

Fire Sprinkler System Basic Training

Goals

- Understand the need for accurate information
- Recognize scheduled & calculated systems
- Recognize NFPA 13 vs NFPA 13R systems
- Recognize wet and dry systems
- How to obtain required information
- How to determine adequacy of the system

Sprinkler Systems Design

- Pipe Scheduled (Placard will not be present)
- Hydraulic Calculated- Normally installed after 1986

Type of Systems

- **Wet pipe**
 - Pressure gauge should read the same above and below the valve
- **Dry pipe**
 - Air pressure gauge is above the valve
 - 1psi of air will hold 5psi of water (add 15psi of air for buffer)
- **Anti-freeze loop**
 - Used in freezers and coolers and where subject to freezing
- **Pre-Action**
 - Takes 2 means to activate system. (Alarm + Temperature)
- **Deluge**
 - Heads are open and alarm or manual valve floods design area

Look For Date On Valve



Placard Information

HYDRAULIC DATA PLATE

Project: 50 REGENT ST. Date: _____
 Location: 50 REGENT ST., JERSEY CITY, N.J. Sys #: 1
 Contractor: NATIONWIDE MECHANICAL, INC. Zone: 1
 Address: 15 NEW YORK AVE., NEWARK, N.J. Area: CLASSROOM 1
 Hazard: Light: OR-1(8'): _____ OR-2(12'): _____ EX-1: _____ EX-2: _____
 NFPA Standard: NFPA-13 2007 EDITION System Type: WET
 Density/Area: 10/1500 gpm/sf over: 889.48 sq. ft. area
 Area/Sprinkler: 400 sf/sp. used: 230 sq. ft. allowed
 Mfg: VIKING Model: VK600
 Sprinkler Data: _____ Orifice: 1/2 K-factor: 5.6 Degree: 155°F
 Sprinklers Flowing: 6 Sprinkler: _____ Hose: 100 gpm allowance
TOTAL SPRINKLERS ON SYSTEM: 29

SUMMARY OF FLOW
 End Sprinkler Flow: 39.99 gpm @ 51 psi
 Discharge of Flow Sprinklers: 241.37
TOTAL DEMAND BASE OF RISER 241.37
 With Hose: 250 gpm With Rack _____ gpm

SUPPLY DATA
 Location: TIDEWATER STREET
 Test By: JCMVA Test Date: 08/02/2014
 City: Static: 33.6 psi; Residual: 25.2 psi; Flow: 840 gpm
 Fire Pump Rating: 750 gpm @ 100 psi; Electric: Diesel: _____

PIPE DATA
 C-Factor: Aboveground= 120 Underground= 140
 Pipe Type: Sched/40: _____ Lt. Wall: XL: _____ CPVC: _____ Copper: _____

STORAGE
 Commodity Class: _____ Max. Hgt. _____ ft. Min. _____ Clear Aisle width _____ ft.
 Fig. No. (231-C): _____ Curve: _____ Sprinkler/Level to Flow: _____
 Rack Demand: _____ gpm @ _____ psi @ ref. point: _____
 Backflow Preventer: Mfg.: _____ Model: _____ (If provided)

Important Information

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PIPE DATA

Transfer Information To Report

Riser # or Building Section Protected:	50 - Classrm 1
Year Installed?	2014
Sprinkler plans/design available & reviewed?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
System Design	<input checked="" type="checkbox"/> Hyd Design <input type="checkbox"/> Pipe Schedule
Hydraulic Design Criteria <input type="checkbox"/> NA	10/1500 gpm/sq ft 889.48 sq ft
Demand at BOR	241.37 gpm @ psi
Pipe schedule pipe sizing classification <input checked="" type="checkbox"/> NA	Select one
Design adequate for current occupancy?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Static Pressure	61.6 psi
Dry Pipe Valve(s)?	<input checked="" type="checkbox"/> NA Air: psi
System Monitored? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Water Flow? <input type="checkbox"/> Valve Tamper? <input checked="" type="checkbox"/> Local Only? <input type="checkbox"/> Central Station? <input checked="" type="checkbox"/> Amcest Alarm & Monitoring
All control valves found open?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
All control valves locked/sealed open?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Water Supply

