
POLICY: FIRE FLOW FOR BUILDINGS

Division of the State Architect (DSA) documents referenced within this publication are available on the [DSA Forms](#) or [DSA Publications](#) webpages.

DISCIPLINE(S)

Fire and Life Safety

PURPOSE

To provide clarification and a procedure for documenting acceptance of water supply data for firefighting and building exposure protection (fire flow, fire hydrant locations, and distribution piping). For the purposes of this document, the terms “water supply” and “fire flow” have the same meaning.

BACKGROUND

DSA is the authority having jurisdiction for construction projects of public schools (K–12) and community colleges and recognizes that the local fire authority (LFA) is inherently more familiar than DSA with the water supply infrastructure within its jurisdiction and operational procedures used in response to a fire emergency.

Some jurisdictions may have public water supply distribution systems capable of providing the minimum required flow in gpm and pressure to a school site, while other jurisdictions may not. Where jurisdictions do not have a traditional water distribution network or the supply is deemed insufficient, some LFAs may routinely utilize water tenders or other water supply resources. In consideration of this, DSA will accept the LFA water supply means for firefighting and building exposure protection.

Section 13147 of the California Health and Safety Code (HSC) directs that for construction of any new school building for which review, and approval is required under subdivision (a) of Section 39140 of the California Education Code (EDC) include the placement of fire hydrants and water piping as necessary to supply the water capacity required for protection of the building.

REQUIRED

The design professional in general responsible charge (DP) is responsible for verifying compliance with California Fire Code (CFC) Section 507, Fire Protection Water Supplies. Water supplies to campuses must comply with the minimum requirements of CFC Appendix BB. When the water supply is insufficient to meet required minimums, an alternate design means of providing the water supply for firefighting and building exposure protection may be proposed (see Section 2.2.1). The design professional shall coordinate any proposed alternate design means with the LFA.

To facilitate plan approval, a completed and signed form *DSA 810: Fire Life Safety Site Conditions Submittal* imaged on the fire access plan sheet is required as part of the plan submittal package.

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1. POLICY

1.1 New Campus: Fire flow tests are required for the establishment and construction of a new campus, and for rehabilitation projects.

1.2 Existing Campus: Fire flow tests are required for construction of a new building, addition to an existing building, or associated with a rehabilitation project.

1.3 Fire flow tests are to be performed in accordance with NFPA 291, Recommended Practice for Fire Flow Testing.

1.4 For the purposes of design, fire flow information may be obtained from the LFA, water purveyor, or from an actual flow test conducted in accordance with NFPA 291. As an option, DSA will accept computer modeled water supply information provided in writing by the water purveyor. Designs based on computer modeling must be subjected to an actual flow test performed as directed in Section 1.3 above to confirm design upon completion of installation.

1.4.1 For fire flow testing requirements during declared drought conditions, see DSA Bulletin (BU) 15-02: *Water Flow Tests for Fire Protection Systems During Drought Conditions*.

1.5 A completed and signed form DSA 810 is required for proposed construction of any new buildings, additions to existing buildings or rehabilitation projects, and in support of proposed design alternates necessary to achieve compliance with fire department access and water supply requirements.

1.6 Fire hydrants, when required, shall be designed to supply the minimum required flow from area fire hydrants as determined by CFC Appendix BB, Table BB105.1, but shall be not less than 1,500 gpm at 20 psi residual pressure.

1.7 In rural areas, and urban areas where the minimum required flow cannot be provided by the water supply infrastructure, it shall be the policy of DSA to accept the LFA approval of proposed or existing water supplies, and the number and placement of fire hydrants. The acceptance by the LFA shall be documented on a completed form DSA 810 imaged onto the fire access site plan. The LFA acceptance indicates to DSA that the water supply meets the minimum requirements of the CFC or that a proposed alternate design means is acceptable for building fire protection purposes.

The LFA may decline to review fire flow or on-site fire hydrant placement by providing a statement in the “comments” section of form DSA 810. In such instances, DSA will review the project for compliance with CFC minimum requirements.

1.8 DSA shall review the submitted plans for adequate water supply and pressure for site fire suppression operations, proposed on-site fire hydrants, and automatic fire sprinkler systems (AFSS) to ensure that the infrastructure (including size of required tanks and or fire pumps), piping, water flow and pressures are sufficient. (For fire sprinkler systems, see DSA Policy (PL) 10-01: *Plan Submittal Requirements Automatic Fire Sprinkler Systems (AFSS)*).

