DESIGN, SUPPLY, ERECTION, TESTING, COMMISSIONING AND MAINTENANCE OF 2 x 10 KL STORAGE TANK & LPG DISPENSER ALONGWITH ALLIED FACILITIES ON TURNKEY BASIS AT BPCL EXISTING MS-HSD RETAIL OUTLET AT

M/S ABC

TENDER NO :

DATE OF ISSUE :

DUE DATE/TIME :
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PART- I
UNPRICED BID
1.0

INSTRUCTIONS TO BIDDERS

SCOPE

This document specifies the scope of works to be undertaken to construct refueling facilities for motor vehicle that operate on LPG. These facilities are to be installed in an existing Bharat Petroleum Corporation Limited. Retail Services Station sites or at any other exclusive site as indicated in this tender.

The works to be undertaken shall be carried out in accordance with this specification, the scope of works & specifications for the installation LPG Refueling Stations, the accompanying drawings / specifications / requirements, all the applicable Standards and codes mentioned herein, all relevant Indian Government Regulatory and Statutory requirements of CCOE, Nagpur, India.

The Contractor shall supply all Supervision, Labour, Equipment and Material (unless specified) and consumables necessary to complete the works specifies.

All the required approvals related to execution of job only are to be obtained by the contractor from local authorities.

SCOPE OF WORK

1. BRIEF DESCRIPTION OF THE WORK :

Design, Supply, Erection, Testing, Commissioning & Maintenance of 2 X 10 KL storage tank and LPG dispenser at our existing / MS-HSD Retail Outlet on Turnkey basis at M/s

2. PREAMBLE

Bharat Petroleum Corporation Limited plans to install Auto LPG Dispensing facilities for dispensing LPG as fuel for automobiles in India at their existing ALDS / MS-HSD Retail Outlets.

The system comprises of various facilities which have been elaborated in subsequent chapters.

As regards pumping systems, from tank to dispenser, the Parties are required to quote for Submersible Pumps as per specifications mentioned in the Data Sheets / Technical Specifications. The pumps with motor should be approved by CCOE as on date of opening of tender.
For the submersible pumps, suitable arrangement to cut off LPG supply at the inlet of the pump should be provided on the manhole cover so that for repair & maintenance it is possible to remove / re-install the pump from / inside the tank without de-gassing the same.

Similarly, LPG dispensers shall also have to be supplied as per the technical specifications and shall be approved by CCOE as on date of opening of tender.

STP and Dispensers equipment imported in India shall be certified by internationally approved Third Party Inspection agencies (approved by BPCL) before shipment (cost to be included in quoted price). For standard equipments/fittings being used by BPC shall be provided with manufacturer’s test/quality certificate. However, for any new brand of equipment/fitting the same has to be approved by BPCL and TPI. The responsibility for statutory approvals within / outside India for the items covered in the tender, shall lie with the successful vendor. Copies of the CCOE approvals should be enclosed along with the Technical Bid.

Similarly, all safety related fittings provided with the system like Safety Relief Valves, Excess Flow Check Valves, tank-gauging mechanism and electrical fittings etc. have to be approved by CCOE, Nagpur.

Tank Management System has to be provided as per specifications and should include 2 independent Level Gauging Systems.

Bulk LPG unloading arrangement has to be provided which includes LPG Decantation Pump, Mass Flow Meter and ‘SMART’ Hoses etc.

The presently offered site provides services to the consumer with respect to petrol, diesel, lubricants etc. The successful tenderer, therefore, has to carry out the project work without causing hindrance to the operation of petrol pump. However, BPCL may close fully or partially the operation of the petrol pump depending upon the site / work requirement, but the same is not binding on BPCL.

Tenderer, therefore, should evaluate such circumstances/conditions and quote accordingly. BPCL in no way shall be responsible for any additional cost / overheads on such accounts.

The Layout Drawing of the specific Retail Outlet indicating the proposed Auto LPG facilities is indicative only. The exact location of the LPG Dispenser / LPG Tank may have to be shifted within the same premises, as per CCOE approved drawings. Tenderers should quote accordingly.

BPCL reserves the right to change the locations of the work to any other similar site in the same city without changing the Terms and Conditions / Scope of the Work, either before finalization of the tender or after placement of the order.
REFERENCE DOCUMENTS /DRAWINGS ENCLOSED IN THE TENDER

1. Site layouts for each existing retail outlets indicating location of underground tank LPG dispenser, hard stand etc. (the location of LPG tank, dispenser etc. is indicative, actual execution will have to be carried out as per the layout approved by CCOE, Nagpur.

2. Typical drawings indicating the size / installation details of 10 KL underground tanks

3. Typical P & ID Diagram indicating the following:
   - Electrical / Pneumatic details
   - Typical gate / fencing details
GENERAL CONDITIONS OF TENDER

1. Quotation should be submitted only in the prescribed tender schedule supplied by the company, together with drawings and general conditions of tender, special conditions of tender and other documents as given in tender within the due date / time of the tender duly signed by the tenderer along with a bank draft/ bank guarantee for EMD for Rs.1,00,000/- per ALDS on or before the due date, Quotations received after the due date/ time will not be considered (Registered vendor need not pay the EMD).

2. The tenderer should study all the tender documents carefully and understand the conditions, drawings, and specifications etc before quoting. If there are any doubts, he should obtain clarification in advance and this shall not be the justification for late submission or extension of opening date/ time of the tenders. It is recommended that tenderer should visit the site / location and ascertain himself with the site / local conditions.

3. The tenderer should quote for all items in the tender schedule. The rates should be expressed both in figures and in words. Where discrepancy exists between the two, the rates expressed in words will prevail. Similarly, if there is any discrepancy existing between the unit rate and the amount, the unit rate will prevail.

4. The rates shall be quoted in the same units as mentioned in the tender schedule.

5. All entries in the tender document should be in Ink / Typed. Corrections if any should be attested by full signature on the Tenderer.

6. Every page of the tender documents shall be signed by the tenderer or his authorised representative.

ACCEPTANCE OF TENDER

1. The company reserves the right to reject any or every tender without assigning any reasons whatsoever and or to negotiate with the tenderer (s) if the Company considers suitable.

2. The company further reserves its rights to allow to public enterprises ‘Price Preference” (facilities as admissible under the existing policy) as may be decided by the company.
3. Capacity of the contractor to carry out jobs simultaneously for the entire Oil Industry will be one of the main criteria for acceptance of tender for award of job.

4. On acceptance of the tender, the contractor shall be required to enter into an agreement with BPCL accepting the terms & conditions of the contract.

SECURITY DEPOSIT:

1. The successful tenderer, before commencement of the work, shall have to provide to the Company, by way of security, money deposit or a Bank Guarantee in the standard format provided by the Company, for an amount equivalent to 10% of the total tendered value of the works subject to minimum of Rs. 1,00,000/-

2. The tenderer shall have the option to adjust the earnest money towards security deposit if he so desires.

3. The security deposit will be retained till the successful completion of the work. In the case of security deposit in the form of a bank guarantee, the same shall be kept valid by the tenderer at his cost till the completion of the work under contract and shall be extended from time to time. No interest will be payable on security deposit.

EXECUTION OF WORK:

1. The successful tenderer should submit detailed execution program & schedule in BAR CHART adhering to the completion time quoted in the agreement. The program will form part of the contract. However, the Company reserves the right to alter the program, if necessary, from time to time, and no claim of successful tenderer on account of such alteration will be entertained.

2. The materials required for the execution of work should conform to the standard specification and approved by the third party inspection agency / BPCL’s representative before actually put to use. Documents with regard to approval shall be submitted prior to commencement of approval. Commencement of work without prior approval shall be entirely at the risk and cost of the contractor. No delay due to non-availability of materials, tools, equipment's etc. will be entertained by the Company.

3. All material, equipment, pipeline, sand, components shall be certified / checked by BPCL / third party prior to putting in use and record to that effect maintained.

4. The responsibility for the safety, security and accountability of the materials, and equipment's brought or installed by the successful tenderer or handed over to him by the company for completion of the work will remain with him till the acceptance of the work by the company for completion of the work. Any damage caused to the material / equipment
during the execution of work will be made good by the successful tenderer to have guarantee / indemnity bond executed for the value of the materials supplied to him free of cost, as per terms of the agreement.

5. The company reserves the right to revise specifications, drawings, designs of any or every item or delete them at any stage of work. The successful tenderer’s claim for compensation or damage on account of these shall not be entertained. Such deviation/additional work will be adjusted at the rates contained in the agreement, schedule of rates of the company or by prevailing market rates, if the rates are not available in agreement.

6. In case it becomes necessary for the company to temporarily suspend or postpone the work, partly or fully due to unforeseen circumstances, the company shall not be liable for any compensation on account of resultant delays.

7. The entire work will be carried out under the supervision of authorised representative of the company, but this will not detract successful tenderers full responsibility for quality/period of execution of work.

8. The tenderer shall engage his own supervisor who will be positioned at the site for speedy, proper, timely execution.

9. The successful tenderer shall submit to the office periodic progress reports of his work as stipulated by our Site Engineer and take such action as advised by the Company from time to time for timely and successful completion of the project.

10. The successful tenderer shall not undertake on his own any change / changes in scope mentioned in the tender documents. In case of doubts he will refer the matter in writing to the Company and act as per clarification given by the company.

11. If the performance of successful tenderer is found to be unsatisfactory, the company reserves the right to cancel in part or the whole of the contract and get the work executed through alternative means at the entire risk and cost of the successful tenderer.

**PENAL CLAUSE**

1. If the successful tenderer does not complete the work in the stipulated time, the company reserves the right to recover liquidated damages at 0.5% of the total contract value for every week of delay or part there of subject to a maximum of 10% of the total contract value until the work is satisfactorily completed and handed over.

2. The successful tenderer shall ensure the safety of adjoining property and shall make good any loss to property resulting from the work undertaken by him.
3. In the event of the successful tenderer failing to complete the work within the stipulated time, the Company shall have the right to employ any other agency to complete the remaining work at the risk and cost of the successful tenderer.

4. It will be the successful tenderer’s responsibility to get the works approved and obtain all certificates for plumbing, electrical, civil works, mechanical works from local, municipal, Governmental or other required authorities.

5. The successful tenderer is expected to cooperate / coordinate with other contractor’s carrying out the work allocated to them so as to avoid breaking up of work already done by them or causing any hindrance in the progress of their work. In case there is any difficulty/dispute, the same should be immediately brought to the notice of the Site Engineer.

6. The successful tenderer shall abide by all security / safety rules regulations in force at the dispensing station for BPCL as well as the laws, by-laws and statutes of Government, Semi-Government and other local authorities such as requirements/ liability under enactment’s like the workmen’s Compensation Act, Contract Labour Act etc and BPCL shall stand indemnified against any claims on these scores.

**PAYMENT TERMS:**

The payment terms shall be as given below

1. No Advance Payment will be given.

2. All Parties shall be made payment in Indian Rupees only.

3. Running Payments can be made to successful tenderer based on stage wise Progress of work done solely at the discretion of BPCL, as under, provided the Site Engineer in charge is satisfied that the progress is as per schedule.

   a. **For supply of Imported Equipment** (LPG Pump /Dispensers/ Mass Flow meters and ‘SMART’ hoses only) and LPG Storage Tanks, Air Compressor, Tank Gauging and Fixtures
      i. 80 % of respective item (against supply cost) against receipt of material at site and submission of inspection release note and test certificates by TPIA.
      ii. 10 % against completion of installation, testing and pre-commissioning.

   b. **For Erection Charge**
      i. 90 % against successful installation, testing and commissioning and trouble free operation.
4. 10 % payment shall be deducted as Retention Money against each Running Bills as per general terms and conditions

5. All work and equipment / accessories supplied shall be inspected and certified by BPCL representative for affecting payment.

6. All payment against the bill will be made by cheque/EFT and such payments shall be subject to deduction on income tax other statutory taxes as may be applicable from time to time.

7. No interest will be paid on money retained by the company.

**FINAL BILLS, RETENTION MONEY:**

1. On completion of the work in line with the provisions of the tender document & to the satisfaction of the company’s authorised representative and after obtaining necessary certificates as required from the local authorities, the successful tenderer shall submit his final bill. Payments of the final bill will be made after adjusting interim payments and after retention amount is deducted and retained.

2. The said retention money will be retained for a period of one year and paid to the contractor after adjusting any dues on the corporation against the contractor under the workmanship/ material provided by the contractor and / or against any other claims for any reason whatsoever under the agreement which may arise within the said period of one year. The retention period of one year will commence from the date of the final bill or the date of completion of job (as reckoned by the company i. e. BPCL) whichever is earlier. However such Retention money can be released against submission of suitable Bank Guarantee as per proforma enclosed.

3. The successful tenderer shall not subject or assign any part of the work to another party, without the prior written consent of the company. In any event the successful tenderer will be solely responsible for the work so sublet or assigned.

4. The tenderer will provide names of the parties to be engaged by them before commencement of work. Such parties shall have requisite experience on ALDSs.

5. The contractor undertakes to ensure due and complete compliance with all laws regulations, rules etc. whether of the Central Government or the State Government or any other competent body / authority applicable to the workmen employed or whose service are otherwise availed of by the Contractor, in connection with procurement of material, fabrication job etc whether employed for completion of assigned job. The Company (BPCL) shall have the right to inspect the records maintained by the Contractor concerning such workmen from time to time and the Contractor to produce for the Company’s ( BPCL’s ) inspection relevant documents & records in
order to ascertain whether or not the requirements of all such regulations, rule etc. have been complied with by the Contractor. In the event of any contravention of such laws, regulations, rules etc. coming to light whether as a result of such inspection or otherwise, the Company (BPCL) shall have the right to require the Contractor to effect such compliance within stipulated time frame as decided by the Company (BPCL). If the contractor does not comply, the employer shall without prejudice to his rights be entitled to withhold from the amount payable to the Contractor any amount payable to the workmen under such laws, regulations and rules and to make payment thereof to the workmen. Company (BPCL) shall also have in that event the right to terminate the contract with immediate effect and to exercise powers reserved to the Company (BPCL) under the contract as a result of termination.

ARBITRATION:

1. Any dispute or difference of any nature whatsoever any claim, cross-claim, counter-claim or set off of the Corporation against the Contractor or regarding any right, liability, act, omission on account of any of the parties here to arising out of in relation to this agreement shall be referred to the Sole Arbitration of the Director (Marketing) of the Corporation or of some officer of the Corporation who may be nominated by the Director (Marketing). The Contractor will not be entitled to raise any objection to any such arbitrator on the ground that the arbitrator is an officer of the Corporation or that he has dealt with the matters to which the contract relates or that in the course of his duties as an officer of the Corporation he had expressed views on all or any other matters in disputes or difference. In the event of the arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, the Director (Marketing) as aforesaid at the time of such transfer vacation of office or inability to act may in the discretion of the Director (Marketing) designate another person to act as arbitrator in accordance with terms of the agreement to the end and intent that the original Arbitrator shall be entitled to continue the arbitration proceedings notwithstanding his transfer or vacation of office as an officer of the Corporation if the Director (Marketing) does not designate another person to act as arbitrator on such transfer, vacation of office or inability of original arbitrator. Such persons shall be entitled to proceed with the reference from the point at which it was left by his predecessor. It is also a terms of this contract that no person other than the Director (Marketing) or person nominated by such Director (Marketing) of the Corporation as aforesaid shall act as arbitrator hereunder. The award of the arbitrator so binding on all parties to the agreement subject to the provisions of the Arbitration Act. 1940 or any statutory modification or reenactment thereof and the rules made thereunder for the time being in force shall apply to the arbitration proceedings under this clause.

2. The award shall be made in writing and published by the Arbitrator within two years after entering upon the reference or within such extended time not exceeding further twelve months as the Sole Arbitrator shall be a
writing under his own hands appoint. The parties hereto shall be deemed to have irrevocably given their consent to the Arbitrator to make and publish the award with the period referred to herein above and shall be entitled to raise any objection or protect thereto under any circumstances whatsoever.

3. The arbitrator shall have power to order to and direct either of the parties to abide by, observe and perform all such directions as the arbitrator may think fit having regard to the matters in difference i.e. dispute before him. The arbitrator shall have all summary powers and may take such evidence oral and / or documentary, as the arbitrator in his absolute discretion thinks fit and shall be entitled to exercise all powers under the Arbitration Act 1940 including admission of any affidavit as evidence concerning the matter in difference i.e. dispute before him.

4. The parties against whom the arbitration proceedings have been initiated, that is to say, the Respondents in the proceeding, shall be entitled to prefer a cross-claim, counter-claim or set off before the Arbitrator in respect of any matter an issue arising out of or in relation to the Agreement without seeking a formal reference of arbitration to the Director (Marketing) for such counter-claim , or set off and the Arbitrator shall be entitled to consider and deal with the same as if the matters arising therefrom has been referred to him originally and deemed to form part of the reference made by the Director (Marketing)

5. The arbitrator shall be at liberty to appoint, if necessary any accountant or engineering or other technical person to assist him, and to act by the opinion so taken.

6. The arbitrator shall have power to make one or more awards whether interim or otherwise in respect of the dispute and difference and in particular will be entitled to make separate awards in respect of claims or cross-claims of the parties.

7. The arbitrator shall be entitled to direct any one of the parties to pay the costs of the other party in such manner and to such extent as the arbitrator may in his discretion determine and shall also be entitled to require one or both the parties to deposit funds in such proportion to meet the arbitrators expenses whenever called upon to do so.

