



TENDER NO: HOGPL/2023-24/C&P/011



HPOIL GAS PRIVATE LIMITED
(A Joint Venture of HPCL & OIL)

TENDER FOR
CONVERSION OF DAUGHTER BOOSTER STATIONS TO ON-LINE STATIONS IN
AMBALA-KURURKSHETRA GA AND KOLHAPUR GA
TECHNICAL VOLUME

TENDER NO: HOGPL/2023-24/C&P/011

Date: 13.10.2023



Contents

SERVICE REQUISITION – CONVERSION OF DAUGHTER BOOSTER STATIONS TO ON-LINE STATIONS IN AMBALA-KURURKSHETRA GA AND KOHAPUR GA.....	Error! Bookmark not defined.
1. DEFINITION	4
2. DOCUMENT PRECEDENCE	4
3. OVERALL SCOPE OF CONVERSION FOR CNG STATIONS	4
4. SPECIAL INSTRUCTIONS TO BIDDERS.....	4
5. INFORMATION/ DOCUMENTS/ DRAWINGS TO BE SUBMITTED BY SUCCESSFUL BIDDER	5
6. AS BUILT DOCUMENT	5
7. STORAGE OF MATERIALS	6
8. SCOPE OF WORK OF CONTRACTOR	6
9. SCOPE OF WORK – SHIFTING OF COMPRESSORS AND ITS ACCESSORIES.....	7
10. SCOPE OF WORK – ABOVE GROUND PIPING.....	8
11. DIMENSIONAL TOLERANCES	8
12. PIPE JOINTS	9
13. SCREWED PIPING.....	9
14. FLANGES CONNECTIONS	9
15. BRANCH CONNECTIONS	9
16. BENDING.....	10
17. MITRE BENDS AND FABRICATED REDUCERS	10
18. CUTTING AND TRIMMING OF STANDARD FITTING AND PIPES	10
19. GALVANISED PIPING.....	10
20. JACKETED PIPING.....	10
21. SHOP FABRICATION/ PREFABRICATION	10
22. FORGING AND FORMING	11
23. MISCELLANEOUS	11
24. ERECTION	11
25. SCOPE OF WORK AND TECHNICAL SPECIFICATION – SS TUBING.....	12
26. INSTALLATION PROCEDURE	13
27. ASSEMBLY	13
28. REMAKE OF FITTINGS	14
29. REFERENCE SPECIFICATION, CODES AND STANDARDS	14
30. SCOPE OF SUPPLY	14
31. TECHNICAL SPECIFICATION	15
32. PAINTING	15
33. MARKING.....	15



TENDER NO: HOGPL/2023-24/C&P/011

34.	TEST REPORTS AND CERTIFICATES.....	15
35.	MARKING, PACKING & SHIPMENT.....	15
36.	DOCUMENTATION.....	16
37.	SPECIFICATIONS OF 2 WAY SS BALL VALVES	16
38.	BASIS OF WORK – FIRE EXTINGUISHER.....	16
39.	MATERIAL OF CONSTRUCTION & BASIC REQUIREMENT	17
40.	COLOR & MARKING	17
41.	APPROVALS.....	17
42.	MARKING.....	17
43.	SAFETY CLIP	17
44.	ACCESSORIES	17
45.	INSPECTION	18
46.	INFORMATION REQUIRED FROM VENDOR.....	18
47.	SCOPE OF ELECTRICAL WORK.....	18
48.	SCOPE OF SUPPLY & SCOPE OF WORK	18
49.	EXCLUSIONS.....	19
50.	DEVIATIONS.....	19
51.	LIST OF SUPPLIERS OF MAJOR BOUGHT-OUT ITEMS	19
52.	COMPLETION PERIOD.....	Error! Bookmark not defined.
53.	CONTRACT VALIDITY	Error! Bookmark not defined.



TENDER NO: HOGPL/2023-24/C&P/011

1. DEFINITION

Where used in this document, the following terms shall have the meanings indicated below, unless clearly indicated by the context to this order.

PROJECT	:	City Gas Distribution Project of Ambala-Kurukshetra & Kolhapur Districts
OWNER/COMPANY	:	HPOIL GAS PRIVATE LIMITED (HOGPL)
BIDDER/SUPPLIER COMPANY	:	The party, who supplies equipment and provide services to the OWNER / COMPANY

2. DOCUMENT PRECEDENCE

It shall be the responsibility of the BIDDER to inform the OWNER of any errors, ambiguities, inconsistencies, discrepancies, or conflict of information that may be found to exist in any document, specification or drawing submitted by the OWNER. In case of conflict, the order of precedence shall be as follows:

- a. Service Requisition
- b. Data Sheets
- c. Technical Specifications
- d. Basic Documents
- e. Codes and Standards

As a general rule in the event of any discrepancy between technical matter and local laws/ regulations (and documents above listed) the most stringent shall be applied. BIDDER shall notify OWNER of any apparent conflicts between SR, specifications, related datasheets, any code and standards and any other specifications noted herein. (Resolution and/or interpretation precedence shall be obtained from OWNER in writing before proceeding with the deviation in completion of services.)

3. OVERALL SCOPE OF CONVERSION FOR CNG STATIONS

The scope of work includes execution of electrical & mechanical works for the conversion of CNG stations from DBS to OLS at Ambala-Kurukshetra and Kolhapur Districts respectively.

