Introduction to Automatic Sprinklers

- Identify the different thermal elements in sprinklers
- Distinguish between the different sprinkler orientations
- Identify the different components of a sprinkler

Sprinkler History

- 1812 – manual perforated pipe system (solder plugs) patented, UK
- 1874 – U.S. Industrial Revolution
  - Uncharged pipes with perforations
  - Manual water hook up
  - Later covered with coal tar pitch to seal the holes
  - Water delay resulted in to many open holes

Sprinkler History

- Development of the sprinkler head in the U.S.
  - 1872, the first U.S. patent
    - Phillip W. Pratt, of Abington, MA
  - Cords and fuses held valves closed with a spring-loaded lever
  - During a fire, the fuses ignited, the cords burned and the valve opened
  - Spinning head, which would spin from the water pressure and fling water out in a circular pattern

Deflector

Frame

Orifice and Orifice Cap

Activation Elements

- Fusible link
  - Metal alloy melts
- Frangible bulb
  - Liquid converts to gas and breaks element
- Chemical pellet
  - Chemical reaction takes place
- Bimetallic disc
  - Element has different plates that bend at different rates
- Duraspeed cap
  - Heat collected and focused

Temperature Rating

- Why?

Temperature Ratings

- Stamped
  - Thermal element
  - Deflector
  - Frame
- Color Coded
  - Bulb
  - Frame

Color Codes

Ceiling Temp.	Temp. Rating	Temp. Class	Color Code	Bulb Color
100 F	135-170	Ordinary	None/ Black	Orange/ Red
150	175-225	**Intermediate**	White	Yellow/Grn
225	250-300	High	Blue	Blue
300	325-375	Extra High	Red	Purple
375	400-475	**Very Extra High**	Green	Black
475	500-575	Ultra High	Orange	Black
625	650	Ultra High	Orange	Black

Sprinkler Response Time

- Response Time Index (RTI)
- The lower the RTI is, the faster it responds
- Quick response
  - RTI of 50 or less

Specialty Sprinklers