Water Supply: Public Private

Main diameter _____ Inches Circulating Dead end

Flow information available: Yes No Test Date _____ Source of information _____

Static pressure: _____ psi Residual pressure _____ psi Flowing: _____ gpm

Elevated Tank _____ gals Pressure tank _____ gals Private pond

Comments: _____

Date of last sprinkler systems inspection/service _____ *(Request copy(s) of most recent full inspection report, and if available attach copies.)*

Report Reviewed? Yes No Any deficiencies noted? Describe: _____

2 inch Drain Test Static Pressure _____ psi Residual Pressure _____ psi

Dry Pipe Valves Trip Tested? Yes No N/A _____

Fire Pump N/A Electric Diesel

Pump Rating: _____ gpm @ _____ psi Date of last inspection/service _____

Report Reviewed? Yes No Any deficiencies noted? _____

Pump test runs: Monthly Quarterly None _____

Take Photos Of Riser System



Take Photo of Fire Pump



Risk Occupancies

- Light Hazard- Habitational, office
- Ordinary Hazard 1-Commercial kitchens, parking garages
- Ordinary Hazard 2
- Extra Hazard 1
- Extra Hazard 2

NFPA 13 Vs 13R Design Fire Protection Vs Life Safety

- $.05/1500 = 75 \text{ GPM/area}$
- $.10/1500 = 150 \text{ GPM/area}$

NFPA 13 Design

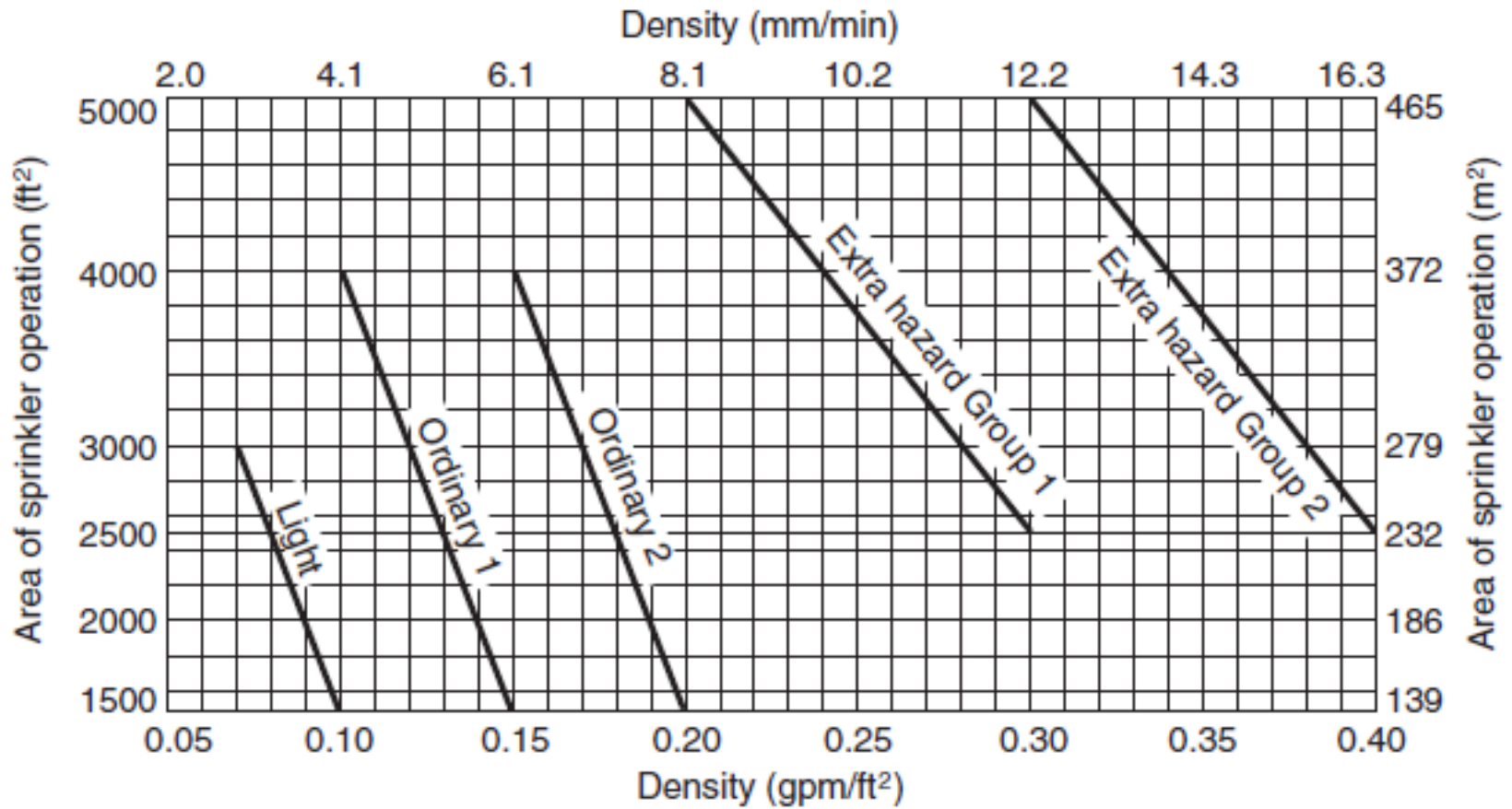


FIGURE 11.2.3.1.1 Density/Area Curves.

Design Demand

- .10/1500 Light Hazard
 - $.10 * 1500 = 150\text{gpm}$ over design area
- .15/1500 Ordinary Hazard 1
 - $.15 * 1500 = 225\text{gpm}$ over design area
- .20/1500 Ordinary Hazard 2
 - $.20 * 1500 = 300\text{gpm}$ over design area
- .30/2500 Extra Hazard Group 1
 - $.30 * 2500 = 750\text{gpm}$ over design area
- .40/2500 Extra Hazard Group 2
 - $.40 * 2500 = 1,000\text{gpm}$ over design area
- .45/2500 Idle Pallet to 8 feet
 - $.45 * 2500 = 1,125\text{gpm}$ over design area

NFPA 13 Basic Requirements

