GUJARAT GAS

Technical Scope for Installation, Fabrication, inspection, testing and commissioning of common approach for for PNG Installation

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1. INTRODUCTION:

Gujarat Gas Ltd, a Group Company of Gujarat State Petroleum Corporation Ltd., (State Government undertaking), is in business of distributing Natural Gas to Industrial/Commercial/Non-commercial/Domestic Customers and CNG Stations in various PNGRB authorized cities to Gujarat Gas Limited.

The present document covers the technical specifications for supply of materials, installation, testing and commissioning of Common approach in basement area / New industrial piping, Metering system and associated facilities and Modification in existing installations as per the requirement of GGL.

The detailed scope of work by the Bidder covers supply of materials and installation of common approach in basement, New & Alteration of industrial piping, inspection, testing, pre-commissioning and commissioning along with all associated works to complete above said work with totally conforming to the Technical Specifications, Drawings, Data sheets and other information provided in this document.

2. DEFINITIONS

Definitions of the terms used in this bid document, (unless the context otherwise requires), shall have the same meaning as respectively assigned hereunder.

The **"GGL"** or **"Company"** or **"Owner"** shall mean GUJARAT GAS LIMITED (GGL), incorporated under company's Act 1956, having its Corporate Office at Gujarat Gas CNG Station, Sector 5/C, ,Gandhinagar – 382006, Gandhinagar, hereinafter mentioned as "OWNER" which expression shall, unless repugnant to the context or meaning or meaning thereof, include all its successors, administrators, executors and assigns.

The **"Bid"** shall mean the Bid submitted by the CONTRACTOR for acceptance by the GGL.

The **"Contract"** shall mean the agreement and all other documents between the company and the contractor for providing the services mentioned herein.

The **"Service Provider"** or **"Contractor"** or **"Bidder"** shall mean the person or persons, firm or Company whose Bid has been accepted by GGL and includes the Service Provider's legal representatives, his successors and permitted assigns.

The **"Supervisor"** shall mean the person deployed by the contractor for control and supervision of the work of his work force, as per the Scope of work mentioned and to receive instructions from Engineer-In-Charge or his representative.

The **"GGL Engineer-In-Charge"** or **"GGL's representative"** shall mean the person designated as such by the Gujarat Gas Limited and shall include his authorized nominee or agent, provided however that the GGL's Representative to be so designated by GGL may be one person for certain aspects of this agreement and another person for other aspects of work covered by this Bid / Contract.

The **"Vendors"** shall mean a manufacturer/company who engaged agreement between the GGL and the Manufacturer for supplying the Material at GGL Designated store or Site through the transporter with required documents.

"Stores" shall mean the GGL Stores located across GGL working areas.

"Storage point" will be a location closer to the laying site selected for storing material required for execution of job. Space and location shall be jointly decided by COMPANY and SERVICE PROVIDER based solely on convenience to expedite the site work.

"Site" shall mean the land, buildings and waters and other places on, under, in or through

which the Permanent Works are to be carried out for the purpose of contract together with any other places designated in the Contract as forming a part of the site.

The **“Permanent Works”** or **“Works”** shall mean and include all works to be executed in accordance with the Contract or part thereof as the case may be and shall include all extras, additional, altered or substituted works as required for the purpose of contract.

“Temporary Works” shall mean all temporary works of every kind required in or about the execution, completion or maintenance of the works, which are not permanent.

The **"Specification"** shall mean all directions, the various technical specifications, provisions attached and referred to in the Bid documents which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the contract or works or works as may be amplified or modified by the COMPANY during the performance of Contract in order to provide the unforeseen conditions or in the best interests of the work or works. It shall also include the latest edition of relevant standard specifications including all addenda / corrigenda published before entering into the contract.

“Approved” shall mean approved in writing including subsequent written confirmation of previous verbal approval and `Approval' means approved in writing including as aforesaid.

The **"Drawings"** shall include maps, plans, tracings, prints and sketches thereof with any modifications approved in writing by the Engineer – In-charge and such other drawing as may from time to time, be furnished or approved in writing by the Engineer – In-charge.

“Emergency” means any incident / fire / explosion / gas leakage on the PE network including installations.

“Third Party Inspection Agency” (TPIA) shall mean outside inspection agency approved by the Company.

“Construction Equipment” means all appliances / equipment and things of whatsoever nature for the use in or for the execution, operation, or maintenance of the work or temporary works but does not include materials or other things intended to form or to be incorporated into the WORK, or camping facilities.

"Mobilization” shall mean establishment of sufficiently adequate infrastructure by the SERVICE PROVIDER at site comprising of construction equipment, aids, tools tackles including setting of site offices / Site Camp with facilities such as power, water, communication etc., establishing manpower organization comprising of resident engineer, supervising personnel and an adequate strength of skilled, semi-skilled and unskilled workers, who with the so established infrastructure shall be in a position to commence execution of work at site (s). MOBILIZATION shall be considered to have been achieved, if the SERVICE PROVIDER is able to establish infrastructure as indicated above to commence work at all site (s)/ locations as per time schedule, where so warranted in accordance with agreed schedule of work implementation to the satisfaction of COMPANY / engineer – in-charge.

“Working Day” means any day, which is not declared to be holiday or rest day by COMPANY.

“**Commissioning**” shall means pressing into service of the system including the plant(s), equipment(s), vessel(s), pipeline, machinery (ies), or any other section or sub-section of installation(s) pertaining to the work of the SERVICE PROVIDER after successful testing and trial runs of the same.

“Guarantee” means the period and other conditions governing the warranty / guarantee in respect of the work as detailed in section hereunder.

“HSE” means Health, Safety and Environment.

"EMERGENCY" means any incident / fire / explosion / gas leakage on the Transmission or Distribution Steel Network including installations.

3. REFERENCE CODES AND STANDARDS

Unless otherwise specified in this document or elsewhere in tender, the vendor shall take reference of latest version of following codes and standards.

PNGRB Pipeline Standard	:	Technical standard and specifications for Natural Gas Pipelines (T4S-Pipeline)
ASME B 31.8	:	Gas Transmission & Distribution piping systems
API 1104	:	Welding of pipelines and related facilities
IS 1239-1	:	Steel Tubes, Tubular and other wrought steel fittings, Part-1: Steel tubes
IS 1239-2	:	Steel Tubes, Tubular and other wrought steel fittings, Part-2: Steel pipe fittings
ASME B16.9	:	Factory-Made Wrought Butt welding Fittings
ASME Sec VIII Division I	:	Boiler and Pressure Vessel Code: Rules for Construction of Power Boilers
ASME Sec IX	:	Boiler and Pressure Vessel Code: Qualification Standard for Welding, Brazing and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators
ASME Sec V	:	Boiler and Pressure Vessel Code: Non-destructive Examination

4. Contractor's scope of work

3.1 General Scope:

The scope/ specification cover the minimum specified requirement for the various activities to be carried out by the Contractor toward the supply and installation, testing and commissioning of welded common approach in basement area or internal piping at Industrial premise if any and related work at the various locations of GGL. All the work towards execution of allocated job, shall be done as per the procedures and guidelines of GGL

Contractor shall collect the work schedule from GGL Work In charge as per the instruction from GGL.

Contractor shall depute the required competent manpower for carrying out piping installation work.

Contractor shall submit information regarding work-in-progress and details about deployment of his working teams to the GGL Engineer in-charge as per the planning and format given by the Engineer in-charge.

Contractor shall observe all prevailing HSE norms and labour laws applicable to them during the period of contract.

The work site would be on case to case basis, but no additional transportation

charges/miscellaneous charges would be paid apart from the rate agreed upon.

Contractor shall not allot subcontract for any or part of the above job.

All the responsibility for the completion of job will be in the contractor's scope.

Contractor shall accomplish the designated job within the specified time duration for fulfilment of the target.

Contractor shall strictly adhere to the environment norms as per the existing local rules.

All persons engaged by the Contractor shall be the Contractor's own employee and they will claim no privileges from Owner. The Contractor is directly responsible for the administration of his employee as regard general discipline and courteous behaviour.

Contractor shall ensure that his supervisor is present at site, till completion of work as per planning given by GGL representative.

Contractor shall arrange for timely submission of bills with reasonable accuracy and the material reconciliation as per the schedule advised by Owner.

For any work covered under company's work permit system, as informed by the engineer in charge, the contractor shall collect the work permit or extension of work permit from engineer in charge at GGL office on day to day basis.

If it appears to the Owner's Supervisor or his representative (incl. Owner) that any work does not meet the GGL specification or found that the contractor selected wrong route, the contractor must carry out modification/replacement at his own cost and the loss of free issue material if any due to rework (reasons attributable to Contractor) shall be debited from Contractor.

Contractor shall make necessary arrangements for Safe Custody of materials in his warehouse and on site. The responsibility for security and storage of materials at site rest with contractor only.

Contractor shall follow GGL safe operating practices for execution of work.

Contractor shall arrange work related PPE's (i.e. Safety Shoes, Safety Goggles, Hardhat, Hand gloves, Gum Boot, Ladders, Safety Belt etc. for his manpower and ensure to wear it during the execution of job.

Contractor shall install all the signage and barricades during the course of work as per the GGL's HSE guidelines.

Contractor shall submit all the required documents as per the frequency decided by GGL Engineer In charge including HSE performance Plan and compliances.

Contractor shall carry out the work normally with in the official duty hours of Company. The Concerned Supervisor must ratify any deviation from the normal working hours. No Work shall be carried out without permission of Company Engineer In-charge beyond the official duty hours.

All activities shall be carried out as per GGL documented procedure and HSE requirement and deviation from it shall be approved and dealt with very strictly.

Contractor shall provide mobile phone to his staff for ensuring effective communication / coordination from site to GGL office.

Contractor shall properly cordon the work area wherever necessary during work in process.

Owner's health, safety and environment management system shall be observed in the connected services by the Contractor and accordingly workman shall be engaged by the

Contractor.

In case of any hazard like gas smell, damage, fire, leakage etc. due to gross negligence of the Contractor, GGL reserves the right to impose penalty up to actual damage cost and or termination of Work Order depending upon the gravity of the situation.

Contractor shall submit the fitness report issued by competent authority for working at height equipment like full body harness, fall arrester, rope, and other equipment i.e. PETZL.

