

220 CMR 109.00: DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE OF  
INTRASTATE PIPELINES OPERATING IN EXCESS OF 200 PSIG

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109.01: Applicability and Scope

(1) 220 CMR 109.00 regulates the design, construction, operation, and maintenance of a pipeline with a maximum allowable operating pressure (MAOP) in excess of 200 pounds per square inch gauge (psig).

(2) 220 CMR 109.00 applies to every gas company, municipal gas department, or other person engaged in the design, construction, operation, and maintenance of a pipeline with an MAOP in excess of 200 psig and within the jurisdiction of the Commonwealth of Massachusetts.

109.02: Definitions

Except as otherwise specified in 220 CMR 109.00, all words are as defined in Title 49 CFR Part 192 - *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*.

Department. Department of Public Utilities, Commonwealth of Massachusetts.

Determine. To make appropriate investigation using scientific or other definitive methods, reach a decision based on sound engineering judgment, and be able to demonstrate, substantiate, and document the basis of the decision.

Division. Pipeline Safety Division of the Department, or its successor.

Gate Station. A location at which gas changes ownership or responsibility for transportation, from one party to another, neither of which is the ultimate consumer. Also referred to as "take station" or "delivery point".

Jetting. Compaction of soil using a stream of high-pressure water.

Operator. Any person who owns, operates, or maintains a pipeline.

Person. Any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, municipal department, cooperative association, or joint stock association, and includes any trustee, receiver, assignee, or personal representative thereof.

Pipeline. A natural gas main or transmission line with an MAOP greater than 200 psig including, but not limited to, pipe, valves, and other appurtenances attached to the pipe.

Puddling. Use of water to aid in soil compaction.

109.02: continued

Sectionalizing Block Valve. An operator-designated valve that is capable of starting and stopping the flow of gas in a segment of a pipeline.

Uprate. To increase the Maximum Allowable Operating Pressure (MAOP) of a pipeline.

109.03: Applications for Exceptions from Provisions of 220 CMR 109.00

Any person engaged in the design, construction, operation, or maintenance of a pipeline with an MAOP in excess of 200 psig may make a written request to the Department for an exception to the provisions of 220 CMR 109.00, in whole or in part. The request shall justify why the exception should be granted and shall demonstrate why the exception does not derogate from the safety objectives of 220 CMR 109.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the exception, the provisions of the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.

The Department may, after consideration and the payment of the appropriate fee, issue a written decision denying the exception or granting the exception as requested or as modified by the Department and subject to conditions. An exception may be granted or denied in writing by the Director of the Pipeline Safety Division, or by the Director's functional successor in the event of an internal reorganization of the Department. Any person aggrieved by a decision of the Director may appeal the decision to the Department. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision.

In an emergency, a verbal request for an exception may be granted by the Department or the Director, provided that the verbal request is subsequently confirmed in writing within seven days of the exception being granted.

109.04: Applicability to Existing Pipelines

(1) The siting, design, and construction requirements of 220 CMR 109.00 shall not apply to any pipeline constructed before February 19, 1999.

(2) Any pipeline constructed before February 19, 1999 shall comply with 220 CMR 109.07: *Pipeline Location Marking* and 220 CMR 109.13: *Operations and Maintenance* within 180 days of February 19, 1999.

(3) Any pipeline constructed before January 1, 1971 with an MAOP of 275 psig or less shall not be uprated to an MAOP greater than 275 psig.

(4) Any pipeline constructed on or after January 1, 1971, but before February 19, 1999, with an MAOP of 275 psig or less may be uprated to an MAOP greater than 275 psig if the pipe itself and all associated fittings and valves are suitable for the higher MAOP.

109.05: Compliance with Other Codes and Standards

(1) Unless otherwise authorized, the minimum safety standards for all pipelines are those issued under:

- (a) 49 CFR Part 192; and
- (b) 220 CMR 100.00 through 115.00.

