



COALINGA FIRE DEPARTMENT

GREG DUPUIS, FIRE CHIEF

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CITY OF COALINGA FIRE DEPARTMENT		
FIRE PREVENTION STANDARD		
STANDARD TITLE:	405.012 REDUCED HYDRAULIC DEMAND SPRINKLER SYSTEM DESIGN	
STANDARD NUMBER: 405.012	EFFECTIVE DATE: October 26, 2022	REVISION DATE: October 26, 2022

PURPOSE

This policy provides an alternative, equivalent, reduced hydraulic design fire sprinkler standard to National Fire Protection Association Standard 13 (NFPA 13) under specific conditions. These conditions include light and ordinary hazard occupancy buildings less than 12,000 square feet, in areas where a fire sprinkler system is not required by the California Building Code (CBC) or California Fire Code (CFC) based on occupancy, specific use, allowable area or height increases, one- hour construction substitution, etc. The CFC has been locally amended in the Coalinga Municipal Code (FMC) to allow the use of this standard.

This policy permits a significant reduction in the hydraulic design area and the type of underground fire service required by NFPA 13, which results in lower installation costs, while still providing an acceptable level of fire protection for light and ordinary hazard occupancies. As this is not a nationally recognized design standard, insurance companies may not offer the normal fire insurance discount that is provided by a compliant NFPA 13 installation.

APPLICATION

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OPERATIONAL POLICY

Except as noted below, all other aspects of the reduced hydraulic design standard (including materials and installation) will conform to NFPA 13.

1. Use of this standard is subject to approval of the Fire Marshal, or designee, and is subject to the following conditions:
 - a. This standard will not be used where ceiling heights in a protected area exceed 20 feet, nor for buildings over two (2) stories in height.
 - b. This standard will not be used for the protection of paint spray booths which are required to be designed to NFPA 13, Extra Hazard Group II.
 - c. Use of this standard may preclude future changes to the building such as additions (including mezzanines) resulting in a building over 12,000 square feet in area or



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any future tenant changes to A-2 public assembly with occupant load of over 100, 1-4 adult daycare, or other building occupancy required to have NFPA 13 fire sprinkler protection by the CFC and CBC.

- d. This standard will not be used for protection of high piled storage.
 - e. Use of extended coverage fire sprinklers is not permitted.
2. Fire service underground:

Note: The provisions of this sub-section are applicable only where the Fire Department Connection (FDC) is connected to the riser after the check valve. If an FDC is located on the underground water supply pipe to the riser, a minimum four-inch (4") fire service with detector check and post indicator valve (PIV) is required. All pipe and fittings will be listed and installed for fire service. Use of CPVC three (3) inches or less in diameter for underground pipe from the detector check/PIV/FDC assembly to the riser transition piece is allowed subject to hydraulic calculations.

- a. A two-inch (2") fire service may be permitted in areas of the City of Coalinga (City) that receive water services from the City Water Division. This type of service is not currently offered by the Bakman Water Company, Pinedale County Water District, or the Malaga County Water District. A two-inch (2") fire service is a two-inch (2") domestic water service installed without a water meter or reduced pressure backflow device requirement. It is normally impossible to use a combination domestic/fire service water supply because of the reduced pressure principal backflow prevention device requirement. The resulting friction loss severely impacts hydraulic design.
- b. The water supply to the riser from the City installed service point box at the property line may be installed with any pipe approved for domestic water supply and buried a minimum of 12 inches per the California Plumbing Code (CPC). This pipe may be pressure tested at water system normal operating pressure.



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- c. The riser transition will be type "K" copper or other approved metal domestic water pipe above grade. Galvanized steel pipe is not permitted for domestic water lines by local ordinance, nor allowed on underground pipe by NFPA 13 standards.
3. Hydraulic design requirements:
- a. The remote area will be a minimum of 500 square feet (30% increase for sloped ceilings exceeding 2" in 12" is applicable).
 - b. A minimum of four (4) sprinklers will be used for the design area.
 - c. The maximum coverage area per head will be 130 square feet for both light and ordinary hazard.
 - d. The friction loss criteria noted below (from the public main through the two-inch fire service point box) will be included in the hydraulic calculations:
 - i. The City uses two- inch copper tube size polyethylene (PE) tubing for this installation. The interior diameter of this tubing is 1.629 inches.
 - ii. The designer will add 15.1 feet equivalent length for fittings used with the PE tubing (e.g., corp. stop and angle meter stop).
 - iii. The designer must know the exact length of PE tubing from the public main to the water service box and provide two (2) PVC elbows for the transition out of the service point box to the on-site supply line.
4. Other specific requirements:
- a. All sprinklers will be quick response for both light and ordinary hazard designs.



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- b. Fire sprinklers may be omitted under combustible construction roof projections over landscaped or pedestrian walkway areas in excess of four (4') feet in depth, provided the area under such projections is not used for storage or handling of any combustible material. Projections over loading docks, vehicle parking (including a porte-cochere), outdoor seating areas, and trash receptacles require sprinkler installation. Combustible concealed spaces above the projection, such as mansards require fire sprinklers to be installed within the space.
- c. For light-hazard occupancies, the "small room rule" of NFPA 13 may be used in rooms not exceeding 225 square feet (effectively a "single sprinkler, small room rule").
- d. Main drains will be one (1") inch in diameter. Larger drains will distort the main drain test results because of the relatively low water demand of these systems.
- e. All fire sprinkler systems with more than 20 sprinklers must be supervised and monitored as required by the CFC.

OPERATIONAL GUIDELINE

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PROCESS

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INFORMATION

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DEFINITIONS

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CROSS REFERENCES

Coalinga Municipal Code (FMC)

National Fire Protection Association (NFPA), Standard 13, Current edition

California Plumbing Code (CPC), Current edition California Building Code (CBC), Current edition California Fire Code (CFC), Current edition

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