All Plumbers/Welders who are engaged for working at height shall be trained and certified by OEM/GGL authorized agency.

Contractor's Representative should not be allowed without Identity Card at GGL sites / office while carrying out the job all deputed persons shall follow GGL HSE norms.

Contractor shall not change personnel frequently and in case of absence, he should be replaced by proper trained and certified person after assessment by GGL Engineer In charge or GGL representative. Contractor shall always maintain the minimum required strength of manpower as per the requirement.

Contractor shall review the progress of works on continuous basis and shall brief the Owner's office for review of work as well as manpower deployment minimum once in fortnight or else as required by either GGL or himself.

Contractor personnel who will be working on site should have thorough knowledge of isometric sketch.

In view of the technology up-gradation taking place from time to time the Contractor shall abide to the requirements imposed by the company at no extra cost or cost mutually agreed with company through amendment.

Contractor's establishment shall be subject to work place inspection, investigation etc. by GGL for ensuring proper work and shall also appoint TPIA for regular checking at defined interval for legal compliance with regard to labour laws and matter stated in this clause.

Computerized programming facility along with mailing facility shall be available at Contractor office.

Contractor shall carry out mobilization for allotted job as per requirement given by the Owner. GGL shall have right to examine at any of the site/premises for the deliverable with a view to maintain the service quality and compliance of safety standards and there shall be no grievances expressed/felt on this account either by "Contractor's his employees.

Minimum qualification for Engineer / Supervisor required is Diploma in Mechanical with preferred back ground in safety.

3.2 Permits and Authorizations:

Contractor shall, with due care and diligence, execute the work in compliance with all laws, by laws, ordinances, regulation etc. and provide all services and labour inclusive of supervision thereof.

Contractor shall obtain all necessary permits or authorizations to carry out construction activities from GGL.

3.3 Communications:

Contractor shall ensure proper office and all required infrastructure supported with communication, Computer and E-Mail facility and shall provide necessary support to facilitate the Commercial / Domestic risers installation activity to be completed within prescribed period, including timely submission of reports.

3.4 Specific Terms and Conditions:

Contractor shall depute a qualified and experienced senior management staff as its Representative who will be the contact person between GGL and CONTRACTOR for the performance of the Contract.

Contractor's Representative shall be entitled to act on behalf of CONTRACTOR With respect to any decisions to be made under the Contract.

Contractor shall be solely responsible for making available for executing the work; all requisite construction equipment's etc. shall be subject to examination by GGL and approval for the same being in first class operating condition. Any discrepancies pointed out by GGL shall be immediately got rectified, repaired or the equipment replaced altogether, by Contractor

Contractor shall ensure calibration / certification / inspection of the all the tools / tackles and equipment as per the frequency decided by the GGL

All the materials, equipment, appliances, PPE, Consumables or other things of whatsoever nature required in or about the execution of steel pipeline fabrication i.e. cutting, grinding, welding, NDT, installation, testing, purging and commissioning , whether of temporary or permanent nature shall be provided by the Contractor.

Contractor shall perform NDT of 1% of total weld joints or NDT of 1 joint per job whichever is higher.

Contractor shall provide Site Co-coordinator for each location as per GGL requirement, to ensure overall compliance of work order and job orders.

Before starting of work at site, Contractor shall familiarize himself with the activities and obtain approval/ clearance from Owner.

Without limiting the generality thereon, Contractor shall do all work necessary at each of the job which is complete in all respect with site restoration.

Contractor shall provide transportation facility specific to job / site requirement, with dedicated vehicle fit for the purpose.

3.5 Steel Fabrication Works:

All the steel fabrication and erection jobs, shall be executed as per the procedure and guidelines for the specific job recommended by GGL

The scope of services for fabrication and installation of Steel supply line piping and associated work at Commercial / common approach in basement at customer premises to supply natural gas from nearest charged pipeline network spread over various locations GGL.

The pipeline constructed across the wall structure at the customer premises shall be adequately protected against potential risk of corrosion by providing PE Sleeve with end seals as approved by GGL.

3.6 Contractor's scope of supply:

- **<u>Manpower</u>**

Contractor shall deploy sufficient manpower to complete the work in all respect with the minimum qualification as mentioned below for the various activities to be performed at GGL site

Sr. No	Designation/Skill	Qualification/Experience

01	Safety Engineer	Diploma/ certification in fire and safety and relevant experience of 1 year
02	Site Supervisors	Diploma in Mechanical Engineering
03	Steel Pipeline Welder	Certification in line with API 1104 and/ or Boiler and Pressure Vessel Sec IX

Contractor shall provide Site Co-ordinator as per GGL business plan, to ensure overall compliance of work order and job orders

Contractor shall carry out management of personnel including payment of salaries and wages, insurance and medical attention at his own cost.

- **Material**

Supply and installation of pipeline consisting of sizes in range from 1/2" N.B. to 4" N.B conforming to IS-1239 part-I Class "C" heavy galvanized/powder coated Pipes with operating pressure of max. 4.0 bar (g) or ASTM A 106 Gr.6 or API 5L-Gr. B, Class 150#, as per the requirements of the job as per GGL Scope. The CS fittings conforming to ASTM A 105 (socket weld fittings up to 1.5" and Butt weld end above 1.5" NB) and valves shall be used of 150# pressure rating.

Supply and Installation of clamping required for installation of Approach including rubber pad as per GGL procedure are under scope of the Contractor.

Contractor shall offer material inspection/test certificates of contractor's scope of materials to owner's appointed TPIA/GGL REPRESENTTIVE for review prior to commencement of work.

Supply and installation of Structural materials required for temporary attachments or for permanent pipe supports wherever required. All consumable materials required for fabrication and installation including synthetic enamel paints, red oxides, G.I. "J" bolts and PVC cap for holding of PVC sheet.

Contractor shall arrange at his own required tools, tackles, special equipment e.g. Welding Machines, Generator, Air Compressor, Four Wheeler Tempo, Calibrated Pressure Gauge, Hammer, Tool Kit Set, etc. needed for Installation and Commissioning of Dom / Com Welded Connections. Also, ensure the upkeep of these units and shall replace if they are not meeting requirements specified by Owner.

All the consumable materials for Cutting, Grinding, Welding, NDT, Support installation, Testing, Leak checking, Purging, Painting, Commissioning and threaded connection, fuel for operating Machines etc.

Material to be arranged by the Contractor should be of standard quality and as per company's specifications / samples certified by Owner.

Tools-tackles, equipment, consumables, skilled manpower, vehicles mentioned below are the minimum required for each location. He shall ensure the upkeep condition of these units and shall replace as required against its quality and performance.

Required tools and tackles as listed below,

- Power Hacksaw machine- Hand operated and manual / power Hacksaw for cutting at heights for difficult approaches
- Portable Tool box
- Welding tool kit
- Air compressor
- Welding Generator set

- RCC Breaker – need basis
- Ladder (10 FEET Height)
- Working platform scaffolding
- Digital Pressure Gauge, Range 0-7 Barg
- PPEs as per PPE Matrix – for all operatives
- Sign Boards and Barricading – sufficient quantity
- PC with MS Office and email facility
- CUG Mobile phones – all supervisors (min. one phone on each site)
- Vehicles

All the Consumable Materials like, Civil Construction Materials, Nitrogen Gas for Purging, Gasket and Teflon Tape for various testing, Diesel, Grease etc.

Tools- tackle like various Spanners, Pipe Wrench, Cutting Tools, Screw Driver, Signboards, Cordoning and Barricading materials.

Structural materials required for temporary attachments or for permanent pipe supports wherever required. Contractor has to submit a list of qualified supervisors, welders planned to deploy for respective job along with Organization chart.

3.6.1 Specification of GI Pipes

The dimensions and nominal mass of tubes shall be in accordance with Table 5 subject to the tolerances permitted in CL.8.1 and 9 of IS 1239 (Part-I) : 2004 (Latest edition). Length of each pipe shall be 3.0 mtr. with + 6, - 0 mm tolerance. However, pipe length shall be considered 3.0 mtr. only for measurement / payment purpose.

Nominal Bore	15 mm (1/2”)	25 mm (1”)	40mm (1*1/2”)	50mm (2”)	80mm (3”)	100mm (4”)
Grade	Heavy	Heavy	Heavy	Heavy	Heavy	Heavy
Outer Dia. (Max. / Min.)	21.8 mm / 21.0 mm	34.2 mm / 33.3 mm	48.8mm / 47.9mm	60.8mm / 59.7 mm	89.5mm / 88mm	115mm / 113.1 mm
Thickness (mm)	3.2	4.0	4.0	4.5	4.8	5.4
Nominal weight (Kg / m) inclusive Galvanized coating	1.44	2.93	4.37	6.19	9.9	14.5
Tolerance on Thickness	-10% / + Not limited	-10% / + Not limited	-10% / + Not limited	-10% / + Not limited	-10% / + Not limited	-10% / + Not limited

3.6.1.1 <u>END CONNECTION OF PIPE</u>

GI Pipes shall be supplied with plain end.

3.6.2 <u>Fittings:</u>

Fittings shall conform to ASTM A 105 for socket weld connection and for Butt weld connection

ASTM A 234 WPB. Data sheet for the fittings is attached as annexure 1. Dimension of fittings shall conform to ASME B 16.9/ASME B 16.11.

3.6.3 FREEDOM FROM DEFECTS

On visual examination the outside and inside surfaces of pipes shall be smooth and free from defects such a cracks etc.

3.6.4 GALVANIZING

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

ii. Zinc conforming to any grade specified in IS: 13229- 1991 with latest amendment shall be used for the purpose of galvanizing.

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

iv. Mass of zinc coating: Minimum mass of zinc coating determined as per IS: 6745 shall be 400 gms/m^2.

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

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

vii. Samplings

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

b) The sample selected according to Clause 6.1 and 6.2 of IS: 4736 – latest edition.

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

d) Criteria for conformity: As per IS: 4736 – 1986 with latest amendments.

3.7 COMPANY'S SCOPE OF SUPPLY:

GGL will provide Job order for each site along with agreed planning / schedule for execution

GGL shall provide Permit to Work / Work authorization permit to carry out the job as per PTW matrix.

