



fixing Copper/MLC pipes suiting to the site conditions 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.

All copper/MLC piping shall be clamped to the walls at intervals not exceeding 500 mm. For copper pipe the solder wire shall be of reputed company of diameter size 3.25mm, lead free as per BS 29453:1994 (Soft solder alloys) and supplied in coils. The detail specification is attached in tender for reference. Solders for use with copper tube & fittings generally melt within the temperature range 180°C- 250°C. The contractor has to furnish the certificate of confirmation of standards before start of work.

- **Installation of Meter**

Installation of domestic meters with associated inlet and outlet connections (GI/Brass fittings), on the wall with approved powder coated meter brackets and angles in new & existing gas charged areas ensure a clear gap between meter and wall.

The contractor shall supply approved powder coated meter brackets and angle brackets. A sketch of the brackets is referred from the enclosed drawing for reference. It is required that one sample of each type of bracket is approved before the work is started.

Firmly secure the meters on the wall with good quality Rawal Plugs, screws etc. In case the Rawal Plugs are not holding then wooden blocks or other fixing arrangements like cement etc. to be used for proper grouting.

Note: Installation of meter should be done at height of approx. 04 to 06 feet.

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 installations will not be provided in any fixed enclosures, cabinets (below or above the slab) or confined space in the customer premises.

The Contractor shall ensure that GI installations and rubber hoses shall not be exposed to direct heat of Gas burners. The installation should have minimum clearance of about 300 mm from electric point mains & switches. Minimum distance between Appliance Valve & Gas Burners shall be 0.3 Meters. The isolation valve shall be installed after entering the customer premises/kitchen but before the meter installation.

The above activities along with restoration of the area to original shall be carried out to the complete satisfaction of consumer and EIC.



- **NG Conversion**

The Contractor shall provide the material such as rubber tube, jets, nozzles, clamps and conversion of burner the burner.

Powder Coating /Painting of GI Pipes

The entire lengths of the pipeline along with fittings are to be painted / powder coated after proper surface preparation as follows:

(a) **Painted (for scratched powder coated pipes and fittings only):**

- 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, and Nerolac. (No other make shall be used for painting).

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. The contractor shall ensure that smooth finish is attained after carrying out painting.

Engineer-in-Charge at his discretion may call for test for paint formulations. Contractor shall arrange to have such tests performed including batch wise test of wet paints for physical and 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. Painting of GI pipe shall be paid with installation of GI pipes.

(b) **Powder coating (refer attached Specification for powder coating)**

Contractor will be required to install powder coated GI pipes & GI Fittings shall submit detailed procedure of powder coating for approval to Consultant prior to supply of GI pipes & GI fittings. After installation of the entire piping system, final touching shall be done to the satisfaction of EIC.

13.0 TESTING OF GI / COPPER/MLC INSTALLATION

- The installation from PE/GI transition fitting up to regulator shall be tested at the



pressure of 6.0bar (g).

- The GI installation from regulator outlet to Isolation valve at meter inlet (except meter) shall be tested at a pressure of 2.0 bar (g) for a hold period of 2 hours with no pressure drop. All the joints in the installation shall be checked with soap solution.
- The GI/copper/MLC installation from Meter outlet to appliance valve (except meter) shall be tested at a pressure of 100 mbar with manometers or diaphragm gauge for a hold period of minimum 15 minutes and all the joints shall be checked with soap solution. Testing to be carried out with the entire satisfaction to TPIA/PMC.
- 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.
- The contractor shall supply the Calibrated Pressure Gauges/ Manometer/Diaphragm Gauges of suitable range for testing of GI/Copper/MLC Installations ranging from 0-4 bars/0-150 m bar/0-250 m bar respectively. The calibration certificate shall be submitted before the start of the execution work.
- The pressure gauges shall be calibrated from time-to-time as desired by EIC but positively once in every six months.
- The details of testing shall be properly recorded in the GI/Copper/MLC cards.
- The ends/joints shall be painted only after carrying out testing of the installation. Powder coating to GI pipes shall be carried out in factory/ shop, and repair/ touching shall be carried out at site.

14.0 INSPECTION

The contractor to the entire satisfaction of EIC before proceeding further shall rectify any defect noticed during the various stages of inspection. 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.

15.0 PURGING & COMMISSIONING

The rate for purging & commissioning shall be included in the GI/Cu/MLC installations.

Care shall be taken to ensure that the outlet is so located that vent gas cannot drift into buildings.

The commissioning of the GI installation should be performed as follows:

- Ensure the method of purging is such that no pockets of air are left in any part of the Customer's piping.
- Ensure the area is well ventilated, and free from ignition sources.



