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New Jersey (State)
Department of Health
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LAWS, RULES AND REGULATIONS GOVERNING INSTALLATION OF PHYSICAL CONNECTIONS BETWEEN APPROVED PUBLIC POTABLE WATER SUPPLIES AND UNAPPROVED WATER SUPPLIES (1968),

CHAPTER 47, P.L. 1968 (N.J.S.A. 58:11-9.1 et seq.)

AN ACT to protect the purity of the public supplies of potable waters in this State.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. Definitions. As used in this act:

"Water Supply System" means a system comprising structures which operating alone or with other structures result in the derivation, conveyance (or transmission), or distribution of water for potable or domestic purposes.

"Approved Public Potable Water Supply" means a water supply which has been approved by the Department of Health of the State of New Jersey under the provisions of article 1 of chapter 10 of Title 58 and article 1 of chapter 11 of Title 58 of the Revised Statutes, and is operating under said sections.

"Unapproved Water Supply" means a water supply which is not approved by the Department of Health of the State of New Jersey under the provisions of article 1 of chapter 10 of Title 58 and article 1 of chapter 11 of Title 58 of the Revised Statutes.

"A Physical Connection" means any cross-connection, bypass, valve, pipeline, auxiliary intake, or any device which permits or may permit any flow of water into an approved public potable water supply from an unapproved water supply.

"Approved Physical Connection" means an installation consisting of a physical connection installed, owned, maintained, and operated in accordance with the rules and regulations of the State department.

"State department" means State Department of Health.

2. No person, corporation, or municipality shall maintain, own, or operate a physical connection between an approved public potable water supply and an unapproved water supply, unless the person, corporation, or municipality first obtains a permit from the State department. All such permits shall expire on April 1st of each year unless an earlier date is specified in the permit.

3. The State department, before it issues any permit under the provisions of this act, shall be satisfied of the following facts:

a. That the physical connection between an approved public potable water supply and an unapproved water supply is protected by an approved physical connection.

b. That the physical connection has the approval of the local board of health of the municipality whose approved public potable water supply may be affected; and

c. That the physical connection has the approval of the person, corporation, or municipality owning the approved public potable water supply which may be affected.

4. The State department shall establish such rules and regulations, as in its judgment may be necessary for the design, installation, testing and maintenance of an approved physical connection, and shall establish such form or forms as in its judgment may be necessary to ascertain the facts that the approved physical connection is of the standard required and is operating in a satisfactory manner in accordance with the rules, regulations, or statutes set forth in section 3 of this act, and such other forms as may be necessary to the proper administration of this act.

Each application for the installation of an approved physical connection, and for the continuance of the approved physical connection, shall be made upon forms supplied by the State department.

5. Upon evidence duly ascertained by the State department, or by the commissioner of health, or furnished to the department by any local board of health, or by the owner of an approved public water supply, that the person authorized under a permit issued under the provisions of this act to maintain an approved physical connection, is violating any of the rules, regulations, or statutes governing such physical connection, the State department, or the commissioner of health, shall, upon hearing, revoke such permit.

No such permit shall be renewed or restored until the State department is satisfied that all the provisions of this act are or have been strictly complied with.

6. The State department before it renews any permit shall be satisfied of the following facts:

a. That the approved physical connection has been tested for tightness under prevailing pressure conditions at least every three months;

b. That the approved physical connection has been subjected to an internal inspection within six months prior to the application; and

c. That the local board of health, the State department, and the owner of the water supply set forth in section 3 of this act, have determined that the approved physical connection was functioning satisfactorily.

7. The physical connection provided for in section 2 of this act shall be inspected by the engineers or inspectors of the State department, by the local board of health whose approved public potable water supply may be affected, or, by the owner of the approved public potable water supply which may be affected.