GA Name	DB Stations to On-Line Stations (In Nos.)
Ambala – Kurukshetra	07 Nos.
Kolhapur	05 Nos.

4. SPECIAL INSTRUCTIONS TO BIDDERS

- 4.1 Bidder to note that no correspondence shall be entered into or entertained after the bid submission.
- 4.2 Bidder shall furnish quotation only in case he/she can provide services strictly as per the service Requisition and specification/data sheets forming part of Service Requisition.



TENDER NO: HOGPL/2023-24/C&P/011

4.3 If the offer contains any technical deviations or clarifications or stipulates any technical specifications (even if in line with SR requirements) and does not include complete scope & technical /performance data required to be submitted with the offer, the offer shall be liable for rejection.

4.4 The submission of prices by the Bidder shall be construed to mean that he/she has confirmed compliance with all technical specifications of the corresponding item(s).

4.5 Bidder must submit all documents as listed in checklist along with his offer.

4.6 All materials shall be delivered to consortium stores/sites of HOGPL. Detailed addresses will be furnished later.

5. INFORMATION/ DOCUMENTS/ DRAWINGS TO BE SUBMITTED BY SUCCESSFUL BIDDER

Successful Bidder shall submit documents unless noted otherwise, each of the following:

5.1 Inspection & test reports for all mandatory tests as per the applicable code as well as test reports for any supplementary tests, in nicely bound volumes.

5.2 Material test certificates (physical property, chemical composition, make, heat treatment report, etc.) as applicable for items in nicely bound volumes.

5.3 Statutory test certificates, as applicable.

5.4 Filled in Quality Assurance Plan (QAP) for Purchaser's/ Consultant's approval. These QAPs shall be submitted in four copies within 15 days from LOI / FOI.

5.5 WPS & PQR as required.

5.6 Other Drawing & Document as specified in vendor data & drawing requirements as with tender.

5.7 Detailed completion schedule activity wise (Bar Chart), within one-week of placement of order.

5.8 Weekly & fortnightly progress reports for all activities including procurement.

5.9 All approved drawings / design calculation / maintenance & operating manual documents as well as inspection and test reports for Owner's / Consultants reference / record in nicely category wise bound volumes (in Hard Copy) and in Soft Copy separately.

5.10 Filled in data sheet for each instrument tag after sizing, range selection, proper selection of materials etc. shall be bidder's responsibility. Any necessary change required later for meeting the specification shall be done by the vendor without any price or delivery implications.

5.11 Test records of mechanical running, performance test.

5.12 A list of documents to be furnished along with supply/invoice.

6. AS BUILT DOCUMENT

On successful completion, the Contractor shall prepare As Built drawings / reports piping system as specified in scope of work. All "As Built" drawings / reports shall be submitted as below:

a. Submission of all purchase specification & procurement documents of Mechanical Equipments, Electrical Equipments and Above ground Piping work.



TENDER NO: HOGPL/2023-24/C&P/011

- b. Submission of all Third-Party Inspection & Testing documents of Mechanical Equipments, Electrical Equipments and Above ground Piping work.
- c. Submission of all Inspection, Testing and NDT records. Radiography/ UT of all weld joint including EQT, PQT and WQT of the respective station.
- d. Submission of As Built Drawing of the CNG facility area of the Station.

7. STORAGE OF MATERIALS

- 7.1 All materials shall be preserved against deterioration and corrosion due to poor or improper storage while under the custody of the Contractor.
- 7.2 All materials shall be duly protected by the Contractor at his own cost with the appropriate preservatives like primer, lacquer, coating, grease etc. and shall be covered with suitable material to prevent them from direct exposure to sun, rain, wind and dust.
- 7.3 The Contractor shall check that equipment's, pipes, specials etc. are not subjected to corrosion from hydrostatic test water. Any such condition when detected should be brought to the notice of Engineer-in-Charge and remedial measures taken as directed.
- 7.4 All machined surface shall be properly greased and should be maintained and protected from damages.

8. SCOPE OF WORK OF CONTRACTOR

Scope of work of contractor shall include the following else otherwise specified:

8.1 Transportation of required piping materials (as described in SOR), pipe supports materials and all other necessary piping materials from contractor's storage point (in case of contractor's scope of supply) or owner's storage areas (in case of free issue material from owner) to work site/ shop including raising store requisitions for issue of materials in the prescribed format and maintaining an account of the materials received from owner's stores.

Piping materials include the following but not limited to the same.

- a) Pipes (All sizes and schedule).
- b) Fittings (All sizes, types & schedule).
- c) Flanges (All sizes, types & Pressure ratings).
- d) Valves & Gaskets (All sizes, types & Ratings).
- e) Bolts, Nuts or M/C Bolts (All types), Studs and Expansion joint/ bellows (All sizes).
- f) Special items like Online Filters, Scrubber, Scrapper, Pumps, Compressors, Strainers, and Air traps etc.
- g) Online instruments like control valves, orifice flange, rotameter, safety valves etc.

8.2 Shop and field fabrication and erection of piping in accordance with documents including erection of all piping materials listed above.

8.3 Fabrication and erection of pipe supports like shoe, saddle, guide, stops, anchors, clips, cradles, hangers, turn buckles, supporting fixtures, brackets cantilevers, struts, tee posts, including erection of spring supports and sway braces.