(2) To the extent that any provision of 49 CFR Part 192, and 220 CMR 100.00 through 115.00 conflict, the more stringent regulation controls.

109.06: Location of a Pipeline

No segment of a pipeline shall be installed less than 40 feet from a building intended for human occupancy, unless the construction criteria for a Class 4 area, as defined in 49 CFR Part 192, are met.

109.07: Pipeline Location Marking

(1) An aboveground line marker shall be placed and maintained at or as close as practicable over each buried pipeline to meet the transmission line requirements set forth in 49 CFR 192.707, except for buried pipelines within the confines of a gate station. The references to location class requirements shall be as defined in 49 CFR 192.5.

(2) The operator shall maintain drawings or plans showing the actual location of the pipeline, valves, pressure regulating stations, and any other pipeline facilities. The drawings or plans shall be updated whenever any changes are made to the pipeline. Each pipeline and its routing shall be reviewed in the field at least once each calendar year, but at intervals not to exceed 15 months, to determine whether the drawings or plans must be revised. The annual review shall be documented. Maps indicating the route of the pipeline shall be given to the fire department and public works department of each municipality through which the pipeline passes. Updated maps, whenever prepared, shall also be provided.

109.08: Materials

(1) All pipe six inches or greater in diameter shall have a specified minimum yield strength (SMYS) of at least 35,000 psig.

(2) All pipe six inches or greater in diameter shall have a wall thickness of at least 0.280 inches. All pipe less than six inches in diameter shall be at least Schedule 40 wall thickness.

109.09: Cover and Backfill

(1) Except as provided in 220 CMR 109.09(2), any buried pipeline shall be installed with a minimum cover of three feet from the top of the pipe to the finished grade.

(2) Where an underground man-made structure prevents the installation of a pipeline with a minimum cover, the pipeline may be installed with less cover provided that it is installed with additional protection to withstand anticipated external loads.

(3) Bed, side, and top fill material shall extend at least six inches around the circumference of the pipe after compaction. The fill material shall be a natural granular soil or sand with 100% of the particles finer than a ¾-inch sieve and less than 10% of the particles finer than a No. 200 sieve.

(4) Material used for backfilling over the top fill to a point approximately two feet over a pipeline shall contain no rock larger than eight inches in its greatest dimension. There shall be no concentrated organic matter in the backfill.

(5) All fill material shall be placed in lifts of no more than 12 inches, loose measurement. Each lift shall be thoroughly compacted by mechanical or pneumatic means before the next lift is placed.

(6) There shall be no puddling or jetting of the backfill material.

(7) Reinforced yellow-colored warning tape, at least eight inches wide and composed of a material resistant to deterioration in soil, shall be buried flat, over the pipeline along the entire buried portion of its route. The warning tape shall be buried approximately one foot below grade. The following caption or its equivalent, shall be repeatedly printed on the warning tape: "CAUTION - GAS PIPELINE BURIED BELOW."

109.10: Welding and Welding Inspection

(1) All welding procedures shall be qualified in accordance with API Std. 1104 (as referenced in 49 CFR Part 192).

109.10: continued

- (2) Each welder shall be qualified in accordance with API Std. 1104 (as referenced in 49 CFR Part 192) no more than six months before performing welding on a pipeline.
- (3) All butt welds on a pipeline six inches or greater in diameter shall be nondestructively tested by radiographic inspection in accordance with API Std. 1104 (as referenced in 49 CFR Part 192), except for girth welds that are determined impracticable to test by radiographic inspection, provided that 90% of all girth welds, on pipelines six inches or greater in diameter, are nondestructively tested by radiographic inspection.
- (4) All pipeline tie-in welds shall be nondestructively tested.
- (5) All other welds shall be tested in a manner that is determined by the operator to reasonably indicate defects that may affect the integrity of the weld. Such testing shall be by means of radiographic inspection, other industry approved means of nondestructive testing, or visual inspection. Visual inspections of welds shall be performed and approved by a qualified welding inspector.
- (6) All welds that are found unacceptable under 220 CMR 109.10 shall be removed or repaired in accordance with 49 CFR 192.245.
- (7) A record of each nondestructive weld test or visual inspection, including radiographs pertaining thereto, shall be retained for the life of the pipeline. The disposition of rejected welds shall be part of the record.