8. Whoever violates any of the provisions of section 2 of this act shall be liable to a penalty of one hundred dollars ($100.00) for each offense, and each day's continuance of a violation after notice to abate or remove the unapproved physical connection shall have been given by the State department, the local board of health having jurisdiction over the place where such violation was committed, or, the owner of the approved public potable water supply which is or may

be affected by such violation, shall constitute a separate offense. Nothing in this section shall be construed to modify or otherwise affect any other law or statute conferring upon any local board of health or the owner of any approved public potable water supply the power or authority to institute any proceedings in any court of this State for the recovery of any penalty for, or obtaining any injunction against, the pollution of any of the public supplies of potable waters in this State.

9. Any penalty incurred under any of the provisions of section 8 of this act shall be recovered in the name of the State department, a local board of health, or the owner of the supply specified in said section 8. Such action may be maintained in the district court of any city or judicial district or small cause court of any county, and jurisdiction is conferred upon said courts to hear and determine actions brought hereunder. The practice and procedure in all such actions shall conform to the practice and procedure prevailing in the court in which the action is instituted.

10. If any person, corporation, or municipality, or any municipal or township authority shall violate any of the provisions of sections 2 and 5 of this act, the State department, whether or not the penalty prescribed by section 8 of this act shall have been sued for or recovered, may file a bill in the Court of Chancery in the name of the state on the relation of the department for an injunction to prohibit the further violation of said sections 2 and 5. Every such action shall proceed in the Court of Chancery according to the rules and practice relating to bills filed in the name of the Attorney General on the relation of individuals.

The local board of health having jurisdiction over the place where such offense was committed, or the owner of the potable water supply which is or may be affected by such offense, whether or not such penalty shall have been sued for or recovered, may file a bill in the Court of Chancery in the name of such board or owner for an injunction to prohibit further violation of the said sections 2 and 5.

11. Nothing in this article shall be construed as requiring the local board of health or the owner of the supply specified in section 3 of this act, to approve an application to establish a physical connection.

12. This act shall take effect immediately.

RULES AND REGULATIONS FOR INSTALLATION OF PHYSICAL CONNECTIONS BETWEEN APPROVED PUBLIC POTABLE WATER SUPPLIES AND UNAPPROVED WATER SUPPLIES

The State Department of Health of the State of New Jersey, pursuant to the authority vested in it by Statute, hereby establishes the following rules and regulations for the installation of physical connections between approved public potable water supplies and unapproved water supplies.

STATE DEPARTMENT OF HEALTH OF
THE STATE OF NEW JERSEY
by Roscoe P. Kandle, M.D.
State Commissioner of Health

Filed with the Secretary of State: January 3, 1968

Effective Date: February 15, 1968

SECTION 1 — PURPOSE

1.1 The purpose and intent of these rules and regulations is to protect an approved public potable water supply from backflow from an unapproved water supply. The requirements contained herein are not to be confused with the requirements in state and local plumbing codes for the prevention of illegal plumbing cross-connections, nor with any state or local requirements for the practice or procedure known as "cross-connection control by containment" whereby a backflow prevention device may be required to protect an approved public potable water supply from contamination as a result of illegal plumbing cross-connections.

SECTION 2 — DEFINITIONS

2.1 "Double Check Valve Device" means an assembly of two single internally-weighted, independently acting check valves installed in series, plus such gate valves, pressure gauges, drain cocks, and spacers as are required by these rules and regulations.

2.2 "Reduced Pressure Zone Backflow Preventer" means a device incorporating two or more check valves in series, and an automatically-operating pressure differential relief valve located between the two check valves, plus such gate valves, pressure gauges, and drain cocks as are required by these rules and regulations.

SECTION 3 — PERMITS APPLICATION PROCEDURES

3.1 Prior to application for a Permit, the owner of the unapproved water supply shall first have contacted the owner of the approved public potable water supply, and the local board of health of the municipality in which the installation is to be made, and shall have secured from both agencies approval for the installation of the physical connection and the type of device it is proposed to install.