8. The parties hereby agree that the courts in the city of Mumbai alone shall have jurisdiction to entertain any application or other proceedings in respect of anything arising under this agreement and any award or awards made by the Sole Arbitrator hereunder shall be filed in the concerned courts in the city of Mumbai only.
3.0

SPECIAL CONDITIONS TO TENDERER

1. The tenderer to clearly mention the number of stations he can undertake/handle simultaneously and complete as per given time. For this purpose, tenderer should also submit the details of jobs being handled by him in India and abroad at the submission of bid. Such details need to be furnished by him along with the Technical data.

2. The tenderer should furnish schedules of completion in BAR CHART & progress of work on weekly basis for each station till successful commissioning of the ALDS.

3. In case such progress/schedule are not provided or not in line with the overall completion schedule, work will be suspended and BPCL shall have discretion to engage other parties and any additional rate to be borne by the tenderer.

4. The contractor should make his own arrangements for the water/electricity required for construction.

5. The Contractor is requested to study all Specifications of work carefully before quoting the rate.

6. It shall be responsibility of the Contractor to determine that each piece of equipment meets the detailed requirements of the drawings and specifications and that is suitable for the installation shown.

7. The contractor must make his own arrangements for temporary electricity connection for construction.

8. On award of work the contractor must submit all details in respect of designs, drawing, material, specifications, for approval of BPCL representative prior to start of construction.

9. The contractor shall take care to ensure that as built conditions are properly recorded & are within the range of design / approved conditions. No deviation from approved / design conditions are permitted. Any deviation therein has to be made up by the contractor.

10. Working drawings are to be furnished immediately and got approved on issue of order. Further details and drawings can be submitted in stages to take up the work to maintain proper progress.

11. No work can be taken up without receipt of approval from BPCL.

12. The contractors should submit the weekly and monthly progress report to Bharat Petroleum Corporation Limited.
13. The contractor shall provide one or more competent and technical supervisors duly and fully authorised to act on his behalf in all matters relating to the works to be carried out under or any other matter concerning this agreement and who shall at all times be present at the works when any work is in progress. Such supervisors shall be persons of known experience and be approved by the Company’s (BPCL) authorised representative before they are permitted in any way to take charge of, or superintend any operation of the works. Names, address & contact nos. of such persons shall be provided who are to be available whenever required.

14. Any directions, explanation, instructions or notices in connection with the work given by the Company’s (BPCL's) authorised representative to the supervisor or any one of them shall be deemed to have been given to the contractor.

15. During progress of the work, the engineer or any other representative of the Company (BPCL) shall be entitled at all times to have access to and inspect of the work.

16. All the safety precaution and regulations should be strictly adhered to at no extra cost to the Company (BPCL).

17. All electrical works should be carried out through licensed electricians only.

18. All welding to be carried out by licensed /certified welder for the type of welding being performed.

19. The successful contractor shall give an Indemnity Bond / Undertaking to the corporation in the prescribed form for covering the provisions of the following statues up to the latest amendments as applicable.

   a) Minimum Wages Act, 1984
   b) Equal Remuneration Act 1978
   c) Inter- state migrant workman ( regulation of employment & conditions of services ) Act 1979
   d) Contract Labour ( regulation & abolition ) Act 1970
   e) Workmen Compensation Act 1923
   f) Employees State Insurance Act
   g) Provident Fund Act

Particulars of registration with appropriate Government Authorities / Statutory Bodies as mentioned above as applicable should be furnished to the corporation in receipt of the work order.
20. The contractor should obtain Janta Insurance Policy or policies of adequate value to cover the compensation Act, 1923 with latest amendment before commencing the work and the same will have to be renewed during construction period required.

21. The contractor must quote the rates including all taxes, statutory levies, sales tax and works contract taxes etc. BPCL shall not entertain any request for payment of any taxes / levies separately.

22. The rates quoted by the bidder will be valid for six months from the date of opening of price bid of the tender and after award of job; the rates will remain valid till the completion of entire project.

23. The above tender is in two parts; Technical /Price

Technical bid should contain the following;

- All technical specifications/details/documents/drawings/data sheets as required in the tender
- The details of jobs of ALDSs currently being carried out by him in India/abroad at the time of submission of tender.
- Number of ALDSs tenderer can do simultaneously per month
- Details of spares required to be replaced along with their normal frequency of replacement.
- Any deviation, he is proposing to seek from the laid down tender conditions

Price bid must contain the rates for items strictly as listed in the price bid. No conditions are acceptable in the price bid. Any conditional price bid is liable to be rejected.

Both the bids must be put in separate sealed envelopes super scribing Technical bid/Price bid as the case may be. Both these sealed envelopes should be put in one big envelop, sealed and deposited in the tender box provided at our office by due date as prescribed in the Notice inviting Tender either by hand or by Registered post or by courier.

Bid received after due date/time will not be considered.
4.0

COMPLETION PERIOD

1. The completion period of individual ALDS shall be 100 days from the date of handing over of the site.

2. The completion period of 100 days shall be strictly adhered to and progress shall be monitored on weekly basis.

3. As the time is the essence of the contract, only those tenderer confidants of completing with meticulous planning as per the above schedule need to respond to the tender.

4. The tenderer shall accord special attention to the completion period and resolve any constraint without incurring any delay on over all completion date.

5. The completion period shall mean period from the date of handling over the site till obtaining third party inspection certificate (Rule33).

6. On completion of the work and commissioning, a certificate to the effect shall be issued by the contractor through reputed third party approved by CCOE and concurred by BPCL in line with a checklist to be provided by BPCL. Completion / Inspection certificate for each equipment & the ALDS as a whole in the format prescribed by BPCL shall be submitted by the contractor. Approval of Company (BPCL) shall be taken for appointment of inspection agency at contractor’s cost. All the cost payable to TPIA will be borne by the bidder.
5.0

DETAILED GENERAL SPECIFICATION OF THE WORKS

1.0 BRIEF DESCRIPTION OF THE PROJECT

The proposed facilities includes provision of 2 x 10 KI tank, one suitable LPG dispenser and suitable STP pump along with the facilities to be provided as per data sheet / technical specifications listed in subsequent chapters and synchronization of newly installed facilities with the existing facilities. Each storage tank should be designed for 100% Propane service but can be used for any mix of propane and butane. Auto LPG conforms to IS -14861

Bulk LPG shall be transported to the retail outlets through truck mounted bullets and decanted into the underground storage tanks by decantation pump and metered through Mass Flow Meter which shall indicate Mass, density and volume etc.

For product transfer from underground LPG storage tank to LPG Dispenser, a suitable Pump (Submersible) is to be provided with associated piping / cabling / fittings and safety-related fixtures as specified by CCOE.

All the controls of all the equipment to be located at the appropriate places and main control shall be at a central place preferably the sales room. The product dispenser is to be operated by trained operators at the retail outlets.

All the safety equipments are to be installed as per the latest amended Static & Mobile Pressure Vessel Rules (Unfired) and other regulations. The complete job including commissioning to be carried out on a total turn-key basis.

2.0 SCOPE OF WORK

RE-FUELING FACILITIES FOR MOTOR VEHICLES WITH AUTO LPG

2.1 Scope of work under this specification shall cover the design, manufacture, shop test, inspection, supply C.I.F. at nearest Port, custom duty port trust charges and clearance charges at Port along with loading charges at port, transportation from port to respective site(s) by road, transit insurance in India, and unloading charges at respective site, storage at site (retail outlet), supply of all labour, equipment, material and consumables necessary for installation and commissioning of the system including all civil, mechanical, electrical, piping works.
The facility is to be installed at BPCL existing ALDS / MS-HSD Retail Outlet at M/s XYZ.

2.2 The works to be undertaken shall be carried out in accordance with this specification, the scope of works and specification of the installation, the accompanying drawings / specifications / requirements, all the applicable standards and codes followed internationally, all relevant Indian Government Regulatory and Statutory requirements of Chief Controller of Explosives (CCOE), Nagpur, India.

2.3 All the required approvals from local / central authorities are to be obtained by the supplier / contractor except approval from CCOE, DM NOC, and CCOE licence.

2.4 The design, manufacture and supply of all the equipments and accessories shall be done by the supplier in compliance with all operating conditions specified in the specifications to meet the performance requirements as specified in Data Sheets.

2.5 The supplier shall stand guarantee for the performance and adequacy of the entire system and all the equipments supplied.

2.6 The supplier shall submit the manufacturer’s test certificates for all items including electrical equipments, instrument items etc.

2.7 The equipment shall be inspected during various stages of manufacture at suppliers / sub-suppliers works by Third Party Inspection Agency or authorised representative of Corporation as per inspection procedures mentioned in special terms and conditions. Inspection will be regarded as a check up and shall not relieve the supplier of any contractual obligation and performance guarantee. The scope of Third Party Inspection shall be finalised and advised by mutual consent.

2.8 All the equipment and accessories shall be shop tested at the manufacturer’s works if desired in the presence of Third Party Inspection Agency or authorised representative of Corporation. The supplier shall provide all the necessary facilities required for such tests and shall replace material / rectify and defects noticed during such tests without any extra cost to the Corporation.

2.9 All equipments and drawings shall be as per metric system and all documents / correspondence etc. shall be in English language only.

2.10 Tenderer at the time of submission of bid shall submit list of the spare parts (as recommended by the Vendor for LPG Pump / Dispenser / Mass Flow Meters on the supplying Vendor’s
letterhead) required for two years trouble free operation. Trouble- free maintenance along with free replacement of spares / services for 2 years shall be the responsibility of the Supplier / Tenderer and no extra payment shall be admissible on this account. Successful tenderer shall make suitable arrangements to ensure that any complaint is promptly attended within 24 hours of being reported for ALDS in Metro Cities. For all other cities, the complaint should be attended within 48 hours of reporting. BROMA shall be used by BPCL and Vendor to resolute the complaints.

The LPG Dispenser spare parts shall include hose, nozzle, power & display cards etc. Parts to be replaced as and when are consumed from the inventory provided at the Retail Outlet.

In addition to the above, successful tenderer shall carry out preventive maintenance of the ALDS by visiting the ALDS once a month. This is over and above any emergency calls. A report of such monthly inspections during the 2 years maintenance period shall be submitted to the concerned Territory Office with a copy to the Retail Outlet Dealer also. No additional cost on this account is payable to the contractor.

2.11 Tenderer may note that the storage tank has to be sourced from within India from a CCOE approved fabricator, as these are being manufactured on regular basis by fabricators in India as per relevant Indian and International standards.

2.12 Tenderer shall, preferably source piping items along with accessories, remote operated valves, etc. (as per specifications mentioned) from India as per specifications. However, this is not a mandatory requirement.

3.0 GENERAL REQUIREMENTS

3.1 It shall be the entire responsibility of the successful tenderer to provide after sales services as and when required, for a period of 2 years from the date of commissioning directly or through their authorised agents in India. While successful tenderer shall arrange for the visit of technical experienced personnel of the vendors of LPG Pump / Dispenser for the successful commissioning of the entire system (all costs to be borne by the Tenderer / vendor), subsequently, the vendor shall position their representative directly or through the successful Tenderer for trouble-free maintenance including all spares.

Successful Tenderer shall submit original documents to this effect from the supplying vendor.
It is very essential to ensure that the Tenderer makes an arrangement / agreement with foreign vendor for LPG Pump / Dispenser for a proper local representative and for training their engineers.

3.2 Completion period: The entire job is to be completed in line with the tender conditions.

3.3 Spares: At any time, Tenderer shall keep minimum stock of spares for 2 years as recommended by each manufacturer for his equipment and should supply the same as per the price list published by the manufacturer. He must submit the latest price list for supply of all such spares including their normal frequency of replacement.

3.4 Guarantee: 24 months from the date of commissioning. The facilities will be maintained in trouble-free condition for 2 years after commissioning. Any spares / assemblies replaced / required to be replaced would be free of cost. BPCL will not be liable to pay any cost for such replacement.

3.5 Training: It is the responsibility of the successful Tenderer / Vendor to provide training to BPCL engineers and to the operating staff at the petrol pumps. Minimum 48 hours free training is required to be imparted at free of cost.

3.6 Periodic Tests: It is the responsibility of a supplier/vendor to provide all the information on requirement of periodic tests followed elsewhere or as required by local authorities and to be present for at least first test when called for. Tenderer will have to carry out all statutory checks through such as Statutory periodic testing of SRV, TSV through approved Competent person and periodic calibration of dispenser, measurement of potential of CP system, resistance of earth pits, testing of hoses through authorized Installer for two years from the date of commissioning of ALDSs without any additional cost.

3.7 The Tenderer has to make it very clear on his requirements to start the job at the site and hence it will be necessary to visit the proposed sites to understand local aspects.

3.8 The successful Tenderer has to co-ordinate other aspects such as approvals from weights and measures authorities, calibration procedures etc.

3.9 The successful Tenderer has to use industry standards / specifications followed in various countries if all the requirements mentioned in this tender document are not adequate in the interest of safety and successful commissioning the project.
3.10 The Tenderer has to have a fairly good idea of Govt. policies on use of Auto LPG.

3.11 The Successful Tenderer has to obtain a work permit from the Retail Outlet Incharge / Dealer prior to start of work.

3.12 The successful Tenderer has to ensure that the existing operation at Retail Outlet is not disturbed.

3.13 All the enclosed drawings are only indicative. The successful Tenderer shall submit all relevant drawing (to be designed by the Tenderer) and approval for the same to be obtained from BPCL.

3.14 It is desirable that contractor have establishment / offices with address at the respective cities mentioned in the Tender. The address to be furnished along with the Tender and will be part of evaluation.

3.15 Contractor has to use and communicate to BPCL the established standards / specifications / codes of practices or its equivalent in case all the requirements mentioned in this tender document are not covered in the interest of sound design, proper installation and successful commissioning the project.

3.16 The ALDS shall be in a state of readiness for commissioning prior to inspection by CCOE for issuing license.

3.17 Contractor has to undertake calibration of all equipment, instrument including flow meters, dispensers, temperature gauge, and pressure gauges along with approvals from weights and measures authorities, calibration procedures etc. without any extra cost to BPCL. Valid necessary required certificates towards calibration as above to be provided before commissioning and to be arranged physically as applicable, latest within 10 days of commissioning.

3.18 The unloading pump, dispenser, submersible pump and its controls, safety features, accessories including level gauges offered by the contractor must be approved by Chief Controller of Explosives with documented evidence furnished with the tender.

3.19 Contractor has to submit schedule of work undertaken by him initially and period progress made till completion of the work.

3.20 Contractor has to ensure that the existing operation at Retail Outlet is not affected or disturbed in any way.
3.21 Contractor supervisor of thorough knowledge and experience to be present at the site throughout construction period and commissioning of the ALDS.

3.22 Contractor working at the site must be communicable.

3.23 Contractor has to co-ordinate with BPCL retail territory manager / retail outlet dealer for smooth execution of the project, as well as with any other contractor on the job at the site.

3.24 Contractor is to respond fully to the technical specification sheet of the tender and all other requirements highlighted in the tender to the satisfaction of BPCL.

3.25 CCOE approved competent person/ TPIA (Third Party Inspection Agency) for certifying the various jobs / equipments have to be approved by BPCL.

4.0 DETAILED SCOPE OF SUPPLY AND EXTENT OF WORKS

4.1 SPECIFICATIONS

Scope of works and specifications for installation of Auto LPG Dispensing Stations (ALDS):

The parties can follow European / Australian standard in addition to OISD 210 and amended SMPV rules specifying safety distances for use of LPG in automobiles as per the following:

- Australian standards for Autogas installations
- SMPV rules specifying safety distances issued by Chief Controller of Explosives of India (CCOE)
- European Standards for Autogas installations.
- OISD STD 210
- Netherland Standards for Autogas installation.