- Continue to purge until gas is available at other appliances; Check availability of gas using Methane- detector
- Internal piping i.e. Meter Inlet, Diaphragm Meter & copper/MLC pipe shall be tested pneumatically & with soap solution from inside of each domestic connection

16.0 RESTORATION

Contractor has to restore the area wherever 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 (CPWD/NDMC/Institutional areas), contractor has to restore the area according to CPWD specifications and obtain a NOC/Clearance certificate from the concerned authorities maintaining the flats, after completion of the work.

The restored slabs or brickwork 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 replace to the total satisfaction of the consumer.

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. Wherever the required standards are not achieved the contractor will be required to replace the defective reinstatement work.

Note that Payment for GI/Copper/MLC installation will be released only after satisfactory restoration and clearing of the sites of all surplus materials etc.

17.0 SUBMISSION OF FINAL RECORDS

Contractor shall submit three sets each of the following documents in hard & soft copy:

- Total list of houses in the area allotted to him giving details of connections provided & reasons where connection could not be given completed.
- The details recorded in RFC cards of every domestic house.
- Details of houses where piping done along with materials used.
- Total material consumption report.
- Material reconciliation with respect to the materials issued.
- Test reports & calibration certificates of gauges etc.
- Any other documents/records required.



- Extra Piping details

18.0 COMPLIANCE TO HEALTH, SAFETY & ENVIRONMENT (HSE) FOR LOW RISE GI:

Scope include use of Fall arrestor, Ascenders / descenders, PPE, Barricades/ Warning Boards (03 No's) connected with warning board & Caution tapes (Refer drawing no. 15792-10-05-32, 26) in areas where piping work is in progress, Use of Safety shoes, Walky talky, Hand gloves, Reflective jackets, Hard hats (helmets), eye and ear safety equipment, Fire extinguishers and as per the detailed scope of work in tender specifications. Contractor shall also prepare and submit duly certified Safety check list signed by TPIA/PMC. In case of non-compliance, penalty shall be applicable as per SCC clause.

This set-up is applicable up to 4th (G+4) floor and full body safety harness with accessories shall be of KARAM or equivalent make.



**19.0 ANNEXURE 1
TOOLS & EQUIPMENT TO BE PROVIDED BY CONTRACTOR FOR
GI/COPPER WORK**

S. No.	Hand Tools Description	Per Technician	Per Team
1	Pipe Wrench 250 mm	1	4
2	Pipe Wrench 350 mm	1	4
3	Pipe Wrench 450 mm	-	2
4	Adjustable Spanner 50 mm	-	4
5	Adjustable Spanner 150 mm	1	2
6	Adjustable Spanner 250 mm	1	2
7	Set of combination spanner 3/16"- 11/4"AF	1	1
8	Set of combination spanners 5mm-30mm	1	1
9	Large tool boxes	1	2
10	Set flat - headed screw drivers	1	2
11	Set Philips screw drivers	1	2
12	Small hammer	1	2
13	Combination pliers/mole grips	1	2
14	Set of files	1	2
15	Drill bits for 1"pipe	-	2
16	Stocks and dies for NPT threading 1/2", 3/4", GI pipe	-	3
17	Blowtorch	-	1
18	Soldering Iron	-	2
19	Copper Pipe Bending Machine	-	2
20	Hand drill 3/8"chuck	-	2
21	Portable electric drill 240v, heavy duty	-	2
22	Spare blades	4	4
23	Batter Powered torches	2	2
24	Measuring Tape 30m	1	2
25	Wire Brush	1	2
26	Portable Pipe vice & tripod	-	2
27	Set steel twist drills 0.5-2.0mm (for appliance conversion)	-	1
28	Set steel twist drill 1mm-10mm	-	2
29	Set masonry drills 1mm-10mm	1	2
30	Graphite based grease	As required	As required
31	Lubricating Oil	As required	As required
32	Hand Cleaner	As required	As required
33	Copper pipe cutter 12mm	-	4
34	GI Pipe Cutters 1/2" Gas Detection Equipment Power Generator 2.5 KVA Pressure Gauge (0-10 bar) Pressure Gauge (0-4 bar) Diaphragm Gauge (0-400m bar) Manometer (0-150m bar)	-	2
		As required	-
		As required	-
		2	4
		2	8
		1	2
		1	1
35	Automatic Thread Cutting Machine	-	As required
36	GI Pipe Cutter	-	2



ENERGISING QUALITY

VCS QUALITY SERVICES PVT. LTD.