GGL will approve construction drawing of Job to be executed

GGL shall have right to examine at any of the site/premises for the deliverable with a view to maintain the service quality and compliance of safety standards and there shall be no grievances expressed/felt on this account either by Contractor's employees.

GGL shall inspect various tests as enumerated in the technical specifications of this bid document and the technical documents

GGL shall inspect each activities carried out at contractor work shop and at site

GGL will carry out Contractor's performance evaluations monthly and shall prepare joint action plan for improvement.

In case of non-availability of any materials/consumable with Contractor and in market, Owner as its own discretion and subject to availability, may supply on chargeable basis at the rate decided by the Owner. However, any delay due to this shall not be attributed to the Owner.

GGL shall arrange the permission/NOC from society president/secretary for execution of job.

GGL shall provide the planning / schedule for activities.

GGL shall provide the sample copy of required formats / reports to be prepared and submitted by contractor to Owner.

This is an open value based contract for the specified period and GGL shall have right to allocate the any of specific job illustrated herein by his own discretion.

GGL shall provide work permit to carry out the job.

GGL shall provide safety guidance and assistance as it deemed required during the execution.

GGL will provide technical Guideline for execution of activities for compliances of Quality required to complete the work

GGL shall have right to ask for the removal of any person of the Contractor who is not considered to be competent, disciplined and orderly in the discharge of his duties.

4 SPECIFICATION OF WORK:

4.1 Welding Procedure Specifications:

Contractor shall submit the welding procedure specification indicating the proposed welding process to GGL for approval. Any deviation desired by the CONTRACTOR shall be obtained through the express consent of the OWNER.

Welding procedure qualification shall be carried out in accordance with the relevant requirements of API 1104 and other applicable codes and other job requirements by the CONTRACTOR. The CONTRACTOR shall submit the welding procedure specifications as per the formats given in API- 1104 after the receipt of the order indicating details of welding consumables, welding process, welding position, welders, destructive test sample positions, pre-heating requirements, voltage, current, heat input etc. Pipe of maximum diameter and wall thickness shall be used for welding procedure qualification.

Radiography of the entire weld shall be carried out using the same source of radiation, radiographic technique and exposure time as that to be used for production weld.. In addition of API 1104, the following codes and specifications shall be followed for the welding qualifications and consumable qualifications.

a. Welding and Brazing qualifications, As per ASME section – IX,.
b. ASME Section – II part C for welding electrodes.
c. ASME Section V – Non-destructive examination

4.2 Welding Consumable:

a. The welding electrodes/filler wires supplied by the CONTRACTOR shall conform to the class specified in the approved welding procedure specification. The materials shall be of the make approved by the OWNER/TPIA.
b. The CONTRACTOR shall submit batch test certificates from the electrode / filler wire manufacturers giving details of physical and chemical tests carried out by them for each, batch

of electrodes/filler wire to be used. The certificates shall have as minimum information such as batch number, date of manufacture, consumable cast number, consumable chemistry, weld metal chemical analysis, weld metal mechanical properties including Charpy impact energy.

c. Electrode Qualification test records shall be submitted as per relevant code requirements by the CONTRACTOR for obtaining the approval of the OWNER/TPIA. The following details shall be provided in qualification test records. All weld tensile test, base material used, pre-heat and post weld heat treatment details, visual examination results, radiographic examination results, tensile test results (incl. UTS, and elongation), impact test values, chemical analysis report, fillet weld test results, other tests like transverse tensile tests and guide bend test results.

d. All electrodes shall be purchased in sealed containers and stored properly to prevent deterioration.

e. Physical properties of the welds produced by the electrode / filler wire & brand recommended for the welding of particular base metal shall not be lower than the minimum values specified for the base Physical properties of the welds produced by the electrode / filler wire & brand recommended for the welding of particular base metal shall not be lower than the minimum values specified for the base metal unless otherwise specified in approved Welding Procedure Specification. (WPS) The choice of electrode shall be made after conducting the required tests on the electrodes as per relevant standards, and acceptance shall be the sole prerogative of the OWNER/TPIA.

f. The composition and purity of shielding gas when required by the welding processes other than shielded metal arc welding, when permitted by the OWNER/TPIA shall be submitted to the OWNER/TPIA for approval.

g. Electrode qualification test records of the electrode tested should be submitted in standard format by the CONTRACTOR to TPIA/ GGL Engineer in-charge for obtaining the approval of using the electrodes in welding.

a. Welding Process:

a. Welding of various materials under this specification shall be carried out using SMAW process.

b. Only qualified welder shall make the joint.

c. Before making tack welds pipe shall be properly aligned. Tack should be equally spaced Minimum number of tacks shall be 4 tack – for 2.5” and smaller dia. pipes.

4.3 Welding Technique:

a. Root pass:

Root pass shall be made with 2.5 mm dia. (12 SWG) welding electrodes conforming the class E – 6010.

b. Filler / Final Pass:

Filler / final pass shall be made with 3.15 mm dia. (10SWG) welding electrodes, conforming to class E – 6013.

4.4 QUALIFICATION OF WELDERS

- Welders shall be qualified in accordance with the API 1104 and other applicable specifications by the CONTRACTOR at their expense. The butt weld test pieces of the welder qualification tests shall meet the visual and the radiographic test requirements API 1104. The welder qualification tests shall be carried out using the welding procedure and the equipment that

will be utilised during production welding. The welder qualification shall be done only on project line pipe. The OWNER/TPIA Representative inspector shall witness the test and certify the qualification of each welder separately. Only those welders who have been approved by the inspector shall be employed for welding. CONTRACTOR shall submit the welder qualification test reports and obtain express approval, before commencement of the work. It shall be the responsibility of CONTRACTOR to carry out qualification tests of welders. Guided bend tests shall also be conducted for welders to be qualified for station pipe welding. Retesting of a welder who has failed the qualification test shall be done only after approval of the OWNER/TPIA who shall decide on the training requirements.

- The welders shall always have in their possession the identification card and shall produce it on demand by the OWNER/TPIA Representative. It shall be the responsibility of the Contractor to provide the identity cards after it has been duly certified by the OWNER/TPIA. No welder shall be permitted to work without the possession of identity card.

4.5 Weld Inspection and Testing:

- Welding procedure qualification shall be carried out in accordance with the relevant requirement of ASME Standard – IX
- The CONTRACTOR shall submit the welding procedure specifications.
- The below mentioned test shall be carried out by the CONTRACTOR at his own expenses.

a. Welder's qualification:

Welder shall be qualified in accordance with the ASME – Section IX. TPIA/GGL REPRESENTTIVE shall witness the test and certify the qualification of each welder. Only those welders who have been approved shall be employed for welding, CONTRACTOR shall be submitting the welder qualification test reports. It shall be the responsibility of CONTRACTOR to carry out qualification test of welders.

- The welder shall always have the identification card in his possession. No welder shall be permitted to work without the possessions of identify card.
- Following shall be submitted by contractor to TPIA/GGL Engineer In Charge for qualification of welder, Electrodes and welding procedure :

a. Electrode and Welding Consumable Qualification Records, for the Welding Consumable tested and approved for the work.

I. Batch Test Certificates, for the Electrodes used, obtained from the Electrode Manufacturers.

II. Weld Joint Hardness test results.

III. Welding Procedure Specifications immediately after receipt of the order.

IV. Welding procedure qualification records.

V. Welder performance qualification records immediately after conducting Welder qualification tests.

VI. Radiography Procedure.

VII. Radiographic test report along with Radiographs.

- Non submission of any of these documents shall tantamount to non-completion of contract.

4.6 Repair of Welds

a. With the prior permission of Engineer-in-charge/TPIA welds which do not comply with the standards of acceptability shall be repaired or the joint cut out and re-welded.

b. The repair shall be subjected, as a minimum requirement to the same testing and inspection requirements as the original weld. The entire joint shall be re-tested with NDT technique recommended

c. Welds not meeting the specification after one repair shall be cut out depending upon the extent of repair.

d. Where a weld is rejected by the accumulation of defect clause, as defined by API 1104 and this specification, repairs within these limitations are permitted

e. Contractor shall maintain a report of all repairs.

4.7 Installation of pipe supports:

a. The contractor and GGL engineer shall jointly decide the route of the supply piping. As per the finalized route, position of pipe supports shall be decided. The pipe supports shall be installed at a nominal distance of 2.0 mtr and recommendations from typical stress analysis study conducted by GGL.

b. In case of fittings, at least one support shall be installed near to the fitting. The supports shall be properly installed on the Commercial / Dom risers' structure to ensure firm support to the piping.

c. The supports shall be installed in straight line with the help of water level tube such that visually they are seen reasonably in straight line. Depending upon the pipe size and site condition 40 mm, 50 mm and 65 mm heavy angles, as agreed by the GGL Site engineer shall be used for pipe supports.

d. Wherever support distance cannot be maintained, special-supporting arrangements as per the directive of the engineer shall be fabricated and installed. GGL site engineer shall be the final authority to approve the adequacy of pipe supports and contractors are responsible to conform to the site engineer's requirement.

e. Type of support and design, specific to route of piping orientation, shall be as per design finalized by GGL

4.8 Fabrication of piping:

a. Fabrication of the piping work shall be done with the pipes and fittings procured from approved vendor of GGL by contractor.

b. For fabrication of the piping, the approved welding procedure shall be used. Contractors are responsible to carry out the procedure qualification tests and maintain the procedure qualification records as per requirement.. The welding shall be done only by the welder approved by GGL.

c. GGL reserve the right to decide the nos. of welders to be qualified. It is the responsibility of the contractor to approve the welders before the expiry of validity period. The expenditure for carrying out the qualification tests at external test laboratories shall be borne by the contractor.

d. Each fabrication team must contain a fitter who shall prepare the fit-ups to ensure sound fabrication. The fitter shall have sufficient knowledge and experience of gas pipeline fabrication.

e. The type and make of the welding consumables used for fabrication shall be as per the approved procedure. The contractor shall submit the batch test certificates of the welding rods to site engineer whenever required. The contractor shall ensure proper handling and storage of the welding rods. Welding rods surpassing the expiry date shall never be used. Welding rods that are damaged or damped during handling shall be discarded.

