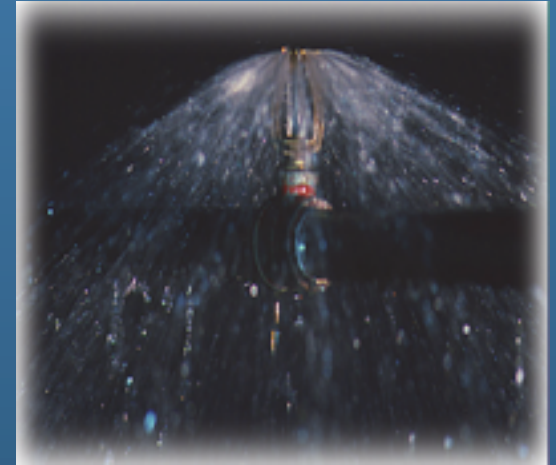


Fire Protection



Kohler Ronan, LLC

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Learning Objectives

After completion of this course, participants will be able to:

- 1. Determine when to provide sprinklers and/or standpipes for a project.**
- 2. Identify different types of sprinkler systems and their various components.**
- 3. Perform basic calculations required for sprinkler design.**

Overview

- 1. Codes & Standards**
- 2. Types of Sprinkler Systems**
- 3. Types of Sprinklers**
- 4. Other Fire Protection Equipment**
- 5. Types of Standpipe Systems**
- 6. Gaseous Systems**
- 7. Water Supply**
- 8. Fire Pumps**
- 9. Other Architectural Concerns**