STANDARD SPECIFICATION FOR WELDED RISER & GI/COPPER/MLC PIPING INSTALLATIONS FOR PNG CONNECTIONS IN HIGH RISE BUILDINGS

VCS-SS-PE-0004

01	10.05.21	ISSUED AS STANDARD	RKY	RKT	HK
00	18.03.19	ISSUED AS STANDARD	BS	MVK	AD
REV. No	DATE	Purpose	Prepared By	Checked By	Approved By



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1.0 INTRODUCTION

Indraprastha Gas Ltd. (OWNER) is a Joint Venture Company of Gas Authority of India Ltd. (GAIL), Bharat Petroleum Corporation Ltd. (BPCL) and Govt. of NCT of Delhi. Owner plans to extend the PNG pipeline network in NCR region for supplying natural gas to Domestic, Commercial and Industrial consumers. It is proposed to execute the work of Welded Riser & GI / Copper/MLC installations for PNG connections in High Rise Buildings in NCT of Delhi, Uttar Pradesh, Haryana & Rajasthan GA. Owner is seeking Contractors to assist in meeting the above objective.

The main scope of this contract comprises the installation of above ground pipes from the outlet of 'PE/GI transition fitting' up to the domestic/commercial Customers 'Appliance/stove/oven valve' as per the Distribution schedule placed in enclosed drawing no. 15792-20-05-07.

The scope includes installation & procurement of above ground GI / Cu pipes/MLC Pipes and associated fittings for Domestic Customers in High Rise Buildings above fourteen floors.

Except service regulator, domestic meter, meter regulator, Isolation and appliance valve, Contractor shall procure each material (Powder coated GI fittings, Powder coated GI pipes, powder coated wrought steel fittings (forged fittings), Cu/MLC pipe, Cu/Brass fittings, MS/PVC clamps using SS304/brass screws, super hold nylon raw plug anchor etc.) which is required from the outlet of PE / GI transition fitting up to the Domestic customers "Appliance / stove /oven").

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 DEFINITIONS

OWNER	Indraprastha Gas Ltd., IGL
PMC	VCS QUALITY SERVICES PVT. LTD. (VCSQSPL)
TPIA	Third Party Inspection Agency to be appointed by IGL.
EIC	Engineer – in –charge
CUMULATIVE LENGTH	The riser length (excluding lateral tapping) shall be considered and averaged out among all the households, whereas the lateral piping shall be included only for one particular connection

3.0 MATERIAL, MANPOWER, EQUIPMENT AND MACHINERY

- **Material to be supplied as a free issue material**



Service Regulators, Domestic Meters, Meter Regulators, Isolation and Appliance valves shall be supplied as a free issue material to the contractor. The contractor shall not use any other material from any other source of supply other than owner's supplied material without any written approval from EIC.

- **Material / Equipment & machinery to be supplied by contractor**

Contractor shall procure / purchase Powder coated GI Pipe & fittings, Powder coated Wrought Steel Fittings (Forged Fittings), Brass fittings, Cu/MLC pipe & fittings and Reinforced rubber hose with other material which is required for satisfactory completion / safety / statutory of the works as per tender at no extra cost to Owner. IGL logo/IGL shall be marked on the material supplied by contractor. The contractor shall take approval from owner / owner representative for marking on the material to be procured by contractor before placement of order.

The Contractor shall provide labour, tools (such as Hammer Drill, Piston Drill, Pipe Cutters, Dies for threading, Pipe wrenches, spanners, conversion kits, solder torch, copper tube Cutters, tube benders, lacquering, thinner etc.) in specified numbers, all types of clamps, Plant and equipment necessary for the proper execution of the work. This will include but not limited to list of specialized tools and tackles indicated in Annexure # 1.

Special tools shall be required at site for carrying out drilling work in walls other than Brick or RCC (Ex. Granite, Marble, Wooden, Glass Cutting etc.)

The contractor has to ensure the availability of DG sets for continuous power supply. In case the power supply is availed at the site from societies, individual residents, contractor shall settle the claims raised by the electricity providers without any cost implication to OWNER. In case contractor doesn't settle the claims for using the electricity from societies/individual residents, on demand by the providers, OWNER will settle the claims and the same will be deducted from the contractor's bills. The progress of work shall not hamper due to non-availability of power supply.

The contractor has to submit the valid calibration certificate for Pressure gauges.

Contractor shall submit the manufacturer test certificate / lab test certificate for all items procured by him for approval before commencing the execution.

No hiring of equipments, tools and tackles by the contractors is allowed at the site. In case, any contractor is found not in possession of enlisted required tools and tackles, penalty will be levied as per SCC which shall be deducted from the running bill.

- **Plant and Equipment**

All vehicular type machinery shall be in good working condition and shall not cause spillage of oil or grease. To avoid damage to paved surfaces, the contractor will