109.11: Pressure Testing

- (1) The operator shall use a test procedure that will ensure discovery of all hazardous leaks in the segment of pipeline being tested.
- (2) All sections of the pipeline shall be successfully hydrostatically or pneumatically tested to at least 1.5 times the MAOP for at least eight hours before being placed into service. Any leaks found during the test shall be repaired or removed before the pipeline is placed into service. When pneumatic testing is used for aboveground piping, consideration shall be given to protecting the public and personnel or providing mitigating measures (*e.g.*, blast mats, barriers, temporary burial of the pipe) during the test.
- (3) Each joint used to tie in a test segment of pipeline is exempt from the specific test requirement of 220 CMR 109.11(2). However, it must be leak tested at no less than its normal operating pressure.
- (4) Each pressure test conducted to comply with 220 CMR 109.11(2) shall be documented with a calibrated recording instrument.
- (5) All pressure testing records and pressure charts shall be maintained for the life of the pipeline. The test information shall comply with 49 CFR 192.517.

109.12: Valves

- (1) Each valve installed on a pipeline shall comply with the following:
  - (a) The valve and its operating device to open or close the valve shall be at a location that is readily accessible to authorized personnel to operate.
  - (b) The valve and its operating device shall be reasonably protected from tampering, unauthorized operation, or damage.
  - (c) The valve shall be supported to prevent settling of the valve or movement of the pipe to which it is attached.
  - (d) If the valve is installed below ground with a valve box or in an enclosure, the box or enclosure shall be installed so that it will not transmit external loads to the pipeline.

109.12: continued

(2) Each pipeline shall have sectionalizing block valves spaced so that each point on the pipeline is within four miles of a sectionalizing block valve. If the pipeline passes through an area designated as a Class 4 location, as defined in 49 CFR 192.5, the federal transmission line spacing requirements shall be applicable, as set forth in 49 CFR 192.179(a)(1).

(3) Each section of a pipeline located between sectionalizing block valves shall have a blow-down valve. Each blow-down valve shall be sized so as to reduce the time needed to reduce the pressure in the pipeline safely and quickly. The discharge point of each blow-down valve shall be located to minimize the hazard to the public in the event gas is vented to the atmosphere.

(4) Where practicable, each regulating station that supplies gas to a pipeline shall have a valve in the pipe supplying the regulating station, provided that the pipe is owned by an operator under the jurisdiction of the Department. The valve shall be located where it can be operated during an event that could preclude access to the station.

109.13: Operations and Maintenance

(1) The pressure at the beginning of a pipeline and at each of the end points of a pipeline shall be monitored except for short segments of pipe within the confines of a gate station.

(2) The flow rate and other pressures or operating functions determined necessary by the operator for the safe operation of a pipeline shall be monitored.

(3) The functions listed in 220 CMR 109.13(1) and 109.13(2) shall be monitored at a continuously attended control center. Any abnormal condition of a monitored function shall activate audible and visible alarms at the control center.

(4) The entire route of the pipeline shall be patrolled at least four times each calendar year but at intervals of no more than 4½ months.

(5) Each pipeline shall be leakage surveyed at least once each calendar year but at intervals of no more than 15 months. Leakage surveys shall be done with flame ionization detectors or equivalent devices.

(6) There shall be written procedures for any maintenance or repairs performed on a pipeline. The materials and equipment used for maintenance or repair shall be suitable for the MAOP of the pipeline. Personnel shall be trained in the procedures and use of the materials and equipment before any maintenance or repairs are performed.

REGULATORY AUTHORITY

220 CMR 109.00: M.G.L. c. 164, §§ 66, 76, 76C and 105A.