Actual Case Study

February 21, 2009

Wilton, CT



0754 **911 calls begin**

0800 **Engine 1, Truck 5, Engine 2 Dispatched /
Responding**

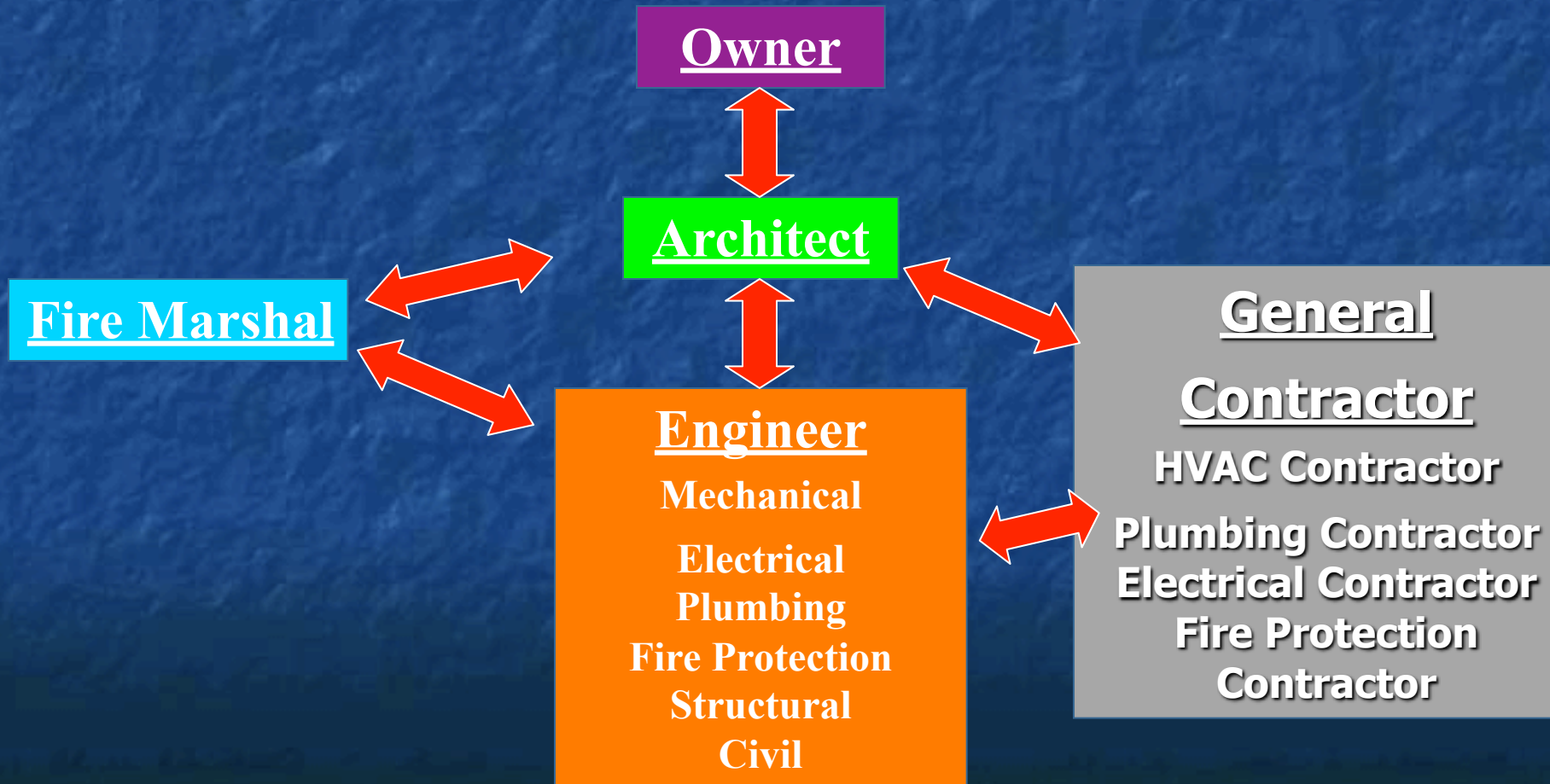


0811

1st victim found

Actual time Stamp	Action	Time from initial call	
075438	911 calls		
080003	Dispatched FD		
080258	E1 on scene	+/-8minutes	Time from having been on scene
080349	line stretched more pressure	+/- 9 minutes	+/- 1 minute
080822	E2 on Scene & hydrant water	+/- 14 minutes	+/- 5 minutes
081149	1 st victim found	+/-17 minutes	+/- 8 minutes
081831	victim out	+/- 24 minutes	+/- 15 minutes

Project Organizational Chart



Codes & Standards

What Codes?

IBC with CT supplement

CT State Fire Code

**NFPA: 101, 13, 20, 24, 25,
409, etc.**

Fire Protection Design Process

- **“What is Required?”**
- **IBC with CT Supplement**
 - **Define “Use Group”**
 - **Assembly, Education, High Rise**
- **CT State Fire Code & Supplement**
- **Architectural “buy-offs”**
- **Insurance Requirements**

Codes & Standards

IBC with CT supplement:

CT Fire Safety Code

Tells us when to install sprinklers & standpipes

NFPA 13:

Tells us how to install Sprinklers

NFPA 14:

Tells us how to install Standpipes

NFPA 20:

Tells us how to install fire pumps

NFPA 409:

Tells us how to protect aircraft hangers

Codes & Standards

NFPA 13D:

Standard for Sprinklers in One and Two Family Houses

NFPA 13R:

Standard for Sprinklers in Buildings up to 4 stories, dorms etc.