TENDER NO: HOGPL/2023-24/C&P/011

- 8.4 Fabrication of plain and threaded nipples from pipes as required during erection.
- 8.5 Fabrication of swage nipples as and when required.
- 8.6 Fabrication of odd angle elbow like 60°, 30° or any other angle from 90/ 45° elbows as and when required.
- 8.7 Fabrication of flange, reducing flange, blind flange, spectacle blinds as and when required.
- 8.8 Fabrication of stub-in connection with or without reinforcement.
- 8.9 Grinding of edges of pipes, fittings, flanges etc. to match mating edges of uneven/ different thickness wherever required.
- 8.10 Modifications like providing additional cleats, extension of stem of valve, locking arrangement of valves etc. as and when required.
- 8.11 Preparation of isometrics, bill of materials, supporting details upto 2-1/2" within the unit battery limit and get subsequent approval from Company Representative as and when called for.
- 8.12 Obtaining approval for drawings prepared by contractor from statutory authority, if required.
- 8.13 Spun concrete lining at inside of pipes 3" NB and above including fittings and flanges as required in accordance with specification.
- 8.14 Rubber lining inside pipes, fittings, flanges as and when required, in accordance with specification.
- 8.15 Radiography, stress relieving, dye penetration, magnetic particle test etc. as required in specification.
- 8.16 Casting of concrete pedestals and fabrication and erection of small structures for pipe supports including supply of necessary materials.
- 8.17 Providing insert plates from concrete structures and repair of platform gratings around pipe openings.
- 8.18 Making material reconciliation statement and return of owner's supply (if any) left over materials to owner's storage.
- 8.19 Flushing and testing of all piping systems as per standard specification for inspection, flushing and testing of piping systems.
- 8.20 Pickling (as and when applicable) as per standard specification for chemical cleaning of C.S. suction piping of compressors.
- 8.21 Submission of job execution procedure for review and approval of Company Representative covering all above activities.

9. SCOPE OF WORK – SHIFTING OF COMPRESSORS AND ITS ACCESSORIES

- 9.1 Transportation, Loading, and Unloading of Booster compressor and its accessories within the GA to dedicated booster stations will be under the scope of bidder. All safety requirements must be compiled by bidder and all the activities should be completed with safety. Any damages or harm to equipment's during transportation or handling will be borne by bidder.
- 9.2 Transportation, Loading, Unloading and Shifting of Online Compressor and its accessories to their respective foundations from store or any stations or from same stations within the GA in place of booster



TENDER NO: HOGPL/2023-24/C&P/011

compressor will be under the scope of bidder. All safety requirements must be complied by bidder and all the activities should be completed with safety. Any damages or harm to equipment's during transportation or handling will be borne by bidder.

10. SCOPE OF WORK – ABOVE GROUND PIPING

10.1 The complete piping work shall be carried out in accordance with the following:

10.1.1 "Approved for construction" drawings and sketches issued by OWNER to the Contractor, Plan and/ or Isometrics.

10.1.2 Approved process licensor's standards and specifications.

10.1.3 Drawing, sketches and documents prepared by contractor duly approved by Company.

10.1.4 Approved construction job procedures prepared by contractor.

10.1.5 OWNER specifications/ documents as below:

- a) Process and Instrument Diagram.
- b) Piping materials specification.
- c) Piping support standards.
- d) Line list
- f) Standard specification of non-destructive requirement of piping.
- g) Welding specification charts for piping classes.
- h) Standard specification for pressure testing of erected piping system.
- i) Welding specification for fabrication of piping.
- j) Any other specifications attached with piping material specification or special condition of contract.

10.2 Codes, Standards and Regulations to be followed:

- a) ASME B 31.8: Gas Transmission and Distribution piping systems.
ASME B 31.4: Pipeline Transportation systems for Liquid Hydrocarbons and Other Liquids.
- b) ASME B 31.3: Process Piping.
- c) ASME Sec. VII: Code for unfired pressure vessel.
- d) IS: 823: Code for procedure for manual metal arc welding of mild steel (For structural steel).
- e) NACE Std.: Code for sour services material requirements MR-01-75.

Note: All codes referred shall be of latest edition, at the time of award of contract.

11. DIMENSIONAL TOLERANCES

Dimensional tolerances for piping fabrication shall be as per Company Standard. The contractor shall be responsible for working to the dimensions shown on the drawings. However, the contractor shall bear in



TENDER NO: HOGPL/2023-24/C&P/011

mind that there may be variations between the dimensions shown in the drawing and those existing at site due to minor variations in the location of equipment's, inserts structures etc.

To take care of these variations "Field Welds" shall be provided during piping fabrication. An extra pipe length of 100 mm over and above the dimensions indicated in the drawing may be left on one side of the pipe at each of the field welds. During erection, the pipe end with extra length at each field weld shall be cut to obtain the actual dimension occurring at site. Isometrics, if supplied may have the field welds marked on them.

However, it is the responsibility of the contractor to provide adequate number of field welds. In any case no extra claim will be entertained from the contractor on this account. Wherever errors/ omissions occur in drawings and Bills of Materials it shall be the contractor's responsibility to notify the Company Representative prior to fabrication.