3.2 After the physical connection has been installed, it shall be inspected and tested by the owner of the approved public potable water supply, the local board of health of the municipality in which the installation has been made, and the State Department of Health. If the installation has been properly made in accordance with the requirements of these rules and regulations, and tests show the device is operating properly, persons making such inspections and tests shall certify accordingly on the Permit application form.

3.3 The owner of the approved physical connection shall arrange for quarterly pressure tests and annual internal inspections with the owners of the approved public potable water supply and the local board of health. Such tests, conducted solely by a representative or employee of the owner of an approved physical connection, are not acceptable.

SECTION 4 — TYPE OF APPROVED PHYSICAL CONNECTION REQUIRED

4.1 In premises served by both an unapproved water supply and an approved public potable water supply, each and every pipe conveying the approved public potable supply into the premises shall be protected by means of an approved physical connection.

4.2 In installations wherein the unapproved water supply is derived from any surface source, or is used within a hospital, sewage or industrial wastes treatment plant or pumping station, or for commercial, industrial or manufacturing processes wherein liquids, vapors, gases, or chemicals of unsafe, unknown or questionable quality may backflow or may be discharged or drained into the unapproved water supply, the approved physical connection shall consist of a Reduced Pressure Zone Backflow Preventer. The provisions of this subsection shall not apply to a physical connection satisfactorily operating under current Permits.

4.3 In all other installations, the approved physical connection shall consist either of a Double Check Valve Device or a Reduced Pressure Zone Backflow Preventer.

SECTION 5 — OPERATING CHARACTERISTICS

5.1 The operating characteristics of all devices used for approved physical connections shall be such as to meet the following conditions:

a. The turbulence in the device shall not be excessive for flow rates up to the rated flow.

b. All moving parts shall be designed to operate up to the rated flow in a positive manner without chatter.

c. The device shall not cause water hammer, nor be adversely affected by water hammer arising from an outside condition.

d. Each check valve shall permit no leakage in a direction reverse to normal water flow.

5.2 In addition to compliance with the requirements of subsection 5.1, the operating characteristics of all Reduced Pressure Zone Backflow Preventers shall be such as to meet the following conditions:

a. The device shall operate to maintain the pressure in the zone between the two check valves at less than the pressure on the approved public potable water supply side of the device. At cessation of normal flow the pressure between the check valves shall be less than the approved public potable water supply pressure. In case of leakage of either check valve, the differential relief valve shall operate to maintain this reduced pressure by discharging to the atmosphere.

b. When the pressure of the approved public potable water supply is two pounds per square inch (2 p.s.i.) or less, the relief valve shall open to the atmosphere thereby providing an air gap in the device.

c. The differential pressure relief valve shall open and close positively and quietly, and shall not spit excessively under normal fluctuations of flow rate or pressure.

SECTION 6 — CONSTRUCTION

6.1 The bodies of all devices used for approved physical connections shall be of all-bronze or all-brass construction up to, and including, those of nominal size four inches (4″). Devices of larger sizes may have bodies either of all-bronze or all-brass construction, or of cast-iron lined with brass, bronze, epoxy resin, stainless steel, or other durable, nontoxic, and noncorrodible material acceptable to the State Department of Health.

6.2 The clappers, discs or poppets, hinges, bushings, and seatings of the check valves in any device used for an approved physical connection shall be constructed of brass, bronze, or stainless steel, and shall be so designed and installed as to be readily replaceable.

6.3 Facing rings of the clappers, poppets or discs, or differential relief valves, shall be composed of molded natural or synthetic rubber or neoprene of even thickness, smooth-faced, and with good water-absorption resistance and aging properties, and shall be so designed as to provide a positive seal against the backflow of water through the device.

6.4 Such applicable pressure gauges as are shown in Figures 2 and 3 in respect of a Double Check Valve Device shall be permanently installed in the positions indicated, and shall be so mounted as to facilitate observation.

6.5 Every Reduced Pressure Zone Backflow Preventer shall be provided with such nipples, test-cocks, tees, and elbows as are shown in Figures 4 and 5 to facilitate the testing procedure as required in Section 8.3b.

