Bennett-Watkins Fire Rescue

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"Striving to Preserve Life and Property"

Firefighting Water Supply Cistern Specifications & Requirements

In an effort to bring consistency and maximize effective firefighting operations. Bennett-Watkins Fire Rescue (BWFR) has jurisdictional specifications for below grade firefighting water supply installation, replacement, marking, and maintenance. These specifications are based on national standards which are adopted locally and best practices as outlined by Insurances Services Office (ISO). These specifications are applied within all areas on BWFR's jurisdiction, referred to as the "District", and shall apply to all new construction that requires a firefighting water supply that is not provided through a municipal water service provider or water district.

1. **Overview.**

   In cases where development is proposed in areas that are not serviced by a reliable and approved water supply capable of providing adequate fire flows for the proposed development Bennett-Watkins Fire Rescue may accept an alternative firefighting water supply designed and engineered in accordance with applicable International Fire Code (IFC), National Fire Protection Association (NFPA) standards, and ISO requirements.

2. **Design Requirements.**

   Through evaluation, historical performance, and practical application, BWFR has opted to only accept below-grade engineered and NFPA compliant water supplies. Above grade tanks, cisterns, pools, or natural water supplies such as lakes, rivers, streams, creeks, and drainages are not considered acceptable or reliable water supplies for firefighting. When evaluating required water supply design requirements such as capacity of water needed, BWFR recognizes the design criteria established in NFPA 1142: *Standard on Water Supplies for Suburban and Rural Fire Fighting, 2017 Edition.*

   BWFR requires a stamped NFPA 1142 analysis prepared and provided with the development application. This document should be prepared by a fire protection engineer or other qualified registered design professional. The document shall include all pertinent information including but not limited to, building area, building height, building construction types, exposure analysis, water supply calculations, summary of minimum capability of fire department to provide water, and water supply conclusions.

3. **Cistern Tank Specifications.**

   BWFR has established specific guidelines for the type of tanks accepted as approved below grade firefighting water supplies. All tanks must be engineered and certified compliant with requirements set forth in NFPA 22: *Standard for Water Tanks for Private Fire Protection.* Proof of engineering or tank compliance with these applicable standards are required to be submitted as part of the development application. Tanks that were originally designed for purposes other than firefighting water supplies will not be accepted as an approved below-grade water supply. All tanks shall be sized and designed in accordance with the findings in the corresponding NFPA 1142 analysis report.

4. Installation Requirements

BWFR has established specific installation requirements that ensure that the approved water supply is functional and can be readily utilized by BWFR in an emergency. These requirements are not optional and are subject to measurement and verification during rough and final inspections. Should you have concerns or an inability to meet one of these requirements, contact BWFR directly before proceeding.

A. All piping connections shall be schedule 80 PVC. If alternative materials are proposed, BWFR must approve those materials prior to installation.

B. Fire department connections (FDC) shall consist of the main FDC as 6" NH female swivel connection with cap.





C. **Secondary connection or "tank fill port" shall be a 2.5" NH Female swivel connection with cap and an additional cam-lock connection.**





D. **FDC height shall be 32 inches measured to the center of cap from the ground height.**

E. **The FDC shall have no more than 5ft set back from the approved fire apparatus access road. This is measured from the curb to the FDC.**

F. **The below grade water tank installation shall be no lower than 20ft elevation from FDC height to the bottom of the tank water level after installation. This distance is measured from the center of the FDC cap to the bottom of the tank.**

G. **The FDC shall have proper vehicle impact protection and signage as required by BWFR. One sign must reflect the total capacity of the tank in U.S. Gallons. (Example: "30,000 Gallons")**





H. **The tank shall be equipped with a visual gauge to clearly display the tank water level above ground.**

I. **All tanks shall have a method of self-filling either off a well or other reliable and consistent water source. (NOTE: If a well is utilized for this installation, please ensure that the well is properly permitted and approved for fire protection water supplies with the Colorado Division of Water Resources. This will be listed on your State permit).**

J. **A final inspection and tank acceptance test shall be required before the cistern/building is accepted and approved or a certificate of occupancy is issued by the authority having jurisdiction.**

5. Below Grade Cistern Maintenance.

All fire hydrant systems and below grade cisterns, both private and municipal, shall be maintained in accordance with the District's adopted fire code which states:

> "**507.5.2 Inspection, testing and maintenance.** 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. Records of tests and required maintenance shall be maintained."

Fire cisterns shall be inspected and tested at least once annually. BWFR typically connects to the cistern and flows water ensuring the cistern is still function during the occupancy's annual fire inspection. Repairs and routine maintenance activities are the responsibility of the property owner/business. Any deficiencies identified during BWFR's test and inspection will be communicated in the occupancy inspection report and must be corrected as soon as possible. Owners/Businesses should conduct routine visual inspections of the above-grade components of the cistern such as the connections, signs, vehicle impact protection bollards, etc.

Any and all out-of-service or impaired conditions of fire hydrants, below grade cisterns, fire pumps, or any other water delivery system component is required to and shall be reported to BWFR immediately at 303-644-3572 or CRRDivision@BennettFireRescue.org

About the International Fire Code (IFC)

Bennett-Watkins Fire Rescue, Adams County, or the Town of Bennett adopts fire code by resolution or ordinance. The current adopted code can be found in the District's website. A free online version of the IFC can be found on the International Code Council website. For questions about any of these code requirements visit our website at www.BennettFireRescue.org or contact the Department's Community Risk Reduction Division at CRRDivision@BennettFireRescue.org or (303) 644-3572.