East Lake Tarpon Special Fire Control District

SOP 404 Fire Hydrant Testing/Maintenance

Implementation Date: 11/2000	**Revision Date(s): 3/22/2018**
	Reviewed Date(s): 6/26/2018
Forms or Attachments: None	

Purpose

To create a guideline for annual fire hydrant inspection and testing.

To familiarize all personnel with the locations of existing and new fire hydrants and to obtain water supply information for pre-fire plans.

404.1 Goal

To inspect all fire hydrants within the district on a bi-annual basis and test all district hydrants every five years.

404.2 Responsibilities

Lieutenants shall coordinate shift duties with the annual fire hydrant inspections and ensure the completion of the fire hydrant maintenance and flow testing of his/her respective section prior to **November 15.** A minimum of **twelve (12) hydrants** will be tested and entered into the Pinellas County Safety Services Hydrant Map on a **monthly basis**. New fire hydrants found within assigned areas will be reported to the Deputy Chief for number assignment. All new fire hydrants within assigned area will be tested when found.

404.2 Hydrant Testing and Inspection

The Fire District will conduct annual inspections of fire hydrants. **Testing** is flowing a hydrant and measuring the estimated flow available from the hydrant. This is normally done by Pinellas County Utilities/fire protection contractors. **Inspection** is checking the hydrant for damage or obstructions to use, and flowing the hydrant only enough to clear the water line and ensure that the hydrant is "wet" and functional. **Frequency:** All fire hydrants located in the District shall be inspected annually by members of the department. In conjunction with Pinellas County Utilities and fire protection contractors, all District hydrants will be inspected bi-annually and tested every five years.

A. **Safety Considerations:** All personnel involved in the inspection and testing of hydrants shall wear reflective traffic safety vests and gloves. Lieutenants shall ensure fire apparatus is positioned for maximum protection of personnel, equipment, and the public. Traffic cones shall be appropriately placed to alert motorists to our presence in the roadway.

B. **Required Documentation:** All hydrant inspections and tests shall be documented in the hydrant map section of the Pinellas County Public Safety Services 911 Web System.

C. **Hydrant Closing Procedure:** To minimize pressure surges on water systems, the following procedure shall be followed when closing fire hydrants. Close hydrant slowly until the stream has been reduced to a 4 ½" bore and flowing gently. Stop closing the valve and hesitate about 20 to 30 seconds to allow pressure to stabilize. Continue to close the hydrant until flow or water stream is reduced to a 2 ½" bore. Stop closing the valve and hesitate 6-10 seconds to allow pressure to stabilize. Close the valve completely. The longer you flow a fire hydrant, the greater the amount of water flowing through the hydrant. This necessitates hesitating longer to allow pressure to stabilize. Observe carefully the flow of water while the hydrant is being shut off. Once the water has stopped dripping, no further turning of the stem is needed. If you continue to apply torque, it is possible to damage the stem or valve seat.

D. **Hydrant Inspections:** Hydrant inspections shall be conducted to determine the condition of each hydrant. Maintenance shall be performed on an "as needed" basis each time the hydrant is inspected. The following reflects the items to consider when inspecting a fire hydrant:

1. Verify hydrant location and number.
2. Check hydrant for physical damage and defects.
3. Check for obstructions that affect our ability to operate the hydrant. Maintain a three-foot clear radius around all hydrants.
4. Check to see that the hydrant outlets are facing the proper direction and there is a minimum 15-inch clearance between the lowest outlet and ground level.
5. Check to see if hydrant is set too close to the curb, exposing it to vehicular traffic.
6. Check condition of the paint.
7. Operate the valve stem for ease of operation.
8. Check hydrant caps and outlets for rust; remove rust from caps and outlets with a wire brush. If you encounter a hydrant cap that cannot be removed by applying a normal amount of pressure with the hydrant wrench:
    a. Do not kick or stand on the hydrant wrench handle.
    b. Do not try to muscle the hydrant cap off. Using these methods can lead to injury and possible equipment damage.
    c. To safely remove a stuck or frozen hydrant cap, tap the outer edges of the cap using the handle of the hydrant wrench, then attempt to remove the cap. If this fails, place the hydrant out of service and notify Pinellas County Utilities/private hydrant owner immediately for repair.
9. Check hydrant caps, outlet threads and gaskets for damage and proper lubrication.

10. Lubricate cap and outlet threads with lube.
11. Flow the hydrant only long enough for clean water to appear. Connect a diffuser and/or use a salvage cover to protect property where necessary.
12. A static reading shall be taken, after the hydrant has been flushed, on all hydrants.
13. Check to ensure that a blue hydrant reflector is installed at each hydrant location.
14. Remove all weeds and debris from around the hydrant to ensure visibility.
15. Other obstructions, such as traffic standards, protective barriers, sign posts, utility poles, shrubbery, or fences shall be reported to the hydrant owner in order to resolve the issue.
16. Document your results in the hydrant map section of the Pinellas County Public Safety Services 911 Web System.

E. **Single Hydrant Testing Procedure:** Evaluate the site to determine potential for property damage before hydrant is flowed. It is important to flow through the 2 ½" outlet during this test. Consideration must be given to interference with traffic flow, damage to surroundings, and potential flooding problems, both local and remote from the test site before the hydrant is flowed. Use a salvage cover to protect property where necessary.

