



CHULA VISTA FIRE DEPARTMENT

FIRE PREVENTION DIVISION

STANDARD OPERATIONAL GUIDELINES

Section: 3104.00 - FPD - Plan Checks	Subject: Guidelines For Underground Fire Service Utilities	Page(s): 4
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SCOPE

These codes and standards shall provide the minimum requirements for the design installation, testing, and inspection of underground fire service utility systems in the City of Chula Vista:

- City of Chula Vista Fire Prevention Standard Operating Guidelines
- California Fire Code 2007 Edition
- California Building Code 2007 Edition
- NFPA 13 Current Edition
- NFPA 14 Current Edition
- NFPA 24 Current Edition
- Standard Drawings and Specifications and approved materials list of the appropriate Water District having jurisdiction for public systems when applicable.
- American Water Works Association

SYSTEM DESIGN, PLANS, PERMITS, CALCULATIONS, AND MATERIAL SUBMITTALS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

- Complete plans for underground components shall be submitted for approval well in advance of installation. Approval shall be obtained from the Chula Vista Fire Prevention Division prior to any installation. Underground fire service utility plan reviews can take up to 20 working days. Submit a minimum of three sets of drawings for review, additional sets may be requested upon review. Upon approval, the Fire Prevention Division retains a minimum of one set and an electronic copy. The contractor should provide additional sets as needed for approval.
- To receive an expedited review of 10 working days by the CVFD, an additional fee will be required per the master fee schedule.
- The Chula Vista Fire Department will only accept computer-generated plans for underground fire service utilities.
- The contractor shall provide an electronic copy of the plans and calculations for laserfiche importing in the Multi-page tif group 4 format at the time of final plan approval with a minimum resolution of 400 dpi. Changes in the field will require as-builts in an electronic copy prior to the building final. Note: when creating the CD-plans, calculations, and specification sheets shall all be part of a "single" electronic file.
- For all fees associated with the review and/or inspection of fire and life safety systems please see OPS # 3100.01. This fee schedule can be accessed through the following link:

http://www.chulavistaca.gov/City_Services/Public_Safety/Fire_Department/Safety/prevention.asp

- If a 2nd plan resubmittal and/or if a re-inspection is required, a fee shall be charged to cover expenses. Please see the current fee schedule for Fire Safety Engineering fees.

- Plans shall indicate all necessary engineering features, including all hydraulic reference nodes, thrust block sizes, pipe lengths and pipe diameters as required by the above named codes and standards. Complete, accurate legends for all symbols and abbreviations shall be provided on plans.
- The associated building permit project-tracking number (example: B07-1234).
- Complete listings and manufacturers technical data sheets for all system materials shall be included with all underground system submittals. All system materials shall be U.L./F.M. listed for fire service and approved by the Fire Prevention Division prior to installation.
- The California Contractors License number shall be provided with each submittal and/or stamped and signed by a licensed professional engineer.
- City of Chula Vista Business License/Fire and Life Safety Contractor License: Installing contractors will have both a City Business License and a Chula Vista Fire Department's Fire and Life Safety Contractor License.
- A hydraulic water flow analysis shall accompany the plans. This analysis shall show the actual flow and pressure for all hydrants and riser stubs. The Hazen Williams formula shall be used in the determination of these flows and pressures. The analysis shall show that the required fire flow is available at the hydrants and that simultaneously the sprinkler demand is available at the most demanding sprinkler riser.
- The system shall be designed and sized such that the maximum velocity in the pipe shall be 10fps at fire demand or sprinkler demand, which ever is greater.
- Calculations shall extend to the point at which the water supply data was determined.
- Water supply data is required to accompany an underground submittal. An official water flow letter can be obtained from the respective water authority. The water flow requirements shall be based upon the currently adopted California Fire Code. The date of the water flow test shall be no older than six months from the time of the plan submittal. **No reductions in fire flow will be granted for buildings protected throughout by an approved automatic fire sprinkler system.**
- All thrust blocks on private fire hydrant lines and fire sprinkler laterals shall be calculated and constructed in accordance with NFPA 24. Calculations shall be submitted and the resulting dimensions of thrust blocks shall be shown on the plans. A geotechnical report shall be provided to substantiate the soils claim (See Chula Vista Fire Department details for both example calculations and diagrams).
- Control valves must be provided in each source of water supply, such as tanks and pumps. A sufficient number of sectional valves must be provided so that not more than a combined total of five hydrants and sprinkler systems, or not more than three sprinkler systems must be out of service due to a single break. Sectional valves may be key-operated type.
- Provide class 200 pipe for all underground fire service utilities.
- Special design considerations may also be required with excessive high static pressures or lines in which fire pumps are installed. Chula Vista Fire department will require a water hammer study by a licensed professional engineer to determine if surge suppression will be required.
- Any piping not shown on this approved plan is not a part of this approval. Any additional piping that is to be installed will require a separate plan submittal requiring the approval from the Chula Vista Fire Prevention Division.