4.2 The turnkey job consists of supply and installation of various equipments and their accessories. General list of equipments is given below, but this may not be a complete list. Additional equipment / material, if required, are also to be a part of contract. It is the responsibility of the Tenderer to complete a job to the entire satisfaction of BPCL as per international standards / safety regulations and duly approved by CCOE, Nagpur.

i. One or two no 7.5 / 10 M$^3$ water capacity underground tank for each site fitted with all safety related devices like SRVs, Remote Operated Valves, 2 independent tank gauging system, glycerin filled pressure gauge (s) etc.
ii. Positive displacement/Centrifugal pumps (single / multi stage submersible with bypass valve, vapour eliminator, controls and fittings) for dispensing LPG from underground tank to the vehicle through the Dispenser.

iii. Bulk LPG Decantation Pump (confirming to API standard) of positive displacement rotary valve type (Corken, Ebsray, Blackmer or equivalent) with automatic regulated bypass valve and FLP motor for unloading LPG from Tank truck to underground tank.


v. Remote fill point (50 mm dia NB) within the industrial fencing having matching ACME coupling at the fill point suitable for connecting the SMART hoses.

vi. Industrial fencing should be 2 M high including brick masonry toe wall 230 mm thick and 300 mm high, having 2 nos. entry / exit wicket gate as per drawing attached.

vii. Cathodic protection as per international standard (sacrificial Anode type) for life of 15 years.

viii. Double nozzle dispenser complete with two metering devices, hydraulics, displays for price, quantity, cumulative data minimum for last 28 days, dead man’s push button switch (optional) and hose pipe fitted with break away coupling.

ix. Complete tank gauging and product management system, to provide information on stocks in the tank. The system should be compatible to obtain sales from the Dispenser including generation of bill against the product delivered every time, if and when provided with necessary hardware and software. The communication protocol for ATG and Dispensor shall be provided by vendor.

tax. LPG pipe work (schedule 80) of established grade (SA 106 gr-B) above ground (inside the fence area) and underground (outside fence area).

xi. Electric controls and cables and circuit breakers for emergency shut down, flame proof function boxes etc.

xii. Control panel and emergency shut down system with electrical and pneumatic components.

xiii. Control panel with audible alarm, level indication, high / low level indication light / alarm trip as required.

xiv. Unloading hoses (smart hose) with acme coupling at the tank lorry end to be supplied with wrenches.

xv. Independent operable / function ROV system for full point / unloading of dispensing lines.

xvi. Fire Extinguishers DCP type (2 x 75 Kg under canopy / shed, 4 x 10 Kg)

xvii. Civil works which include:
a) Dismantling of RCC /CC/Asphalted Driveway and disposal of Debris to unobjectionable place, including all leads and lifts.

b) Excavation in all types of soils (including rocky strata) upto a depth of 5 m including providing supports / shoring to existing structures and disposal of excavated earth / rocks to unobjectionable place including all leads and lifts.

c) Installation of the LPG Tank (underground) including all material / civil works as per drawing enclosed.

d) Provision of PCC border all along the length / width of CC paver blocks, 500 mm wide and 150 mm thick.

e) Laying pipeline in brick masonry ducts of walls 230 mm thick and 500 mm below top of the RCC drive way. CC coping 1:2:4 50 mm thick shall be provided on the duct walls.

f) Covering of the ducts with 150 mm thick pre-cast RCC slabs of width 600 mm or above.

g) Laying of Cables for Dispenser & Pump connections in GI pipes of min dia 50 mm (class ‘B’) after dismantling the existing RCC. After laying the pipe / cable at 300 mm, driveway shall be repaired by CC (1:2:4) / asphalting.

h) Installation of dispenser (to be painted as per BPCL RVI scheme) on pump island which shall be constructed as per our RVI standard at ROs for MS/HSD pumps.

i) Provision of min 60 mm suitable CC paver blocks over the tanks as per approved drawings.

j) Industrial fencing 2m high shall be grouted all along the length / width of the bullet installed with two nos. 1.5 m wide wicket gate for entry. The design of the fencing is as per drawing enclosed.

k) Civil works for installation of Decantation pump including suitable cover / canopy to protect the pump from rain.

xviii. Supply & Installation 1 no. Air Compressor (ELGI / INGERSOLL RANK) of adequate capacity for operation of ROVs (to be sourced from India), including allied piping and cabling.

xix. Marking in paint of the Hard Stand on the existing driveway. BPCL shall provide the fresh Hard Stand if required.
xx. 2 independent earth pits as per IS 3043 connected by a grid, for earthing of LPG dispenser, fill point and pipelines.

xxi. Foundation work for decantation pump and provision of suitable canopy.

xxii. Supply & installation of ‘No smoking’ signboards (3 Nos) and Do’s and Don’ts at fill point and LPG Dispenser (in English & local language).

Note: All the pneumatic equipments including ROVs should operate below the operating range of air compressor.

Job includes

Tools, tackle equipment, material, manpower and supervision for carrying out the job in total,

The following tasks are also a part of turn key job and to be carried out by the Tenderer under the supervision of BPCL supervising engineer or their authorised representative.

4.2.1 Clear designated area around the Autogas installation, remote kerbing and forecourt slab / existing sales building (if required) as required. Place materials in an approved location for later use in reinstatement of landscaping. Debris and excess earth shall be disposed off as authorised places / dumping grounds without any additional cost.

Special attention should be paid to the handling of contaminated soil and for disposal of debris and access operations of petrol / diesel dispensing facilities.

Special attention to be paid to carry out any hot work (if required) and necessary permits to be obtained from competent authority prior to carry out such jobs.

4.2.2 Excavate the area as specified. The Tenderer shall ensure that stability of the excavation is maintained at all times. This may require the use of shoring and / or battering where necessary. Consideration must be given to stabilise adjacent motor spirit / diesel tanks if necessary. Provide suitable cordon off arrangement (approved by BPC) around tank excavation if the excavation is left open overnight.
4.2.3 Prepare site for construction of other ancillary structures and services.

4.2.4 Install all pipe work, fill and vent pipes in accordance with the drawings. Enamel paint with primer/2 coats including colour coding of all pipe work, not covered, with Denso tape within 24 hours of fabrication. If delayed then proper wire brushing/descaling of the pipe work before applying primer and subsequently covering with Denso tape/coal tar tape.

4.2.5 Co-ordinate the installation and commissioning of the cathodic protection system ensuring proper electrode potential to soil electrode so that the underground tank and all buried pipe work is adequately protected against corrosion immediately after installation.

4.2.6 Provide insulation joint between the cathodically protected and unprotected equipment.

4.2.7 Provide and install the dispenser base and ballads and prepare / repair all concrete areas.

4.2.8 Install all electrical equipment and systems as per hazardous area classifications, test and ensure functioning as per the specification and requirement.

4.2.9 Install all mechanical equipment, pneumatic system, associated controls, emergency system as per specification and requirements in the approved layout drawing, P&ID, fabrication drawing, SMPV Rules & OISD standards.

4.2.10 Perform hydraulic test of the vessel in situ, pump out water and completely dry the interior surface of the vessel in presence of BPCL representative.

4.2.11 Pressure the pipeline at 48 Kg / sq.cm. with water and pneumatically test with nitrogen through storage vessel at maximum operating pressure of 14 kg /sq.cm in presence of BPCL official.

4.2.12 When the vessel is not charged with LPG, keep under nitrogen pressure.

4.2.13 Test the unloading hose and dispenser hose with fittings at 32 Kg/sq.cm. prior to commissioning.
4.2.14 Change the gasket in case of leakage rather than tightening.

4.2.15 Carry out pre-commissioning activities i.e. clean, flush and purge the installation to make it ready for commissioning. Test run / check of equipment, control system and safety systems.

4.2.16 Commission the installation. Test / verify the rated design performance of individual system, components as well as the entire station as a whole for a reasonable period to the satisfaction of BPCL engineers.

4.2.17 Test the performance (record) to verify response for normal, abnormal and emergency situations i.e. high level alarm, high level switch, high differential pressure, break away coupling, emergency switches, cathodic protection system, insulation joint, earth pit resistance, fire extinguishers, dispenser electronics and control.

4.2.18 Particular attention to be given to test for leakage, pressure, calibration, response times and emergency systems.

4.2.19 Take corrective measures in case of deviations in performance.

4.2.20 Record and document the input and results.

4.2.21 Make arrangement for calibration of dispenser before commissioning.

4.2.22 Paint all new structures with paint of requisite specifications as per our RVI.

4.2.23 Reinstate landscaping, forecourt disturbed by the installation of piping and other services to original condition.

4.2.24 The contractors shall provide “Work as executed”, “As built” drawings upon completion along with all complete relevant documentation.

4.2.25 Fencing all round the facilities after completion of the job.

4.2.26 Provide suitable guards as per CCOE norms for fill point and dispenser to avoid hitting by other vehicles.
4.2.27 Provide vents at 3m level.

4.2.28 Connect fill point vent with SRV vents.

4.2.29 Contractor to give completion / commissioning certificate based on a checklist provided by BPCL.

4.3 DRAWINGS AND DOCUMENTS

i) Successful Tenderer to submit the following:

   a) Overall plot plan
   b) Detailed drawing with sections as required for CCOE approval including zone classifications.
   c) Detailed drawings for the underground tank
   d) Design calculations for pressure vessels under IS 2825 as per codes specified.
   e) CCOE approved fabrication drawings for underground tanks.
   f) Third party control certificates on completion of pressure vessel fabrication.
   g) TPIA Certificate for tank foundation design certifying that tank foundation is safe enough to prevent floatation of tanks even under no load / empty conditions.

4.4 DEVELOPMENT APPROVALS

The following approvals and permits shall be obtained by the Tenderer:

i) C.C.O.E. approvals for Equipments / systems.
ii) Weights and Measures approvals for equipments.

Obtaining layout and storage approvals from CCOE is not in the scope of the Tenderer.

4.5 SAFETY

The contractor shall comply with all national, state and local health, safety and environmental rules & regulations, BPCL, Safety regulations and the other requirements, as applicable.
4.6 REFERENCE DRAWINGS AND DOCUMENTS

Turnkey party to submit these drawings / documents along with the offer (minimum requirement).

<table>
<thead>
<tr>
<th>Proposed Site Layout</th>
<th>Based upon attached layout</th>
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</thead>
<tbody>
<tr>
<td>P&amp;ID</td>
<td>* (in line with BPC drawing enclosed)</td>
</tr>
<tr>
<td>Electrical Wiring Schematic</td>
<td>*</td>
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<tr>
<td>Emergency Shutdown system</td>
<td>*</td>
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<tr>
<td>Underground LPG tank</td>
<td>As per attached drawing</td>
</tr>
<tr>
<td>Details of underground tank installation</td>
<td>* (in line with BPC drawing enclosed)</td>
</tr>
<tr>
<td>“Dual Hose” LPG Dispenser details, installation details with fittings as per CCOE requirement</td>
<td>*</td>
</tr>
<tr>
<td>Remote fill point for UG tanks</td>
<td>*</td>
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<tr>
<td>Cathodic Protections and Schematic</td>
<td>*</td>
</tr>
<tr>
<td>Details of Submersible Pump fixing in the UG tank with fittings, isolation valve etc. (in case of submersible pump option)</td>
<td>*</td>
</tr>
<tr>
<td>LPG piping details</td>
<td>*</td>
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</tbody>
</table>

* to be submitted by party along with the technical bid. Non-submission of these details may lead to disqualification of the party.
LIST OF APPLICABLE STANDARDS, GUIDELINES & CODES

The tenderer to adhere to following standards, guidelines or their equivalent in design, supply, erection, installation, inspection and testing of Auto LPG dispensing stations.

Specifications- Standards, Guidelines & Codes Of Practices To Be Followed

- AS 1210
- AS/NZ 1596
- AS 2381
- AS/NZ 2430 (Parts 3.1, 3.2, 3.3, 3.4)
- AS 3000
- BS-5500
- ASME Section - VIII ( Div - 2 )
- ANSI B 31.3.
- ANSI B 16.5, std for slip on flange
- ANSI B 36.1, std for seamless pipe
- A 194 2H for stud bolts
- NFPA - 58 / NFPA-59
- EN
- UL -
- NACE - For cathodic protection system
- Static & Mobile Pressure Vessels (U ) Rules ( Amended)
- OISD Standards on ALDS
- IE Rules
- IS 3043
- IS 2148
- OISD STD – 110 Recommended Practices on Static Electricity Rev. I
- OISD STD – 113 Classification of Area for electrical installation at Hydrocarbon and Handling facilities.
- OISD STD -- 137
- OISD STD – 144 Liquefied Petroleum Gas (LPG) Bottling Plant Operations Rev. II
- OISD STD – 149 Design aspects for safety in electrical systems
- OISD STD- 158 Recommended Practices on Storage and Handling of Bulk Liquefied Petroleum Gas
- Rev OISD STD – 169 OISD Guidelines on Small LPG Bottling Plants (Design and Fire Protection facilities)
- IS: 3764 Safety code for excavation work.
7.0

DETAILED TECHNICAL SPECIFICATIONS

1. SPECIFICATION OF LPG DISPENSER / DISPENSING UNIT

A. GENERAL

1. Dispenser shall be of a type with dual hose lane oriented, double head electronics dispenser with high hose mast / hose retraction system and approved by the Chief Controller Of Explosives, Nagpur. The requirements of SCHEDULE - II of SMPV Rules (Amended) on design, construction, testing for liquefied petroleum gas and its pipe connections shall be met:

2. The dispenser shall be provided with, a remote operated shut-off valve, an excess flow valve and a pipe shear provision in that order in the liquid inlet and return pipe.

3. The remote operated valve shall have provisions to close automatically by cutting of air supply by suitable device in the event of a crash/hit by vehicle.

4. The dispenser shall be installed on a firm foundation and protected against physical damage from four sides with four bollards. The design is as per CCOE issued circular.

5. All distances from dispenser shall be measured from edge of the facilities.

6. A breakaway device with excess flow valves or quick action cut-off valves on both sides of the breakaway device conforming to Underwriters Laboratory, USA, specification number 567 or equivalent shall be provided on the delivery line from the dispenser before the connection of the hose so as to prevent spillage of liquefied petroleum gas from both sides of the breakaway point in the event of its breakage.

7. The dispensing nozzle at the end of the hose shall be of self sealing type of twenty two millimeters nominal size and suitable for matching with filler connection of cylinders fitted to vehicles as fuel tanks, as specified in Australian Standard AS - 1425 or other established standard approved by the Chief Controller of Explosives.

8. The dispensing nozzle shall be compatible with the filler nozzle in IS – 15100 (multi-valve)

9. The hose for delivery of liquefied petroleum gas by the dispenser to motor vehicles shall be suitable for commercial
propane. The design pressure of the hose shall be minimum thirty-two kilograms per square centimeters with a safety factor of five and shall be tested at one and half times of the design pressure at an interval not exceeding one year. The hose shall be electrically and mechanically continuous.

10. The length of the hose connected to the dispenser shall not exceed five meters and fifty centimeters.

11. The hose shall have provisions of securing through hose mast.

12. Emergency shut down switch on the body of the dispenser to cut-off power in case of emergency.

13. The remote operated valves below the dispenser on liquid & vapour lines shall be easily accessible & of fire safe type.

14. Every dispensing unit from which liquefied petroleum gas introduced into the cylinders fitted to the motor vehicles, shall be equipped with self-sealing type fuelling nozzle from which the vapour released on disconnection shall not exceed five milliliters.

15. All metallic liquefied petroleum gas pipings shall be rated for Propane and designed to the American Standard ASME - B-31.3 with minimum design pressure of thirty two kilograms per square centimeters with a factor of safety of four. The materials of pipe shall be low carbon or alloy-steel conforming to the American Standard ASTM - SA-333 grade 6, or SA - 106 grade B Schedule 80 (Maharashtra Seamless limited/Jindal or equivalent). Only schedule 80 pipes shall be used. Joints of pipeline above 40 millimeters diameter shall be welded or flanged. Threaded or screwed connection shall not be provided except for special fittings like excess flow valve, pump connections up to fifty millimeters diameter.

16. Threaded and flange joint material, specification shall conform to relevant ANSI standards.

17. Testing - Every dispenser shall be factory tested and calibrated with LPG of specification meeting IS-14861 (2000) & certificate provided. Dispensers shall be suitable for commercial propane. Dispenser shall have minimum of 60 stop / start operating cycles per hour. Testing shall be done at the maximum operating pressure as above for leak, rated flow, control & functioning of safety devices to ensure no faults in the dispensing system during commissioning, normal & emergency situations.
18. Documentation - Following documents shall be provided for the dispenser.

1. *Factory test and calibration certificate*.

2. Installation, operation and maintenance manuals

3. Statutory approvals: Clearance/approval from local weights & measure authorities.

   A copy of approval from Chief Controller Of Explosives for the dispenser in line with the Schedule - II (Rule - 30A) of Static & Mobile Pressure Vessels Rules ( U ), 1981 (Amended).

   A copy of the approval for meteorological performance from local Weights & Measures Department.

4. Typical dispenser error / flow rate curve or equivalent to show the dispenser performance.

5. Trouble shooting for various situations

6. The tenderer shall obtain clearance/approvals from Indian authorities in accordance with the provisions therein

7. The manufacturer shall provide all original documents to BPCL prior to installation

19. Installation, Commissioning and Maintenance manual - A comprehensive technical manual shall be provided covering installation of the setup, operating procedures, service diagnostics, trouble shooting, inspection/testing procedures, dispenser error code, electrical, mechanical & technical drawings, piping & instrument drawings, weights and measures calibration procedures, replacement parts list with frequency.

20. Design Code - Applicable code to which the dispenser is designed, manufactured, tested and inspected to be provided.

21. Type / brand of dispenser: - The tenderer to offer dispenser from one or more of the following brands along with CCOE/W & M approval for the model and type.

   **FAS/Euro Star**
   **BATCHEN - COMMANDER**
   **YENEN - PUMA**
   **E.Meurs**
The tenderer has to comply with:

i. The same is approved by CCOE/ local weights and measure department

ii. Tenderer can satisfy BPCL through documentary evidence that such dispensers are already being widely used world over and their performance has been satisfactorily.

iii. The manufacturer has adequate after sales service facilities in India and is ready maintain pumps including free replacement of all spares in first two year

iv. Accuracy is ensured for following situations while dispensing by quantity or amount as per technical specifications.

22. Release of LPG on disconnection - Quantity of LP Gas that will be released while disconnecting the dispenser nozzle from the vehicle to be fueled should not exceed 5ml.

23. Servicing - Name & location of the approved service centres of the dispenser in India, type of services proposed to be offered and the back up available from the principals should be provided

24. Spare parts - A list of spares shall be provided by the tenderer giving the normal frequency of change. All parts shall be available as spares within 24 hours from a request. Spares shall be from original supplier of the dispenser.

25. Equipment supplied to be complete in all respect, operational and shall include all necessary auxiliary items. These include accessories, all miscellaneous materials, minor parts and other such items where specified, or where it is clearly the intention that they should be supplied to complete and commission the equipment.

B) TECHNICAL SPECIFICATIONS

I. Statutory requirements with regard to dispenser as per latest SMPV rules must be met.

II. DISPENSING COLUMN

a. All internal dispenser pipeline connections shall either be welded or flanged to ANSI class 300 raised face or equivalent. Threaded or screwed connection shall not be provided except for special fittings and such connections shall be listed.
b. The enclosure of the delivery unit shall be provided both at the bottom and at the top, with two ventilation openings situated opposite each other.

c. The liquid inlet flange connections & vapour return flange connections in the dispenser shall terminate with an ANSI class 300 # welded flange connections in the dispenser.

d. A push button shall be fitted on each dispensing unit and be so arranged that delivery of LPG can only be achieved by pressing the push button. This push button shall be hand operated. This will act as dead man’s button & failure of pressure on the button shall stop delivery of LPG automatically and instantly.

e. Dispenser shall have protection devices in accordance with SMPV Rules (latest).

