

Private Fire Hydrant Inspection and Maintenance



*In the
City of Council Bluffs*

August 2013

The City of Council Bluffs has nearly 3,000 public fire hydrants and over 400 private fire hydrants. All public fire hydrants are maintained by the Council Bluffs Water Works (CBWW). This document has been prepared to provide guidance for conducting tests and inspections of private hydrants connected to the water system.

Scope

This document is intended to aid private fire hydrant owners with information for proper maintenance, testing and marking of their fire hydrants. In no way will this document replace proper training and experience. It should not be viewed as a training manual but as a guide to the proper execution of these functions. This manual is available online at:

<http://www.councilbluffs-ia.gov/index.aspx?NID=871> .

Fire hydrants (hydrants) spend most of their time unused and ignored, yet they are called upon in a moment's notice to provide fire flow for the protection of a business or home. They are an indispensable facet of the overall fire protection features of a building. Because of the way land is platted and easements are granted, there are a large number of private fire hydrants within the City of Council Bluffs. These hydrants are required for the fire protection of a building, but they are useless unless regularly maintained, and marked as described in this document so that firefighters can quickly identify the capabilities of the hydrant.

Characteristics of Hydrants

Most if not all hydrants in the City of Council Bluffs are dry barrel hydrants. Dry barrel hydrants have the main valve located below ground and the section that extends above ground is void of water except during operation. These hydrants are equipped with drain valves to allow the portion of the hydrant above the main valve to automatically drain.

Hydrant Repairs and Maintenance

Property owners are solely responsible for testing, maintenance and marking of privately-owned hydrants and assumes all liability for the proper operation, maintenance, and marking of their hydrants. Maintenance, testing and inspection of private hydrants should only be performed by properly trained individuals.

Information regarding the testing and repair of privately-owned hydrants shall be provided to the Council Bluffs Fire Department on an annual basis. The owner is responsible for keeping records pertaining to the certification and maintenance of private hydrants and assumes responsibility for the testing and maintenance of privately-owned hydrants.

All out-of-service hydrants shall be immediately reported to the Council Bluffs Fire Department (CBFD) and then bagged.

All new private hydrant installations shall be inspected by the CBFD. Inspections shall include a flow test.

Routine Inspection

NFPA 25 states that hydrants should be inspected annually and after each use. In freezing climates, this is best accomplished in the fall, or in the spring. Lack of experience and time

between inspections increase the length of time necessary to inspect a fire hydrant. Routine inspection of common fire hydrants by experienced operators should take approximately thirty (30) minutes per hydrant.

PROCEDURE

(A simplified check list is included at the end of this document)

1. Notify the Council Bluffs Fire Department (CBFD) 24 hours in advance of the time and area(s) you will be inspecting. 712-328-4672.
 - Locking Caps will need to be removed and replaced by the CBFD.
 - Contact the CBWW 712-328-1006, 24 hours in advance of time of the areas you will be flowing hydrants. Depending on system conditions the CBWW may require postponement of flowing hydrants to an alternate time.
2. Visually inspect the area around the hydrant.
 - Hydrants are required to have a minimum clearance of three (3) feet in all directions.
 - In order to protect landscape, yards, vehicles, etc., it may be necessary to use a diffuser or hose to direct water away from the surrounding area.
3. Visually check the hydrant for any defects.
 - Remove all caps and check the threads.
 - Remove the first cap slowly to ensure there is no pressure on the hydrant.
 - Clean threads with a wire brush.
 - Lubricate the threads if necessary.
 - CBWW uses Food Grade Anti-Seize, from Loctite, as a thread lubricant.
 - Inspect gaskets
 - Check for water or ice in barrel.
 - If hydrant is equipped with safety chains, ensure the chains are loose and do not bind on the cap.
 - Check the breakaway flange for damage or loose bolts.
 - Lubricate the operating nut if required.
 - Some hydrants have grease fitting on the operating nut that requires grease.
 - Contact the manufacturer for specific instructions.
4. Replace caps on all but one outlet and attach a hose or diffuser if necessary to protect surrounding area.
 - Ensure caps are tightened; a loose cap can blow off under pressure.
5. Open the hydrant **SLOWLY** approximately 3 to 5 turns. Allow time for the air to escape from the hydrant barrel. Then **SLOWLY** open hydrant to the full open position to check operation.
 - When the hydrant is flowing full, a flow test can be conducted. (Pitot Tube measurement taken). See Fire Flow Testing in this guide for additional details on flow testing.
 - Flow may then be reduced if desired.