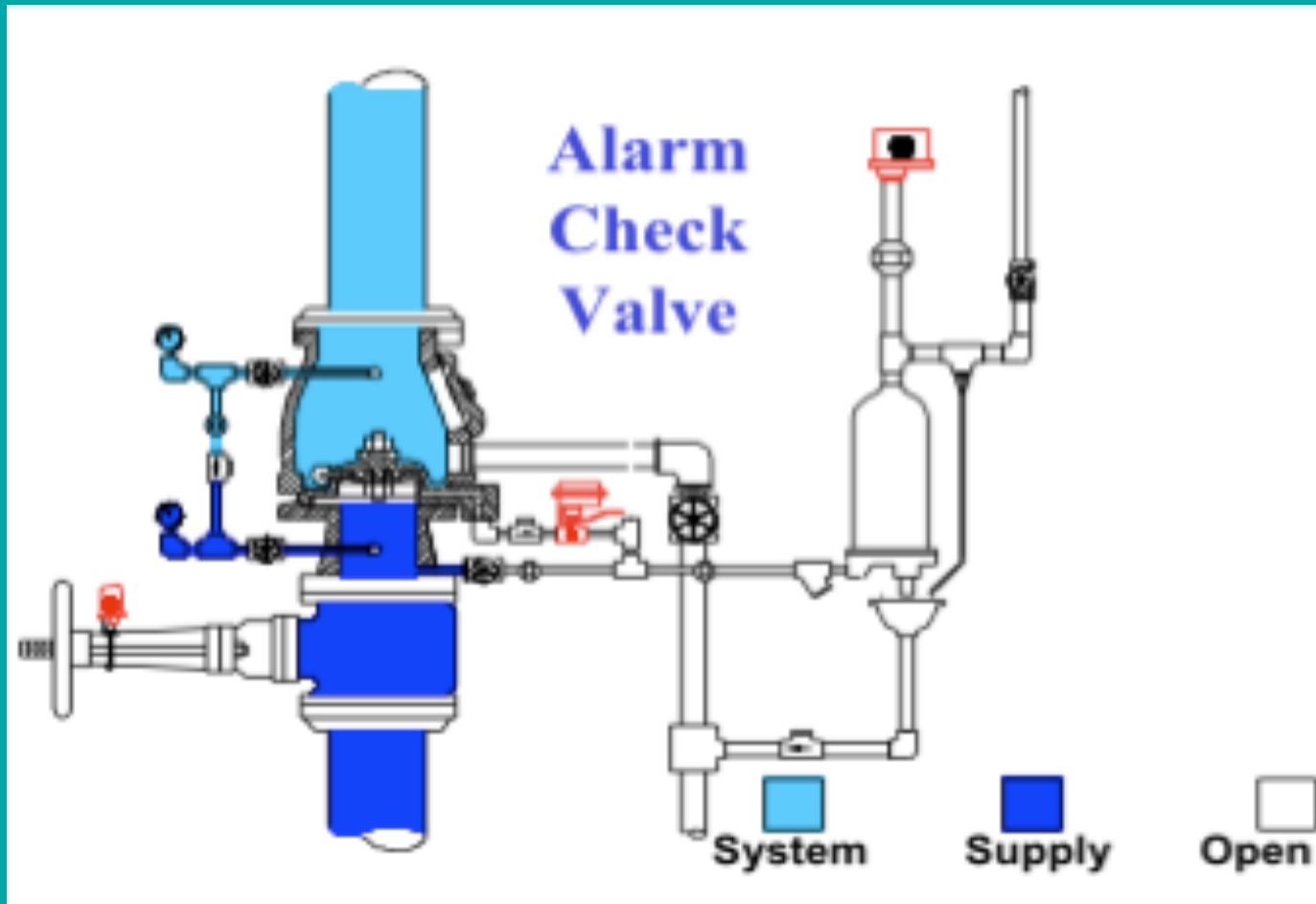
Sprinkler Spacing

Hazard	Max Area Covered By 1 Sprinkler (Sq. Ft.)	Max Distance Between Sprinklers
Light	225	15
Ordinary	130	12 - 15
Extra	100	12

