COALINGA FIRE DEPARTMENT
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CITY OF COALINGA FIRE DEPARTMENT		
FIRE PREVENTION STANDARD		
STANDARD TITLE:	405.001 NON-HIGH RISE STANDPIPE REQUIREMENTS	
STANDARD NUMBER: **405.001**	EFFECTIVE DATE: **October 26, 2022**	REVISION DATE: **October 26, 2022**

PURPOSE

This policy has been established to provide direction for the design, installation and flow testing of standpipe systems for non-high rise buildings within the City of Coalinga (City) .

APPLICATION

This policy applies to the installation of standpipe systems in buildings not classified by the California Building Code (CBC) as a Highrise building. As allowed by National Fire Protection Association (NFPA), Standard 14, Installation of Standpipe and Hose Systems, standpipe systems in non-high rise building with fire pumps can be designed for the required standpipe flow and pressure utilizing a supply coming from a Coalinga Fire Department (CFD or Department) pumper engine connected from a fire hydrant to the building fire department connection (FDC). This policy is also applicable to buildings that require standpipe systems, but a fire pump is not needed for the fire sprinkler design. All standpipe systems are to be installed per this policy and the latest California Fire Code (CFC) and CBC adopted edition of NFPA 14.

OPERATIONAL POLICY

For a typical multi-story non-high-rise office or residential building, standpipe demand as required by NFPA 13 will always exceed fire sprinkler demand. Standpipe systems in modern building are nearly always combined with the fire sprinkler piping system primarily as a cost savings. Such a standpipe system is defined by the CFC as a "Class I, manual wet system" where a Department pumper engine is needed to meet standpipe system demand. All fire pumps are required to have check valves installed at the discharge of the fire pump and all FDC connections to the fire sprinkler system must be made to discharge side of the aforementioned check valve. When a fire pumper engine is pressurizing the fire sprinkler/standpipe system the fire pump is therefore bypassed with the greater flow and pressure of the larger pump. The fire sprinkler system design engineer is therefore tasked with supplying both a fire sprinkler system demand hydraulic calculation(s) utilizing the available public water flow and pressure supply with assist from the building fire pump as applicable and a separate standpipe hydraulic calculation utilizing a Department pumper engine as the sole water source.

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OPERATIONAL GUIDELINE

Buildings that require standpipe systems are typically multi-story and have a minimum of two (2) required stairways. For a building of this type, the simultaneous flow and pressure demand for the design of the system is 500 gpm at 100 psi at the two (2) upper most hydraulically remote standpipe outlets and 250 gpm at 100 psi at the other stairway uppermost outlet. For building with more than two (2) stairways, the additional stairwell standpipe has a demand of 250 gpm at 100 psi for the uppermost outlet up to a total demand in a fire sprinklered building of 1000 gpm. Additional stairs must also have standpipe systems but only the three (3) most hydraulically remote stairway standpipes must be calculated.

Fire sprinkler system plan submittals and hydraulic calculations that include standpipe systems are to include the following information:

1. Standpipe system hydraulic calculations are to use an CFD fire engine pump as the supply source as an installed fire pump is bypassed when CFD is pumping into the system. CFD fire engine pump curve is 1000 gpm at 150 psi.

2. Standpipe system hydraulic calculations are to originate at the fire department connection with CFD pump data. The remaining portions of the calculations are to be in accordance with the NFPA 14. Fire sprinkler system demand is not required to be added to standpipe system demand.

3. Standpipe plans are to have the required class (Class I for most installations) and Type (automatic wet or manual wet) of standpipe noted on the plans in accordance with CFC definitions.

4. For buildings with roof slopes less than 4:12, each standpipe system stairway riser is to be extended to 2-1/2 inch outlets on the roof. The most remote standpipe is to be equipped with two (2), 2½ inch hose valves for standpipe testing at the 500 gpm remote standpipe demand.

5. For buildings with roof slopes in excess of 4:12 the uppermost stair landing standpipe outlet is to have an adjacent exterior openable window with a clear opening area of a minimum 36" X 36" or a similar sized access panel located no more than 36 inches

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above the landing level for the purposes of directing flow test discharge. If such an opening cannot be provided, then a 3" drain pipe discharging to the building exterior with 2-1/2" swivel female hose coupling at the landing is required so that the flow test may be conducted utilizing an in-line pitotless 2-1/2 inch flow testing instrument.

6. Provide at least one (1) hose valve installation detail on the plans. If using pressure reducing hose valves, a drawing must be provided for the pressure reducing hose valve and one (1) for a non-pressure reducing hose valve (if installed).

7. Hose valves must be in-line hose valves and pressure gauge with isolation valve must be installed before the hose valve. No angle valves are permitted.

8. Hose valves installed in stairwells are to have the hose valve installed on the floor level stair landing.

9. The minimum supply pipe size for combined fire sprinkler/standpipe systems is to be 4 inch. Note that for some building designs, a 6-inch ground floor supply pipe to the most remote stairwell carrying the 500 gpm demand may be needed to overcome the friction loss.

10. Standpipe supply mains are to be provided with supervised and indicating control valves so that a single stairway standpipe riser can be taken out of service for maintenance without placing the remaining standpipe risers out of service.

11. For fire sprinkler systems combined with standpipe systems, fire sprinkler system connections for each floor are only to be supplied from one (1) of the standpipe risers. Cross connecting fire sprinkler laterals significantly complicates flow switch testing and is not permitted.

12. Each fire sprinkler lateral from a combined standpipe riser is to be provided with a supervised floor control valve, check valve, drain valve, and supervised water flow switch assembly.

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13. For standpipe systems having a demand up to 750 gpm, a standard 2-way FDC is acceptable. For demands in excess of 750 gpm, the FDC is to be a single 4-1/2 swivel female National Hose Thread (NHT) connection.

14. In every case, the Fire Marshal, or designee, has the authority to modify these requirements and the determination is to be made at the sole discretion of the Fire Marshal, or designee.

Class I, manual wet standpipe systems are required to be hydraulically calculated to provide the minimum flow and pressure specified in NFPA 14. The required acceptance and 5-Year flow test procedure is to be in accordance with the test procedures specified in Fire Prevention Manual, Five Year Test for Combined Standpipes Form, FPD-F-17. NFPA 14 allows the local authority having jurisdiction (AHJ) to modify the required flow test procedures to achieve the intent of the standard. FPD-F-17 provides alternative test procedures utilizing the fire pump specified for the fire sprinkler system design or where a fire pump is not installed, a method to utilize the available water supply from the public water main infrastructure.

PROCESS
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INFORMATION
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DEFINITIONS
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CROSS REFERENCES

California Building Code, Current edition

California Fire Code, Current edition

National Fire Protection Association Standard (NFPA)

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NFPA 14, Installation of Standpipes and Hose Systems, Current edition

Fire Prevention Manual
Five Year Test for Combined Standpipes Form, FPD-F-17