f. Before jointing pipes and fittings, visual observation shall be done to ensure that inside of the pipes and fittings are free from any obstruction.

g. The contractors shall ensure sufficient nos. and types of machines and tools required for pipeline fabrication depending upon the size and no. of jobs. The contractors are responsible for up-keep of the machines and tools-tackles and safe handling during the execution of the job. During the fabrication work, proper signboards shall be used and proper barricading shall be done. The contractor as per the instructions shall ensure wearing of proper personal protecting equipment from GGL.

h. During the fabrication work, all norms mentioned in requirements for environment protection, mentioned later herein, shall be strictly followed.

i. At the time of installation of piping, proper lifting arrangements shall be employed by the contractor to ensure that the piping sections do not collide with any facility at customer's premise. The lifting facility shall have sufficient lifting capacity to ensure fall-free safe installation at heights. Sufficient no. of manpower shall be deployed whenever pipeline is to be lifted manually for installation at heights.

j. After installation of the piping, visual observation shall be made for straightness and bending of piping.

k. Additional supports shall be provided as per the directives of GGL's site engineer if inefficiently / inadequately supported sections result in bulging of the piping.

l. Fabricated supports shall be erected up to and on the platform such that there is a support after each flanged joint. Wherever, nos. of supported has to be reduced due to site condition, it shall be done only after clearance from the site in-charge. Once required supports are installed, pipe sections and valves shall be installed on the supports with the help of hardware and pipe 'U' clamps. The sections and valves shall be installed by maintaining perfect alignment such that no undue stresses are generated on flanged connections.

m. It is preferable to bring the pre-fabricated structure at respective site duly fabricated at Contractor workshop at site. After transporting the pre-fabricated structure to the site, final fabrication work shall be done at site. For installation of the fabricated structure, the contractor shall arrange proper lifting and material handling equipment.

4.9 Meter Installation:

a. Different types of meter shall be installed at different industries & Commercial connections based on consumption pattern of equipment

b. The fabrication and installation of pipeline, Meter and associated facilities shall be installed as pre the approved drawing and instruction of GGL

c. Contractor shall exercise care in loading, unloading, storing and distribution of Meter in order to avoid damage

d. Meters shall be stored in sheltered and transported at site for use only at the time of installation.

e. Contractor shall if any equipment or instrument is found defective at the time of material reconciliation, repairing cost / rectification cost shall be recovered from contractor's bill.

4.10 Installation of valves and valve station

a. Valve installation is the activity of installation – either by fabricating companion flange joint or by screw end joint, having different types and sizes of valves during the progress of fabrication and erection of Industrial Installation.

b. Valves with flow arrows shall be installed according to the normal flow in the pipeline. During welding, the valves shall be in fully open position. Care shall be taken to avoid entry of sand particles etc. to valve body, seals etc. during transportation, storage, assembly and installation.

c. For valves and piping installed the anti-corrosion painting shall be applied. The anti-corrosion below ground coating shall extend up to 300 mm above ground at the lowest point.

d. All valve and any other inline assemblies shall be prefabricated and tested pneumatically at site as per applicable specification.

e. All such assemblies shall be installed at the locations shown in the drawings only after successful completion of the test. Thereafter the ends of the assembly shall be closed off.

f. Contractor shall carry out necessary cutting, bevelling and welding of the field joints required for the installation of such assembly.

4.11 Installation of transition fitting

a. Transition fitting shall be installed at the locations at the out let of MRS / Connection to underground PE Pipeline

b. Handling and installation of the transition fitting shall be carried out with all precautions required to avoid damage and excessive stresses.

c. The joint shall be inserted on straight sections and laid on a fine sand bed.

d. During the execution of the in-line connection welding, the propagation of heat shall be avoided. To achieve this, the joint shall be kept cold by means of rags continuously wetted.

e. Installation and welding of the joint into the pipeline to ensure that the assembly is undamaged.

4.12 Extension and Modification of Supply Piping

a. In case of modification / extension of the industrial & commercial customer supply pipeline, similar specification of material shall be used

b. Modification in existing pipeline is carry out with drawing approved by GGL

c. Testing of the pre-fabricated spools / piping are done prior to connecting the section to the existing line.

d. Hot work shall be carry out as per the GGL approved procedure

e. On successful completion of the pneumatic testing, the tested pipe section shall be connected with the existing pipeline.

f. Final joints shall be tested with soap solution at operating pressure.

4.13 Pneumatic Test:

a. The pneumatic test is carried out with the use of Compressed Air or Nitrogen Gas.

b. The pipeline under testing is marked with the Display board indicating the “Pipeline under testing”.

c. The pneumatic testing shall be done with the help of Compressed Air/Nitrogen gas. Pneumatic testing shall be done at a pressure of 1.5 times pressure of working pressure (bar g) and this pressure shall be held for 1 Hours after the pressure stabilization period of 30 minutes. No pressure drop shall be allowed during the pressure holding period.

d. The pressure is retained in the pipeline for minimum two hour or as found required specific to the site requirements. Any drop in pressure is observed by the Contractor supervisor and

the leakages if any are resolved. All flanged and threaded joints shall be leak tested with the help of soap solution. If any leak is identified during the leak testing, the same shall be rectified suitable and the entire pneumatic test shall be repeated for 1 hr.

e. Any threaded / flanged joints available shall be leak tested with the help of soap solution during the pressure holding time. If there is pressure drop at any stage, thorough investigation shall be done. Any weakness identified during the investigation shall be rectified and recorded. Rectification shall be carried out after completely de-pressurizing the piping. Any cost incurred for the rectification shall be borne by the contractor. After the rectification, the pneumatic testing shall be re-initiated.

f. On completion of satisfactory Pneumatic test the same is offered to the Owner's site supervisor for witness and approval.

4.14 Painting works:

a. Painting: In case of Powder coated pipes, paint shall be applied on each joint and on fittings. The pre-coating damaged during handling and installing shall be touched-up as per same painting scheme.

b. Painting shall be done by applying 1 coat of red oxide primer and two coats of golden yellow synthetic enamel after properly cleaning the surface to be painted. The cleaning shall be done with the help of sandpaper such that all the deposits are properly eliminated. Excessive scrapping which can remove the zinc coating shall be avoided. The paint, thinner and primer shall be procured by the contractor of the Brand approved by GGL.

c. The paint shall be applied on each joint and on fittings. The pre-coating damaged during handling and installing shall be touched-up as per same painting scheme.

d. During the painting work, all norms mentioned in requirements for environment protection, mentioned later herein, shall be strictly followed.

e. Painting shall be done in following order:

Valves:

i. Scraping and cleaning of paints from the surface of painted materials.
ii. Applying one coat of red oxide or zinc chromate primer.
iii. Applying one/two coats of chlorinated rubber paint.
iv. Applying one/two coats of synthetic enamel paint as per colour code given by Owner.

5 INSPECTION:

- GGL reserves the right for inspection and ordering corrective actions at any stage of any activity being executed by the contractor under this contract if it is found that work is not done as per the requirements specified here-in.
- The corrective actions shall be implemented by the contractor up to the satisfaction of GGL site supervisor to ensure that all the specified requirements of this tender are properly attended to.
- The contractor from his side shall nominate his supervisor to carry out regular supervision of all the activities and for co-ordination of quality related issues with GGL. Whenever a written communication is done from GGL side for non-conformance to the requirements specified here-in, the contractor shall submit in writing, the action plan to prevent re-occurrence of such non-conforming act in future.

6 DOCUMENTATIONS:

Contractor shall submit following documents to GGL before starting the job.

- HSE Plan / Contract
- Organization Chart
- List of Equipment and Machinery
- Quality Assurance Plan

In addition to above, Contractor shall submit following report to GGL engineer in charge as per frequency given.

Sr.	Report	Doc. No.	Frequency
1	Daily progress Report	As per Attachment	Daily
2	Welding Joint Report	-	For each site
3	Job Completion Certificate	-	For each site
4	As built drawing (1 original, 1 soft copy)	-	For each site
5	Measurement sheet		For each site
	HSE:		
1	Site Specific Risk Assessment		Each site, before excavation
2	Hazard Reporting		As and when it happen
3	Near miss Reporting		As and when it happen
4	Performance Measurement and Monitoring		Monthly

7 MODE OF MEASUREMENT:

Contractor shall submit Bill of each assigned job within 7 days time from the completion of the job for all categories of services duly certified by GGL representative after completion of each job.

Contractor shall take joint measurement within two days time from the completion of job, for all categories of services and the same shall be certified within two days time.

Material measurement sheet shall be certified within Two days time after completion of each job and the same shall be submitted to the GGL along with the bill.

The drawing (Soft Copy) of the work executed shall be submitted by the contractor before commissioning of the Connection / Riser.

GGL reserves the right to increase / decrease the quantity or replace the Scope of Work or delete them at any stage of the work.

8 INSURANCE:

Wherever applicable, insurance is the responsibility of CONTRACTOR for Man/ Materials and Services towards the scope of Work Order.

9 HANDLING OF MATERIALS:

Contractor shall use proper equipment for loading/ unloading of the material[s] as per standard GGL HSE standard procedure and practices.

In case any material[s] is damaged during loading/ transit/ unloading at site, the GGL reserves the right to reject the entire/ part of the material.

10 MATERIAL RECONCILIATION

The Contractor will be required to do Material Reconciliation immediate after completion of project.

11 CHANGES:

GGL reserves the right, at any time and from time to time to direct contractor for changes in the Scope of Work and CONTRACTOR shall agree to promptly effect such changes. GGL shall equitably adjust any difference in price or time for performance resulting from such changes after receipt of documentation in such form, formats and details as GGL may direct.

