



GUIDELINES FOR PLANS SUBMISSIONS

1. Introduction

These guidelines are intended to provide minimum submittal requirements for obtaining LPG tanks installation permit. Additional requirements and/or information may be required based on the individual project.

To enhance the installations of bulk LPG systems for projects, WOQOD appointed dedicated gas contractors (list available at WOQOD website) to carry out the installations and other related services.

The developer or consultant shall contact any of the appointed gas contractors to install the bulk LPG system upon reaching an understanding.

Upon studying the project requirements, the gas contractor should submit the technical proposals on the requested LPG installation to the project consultant in order to be received by him to ensure its conformity with WOQOD requirements, and other utilities services providers, subject to local jurisdiction.

Woqod will review the project plans submitted through Building Permit System (BPS) in order to ensure that the placement for LPG tank is suitable in compliance with the adapted codes, standards and practices. In addition to the above, a proper designated parking space for Woqod LPG truck is ensured.

The project consultant has a primary responsibility on LPG Safety in the designing of LPG tank system in whole, strictly in compliance with the local jurisdiction requirements while preserving the architectural design intent.

The technical proposals of the project consultant must take into account the available space at site to ensure the suitability of placing LPG Tank is well fixed. In addition to that, consideration must be made to ensure rated gas off-take of gas appliance/equipment are maintained as well as an accessibility for the passage and parking for parking for WOQOD LPG delivery truck.

2. Codes and Standards Requirements

Project Consultant nominated by the project developer for the LPG installation must adhere to both international LPG codes (i.e. NFPA 54 & 58) standards as well as local jurisdiction and he is required as well to be familiar with all aspects of NFPA 10, 17A and 96, which reflects the industry's best practice that maximizes protection for occupants of the building and to reduce the risk of fire in the kitchen and other belongings in it.



3. Projects Submittal Requirements

A. Required Documents

Project engineering plans should be submitted in accordance with WOQOD standard requirement including the following.

- Authorization letter of Gas Contractor to consultant.
- Letter of award of LPG installation contract to Gas contractor by project consultant.
- Undertaking letter from project developer to ensure that LPG Tank would be well maintained at his own cost.
- Bulk LPG Tank Installation request with the attached forms.

B. Projects Engineering Plans

Project Consultant shall upload the engineering shop drawing in ACAD format as follows:

- i. Schematic (P&ID) Drawing including comprehensive cause & effect chart for Gas Detection system.
- ii. Site Plan for the placement of LPG Tank including LPG delivery truck parking/driveway.
- iii. Gas pipe route provided with the type of piping starting from main pipeline and the internal piping up to appliance connection.
- iv. Underground piping with depth.
- v. Typical kitchen isometric.
- vi. Approve design for placement of enough gas detectors for each kitchen.

C. Gas Tanks Sizing

The proposal for sizing the tank must be computed with the estimates based on project gas consumption as well as WOQOD frequency of delivery in refilling.

Gas Demand shall be elaborated in detail with Building floor, number of equipment's, pressure rating (high or low).

Refilling duration for the Tank's shall be as per WOQOD requirement.

Guidelines for Estimating Frequency in Refilling		
S.No.	Project Category	Approx. Days
1	Villa	90 Days
2	Palace	30 Days
3	Multi Storied Building	30 Days
4	Restaurant	10 Days
5	Catering Business	10 Days
6	Hotel	10 Days
7	Shopping Complex	10 Days
8	Staff Accommodation	10 Days
9	Housing, Education and Healthcare Facilities	30 Days
10	Factories / Plants	10 Days

Note: Constraints concerning the capacity of tanks not meeting the refilling demand are required to seek approval from WOQOD.



D. Types of LPG Tanks

WOQOD maintains a regular stock of tanks of different capacities, for example, 1000, 2000 and 4000 liters aboveground tanks. These are manufactured in accordance with PED 97/23/EC and AD-Merkblätter standards. Other sizes of tanks that are required to be procured from WOQOD are manufactured in accordance with PED 97/23/EC and ASME section VIII Div.1 as required by the project developers.