1. Remove a 2 ½" hydrant cap and attach the hydrant test gauge to the outlet. **The petcock for the test gauges must be in the flushing position.**
2. Remove the other 2½" outlet cap and install diffuser. **The petcock for the gauge on the diffuser shall be in flushing position.**
3. Tighten the remaining outlet cap.
4. Stop traffic as necessary to conduct this test.
5. Open hydrant slowly and fully to allow water to flow until it runs clear to flush hydrant branch line and hydrant.
6. When hydrant is fully open, open both gauge petcocks, read and record pressure reading on both the gauges.
7. Once the reading is obtained, slowly close hydrant in accordance with the closing procedure in this SOP to prevent a water hammer in the main.
8. Leave test gauge on the outlet for the static pressure test.
9. Replace hydrant caps and tighten to prevent removal by vandals.
10. Open the petcock on the test gauge; open hydrant valve fully to exhaust the air from the hydrant.
11. Close petcock as soon as air in the hydrant has been bled off.
12. Once air has been bled off and the needle on the hydrant gauge comes to rest, read and record the static pressure.
13. Close the hydrant and ensure it drains properly by checking the gauge to see if the pressure has bled off.
14. If the hydrant doesn't drain properly, bleed the pressure off using the gauge petcock and record the draining problem on the hydrant repair form.
15. Remove test gauge, replace the hydrant cap, and tighten snugly. **Do Not Over Tighten.**

F. **Hydrant Flow Testing:** This procedure shall be used when conducting a full flow test

for the purpose of determining available fire flow. This procedure requires the use of a minimum of two hydrants where available. This procedure shall be done in accordance with the most current edition of NFPA Standard 291, Fire Flowing Testing and Marking of Hydrants, as follows:

1. Analyze the site for possible property damage before the hydrant is flowed.
2. Inspect hydrant(s) for physical damage or defects.
3. Ensure all hydrants are turned off.

Consideration must be given to interference with traffic flow, damage to surroundings, and potential flooding problems, both local and remote, from the test site before hydrant is flowed. Connect a diffuser and/or use a salvage cover to protect property where necessary.

Control Hydrant:

1. Remove a 2 ½" hydrant cap from the control hydrant and attach the hydrant test gauge. **The petcock for the test gauges must be in the flushing position.**
2. Tighten remaining outlet caps.
3. Open hydrant valve and bleed off air from the control hydrant.
4. Close petcock as soon as the air in the hydrant has been bled off and the water is clear.
5. Once air has been bled off and the needle on the hydrant gauge comes to rest, read and record the static pressure.

Flow Hydrant:

1. At each flow hydrant, remove one of the 2 ½" outlet caps and attach a hydrant test gauge and diffuser. **The petcock for the test gauges must be in the flushing position.**
2. Tighten any remaining hydrant caps.
3. Stop traffic as necessary to conduct this test.
4. At a given signal, open each flow hydrant(s) one at a time.
5. Flow hydrant(s) should be opened slowly and fully.
6. The person at the control hydrant must observe the test gauge on that hydrant as each flow hydrant is opened.
7. If the static pressure drops more than 50 percent when the first hydrant is open and flowing, the second hydrant should not be flowed.
8. Residual pressure at the control hydrant shall not be allowed to drop below 20 psi during the test.
9. Once the flow hydrants are fully open, a signal is given to read and record the flow pressure from each hydrant.
10. Residual pressure shall be read and recorded at the control hydrant with the flow hydrants fully open.

To obtain satisfactory test results for theoretical calculations of expected flows or related capacities, sufficient discharge should be achieved to cause a drop in pressure of at least 25 percent at the control hydrant. If you are unable to cause a drop of at least 25 percent, you may need to add additional flow hydrants. Where systems are weak and mains are small, pressure drop may be sufficient with only a single hydrant flowing.

1. After readings have been recorded, hydrants shall be shut down slowly, one at a time, in accordance with the shutdown procedure described in this SOP to prevent undue surges in the system.
2. Shut the control hydrant down last.
3. Remove test gauges, replace hydrant caps and tighten to prevent removal by vandals.
4. Document any defects or needed repairs and report deficiencies to the hydrant owner.

404.3 Hydrant Repairs:

A. If a fire hydrant is inoperable or needed repairs necessitate placing a hydrant out of service, the Lieutenant shall ensure that the appropriate fire hydrant owner is notified immediately. Public fire hydrants will be repaired by Pinellas County Utilities at 464.4000 (24 hours a day). Private fire hydrants will be repaired by their respective owners. When reporting a fire hydrant out of service, the following information must be provided:
   1. Fire station placing the hydrant out of service.
   2. Hydrant number (if available).
   3. Hydrant location.
   4. Nature of problem.
   5. Contact information (phone number and department email address)

B. All hydrants will be noted as being out of service or not to be used by placing an orange "NOT IN SERVICE" bag over the hydrant and secured with a zip tie.

C. The Lieutenant will be responsible for coordinating the repair of the hydrant. Upon notification that the hydrant has been repaired, the lieutenant shall notify the on-duty District Chief/and Deputy Chief of the repair. The District Chief will assign personnel to inspect the hydrant and assure that the "NOT IN SERVICE" bag is removed from the hydrant.