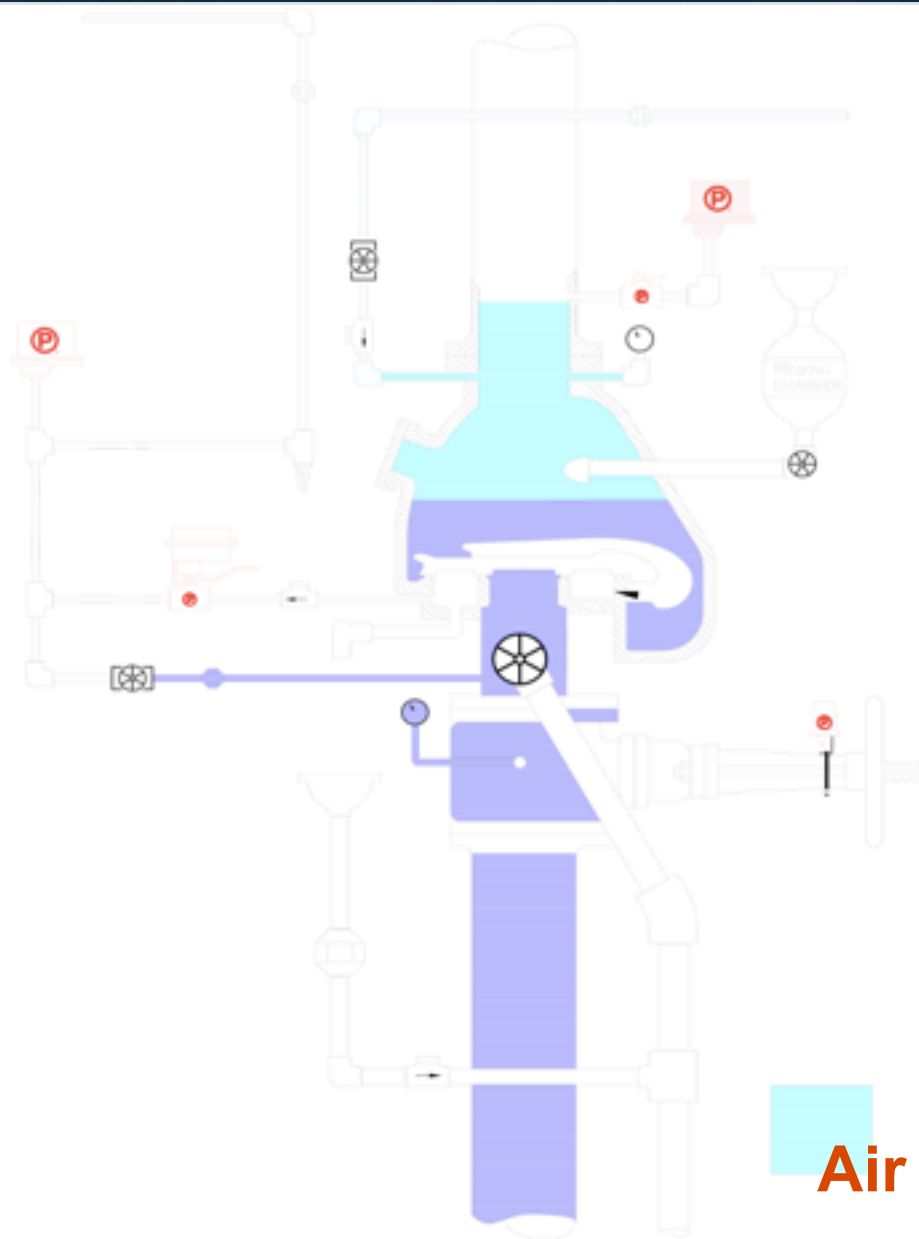


Types of Sprinkler Systems

Wet System Piping and Components



CUT AWAY OF A DRY PIPE VALVE



Air

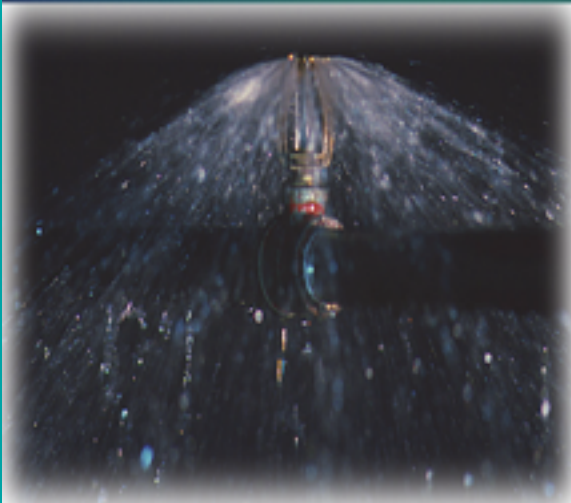
Water

Open

Preaction Sprinkler Systems

- Like Dry Systems except they also use heat and smoke detection to activate
- Used when water damage is a concern
- Considered a “high end” dry system
- Utilized in museums, computer rooms etc.

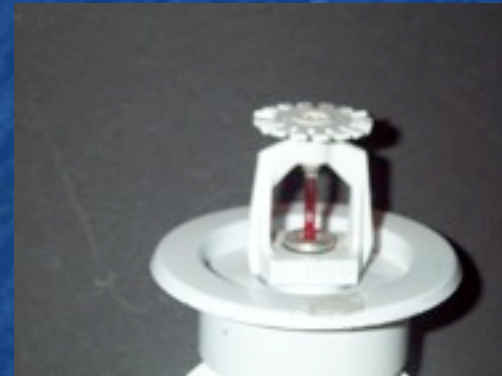
Types of Sprinklers



Pendent Sprinklers



Exposed