III. DISPENSER BASE

a. The dispenser manufacturer shall at the time of tendering submit a base plate connection and fit up detail. Important details required are size and location of bolt connections.

b. Each dispenser shall have barrier as recommended by CCOE from four sides to prevent any damage due to collision.

IV. DISPENSER BLEED VALVE ( OR EQUIVALENT )

The dispenser shall have arrangement for safe bleeding of product before taking up for maintenance through an opening not more than 1.5mm in dia.

V. DISPENSER TEST

Arrangement for meter testing and calibration shall be provided for returning liquid to the vessel. A separate spool shall be provided with isolation/bleeding arrangement to install master meter on the return line.

The dispenser shall have both arrangements for calibration of the meter in situ through master meter as well as by sending the same to approved third party agency.

VI. PIPE, VALVE, FITTINGS & TUBING MATERIAL

1. All piping, valve and fittings shall be made from steel ( as per specs). The material quality shall be suitable for LPG services and shall meet the mechanical properties in terms of elongation and charpy V- notch value.
2. Pipes to have manufacturing mark/heat nos clearly visible on each piece along with corresponding documents.

3. All pipes shall be of schedule 80 with requisite certification.

4. Tubing required in the dispensing system should be stainless steel instrumentation quality tubing. Copper tubing shall not be used.

5. Design pressure shall be \textit{at least} equivalent to the design pressure (shut off pressure) of the pump or other source feeding the piping system.

6. Piping system shall be designed at 32kg/cm².

7. Gaskets to be ANSI B.16.20 (spiral wound metallic gasket @ 300 pounds) & marked on each piece.

8. Flanges to be marked with ANSI – 16.5, 300 pounds.

9. Flanges of 50mm of size & above will have 8 bolts.

VII. HYDROSTATIC RELIEF VALVES

1. Hydrostatic relief valves in the dispenser pipe work (if provided) shall be of stainless steel and discharge into the dispenser liquid inlet or vapour return line. Hydrostatic relief valve discharging inside the dispenser is not acceptable.

2. Hydrostatic relief valve shall be only on liquid lines.

3. Set pressure shall be marked, visible & certified documents available.

4. The hydrostatic thermal relief valve shall be set at a pressure not exceeding 110 % of the design pressure (NFPA -58) of the pipeline i.e. 21 kilograms per square centimeter.

5. The number of hydrostatic relief valves installed will be such to prevent the possibility of hydraulic lock up situation.

6. Type of hydrostatic relief valve used shall have to be approved by BPCL.

7. Every hydrostatic relief valve shall be provided with a needle valve (800 pounds) to facilitate isolation from main body on which it is fitted except in Dispenser.
VIII. DISPENSER CABINET

1. The cabinet shall be stainless steel/ MS with powder coating with double cabinet, one for housing display and computing unit and other for housing flow meters, hydraulics and accessories along with piping.

2. The cabinet shall be constructed such that the dispenser internals are accessible for maintenance and meter calibration from two sides. Doors and panels provided for this purpose must be lockable.

3. The cabinet shall be of weather proof.

4. The cabinet is to be of a high industrial standard giving good mechanical integrity and at least 15 years life expectancy.

5. The cabinet shall be painted by powder coating with stoving and high duty gloss enamel or equivalent. All other exposed bare metal shall be protected in accordance with good painting specifications.

6. Minimum 3 years anti corrosion warranty at no additional cost shall be provided.

7. Cabinet shall be provided with protection for mechanical and electrical/electronic components and house these components in a weather proof and dust resistant enclosure to at least IP 23 or equivalent.

IX. VAPOUR ELIMINATION AND HOSE PRESSURISATION:

1. Reliable & proven system for vapour elimination shall be provided and necessary approval from Weights & Measures shall be obtained.

2. Isolating fire proof ball valves to be installed on the liquid line & vapour return lines of the dispenser in addition to the fire proof remote operated valves.

3. System to maintain a constant pressure and arrest any fluctuation of pressure in the dispenser shall be provided in order to minimise the possibility of vapour formation.

X. METER PERFORMANCE:

1. The meter shall be two/four piston, positive displacement gland less (no dynamic seals).
2. The manufacturer shall provide information on the type of the meter, reliability of performance, accuracy and repeatability within the entire range of temperature, pressure and flow.

3. The manufacturer shall specify the design and type of mechanical seal used in the meter shaft (where applicable) with evidence on seal reliability.

4. Calibration system of the dispenser shall be specified in accordance with established practices, approved by local authorities & shall be calibrated by the contractor in accordance with local statutory requirements periodically.

5. On line electronic master meter with mass flow meter to be preferably available with the contractor for periodic calibration & certificate to the effect will be provided by the contractor.

6. The meter should be designed for following parameters.

   Minimum flow rate - 5/10 lits / min
   Maximum flow rate - 50/60 liters / min
   Maximum operating pressure 20 kg/cm2
   Liquid temperature range - 10 degree c + 55 degree c
   Accuracy + / - 0.5 % (to be in line with W& M act)
   Repeatability to be in line with W & M act.

XI. DISPLAY/MICROCONTROLLER FUNCTIONS

1. Should have large backlit Liquid Displays, 1 display unit for each meter.

2. Should be Microprocessor based operation and control and volume based computation

3. Should have non –volatile battery maintained memory

4. Should have dual channel pulsars with self error checking

5. Should be able to automatically compute volume depending upon temperature based on relevant ASTM tables

6. Should have facility for automatic temperature compensation

7. Facility for effecting delivery on the Amount and Volume preset
8. Minimum display requirements shall provide
   (a) Customer display: rate, quantity, amount
   (b) Service displays – k-factor, product density, cumulative volume & price

9. The flexibility for remote information for down loading or up loading shall be available.

10. Should also have provision of selling through value (Rs) & volume (lits) as preferred by the customer.

11. Provisions of price & volume transmission to a remote read out through a suitable 232/485/current loop etc.

12. Minimum 28 days of data retention after power failure. Battery back ups for transaction.

13. Both temperature compensated & uncompensated volume measurements to be provided.

14. Provision to be made for temperature sensing located within the dispenser/ vapour eliminator.

15. An exterior key operated reading facility to display temperature compensated litres to be installed.

16. Electronics to be IFSF compliant

17. Display to be capable of displaying:

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1. Total volume range</td>
<td>0-999.99 units</td>
</tr>
<tr>
<td>2. Total value display range</td>
<td>0 – 999999 units (with floating decimal point)</td>
</tr>
<tr>
<td>3. Price per unit display range</td>
<td>99.99 (with floating decimal point)</td>
</tr>
<tr>
<td>4. Cumulative volume range</td>
<td>Up to 9999999 units</td>
</tr>
<tr>
<td>5. Cumulative value range</td>
<td>999999.99 units</td>
</tr>
<tr>
<td>6. Maximum metering resolution</td>
<td>10 ml</td>
</tr>
<tr>
<td>7. Calibration accuracy</td>
<td>Rounded to the currency</td>
</tr>
<tr>
<td>8. Data retention</td>
<td>Minimum 28 days</td>
</tr>
</tbody>
</table>

XII. EMERGENCY SYSTEM / EQUIPMENT:

Following should be provided

1. Emergency stop to be at the dispenser.
2. Remote operated valve on dispenser liquid inlet/outlet lines & shear section as specified in SMPV.
3. An excess flow check valve shall be fitted in the rigid pipe before the flexible hose of the dispensing unit to stop flow beyond 120% of rated /design flow in the line.

XIII. LPG HOSE PROTECTION:

1. System shall be provided to ensure that at all times the hoses shall be laid/supported clear of the ground.

2. Hose shall be pressure tested prior to commissioning.

3. If a high hose mast is used, provision must be made for the hose to detach from the mast without damaging the hose, mast or cabinet in case of a driveway with hose connection to a vehicle.

4. If a hose retractor mechanism is used the manufacturer must submit the design of the mechanism for approval.

5. The length of the hose connected to the dispenser shall not exceed five meters and fifty centimeters.

XIV. BREAKAWAY COUPLING

1. A hose breakaway coupling shall be fitted to the dispenser hoses. This coupling shall be anchored to the dispenser framework by way of a restraining cable or similar device. Under this arrangement the dispenser shall remain safely detached when a drive-away occurs. The breakaway coupling shall be fitted and anchored at the ground level.

2. The pull force required to detach from a high hose mast shall be between 400N-600 N and suitable for Indian cars and auto rickshaws. The anchorage point of the breakaway coupling shall meet the following criteria.

   (a) The hose shall be capable of self-alignment such that the straight pull is always achieved.

   (b) The anchorage point shall be capable of sustaining a pull force of 2KN with no damage to any part of the dispenser.

   (c) The breakaway coupling shall come with connections to suit the hose

3. The vapour loss on separation shall not exceed 5 ml.

4. The coupling shall be capable of reassembled after separation without necessity to drain the hose, the use of any special tools. Any part to be replaced to be specified.
5. Performance / test certificate of breakaway coupling with periodic inspection and testing methods shall be provided.

XV. DISPENSER NOZZLE

The dispenser shall be fitted with hose nozzles which meet the following specification:

1. The connection system shall meet with the filler connections specified in IS – 15100, EN- 67, AS- 1425 / NZ or equivalent.

2. The nozzle shall not allow gas to be dispensed unless it is correctly connected to the car filler valve.

3. The nozzle should seal to the car filler valve even if it is inadequately tightened. If sealing is not achieved the nozzle should not allow the gas flow to commence.

4. There shall be no leakage of LPG on misalignment of vehicle nozzle & dispenser nozzle.

5. The liquid discharged on disconnection should not exceed 4ml.

6. The nozzle will incorporate provision to start and stop gas flow of quick acting type.

7. The nozzle should not incorporate a device to latch it in the open position.

8. The nozzle should not allow gas to be dispensed if customer tank is full by way of suitable electronic logic in the dispenser.

XVI. HOSE TYPE

1. The hose for delivery of liquefied petroleum gas by the dispenser to motor vehicles shall be suitable for commercial propane.

2. The design pressure of the hose shall be minimum 32 kg/cm² with a safety factor of five. The burst pressure of the hose shall be specified.

3. The hose shall be tested at one and half times of design pressure. The hose shall be mechanically and electrically continuous. Test certificate to be made available for material, quality and design conditions.

4. The hose shall not be longer than 5 meters and fifty centimeters but shall be at least 4m.

5. The hose shall be of approved type and resistant to LPG.
6. The hose of the dispensing unit shall be provided at the end with a nozzle with valve of a type approved by an inspection agency, which can only be opened when or after the hose is connected to the receiving fuel tank of the motor vehicle and which before or on disconnecting the hose closes automatically and instantly.

7. The hose will be tested before installation in line with OISD standards.

XVII. HOSE CONNECTIONS

The hose to LPG dispenser pipe connection shall be made outside the dispenser cabinet ensuring ease of maintenance (i.e., hose replacement) through minimising the possibility of tampering.

XVIII. ELECTRICAL EQUIPMENT & SYSTEM

Following classification of zoning shall be followed:

The extent of hazardous area for liquefied petroleum gas dispenser shall be as under:

1. Entire space within the dispenser enclosure cabinet and forty six centimeters horizontally from exterior of enclosure cabinet and up to an elevation of one hundred and twenty two centimeters above dispenser and the entire pit or open space beneath the dispenser shall be division “1”.

2. Up to forty six centimeters vertically above the surrounding ground level and horizontally beyond forty six centimeters up to six meters on all sides of the dispenser enclosure cabinet shall be division “2”.

3. Storage vessel shall be considered as zone “0/1” and 5m from the storage vessel to be considered as “zone 2”.

4. Area up to 5m from fill point block valve shall be considered as “ zone 2 ”.

5. The entire electrical installation work shall be carried out in accordance with approved drawings and in general conformity with the requirements of the Indian Electricity Act the Indian Electricity Rules.

6. The precise positions of all points, controls, switch boxes, main and distribution boards, cut off points etc, shall be subject to approval by the BPCL
7. High voltage tests should be undertaken to ensure that no damage has occurred during the laying operation and that the joints are in order. Cables of 1.1 KV suitable for low and medium voltage should withstand for 15 minutes, 300 volts D C current applied between the conductors and between each conductor and sheath. In the absence of high pressure testing equipment it is sufficient to test for 1 minute with 100 volts.

8. Earthing system shall be earth electrodes as per IS 3043 with GI pipe earth electrode with excavation of earth, refilling with solid treating media like charcoal, salt etc. the earth pipe electrode shall be of 100 mm dia and 1.3 mm thick and 3 mts long complete with funnel etc. including resistance test results( <2 ohm) to be furnished. Construction of chamber and fixing of MS chequered plate cover shall be done. One for panel earthing, one for connecting up to earth bus and then to all DBs.

9. Separate earth pits shall be constructed for electrical & non electrical components

10. Each motor shall have two independent earth strips.

11. Necessary safety certificates, etc. are to be obtained by contractor. Electrical installation shall be certified by competent electrical inspector.

12. All electrical equipment shall be installed in accordance with hazardous area classification having CCOE approval and CMRS certification.

13. Electrical equipment directly connected with the storage vessel: “zone 0” and 5m from storage vessel to be considered as “zone – 2”.

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<thead>
<tr>
<th>ZONE I &amp; II</th>
<th>ZONE II ONLY</th>
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<tbody>
<tr>
<td>(a) Intrinsically safe (Ex ia or ib) or equivalent</td>
<td>(a) Non sparking (Ex n) or equivalent</td>
</tr>
<tr>
<td>(b) Flame proof enclosure (Ex d) or equivalent</td>
<td>(b) Encapsulated (Ex m) or equivalent</td>
</tr>
<tr>
<td>(c) Increased safety (Ex “e” – Cable joints only) or equivalent</td>
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XIX. ELECTRICAL & ENVIRONMENTAL SPECIFICATION

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Mains supply: 230 volt, 50 Hz, + / - 10 %</td>
</tr>
<tr>
<td>2</td>
<td>Operating temperature range: -10 degree c to + 55 degree ambient</td>
</tr>
<tr>
<td>3</td>
<td>Humidity range: 0 – 90 % (non-condensing)</td>
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</tbody>
</table>
XX. WARRANTY

Manufacturer shall make good with all possible defects which may arise from defective design, materials or workmanship or from any of omission of the manufacturer encountered during normal, abnormal, emergency operating conditions within two year after equipment have been put into service.
2. SPECIFICATION & REQUIREMENTS FOR LP GAS STORAGE VESSEL SYSTEM

A. GENERAL
   (I) Scope
   i. Design of LPG storage system as per the specifications / data sheet (as per code requirement) including proposals of detailed fabrication and obtaining approval for the design and drawings from BPCL / CCOE and other statutory authorities.
   ii. Preparation of Bill of materials, quality assurance plan and fabrication procedures as per code requirement. These documents shall be submitted for approval, to BPCL.
   iii. Calibration, certification and documentation including co-ordination for obtaining approvals from statutory authorities.

   (II) General features

   1. The following features are general in nature and also apply to all tanks valves and pipe work wherever possible. Noncompliance with these standards must be nominated if not exempted elsewhere. These features shall take precedence over drawings but not the specific sections below.

   2. The tenderer shall furnish tank design, fabrication details with the tender.

   3. All fittings, valves, and pipe work above 40 mm dia shall be flanged 300 # ANSI, B 16.5 RF with steel spiral wound gaskets except those required as insulating joints.

   4. All studs and nuts shall be supplied zinc phosphated and shall be ASTM A 193 B 7 studs and A 194 2h nuts or equivalent.

   5. All ball valves shall be supplied as 300 # ANSI rating marked .

   6. All remote operated valves shall be of fire safe type.

   7. All actuated ball valves shall have indications for opening & closing

   8. All gauges, instruments, valve stems data plates and actuators shall be masked to prevent ingress of grit or paint during surface treatment of pipe work assembly. All flange internal edges shall be painted prior to assembly of flanges.
9. Interior of tank shall be dry and wire brushed after in situ hydrotesting.

10. External tank shall be shot blasted to AS 1627.4 (or equivalent), Class 2.5 and coated with two coats of Dulux Amercoat 450 micron DFT or equivalent. Spark test tank exterior to AS 3894.1. Thickness of the coating shall be shown through alcometer to BPCL representative at site.

11. The tank pit of any underground tank shall be designed and constructed to prevent ingress of surface water or groundwater. All electrical equipment within the pit shall be suitable for Class 1, Group 2, Zone 1 Hazardous area and shall be Ex rated. Electrical equipment shall be installed at the highest point possible in the pit.

12. There will be no enclosure /pit at the top exposed surface of the underground vessel.

13. All steelwork, piping, valves shall be supplied pre-painted using zinc rich primer and industrial enamel top coat.

14. All work shall comply with relevant Australian Standards AS 1596, AS 3000, AS 1210, etc. or equivalent.

B. UNDERGROUND VESSELS:

Underground vessels shall conform to the following requirements:

- **General**:

  1. All tanks are to be supplied with stud pads to all fittings above 20mm dia to suit 300 # ANSI RF flanged ball valves c / w internal NPT threads. This excludes safety relief valves but no other valves or fittings.

  2. Vessels shall be set substantially on level and properly anchored to a firm Foundation, firmly clamped in place and surrounded by sand. Foundation shall be designed to prevent floating of tank under empty and no load conditions.

  3. The design details / calculation of the foundation proving its suitability against floatation & shifting shall be provided and got approved by BPCL as well as TPIA.

