



Water-Based (formerly Automatic Sprinkler) Systems Layout

Level I Content Outline Standard Model/CBT

The skills and knowledge listed under each task are suggestive of those involved in that task, but are not intended to constitute an exhaustive listing.

1.1 Safety

Questions related to this task make up 2 - 5% of the exam.

1.1.1 Follow Safety Requirements.

Knowledge:

OSHA regulations (Parts 1910 and 1926)
First aid procedures

Skills:

Comply with safety requirements as posted.
Locate first aid equipment.
Apply basic first aid.
Use personal protection equipment.
Recognize tripping and falling hazards at the worksite.
Recognize safety hazards and notify supervisor and/or site safety representative as appropriate.
Recognize basic electrical hazards.
Use ladders safely.

1.2 Contract Documents

Questions related to this task make up 7 - 10% of the exam.

1.2.1 Find information in plans and specifications.

Knowledge:

Types of documents included in plans and specifications (e.g. sprinkler, mechanical, architectural, electrical), and the purpose and parts of each

Skills:

Identify applicable sections of specs and plans.
Identify symbols on a construction drawing.

1.3 Research

No tasks at this Level

1.4 Survey Existing Conditions

Questions related to these tasks make up 13 - 15% of the exam.

1.4.1 Check and update building plans.

Knowledge:

Types of information in existing building plans and documents

Skills:

Confirm building layout and note changes.
Make simple measurements
Transfer information from notes to drawings.

1.4.2 Obtain simple field data for existing fire protection systems.

Knowledge:

Types of information in existing sprinkler system plans and documents

Skills:

Obtain simple field data such as information placards and data plates.
Recognize major components (i.e. control valve, alarm and dry type valves, alarm devices) of all system types: wet (including antifreeze), dry, preaction, and deluge).

1.4.3 Identify elements of building construction.

Knowledge:

NFPA13, 13R, 13D

Skills:

Identify building construction components.
Recognize combustible and non-combustible materials.

1.5 Codes and Standards

Questions related to this task make up 7 - 10% of the exam.

1.5.1 Identify work covered by major standards.

Knowledge:

Scope of NFPA 13, 13R, 13D, and other standards applicable to water-based fire protection systems layout (14, 20, 22, 25, etc.)
Scope of IBC

Skills:

Identify the standards that apply to various roles and functions related to fire protection systems.
Recognize sources of codes and standards and their approval processes.



1.6 System Layout

Questions related to these tasks make up 53 - 56% of the exam.

1.6.1 Identify basic system types and major components.

Knowledge:

NFPA 13, 13R, 13D

Skills:

Identify the four basic sprinkler systems—wet (including antifreeze), dry, preaction, deluge—and their basic functional differences.

Identify a standpipe system.

Identify a fire pump system.

1.6.2 Recognize basic hazards and occupancies.

Knowledge:

NFPA 13

Skills:

Define hazard classifications (light, ordinary I and II, extra I and II).

Recognize typical examples of occupancies for each hazard classification.

1.6.3 Identify building features.

Knowledge:

Building features as defined in NFPA 13, 13R, 13D, IBC

Skills:

Identify basic building features (atrium, dormer, mezzanine, etc.).

1.6.4 Identify types of water supplies.

Knowledge:

NFPA 13, 13R, 13D

Skills:

Identify the features and devices of different types of water supplies as defined in NFPA 13.

Identify the characteristics of pipes used in underground piping.

1.6.5 Identify the components of standpipe systems.

Knowledge:

NFPA 13, 14

Skills:

Identify basic components of standpipe systems and their features.

1.6.6 Identify components of fire pump systems.

Knowledge:

NFPA 20

Purpose of fire pumps

Skills:

Identify basic components of fire pump systems and their features.

1.6.7 Draft a simple sprinkler system layout.

Knowledge:

NFPA 13, 13R, 13D

Skills:

Identify and layout basic components of sprinkler systems and their features.

Identify and layout basic piping configurations (e.g. tree, loop grid, etc.).

Properly space sprinklers in a simple layout.

1.6.8 Calculate basic hydraulic parameters.

Knowledge:

Elements of basic hydraulics

NFPA 13, 13R, 13D

Hydraulic formulas (e.g. Hazen-Williams, pressure loss or gain through elevation, pressure at an orifice, flow from orifice)

Skills:

Properly use basic hydraulic terminology and relate it to the functions of water flow.

Perform elementary hydraulic calculations.

Use basic algebra to solve simple hydraulic equations.

Use a calculator.

Recognize the Hazen-Williams formula and identify its variables.

1.6.9 Identify components of simple sprinkler systems required for inspection, testing, and maintenance.

Knowledge:

NFPA 13, 25

Skills:

Incorporate basic inspection, testing and maintenance device requirements into a simple system layout.

Identify simple sprinkler system inspection, testing, and maintenance components and their purposes.

1.6.10 Identify hangers and fasteners.

Knowledge:

NFPA 13, 13D

Skills:

Read and interpret manufacturer's technical requirements.

Identify basic types of hangers and specialized fasteners.

1.6.11 Identify the materials, devices, and components used in sprinkler systems.

Knowledge:

NFPA 13

Skills:

Read and interpret manufacturers' information

Read and interpret project specific submittal data

Identify materials, devices, and components.

Prepare a complete basic material list.



1.7 Submittal and Approval Process

Questions related to this task make up 4 - 7% of the exam.

1.7.1 Compile Submittal Package.

Knowledge:

Purpose and parts of a submittal package

Skills:

Compile a submittal package.

1.8 Project Management

Questions related to these tasks make up 4 - 7% of the exam.

1.8.1 Coordinate information from other disciplines.

Knowledge:

Types of contract documents

Types of job-specific shop drawings

Skills:

Obtain information (e.g. CAD files, plans, specs, flow data) from others (e.g. architects, engineers, trades).

1.8.2 Compile documents for a closeout package.

Knowledge:

NFPA 13, 13R

Skills:

Compile the documents for a closeout package.

Identify the documents required for closeout and the contents of each.