# Water-Based Systems Layout Certification

## Level IV Content Outline
(Updated Exam Release Date: July 8, 2024)

### Engineering Technician

The candidates for NICET certification at Level IV in Water-Based Systems Layout should have the knowledge, experience, and skills needed to supervise other technicians. Their work includes complex or specialized water-based systems. They have a comprehensive understanding of codes and standards. Level IV technicians have at least 10 years of experience in water-based systems layout.

### 4.1 Safety and Environmental Compliance
(Questions related to these tasks make up 1-11% of the exam.)

- 4.1.1 Manage compliance with environmental requirements.  
- 4.1.2 Manage personnel safety.  

### 4.2 Contract Documents
(Questions related to these tasks make up 1-9% of the exam.)

- 4.2.1 Review contracts.  

### 4.3 Survey Existing Conditions
(Questions related to these tasks make up 1-11% of the exam.)

- 4.3.1 Evaluate existing complex fire protection systems.  
- 4.3.2 Plan internal system obstruction investigations.  

### 4.4 Codes and Standards
(Questions related to these tasks make up 29-39% of the exam.)

- 4.4.1 Interpret the intent of fire protection codes/standards.  
- 4.4.2 Identify the differences between NFPA standards and FM Global data sheets.  
- 4.4.3 Address revisions between new and previous editions of codes/standards.  

### 4.5 System Layout
(Questions related to these tasks make up 35-45% of the exam.)

- 4.5.1 Layout sprinkler systems with special occupancy requirements (per NFPA 13).  
- 4.5.2 Mitigate corrosion issues.  
- 4.5.3 Resolve fire pump system issues.  
- 4.5.4 Resolve issues with multiple considerations (e.g., changes in occupancy, system types, density, water supply).  
- 4.5.5 Resolve water supply issues.  
- 4.5.6 Evaluate system hydraulics.  
- 4.5.7 Hydraulically calculate complex systems.  
- 4.5.8 Apply advanced concepts of bracing/restraints (e.g., seismic, end head restraints).  
- 4.5.9 Coordinate complex interfaces with other fire protection systems.  
- 4.5.10 Incorporate pre-engineered system layouts (e.g., kitchen hood systems).  

### 4.6 Project Management
(Questions related to these tasks make up 5-15% of the exam.)

- 4.6.1 Oversee management of multiple projects.  
- 4.6.2 Manage subcontractors.  
- 4.6.3 Develop project budgets.  
- 4.6.4 Monitor project progress and manage expenses.  
- 4.6.5 Prepare complex maintenance or testing plans.  

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April 26, 2024   Footnote number is linked to a reference on the General References listing

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