LPG Tanks are ordered by WOQOD from manufacturers upon the satisfactory reviewal of DC2 and after receiving a purchase order from the gas contractor confirmed by the project developer / consultant.

4. Code Requirements for Placement of LP-Gas Tanks

The proposed tank sizes intended to be installed should be placed outside building in a well-ventilated area, taking into consideration the sizes of the tanks and numbers in quantity, and ensuring safety separation distance to adjoining property, and important buildings as well as sources of ignitions etc. The proposed LPG Tanks are required to be installed Aboveground, Underground or mounded type.

Note: For tank sizes up to 1000 liters, separation distances adopted by WOQOD is a maximum of 2 nos. tanks in a group.

Certain projects requirements in relation to types of tanks and sizes should be equipped with fire protection systems (prevention, detection and suppression), which should be acquired with the approval from Fire Prevention Department of QCDD.

Tanks Capacity (Liters)	Separation Distances from Tanks (Meters) From important buildings and line of adjoining property		
	Underground / Mounded	Aboveground	Between Tanks
Up to 1000	3	0.5	0.5
1000 - 7600	3	7.6	1
7600 - 114000	15	15	1.5
114000 - 265000	15	23	1/4 x (sum of Tanks diameters)
265000 - 341000	15	30	



5. Materials & Equipments to be used

Materials of LP-Gas systems including piping, valves, pressure regulators, emergency shut-off, materials/appurtenances, vaporizers, pumps/compressors, gas leak detection system shall all comply with NFPA 58 or equivalent accepted standards.

6. Factors Related to WOQOD LPG Delivery Trucks

WOQOD maintains a variety of various capacities of LPG trucks dedicated for delivering LPG product to customer's projects facilities.

The project consultant must take into consideration the most suitable capacity of truck to deliver the LPG product in relation to the size of the tank in terms of consumption, and the available of suitable space for parking. The following data's are required to be applied.

Delivery Trucks	6 MT	10 MT
Up to 500 Liters per day consumption	√	√
Above 500 Liters per day consumption		√
Project consultant are requires to use this data while choosing the truck capacity.		

Delivery Trucks Dimensions/Weights:

Delivery Truck Sizes (MT)	Dimensions (Length x Width) (meters)	Weights (Tons)
6	7.3 x 2.4	16
10	9.8 x 2.6	28
20	17 x 2.5	45
Note: 20 MT delivery truck is designated for Communities, Factories and Plants		

7. Factors Related to Point of Transfer

While placing the proposed LPG Tanks, consideration should be made in accordance with the following scenarios:

- Up to 4000 liters capacity tanks at aboveground level, direct filling should be performed which require truck hose reel to be extracted up to 25 meters.
- If tank location exceeds 25 meters, project consultant should make a provision to extend filling line provided with filling point at a safe area.
- All underground tank sizes should be provided with extension of filling line.
- Tank sizes of capacities 7000 liters and above should be provided with the extension of liquid and vapor equalization lines at dedicated safe area and equipped with TODO couplings.



8. LP-Gas Pipes Outside Buildings

LP-Gas pipe installed outside the building and below ground should be installed 1 meter away from the Building. Underground metallic or any other piping should be protected against corrosion as warranted by soil conditions. Moreover, the carbon steel pipe be seamless and it should be joint by welding.

9. LP-Gas Pipes Inside Buildings

LP-Gas system piping installation may be allowed in basement, common corridors and other rooms if the following conditions are met:

- Piping installation should be protected with Metal or Double Containment.
- Gas leak detectors must be installed inside the encasement.
- The encasement must be properly vented outside the building.

The maximum operating pressure for piping inside building should not exceed 1.2 bars (17.5 psi).