12. PIPE JOINTS

The piping class of each line specifies the type of pipe joints to be adopted. In general, joining of lines 2" and above in process and utility piping shall be accomplished by butt welds. Joining of lines 1-1/2" and below shall be by socket welding/ threaded joints as specified in "Piping material specifications".

However, in piping 1 1/2" and below where socket welding/ threaded joints are specified, butt weld may be used with the approval of Company Representative for pipe-to-pipe joint in long run of piping. This is only application for non-galvanized piping without lining. Flange joints shall be used at connections to vessels, equipment's, valves and where required for ease of erection and maintenance as indicated in drawings.

13. SCREWED PIPING

In general, galvanized piping shall have threads as per IS: 554 or ANSI B2.1 NPT as required matching threads on fitting, valves etc. All other piping shall have threads as per ANSI B2.1, tapered unless specified otherwise.

Threads shall be clean cut, without any burrs or stripping and the ends shall be reamed. Threading of pipes shall be done preferably after bending, forging or heat-treating operations. If it is not possible, threads shall be gauge checked and chased after welding heat treatment etc. During assembly of threads joints, all threads of pipes and fittings shall be thoroughly cleaned of cuttings, dirt, oil or any other foreign matter. The male threads shall be coated with thread sealant and the joint tightened sufficiently for the threads to seize and give a leak proof joint. Threaded joint to be seal-welded shall be cleaned of all foreign matter, including sealant and make up to full thread engagement before seal welding.

14. FLANGES CONNECTIONS

All flanges' facings shall be true and perpendicular to the axis of pipe to which they are attached. Flanged bolt holes shall straddle the normal centrelines unless different orientation is shown in the drawing. All bolts shall be equally tightened. Wherever a spectacle blind is to be provided, drilling and the jack screws in the flange shall be done welding it to the pipe.

15. BRANCH CONNECTIONS

Branch connections shall be as indicated in the piping material specifications. For end preparation, alignment, spacing, fit-up and welding of branch connections refer welding specifications. Templates shall



TENDER NO: HOGPL/2023-24/C&P/011

be used wherever required to ensure cutting and proper fit-up. For all branch connections accomplished either by pipe-to-pipe connections or by using forged tees the rates quoted for piping shall be inclusive of this work. Reinforcement pads shall be provided whether indicated in drawings/ specifications etc.

16. BENDING

Bending shall be as per ASME B31.3 except that corrugated or creased bends shall not be used. Cold bends for lines 1-1/2" and below, with a bend radius of 6 times the nominal diameter shall be used as required in place of elbow wherever allowed by piping specifications. Bending of pipe 2" and above may be required in some cases like that for headers around heaters, reactors etc. The completed bend shall have a smooth surface, free from cracks, buckles, wrinkles, bulges, flat spots and other serious defects. They shall be true to dimensions. The flattening of a bend, as measured by the difference between the maximum and minimum diameters at any cross-section, shall not exceed 8% and 3% of the normal outside diameter, for internal and external pressure respectively.

17. MITRE BENDS AND FABRICATED REDUCERS

The specific application of welded mitre bends and fabricated reducers shall be governed by the piping material specifications. Generally, all 90° mitres shall be 4- piece 3-weld type and 45° mitres shall be 3- piece 2-weld type as per standard unless otherwise specified. Reducers shall be fabricated as per directions of Company Representative. The radiographic requirements shall be as per material specifications for process and utility systems.

18. CUTTING AND TRIMMING OF STANDARD FITTING AND PIPES

Components like pipes, elbows, couplings, half-couplings etc. shall be cut/ trimmed/ edge prepared whether required to meet fabrication and erection requirements, as per drawings and instructions of Company Representative. Nipples as required shall be prepared from straight length piping.

19. GALVANISED PIPING

Galvanised carbon steel piping shall be completely cold worked, so as not to damage galvanized surfaces. This piping involves only threaded joints and additional external threading on pipes may be required to be done as per requirement.

20. JACKETED PIPING

The jacketing shall be done in accordance with specification or Licensors specification as suggested in material specification or special condition of contract. Pre-assembly of jacketed elements to the maximum extent possible shall be accomplished at shop by contractor. Position of jump over and nozzles on the jacket pipes, fittings etc. shall be marked according to pipe disposition and those shall be prefabricated to avoid damaging of inner pipe and obstruction of jacket space. However, valves, flow glasses, in line instruments or even fittings shall be supplied as jacketed.

21. SHOP FABRICATION/ PREFABRICATION

The purpose of shop fabrication or pre-fabrication is to minimize work during erection to the extent possible. Piping spool, after fabrication, shall be stacked with proper identification marks, so as facilitate their withdrawal at any time during erection. During this period all flange (gasket contact faces) and threads



TENDER NO: HOGPL/2023-24/C&P/011

shall be adequately fabricated by coating with removable rust preventive. Care shall also be avoiding any physical damage to flange faces and threads.

22. FORGING AND FORMING

Forging and forming of small-bore fittings, like reducing nipples for piping 1 ½" and below, shall be as per ASME B 31.3.

23. MISCELLANEOUS

23.1 Contractor shall fabricate miscellaneous elements like flash pot, seal pot, sample cooler, supporting elements like turn buckles, extension of spindles and interlocking arrangement of valves, operating platforms as required by Company Representative.