12 HSE REQUIREMENT

HSE requirement shall as per attached Annexure : 2

Annexure: 1

DATA SHEET FOR HOT DIP GALVANIZED FITTINGS		
Sr. No.	**Description**	**Specification**
GENERAL		
1	Schedule no./Class Rating	
a)	Butt-welded fittings (Above 1.5”NB)	Schedule matching with pipe thickness
b)	Socket Weld Fittings(Up to 1.5”NB)	3000#
SERVICE CONDITIONS		
2	Service Fluid	Natural Gas
3	Temperature	0 to 65 °C
4	Design Pressure	19 Bar-g
5	Maximum Operating Pressure Maximum	4 Bar-g
CONSTRUCTION DESIGN		
6	Design Standard	ASME B 16.9/ASME B 16.11
7	Allowable Stress Valve	ASME B 31.8
8	Bevelled angle (Butt Weld Fittings)	$32.5^{o} \pm 2.5^{o}$
MATERIAL SPECIFICATION		
	Part	**Specified Material**
9	Material of Construction	ASTM A105/ASTM A 234 Gr. WPB
TESTING and INSPECTION		
10	Proof test	ASME B 16.9
12	Hardness test	• A105 - 187 BHN max. • A234 - 197HBW max
13	Tensile test	• A105 -TS-485MPa min • A234 TS-415MPa min
14	Yield strength (Minimum)	• A105 YS-250MPa min • A234 YS-240MPa min
15	Elongation	AS PER APPLICABLE CODE
17	UT	100% Surface
18	MPT	100% at Bevel Ends
19	DPT (if thickness less than 6MM)	100%
20	Marking	MSS SP 25

Annexure: 2

A. SCOPE AND APPLICATION

Contractor/Service providers are the key stake holder and an integral part of Gujarat Gas Ltd (GGL's) business. Contractors'/Service provider' Quality, Health, Safety and Environment (QHSE) performance reflects on the company's business performance and reputation. GGL has established QHSE Management Systems, Procedures & Guidelines to ensure compliance with GGL's QHSE requirements. These requirements apply to all jobs whilst conducting work for GGL including; Project, Construction, Operation & Maintenance, Field Operations and Services within any given contract or agreement.

The overall objective of QHSE management in contract/agreement is to improve the company and Contractor's/Service providers' QHSE performance in all aspects of activities. Active and on-going participation by both the GGL and Contractor/Service provider is essential to achieve this objective.

B. RESPONSIBILTIES

It is responsibility of GGL management and staffs to ensure that all Contractors/Service providers work under their direction & control are provided with relevant Integrated Management System (IMS) Policies, Procedures & Guidelines that describe the GGL requirements for undertaking work within the company. It is also the responsibility of Contractors/Service providers to ensure that their staff are informed of and comply with GGL's requirement whilst working for the company.

GGL HSE department provides advice and assistance on QHSE requirements across the complete spectrum of all work activities. Contract Owner (Department Head) and Contract Holder (Work in-charge) are responsible to ensure safe execution of work/service include the following:

- Ensuring that the QHSE Policy, Procedures & Guidelines are known and understood by all contractors'/service providers' staff and work force
- Monitoring, Inspecting & Auditing execution of work, activities to ensure adherence to the QHSE compliance requirements

The Contractors'/Service provider' will take the responsibility for implementation of GGL's QHSE Policy, Procedures, Guidelines and other requirements with the advice and support of the GGL's Contract Owner / Contract Holder and HSE representative.

Contractor/Service provider to ensure that all aspects relating to QHSE are adequately addressed and implemented in accordance with the GGL QHSE requirements and QHSE Management Plan, which shall include the management processes and activities to be implemented during the course of work with GGL.

Contractor/Service provider shall be responsible for ensuring that adequate HSE resources are put in place to enable satisfactory implementation of QHSE Management Plan.

This responsibility also applies to ensure the Health and Safety of the people are directly and indirectly engaged / involved whilst working or present at GGL's work area / sites.

C. MOBILIZATION

- Post selection and awarding of contract, GGL shall arrange a kick-off meeting with Contractor/Service provider where GGL team members Contract Owner (CO), Contract Holder (CH) & HSE representative) will discuss on QHSE Management aspects / plan and requirements in order to make sure that Contractor/Service provider and their team are fully understand the expectation of GGL. During the meeting, QHSE Management Plan shall be discussed and agreed between GGL and Contractor/Service provider.
- Contractor/Service Provider shall ensure that all tools, tackles, equipment, machineries & instruments are adequately deployed and are 'Fit for Purpose'. Pre mobilisation checks/inspection shall be carried out by GGL team for the same before the start of work.
- GGL emphasizes on the importance of the Health and Fitness of all staff/work force deployed at GGL work sites. Contractor/Service provider shall adhere to medical check-up as per the GGL Health check-up matrix (as applicable)
- A proper HSE orientation and training will be organised by GGL for the Contractor/Service provider workforce before the start of work; under no circumstances should the Contractor/Service provider commence the work unless they have undergone the HSE training (as applicable)
- Contractor/Service provider shall ensure that all their staff/work force are provided required Personal Protective Equipment (PPEs) as per GGL PPE matrix (as applicable)
- Contractor/Service Provider shall ensure all required emergency arrangements like Medical treatment, FIRST AID box and Fire fighting equipment (as applicable)

D. EXECUTION

Contractor/Service provider is responsible to ensure the compliance with GGL QHSE requirements. GGL overall QHSE performance is directly influenced by the contractors' performance.

- Contractor/Service provider is responsible for QHSE compliance monitoring at site/work activities to ensure that work/activity is performed in a safe manner. Moreover, they are responsible for reporting of all incidents, Hazard and Near Miss that might happen during work/activity
- Contractor/Service provider shall follow and comply with GGL ''Work Permit'' system
- During work execution and activities, GGL team will regularly monitor and evaluate the performance of the Contractor/Service provider to identify the shortfalls and weaknesses and assist to improve the overall performance including QHSE performance through CPAR process (as applicable)

We believe that everyone at GGL, Employees, Contractors, Service providers and Associates have the right to go home safely to their families.

QHSE Defaults and Penalties (As applicable)		
SN	**Description**	**Penalty amount**
1	**LTI**	As per the penalty matrix enclosed with this document
2	**Non-compliance - HSE Engineer**	
3	**Un authorised work** (where permit to work is not applicable & work is executed without approval of EIC)	
4	**Work without PtW/WA**	
5	**Non-compliance - Safety Training Card (STC)**	
6	**Non-compliance - Health Check up**	
7	**Non-compliance - PPEs**	

Remark: Issuance of MEMO against HSE non compliances including above mentioned defaults shall be decided by Contract Holder

E. QHSE GUIDELINE (AS APPLICABLE) FOR ALL TYPE OF CONTRACTS

1. Contractor/Service provider

a) shall ensure that all staff/work force comply with the requirements of the GGL HSE Management System, QHSE policy, standard, procedures, guideline, plan & Life Savers at work site

b) shall ensure issuance of Identity Card to their team members

c) shall apply and obtain Permit to work (PtW/WA) before start of the work

d) shall arrange work related Personal Protective Equipment (PPEs) for their staff/work force and ensure proper use during the execution of job

e) shall carry out the work within the duty hours/office hours. No Work shall be carried out without permission of GGL's representative beyond the official duty hours unless otherwise agreed upon prior to start of work and recorded appropriately

f) shall ensure that all tools, tackles, appliances, machines, vehicles, instruments or other equipment are Fit for Purpose and maintained safe working condition at all times and are used only by authorized and competent persons

g) shall ensure that all the QHSE requirements are properly discussed for any sub-contracted activities with GGL. No such activity shall be performed without clearance from GGL management

h) shall ensure that all Hazards, Near miss, accident, incident, injuries are reported promptly to GGL**.** Action arises due to reported Hazards, Near miss, incident investigation; audit/inspection shall be closed out as per agreed timelines with site in-charge

i) shall deploy staff & work force trained, qualified and competent for the work and well aware of risks and mitigation action/s for the activities undertaken

j) shall make necessary arrangements for safe custody of equipment, materials in stores/warehouse and at site

k) shall ensure safe transportation, storage and handling of materials to prevent any damage which may impair safe performance of the equipment / material etc

l) shall initiate immediate actions to hospitalize injured person(s)

m) shall ensure an injury free, incident free workplace and protect people from harm caused by work activities

n) shall ensure use of seatbelts while driving four-wheeler and use of crash helmet for Two wheeler riders during job execution

o) shall ensure Lock out and Tag out (LOTO) after de-energizing and double check before starting any jobs. In case of conducting job for the purpose of fault finding & monitoring of voltage & current it is to be considered live working and all PPE'S to be worn to avoid exposure of flash arc current

p) shall take note that the use of open wires in sockets, use of wires with tape joints shall not be accepted at work site.

q) shall ensure proper collection, storage and disposal of solid / liquid waste as per GGL procedure and guideline

r) staff/work force shall not smoke or resort to misuse of drugs, medicines or alcohol while on duty

2. In case of any incident like fire, gas leakage etc. due to gross negligence of the Contractor's staff/work force, GGL reserves the right to impose penalty up to actual damage cost and or termination of work order depending upon the gravity of the situation.

3. Any breach of the QHSE requirements shall be deemed by the company to be a material breach of the terms & condition of the contract. GGL shall be entitled to take appropriate actions including instructing the contractor to (a) remedy the breach; (b) suspend the work or (c) terminate the contract.