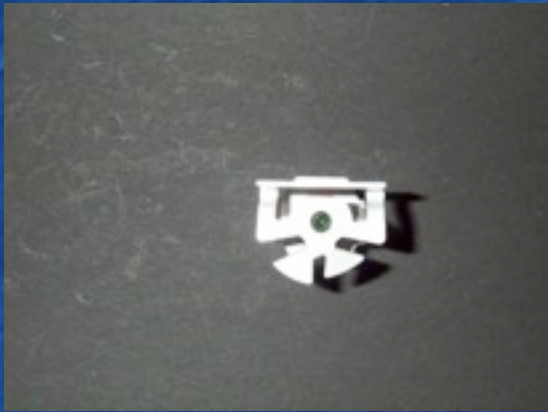
Semi-Recessed

14.8 gpm - +/-30 gpm

Concealed Sprinkler Heads



Sidewall Sprinklers



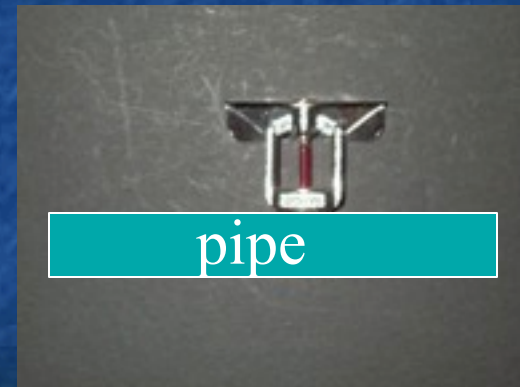
Concealed



Exposed



Semi-Recessed



Vertical

Standpipe Design



Types of Standpipe Valves



Class I



Class II



Class I



Class III

Standpipes

Where are they Required in Connecticut

The Basics

- IBC with CT supplement
 - All buildings in which floor level is $>30'$ above or below the lowest FD access
 - As revised in CT Fire Safety Code