  4. Sand used for back filling shall be fine, sieved & free from silts, rocks & abrasives

  5. Back fill shall be free of rocks or similar abrasives.
6. Sand shall be preferably white sand & quality got approved by BPCL before use

7. Vessels shall be placed at least 500mm below grade. The fitting housing, housing cover, tank connections and piping shall be provided with protection against external damage.

8. The portion of the vessels to which the fitting cover or other connections are attached shall be permitted to be covered.

9. Vessel to have two flanges. One will have pump & its accessories. The second will have instruments & safety fittings.

10. Approval to be obtained from BPCL on layout & details of connections of the flanges

11. Underground tanks with submersible pumps:

In addition to specific details of drawings, all underground LPG tanks shall have the following features or its equivalent as approved by CCOE.

- Vessel c/w chamber and primary valves
  
  (i) Ball valve on inlet to pump chamber shall be full bore and have manual 90 degree turn handle with open/closed position clearly shown on bonnet. Removable “T“ bar to be supplied on hanger on pit wall. An open/close tag to be provided on the valve top.
  
  (ii) The drainpipe shall be positioned in the tank between 5mm and 20mm from the bottom of the tank.
  
  (iii) When installed in the pit, provisions shall be made to ensure that contents gauge can be read at all times under external light conditions without the need of portable light sources.

- Tank pit c / w pump, valves, pipe work & cover
  
  (i) All pipe penetrations out of pit to be fitted with Proseals or equivalent, to prevent ingress of water through gaps in turret for pipe penetrations.
  
  (ii) The tank shall have two flanges to accommodate & access pump / fittings / gauges / instruments. All fittings, valves and pipe work above 40mm dia shall be flanged 300 # ANSI with steel spiral wound gaskets except those required for insulating joints.
The drain valve shall be ¾ or 1 inch ball valve with blind flange fitted.

(iii) The tenderer shall furnish the details fittings on each flange.

(iv) All pipe work shall be schedule 80 except the vent pipe which shall be schedule 40 with 300 # ANSI flange.

(v) All pipe work leaving / entering the pit to be fitted with insulating flanges. Additional insulating kits are required on the pump chamber flange and between the liquid withdrawal actuated valve and the bypass valve.

(vi) Internal tank pit including all valves and fittings to be cleaned to AS 1627.7 Class 1 or equivalent and coated in Amerlok 400 T to 125 to 200 micron DFT. All flange internal edges to be painted prior to assembly of flanges.

(vii) Each pipe end from / to the vessel to have ball valves with end flange on each side to keep provision of modifications / changes.

- Pump & Actuator Switch Panel

(i) The pump and actuator switch panel shall be supplied mounted at the fill point. All electric and pneumatic connections within the pit shall be made as per P&ID and as shown on electrical schematic as follows.

(ii) 6mm PU air tubing from air solenoid and valve to actuators. Use only metal push on air fittings and color coded, direct all exhaust air to highest point on back of control board.

12. Testing Of Tank:

(i) Non – destructive testing on all tank welds as required by AS -1210 or equivalent.

(ii) Thoroughly dry vessel following shop test. Clean vessel to remove all mill scales and weld slags.

(iii) Conduct hydro test in situ after installation at the test pressure of 28.6kg/cm2.
(iv) After drying up of vessel, install all the safety fittings and level gauges. Perform soap-water leak test on all flanges, valves and connections by pressurising vessel with filtered nitrogen at 14kg/cm². The soap must be non corrosive at the site.

(v) Following this test, LPG purging as per standard operational practice.

13. Statutory Requirements

All relevant statutory requirement shall be met including design to all SAA codes, in particular AS 1210, AS 1596 or equivalent, and design approvals authorities like CCOE, Weights & Measures etc shall be obtained by vendor. Documentation shall be provided in support.

- Mechanical Design:
  1. Design code: IS 2825. Design shall take into account the Static and Mobile Pressure Vessels (Unfired) Rules 1981 also.
  2. Maximum tensile stress of the material shall be below 80,000 PSI
  3. Material shall be ASTM A 537 CLASS I / SA 516 GR 70
  4. Design temperature: - 43 degree celsius and + 55 degree celsius
  5. Design pressure: 22 kg / sq.cm (g)
  6. Water capacity: 7500lit /10000lit
  7. LPG to be handled: Marketable Auto LPG (commercial propane) conforming to IS - 14861
  8. Corrosion allowanc:1.5mm (minimum)
  9. Radiography: Full
  10. Stress relieving: 100% irrespective of thickness
  11. Earth pressure: As per IS- 2825
  12. Hydrotest pr.: 28.6 kg/cm² (1.3 time of design pr)
13. Third party inspection agency (CCOE approved): BQIS, Bax Council, IRS, Mec Elec, LLOYDS, DNV, EIL, PDIL etc. TPIA should certify all stages of inspection such as raw material identification, edge preparation, alignment rolling set ups, welding set, DP test, radiography etc.

C. PIPE WORK, VALVES AND FITTINGS (To be provided as per Data sheet)

1. All fittings shall be suitable for use at not less than the design pressure and temperature i.e. equivalent to propane.

2. The remote operated valves on the vessel shall be fire-safe type.

3. The flange joints shall either have spiral wound metallic gaskets or ring joints.

4. The nuts / bolts / studs used must be resistant to rust formation.

5. Flange connections shall be a minimum of ANSI -300lb flange class & marked.

6. Each vessel shall have at least two safety relief valves, each set at not more than 110% off design pressure of the vessel and having the relieving capacity adequate for limiting the pressure build up in the vessel not more than 120 % of design pressure.

7. All metallic liquefied petroleum gas piping shall be rated for LPG at design pressure of 32 kg/cm².

8. All materials of piping including nonmetallic parts for valves, gaskets & diaphragms shall be resistant to LPG under service conditions to which they are subjected.

9. Pipeline shall be adequately supported & free from any vibration.

10. The bonded parts of the pipeline shall not be painted.

11. Fabrication shall be such so as to ensure to leave the flange faces parallel and their centres in line. Care shall be taken against excessive strain.

12. Joints of pipeline above forty millimeters diameter shall be welded or flanged. Threaded or screwed connection shall not be provided except for special fittings like excess flow valve, pump connections up to fifty millimeters diameter.

13. All piping installations shall be hydro-tested after installation and proved free from leaks at 1.5 times of its design pressure i.e. (48kg
/ sq.cm ( g ) and pneumatic testing with nitrogen before gas charging pipeline will be tested with nitrogen at 14 kg/sq.cm2.

14. All piping material, piece of piping shall be clean, free from rust, debris, scale, clearly marked. Such marking shall be visible with certificates supporting conformity to standard, material, testing. Certificates shall be submitted prior to execution of the work.

15. Buried piping shall exclusively be welded throughout.

16. The trench shall of a size, at least- 0.6m deep capable of taking the loads of heavy vehicle like tank lorries.

17. Trench shall be excavated so as to ensure that the pipe rests on firm even ground free from stones, rocks, bricks

18. The back filling material of the trench shall with an inert non-corrosive material free from abrasive particles likely to damage corrosion protection and designed to prevent the formation of flammable gas-air mixture in the event of a leak. Preferably white sand shall be used.

19. The cover & the backfilling shall be such that there is no risk of subsidence.

20. It is to be assumed in design that traffic/superimposed loads shall pass over the LPG pipe work in trench

21. Backfill material shall be sieved before application. Prior to back filling joints, coating and wrapping shall be inspected by BPCL engineer.

22. Underground piping shall be wrapped with one overlapped layer(55%) of impregnated tapes.

23. Electric cables shall not run in the same trench of LPG pipes unless they are protected by an outer sleeve or pipe.

24. Underground piping shall be protected by load bearing slabs /covers which can be easily removed for inspection.

25. Successful tenderer shall get approved by BPCL the detail piping design for code, material, drawing, layout, trenching, routing, instrumentation, location/type of valves, inspection / testing plan for each specific site.

26. The tenderer shall undertake modifications / additional work w.r.t design, laying, testing, inspection if required at his cost.
27. Pipeline shall be cleaned mechanically by brush & flushed by compressed prior to laying.

28. Buried and the above ground piping shall be connected with flanges.

29. Buried piping shall be installed at sufficient depth to be able to withstand likely mechanical loads. The depth shall be at least 0.6 m. The piping shall be embedded by a layer of clean sand of at least 0.1 meters. Stones and other objects shall be removed from this sand. Sand shall be preferably white sand.

30. Buried piping shall be adequately protected against external corrosion, with suitable coating of red oxide, coal tar, denso tape.

31. Buried pipeline to have marker.

32. Piping shall be adequately supported.

33. Before alignment and fit up, the inside of each pipe component shall be checked for foreign material and thoroughly cleaned.

34. Pipe and fittings which have been damaged or found to have defects shall not be used.

35. All pipeline material shall be visually clean & rust free with identification mark visible.

Welding:

1. All welding shall be in line with the provisions of ASME B 31.3

2. The tenderer shall get the following approved by BPCL representative in accordance with standard:
   - Weld procedure
   - Welder approval
   - Weld metal
   - Equipment to be used
   - Weld process including joint penetration and pre weld assembly
   - Pre & post weld heating
   - Type of fabrication
   - Type of attachments
   - Inspection
   - Third party appointed

3. Tenderer shall have to get the welding procedure approved by BPCL representative / TPIA.
4. Maximum carbon content of the parent material shall not exceed 0.25 % carbon content.

5. Welding process shall be supervised

6. Welder must have valid qualification/experience certificate & a copy of the same shall be provided to BPCL site incharge

7. Pipeline butt joints shall be 100 % radiographed in accordance with established & accepted through third party inspection agency using standard equipment & process & results documented.

8. Penetration of welding shall be full thickness.

9. Statutory requirements for radiographic examination, equipment testing shall be met by the tenderer.

10. Repair work, of welding shall be brought to the knowledge of BPCL & consent shall be obtained.

11. Welder qualification certificate shall be submitted for approval of BPCL/TPIA prior to work execution. Welder without relevant certificate shall not be permitted.

D. EMERGENCY SHUT OFF VALVE:

Emergency shut off valves of excess flow or preferably remote operated type shall be provided in all liquid and vapour connections on vessels except those for safety valves and those not exceeding 3mm dia for liquid and 8mm for vapour.

E. PAINTING :

LPG storage vessels provided with 450 DFT anti corrosive coating.

F CATHODIC PROTECTION:

Cathodic protection system of sacrificial anode type shall be provided in accordance with NACE / NPR 6912 “ Cathodic Protection “ or an equivalent standard.

The minimum vessel to soil potential shall be more negative than – 0.85 volts with respect to copper / copper sulphate half-cell. Over protection of coated vessel shall be avoided by ensuring that polarisation potential is below – 1.2 volts with respect to copper / copper sulphate half cells.
The parts of the installation to be cathodically protected shall be electrically insulated from pipeline manifold / earthed objects, & instrument connections. Insulating flange shall be of approved type & able to be fully nonconductive.

Layout of the cathodic protection showing cables, junction boxes shall be provided by the tenderer.
3 SPECIFICATION FOR SUBMERSIBLE LPG PUMP

The following specification outline the minimum requirements necessary to ensure the optimum performance, maximum life and trouble-free operation of the equipment detailed and the pumping system in general for:

Submersible LPG Pump sets for use conjunction with underground supply tanks.

This specification does NOT depict:

(a) The design, ancillary materials and related equipment, methods of fabrication, erection, installation and or operation of LPG Tank and required sub-systems or the LPG installation.

(b) Required equipment not related to the LPG Pump, Pumpsets and / or by pass valves.

WARNING:

Irrespective of this specification, all design, equipment supply, fabrication, installation and operation and of all or any of the LPG equipment, system or sub-system MUST BE STRICTLY IN ACCORDANCE WITH all relevant Federal, State and Local Standards, Statutory Codes and Regulations applicable in the area of use and should have their approval.

QUALITY ASSURANCE:

Pump, pump sets, bypass valve and related ancillary equipment shall be designed, manufactured and supplied by companies which can demonstrate the highest level of quality control through their sound design, manufacturing process & stage-wise inspection.

DOCUMENTATION:

1. Installation, Operation and Maintenance Manuals ( I,O & M )

Every LPG pump / Pump set and Bypass Valve shall be supplied with current Manufacture’s I,O&M Manual which clearly depicts the relevant minimum requirements for recommended Installation Operation and Maintenance of the subject equipment. Also included / accompanying the Manual should be adequate information to enable accurate identification of Spare Parts, a trouble shooting guide, plus any other specific information necessary for the relevant equipment supplied.
2. Pump / Pump set performance Curves

Every LPG Pump / Pumpset must have an available performance curve relating to LPG – showing flow rate, differential pressure and power input at the speed (Hz) relevant to the operating electrical network – i.e., 50 Hz, plus the density of the LPG at which the performance is depicted.

3. Certificate of Conformity, Approvals etc for all Electrical Equipment.

All electrical equipment (e.g., electric motors, switches, cabling, junction boxes etc.) for use in either the defined Hazardous areas or Non – Hazardous areas shall have a relevant and recognized Certification, Certificate of Conformity (or Approval ) available and clearly identifiable for that specific piece of equipment, material of apparatus for the Area Classification applying.

WARRANTY:

The Manufacturer shall Warrant it Products, spares and accessories against defects in material or workmanship for a period of twenty four (24) months from the date when the equipment is commissioned, or as agreed in writing between the Parties. During the Warranty period, should a defect occur the Manufacturer shall arrange to expediently repair or replace the alleged faulty Product any extra cost

The submersible pump, fittings, accessories, control motor, electrical system shall be of a type approved by Chief Controller of Explosives and should be compatible so as to operate on these parameters

SUBMERSIBLE PUMP SET

Submersible LPG Pump sets for use in conjunction with underground supply tanks

<table>
<thead>
<tr>
<th></th>
<th>Flow rate ( from pump set )</th>
<th>Minimum 70 lit / min at 700 kpa (7 Bar) differential pressure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Differential pressure</td>
<td>700 kpa (7 bar ) minimum capability for continuous steady – state liquid pumping operation without pulsing. Higher differential pressure capability is acceptable. Differential pressure shall be available for both the dispensing nozzles in operation.</td>
</tr>
<tr>
<td></td>
<td>No of stages</td>
<td>To be compatible with flow &amp; pressure</td>
</tr>
<tr>
<td></td>
<td>Test run – pumpset</td>
<td>2880 rpm (nominal) close coupled to 50 Hz 2- pole, 3-Phase synchronous speed submersible electric motor.</td>
</tr>
<tr>
<td></td>
<td>Test run pumpset (contd )</td>
<td>All submersible pump sets shall be run –</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><strong>Static testing – pumpset</strong>&lt;br&gt;All submersible pump sets shall be static pressure tested to 14 kg/cm² with nitrogen or similar gas prior to installation to verify pressure retaining integrity of connected pipe joints, electrical conduit entry etc. This pressure is to be maintained for a minimum of 30 minutes and the pump set and connections be leak free during this period.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>Material of construction</strong>&lt;br&gt;All pressure retaining casting including pump discharge head shall be ductile iron to ASTM grade A 395 or equivalent. Cast iron shall not be used for these components. Regenerative turbine impeller to be bronze Sleeve bearings to be a carbon composite material with a mating hardened shaft journal Pump sets casing to be carbon steel for strength during operation and handling. Elastomers to be viton or equivalent.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><strong>Motor internal cooling</strong>&lt;br&gt;The pump set shall incorporate a system which guarantees and maintains the internal lubrication and cooling with ' liquid –state ' LPG, without exceeding the rated (certificate) max. operating temperature.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><strong>Trip Mechanism (Thermal cut off / Overload protection)</strong>&lt;br&gt;The submersible pump set shall incorporate in internal, hermetically sealed, explosion-proof thermal cutout switch for the purpose of sensing over-temperature in the motor and the adjacent critical motor sleeve bearing OR overload protection in its control circuit to protect the STP.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td><strong>Pumpset bearings</strong>&lt;br&gt;Pump sets shall be fitted with heavy duty sleeve (radial ) and thrust ( axial ) bearing, designed for use in LPG. They shall be adequately lubricated and cooled to ensure liquid- state operation at all times.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><strong>Pumpset insulation</strong>&lt;br&gt;The submersible pump set casing shall be fitted with insulating guide rings, positioned to prevent contact between the pump casing and the pump chamber when installed in the tank hence assisting cathodic protection.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><strong>Submersible motor</strong>&lt;br&gt;The submersible pump set motor shall be of a certified explosion proof design for use in class 1 zone 0/1 area classification.</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td><strong>Maintainability</strong></td>
<td>The submersible pump set shall be designed for total disassembly to enable feasible repair, cleaning or refurbishment.</td>
<td></td>
</tr>
<tr>
<td><strong>Pumping ability</strong></td>
<td>The submersible pump set must be capable of reliable operation right down to the pump and chamber inlet port level without sustaining damage to pump set, whilst still maintaining its specified flow rates. A stated minimum operating level in the tank is not acceptable.</td>
<td></td>
</tr>
<tr>
<td><strong>Pump set installation</strong></td>
<td>The submersible pump set shall be installed within an isolate able pump chamber- inside the main LPG supply tank. Pump set installed directly in the LPG supply tank which cannot be isolated from the tank, are unacceptable.</td>
<td></td>
</tr>
</tbody>
</table>

### BYPASS VALVES

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose/ Installation</strong></td>
<td>A pressure bypass valve shall be installed in the discharge line immediately after the LPG pump to control and maintain differential pressure generated by the pump. It shall be piped back to the supply tank. The pressure regulation device shall be integral of the pump, approved by the original pump supplier &amp; CCOE. The bypass line will separately be routed to the tank. The pump to trip in case of minimum differential pressure not available to safeguard.</td>
</tr>
<tr>
<td><strong>Noise / chattering</strong></td>
<td>The bypass valve will be free from any noise &amp; chattering while in operation.</td>
</tr>
<tr>
<td><strong>Flow performance</strong></td>
<td>The bypass valve shall be capable of handling the full-flow capacity of the LPG pump with less than 10 % overpressure when operating at maximum flow rate. The bypass valve capacity shall be so designed such to take care that dual hose dispenser can be supplied with effectively without increasing the filling time.</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>The bypass valve shall be preferable of the Spool Valve design which minimises noise and vibration during operation (conventional poppet-valve designs are not preferred)</td>
</tr>
<tr>
<td><strong>Pressure setting</strong></td>
<td>Arrangement for measuring and setting the differential pressure externally shall be available.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6</td>
<td>A standard differential pressure spring range of approximately 500 kpa to 1000 (5 bar to 10 bar) is preferred. An external and visible means to seal / secure the setting is required.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Connections</strong> Flange porting connections to ANSI class raised face (or equivalent shall be cast integral in the bypass valve body are strongly preferred. In case of Screwed connection, shall be to NPT standard.</td>
</tr>
<tr>
<td>8</td>
<td><strong>Hydrostatic test</strong> The bypass valve shall be hydrotested by the supplier to be leak free.</td>
</tr>
<tr>
<td>9</td>
<td><strong>Material construction</strong> All pressure – retaining castings shall be ductile iron to ASTM grade A395 or equivalent or equal. (Cast iron shall NOT be used for this purpose) Elastomers (O – Ring shall be preferably Nitrile or equivalent.</td>
</tr>
</tbody>
</table>
4 SPECIFICATION OF CONTROL PANEL

CONTROL PANEL - The control panel to comprise of:-

1) Switches controlling the operational status pneumatically / electrically and related indicating lights showing the status, provision of tripping & resetting.

