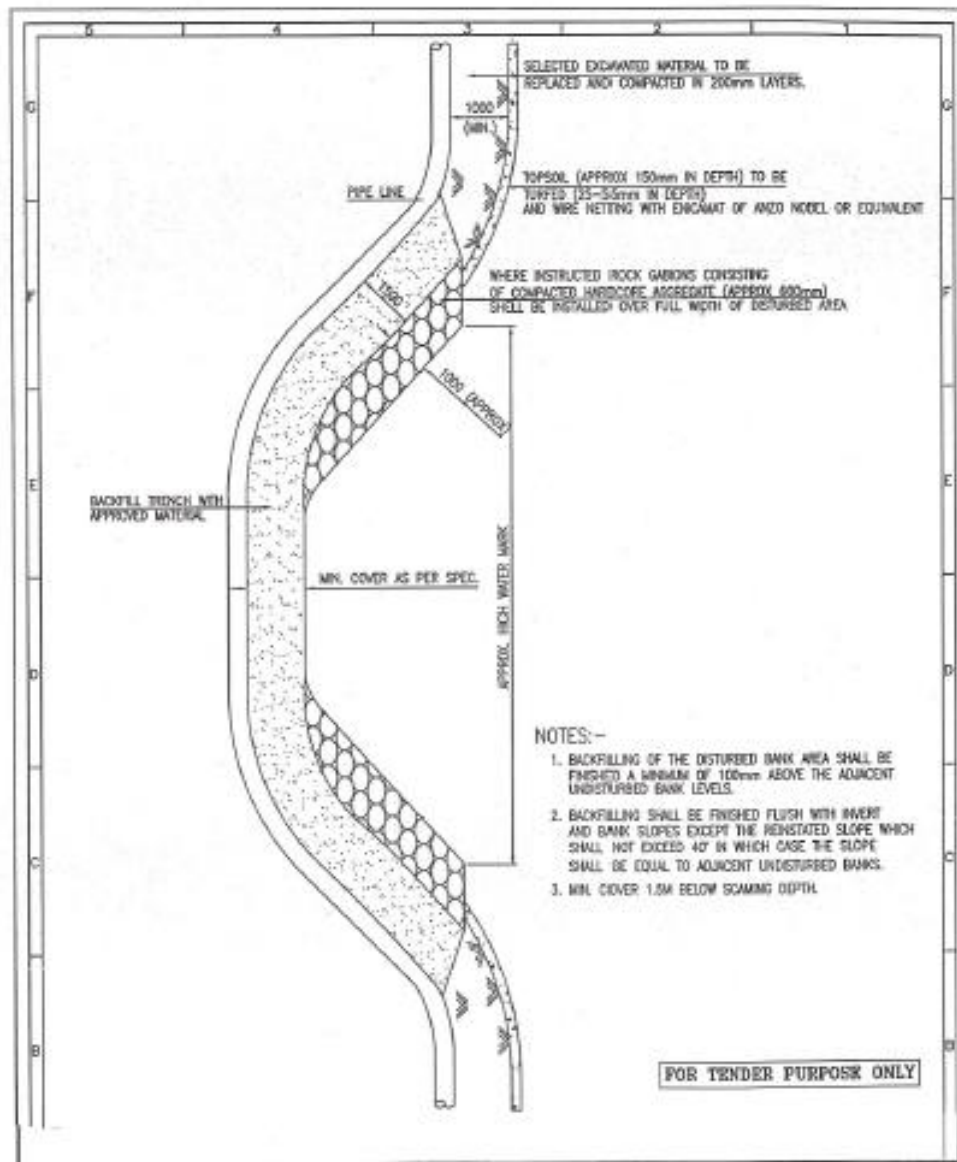
Pipeline Warning Signs



Warning Signs without foundation



Typical Commercial Connection Scheme



Standard details for Drain Crossings