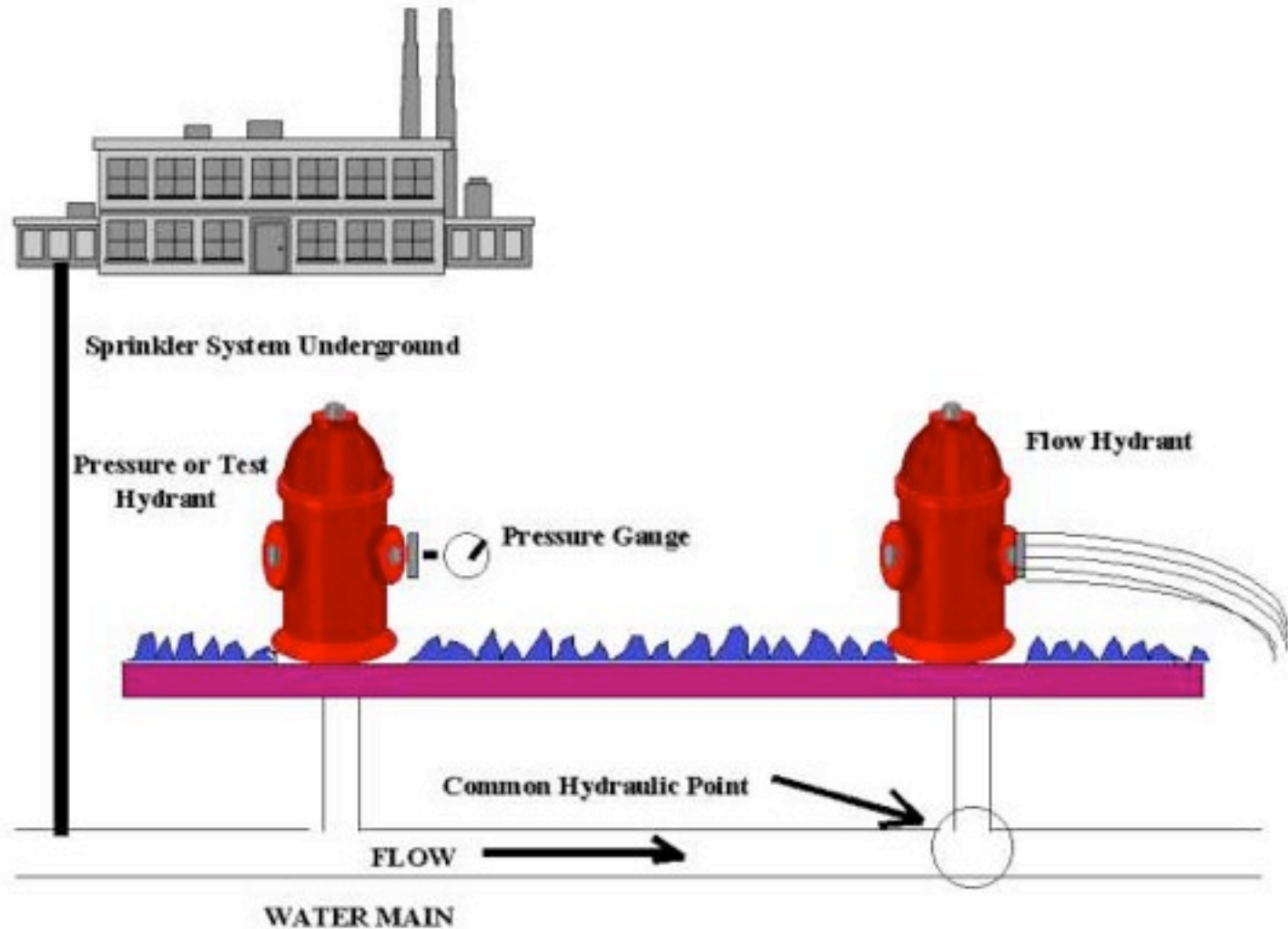
What Class of Standpipes are Required?

1. Class I 2 1/2" valves in rated stairwells
2. Class III 2 1/2" & 1 1/2" valves on either side of a "stage"
3. As required elsewhere: i.e. aircraft hangars, warehouses, etc.

Available Water?

- Waterflow test
 - Where?
 - When?
 - What are the results?