23.2 Span Concrete Lining The work of inside spun concrete lining of pipes and specials of diameter 2" and above shall be done as per material specifications and special condition contract.

23.3 Fabrication of pipes from plate Pipes shall be fabricated at site as and when required as per the specifications attached with contract document and the actual piping material specification.

24. ERECTION

24.1 CLEANING OF PIPING

On completion of fabrication, all pipes and fittings shall be cleaned inside and outside by suitable means (mechanical cleaning tool, wire brush, etc.) before erection to ensure that assembly is free from all loose foreign material such as scale, sand, weld spatter particles, cutting chips etc.

All field-fabricated piping shall also be cleaned at the completion of the fabrication. All burrs, welding circles and weld spatter shall be removed by suitable means (mechanical tools, wire brush etc.)

Special cleaning requirements for some services, if any shall be as specified in the piping material specification or isometric or line list. S.S. jacketed piping requiring pickling shall be pickled to remove oxidation and discolouring due to welding.

24.2 PIPING ROUTING

No deviations from the piping route indicated in drawings shall be permitted without the consent of Company Representative. Pipe to pipe to structure/ equipment's distances/ clearances as shown in the drawings shall be strictly followed as these clearances may be required for the free expansion of piping/ equipment. No deviations from these clearances shall be permissible without the approval of Company Representative. In case of fouling of a line with other piping, structure, equipment etc. the matter shall be brought to the notice of Company Representative and corrective action shall be taken as per his instructions.

24.3 SLOPES

Slopes specified for various lines in the drawings/ P&ID shall be maintained by the contractor. Corrective action shall be taken by the contractor in consultation with Company Representative wherever the contractor is not able to maintain the specified slope.

24.4 VENTS AND DRAINS



TENDER NO: HOGPL/2023-24/C&P/011

High point vents and low point drains shall be provided as per the instructions of Company Representative, even if these are not shown in the drawings. The details of vents and drains shall be as per piping material specifications/ job standards.

24.5 VALVES

Valves shall be installed with spindle/ actuator orientation/ position as shown in the layout drawings. In case of any difficulty in doing this or if the spindle orientation/ position is not shown in the drawings, the Company Representative shall be consulted, and work done as per his instructions. Care shall be exercised to ensure that globe valves, check valves and other unidirectional valves are installed with the “flow direction arrow” on the valve body pointing in the correct direction. If the direction of arrow is not marked on such valves, this shall be done in the presence of Company Representative before installation.

Fabrication of stem extensions, locking arrangements and interlocking arrangements of valves (if called for), shall be carried out as per drawings/ instructions of Company Representative.

24.6 LINE MOUNTED EQUIPMENTS/ ITEMS

Installation of line mounted items line filters, strainers, steam traps, air traps, desuperheaters, ejectors, sample coolers, mixers, flame arrestors, sight glasses etc. including their supporting arrangements shall form part of piping erection work.

24.7 BOLTS AND NUTS

The contractor shall apply coat grease mixed with graphite powder (unless otherwise specified in the piping class) at bolts and nuts during storage, after erection and wherever flange connection is broken and made-up for any purpose whatsoever. The grease and graphite powder shall be supplied by the contractor within the rates for piping work.

24.8 PIPE SUPPORTS

Pipe supports are designed and located to effectively sustain the weight and thermal effects of the piping system and to prevent its vibrations. Location and design of pipe supports will be shown in drawings for lines 3” NB and above for line below 3” NB contractor shall locate, and design pipe supports in line with EPMC standards and obtain approval of Company Representative on drawings

prepared by contractor, before erection. However, any extra support designed by Company Representative shall also be installed.

No pipe shoe/ cradle shall be offset unless specifically shown in the drawings.

Hanger rod shall be installed in a direction opposite in a direction opposite to the direction in which the pipe moves during expansion.

25. SCOPE OF WORK AND TECHNICAL SPECIFICATION – SS TUBING

This specification covers the minimum requirements for design, manufacture and supply of Stainless-steel tube laying and testing for city gas distribution.

25.1 Laying of SS Tube

Laying, testing, and commissioning of SS tubes and fittings complete with all supports. The MS Angle and U-clamps (galvanised) / other fixing arrangement shall be procured and installed by the contractor. Payment shall be at the rate for the work set out in the agreed Schedule of Rates.



TENDER NO: HOGPL/2023-24/C&P/011

25.2 Scope of Works: For Laying, Testing & Commissioning of SS Tubing

Generally, the following shall constitute the Contractor's scope of work but not limited to as given herein:

25.2.1 SS tubes shall be clamped to the MS Angle at every 1000 mm using P clamps of SWAGELOK make / any other approved make / SS – 308 clamps with EPDM cushion. The practice of flattening tubes for clamping purposes shall not be permitted.

25.2.2 MS Angle and U-clamps (galvanised) shall be procured from approved manufacturers and through a QAP including stage inspection and pre dispatch inspection of the materials By EPMC (To be isolated by rubber gaskets).

25.2.3 Tubes shall be bend using tube benders only and any hot bending will be totally rejected. Tubes shall be cut using pipe cutting device. Hot cutting is not allowed.

25.2.4 Carrying out pneumatic testing and purging with nitrogen as per approved procedures; providing all tools, tackles, instruments, manpower and other related accessories for carrying out the testing of tubes.