2. PROCEDURE

2.1 Preparation

The minimum fire flow in gallons per minute (gpm) and pressure (psi) serving the campus shall be based on CFC Table BB105.1. Prior to submitting a fire access site plan to DSA as part of a project submittal, the design professional (DP) shall first verify that the available water supply in gpm and pressure to the campus meets the minimum requirements of CFC Appendix BB.

Water supply availability shall be documented in writing by the DP at time of project submittal, sourced from the local fire authority, water purveyor, or an actual flow test performed in accordance with NFPA 291. As an option, written water supply analysis by computer model performed by the water purveyor is permitted.

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Where fire flow minimum requirements cannot be met in accordance with the CFC, the design professional shall notify the school district of the need for an alternate design means for firefighting and building exposure protection. The school district official shall sign form DSA 810 acknowledging that the district understands and accepts the alternate design means.

2.2 Site Plan

The design professional shall provide a fire access related site plan reflecting all required information as noted on form DSA 810 for LFA acceptance.

2.2.1 Alternate design means and methods allowed by CCR Title 24, Part 1, Section 4- 404 (CAC) and CFC Appendices BB and CC for firefighting, shall be submitted to the LFA for consideration and acceptance.

Alternate design means and methods proposed for water supplies shall reflect equivalency with, but need not be more restrictive than, the minimum CFC requirements.

Alternate design means and methods shall be requested in writing to the LFA. Upon acceptance by the LFA, a written description of the accepted alternate design means, or method shall be included on the fire access site plan.

If the LFA chooses not to review a requested alternate design, it shall be submitted to DSA as part of the project design package at time of initial project submittal.

Where proposed alternate design means include on-site water storage tanks and or fire pumps, the initial project submittal package must include manufacturer's product and installation documentation and tank sizing calculations. For above-ground water tanks, submittals must include structural calculations for foundation and tank designs.

Where water tanks for fire protection and or fire pumps are a deferred submittal, the project manual shall include the design basis, including any supplemental documentation or calculations.

2.2.2 Per California Code of Regulations (CCR) Title 19, Public Safety, Section 1.07 (re: Hall v. City of Taft), local ordinances do not apply to public school project sites. Minimum code and standards requirements will be enforced, as adopted and amended in California Fire Code, Chapter 80. However, the connection to city or county water utilities on the public side of the project shall comply with local specifications and ordinances. It is the school district's responsibility to identify and comply with all such applicable statutes and regulations.

2.3 Items Reviewed but not approved by the LFA

Where the LFA does not accept the design professional's proposed alternate design; the LFA must provide comments on form DSA 810. DSA's regional office Fire and Life Safety staff will review and evaluate the proposal considering LFA comments on the issues and, as the authority having final jurisdiction, will make determinations based on minimum requirements found in the CFC.

2.4 Submittal to DSA

The design professional is responsible for, and shall ensure that, the fire access site plan included as part of the initial project submittal reflects compliance with the emergency vehicle access and fire protection water supply requirements outlined in CFC Sections 503 and 507. Any Issues and or changes in design or materials that affect emergency vehicle access, or the fire protection water supply must be resolved and re-submitted to DSA for review and approval. Changes to the project where a design alternate has already been accepted by the LFA must be acknowledged by the school district and resubmitted to the LFA for re-acceptance. The design professional shall provide written documentation describing the alternate conditions, design, or methods accepted by the LFA.

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All information, as requested on form DSA 810, shall be permanently included on the fire access site plan when submitted to DSA and will become part of the archived record set.

REFERENCES:

2022 Title 24, Part 1, California Administrative Code (CAC)

2022 Title 24, Part 2, California Building Code (CBC) – Section 903

2022 Title 24, Part 9, California Fire Code (CFC) – Sections 503, 507, and Appendices BB and CC

A DSA Policy is a formally established set of governing statements based on law and code objectives, addressing any aspect of DSA's review and approval of plans and specifications and construction oversight programs that is not clearly addressed by code. A Policy also may specify administrative or technical requirements that are not yet addressed within Title 24, but are deemed important and necessary to fulfill code objectives in advance of adoption into the code.