2) Furthermore the panel contains the motor control for the LPG pumps and the level alarm / indicating and controlling equipment.

3) Weather-protected arrangement by way of cabinet adjacent to fill point.

4) At least 3 emergency shut-down push buttons, located in the sales room, dispensing area, fill point and the storage vessel.

5) The panel to be located in non- hazardous area, preferably in the sales room. A suitable circuitry arrangement to facilitate motor getting automatically switched off every 10 min if a remote button at fill point is not pressed. To handle the misuse, the circuitry should reset after every 9 mins.

Details of functions / controls are as under:

I. Supply of power to the station, its equipment, control with on / off switch & indication.

II. Display of supply in three phases with indication light. Electrical circuit breakers as in SMPV Rules.

III. Indication of tank level in first decimal in percent through one the two level gauges. Second gauge will give local indication.

IV. Alarm for independent high level switch with separate indication light.

V. High level / low level alarm (through one of the level gauges) in vessel with indication light & provision of tripping of the system at predetermined low/high levels.

VI. The level gauges will have provision of replacement without removing the tank contents.

VII. The alarm hooter will be common for all functions where as indication lights on actuation will be separate.

VIII. Indication/light for abnormal conditions of submersible pump with provision of reset.
5 ELECTRICAL SYSTEM

Extent of hazardous area - The extent of hazardous area for liquefied petroleum gas dispenser shall be as under

1. Entire space within the dispenser enclosure cabinet and forty six centimeters horizontally from the exterior of enclosure cabinet and up to an elevation of one hundred and twenty two centimeters above dispenser base and the entire pit or open space beneath the dispenser shall be division ‘1’.

2. Up to forty-six centimeters vertically above the surrounding ground level and horizontally beyond forty six centimeters up to six meters on all sides of the dispenser enclosure cabinet shall be division ‘2’.

3. Storage vessel shall be considered as zone “0/1” and 5m from the storage vessel to be considered as “zone 2”.

4. Area up to 5m from fill point block valve shall be considered as “zone 2”.

5. The entire electrical installation work shall be carried out in accordance with approved drawings and in general conformity with the requirements of the Indian Electricity Act, 1910 the Indian Electricity Rules, 956.

6. The precise positions of all points, controls, switch boxes, main and distribution boards, off points etc, shall be subject to approval by BPCL.

7. It is the responsibility of the contractor to obtain the necessary service connection from the local electric supply undertaking or system, the necessary fees or charges being paid by the BPCL.

8. All wires shall be PVC insulated multi strand copper conductors as specified and shall be 660 v grade. The smallest conductors for lighting and power circuits shall be 1.5 sq. mm and 2.5 sq. mm copper (as specified) respectively. For flexible cords it shall be 0.5 sq.cm. copper. All wires shall be colour coded.

9. Spacing between cables where more than one cable is laid in the same trench the actual space between the cables should normally be 23 mm apart leaving a clear distance of 15 mm from the cable and the trench walls.

10. High voltage tests should be undertaken to ensure that no damage has occurred during the laying operation and that the joints are in order. Cables of 1.1 IV suitable for low and medium voltage should withstand for 15 minutes, 300 volts D C current applied between the conductors and between each conductor and sheath. In the absence of high
pressure testing equipment it is sufficient to test for 1 minute with 100 volts.

11. Necessary safety certificates, etc. are to be obtained by contractor.

12. All motors to have double earthing

13. All electrical equipment shall be installed in accordance with hazardous area classification having CCE approval and CMRS certification.

14. Electrical equipment directly connected with the storage vessel: “zone 0” and 5m from storage vessel to be considered as “zone – 2”.
8.0

DATA SHEETS

(To be filled in by Tenderer and submitted along with Technical Bid).

**Tender No. :**

Design, Supply, Erection, Testing, Commissioning and Maintenance of new ALDS at our existing ALDS / MS-HSD RO at M/s ……………………………………….

<table>
<thead>
<tr>
<th>A. LPG STORAGE VESSEL</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td></td>
<td>Y for all</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Under Ground</td>
<td></td>
</tr>
<tr>
<td><strong>Design code</strong></td>
<td>IS 2825</td>
<td></td>
</tr>
<tr>
<td><strong>Water capacity – KL</strong></td>
<td>7.5 kl or 10 kl</td>
<td>(As per tender conditions).</td>
</tr>
<tr>
<td><strong>Working Temperature</strong></td>
<td>Ambient</td>
<td></td>
</tr>
<tr>
<td><strong>Design Pressure – KG per SQ-CM, maximum vapour pressure of commercial propane at 55 degree celsius conforming to IS-14861/IS –4576.</strong></td>
<td>22 kg/sqcm at 55 Deg. C</td>
<td></td>
</tr>
<tr>
<td><strong>Test Pressure</strong></td>
<td>28.6 KG / sq.cm</td>
<td></td>
</tr>
<tr>
<td><strong>Design Temp</strong></td>
<td>- 43\textdegree C to + 55 Deg C</td>
<td></td>
</tr>
<tr>
<td><strong>Radiography</strong></td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td><strong>Heat Treatment</strong></td>
<td>S R of complete vessel 100 %</td>
<td></td>
</tr>
<tr>
<td><strong>Joint efficiency</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Corrosion allowance</strong></td>
<td>1.5 mm</td>
<td></td>
</tr>
<tr>
<td>Type of end</td>
<td>Deep Torispherical</td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Material of Construction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td>SA- 537 CLASS I /SA 516GR 70</td>
<td></td>
</tr>
<tr>
<td>Dish ends</td>
<td>SA- 537 CLASS I / SA 516 GR 70</td>
<td></td>
</tr>
<tr>
<td>Inspection By</td>
<td>CCOE approved as above</td>
<td></td>
</tr>
<tr>
<td>Fittings on Vessels</td>
<td>As per SMPV Rules</td>
<td></td>
</tr>
<tr>
<td>SRV</td>
<td>2 nos. specify make / type</td>
<td></td>
</tr>
<tr>
<td>Level gauge</td>
<td>2 no independent variable liquid level gauge (1 No. magneto restrictive type. Second - Rocheseter magnetic level gauge, local analogue type mounted on bullet top through mechanical Dial gauge. Magnetic restrictive type gauge shall have transmission at level in first decimal to control room, with high level indication / alarm / trip with unloading pump and low indication / alarm / trip with dispensing pump.</td>
<td></td>
</tr>
<tr>
<td>Pressure gauge</td>
<td>1 no pressure gauge, glycerin filled.</td>
<td></td>
</tr>
<tr>
<td>High level alarm</td>
<td>1 no. High level alarm with cut off of pump at level ( 85 % ).</td>
<td></td>
</tr>
<tr>
<td>Fittings outside the vessel</td>
<td>All fittings to be CCOE approved. Emergency shut off valve of remote operated type on liquid line, vapour line and return line. Positive shut off valve of quick shut off type ball / plug, one each on liquid, vapour, return</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Provision / Arrangement</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------</td>
<td></td>
</tr>
<tr>
<td>• Arrangement for de-compressing / degassing the vessel for maintenance, tenderer to specify the system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Water draining arrangement with double block valve.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• In-sites hydro testing of storage vessel with potable purify water, draining of water, drying of interior of vessel.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pneumatic leak test with nitrogen at design pressure prior to commissioning / gas charging at 14 Kg/cm² pressure up to, interior of dispenser.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Gaskets | All gaskets to be resistant up to 827°C. |

<table>
<thead>
<tr>
<th>Foundation Design</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• To be designed for preventing upliftment of tank under no load / empty conditions.</td>
<td></td>
</tr>
<tr>
<td>• Design to be approved and certified by Tank manufacturer and TPIA.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Submersible Pump</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td><strong>BPCL’s requirement</strong></td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>Netherland/ Australian / European standard and SMPV Rules. Type approved by CCOE (copy of approval to be attached).</td>
</tr>
<tr>
<td>Fluid parameters</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td><strong>Product pumped</strong></td>
<td>Propane / LPG conforming to IS – 14861</td>
</tr>
<tr>
<td><strong>LPG working temperature range</strong></td>
<td>-10 to 55 deg C</td>
</tr>
<tr>
<td><strong>Design temperature</strong></td>
<td>- 43 to + 55 deg C</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>0.48 to 0.57 kg / litre</td>
</tr>
<tr>
<td><strong>Kinematic m²/sec</strong></td>
<td>0.34 to 0.17</td>
</tr>
<tr>
<td><strong>Dynamic centipose</strong></td>
<td>0.19 to 0.08</td>
</tr>
<tr>
<td><strong>LPG Pump</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Manufacture</strong></td>
<td>Vendor to specify (Red Jacket /Esbray).</td>
</tr>
<tr>
<td><strong>Certification</strong></td>
<td>Australian Certification AUS Ex3129 X / European Equivalent including CCE in India</td>
</tr>
<tr>
<td><strong>Type of motor protection</strong></td>
<td>Ex II A T 4 for CLASS 1 Zone 0</td>
</tr>
<tr>
<td><strong>Pump</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Pump Type</strong></td>
<td>Multistage centrifugal/turbine, vane type.</td>
</tr>
<tr>
<td><strong>Pumping performance</strong></td>
<td>Min 70 LPM at 700 kpa differential Pressure Maximum differential pressure 10 kg/sq.cm</td>
</tr>
<tr>
<td><strong>Porting</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Bearings</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Seal</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Body</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Cover</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Discharge head</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Casing</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Bearing</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Pressure control</strong></td>
<td>Yes (Vendor to specify)</td>
</tr>
<tr>
<td><strong>Safety system</strong></td>
<td>Yes (Vendor to specify)</td>
</tr>
<tr>
<td><strong>Purging / degassing system</strong></td>
<td>Yes (Vendor to specify)</td>
</tr>
<tr>
<td><strong>Impellers</strong></td>
<td>Gun metal / Elastomers</td>
</tr>
<tr>
<td><strong>Motor</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Motor type</strong></td>
<td>Vendor to specify</td>
</tr>
<tr>
<td><strong>Rating (HP/KW)</strong></td>
<td>3hp Ex s II A T 4 for class 1zone 0</td>
</tr>
</tbody>
</table>
## Approvals

<table>
<thead>
<tr>
<th></th>
<th>Indian certification by CCOE</th>
</tr>
</thead>
</table>

### Miscellaneous

- Bypass valve / pressure regulator should be free from chattering and noise for the entire range of characteristic curve to be approved by OEM / BPCL.
- Vendor to state full load of pump.
- Provision of suitable protection for cavitation / over pressure / dry run / low level / high temperature (vendor to state type of protection).

### C. Dual Hose Dispenser

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
</table>

**Standards Compliance**

- European standard ( OR )
- Australian national standards commission ( NSC ) – AS 1425 / AS 1596
- Document 101 ( equivalent to OIML ) of Australian standards
- Indian Auto LPG Standard – OISD 210

**Preferred Brand**

- FAS, Batchen, Yenen, Eurostar, Emeurs OR as approved by BPCL.

**Type**

- Dual Hose, Double Head, Electronic Display

**Working pressure**

- 20 kg/cm²

**Design temp**

- -10 to + 55 Deg C

**Working temp.**

- -10 to + 55 Deg C

**Certification**

- Vendor to specify
- NSC –10 /1/13 or equivalent
<table>
<thead>
<tr>
<th><strong>Hose mast</strong></th>
<th>To be approved by BPCL (Vendor to specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing</strong></td>
<td>SS, Double cabinet (for display and flow meter)</td>
</tr>
<tr>
<td><strong>Frame &amp; Panels</strong></td>
<td>Vendor to Specify &amp; to be approved by BPCL</td>
</tr>
<tr>
<td><strong>Hydraulic system</strong></td>
<td>Vendor to Specify</td>
</tr>
<tr>
<td><strong>Flow Meter</strong></td>
<td>Special 2/4 position meter suitable for LPG service one for each hose.</td>
</tr>
</tbody>
</table>
| **Electrical Equipment** | Vendor to Specify & to be approved by BPCL
All electrical equipment are flame proof, explosion proof, and appropriate for Zone I & II use, approved by CMRS – Dhanabad and CCOE – Nagpur. |

### Performance

<table>
<thead>
<tr>
<th><strong>Flow rate</strong></th>
<th>5/10 LPM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum</strong></td>
<td>50/60 LPM</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>-/+ 0.50%</td>
</tr>
<tr>
<td><strong>Total volume display range</strong></td>
<td>0-999.99 units</td>
</tr>
<tr>
<td><strong>Total value display range</strong></td>
<td>0-99999 (with floating decimal)</td>
</tr>
<tr>
<td><strong>Price per unit display range</strong></td>
<td>99.99 (with floating decimal)</td>
</tr>
<tr>
<td><strong>Cum. volume range</strong></td>
<td>Up to 9999999</td>
</tr>
<tr>
<td><strong>Cumulative value range</strong></td>
<td>9999999.99 units</td>
</tr>
<tr>
<td><strong>Data retention (in event of power failure)</strong></td>
<td>28 days</td>
</tr>
</tbody>
</table>
| **Controls / operation** | Micro processor based controls and metering
Self-diagnostic feature for error detection. |
<table>
<thead>
<tr>
<th><strong>External communication</strong></th>
<th>IFSF compliant, with 232/485/current loop communication port.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical &amp; environmental</strong></td>
<td>Main supply 240 V, 50 Hz flame proof / explosion proof / intrinsically safe certified for use in Zone I, IIA / IIB. Operating temp –10 to+55 °C Humidity 0-90 % ( Non – condensing )</td>
</tr>
<tr>
<td><strong>Dispensing nozzle</strong></td>
<td>Conforming to vehicle filler nozzle EN – 67 / IS – 15100</td>
</tr>
<tr>
<td><strong>Nozzle / filler connection at outlet.</strong></td>
<td>This should be suitable for an automatic quick disconnecting type / self-sealing which should be capable of making leak proof joint with the filler connector.</td>
</tr>
<tr>
<td><strong>Valid approvals (copy to be attached)</strong></td>
<td>CCOE W &amp; M</td>
</tr>
<tr>
<td><strong>Dispenser calibration</strong></td>
<td>To calibrate the dispenser on commissioning and there after once in six during the 2 year warranty / maintenance period. Calibration certificate to be provided at each calibrations.</td>
</tr>
<tr>
<td><strong>Other requirements</strong></td>
<td>The LPG dispensers should have the facility for physically/system driven punching in product density without requiring any addition / replacement of hardware to on site density corrections in the dispensers.</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td>• Provision for providing temperature compensation volume. • Release of LPG on disconnection of nozzle</td>
</tr>
</tbody>
</table>
should not exceed 5ml.
- Provision of emergency switch.
- Provision of fire safe ROV, EFCV, shear section at the dispenser.