6.6 The pipe conveying water from the differential relief valve of a Reduced Pressure Zone Backflow Preventer shall be of the same, or larger, diameter as that of the relief port, and shall maintain the same diameter to its point of discharge.

SECTION 7 — INSTALLATION

7.1 The approved physical connection shall be installed on the customer's side of the water meter on the pipe conveying the approved public potable water supply into the premises; shall be located as close to the meter as is reasonably practicable, and prior to any other connection, unless that connection is also protected by means of an approved physical connection.

7.2 The approved physical connection shall be so located as to permit easy access and provide adequate and convenient space for maintenance, inspection, and testing,

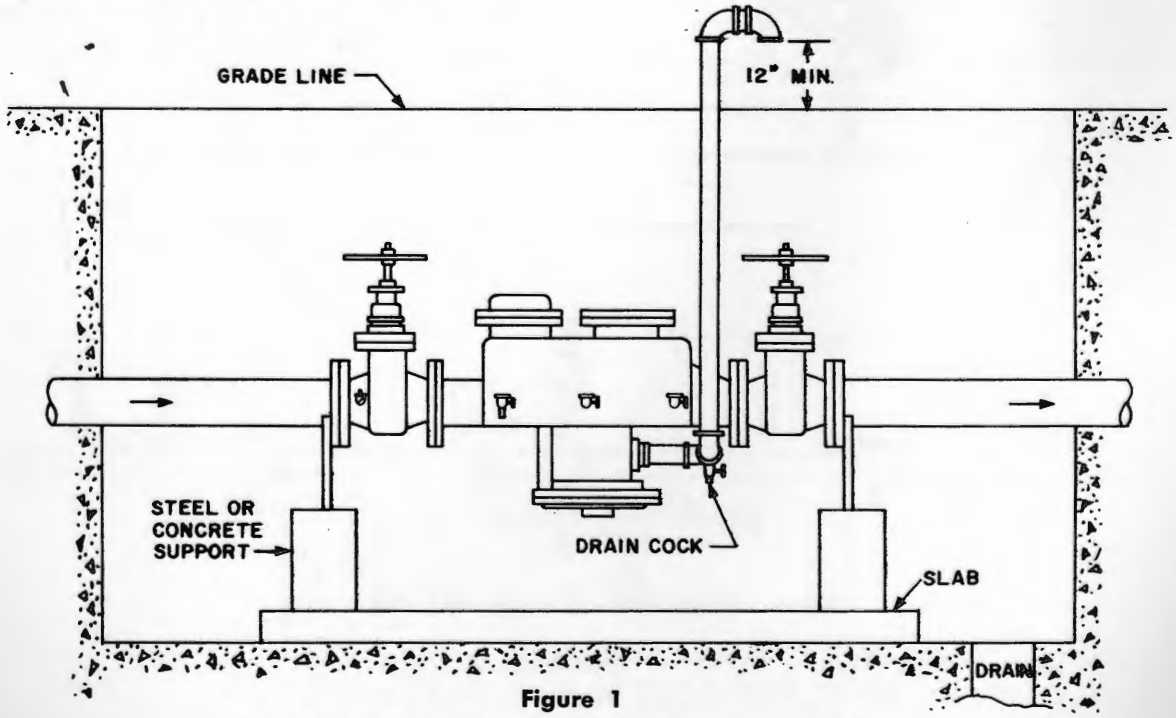

Figure 1

Installation of Reduced Pressure Zone Backflow Preventer in a vault

and where no part of the device will be submerged or subjected to freezing temperatures.

7.3 Normally, installation within a pit or vault shall not be permitted. If so accepted under exceptional circumstances where above-grade installation is not reasonably practicable, the pit or vault shall be of watertight construction, be so located and constructed as to prevent the danger of flooding, and shall be maintained free from standing water by means of either a sump and sump-pump or a suitable drain. Such sump-pump or drain shall not connect to a sanitary sewer nor shall be so located or constructed as to permit flooding of the pit or vault by reverse flow from its point of discharge.