25.2.5 Start-up and commissioning assistance.

25.2.6 Handing over the completed works to Client for their operation/ use purposes.

25.2.7 Disconnecting/Reconnecting/Modification all SS tubing connections, if required, with Booster /Online Compressor/ Flowmeter/ Dispenser/ Cascade/ other equipment, re-laying/testing of used tubing, if required, disconnection of SS tubing from compressor/cascade/dispenser/other equipment & reconnection with online compressor, repair of any dents/damages etc. in scope of bidder on site as per instructions of engineer in charge.

25.2.8 Any other work not specifically mentioned herein but required for the satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and must be completed by the Contractor within specified schedule at no extra cost to Client.

26. INSTALLATION PROCEDURE

26.1 TUBE END PREPARATION

26.1.1 Cut the ends square with a hacksaw and a suitable guide. Tube cutters are satisfactory for most tube materials but tend to work harden stainless steel. As such proper care shall be exercised while cutting the SS tubes to avoid the hardening.

26.1.2 Burrs must be removed inside and outside for proper entry into fitting to prevent contamination and/ or restricted flow. 'Swagelok' de burring tool shall be used.

26.1.3 Remove all fittings, chips, and grit before attachment of fittings.

27. ASSEMBLY

27.1 Tube line fabrication must be accurate so that the tube end easily enters the fitting in proper alignment. Do not force an improperly fitted tube line into the fittings.

27.2 Ensure that the tube end is bottomed against the shoulder in the fitting body. This is necessary to prevent movement of the tube while the nut forces the ferrule to grip the tube and to seal through any imperfections that may exist on the outside tube surface.



TENDER NO: HOGPL/2023-24/C&P/011

27.3 Never permit the fitting body to rotate during tube end make-up, use two wrenches. Assemble port connectors to components first and hold with a wrench while making up the tube joint. All types of union bodies must be held while each of the tube ends is made up.

27.4 Never attempt to make up by torque.

27.5 Always turn the nut the prescribed amount regardless of torque required. Fitting end plugs required only 1- ¼ turn from finger tight make up in all sizes.

28. REMAKE OF FITTINGS

A disassembled joint can be remade, simply by retightening the nut to the position of the original make up. For maximum number of remakes, mark the fitting and nut before disassembly. Before retightening, make sure the assembly has been inserted into the fitting until the ferrule(s) seats in the fitting. Retighten the nut by hand. Rotate the nut with a wrench to the original position as indicated by the previous marks lining up. (A noticeable increase in mechanical resistance will be felt indicating the ferrule is being re-sprung into sealing position.) Then snug the nut 1/12 turn (1/2 hex flat) past the original position.

29. REFERENCE SPECIFICATION, CODES AND STANDARDS

The Contractor shall carry out the work in accordance with this specification, ASME B 31.8 - Gas Transmission and Distribution Piping Systems, Oil Industry Safety Directorate (OISD) norms. If Contractor finds any discrepancy, ambiguity, or conflict in or between any of the Standards and the contract documents, then this should be promptly referred to the Engineer-in- Charge (EIC) for his decision, which shall be considered binding on the contractor.

30. SCOPE OF SUPPLY

In general, the following tubes & fittings shall be supplied:

- i) ¾" OD SS Tube of 0.095 wall thick min.
- ii) ½" OD SS Tube of 0.083 wall thick min.
- iii) Double Compression Ferrule Fittings (Union, Reducer, T-Connectors, Cross Connectors, etc.) of sizes ¾", ½", 3/8" & ¼".
- iv) SS Valves of suitable sizes.

Supply by The Contractor at His Own Cost as part of this specification:

The procurement and supply of MS Angle with U- clamps at the appropriate time of all the materials and consumables except for the materials specifically enlisted under Owner's scope of supply, shall be entirely the Contractor's responsibility and its rates of execution shall be inclusive for all these items, as follows but not limited to these:

- i) Bolts and nuts for supports, U-bolts with nuts, P-clamps for tubes, anchor bolts of various sizes for fixing to concrete structure.
- ii) Bitumen paints primer and solvents.
- iii) All material for minor civil works like grouting etc.
- iv) Minor structural steel for fabrication of tube/ tray supports like MS plates, GI plates, flats, pipe etc.
- v) Pumps, compressor, Corrosion Inhibitor for water used for hydrostatic testing, including water for testing, inert gas for purging.



TENDER NO: HOGPL/2023-24/C&P/011

- vi) All items not expressly mentioned in the Contract, but which are necessary for the satisfactory completion and performance of the Work under this Contract.

Note: Samples of all the consumables items / test certificates required to be approved by EIC.

31. TECHNICAL SPECIFICATION

All the items shall be suitable for compressed Natural Gas service and meet following specifications: Testing shall be as per ASTM F 1387.

31.1 Materials

31.1.1 Fittings shall be manufactured from the following materials:

- i) Bar stock shall be as per BS: 970-316-S31, EIN 1.4401 or ASME 479-316.
- ii) Forgings shall be as per BS: 970-316-S31, EIN 1.4401 or ASME SA- 182-316

31.1.2 The fittings end connections shall be compatible to tube of hardness $\leq Rb80$.

31.1.3 All component parts of the fittings shall be of the same material.

31.1.4 The ferrule material shall be able to withstand an atmosphere of Natural Gas, oil and moisture without rusting.

32. PAINTING

Once all inspection and test have been carried out all external surfaces shall be thoroughly cleaned to remove grease, dust & rust. Standard mill coating shall be applied on external surface to protect against corrosion during transmit and storage. The coating shall be removable type in field.