- The City of Chula Vista Fire Prevention Division will require the following inspections and tests as a minimum:
 - Thrust block pre-pour, trench and backfill inspection.
 - Components and wrap inspection
 - Tracer wire and continuity test
 - Underground hydrostatic test.
 - Underground flush.
 - Underground final
- No joints shall be installed under the building.
- Minimum fire hydrant size required (6" x 4" x 2 1/2" x 2 1/2").
- The civil engineer who designed the water system hereby certifies that this water system is in accordance with the requirements as prescribed by the Chula Vista Fire Prevention Division, the CFC and NFPA 24. This certificate shall be accomplished with a wet stamp and signature on the submitted plans.
- Breakaway spools or breakaway bolts are required. See the water agency standard details.
- Fire Department Connections (FDC's) shall not be located on any backflow device
- Fire Department Connections (FDC's) shall not be located on buildings unless approved by the Fire Marshal.
- Fire service laterals serving sprinkler systems shall have their own Post Indicating Valve (PIV). This PIV is in addition to and separate from valves on any backflow device.
- Post Indicating Valves shall be physically secured to an underground concrete anchor block via restraining rods, approved mechanical restraints, or restrained back to the next fittings.
- The Fire Prevention Division shall approve the location of the post indicator valve and the fire department connection. Fire department connections shall be visible, accessible, and installed at least 40 ft. away and separate from the building in approved locations within 50 foot of a fire hydrant (6" x 4" x 2 1/2" x 2 1/2").
- Additional check valves are required on private systems. The check valve shall be installed on the supply piping between the post indicator valve and the fire department connection. This is to isolate the sprinkler underground line from any hydrant system.
- All post indicator valves shall be installed with a supervisory switch, which sounds a supervisory alarm at a U.L. listed central receiving station (central station monitoring for certified system and central station remote service for non-certified monitoring systems).
- All post indicator valves shall be provided with a breakaway security lock. A set of keys shall be kept in the Knox Vault. The post indicator valve shall extend 36" to 44" above finished grade.
- Post indicator valves, and fire department connections shall be painted red (Rust-oleum safety red #2163 or equivalent).
- Fire Department Connections and Post Indicating Valves shall have a sign to indicate what buildings they serve. For a detail of this requirement please see the following link:

http://www.chulavistaca.gov/City_Services/Public_Safety/Fire_Department/PDFs/prevention/SignDetail1.pdf

- Fire sprinkler system underground piping with on-site fire hydrants shall be designed so that on-site fire hydrants will not be shut off when the sprinkler system is shut off from the post indicator valve.
- Fire hydrants shall be arranged so that when the Fire Department Connection is pressurized the on-site hydrants are not pressurized.
- The Fire Prevention Division shall require, from the installing contractor, a completed "Contractors Material & Test Certificate for Underground Piping" at the time of underground final inspection. Underground system piping will not pass the final inspection until the Fire Prevention Division receives this completed certificate.
- Blue reflective markers shall be installed to identify location of fire hydrants. These markers shall be visible from both directions of vehicle travel. On undivided roads, markers will be placed one foot from centerline in the direction of the fire appliance.
- On site fire hydrants, post indicator valves, and fire department connections located less than three feet behind the inside face of a curb or when no curb is provided, shall then be protected by guard posts set in concrete. For a detail of this requirement please see the following link:

http://www.chulavistaca.gov/City_Services/Public_Safety/Fire_Department/PDFs/prevention/Bollard.pdf

- Each sprinklered building will require its own separate post indicator valve and fire department connections.
- Fire department connections shall be equipped with listed plugs or caps. All protective caps shall be of breakable cast iron. Plastic caps are not permitted. The use of brass plugs is an acceptable alternative although not recommended due to their vulnerability to theft.
- Private fire service lines when supplying three (3) or more fire hydrants are required to be provided with two (2) points of connection with the public main. Distribution must be looped to provide at least 50 percent of the required fire flow in case of a single break. Dead end mains must be avoided.
- Private fire service lines shall be no less than eight (8) inches in diameter when serving fire hydrants and automatic fire sprinkler systems.
- Underground lateral supplies for sprinkler systems shall be a minimum of 6 inches for commercial properties and a minimum of 4 inches for residential properties (1 inch is the minimum required for dwelling properties). Tracer wire and locate tape shall also be provided for all fire sprinkler system laterals.
- Fire hydrant control valves shall be provided on the lateral in a road box at ten (10) feet from the fire hydrant. See the water agency standard details.
- City of Chula Vista Fire Department job card shall be kept on the project site at all times.
- Working plans shall be submitted for approval to the authority having jurisdiction before any equipment is installed, improved, or demolished.