

Special Specification 5034

Fire Hydrant Relocate and Reconnect



1. DESCRIPTION

Furnish, install, relocate, and reconnect fire hydrant assemblies and supporting materials in conformance with the City of Colleyville requirements and details shown on the plans, described in this specification, and detailed in the City of Colleyville Infrastructure Construction Provisions and Details revised July 2014. Obtain necessary permits, provide testing as necessary, and request inspection of the completed water lines prior to being placed in service.

2. MATERIALS

Furnish all materials in accordance with the requirements shown on the plans and in this document.

Fire hydrants must comply with AWWA C 502, "Fire Hydrants for Ordinary Water Works Service."

Fire hydrants must be post type with compression main valve closing with the line pressure. All hydrants must be of the "traffic" type with easily replaceable frangible parts designed to break on traffic impact. Hydrants must be designed for a working pressure of 150 psi.

Fire hydrants must be Mueller Centurion or an equivalent as approved by the City.

- 2.1. **Main Valve Size.** Five and one-fourth (5¼") in. I.D. minimum.
- 2.2. **Inlet Connection.** Six- in. (6") mechanical joint or as otherwise shown on the contract drawings. Bolts, nuts, and washers used in flange and mechanical joint connections must be high-strength. Low alloy steel similar to CORTEN or equal.
- 2.3. **Depth of Bury.** Normally four (4') ft. unless otherwise shown on the plans or called for in the contract documents. The maximum permissible-depth of bury is six (6') ft. Fire hydrants installed between four (4') ft. and six (6') ft. depth must be installed with Grade Loc fittings as manufactured by Assured Flow Sales, Inc., or standard ductile iron fittings as described in section C 1.19 of the City of Colleyville Infrastructure Construction Provisions and Details revised July 2014.
- 2.4. **Barrel Sections.** Hydrants must have upper and lower barrel sections with the joint designed to be at least two (2") in. above finished grade. The union between the upper and lower barrels must be made by a traffic safety device such as a two-part safety flange, four-part segmental coupling, or breakable lugs in combination with breakable bolts. The design will permit rotation of the upper barrel to position the nozzles in any direction. Upper and lower barrel flanges must be integrally cast.
- 2.5. **Nozzles.** The upper barrel must include two (2) hose nozzles and one (1) steamer nozzle located on the same plane. All nozzles must be equipped with cap chains and gaskets for all nozzle caps. Nozzle caps to have one-in. (1") square nuts.
 - 2.5.1. **Hose Nozzles.** The two (2) hose nozzles must be two and one-half (2½") in. I.D. with National Standard threads.
 - 2.5.2. **Steamer Nozzle.** The steamer nozzle must be four and a half (4 1/2") in. I.D. (Mueller Gauge 4-482) with the following characteristics:

- Major Diameter - 4.982",
- Pitch Diameter - 4.820",
- Minor Diameter - 4.632",
- Root Diameter - 4.570",
- Threads per in. - 4", and
- 4.5" Hyro-Storz Adapter.

- 2.6. **Direction to Open.** Turn to left (counter clockwise).
- 2.7. **Operating Nut.** The operating nut must be one and one-half (1 1/2") in. pentagon measured flat to flat with a minimum of one (1") in. and must have a weather shield cast integrally with the nut.
- 2.8. **Color of Finish Paint above Ground Line.** Two coats of safety red over a shop prime coat.
- 2.9. **Paint.** Paint must be brushed on and not sprayed.
- 2.10. **Stem.** Provision must be made in the design of the stem to disconnect the stem from the hydrant parts above the standpipe breakpoint in the event of a traffic accident.
- 2.11. **Union Between Upper and Lower Stems.** The union between the upper and lower stems must be made by a breakable coupling. The design must be such that excessive turning torque on the stems in either the opening or closing cycle is not transmitted to the weakened section of the coupling.
- 2.12. **Drainway.** The drainway must be all bronze. Drain water must not come in contact with the internal cast iron parts of the shoe while exiting the hydrant through the drainway.
- 2.13. **Main Valve.** The main valve and seat ring must be removable through the upper barrel from above ground. The main valve seat ring must thread directly into a bronze insert.
- 2.14. **O-Rings.** O-rings must be furnished in lieu of stem packing.
- 2.15. **Hydrant Manufacturers.** Only those manufacturers whose hydrants have been specifically approved by the City's Standard Water/Sewer Products Committee will be approved in the City's water system. This approval will be based on the following items; disqualification of project may occur at any time as a result of failure to comply with the following provisions.
- 2.15.1. **Approvals.**
- 2.15.1.1. **Drawings.** Each manufacturer of fire hydrants manufactured under these specifications must have on file at the City certified assembly drawings of the hydrant proposed to be furnished. Any proposed exceptions, changes, or modifications of design must be accompanied by new detailed drawings and statement of changes made. Failure to meet this requirement is sufficient cause for disqualification. Drawings furnished must show principal dimensions, including metal thickness, construction details, and materials used.
- 2.15.1.2. **Experience Record.** No hydrant manufacturer will be considered which has not been regularly manufactured and in continuous use for at least ten (10) yr. in the United States. User references must be provided outlining products use for at least five (5) yr.
- 2.15.1.3. **Affidavit of Compliance.** An affidavit of compliance to the effect that the hydrant complies in all respects to these specifications must accompany each request for approval.
- 2.15.1.4. **Field Evaluation.** The manufacturer must provide a hydrant, at no cost to the City for a minimum one (1) yr. period of field evaluation and testing. The hydrant must perform in a manner acceptable to the City for the one (1) yr. trial period.