4. All activities shall be carried out as per GGL's documented procedures and QHSE requirements, deviation from it shall be dealt with very strictly

F. FORMATS

a) Memo format

GUJARAT GAS	MEMO	

Memo No:	Date:	Time:
GA/Location		
Name of the activity		
Name of the contractor		
Memo Issued to		
Memo Issued by		

Observation		
SN	Non Compliance Observed	Close-out timeline
1		
2		
3		
4		

Remarks:

	GGL	Contractor
Name		
Designation		
Signature		

b) First Aid Box Contents

GUJARAT GAS	First Aid Box Contents	Doc. No.	HSE-F-40
		Rev. No.	0
		Effective Date	15/05/2018

SN	First Aid Box Contents	Minimum required Quantity
1	Small sterilized dressings	12
2	Medium size sterilized dressings	6
3	Large size sterilized dressings	6
4	Large size sterilized burn dressings	6
5	15 gm. packets of sterilized cotton wool	6
6	200 ml bottle of cetrimide solution (1 per cent) on a suitable antiseptic solution	1
7	Scissors	1 pair
8	Adhesive plaster (2 cm x 1 meter)	2 rolls
9	Sterilized eye pads in separate sealed packets	8
10	Analgesic or Aspirin tablets	20 nos.
11	Polythene wash bottle (500 c.c.) for washing eyes	1
12	Medical disposable gloves	12 pairs
13	Safety pins	1 dozen
14	One copy of First aid Leaflet	1

c) First Aid Box Contents Usage Format

GUJARAT GAS	First Aid Box content Usage Format	Doc. No.	HSE-F-41
		Rev. No.	0
		Effective Date	15/05/2018

Office/Station/Vehicle details:

SN	Date & Time	Name of Person treated	Type of Emergency/Injury	First aid Box Content Used	Quantity used	Name of First Aider	Signature of First Aider

d) PPE Applicability Matrix

GUJARAT GAS

PPE Applicability Matrix

Doc. No.	HSE-F-45
Rev. No.	0
Effective Date	01.06.2018

SN	Activity / Work	Activity / Task Performer / Executor	Safety Hard hat	Safety Shoes	Safety Goggle/ Glass	Reflective Jacket / Strip	Dust Mask	Ear Plug / Ear Muff	Cotton Hand Gloves	Leather Hand Gloves	Rubber Hand gloves	Chemical resistant gloves	Rubber electrical gloves (11KV / 33KV / 66KV)	Electrical Resistant Safety Shoes (HT)	Gum Boot	Fire Retardant Clothing	Cotton dress / cover-all with reflective stripe	Chemical resistant Suit	Seat belt	Crash Helmet	Full Body Harness Double anchor	PETZL (Work at height equipment)	Knee guards	Welding Screen	Face shield	Self Contained Breathing Apparatus	Respirator for Organic Vapour
1	Project, Construction, Connection Site -Supervision / Site Visit	GGL Employee / Out Sourced Engineer	√	√	NB	√	NB	NB	NB																		
		TPI / Construction Supervisor / Contractor	√	√	NB	√	NB	NB	NB																		
		Contractor Supervisor / Engineer / Mukadam	√	√	NB	√	NB	NB	NB																		
2	Project, Construction, Connection site	Technician/Fitter/Rigger/Helper/Workers	√	√	NB	√	NB	NB	√	NB	NB		NB		NB												
3	Customer Premises Visit / Meeting	GGL Employee / Out Sourced Engineer	√	√	NB	√	NB	NB	NB																		
		GGL Non Technical Employee	√	√	NB	√	NB	NB	NB																		
		TPI / Construction Supervisor / Contractor	√	√	NB	√	NB	NB	NB																		
4	Excavation in Soft Soil	Labour / Worker	√	NB	NB	√	NB		√				NB	NB	√												
5	Excavation in Hard Soil / RCC / PCC	Labour / Worker	√	√	√	√	NB	NB	√				NB	NB	NB												
6	Steel Pipeline Welding - Cold work	Welder	√	√						√			NB		NB		√							√	√		
		Helper / Fitter	√	√	√				√	NB			NB		NB		√								NB		
7	Steel Pipeline Welding - Hot work	Welder	√	√						√			NB		NB	√								√	√		
		Helper / Fitter	√	√	√				√				NB		NB	√									NB		
8	Radiography	Radiographer	√	√					√						NB		with TLD Badge										
9	Joint Coating	Technician / Helper	√	√	√	√	NB					√			NB												
10	Holiday detection	Technician / Helper	√	√		√							√		NB												
11	Drilling	Fabricator / Technician / Rigger / Helper	√	√	√		NB	√	√				NB														
12	Grinding / Cutting / Shot Blasting	Fabricator / Technician / Rigger / Helper	√	√	√		NB	√		√			NB		NB		√								√		
13	PE Pipeline Welding - Cold Work	Welder	√	√	√	√			√						NB												
14	PE Pipeline Welding - Hot Work	Welder / Helper	√	√	√	√			√						NB	√											
15	Plumbing	Plumber / Helper	√	√	NB		NB		√																		
16	Working at Height at Riser / Riser Maintenance / Building	Trained Plumber / Civil Worker	√	√	√	√	NB		√												√	√	√				
17	Work on road/highways/street or vehicle movement area	Any Level / Category of person	√	√	NB	√	NB																				
18	AMC - Dom/Com		√	√	√	√	NB		√								√										
19	PNG/CNG O&M Cold job on charged gas network / installation	Any Level / Category of person	√	√	NB	√	NB		√						NB												
20	PNG/CNG O&M Hot job on charged gas network / installation	Any Level / Category of person	√	√	NB	√	NB	NB	√						NB	√											
21	Odorant transfer / filling activity	Any Level / Category of person	√	√	√							√				√		√									√
22	CNG Handling (Filling / Transporting)	Technician / Helper	√	√													√										
23	CNG Back-court Operations	Compressor Operator	√	√	√			√	√								√										
24	Testing - Equipment / Pipeline / Valve / PRI	Any Level / Category of person	√	√	√	√		NB	√						NB		√										
25	Gas Commissioning - Network / Gas Installation	Any Level / Category of person	√	√	√	√		NB	√						NB	√											
26	Electrical - Project / Office Site - Cold Work / Installation	Electric Engineer / Electrician / Worker	√	√	√								√	NB			√										
27	Electrical - Project / Office Site - Live Work / Installation	Electric Engineer / Electrician / Worker	√	√	√								√	NB		√											
28	Driving - Mobile Cascade Van (MCV/LCV/HCV)	Driver / Helper		√															√								
29	Handling of Heavy Equipment (Hydra/JCB/Crain/HDD machine)	Driver / Helper	√	√	√	√	NB																				
30	Driving - Four / Three Wheeler	Driver & Co-traveller		√															√								
31	Driving - Two Wheeler	Driver / Pillion Driver		√																√							
32	Office Work	Canteen boy / House Keeping Staff		√			NB		√																		
33	Work in high noise area	Any Level / Category of person	√	√				√																			
34	Work in confined space	Technician / Worker	√	√	√																NB					NB	
35	Manual Boring	Worker	√	√	√	√	NB						√														
36	Loading / Unloading	Technician / Worker	√	√		√			√	NB	NB																
37	Civil work	Masson / Worker	√	√	√	√	NB		√		NB				NB												

Safety Hard hat White Colour — **GGL Employees / Out Sourced Engineer**
Safety Hard hat Orange Colour — **Contractor Supervisor / Engineer**
Safety Hard hat Green Colour — **Contractor Filed workers / Labours**
NB: Need Based on site/risk assessment

e) Training Applicability Matrix

GUJARAT GAS	Training Applicability Matrix		Doc. No.	HSE-F-46
			Rev. No.	0
			Effective Date	15.06.2018
Job Positions / Area of Work	**Basic Safety Training + Fire fighting (Classroom Training)**	**Competency Training**	**Practical Fire fighting Training**	**First Aid Training**
Contractor Staff / TPI / Outsourced Employee - Technical				
Plumber	✔	✔	✕	✕
Plumber - Working at Height	✔	✔	✕	✕
Supervisior - Working at Height (Rescue Training)	✔	✔	✕	✔
PE Pipe Welder (Welder qualification)	✔	✔	✕	✕
Steel Pipe Welder (Welder qualification)	✔	✔	✔	✕
Fitter/Fabricator	✔	✕	✔	✕
Helper (Project jobs)	✔	✕	✕	✕
Site Supervisor or Mukadam (All jobs)	✔	✕	✔	✔
Qualified HSE Engineer	✔	✕	✔	✔
QA/QC Engineer	✔	✕	✕	✕
Outsourced Employees - Technical	✔	✕	✔	✔
TPI (of TPIA)	✔	✕	✔	✔
Construction Supervisior (of TPIA)	✔	✕	✔	✔
Project/O&M In-charge/Manager	✔	✕	✕	✕
PE/PNG O&M Staff / Emergency response team	✔	✔	✔	✔
Steel pipeline O&M Staff	✔	✔	✔	✔
PNG (Dom/Com) AMC team	✔	✕	✕	✕
CNG Station Supervisor	✔	✔	✔	✔
CNG Filler	✔	✔	✔	✕
Compressor Operator	✔	✕	✔	✔
CNG O&M Staff	✔	✕	✔	✔
CNG Project Supervisor / In-charge	✔	✕	✔	✔
CNG Project Technician	✔	✕	✕	✕
Civil Staff - CNG Projects	✔	✕	✕	✕
Certified Electrician	✔	✕	✔	✔
PRI OEM O&M Staff	✔	✕	✕	✕
Odorant Handling staff	✔	✕	✔	✔
Terminal Compressor O&M Staff	✔	✕	✔	✔
Terminal Compressor O&M Supervisor	✔	✕	✔	✔
Security staff at Gas Installation	✔	✕	✔	✔
MCV Driver	✔	✔	✔	✕
Hired Vehicle Drivers (non O&M)	✔	✔	✕	✕
HDD/Hydra/Crane/Excavator Operator	✔	✕	✕	✕
Contractor Staff / TPI / Outsourced Employee - Non- Technical				
Security staff at offices and warehouse	✔	✕	✔	✔
Billing staff	✔	✕	✕	✕
DMA/CDMA staff	✔	✕	✕	✕
House Keeping Staff	✔	✕	✔	✕
GGL Employee (Technical/Non-Technical)				
GGL Employee - New (including GET/MT) - Technical	On joining	On joining	✔	✔
GGL Employee - New (including GET/MT) - Non-Technical	On joining	On joining	✕	✕
GGL employees - staff & shift engineer as part of emergency response team	✔	✔	✔	✔
Floor Warden	✕	✕	✔	✕
First Aider	✕	✕	✕	✔

f) Trainer Frequency & Trainer Matrix

GUJARAT GAS	Training Frequency & Trainer Matrix		Doc. No.: HSE-F-47 Rev No.: 0 Effective Date: 15.06.2018
Training Title	**Frequency (Years)**	**Trainer**	**Target Group**
Practical Fire Fighting Training	1	HSE Rep - GA / Corporate	As per Training Applicability Matrix
First Aid Training	3	External Agency	
Basic Safety Training + Fire fighting (Classroom Training)	1	HSE Rep - GA / Corporate	
Induction Training - HSE	On joining	HSE Corporate	GGL Employee - New (including GET/MT)
Induction Training - General	On joining	HR Corporate	GGL Employee - New (including GET/MT)
Functional Training	On joining	Based on recommendation of GAH/Function Head	GGL Employee - New (including GET/MT)
Technical Competency Trainings			
Plumbing Training	3	External Agency	Plumber
Working at Height Training	1	External Agency	WAH-Plumber
Working at Height Training	3	External Agency	WAH-Plumbing Supervisor & Rescuer
PE Welder Training & Qualification	3	External Agency	PE Welder
CNG Filling Training	3	External Agency	CNG Filler & CNG Supervisor
Steel Pipe Welder Qualification	As per TPI Certification	TPIA	Steel Pipe-welder
Steel/PE/PNG O&M Training Including Emergency Handling Training	3	External Agency	Steel/PE/PNG O&M Staff / Emergency handling team including GGL Employees - staff & shift engineer as part of emergency response / O&M team
Defensive Driving Training	1	External Agency	MCV Drivers & Hired Drivers