### D. Nozzle as per BIS : 15100

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make</td>
<td>OPW/ZVA/LGE</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Accidental gas discharge prevention</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Max LPG spillage (ml) on disconnection</td>
<td>Not more than 5 ml.</td>
<td></td>
</tr>
<tr>
<td>Self-sealing type</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>‘O’ rings low temperature</td>
<td>Nitrile rubber.</td>
<td></td>
</tr>
<tr>
<td>Vendor to submit</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Inlet thread dimensions</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Max operating pressure</td>
<td>24 kg/cm²</td>
<td></td>
</tr>
<tr>
<td>Material of construction</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Warranty</td>
<td>1 year against manufacturing defects</td>
<td></td>
</tr>
</tbody>
</table>

### E. LPG Decantation Pump (for unloading bulk LPG)

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preferred Brand</strong></td>
<td>Corken / Ebsray / Blackmer</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Positive Displacement Vane type / centrifugal</td>
<td></td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>200 LPM</td>
<td></td>
</tr>
<tr>
<td><strong>Pump Speed</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Min differential pressure</strong></td>
<td>1.5 to 2 Kg/cm²</td>
<td></td>
</tr>
<tr>
<td><strong>Suction Delivery sizes</strong></td>
<td>50 x 50 NB</td>
<td></td>
</tr>
<tr>
<td><strong>Material for construction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Case</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Heads</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Rotor</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Cam side Plate</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Bearing Cap</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Shaft</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Vanes</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Relief Valves</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Bearing</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Seals</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Motor (should be CCOE approved)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Flame proof, weather proof, TEFC squirrel cage, induction motor</td>
<td></td>
</tr>
<tr>
<td><strong>Standard followed</strong></td>
<td>IS 2148/1969 suitable for Gas Group IIA &amp; B</td>
<td></td>
</tr>
<tr>
<td><strong>Motor Rating</strong></td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td><strong>Construction – Mounting</strong></td>
<td>Horizontal Foot mounting</td>
<td></td>
</tr>
<tr>
<td><strong>Insulation</strong></td>
<td>F/“B” Class</td>
<td></td>
</tr>
<tr>
<td><strong>Duty</strong></td>
<td>Continuous duty IP 55</td>
<td></td>
</tr>
<tr>
<td><strong>External Bye pass valve</strong></td>
<td>Ebsray / Corken / Blackmer</td>
<td></td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>Pressure regulations, motor interlocked with high level in storage tank at 85%</td>
<td></td>
</tr>
</tbody>
</table>
| Miscellaneous | • Capable of complete decantation leaving only vapour in tank lorry  
| | • Capable of unloading without connecting the vapour line. |

### F. Mass Flow Meter

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
<td>LPG / Propane Liquid</td>
<td></td>
</tr>
<tr>
<td>Make</td>
<td>Emerson(Micro motion) , E&amp;H</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>0.5 to 0.57 Kg/Ltr.</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.9 C.P. to 1.0 C.P.</td>
<td></td>
</tr>
<tr>
<td>Working Pressure</td>
<td>12 Kg/cm² (Max.)</td>
<td></td>
</tr>
<tr>
<td>Working temp.</td>
<td>-10 to +55 deg C</td>
<td></td>
</tr>
<tr>
<td>Flow</td>
<td>200 LPM</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>+/- 0.2%</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Power Requirement</td>
<td>Vendor to specify</td>
<td></td>
</tr>
</tbody>
</table>
| Display     | 1. Local Display (Field) at least 5 digit alphanumeric Liquid Crystal Display  
<p>| | 2. Should also indicate Mass, density, volume, temperature, mass totalizer, volume totalizer, mass &amp; volume flow rates along with non-erasable totaliser |
| End connection | Flanged connection. Vendor to specify the size. | |
| Connection  | Direct on Line       |                                        |</p>
<table>
<thead>
<tr>
<th><strong>Weights &amp; Measures approval</strong></th>
<th>Vendor to confirm. Enclose copy of the certificate.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CCOE approval</strong></td>
<td>Vendor to confirm. Enclose copy of the certificate.</td>
</tr>
</tbody>
</table>

### H. “SMART” Hose

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 mm Dia x 3 Mtr. Long with LL3 female NPT coupling – 1 No.</td>
<td>Vendor to confirm</td>
<td>Y</td>
</tr>
<tr>
<td>25 mm Dia x 3 Mtr. Long with LL1 female NPT coupling – 1 No.</td>
<td>Vendor to confirm.</td>
<td>Y</td>
</tr>
</tbody>
</table>

### I. Air Compressor

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Brand</td>
<td>ElGI / INGERSOLL RAND / K.G.KHOSIA</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>Min 45 lt with pr upto 7 Kg/cm²</td>
<td></td>
</tr>
<tr>
<td>HP</td>
<td>Min 1</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Automatic Pressure Control / regulation arrangements.</td>
<td></td>
</tr>
</tbody>
</table>

### J. Pipes / Valves

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipes</td>
<td>Conforming to ASME/ANSI B 31.3 requirements</td>
<td></td>
</tr>
<tr>
<td>Design pressure</td>
<td>32 Kg / cm²</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>SA 333 Grade 6/ ASTM A 106 Gr.B</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>Pipe schedule</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>EFCV</td>
<td>(Rego. MGM)</td>
<td></td>
</tr>
<tr>
<td>SRV</td>
<td>(Rego)</td>
<td></td>
</tr>
<tr>
<td>Ball Valves</td>
<td>(AUDCO, BDK, Micro finish, VIRGO)</td>
<td></td>
</tr>
</tbody>
</table>
| Remote Operated Valves (Actuator) | • Preferred Brand – Audco, Rotex, Elomatic  
|                          | • Fire safe ball / plug valves  
|                          | • Pneumatically operated  
|                          | • Response time not more than 15 seconds. |
| Wrapping / Coating       | Pipe – coal for coatings with one layer of 55% overlapped layer of tape. |
| Gaskets                  | Spiral wound metallic type as per ANSI B – 16.20. |

K. LPG Filter (to be installed before the Mass Flow Meter)

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Class 300</td>
<td></td>
</tr>
<tr>
<td>Make</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>5 Microns</td>
<td></td>
</tr>
<tr>
<td>No. of elements</td>
<td>Vendor to specify</td>
<td></td>
</tr>
<tr>
<td>Flow rate</td>
<td>300 LPM</td>
<td></td>
</tr>
<tr>
<td>Operating Pressure</td>
<td>12 bar (min)</td>
<td></td>
</tr>
<tr>
<td>Max. Pressure</td>
<td>0.5 bar</td>
<td></td>
</tr>
</tbody>
</table>
## L. Remote Fill Point (Above Ground)

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
</table>
| Remote Fill Point (Above ground) | • Vendor to Specify in line with Australian, Netherland, European or equivalent standard.  
  • Fill point layout/components to be approved by BPCL for each site  
  • Fill point to be provided with ROV, EFCV, NRV, pressures gauges (pump suction & discharge)  
  • Fill point lines will have two sets of ROV’s, one at the fill point & the other at the storage vessel  
  • Fill point & its equipment i.e. flow meter, unloading pump & ROV/solenoid to have independent arrangement for power supply / local switch so that during dispensing, power supply to them can be kept switched off. Arrangement to be approved by BPCL  
  • Liquid line/vapour line, hoses to be provided with metallic caps to close at the end of operations  
  • Vapour return line with cap to close at the end of operations.  
  • Level indication of vessel at fill point  
  • Acme quick coupling with hexagonal nut with 300 lb rating.  
  • Spanner / tools to be | Y |
- EFCV/ smart hose
- Earthing system with heavy duty cable, lug (IS -3043) cable to be 7m long with rust proof crocodile clip.
- Earthing system to be interlocked with unloading pump.
- Unloading pump motor interlocked with high level in storage tank at 85 %
- Antistatic belt for the pump drive
- Unloading pump interlocked with level in storage vessel.
- The laying of header shall be such to facilitate complete decantation of LPG from tank lorry with only vapour remaining in the tank lorry at the end of decantation.
- Earthing / bonding of vent line
- Double Isolation ball valve.
- Unloading pump of positive displacement type.

<table>
<thead>
<tr>
<th>M. Cathodic Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Cathodic Protection</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
prevent corrosion.
- Reference points for measurement with identification marks.
- Certified by third party.
- Insulating joint on all fittings & connections, type to be approved by BPCL for each site
- Insulating joints to give “0” continuity
- Vessel to soil potential more negative than -(-0.85V) but not more than -1.20V

**N. Welding and Inspection**

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding &amp; inspection</td>
<td>All butt welded joints shall be 100% radiographed &amp; records/document/third party inspection to be furnished to BPCL prior to commissioning</td>
<td>Y</td>
</tr>
</tbody>
</table>

**O. Painting**

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painting</td>
<td>Any paint work / flange / piping getting rusted, peeled off, pitted, faded shall be rectified within one year from date of commissioning.</td>
<td>Y</td>
</tr>
</tbody>
</table>

**P. Control Panel / PLC / Run Box**

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Panel / PLC / Run Box</td>
<td>Conforming to NZ/AS / European standard. System to be approved</td>
<td>Y</td>
</tr>
</tbody>
</table>
- Located in non-hazardous area in line with area classification approved by BPCL
- Display of supply in three phases with indication light.
- Circuit breaker as in SMPV Rules to trip power supply to panels while activating emergency shut down system.
- Separate control solenoids for fill point & storage tank system so that fill point can be kept de-energized / deactivated if not required, system to be approved by BPCL
- Indication showing status of opening/closing of ROV's for fill point, storage vessel, dispenser ROV. System to be approved by BPCL if the same is being provided.
- Energising / reset / trip provision
- Indication of level in storage tanks through one of the level gauges with high/low level
- Indication light, alarm & trip
- In case of high level at 85 % unloading pump & fill point ROV to trip with indication with provision of reset / reaching the normal conditions.
- In case of low level as determined by pump supplier dispensing pump to trip with indication with provision of reset / reaching the normal conditions
- The abnormal conditions / deviations for which dispensing pump is not taking start shall clearly displayed on the panel through indication light i.e. level, differential pressure, motor bearing temperature as determined by pump supplier with provision of reset.
- Alarm / Hooter audible from at least from 20m for abnormal conditions i.e. high level, low level, tripping of dispensing pump for abnormal conditions
- ROV - opening / closing status. System to be approved by BPCL
- Provision of setting high level / low level in the tanks with indication of the specific set point.
- To provide an interface between in dispenser and the submersible pump, such that the pump only operates when dispensing nozzle is removed from its holder.
- Weatherproof, lockable.
- Valves numbered in line with P& ID.

Q. Electrical System, Cable, Motors

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical system, cable, motors</strong></td>
<td>Conforming to latest edition of ISS standards/IE Rules for LT cables</td>
<td>Y</td>
</tr>
</tbody>
</table>
closure of ROV’s & tripping of motors while tripping through emergency switches. Tenderer to get the system approved by BPCL.
• All indication lights & switches to be clearly marked
• Indication lights for three phases
• Specify the power requirement of the ALDS equipment wise
• As per hazardous area classification
• IS – 2148/IS- 2206
• Suitable for laying in ground, trenches, wall column
• Rating factors to be furnished by vendor
• Cables tested as per relevant Indian standard with test records
• Flame proof certificates to be provided.
• Manual / instruction booklet with drawing to be provided on specification, operation, testing & maint. of the electrical system & control panel.

R. Civil Work

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Work</td>
<td>• Civil work to be in line with BPCL standard practices in Retail Outlets. • Foundation / installation of underground tank in line with AS/NZ/European standards &amp; conforming</td>
<td>Y</td>
</tr>
</tbody>
</table>
to CCOE standards, SMPV Rules.
- Anchoring of UG tank with hold down nuts / bolts of approved make and size duly grouted in concrete.
- Foundation / hold down bolts of underground tank designed to prevent flotation / shifting of vessel with calculation/design approved by third party & BPCL.
- Sand used as cover of underground pit to be preferably white sand free from abrasives, stones, chips & sieved.
- Cover to be compacted to prevent settlement.
- Placed at least 0.6m below grade or as approved by CCOE.
- Paver block in the pit area & tiles between pit & fence. Type of tile & paver block to be approved by BPCL for each site.
- No accumulation of rain water in the fence area.
- fencing, islands, pedestals as required for specific site and foundation of UG tanks.
- Cables for dispensers and pump connection shall be laid in GI pipes of min dia 50 mm (Class B) after dismantling the existing RCC. After laying the pipe / cable at desired depth, driveway shall be repaired by CC (1:2:4: ) asphalting as necessary.
- LPG pipe & electric cable
<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trench shall not be same unless cable routed through separate conduit/pipe.</td>
<td></td>
</tr>
<tr>
<td>• The trench to take load of vehicular traffic / tank lorry movement &amp; shall be impervious to rain water ingress.</td>
<td></td>
</tr>
<tr>
<td>• Trench to be easily inspectable by removing cover.</td>
<td></td>
</tr>
<tr>
<td>• Fencing with 50 X 50 X 6 mm angle iron pillars erected on concrete block Chain link fencing will be provided with two gates.</td>
<td></td>
</tr>
<tr>
<td>• Fence design shall vary from site to site &amp; to be approved by BPCL for each site.</td>
<td></td>
</tr>
<tr>
<td>• Wicket gates of 2.0 m height with 1.5 m width.</td>
<td></td>
</tr>
<tr>
<td>• Gate/Emergency gates will be on opposite sides of the fence</td>
<td></td>
</tr>
<tr>
<td>• Design of fence &amp; paver block/tiles /gravels to be approved by BPCL for each site</td>
<td></td>
</tr>
<tr>
<td>• No water accumulation in fenced area with provision of draining</td>
<td></td>
</tr>
<tr>
<td>• Dismantling of RCC / CC / asphalted driveway &amp; disposal of debris to unobjectionable place, including all leads and lifts as required for specific site.</td>
<td></td>
</tr>
<tr>
<td>• The ducts shall be covered with 75 mm thick pre cast machine pressed RCC slabs of width 600 mm / above or equivalent.</td>
<td></td>
</tr>
</tbody>
</table>

**S. Design, Documentation**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor to</td>
</tr>
</tbody>
</table>
| Design, Documentation | • All design to be in line with established standards & documented.  
• Records of operating, inspection, testing & maintenance procedures to be documented.  
• Stage wise inspection report duly certified by TPIA to be submitted in the checklist provided by BPCL | Y |

| T. Supervision, Installation & Commissioning | | |
| Description | BPCL’s requirement | Vendor to confirm / specify make details |
| Supervision, Installation & Commissioning | • All test & inspection reports in line with statutory/ mandatory / regulatory requirements and the periodic inspection reports during construction/ fabrication stages shall be furnished before taking up for commissioning.  
• Inspection, testing, leak test, hydrotest shall be done as required by BPCL & redone wherever necessary.  
• Responsibility of the contractor at all stages  
• Competent person to supervise  
• Stage wise reporting of progress made  
• Completion report certified by third party in line with BPCL checklist.  
• A contractor has to prepare a work schedule on plan of execution of the project & obtain BPCL | Y |
clearance / approval on the same.

- Contractor give feed back on a checklist furnished by BPCL on weekly basis at the end of every week through E-Mail & reorient/ modify the schedule if required by BPCL.

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>Training (minimum 48 hrs) on operation, maintenance, periodic inspection, testing of equipment and facilities in line with the OEM recommendation, OISD standards, CCOE requirements to the ALDS staff, fitter, BPCL engineer prior to commissioning and thereafter. No cost payable for the same. Proper documentary proof to be provided at the outlet.</td>
<td>Y</td>
</tr>
</tbody>
</table>
## V. General Requirement

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Requirement</td>
<td>The turnkey job shall be carried out as per OISD std, SMPV rules, Indian Electricity rules and equivalent international standard namely AS, NZ, European, NFPA, etc. Any deviation to be approved by statute.</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Combination of standards, specification will not be resorted to. In case of difference / variation from one specification to the other, the more stringent specification to be adopted as deemed reasonable and justified by BPCL and as per the guidelines/approval of CCOE.</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>All electrical equipment (Control Panel excluded) in hazardous area are Flame proof, explosion proof and appropriate for Zone I &amp; II use certified by CMRS – Dhanbad &amp; approved CCOE Nagpur.</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Material / equipment system not covered above shall be in line with BPCL tender specification ,SMPV Rules, Indian Electricity, rules, &amp; Relevant Australian / European codes</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>All the above requirements are to be read in conjunction with our Tender (General / Technical) Specifications.</td>
<td>Y</td>
</tr>
</tbody>
</table>
### W. After Sales Service – (2 years)

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Sales Service</td>
<td>Preventive Maintenance of ALDS once a month, Vendor to confirm (for a period of 2 years without any extra cost). This also includes TWO nozzles extra with every dispenser free of cost.</td>
<td>Y (mandatory)</td>
</tr>
</tbody>
</table>

### X. List of Spares – (2 years)

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
</table>
| List of Spares (for 2 years) | LPG Dispenser (min spare)  
Dispenser hose  
Power Supply Card  
Display Card  
Pulser  
Nozzle | Vendor responsibility with requisite stock for timely support.                         |

### Y. List of Drawings

<table>
<thead>
<tr>
<th>Description</th>
<th>BPCL’s requirement</th>
<th>Vendor to confirm / specify make details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 P&amp;ID</td>
<td>As per BPCL Drawing No. LPG/ENG/AUTOLPG P&amp;ID/1; Rev.0. However the piping sizes shall be decided by the vendor based on the design requirements</td>
<td></td>
</tr>
<tr>
<td>2 Electric Wiring Schematic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Emergency shut down system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Underground LPG tank Fabrication details</td>
<td>To be enclosed by Tenderer. Vendor to confirm,</td>
<td></td>
</tr>
<tr>
<td>5 Details of underground tank installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Dual hose LPG dispenser details</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remote fill point for underground tank</td>
<td>To be enclosed by Tenderer. Vendor to confirm.</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Cathodic Protection and schematic</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>LPG piping details</td>
<td></td>
</tr>
<tr>
<td></td>
<td>List of Drawings / Documentation to be furnished</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Layout</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>P &amp; ID</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Installation of UG LPG Tank</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Underground LPG Tank – Civil drawing</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tank fabrication details</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dual Hose LPG dispenser</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>LPG Piping details</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Cathodic protection</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Emergency shutdown system</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Design calculations of storage vessel (duly certified by TPIA)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Design calculation for storage vessel foundation (Duly certified by TPIA)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Hazardous area classification</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Any other drawings required by statutory authorities.</td>
<td></td>
</tr>
</tbody>
</table>
ANNEXURE I

PROFORMA OF BANK GUARANTEE IN LIEU OF EARNEST MONEY DEPOSIT / SECURITY DEPOSIT.
( On non-Judicial Stamp Paper of Rs. 100/- )

This IDENTURE made this ................. day of ...............2001 between ...................................................... of the first part and  
................................................................. Bank Ltd hereinafter called ‘The Bank’ which  
expression shall include its successors and assign of the second part and the  
................................................................. @ .....................................................@  
@ .........................hereinafter called ‘the Corporation’ which expression shall  
include his successors and assigns of the third party.