An access ladder and adequate natural or artificial lighting shall be provided to permit maintenance, inspection, and testing.

When a Reduced Pressure Zone Backflow Preventer is installed in a pit or vault, the port from the differential relief valve shall be piped above grade and shall be provided with a downfacing elbow which terminates a distance of at least twelve inches (12″) above grade. A drain cock shall be provided in the discharge pipe immediately adjacent to the unit. This drain cock shall be closed at all times except when testing the device or draining water from the discharge pipe. (See Figure 1)

7.4 All devices used for approved physical connections, including those which embody spring-loaded check valves, shall be installed only in the horizontal position. Check valves that are suitable for vertical installations shall be installed only on up-feed supply piping.

7.5 Tightly-closing gate valves shall be installed, one on each side of, and adjacent to, the approved physical connection.

7.6 There shall be no bypass around any approved physical connection unless an approved physical connection is also installed on the bypass.

SECTION 8 – TESTING PROCEDURES

8.1 Testing procedure for an approved physical connection shall be conducted in accordance with the requirements of subsection 8.2 or 8.3 of these rules and regulations, whichever is applicable.

8.2 Testing Procedure for a Double Check Valve Device shall be conducted as follows:

NOTE— A spacer two feet (2′) or more in length is required on installations three inches (3″) or less in diameter. No spacer is required on larger installations.

1. Open valves M and N.
2. Blow out test drains D and E to remove any sediment or scale that may have accumulated.
3. Blow off the pet-cocks under the gauges to be sure that the gauge connections are clear.
4. Close gate valve M.
5. Open test drain D. Pressure on gauge A should drop to zero, and gauge B will drop part way due to compression of facing on clapper of check valve F. Cessation of flow from test drain D and sustained pressure readings on gauge B indicates that check valve F is properly seated.
6. With test drain D still open, open test drain E. Gauge B will drop to zero and gauge C should remain stationary, indicating that check valve G is properly seated.
7. Close test drains D and E, and then open wide gate valve M.

NOTE— The above procedure indicates the results which will be obtained when gate valves, check valves, and test drains are tight. The test shall be abandoned if any of these leak.

Be sure to leave valves M and N wide open on fire protection systems.

8.3 a. The owner of each Reduced Pressure Zone Backflow Preventer shall provide, for testing purposes, two rigid plastic tubes, each approximately three-quarter