All piping installed should be elevated not less than 3 1/2 inches (152 mm) above ground and where installed across roof surfaces, should be elevated not less than 3 1/2 inches (152 mm) above the roof surface. Piping installed above ground, outdoors, and installed across the surface of roofs should be securely supported and located where it will be protected from physical damage. Where passing through an outside wall, the piping must also be protected against corrosion by coating or wrapping with an inert material. Where piping is encased in a protective pipe sleeve, seal the annular space between the piping and the sleeve should be sealed.

Prohibitions:

LP-Gas system piping installations are not permitted under concrete floors within the building under building foundations, underground floors or basement levels, or within lift shafts and cavity walls in compartments or ducts dedicated for electrical systems, in or through HVAC air-distribution chambers (or through a ducted supply, return or exhaust), a clothes chute, chimney or gas vent, along adjacent building services pipeworks, in fire-fighting lobbies, in smoke-stop lobbies, in refuge areas, in fire command center, at protected corridors, at escape corridors, at staircases, in sleeping areas, in rooms housing fire fighting and fire alarm equipments and controls, along adjacent pipeworks and static equipments conveying flammable fluids, along oxidizing corrosive and hazardous materials and in areas employing stationary combustion engines.



10. High Pressure Regulator – First Stage

High Pressure Regulator is located near the tank area inside an enclosure. This Enclosure should be constructed with heavy-duty aluminum/steel sheets with approved lock and locked doors. The following components should be fitted in the enclosure:

- First Stage Pressure regulator (Outlet max. up to 1.2 Bars)
- OPSO/ UPSO
- Shut off valves
- Normally closed solenoid valve
- Pressure gauges
- Condensate trap

11. Medium/ Low Pressure Regulator – Second Stage

2nd stage vapor pressure regulators should be sized in order to bring down the high pressure of gas to the required pressure level (range of 0.030 to 1 Bar) to cope with the equipment. The 2nd stage regulator and its related fittings must be installed in order to protect them from the weather as well as to prevent water to the vent. Enclosure have to be provided as per project requirement as considered to be pressure reducing station for multi-kitchen equipment. In addition to that each gas kitchen equipment required to be connected with a designated regulator either medium or low pressure with Ball valve and approved hose.

12. Gas Meter

The gas meter is a device intended for measuring the account of consumption of quantity in terms of Vapor gas supply in units of volume measuring in cubic meters. As a guidance, a common gas meter should calculate in cubic meter per hour (m³/hr) which will satisfy the normal requirements of individual outlet. Refer to NFPA 58, Section 6.17.5 and NFPA 54, Section 5.7.

The following fittings should be incorporated in the gas meter box:

- Gas meter capacity (m³/hr)
- Pressure regulator with UPSO/OPSO
- Fixing bracket for meter connection
- Shut-off ball valve
- Meter compensation connection

13. Gas Detection System

Gas Control Panel with Detector should be installed in order to improve safety to take corrective action when an alarm is sounded with the detector executing an action i.e. Shut-off Solenoid Valve in case of gas leak.

The project consultant should propose for a fixed gas detection system capable of monitoring the premises or certain areas of the premises, where combustible gas (es) might accidentally accumulate.

The detecting system should be capable of signaling an early warning of accidental accumulation of combustible or toxic gas(es), and the location, in order to initiate one or more of the following actions, either automatically or under manual control:

- Safe evacuation of premises
- Appropriate firefighting procedures
- Shut down of process or plant
- Ventilation control as per local authority requirement

The gas leak detection system must be installed especially in buildings in order to monitor gas leaks at different locations of the gas network. Gas tank(s) and all open to sky (OTS) gas pipes should be protected with a gas leak detection system. The gas control panel conditions are to be followed in Cause & effect chart are as follows:

- A central control panel (including sensors) flashing light alarm and horn for 15% level, closing the gas supply at 30% level and closing the main gas supply at 40% level.
- The gas control panel interfaced with the fire alarm panel.
- Gas leak detector on the tank area should be explosion proof type.