- Check for leakage at the flanges, operating nut, nozzles and nozzle caps.
 - Allow the water to flow for a minimum of one minute to flush the hydrant and line.
6. Once the water is clear close down hydrant **VERY SLOWLY**.
- Be aware that some hydrants may not seem to slow down when you turn them. This usually means the hydrant may slam (it will have some slop in the stem and may make a thump sound when closing). This causes water hammer and could cause major damage to the water distribution system. This is why it is imperative that hydrants are closed **VERY SLOWLY**. The owner shall be held liable for any damage caused to the CBWW water distribution system due to improper operation of hydrants.
7. Wait to make sure the hydrant stops dripping. It should not be necessary to close the hydrant with great force.
- If the hydrant does not shutoff completely, there may be debris stuck between the disc and seat. Over tightening of the hydrant can do permanent damage to the disc. Open the hydrant to flush the debris, and then close down the hydrant again. If the hydrant will not shut off completely, notify the CBWW and Cbfd as the fire line may have to be shut down until the hydrant is repaired.
8. After the hydrant is closed, back off on the operating nut about 1/4 turn.
- This removes the pressure from the operating nut and stem. The main valve will remain closed.
9. Ensure water is draining from the barrel.
- If water does not drain from the barrel it may need to be pumped to prevent damage from freezing.
10. Remove any fittings or hoses and replace the caps.
- Tighten the cap and then back off slightly. Caps should be tight enough to prevent removal by hand but loose enough to be removed with ease using a spanner wrench.
11. Defective elements shall be removed and replaced. This procedure shall be repeated until the hydrant conforms to current standards.
12. Repair any damage caused by flowing hydrants.

Painting and Color Coding Fire Hydrants

The appearance of hydrants has a direct impact on the public's confidence in the Fire Departments' ability to protect their homes and businesses. Hydrants are color coded to indicate various system conditions including flow, type or size of water main, type of distribution system (potable, non-potable, or private) and system pressure. Therefore, it is necessary to maintain the appearance of the hydrants by painting.

All public hydrant barrels in City of Council Bluffs are painted yellow, while barrels of private hydrants are required to be painted red. These colors make hydrants more visible and separate them from surrounding landscaping and structures. The dome of the hydrant shall be painted to indicate fire flow capabilities.

Each new hydrant shall be factory painted per the paint manufacture's specifications. Paint shall be Tnemec Series 73, Color 06SF Red paint.

At the time of installation a flow test shall be perform to determine the gallons per minute (GPM) available at each hydrant. The contractor will paint the hydrant dome according to the flow ranges as stated below.

All fire hydrants are color coded, as set forth in NFPA Standards, to indicate the expected fire flows from the hydrant during normal operation. Only the dome shall be painted with the following colors to indicate available flow:

Flow Colors

1500 GPM or Greater; Light Blue Tnemec Series 73, Color 25BL Fountain Blue

1000 to 1499 GPM; Green Tnemec Series 73, Color 09SF Green

500 to 999 GPM; Orange Tnemec Series 73, Color 04SF Orange

Less than 500 GPM; Red Tnemec Series 73, Color 06SF Red

Some existing private hydrants may be painted yellow. As these hydrants are identified, the owners shall be required to sand blast and re-paint them in accordance with this guide.

Fire Flow Testing

PURPOSE

Fire flow tests are conducted to determine pressure and flow capabilities within the system. The primary function of fire flow tests is to determine how much water is available for fighting fires. Hydrants shall be flow tested every five (5) years.

PROCEDURE

It is required that the procedure outlined in AWWA Manual M17, 'Installation, and Field Testing, and Maintenance of Fire Hydrants', is used for conducting flow testing.

