COMMERCE FIRE DEPARTMENT

Standard Operating Guidelines

Subject: Fire Hose Maintenance/Testing

Reference Number: 5.03

Effective Date: 6/5/2014 **Last Date Revised:** 2/5/2015

Approved By: Chief Kevin Dean

Purpose: The purpose of this standard is to ensure that all department fire hose is properly identified, recorded, inspected, maintained, and tested according to *NFPA 1962 Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.*(latest edition)

Terminology:

Fire Hose – A flexible conduit used to convey water.

Hose Number - A number assigned to identify a section of hose. The number represents the size, year of manufacture, and number of hose for the purchase year.

Jacket - The outermost protective coverings of the fire hose. Usually manufactured of a cotton/ polyester blended fabric. Hose may offer a single outer jacket or multiple jackets.

LDH - Large-diameter hose. A hose size of 3.5 inches or larger.

Service Test - Hydrostatic test conducted by users on all in-service hose to determine suitability for continued service.

Test pressure - The water pressure exerted on the interior lining of the fire hose that places the hose integrity under a strain to determine the hose condition.

Hose Number Identification:

1. Each section of fire hose, regardless of length, shall be marked with an identifying number so that it may be tracked during its service life. This number must be clear and legible, and may need to be remarked if faded. The number shall be printed on both ends of the hose. The number shall be printed in permanent black ink.

2. All hose numbers will be a series of numbers that signify the size, year of manufacture, and the identifying number.

    a. The first character of all hose numbers is an upper case “C” to identify Commerce.

    b. The second character shall signify the hose size.

        I. “1” for 1.75 inch hose

        II. “2” for 2.5 inch hose

        IV. “3” for 3 inch hose

        VI. “5” for 5 inch hose

    c. The next number shall signify the year of manufacture. For example 2003

listed as “03”

d. The last series of numbers represent a 3-digit number that is a running number of the hose purchased in that size for that year.

e. Example: Hose number “C-3-99-036” represents the 36th hose of 3 inch supply that was purchased in 1999.

1. A record of all fire hose shall be maintained.

Inspection:

1. Physical inspections shall be done as follows:

a. Prior to placing in service, after each use, and during annual service testing.

b. Physical inspection shall determine that the hose and couplings are free of debris, and exhibit no evidence of mildew, rot, or damage by chemicals, burns, cuts, abrasions, and vermin.

c. Couplings shall be inspected for damaged threads, slippage on the hose, swivels not rotating, missing lugs, loose collars, damaged or missing gaskets, and any other defects.

d. Any hose that is found defective shall be forwarded to the department’s Quartermaster.

Maintenance:

1. Hose jackets:

a. Shall be cleaned after each use following manufacturer’s guidelines.

b. If exposed to hazardous materials, the hose shall be decontaminated by a method approved by the contaminate.

c. Hose should be allowed to thoroughly dry before placing in service.

d. Hose should not be dried on hot pavement or under intense sunlight.

e. Vehicles shall not be driven over fire hose.

2. Couplings/Gaskets:

a. Care should be taken not to drop the couplings on the pavement or other hard surfaces that can cause damage to swivel or exposed threads.

b. Threads should be kept free of debris.

c. Gaskets should fit tightly but not protrude into the waterway.

d. Any defective or misfit gasket shall be replaced.

3. Storage:

a. Fire hose stored in the station should be on racks, out of direct sunlight, and in a well-ventilated area.

b. Fire hose stored in apparatus compartments shall not be stored in the same compartment as petroleum products or any other item that could damage the hose.

c. Fire hose stored on the apparatus in cross lay or on hose bed, shall be unloaded and reloaded twice a year to prevent the setting of permanent folds in the rubber lining.

d. All pumper trucks shall carry 1000 feet of 5 inch, 800 feet of 3 inch, and 200 feet of 2 1/2 inch fire hose in the hose bed.

Service Testing:

NFPA 1962 Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose (latest edition); should be used as our fire hose testing guide. One exception shall be the service test pressures.

Service testing shall be performed on all hose sized 1 3/4 inch and larger at the following times:

1. Acceptance of new hose, annual hose testing, and following suspected damage to hose.

Test pressures:

1. 1 3/4 inch to 3-inch hose shall be tested to 250 psi for a period of five minutes.
2. LDH shall be tested to 200 psi for a period of five minutes.

Annual Hose Testing Procedures:

1. Each member that is overseeing the pressure tests of fire hose must be aware of the inherent dangers present with higher water pressures and must inform personnel of safety precautions that are to be followed during these tests.
2. Fire hose is to be laid out in lengths of 300 feet. The hose layout shall be straight and have no kinks or twists. If, in the event that space does not allow for a 300 foot hose lay that is straight, a lesser hose lay length must be utilized.
3. Each hose section shall be inspected prior to the test for any indication the section is “out of service”, for any obvious damage, hose gasket, and hose number.
4. The hose tester should be used for testing hose. The hose tester should be used per manufacturer’s recommendations and shall be calibrated prior to testing.
5. A pumping apparatus may be used for testing hose. Any pumper used for hose testing must have been certified within twelve months. No hose connections should be made in the immediate area of the pump operator’s position.

6. It is recommended, but not required, that a 2.5” Static Cap be positioned on the discharge end of the hose lay length with a 1/4” bleeder valve to drain air from the hose. A combination or smooth nozzle with shutoff may also be used, however, these appliances are very costly and higher pressures may cause excessive wear that should be avoided.
7. With the discharge end appliance of the hose lay opened, the pressure shall be raised to 45psi. While at 45 psi the hose shall be checked for leakage at the couplings, couplings should be tightened as needed.
8. After the hose test layout is full of water, all the air in each hose line shall be exhausted by raising the discharge end of each hose line above the highest

point in the system. The nozzle or cap valve shall then be closed.
9. All sections of fire hose shall have a mark made on the outer most jackets adjacent to each end's coupling shank. This mark shall be black in color and extend no less than ½ the distance around the diameter. This mark shall determine if the coupling has slipped during the test.
10. All personnel other than those persons required to perform the remainder of the procedure shall clear of the area.
11. The pressure shall be raised gradually, not to exceed 5 psi per second, until the service test pressure has been attained and maintained.
12. After the stabilization period, the hose shall remain at the test pressure for a period according to NFPA 1962.
13. During the test period, the hose shall be inspected for leaks. Personnel shall stay at least 15 feet away from hose as they walk along the hose lay.
14. Hose shall be considered as failed in the event that the couplings slip, hose bursts, hose leaks, or the test pressure is not maintained for the test period. If a section fails, the hose shall be taken out of the hose lay and the test procedure shall be restarted.
15. Hose that fails shall be separated from the hose lay. The hose is documented as failed to include the reason for failure. The hose shall be reverse rolled (female coupling in) and a loop put in the end of the hose. Failed hose shall be returned to the Quartermaster.
16. Following a successful test period, the pressure shall be released and each test cap or nozzle opened to drain the hose.
17. Fire hose should be reloaded on the apparatus in cross lay or on hose bed, in a manner that prevent the setting of permanent folds in the rubber lining.

Summary:

The process of annual pressure testing of fire hose has several advantages to this department. This procedure will allow for inspection of this equipment along with documentation that will provide for a more favorable review by outside agencies. This operational procedure is developed to facilitate these issues along with an outline of safety for our personnel.