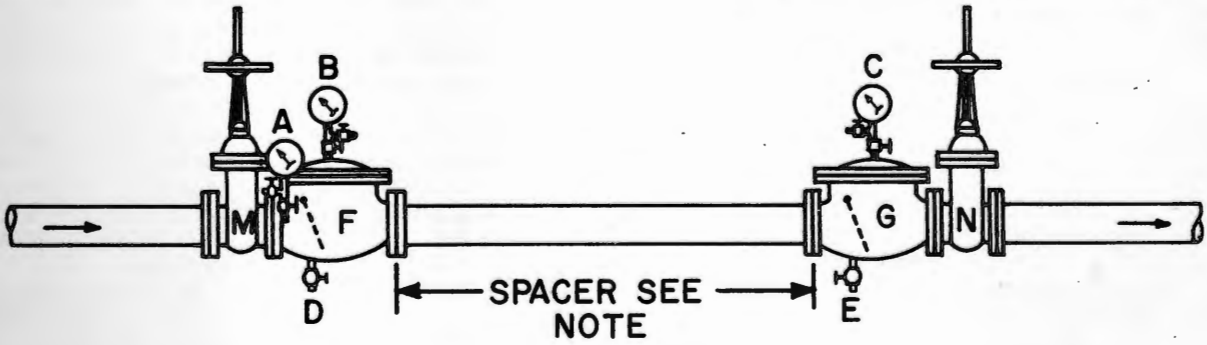

Figure 2

Standard Installation of Double Check Valve Device

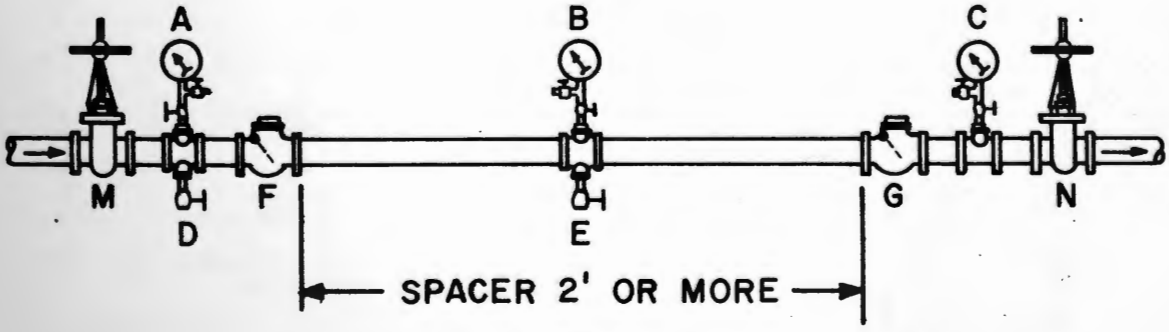

Figure 3

Small Installation of Double Check Valve Device

inch, (¾″) inside diameter with lengths of at least six inches, (6″) and twelve inches (12″) respectively, one six foot (6′), length of half inch (½″) hose, and one compound gauge with a range of thirty inches (30″), vacuum by fifteen (15) p.s.i. pressure. The tubes, hose, and gauge shall be provided with such adapters as may be necessary to permit them to be mounted as shown in Figure 4.

b. Testing procedure for a Reduced Pressure Zone Backflow Preventer shall be conducted as follows:

Install test equipment as shown in Figures 4 and 5.

1. Close gate valve B. If relief valve starts to drain, the first check valve is leaking.
2. Close gate valve A.
3. Open test cock No. 4. To fill the plastic tube, crack open gate valve A until a small amount of water continues to run over the top of the tube.
4. Open test cock No. 3. Water will then spill over the top of the short tube.
5. Open test cock No. 2.
6. Open drain cock slowly until spillage over the top of the short tube stops. Check the gauge reading at this point. This reading is the pressure drop across the first check valve and should be between 6 and 10 p.s.i.
7. Slowly open the drain cock, thereby causing the gauge pressure to fall.
8. As the gauge pressure approaches 2 p.s.i., the water column in the short tube will slowly fall, and should fall rapidly just as the relief valve opens. (In valves 6″ and larger, it may be necessary to refill the tube with a hose.) The gauge reading at this point shall not be less than 2 p.s.i.
9. Open the drain cock wide, causing the relief valve to come wide open.
10. If the water level in the long tube remains at the top of the tube, the second check valve is tight. If the level falls when the relief valve is open, refill this tube with a hose and maintain the water level at the top of the tube. If the relief valve drains continually, the second check valve is leaking. If there is no drainage from the relief valve, but flow through the hose is required to maintain the water level in the tube, then gate valve B is leaking.

Be sure to leave valves A and B wide open on fire protection systems.

NOTE—It is undesirable to leave the compound pressure gauge in place during normal operation of a Reduced Pressure Zone Backflow Preventer, because of possible damage due to sudden fluctuations in pressure, etc.

