



Water-Based (formerly Automatic Sprinkler) Systems Layout

Level III – General Plans Preparation 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.

3.1 Safety - No tasks at this level

3.2 Contract Documents

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

3.2.1 Evaluate and apply plans and specifications.

Knowledge:

Purposes and parts of contract documents
Purposes and parts of plans and specifications

Skills:

Evaluate and apply all references to fire protection contained within specifications and plans (e.g. hangers, painting, valves, cutting and patching, fire proofing).
Identify and address discrepancies between specifications, codes, standards, and contract documents.

3.3 Research - No tasks at this level

3.4 Survey Existing Conditions

Questions related to this task make up 10 - 15% of the exam.

3.4.1 Review plans.

Knowledge:

Purposes and contents of building and system plans and documents

Skills:

Verify and review survey and final drawing for compliance with codes and standards.

3.4.2 Review and evaluate existing fire protection systems.

Knowledge:

NFPA 13, 13R, 13D, 14, 20, 22
Purposes and contents of plans and documents related to an existing fire protection system

Skills:

Review and evaluate drawings of existing systems.
Evaluate appropriateness of existing system and modify as necessary.

3.4.3 Evaluate building construction to identify fire protection needs and constraints.

Knowledge:

NFPA 13, 14

Skills:

Evaluate building construction as it applies to layout.

3.5 Codes and Standards

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

3.5.1 Evaluate applications of standards.

Knowledge:

NFPA 13

Skills:

Evaluate the applicability of NFPA standards to specific situations.

3.6 System Layout

Questions related to this task make up 60 - 70% of the exam.

3.6.1 Determine appropriate applications of system types.

Knowledge:

NFPA 13

Skills:

Review and determine appropriate applications of water-based systems.
Identify the functions of non-water-based system types and their applications.

3.6.3 Apply standards to complex building features.

Knowledge:

NFPA 13

Skills:

Research manufacturer's technical recommendations.
Read and interpret erection drawings.
Apply standards to special or complex building features.
Follow proper channels to resolve design questions.

3.6.4 Lay out a tank system.

Knowledge:

NFPA 22

Skills:

Identify the purposes and components of various types of tanks.
Recognize tank exposures such as freezing, fire, etc
Select the type of tanks, proper materials, pumps, and piping and apply to the system layout.

**3.6.8 Evaluate sprinkler systems.****Knowledge:**

NFPA 13

Skills:

Evaluate and determine the adequacy of sprinkler systems and system requirements, including storage arrangements.

Verify the effective use of cost efficient methods in a layout.

Identify the nature and purpose of fluid delivery-time programs for dry systems.

3.6.10 Evaluate inspection, testing, and maintenance results.**Knowledge:**

NFPA 13, 14, 20, 25

Skills:

Recognize and resolve discrepancies between anticipated and actual results for standard water-based systems tests such as fire pump performance tests, dry system trip tests, main drain tests, etc.

3.6.11 Select appropriate fire stopping applications.**Knowledge:**

Sources of fire ratings

Skills:

Research manufacturer's listing requirements.

Identify and apply complex fire stopping requirements.

Select applicable fire stopping materials.

3.6.12 Verify compliance of water-based system layout and plans.**Knowledge:**

NFPA 13, 14, 20

Skills:

Review the layout and plans for a water-based system for compliance with contract documents and standards

3.6.13 Comply with loading and seismic requirements for hangers, bracings, and restraints.**Knowledge:**

NFPA 13

Skills:

Research manufacturers' listing requirements.

Recognize the implications of building construction for supporting the load of the fire protection system.

Apply seismic bracing as required.

Follow proper procedures to verify load capacity when necessary.

3.6.14 Evaluate a materials and fabrication stocklist.**Knowledge:**

NFPA 13, 14, 20

Skills:

Read and interpret project-specific submittal data. Research manufacturers' information.

Review prepared stock list.

Review stock list against contract requirements.

Evaluate stock list against system requirements.

3.6.15 Coordinate interfaces with other fire protection systems.**Knowledge:**

NFPA 13, 20, 72

ASME A17.1

Skills:

Research manufacturers' recommendations.

Read and interpret contract documents.

Coordinate the system layout, configuration, compatibility, and communication between water-based system and fire alarm systems.

Coordinate water-based systems with elevator machine equipment and AHJ requirements.

3.7 Submittal and Approval Process

- No tasks at this level

3.8 Project Management

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

3.8.1 Coordinate with other disciplines.**Knowledge:**

Roles, functions, objectives, and constraints of other disciplines

Skills:

Read and interpret contract documents.

Read and interpret job-specific shop drawings.

Work with other disciplines to prepare a project schedule.

3.8.2 Develop a project schedule.**Knowledge:**

Project management tools, e.g., Gantt charts, WBS

Skills:

Create and manage a project schedule.