g) Waste Management Matrix

Waste Management Matrix					
Waste item	**Responsibility of collection**	**Storage Location**	**Responsibility of Storage & Disposal**	**Method of Disposal**	**Record to be maintained**
Hazardous Waste					
O&M Waste					
Used oil from Compressor / DG set	GGL EIC through contractor	CNG Station / CGS	Contractor	Disposed to SPCB authorised vendor	From-3, Form 4, Manifest
Cotton Waste- Contaminated with Used oil		CNG Station / CGS	Contractor	Disposed at land fill sites	
Used Gas filter cartridge		GGL Store / Warehouse	GGL Warehouse – rep.	Disposed at land fill sites	Manifest
Ethyl Mercaptan scrubber drums		CNG Station / CGS	Vendor	Disposed to SPCB authorised vendor	Manifest
Used Suraksha hose		GGL Store / Warehouse	GGL Warehouse – rep.	Disposed at land fill sites	Manifest
Condensate during pigging		Condensate tank at site	Contractor	Disposed to SPCB authorised vendor	Manifest
Used Odorant Tank		GGL Store / Warehouse	GGL Warehouse – rep.	Disposed to SPCB authorised vendor	Manifest
Project Waste					
Used Welding Electrodes	GGL Site In-charge through contractor	Respective Contractor store	Respective Project Contractor	Disposed to SPCB authorized vendor	Manifest
Equipment-Used Oil				Disposed to SPCB authorised vendor	
Coating / Chemical cans				Disposed to SPCB authorized vendor	
Coating applicator Pad				Disposed to SPCB authorized vendor	
Used Hydro-test Water		Contractor water tanker		During de watering, care shall be taken to properly dispose the discharging water in order to avoid pollution, damages to fields under cultivation and / or existing structures and interference with the traffic. As chemical have been added to water, dewatering shall be done in such a way that the composition of the efficient water does not exceed the limit set in IS 2490 (Part-I) tolerance limits for industrial effluents discharged into in land surface water. Hence, dewatering circuit shall include chlorination before letting the water out of the pipe section to the environment.	
Other Hazardous Waste					
Plastic / other non-biodegradable scrap < 50 micron	GGL Site In-charge through contractor	GGL Store / Warehouse	GGL Warehouse – rep.	Sold to SPCB approved re-cycler	Monthly Patrak
Used empty paint cans	GGL EIC			Sold to SPCB approved re-cycler	Manifest
Used batteries	GGL EIC			Sold to dealers having authorisation to collect used batteries	Form-VIII
E-waste	GGL IT In-charge			Sold to vendors having authorisation for collecting e-waste	Register
Non- Hazardous Waste					
Project and O&M Waste					
Cotton waste	GGL Site In-charge through contractor	Respective Contractor store	Contractor	Dust bins / garbage container	Challan
Discarded Grinding Disc		Respective Contractor store		Sold to authorised scrap dealer	
Used Stringer brush				Sold to authorised scrap dealer	
Bevel Protector				Sold to authorised scrap dealer	
Foam Pig				Sold to authorised recycler	
Bentonite Mud used for HDD		Contractor truck		Landfill Site	
Metal Scrap (CS, MS) Pipe, Fittings, Valves	GGL Site In-charge through contractor	GGL Store / Warehouse	GGL Warehouse – rep.	Sold to authorised recycler/scrap dealer	
Other Metallic / Non-metallic scrap e.g. meters, regulators etc.					
Aluminium, Brass, Copper Scrap					
Scrap PE pipe pieces, Fittings, valves					
Non-usable Project surplus – Steel & PE					
Admin Waste					
Canteen Wastes	Admin In-charge through respective Contractor	At designated location in premises	Admin Contractor	Local Authority Waste Management arrangement – e.g. Municipal Corporation waste truck	
Used Plastic Water Bottle					
Waste paper					
Broken glasses					
Electrical bulbs/tube lights etc.					
Rubber Scrap	Admin In-charge through respective Contractor	GGL Store / Warehouse	GGL Warehouse – rep.	Sold to authorised recycler/scrap dealer	
Wooden Scrap					
Office Chairs, Fan, Water Cooler					
Electrical Waste - Motor, Pump, Panel, UPS	EIC through contractor	GGL Store / Warehouse	GGL Warehouse – rep.		
Other Non-Hazardous waste					
Plastic / other non-biodegradable scrap > 50 micron	Respective Function In-charge	Waste bins / garbage container	-	Local Authority Waste Management arrangement – e.g. Municipal Corporation waste truck	
Housekeeping waste	Contractor		Admin		
Building material (civil) waste	GGL EIC through contractor		Contractor		

h) Contractor Performance Assessment Report

GUJARAT GAS	Contractor Performance Assessment Report (CPAR)			Doc. No. : HSE-F-28 Rev. No. : 00 Eff Date : 02.07.2018	
GA / Function:		Month of Evaluation:			
Location:		Department:			
Type of Work/Services:		Work order number:			
Name of the Contractor / Firm:		Contractor Name:			
Contractor Work In-charge:		GGL Work In-charge:			
		Point Gained	Max. points	CATEGORY	Total Score
A. Quality Controls (Weightage 10%)					
1	Quality of Workmanship / Job execution / Services		4	<90% compliance 90 - 99% compliance 100% compliance/ Adherence Not applicable	0 2 4 NA
2	Quality of Supervision, Inspection, Maintenance, Calibration etc.		4		
3	Quality of Tools & Tackles, Equipment, Instruments used for GGL work		4		
4	Quality of materials used for GGL work (Supplied by Contractor)		4		
5	Proper storage and handling of materials & equipment at store, camp and at site		4		
B. HSE Compliance (Weightage 15%)					
1	Sufficient resources allocated to manage HSE including HSE Officer		3	Non-compliance/ Un-adherence Full compliance/ Adherence Not applicable	0 3 NA
2	Proper identification of site specific risk assessment (SSRA) & mitigation and conducting Tool Box talk with field team by site supervisor		3		
3	Adherence to the requirement of use of PPE's at site		3		
4	Incident management and reporting		3		
5	Waste management (collection, storage and disposal)		3		
6	Regular Health check up of people deployed at GGL sites		3		
7	Ensured participation of workmen in the training arranged by GGL		3		
8	Carrying out at least 2 WPI per month by Project Manager / Contractor owner in a month - for construction & maintenance sites		3		
9	Reporting of minimum 2 numbers of job related Hazard / Near-miss per month		3		
10	No overdue actions from reported Hazard / Near-miss / WPI (Work Place Inspection) / Safety tour / Internal or External Audit Observations		3		
C. Life Saver (Weightage 15%)					
1	Compliance to GGL Life Savers		30	<80% compliance >=80% to <90% compliance >=90% compliance	0 15 30
D. Contract Management (Weightage 10%)					
1	Management and maintaining minimum deployment of qualified, competent and trained manpower resources		2	Non-compliance/ Un-adherence Full compliance/ Adherence Not applicable	0 2 NA
2	Quick deployment / mobilization of additional resources as required		2		
3	Effective liaison with permission issuing authority / with private entity		2		
4	Expedite in the settlement of all site issues		2		
5	Site restoration including demobilization of equipment & materials		2		
6	Notification to GGL in case of site specific deviation / problems		2		
7	Maintain complete records of the site / location / station and regularly updating status/remarks of allotted work		2		
8	Submission of reports, Invoices / RA bills in time and promptly closing of queries		2		
9	100% attendance at meetings organized with GGL management		2		
10	Promptly resolution of third party / GGL property / any other asset damage		2		
E. Other Key Performance (Weightage 10%)					
1	Compliance with Statutory & Legal requirements		5	Non-compliance/ Un-adherence Full compliance/ Adherence Not applicable	0 5 NA
2	Complaint against contractor by a customer		5	>5% of total number of connections <5% of total number of connections No complaint Not applicable	0 3 5 NA
3	Timely resolution of Complaints of customer / third party / authority		5	<80% closeout 80% - 90% closeout >90% closeout Not applicable	0 3 5 NA
4	Closure of recommendation from previous CPAR to the satisfaction of GGL		5		
F. Business Performance (Weightage 40%)					
1	Performance meets contractual requirements and delivered business target / KPI / Services within SLA / scheduled timeline		80	<30% target 30%-55% target 55-70% target 70%-100% target =>100% target	0 20 40 60 80
NOTE : N/A (not applicable) should be used if the ratings are not going to be applied to a particular area for evaluation					
Total Points Gain (A+B+C+D+E+F)					
Maximum Points = All Applicable line items of (Ax4 + Bx3 + Dx2 + Ex5) + 30 + 80		200			
CPAR Score = Total Points Gain / Maximum Points x 100					
Recommendations for Improvements (to be reviewed next month):					
1					
2					
3					

	Evaluator (GGL)		Contractor Representative	
	Designation & Name	Signature & Date	Designation & Name	Signature & Date
Reviewed by GA / Function Team	Work in charge			
	Technical / Function Manager			
	HSE Representative			
Approved by	GA Head / Function Head			