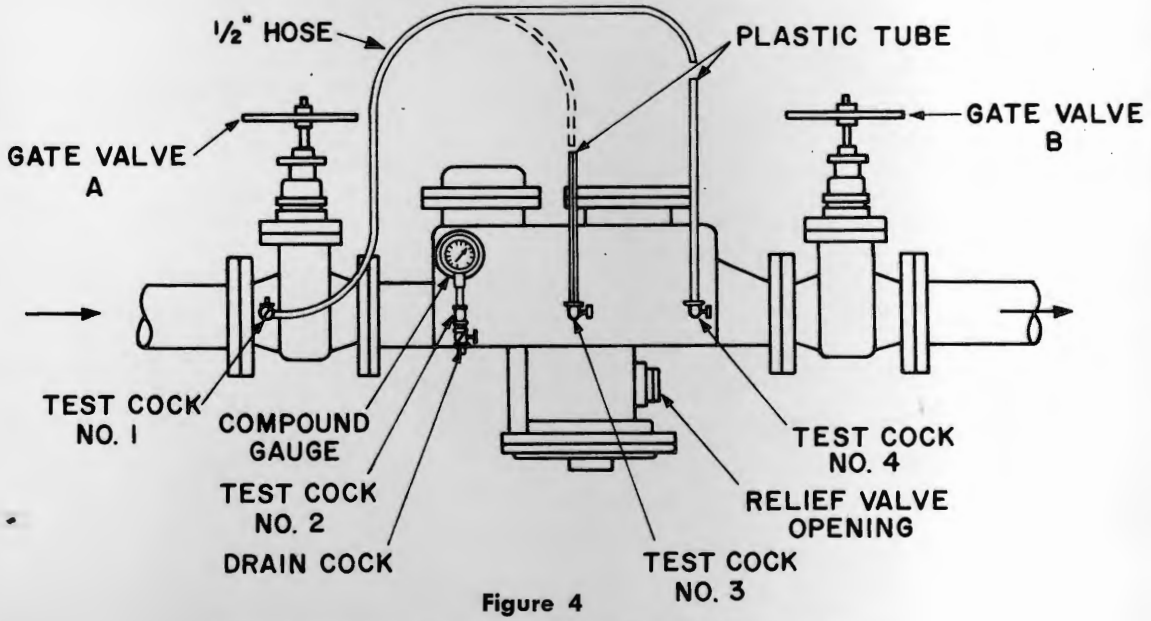

Figure 4

Standard Installation of a Reduced Pressure Zone Blackflow Preventer Showing Test Equipment Installed

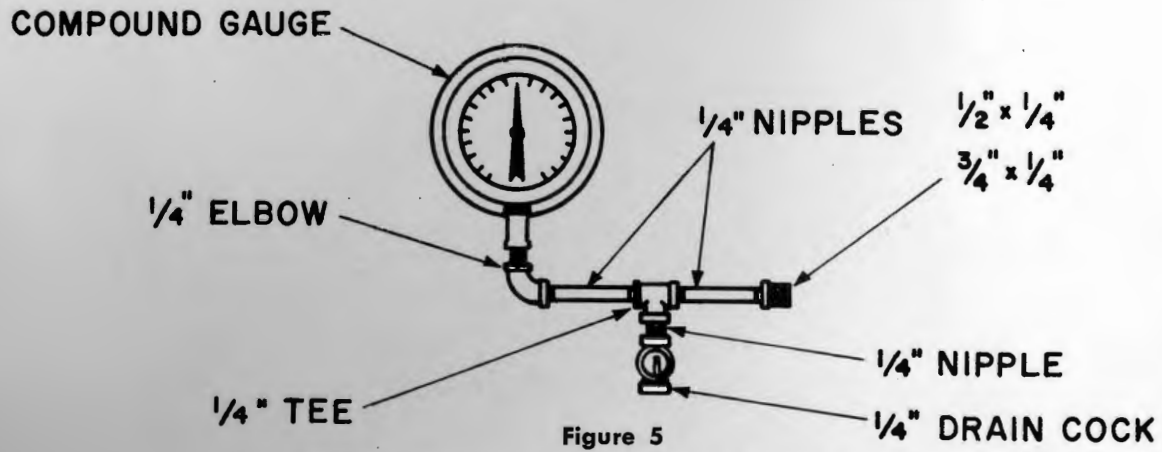

Figure 5

Detail of Fittings Required for Installation of Compound Gauge for Testing of a Reduced Pressure Zone Backflow Preventer

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