- Sprinklers shall be installed throughout the premises (*are there concealed spaces and did we verify protection?*)
- Sprinklers shall be located so as not to exceed the maximum protection area per sprinkler.

NFPA 13 Basic Requirements

The maximum floor area on any one floor to be protected by sprinklers supplied by any one sprinkler system riser or combined system riser shall be as follows:

- Light hazard — 52,000 ft²
- Ordinary hazard — 52,000 ft²

NFPA 13 Vs NFPA 13R

- NFPA 13 is fully sprinklered
 - All areas have sprinkler protection
 - Risers, piping, valves and heads must comply
- NFPA 13R does not meet NFPA 13 standards
 - Found in Hotels, Motels, Apartments and Condos
 - NFPA 13R does not require nonliving areas to have protection (i.e. attics, bathrooms, balconies, walkways and concealed spaces may not have protection).

Identify NFPA 13R Systems

- Riser size
- Number of risers
- Type of sprinkler piping
- Occupancy
- Retro fit systems
- Attic, bathroom and concealed space protection
- Placard information

CPVC Piping

Chlorinated Polyvinyl chloride

- Can be found in some NFPA 13 applications
- Generally found in NFPA 13R applications

CPVC Piping



CPVC Piping



NFPA 13R

Hydraulically Calculated System

This system as shown on Allegory Fire Protection Inc.
company print no FP-3 dated 10-2-09
for LINDSTROM RESIDENCE
at 210 HAW STREET contract no LINDSTROM
is designed to discharge at a rate of 10 gpm
(L/min) per sq ft (m²) of floor area over a maximum area of
208 sq ft (m²) when supplied
with water at the rate of 531 gpm (L/min)
at 31.0 psi (bars) at the base of the riser
Hose stream allowance of 0 gpm(L/min)
is included in the above.

Occupancy classification Residential 13-R
Commodity classification N/A
Maximum storage height N/A
Installed by Allegory Fire Protection Inc.

NFPA 13R