Note: Draft CPAR format for reference only

i) LIFE SAVER COMPLIANCE

GGL Life Savers	Life Savers rules
Safe System of Work (SSoW)	• Before commencement of any job, ensure that: ➢ Hazards are identified and appropriate control measures are in place ➢ An appropriate emergency/ rescue plan is in place • Obtain Permit to Work (PtW) authorization from issuing authority as applicable to the job, • Ensure that approved PtW mentions detailed scope of work, and must have clearly identified hazards, associated risks and necessary control measures, • Carry out Tool Box Talk (TBT), • Ensure the job is performed by trained & competent personnel, • Ensure safety critical job being supervised by competent supervisor, • Ensure material, tools and equipment required for performing the job are fit for purpose, • Prior to commencing a job on isolated facilities, get confirmed all electrical & mechanical isolations (e.g. Gas installation, Gas pipe section, equipment, etc.) by authorised person and follow Lockout & Tag out (LOTO) system • Wear appropriate Personal Protective Equipment (PPE) for the concerned job • Provide cautionary instructions to people about exposure to hazards in vicinity of worksite • Intervene and stop the unsafe job at site • If unsure about job to perform safely, stop the job and discuss with supervisor/ manager • Follow Management of Change (MoC) process for changes to plant/ equipment
Gas Escape Handling	• Follow "Safe System of Work" Life Saver rules • In case of gas escape inside premises, open doors & windows to ventilate the escaped gas • Give priority to protecting life • Always wear appropriate PPE including fire retardant clothing • Check for presence of Gas with gas detector, identify gas affected area and if required, evacuate persons to a safe place • Control the potential ignition sources within Gas affected area/ zone e.g. Do not permit smoking/ naked flame/ use of phone/ operation of electrical switches, etc. • Cordon leak affected area, display warning signs, • Seek help of local authorities as required to keep traffic & people away • Isolate/ turn off gas supply as early as possible • Continuously monitor for presence of Gas in atmosphere • Seek help of fire department and ambulance services as required • Post leak repair, carry out leak check to ensure soundness of repaired leak as well as ensure there is no other gas leakage in the area

Excavation, Manual Boring and Horizontal Directional Drilling	**Excavation**
	• Follow "Safe System of Work" Life Saver rules
	• Identify, locate and protect all underground utilities e.g. power cable, gas pipeline, etc. as necessary
	• Use insulated crow bar / peak axe for manual excavation
	• Identify & mitigate the hazards as necessary e.g. contaminated soil, equipment movement, traffic etc.
	• Follow correct trench protection techniques as per soil conditions like benching by step cut , "V" shape slopping or shoring
	• Keep excavated spoil away from edge of trench / pit
	• For any change in ground conditions, stop work and consult supervisor
	• Keep children away from pit / trench / work sites
	• Display warning signs, use appropriate barricades at work area and provide easy means for getting in and out of trench / pit
	• Make provision of proper cross over on trench for pedestrian as required
	
	Manual Boring
	• Follow "Safe System of Work" Life Saver rules
	• Identify, locate and protect all underground utilities e.g. power cable, gas pipeline, etc. as necessary
	• Identify & mitigate the hazards as necessary e.g. contaminated soil, equipment movement, traffic etc.
	• Give preference to open cut excavation over manual boring
	• Before each boring work, ensure :
	  ○ approved bore plan is in place
	  ○ entry and exit locations for manual bore are visibly marked
	  ○ Permit to Work (PtW) for the job is in place
	• Ensure protection against potential electric shock by :
	  ○ use of electrical shock resistant (Teflon or equivalent approved insulating material coated) manual boring tool
	  ○ wearing of rated electric shock resistant hand gloves and boots
	  ○ provision of "Electrical Insulating Rubber Mat" on the ground
	  ○ avoiding work in wet conditions if electrical power supply is not isolated
	
	Horizontal Directional Drilling (HDD)
	• Follow "Safe System of Work" Life Saver rules
	• Identify, locate and protect all underground utilities e.g. power cable, gas pipeline, etc. as necessary
	• Identify &mitigate the hazards as necessary e.g. contaminated soil, equipment movement, traffic etc.
	• Before starting HDD operation, ensure:
	  ○ approved bore plan is in place
	  ○ HDD entry and exit locations are visibly marked
	  ○ capacity of HDD drilling rig is adequate
	  ○ Proper earthing / grounding of machine
	  ○ cable strike alarm in working conditions
	  ○ moving parts of machine are guarded

	○ out rigger of HDD machine are working and rigidly put on stable & firm ground ○ availability of tracking equipment / device ○ crane is in good condition • During drilling operation, do ensure : ○ that track movement of the drilling tool is as per approved bore plan ○ auto greasing of machine rod ○ that entry of unauthorised personnel in the work area is prohibited ○ no maintenance activity is carried out while HDD machine in operation
Work at Height	• Follow "Safe System of Work" Life Saver rules • Use only approved and certified working at height equipment e.g. rope access system like PETZL®, scaffold, ladder, etc. • Give preference to safe working platform in place of rope access system or ladder wherever possible for carrying out work at height • Always use a fall arrestor having: ○ double action self-locking snap hooks ○ proper anchor preferably mounted overhead that limits free fall to two meters • If using a rope access system, ensure use of fall arrest harness • Select safe routes for installation of riser & lateral • Never carry out any work at height when near an overhead power line • Secure all tools and equipment • Clearly display warning signs and have the area in control below the workplace wherein "working at height" is in progress • Stop the work in adverse weather conditions i.e. rain, heavy wind, poor work lights etc.
Confined Space Entry	• Follow "Safe System of Work" Life Saver rules • Ensure that all isolations are in place • Check oxygen level inside confined space and if not adequate, do not enter or be inside confined space • Check with gas detector and ensure there is no flammable gas inside confined space • Ensure there is no chemical fume inside confined space • Always use buddy system, ensure standby personnel is available and is always in contact with the person(s) in the confined space • Do not allow unauthorised entry inside confined space • If rescue needed, ○ standby personnel (buddy) to stand outside confined space and call for help of rescue team ○ allow only authorised rescue team member with all necessary Personnel Protective Equipment to enter inside confined space. • Ensure provision of suitable access & egress

Lifting Operation	• Follow "Safe System of Work" Life Saver rules • Ensure approved lift plan in place • Use only correct, approved and certified lifting equipment, tools & tackles and safety devices • Work according to a lift plan that is discussed, understood and followed by everyone involved in the job • Do not exceed safe working load limit • Ensure lifting equipment are working on stable & firm ground • Do not allow anyone under the lifted load or in the lift path • Ensure operator of lifting equipment and signal man are always in contact • In case of rough weather condition, stop the lifting operation and wait till condition is normal
Electrical	• Follow "Safe System of Work" Life Saver rules • Ensure isolation of all connected power sources and use of Lockout & Tag out (LOTO) before commencement of electrical job • Consider all conductors are live unless proved dead with a certified testing instrument • Ensure earthing of all electrical equipment and use of three pin plug and socket • Never insert open wires in the socket, always use plug & socket • All electrical work are to be done by certified electrical person and licensed contractor only • Use portable electrical equipment with double insulation protection • Ensure ELCB / RCCB are used and in working conditions • Verify equipment and materials being used are of rated capacity • Ensure use of appropriate PPE's like certified insulated gloves etc. • Prohibit entry of unauthorised person inside electrical installation area • Do not use damaged electrical equipment
Driving	• Always wear seatbelt while driving / travelling in the passenger or commercial vehicle • Obey speed limits • Obey traffic rules, traffic signs and signals • Never use mobile phones or any other communication device while driving • Always wear crash helmet while riding two wheeler • Ensure provisions of leg guards on two wheelers • Plan your journey in advance considering route, duration, road condition and weather condition • Never drive or allow driving when driver is fatigued or under influence of substance like alcohol, painkillers, antihistamines, recreational drugs etc. • Avoid use of two wheeler / three wheeler for travel on high ways and / or dark roads • Ensure vehicle is fit for purpose • Ensure periodic inspection, servicing and maintenance of vehicles. • Never exceed passenger limits in vehicle nor allow unauthorized person in driver's cabin of hazardous goods vehicles

PENALTY MATRIX

Sr. No.	Parameter	Service level Agreement	Penalty
1	Non-compliance to material – use of substandard material	All the Material shall be used as per the GGL specification and Quality plan.	In addition to corrective actions by contractor at his own cost, Rs. 3,000 will be levied per instance.
2	CPAR Score	Monthly CPAR score ≥55%	1. First instance warning letter to be issued. 2. Penalty of Rs. 5,000 to be deducted after 3 months from the date of warning letter issued if there no improvement within 3 months and still monthly CPAR score < 55% in this period. 3. Penalty of Rs. 10,000 to be deducted for every month after fourth month from the date of warning letter issued, if there is no improvement in forth month and still monthly CPAR score < 55%. 4. GGL may take actions, , as deemed fit, as per the contract if there is no improvement after six months from the date of warning letter issued
3	HSE Compliance	LTI (Loss Time Injury)	Rs. 20,000 / incident
		Non deployment of HSE Engineer	Rs. 100 per day
		Un authorised work (where permit to work is not applicable & work is executed without approval of EIC)	Rs. 5,000 / incident
		Work without Permit to work / Work Authorisation	Rs. 500 / incident
		Non-compliance - Deployment of manpower with Safety Training Card (STC)	Rs. 500 / incident
		Non-compliance - PPEs	Rs. 100 / incident
4	Leakages in the connection	Each connection shall leak proof	Rs. 500 per leakage Instance or actual amount credited to customer if observes leakage during the guaranteed period & customer asked for rebate (one year from NG commissioning)
5	New connection : Noncompliance of commissioning within timelines	Commissioning within 60 days for workable Dom. Connection & other as per defined SLA from the date of Job order or submission of site visit report for non-workable connection within 10 days. Penalty should be deducted on quarterly basis.	Rs. 100 per connection
6	Damage to GGL Network	No damage to GGL network	Cost of actual gas volume loss and repair cost will be deducted from monthly bill of contractor considering existing GGL commercial rate of NG and existing O&M rate for repair.
7	Initial mobilization:	Penalty against delay in mobilization:	0.5% of the basic contract value per week, up to maximum of 2% of the basic contract value will be deducted from the EMD / Bank Guarantee

		Due to delay in mobilization of Manpower / Equipment / Tools & Tackles: Within 30 days from the date of kick off meeting	submitted by the BIDDER or from the RA bills submitted subsequent to start of the work or outstanding from payment pending within GGL

***LTI (Loss time Injury)**

1.1.1.1 A disabling Occupational Injury which results from a work related activity or from a single instantaneous exposure in the work environment and that results in a person being unfit for work beyond the day of the incident. Where the injured party returns to work on the following day but subsequently has to take time off as a result of the injury this shall count as a Lost Time Injury.