Waterflow Test



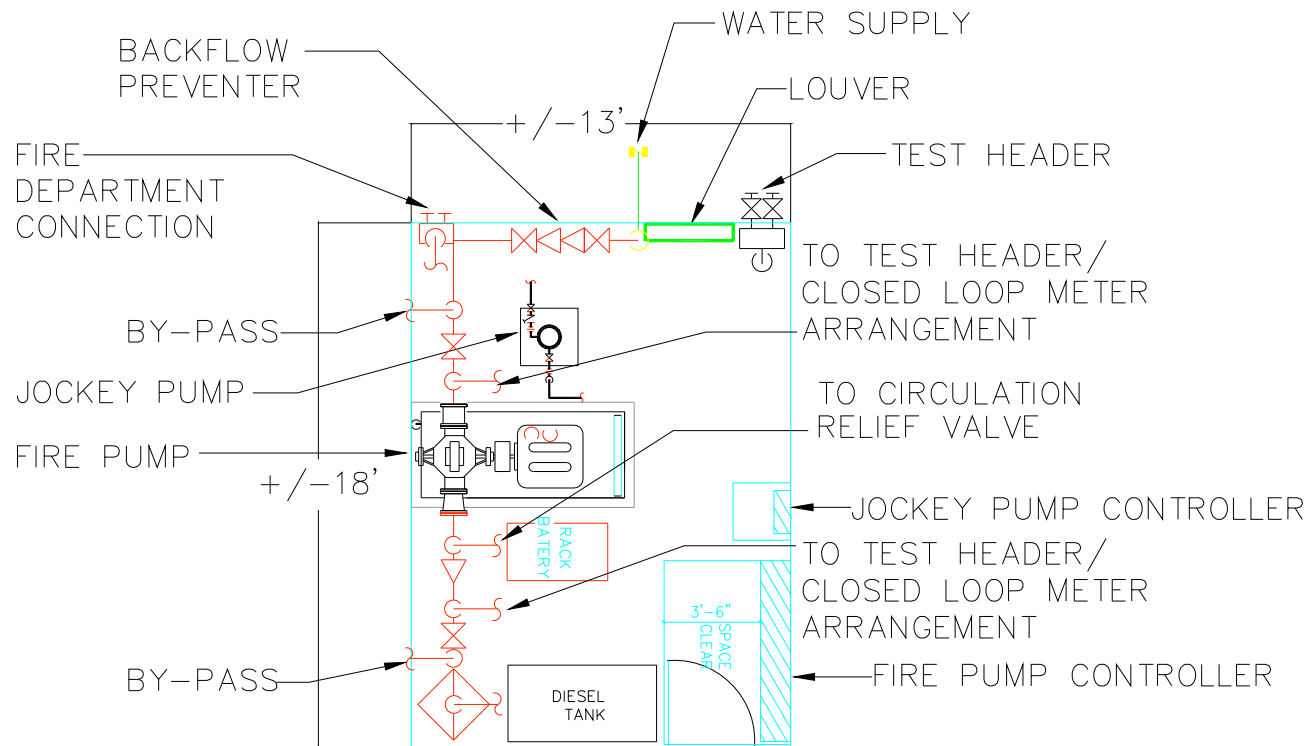
Poor Water flow Test

- Increase Pressure?
 - Fire Pump
- Increase GPM
 - Tank
- Graph it!

Fire Pumps



Typical Fire Pump Room Layout



Gaseous Systems

- Inergen
- FM200
- Ecaro
- Sapphire

Other Architectural Concerns

- Stages >1000 sq.ft.
 - Standpipes on either side
 - Deluge system above if curtain not provided
 - Sprinklers in chair storage if combustible
- Elevator Hoistways
 - Sprinkler at top of shaft (if not ASME 17.1 compliant)
 - Sprinkler at bottom of shaft (unless hydraulic fluid non-combustible)
- Vertical Openings to Another Floor
 - Sprinklers 6'-0" on center around opening with 18" draft stop.
- Combustible Concealed Spaces
 - Sprinklers must be provided in unless it meets exception in NFPA 13, 2002.

Thank you for your time!

QUESTIONS??

**This concludes The American Institute of
Architects Continuing Education Systems Program**

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