33. MARKING

All Flanges & fittings shall be stamped with the requirements of applicable dimensional manufacturing standard.

The marking shall also include following:

- PO Number.
- Item Code

34. TEST REPORTS AND CERTIFICATES

34.1 The manufacturer shall supply material compliance certificates conforming that the raw material for fittings conforms to the requirements of ASME Section-II and ASME Section-III sub section NB, NC and ND.

34.2 The manufacturer shall furnish test procedure and typical test reports of all tests conducted on fittings as per the requirements.

35. MARKING, PACKING & SHIPMENT

35.1 Heat code traceability number shall be stamped or etched on both body and nut of each fitting.

35.2 Replacement nuts and ferrules shall be packaged in a manner so as to allow safe and simple replacement.



TENDER NO: HOGPL/2023-24/C&P/011

35.3 All the items shall be suitably wrapped and packaged to with stand rough handling during ocean shipment and inland journey.

35.4 Item shall be properly tagged and package separately to facilitate easy identification.

35.5 Items shall be wrapped and packaged in such-a-way that they can be preserved in original as new condition.

36. DOCUMENTATION

Following test certificates shall be furnished along with shipment:

- Test certificate of visual, chemical, mechanical testing (incl. tensile, hardness) and hydro test reports.
- Manufacturers standard shop inspection & test report for all items.
- The test report for specified tests – type approval as per LR/ASTM F1387/PNV.
- Third party inspection report as applicable to meet the requirements of specified codes & standards as applicable.

37. SPECIFICATIONS OF 2 WAY SS BALL VALVES

a) Valves should be manufactured from following materials:

- i. The valve body will be made out of material conforming to ASTM A 479 Gr. SS 316/ASTM A351 CF3M.
- ii. Material of construction of ball shall conform to ASTM A 276 Gr. SS 316.

b) All ball valves shall be designed in conformance with the requirements of ASME B31.3, MSS SP-99 and other applicable standards. Area classification applicable for all items shall be Class 1, Division 1,

Group D as per NEC or Zone-1, Group IIA/IIB as per IS/IEC specification or equivalent specification. All parts components shall meet the requirements for the specified area classification.

c) Valves shall be rated for a maximum pressure rating of 6000 psig and shall be capable of operation between Design Temperature range of –400F to +2500F.

d) Valves shall have spring loaded PEEK seats allowing seal-ability over the full pressure range at any port and low operating torque over the full range of pressure and temperatures.

e) Valve shall have Nylon handle. Handle shall indicate the direction of flow.

f) All valves should be full bore to ensure no pressure drop.

38. BASIS OF WORK – FIRE EXTINGUISHER

38.1 The design, construction, manufacture, supply, testing and other general requirements of the Fire Extinguisher shall be strictly in accordance with the applicable OISD codes, technical specification, approved drawing. /Document and shall comply fully with relevant National/ International standards, Indian Electricity Act, Indian Electricity Rules, regulations of Insurance Association of India and Factories Act while carrying out work as per this specification.

38.2 Any modification suggested by the statutory bodies either during drawing approval or during inspection, if any, shall be carried out by the Bidder without any additional cost and delivery implications.



TENDER NO: HOGPL/2023-24/C&P/011

38.3 Following codes, standards, and regulations & all their subsequent amendments to be considered:

- OISD-179
- OISD-226
- PNGRB-T4S-CGD
- PETROLEUM RULES-2002
- GAS CYLINDER RULES-2004/2016 (GOVT. OF INDIA)
- GUIDELINES OF CHIEF CONTROLLER OF EXPLOSIVES.

39. MATERIAL OF CONSTRUCTION & BASIC REQUIREMENT

39.1 The material, shape, construction, method of operation, performance, contents, and test shall comply with IS: 15683.

39.2 Carbon dioxide used in extinguishers shall comply with IS: 15222.

39.3 Dry powder conforming to IS: 14609, IS: 4308 or IS: 4861 shall be used for charging the extinguishers.

39.4 Discharge hose length shall be 5.0 M.

39.5 The expellant gas shall be CO₂ unless otherwise specified.

39.6 The extinguishing media for water or / and foam-based fire extinguishers shall be pure water or water with additives such as wetting agents, viscosity increasing agents, flame retardants or foaming agents etc. as per the requirement. Foam concentration shall be as per the requirements specified in IS: 4989.

40. COLOR & MARKING

The colour of extinguisher bodies shall be red conforming to shade no.536 or 538 of IS: 5. The paint shall conform to IS: 2932. Each extinguisher shall be clearly and permanently marked with the information specified in IS: 15683, along with IS certification mark and purchaser's name.

41. APPROVALS

A clearance/ approval certificate for filling the extinguisher from "Chief Controller Explosive" Govt. of India, Nagpur shall be submitted for each cylinder.

42. MARKING

Each extinguisher shall be clearly and permanently marked as per IS: 2878 along with IS: certification mark and purchaser's name.

