

FIRE PROTECTION ENGINEERING DOCUMENTS

COMPARISON OF MINIMUM REQUIREMENTS | NOVEMBER 2023

Fire Protection, as an industry, continues to undergo massive change. The responsibility of the Professional Engineer for fire protection is becoming better-defined, with several states and a joint position statement by ABET, AFAA, AFSA, ASCET, FSSA, NCEES, NFSA, NICET, and SFPE addressing minimum requirements for engineering documents.

This table is a quick comparison of the minimum standards for “engineering documents” for fire suppression systems, sometimes called “bid documents”, “design/build specs”, or “performance specifications”. These are supposed to be prepared by the responsible design professional, and are entirely separate from “Installation” or “Shop Drawings”.

Engineering Documents	Joint Statement ¹	Florida ²	Illinois ³	South Carolina ⁴
Scope of Work				
Identify scope of work	•	•	•	•
Identify applicable codes and standards, including specific editions	•	•	•	•
Code compliance: Identify any trade-offs used or allowed	•			
Engineer responsibility set by state law		•	•	•
System & Components				
Type of System (wet, dry, pre-action, standpipe)	•	•	•	•
Select components needed	•	• ⁵	• ⁶	
Areas to be protected (or omitted)	•	• ⁷	• ⁷	• ⁷
Establish zoning (consider suites, horizontal exits, smoke control systems)	•			
Identify monitoring and interactions/interlock with other systems		•		
Fire pump flow and pressure rating		• ⁸	•	•
Water storage tank requirements and capacity		•	•	•
Hazards				
Hazard Classifications	•	•	•	•
Classify hazards, storage arrangement, and commodities	•	•	•	•
Establish the design criteria	•	•	•	•
Owner's Certificate for storage occupancies		•		

¹ Joint Position Statement *The Engineer and Engineering Technician Designing Fire Protection Systems*, endorsed by ABET, AFAA, AFSA, ASCET, FSSA, NCEES, NFSA, NICET, NSPE, and SFPE: <https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/sfpenspenicetascetncees>

² Florida Statutory Charge in 61G15-32, 15 Nov 15 2023 at www.flrules.org/gateway/ChapterHome.asp?Chapter=61G15-32

³ Technical submission requirements (for building permit, must be separate from layout documents) under Illinois Professional Engineering Practice Act 225 ILCS 325, accessed 15 Nov 2023 at www.ilga.gov/legislation/ilcs/documents/022503250K3.htm, and <https://idfpr.illinois.gov/content/dam/soi/en/web/idfpr/forms/dpr/design-code-manual.pdf>, with the Code & Standard committee's recommended criteria accessed 15 Nov 2023 at <https://firesprinklerassoc.org/wp-content/uploads/2014/02/SprinklerSubmission.pdf>

⁴ South Carolina Fire Sprinkler Specification Sheet, Required under State Law Section 40-10-250, accessed 15 Nov 2023 www.scstatehouse.gov/code/t40c010.php

⁵ Includes backflow prevention and metering specifications, including maximum allowable pressure drop.

⁶ Includes FDC type and location, water service size, standpipe type and class, required standpipe flow, required valves, and generator requirements

⁷ As identified by determining the “scope of work”

⁸ For high-hazard, storage, or factory occupancies.

Engineering Documents

Joint Statement¹

Florida²

Illinois³

South Carolina⁴

Water Supply

Determine available water supply	•	• ⁹	• ¹⁰	• ¹¹
Confirm water supply viability, including adjustments	•	•	•	
Identify water quality or environmental factors that would affect systems	•	•	•	

Layout & Criteria

Conceptual system layout	•			
Hydraulic calculations to verify adequacy of water supply	•			
Determine sprinkler spacing		• ¹²	•	
Set Hanging & Bracing criteria	•	• ¹³		•

Specifications

Determine allowable materials		•	•	
Specify requirements for acceptance testing		•		
Specify performance of components		•	• ¹⁴	
Revise engineering documents when installation drawings materially deviate		•	•	

⁹ Includes point of service, main size and location, whether dead-end or circulating, distance to nearest circulating main if a dead-end, minimum duration or reliability for most hydraulically-demanding design area. Flow test data must include date, time, who conducted the test, test elevation, static pressure, residual pressure, flow rate, hydrant coefficient, location of test.

¹⁰ Includes date, location, witness, static pressure, residual pressure, flow, source, adjustment, and water quality

¹¹ Includes date, static pressure, residual pressure, distance to base of riser, elevation, source type, test conductor.

¹² And temperature rating requirements

¹³ Including all structural openings.

¹⁴ As well as quality of workmanship, equipment, and construction systems.