RECORD KEEPING

An accurate record should be kept of each test. Static, residual and Pitot pressures are used for test information. A copy of all records shall be supplied to the CBFD.

PLANNING

It is important to plan ahead when conducting fire flow testing. Review previous tests to estimate the flow and pressures that can be expected. Select a day for testing when weather predictions indicate that conditions will be reasonable. CBWW and CBFD are required to be notified as to the time and location of the tests at least 24hrs ahead of time. Precautions to prevent the tests from affecting traffic flow should also be taken.

CAUTIONS TO BE OBSERVED WHEN FIELD TESTING

Opening a hydrant rapidly can cause a negative pressure fluctuation. Therefore, hydrants should be opened slowly until fully opened. Closing the hydrants is more critical, and it must be done very slowly. Closing a hydrant rapidly causes a pressure surge, or water hammer, and this could cause damage to the distribution system. Hydrants should be opened and closed one at a time to minimize the effect on the distribution system. Dry-barrel hydrants must be opened fully because the drain-valve mechanism operates with the main valve. A partially opened hydrant could force water through the drain outlets under pressure, eroding the thrust support from behind the hydrant. After the test, the hydrant barrel should be drained before tightening the outlet-nozzle cap. A tight outlet-nozzle cap could prevent proper drainage and possibly allow freezing and cause ice blockage in either the upper or lower barrels during winter months.

A majority of fire lines are connected to the potable supply line to buildings. During testing opening hydrants may change the flow characteristics of the distribution system and service line causing the water to become colored. If discoloration is noticed, the supply line in the building will need to be flushed out using a cold water faucet until the water appears colorless. If thirty (30) minutes of flushing does not clear up the water contact the CBWW.

For More Information

For more information, contact the
Council Bluffs Fire Department 712-328-4646
Water Works 712-328-1006

Dry Barrel Hydrant Simplified Inspection Checklist

Hydrant # _____ Location _____

Date _____ Inspected by _____

- ___ 1. Notify Council Bluffs Fire Department of work to be performed.
- ___ 2. Notify Council Bluffs Water Works if flowing hydrants.
- ___ 3. Visually inspect the area.
- ___ 4. Visually check hydrant.
- ___ 5. Remove caps. Clean and lubricate threads. Replace caps.
- ___ 6. Install hose or diffuser if necessary.
- ___ 7. Open hydrant **SLOWLY** to full open position.
- ___ 8. Perform Fire Flow Test if required.
- ___ 9. Check for leakage.
- ___ 10. Reduce flow and run for at least 1 minute.
- ___ 11. Check water clarity with solid white cup.
- ___ 12. Reduce flow **SLOWLY** and shut off hydrant.
- ___ 13. Watch to see hydrant stops dripping. Re-flush if necessary.
- ___ 14. Pump water from barrel of hydrant if needed.
- ___ 15. Remove hose or fittings, replace cap.
- ___ 16. Repair any damage to surrounding area.
- ___ 17. Report problems to Water Division.

Problems Identified:

Problems Resolved:

Notes:



Council Bluffs Fire Department

200 South 4th Street

Council Bluffs, IA 51503

Tel: 712-328-4646

Fax: 712-328-4916

www.cbfire.org

'Date'

'Business Name'

'Street Address'

Council Bluffs, Iowa

Our records indicate that you have privately owned fire hydrant(s) on your property. It is your responsibility to maintain these hydrants to ensure that they are in proper working order in the event of a fire incident. We are requiring that these hydrants be inspected, serviced and maintained on an annual basis.

According to NFPA 25, *"Fire hydrant systems shall be subject to periodic tests as required by the fire code official. Fire hydrant systems shall be maintained in an operative condition at all times and shall be repaired where defective. Additions, repairs, alterations and servicing shall comply with approved standards."*

Please notify the Council Bluffs Fire Department at 712-328-4672 at least 24 hours in advance of scheduled service on your hydrant(s). Following maintenance, please complete the form below and retain for review by Fire Inspectors.

Property Owner _____

Address _____

Number of Hydrants _____

Description of Maintenance

Date Performed

Performed By

Flowed

Flushed

Pumped Down

Lubricated

Describe any problems found and/or corrected:
