

Hill Air Force Base
Installation Facilities Standards (IFS)

G10 Hill AFB IFS Natural Gas and LPG

Comply with Air Force Corporate Standards for Overview:

<http://afcfs.wbdg.org/index.html>

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G10.0 General Requirements

10.0.1 Note: This Supplementary Document is provided as a supplement to the Hill AFB IFS. If there are any discrepancies between this Supplementary Document and the requirements of the IFS, the IFS will govern.

10.0.2 This Supplementary Document supersedes the Hill Air Force Base Architectural Compatibility Guide dated 01 February 2019.

G10.1 General Gas Pipe Design

10.1.1 Natural Gas distribution systems design and installation shall comply with AFMAN 32-1067, 49 CFR Part 192 and NFPA 54 National Fuel Gas Code. Distribution pressures at HAFB will vary with location but are typically 35 psi. All new risers must be anode less and shall have an isolation valve with dielectric protection. All subgrade piping containing natural gas shall be medium density polyethylene (see ASTM D2513) with only electro fusion, socket weld or butt fusion type fittings. Mechanical, barbed or stab fittings are prohibited. All natural gas system installers must be certified for installation for the type of gas system components being installed.

10.1.2 Saddle connection fittings and hot taps are prohibited.

G10.2 Line Location

Natural Gas distribution system lines shall never be installed or allowed to remain under buildings. They shall not be laid in the same trench with other utilities to preclude the possibility of leaking gas following along or collecting in other pipelines or conduits. For the same reason, gas lines will be placed above other utilities whenever they cross, if practicable. Gas lines shall not be laid under paved streets or in other locations subject to heavy traffic whenever practicably avoidable. Whenever it is necessary to locate gas lines in such locations, the lines must be protected by suitable casing and by burying to a depth to provide at least 2 feet of cover over the top of the pipe. (When gas lines are installed above other utilities). Sufficient clearance must be maintained between plastic mains and steam, hot water, power lines, and other sources of heat, to avoid temperatures in excess of 60 degrees C (140 degrees F) for medium density polyethylene pipe. Natural gas lines must be bedded and buried in sand, buried deep enough to provide no less

than 30 inches of cover and shall have an insulated 14 Gauge solid core wire (tracer wire) with .030 wall coating placed within 6 inches of the pipe and a warning tape between 12 inches and 24 inches above the pipe. Caution: The tracer wire, when in contact with pipe, may burn through pipe in a lighting event. The tracer wire must not contact the polyethylene pipe. When natural gas piping is installed in a casing do not install tracer wire in same casing unless a separate casing for the tracer wire is installed in the main casing. Designs for road crossing shall be approved by the 75 CES/CEOIU.

G10.3 Inspection

All new piping must be inspected and pressure tested IAW International Fuel Gas Code before concealment. Coordinate all inspections and pressure testing with the 75 CES/CEOIU Shop.

G10.4 Gas Meters

10.4.1 New meter sets shall not be positioned under roof valleys or other places where excessive amounts of water, snow or ice can drip on it from the roof. New meter sets shall be protected from water, ice and snow.

10.4.2 Automatic Meter Reading (AMR) compatible gas meters and pressure regulators shall be installed for all new and renovated facilities or when gas service to existing facilities is installed, replaced, or upgraded and connected to the EMCS system. Meters shall be Dresser Roots rotary style meter. Deviations on meter substitution will be reviewed and approved by 75 CES/CEOIU prior to installation and meet the requirements of UFGS 33 51 13.00 30, Natural Gas Metering.

10.4.3 To facilitate maintainability, all new meter set piping must have a meter bypass loop with a plug valve and plug valves on each side of the meter. All new meter set piping shall also include two test tees, one on each side of the pressure regulator. Each test tee must include a plug valve, and a pressure gauge capable of accurately measuring the designed pressure for that location in the gas system. A wye strainer with 100 count mesh stainless steel screen must be installed prior to the meter and regulator. Facility gas services shall enter facility above grade and shall be installed for each building with pressure regulators. Gas meters serving dormitories or other residential type structures shall have earthquake sensitive automatic shut off valves or excess gas flow shut off valves. Earthquake valves shall comply with the American Society of Civil Engineers Standard ASCE 25-97, Earthquake Actuated Automatic Gas Shutoff Devices. Recommended earthquake sensitive automatic shut off valves manufacturer is KOSO. The natural gas meter set must be designed with supports on both sides of the meter to protect against vertical and horizontal movement and appropriate barriers/bollards to protect the meter set.

G10.5 Pressure Regulators

Controlling and limiting pressure. Each facility internal natural gas system will be regulated to meet facility demand and appliance specification. Facility natural gas systems will be designed, sized and installed IAW IFGC chapter 4 sect 402. Facility piping operating below 5 psi will be sch 40 black steel threaded pipe. Facilities operating above 5 psi will only be welded sch 40 black steel piping. Natural gas regulators may have an internal relief valve or pilot operated regulator with downstream relief valve. Facility natural gas systems may have individual "appliance regulators" installed at each appliance to maintain proper operating pressure supply to each appliance. Internal facility regulators will be vented to the outdoors or equipped with an approved vent limiting device.

G10.6 Liquefied Petroleum Gas

LPG usually includes butane, propane or mixtures of which can be stored as liquids under moderate pressures of 80-250 psig at ambient temperature. Use of LPG gas systems is discouraged and must be preapproved. LPG gas distribution systems when used will be designed

to comply with the requirements of NFPA 58 instead of ANSI B31.8. Polyethylene and fiberglass pipe will not be used in LPG systems NFPA 58 chapter 6.11.1.1.