WHEREAS the Contractor has to pay from time to time to the Corporation the  
earnest money deposit in respect of work tendered to be performed or in  
respect to tenders to be submitted by him according the conditions for  
submission to tenders or of contracts as the case may be.

AND WHEREAS , the Contractor desires to secure exemption form the of  
earnest money deposit with each individual tender and has offered to furnish  
a guarantee of the Bank for the sum of Rs. ........ to the Corporation for the  
purpose of securing tender or contract:

NOW IT IS HEREBY AGREED BY AND BETWEEN THE PARTIES HERE  
TO AS FOLLOWS:

If the contractor commits any breach of the terms and conditions of any  
tender or contract in respect of which the contractor has been exempted from  
depositing the earnest money deposit because of this guarantee furnished by  
the Bank to the Corporation and the Corporation has become entitled to forfeit  
the earnest money depositor any part thereof the bank hereby unconditionally  
and irrevocably agree and undertake to pay to the Corporation on demand  
and without demur the amount of the earnest money deposit required to be  
furnished by the Contractor under the conditions of the tender or of the  
contract in respect of which the breach is commuted to the extent of Rs. ....

We have .................. Bank Ltd, further agree that the  
Corporation shall be the sole judge of and as to whether the said Contractor  
has committed any breach or breaches of any of the terms and conditions of  
the tender / or the contract and the extent of loss , damage , or that may be  
caused to or suffered by the Corporation on account thereof to the extent of  
the earnest money deposit required to be deposited by the Contractor in  
respect of the said tender or the contract and the decision of the Corporation  
that the said Contractor has committed such breach or breaches and as to  
the amount or amounts of loss, damage, costs , charges and expenses  
caused to or suffered by or that may be caused to or suffered by the  
Corporation from time to time shall be final and binding on us.
We, the said Bank further agree that the Guarantee herein contained shall remain in full force effect during the period that would be taken for the performance of all the contracts in respect of which the Contractor has been exempted from making a deposit by virtue of this Guarantee and till all the dues of the Corporation under the said contracts have been fully and properly carried out by the said contractor and accordingly discharge this Guarantee subject however that the Corporation shall have no claim under this Guarantee after ........ years from the date of expire of the Defects Liability period as provided in the contract which expires last or after expire of ...... years from under this Guarantee has been served on the bank before the expire ........ years from under this Guarantee has been served in which case the same shall be enforceable against the Bank notwithstanding the fact, that the same in enforce after expire of the said period of .... Years provided, however, if the Corporation thinks that the same said period of .... Years after the day of expire of the defects Liability period as provided in the Contract which expires last shall expire after the expire of the period of .... Years from ........ day of .... The bank hereby agrees and undertakes on being called upon by the Corporation to extend the date of validity of this Guarantee for a further period of ..... years from ..... day of ..... and if the bank fails to do so the bank shall forth with pay to the Corporation the said sum of Rs.................

The Corporation shall have the fullest liberty without affecting in any way the liability of the Bank under the Guarantee or Indemnity from time to time to vary any of the terms and conditions of then said contracts or to extend time of performance by the said Contractor or postpone for any time and from time to time any of the powers exercisable by him against the said Contractor and either to enforce to forbear from enforcing any of the terms and conditions governing the said contract or securities available to the Corporation and the said Bank shall not release from its liability under these presents by any exercise of the Corporation of the liberty with reference to the matters aforesaid or by reason of time being given to the said Contractor or any other forbearance act or omission on the part of Corporation or of any other matter or thing whatsoever which under the law relating to sureties would nut for this provision have the effect of so releasing the Bank from its such liability.

It shall not be necessary for the Corporation to proceed against the Contractor before proceeding against the Bank and the guarantee herein contained shall be enforceable against the bank not withstanding any security which the Corporation may have obtained or to be obtained the contractor shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.

The contractor hereby agrees and undertakes that if the Corporation has become entitled to forfeit the amount of earnest money deposit or any part the thereof in respect of any of the contracts for which he has been exempted from payment of earnest money deposit by virtue of this Guarantee and if the Corporation has recovered the said amount of earnest money deposit or any part thereof from the Bank under this Guarantee, the Contractor shall forthwith on the happening of any such event arrange to have the amount of
the guarantee increased to the said sum of Rs......... As aforesaid and till such time as he furnished a fresh or further Bank Guarantee bringing the amount of the Bank Guarantee to the said sum Rs........ The Contractor shall not be entitled to any exemption in respect of payment of any earnest money deposit in respect of any of the tender submitted by him after the date of forfeiture of any amount of earnest money deposit by the Corporation under any of the said contracts and such amount having been recovered from the Bank under this Guarantee.

We, the said bank, lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the Corporation in writing and agree that any change in the Constitution of the said Contractor or the said bank shall not discharge our liability hereunder.

IN WITNESS WHEREOF the parties herein have executed these presents the day and year first over above written.

Signed and delivered by the
Within named................
( Contractor ) in the presence of
1.
2.

Signed and delivered by the signed by Shri. ........................ ( Name & Designation ) with named ..................... for and on behalf of the ......................... Bank in the

In the presence of
1.
2.

we have the power to issue this guarantee this guarantee in the favour under Memorandum and Articles of Association and the undersigned has full power of attorney dated ................. granted to him by the Bank

............... Bank
by its Constituted Attorney.
............... Signature of person duly
Authorised to sign on behalf
On the Bank
ANNEXURE II

PROFORMA FOR BANK GUARANTEE
( FOR RELEASE OF RETENTION MONEY )
( On non-Judicial Stamp Paper of Rs. 100/- )

This deed of Guarantee executed by the 
……………………………………………….
( hereinafter referred to as “ the Bank” in favour of THE PRESIDENT OF 
INDIA, 
(hereinafter referred to as ‘The beneficiary”) for an amount not exceeding 
(Rs. …………………………………. Only ) at the request of 
……………………….
(hereinafter referred to as the ‘The Contractor”).

This Guarantee is issued subject to the condition that the liability of the Bank 
under this Guarantee shall remain in full force up to .................

In consideration of M/s Bharat Petroleum Corporation Limited, 4 & 6 
Currimbhoy Road, Ballard Estate, Mumbai- 400 038 ( hereinafter called “ The 
Corporation” ) having agreed to release the retention amount of Rs. 
…………………….. ( Rupees ……………………………………… only ) which 
has been deducted form the value of the work executed as per the 
Agreement No. ...... dated ...... On production of a Bank Guarantee of Rs. 
.........

We have ……………………………………………….. do hereby undertake to 
indemnity and keep indemnified the Corporation to the extent of Rs. 
………………………………. Against any loss or damage carried to or suffered by 
the Corporation by reason of any breach of the said agreement of any of the 
terms and conditions contained shall remain in full force and effect during the 
period that 
would be taken for the performance of the said Agreement and that it shall 
continue to be enforceable till all the due of the Corporation under or by virtue 
of the said agreement have been fully paid and its claims satisfied or 
discharged or till Bharat Petroleum Corporation Limited, certified that the 
terms and conditions of the said agreement have been fully and properly 
carried out by the said Contractors …………………………… and accordingly 
discharges the Guarantee.

Notwithstanding anything contained in foregoing our liability under this 
Guarantee is restricted Rs. ............ And shall remain force till ........... unless a 
Demand or claim under this guarantee is made on us in writing on or before 
..... We shall be discharged from all liability under this Guarantee thereafter.

Date:

Bank Manager
ANNEXURE III  
PROFORMA OF BANK GUARANTEE
(Performance)

M/s. Bharat Petroleum Corporation Limited.
Dear Sirs,

In consideration of M/s. Bharat Petroleum Corporation Ltd. (hereinafter called “the Company” which expression shall include its successors and assigns) having awarded to M/s. (Name-____________________________________________________________ 
____________________________________________________________
____________________________________________(constitution)_____________________________________
____________________________________________(address)____________________________ 
hereinafter referred to as ‘The Vendor’ which expression shall wherever the subject or context so permits include its successors and assigns ) a supply contract in terms inter alia, of the Company’s Letter No._____________________dated________ and the General Purchase Conditions of the Company and upon the conditions of Vendor’s furnishing security for the performance of Vendor’s obligations and / or discharge of the Vendor’s liability under and / or in connection with the said supply contract up to a sum of (in figures)________________________________________ 
(in words)_______________________________________________________ only amounting to 10% (ten percent) of the total contract value.

We, (name)________________________________________________________ 
____________________________________________________________ (constitution)___________________________________________________
(hereinafter called “the Bank” which expression shall include its successors and assigns) hereby jointly and severally undertake and guarantee to pay to the Company in (Currency) forthwith on demand in writing and without protest or demur of any and all moneys any wise payable by the Supplier to the Company under, in respect of or in connection with the said supply contract inclusive of all the Company’s losses and expenses and other moneys any wise payable in respect of the above as specified in any notice of demand made by the Company to the Bank with reference to this Guarantee upon an aggregate limited of (in figures)____________________________ 
(in words)____________________________________________________________

and the Bank hereby agrees with the Company that :


a) This Guarantee/Undertaking shall be a continuing guarantee and shall remain valid and irrevocable for all claims of the Company and liabilities of the Vendor arising up to and until midnight of
____________________

b) The Guarantee/Undertaking shall be in addition to any other guarantee or security of whatsoever that the Company may now or at any time otherwise have in relation to the Vendor’s obligations / liabilities under and/or in connection with the said supply contract, and the Company shall have full authority to take recourse to or reinforce this security in preference to the other security(ies) at its sole discretion, and no failure on the part of the Company in enforcing or requiring enforcement of any other security shall have the effect of releasing the Bank from its full liability hereunder.

c) The Company shall be at liability without reference to the Bank and without effecting the full liability of the Bank hereunder to take any other security in respect of the Vendor’s obligations and/or liabilities under or in connection with the said supply contract and to vary the terms vis-à-vis the vendor of the said supply contract or to grant time and/or indulgence to the Vendor or to reduce or to increase or otherwise vary the prices of the enforcement all or any of the obligations of the Vendor under the said supply contract and/or the remedies of heretofore held by the Company and no such dealing(s), variation(s), reduction(s), increase(s) or other indulgence(s) or arrangement(s) with the Vendor or release or forbearance whatsoever shall have the effect of releasing the Bank from its full liability to the Company hereunder or of prejudicing rights of the Company against the Bank.

d) This Guarantee/Undertaking shall not be determined by the liquidation or winding up, dissolution or change of constitution of insolvency of the Vendor but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to the Company in terms hereof.

e) The Bank hereby waives all rights at any time inconsistent with the terms of the Guarantee/Undertaking and the obligation of the Bank in terms hereof shall not be any wise affected or suspended by reason of any dispute or disputes having been raised by the Vendor (whether or not pending before any arbitrator Officer, Tribunal or court) or any denial of liability by the Vendor or any other order of communication whatsoever by the Vendor stopping or preventing or purporting to stop or prevent any payment by the Bank to the Company in terms hereof.

f) The amount stated in any notice of demand addressed by the company to the Guarantor as liable to be paid to the Company by the Vendor or as suffered or incurred by the Company on account of any losses or damages or cost, charges and/or expenses shall
as between the Bank and the Company be conclusive of the amount so liable to the paid to the Company or suffered or incurred by the Company, as the case may be and payable by the Guarantor to the Company in terms hereof.

Yours faithfully,
ANNEXURE IV

INDEMNITY BOND / UNDERTAKING
( On a Non-Judicial stamp paper of Rs.100/-)

From : M/s
(Contractor )

To : M/s BPCL

Sub: Work Order No. ------------ dated ---------
Agreement No. ------------ dated ---------

THIS INDEMNITY BOND / INDERTAKING executed at ---------- this --------- --- 
------- day of ------------ 2001 by Messers ------------ hereinafter called the 
Contractor ( which expression shall be and include, if the context so admits, 
the partners or partner for the time being of the Firm and their or his 
respective heirs, executors and administrators / its successors and assign in 
law ) in favour of BPC a company incorporated under the Companies Act I of 
1956 and having its Registered Office at ------------------------, hereinafter 
called ---------- “ The Corporation” ( which expression shall include its 
successors and assigns in law )

WHEREAS the Corporation desirous of having executed certain work 
specified in the Work Order No. ---------- dated ---------- issued by the 
Corporation on the Contractors, describing, the work to be done prepared and 
the same have signed by or on behalf of the parties here to AND WHEREAS 
the Contractors have agreed in the said Work Order upon certain terms and 
conditions provided in the Agreement executed between in Contractor and 
the Corporation and also contained in the General Conditions of Contract 
attached thereto.

AND WHEREAS the Contractors are bound by law to comply with the 
provisions of various Labour Laws like minimum Wages Act. ( Regulations of 
Employment and Conditions Services ) Act, 1979, Contractor Labour ( 
Regulation and Abolition ) Act, 1970: Workman’s President Fund Act 
providing Provident Fund Scheme for labourers engaged by the Contracts but 
in the event of violation of the provisions of various amenities and facilities to 
the workers under the different labour laws, not only the Contractors but also 
the Corporation as the principal employer different labour laws, not only the 
Contractors but also the Corporation as the principal employer becomes liable 
for the acts of Commission and omission by the Contractor.

IT IS THEREFORE THE INTENT OF THIS INDEMNITY BOND / 
UNDERTAKING by the contractor /s to indemnify and keep indemnified the 
Corporation as stated hereinafter:-

The Contractor hereby agree, confirm and declare that they have fully 
complied will comply with the provisions of various labour laws, particularly 
those refereed to herein above and that no violation of the provision f
various amenities and facilities to the workers under different laws has been done by them in the event of any past or future violation of labour laws, the Contractors shall indemnify and keep the Corporation duly indemnified against all losses, damages, costs, charges, expenses, penalties, suits or proceedings which the Corporations may incur, suffer or be put to.
Contractor hereby undertakes to furnish a certificate with regard to the number of labourers employed by them in the Corporation in other organisation through the country to the location in charge of the Corporation where the work is undertaken by the Contractors.

The contractors hereby confirm and state that they are duly registered under the Contract labour (Regulation and Abolition) Act. 1970 as amended from time to time and that they undertake to furnish a certified copy of the requisite License obtained by the Contractors from the competent authority to the Corporation’s representative

The Contractor hereby undertake to keep proper record of attendance of his labourers and will give opportunity of the officers of the Corporation to supervise the same and confirm upon the Corporation’s representative the right to countersign the said register. The Contractor shall provide copy of the pay sheets to the Locations in-charge of the Corporation nominated by the Corporation for supervision of the payment of wages made to the Labourers by the Contractors and also confirm the right on the Corporation’s representative to supervise the payment of wages to the labourers on the spot.

The Contractors state that they are fully aware of the provisions of the Provident Fund Act particularly with regard to the enrolment of the labourers as a member of provident fund. The contracts further confirm that they are aware provision that they obliged to recover Provident Fund contribution from the eligible labourers engaged by them and after adding their own contribution, remit the same to RPFC. The Contractor state and confirm that they are fully aware of the obligation to remit the said amount on account of Provident Fund to the RPFC within the prescribed period and that they have obtained a separate code number form the RPFC which is bearing No. ---- dated ---- from RPFC

The contractor will afford all opportunities to the officers of the Corporation to verify that the Provident fund is actually deducted by the Contractors from wages of the labourers and the same together with Contractors contribution has been duly remitted by the Contractors to the concerned PF Commissioner. The contractor /s also undertake to provide photocopy of the receipt issued by the Concerned PF commissioner for having received the PF Contributions from the Contractors.

In the event the Location in-charge of the Corporation is not satisfied about the payment of wages made and recovery of PF etc from the labourers employed by the Contractors hereby agree and authorise the Corporation to withhold the payment of their bills till the Contractors complete all the obligation in this matter.
Notwithstanding the provision contained in this Clause 7 of the Contractor hereby undertake and authorise the Corporation to recover dues payable by the Contractor in the labourer employed by them as also amounts of P F contributions (including the Contractor's contribution) as also all losses, damages, costs, charges, expenses, penalties from his bills and other dues including the security amount.

The Contractors hereby confirm agree that the aforesaid indemnity undertaking are in additions to and not in substitution of terms and conditions in the Tender documents and the Work Order and also the agreement executed by the Contractors with the Corporation.

The Contractors hereby confirm agree and record that this letter of undertaking and indemnity shall be irrevocable and unconditional and shall be binding on their heirs executors, administrators and legal representatives and shall ensure for the Corporation benefit and for the benefit of its successors and assigns.

Yours faithfully

Date:

Witness: (1) (Full Address)

(2) (Full Address)
PART- II
PRICE BID
PART – II

PRICE BID
BILL OF QUANTITIES

TENDER NO:

Pl attach the schedule as per estimate provided to regions.
## LIST OF RECOMMENDED SPARES

**TENDERER TO FURNISH THE LIST**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Name Of The Spares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spares For Submersible Pump</td>
</tr>
<tr>
<td>2</td>
<td>Spares For Dispenser</td>
</tr>
<tr>
<td>3</td>
<td>Spares For Unloading Pump</td>
</tr>
<tr>
<td>4</td>
<td>Spares For Flow Meter</td>
</tr>
<tr>
<td>5</td>
<td>Spares For Electrical Item</td>
</tr>
<tr>
<td>6</td>
<td>Spares For Control System</td>
</tr>
<tr>
<td>7</td>
<td>Spares For Pneumatic Items</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous Spares</td>
</tr>
</tbody>
</table>

**Note:**

Vendor to attach a separate list with part numbers and quantity for each equipment.

All the specifications given in the tender set along with the terms & conditions are acceptable in totality.

Spares are based on two years operation.

Name, Signature And Seal Of Bidder.