43. SAFETY CLIP

Safety Clip should be provided to prevent accidental actuation of piercing mechanism.

44. ACCESSORIES

Each extinguisher shall be supplied with M.S. bracket, wood screws and spanner as may be necessary. The details of the bracket shall be submitted with the offer.



TENDER NO: HOGPL/2023-24/C&P/011

45. INSPECTION

Authorized representative shall have access at all reasonable times to the manufacturer's works where extinguishers ordered are being manufactured and or tested.

46. INFORMATION REQUIRED FROM VENDOR

45.1 The vendor shall furnish the following information along with the offer and for approval prior to fabrication.

- General arrangement of trolley mounted extinguisher showing plan and elevation.
- Fabrication details and plate thickness calculation for pressure vessel.
- Catalogues for all bought out items with Model No. If any.

47. SCOPE OF ELECTRICAL WORK

This document covers the details of supply and installation of Electrical equipment at Ambala-Kurukshetra and Kolhapur GA of HPOIL Gas. The scope includes supply and installation of all electrical items. All works and clauses of this document shall be applicable unless specifically mentioned otherwise.

This document shall be read in conjunction with Schedule of Rates, Specifications, Standards, Drawings and Other Documents forming a part of the Tender Document.

48. SCOPE OF SUPPLY & SCOPE OF WORK

The Scope of electrical works shall include supply, installation/erection, testing and commissioning of the items listed below but shall not be limited to the following:

1. Various types of LV switchboards, junction boxes etc. as per single line diagram and SOR/specifications.
2. Outdoor flameproof lighting fixtures complete with/without LED lamps and poles as per SOR/specifications.
4. Indoor lighting fixtures as per SOR/specifications.
5. Sub Energy meter 0.2 class for LV three phase system as per specifications and SOR.
6. Supply of various LV/HV power cables, Instrumentation cables and communication cables complete with cable glands and lugs and ferrules as per SOR/specifications.
7. Supply of various GI/PVC/HDPE conduit pipes as per SOR/specifications.
8. Supply of cable trench markers and cable tags at both ends and at intermediate locations.
9. Supply of conventional GI/Copper plate/maintenance free earthing systems and accessories like inspection chambers, earthing strips, GI wire/rope, flange jumpers as per as per SOR/specifications.
10. Supply of cable trays of various sizes as per SOR/specifications.
11. Supply of miscellaneous items like Caution boards (Danger, High Voltage), Shock hazard charts, Insulating Mats 11 KV grade, Single Line Diagram complete in glass frame Single as per SOR.
12. Any other item required for completion of the work and satisfactory operation of the CNG facilities.



TENDER NO: HOGPL/2023-24/C&P/011

13. PG test for APFC panel & UPS also in scope of bidder on site as per instructions of engineer in charge.

14. Disconnecting/Reconnecting/Modification all electrical and earthing connections with Booster /Online Compressor/MEDB Panel/Lighting Pole/Flowmeter/Emergency Switch/Dispenser/Exhaust Fan/other equipment, relaying/testing of used cables if required, disconnection of earthing grid from compressor/panel/ other equipment & reconnection with online compressor, repair of earth electrodes etc. in scope of bidder on site as per instructions of engineer in charge.

49. EXCLUSIONS

The following are excluded from the scope of the bidder:

- Supply and Installation of CNG Booster/Online Compressor.
- Supply and Installation of Car Dispenser.
- Supply of CNG Cascade.

50. DEVIATIONS

Where a deviation from the “Basis of Work” and approved job procedure described above is required or where the basis of work does not cover a particular situation, the matter shall be brought to the notice of Company Representative and the work carried out only after obtaining written approval from him in each case.

51. LIST OF SUPPLIERS OF MAJOR BOUGHT-OUT ITEMS

1. Soft starter

- a. Siemens
- b. ABB
- c. Rockwell
- d. Schneider

2. FLP Switchgear

- a. Baliga
- b. FCG
- c. FPE
- d. Flexpro
- e. Sudhir

3. Switches/Fuses/Contractors

- a. L & T
- b. GEC
- c. Siemens
- d. Schneider

4. MCCB

- a. Siemens



b. Legrand

c. Schneider

5. Vibration Switch

a. Robershaw control

b. Murphy

6. PLC

a. Rockwell Automation

b. GE Fanuc

c. Siemens

d. Allen Bradley

e. Tele-Mechanique

f. Schneider

7. Push Button

a. L&T

b. Vaishno

8. SS Tubes for CNG application

a. M/s Sandvik, Sweden

b. M/s Tubacex

c. M/s. BMT Superlock

d. Jindal Saw

9. SS Fittings for CNG application

a. M/s Swagelok (USA)

b. M/s Parker (USA)

c. M/s SSP, USA

d. M/s. Dk LOK

e. M/s. OEM make.

f. Panam

10. On Off ball/needle valve for CNG application

a. M/s Parker

b. M/s Swagelok

c. M/s. Dk LOK

d. M/s. OEM Make



TENDER NO: HOGPL/2023-24/C&P/011

11. Cables and wires

- a. INCAB/ Universal
- b. ASEAN/CCI
- c. FORT Gloster
- d. Finolex
- e. KEI Associated Cables
- f. Polycab

12. Barrier/isolators/surge protector

- a. MTL
- b. Phoenix
- c. P&F