- 2.15.1.5. **Parts Availability.** The manufacturer must guarantee that all repair parts will be delivered to the City within two (2) working days of request.

The hydrostatic tests set forth in AWWA C 502 must be fully met and complied with.

Failure to meet any of the requirements set forth in AWWA C 502 or these specifications will be cause for rejection.

3. CONSTRUCTION

Relocate and reconnect fire hydrants at the locations shown on the plans or in approved standard locations. Perform work in a manner consistent with the plans and City of Colleyville standards and specifications and as described in this document.

City of Colleyville Water Standards are as follows:

- W1: Valve Detail with Box and Concrete Pad,
- W2: Fire Hydrant and Concrete Splash Pad,
- W3: Standard Fire Hydrant Meter Installation,
- W4: Water Embedment,
- W5: Horizontal Thrust Block W6: Vertical Tie-Down Block W7: Blow Off Detail,
- W8: 2" Combination Air Valve Offset Installation W9: 2" Combination Air Valve Installation,
- W10: 1" Water Service for 1" and ¾" Outlets,
- W11: 2" Water Service Details for 2" and 1.5" Outlets W12: Typical Meter Vault and Appurtenances,
- W13: Detector Check and Meter Detail, and
- W14: 6" Thru 10" Double Detector Backflow Preventer Assembly.

The specifications and standards can be viewed on the City of Colleyville's internet Home Page at www.colleyville.com.

- 3.1. **Fire Hydrant Leads.** All fire hydrant leads must be at least six (6") in. in diameter. Where fire hydrant leads are stubbed from mains eight (8") in. and larger in diameter, a gate valve must be installed in the hydrant lead between the fire hydrant and the main. Where fire hydrants are located along the major thoroughfares or streets with large volumes of traffic, a gate valve will be installed in the hydrant lead regardless of the size of the supply main if so directed by the City. On fire hydrant leads requiring gate valves the gate valve must be restrained to the main.
- 3.2. **Fire Hydrant Location.** Where possible, fire hydrants must be located so that the face of the fire hydrant is three (3) to five (5') ft. behind the back of the curb with the steamer nozzle facing the street. Fire hydrants will be located outside of curb returns at intersections and outside of all sidewalks.
The City may vary this location somewhat if street paving procedures require it.
- 3.3. **Depth of Bury.** The normal depth of bury is four (4') ft. unless otherwise shown. In no case will the depth of bury exceed six (6') ft. Where main depths are greater than six (6') ft., offsets, bends, and fittings as required must be used to reduce the depth of bury to no more than six (6') ft. Fire hydrants installed between four (4') ft. and six (6') ft. deep must be installed with Gradeloc or ductile iron fittings.
- 3.4. **Installation.** The hydrant must be set vertical and to a depth such that the center of the steamer nozzle is not less than sixteen (16") in. nor more than twenty (20") in. above curb grade.

Each fire hydrant must be set on a concrete slab as shown in the City of Colleyville standard detail W-2.

Around the base of the hydrant there must be placed not less than seven (7) cubic ft. of washed gravel to provide reservoir capacity so that the hydrant will completely drain when closed.

The hydrant must be carefully and firmly blocked against firm trench walls with Class "A" concrete. Provisions must be made to protect the hydrant drain from blockage.

4. MEASUREMENT

Fire hydrant relocate and reconnect will be measured for Payment per each, complete in place. Offsets, bends, fittings, or any supporting materials needed to complete relocating and reconnecting of the fire hydrant will be considered subsidiary to the price bid for the fire hydrant relocate and reconnect.

5. PAYMENT

The work performed with this Item and measured as provided under "Measurement" will be paid for at the unit price bid per each, complete in place. This price will be full compensation for furnishing all labor, tools, equipment and incidentals necessary to satisfactorily complete the work prescribed in the Document and as detailed on the plans. Miscellaneous piping, fittings, concrete blocking, sterilization, excavation, trench protection, embedment, and testing required to complete the work will not be paid for directly, but will be subsidiary to this Item unless otherwise shown in the plans.