Session 1: Fire Alarm and Fire Sprinkler Systems (75 minutes)

Objectives:

- Describe the purpose of the fire alarm system and the fire sprinkler system.
- List the parts and explain the operation of the fire alarm system.
- Describe how a standpipe system operates.
- List the parts and explain the operation of a wet pipe fire sprinkler system.
- Describe the general operation of the wet pipe sprinkler system, the deluge sprinkler system, the pre-action system, and chemical systems.

Fire Protection

- Fire alarm system
- Fire sprinkler system

Fire Alarm Systems

- Fire alarm panel
  - Annunciator panel
  - Knox® boxes
  - Alarm signals
  - Trouble signals
  - Supervisory trouble signals
  - Central monitoring station
- Initiating devices
  - Manual
    - Pull station
  - Automatic
    - Heat detectors
      - Fixed-temperature detectors
      - Rate-and-rise detectors
      - Combination
    - Smoke detectors
      - Ionization detectors
      - Photoelectric detectors
      - Projected beam detectors
      - Duct detectors
    - Carbon monoxide detectors
    - Water flow switches
    - Valve temper switches
    - Water temperature alarms
- Notification appliances
  - Horn and strobe appliance
  - Emergency Voice Alarm Communications (EVAC) system
    - Automatic mode (horn and speaker appliance)
    - Manual mode
Americans with Disabilities Act (ADA) requirements
Activate
  - Magnetic door holders and locks
    - Fire doors
    - Smoke doors
  - Smoke management fan
  - Pressurization fan
  - Elevator recall

Training and Testing
- Train occupants
- Test, inspect, maintain equipment

Fire Sprinkler Systems
- Wet pipe sprinkler system
  - Fire department connection (FDC)
  - Fire pump
  - Sprinkler riser
  - Sprinkler heads, mains, and branches
  - Water flow alarms, signals
  - Valve tamper switches
- Early Suppression Fast Response (ESFR) sprinklers (warehouse applications)
- Standpipe systems
- Dry pipe systems
- Deluge system
- Pre-action system
- Chemical systems
- Fire extinguishers

© 2008 BOMA International
Session 2: Building Maintenance (30 minutes)

Objectives:

- Describe the difference between reactive, preventive, and predictive maintenance
- Provide an example of each type of maintenance

Reactive Maintenance

- Repair, replace after expiration or breaking
- Examples
  - Replace light bulbs after they burn out
  - Fix motor after it has failed

Preventive Maintenance

- Proactive
- Scheduled maintenance (time-based schedule)
- Examples
  - Group re-lamping
  - Scheduled maintenance, HVAC system

Predictive Maintenance/Reliability Centered Maintenance (RCM)

- Proactive
- Statistics, measurement, experience determine service intervals
  - Statistical Process Control (SPC)
Session 3: Elevators and Escalators (30 minutes)

Objectives:

- Describe the difference between traction and hydraulic elevators.
- Explain the operation of each system.

Elevators

- Components
  - Elevator cab
  - Elevator shaft
  - Buttons and switches
  - Indicators, tones, lanterns
  - Information screens
  - Elevator phones
    - Americans with Disabilities Act (ADA)
  - Destination floor control systems
  - Express elevators
  - Freight elevators
  - Service keys

- Types of elevators
  - Traction elevators
    - Components
      - Sheave
      - Counterweight
      - Brake
    - Overhead traction elevator
    - Basement traction elevator
  - Hydraulic elevators
    - Components
      - Hydraulic fluid
      - Pump
      - Piston
    - Hole-less hydraulic
  - Machine Room-Less (MRL) elevators
  - Elevator maintenance

Lifts for Disabled

- Wheelchair lifts

Escalators

© 2008 BOMA International
Session 4: Roofing Systems (30 minutes)

Objectives:

- List the components of a roofing system
- Describe the differences between built-up, modified bitumen, and single-ply roofs

Roof: Long-Term Fixed Asset

- Life cycle cost analysis (LCC)

Components of a Roofing System

- Decking
- Insulation
  - Inverted or protected roof assembly
  - Types of insulation
    - Extruded polystyrene
    - Blue board
    - Phenolic foam (recalled)
- Walk paths

Types of Roof Systems

- Built-up roofs (BUR)
- Modified bitumen roofs
  - Thermoplastic
  - Elastomeric
- Single-ply membrane roofs
  - Types of membrane
    - Ethylene propylene diene monomer (EPDM)—rubber
    - Polyvinyl chloride (PVC)—vinyl
    - Thermoplastic olefin (TPO)
  - Ballasted system
  - Mechanically attached system
  - Fully adhered system

Roof Maintenance

- Inspections
- Common problems
  - Equipment on roof surface
  - Roof penetrations
  - Leaves
  - Clogged roof drains
  - Trash and debris
ANSI/IWCA I-14.1 Window Washing Standard

- Roof anchor installation and testing

Green Roofs

- Vegetation over waterproofing membrane
- Provide amenity space for building users (garden)
- Reduce heating and cooling costs
- Reduce heat island effect
- Increase lifespan of roof
- Reduce storm water runoff
- Filter pollutants

© 2008 BOMA International
Session 5: Solid Waste Management and Recycling (30 minutes)

Objectives:

- List the recyclable and non-recyclable items that make up the solid waste stream for a typical commercial building.
- Explain the value of performing a waste audit.
- Describe four primary types of waste removal containers.
- Identify the benefits (financial, social, legal) of properly handling waste materials

The Waste Stream

- Solid waste (aka municipal solid waste)
  - Disposal
    - Landfills
    - Incineration
    - Waste-to-energy plant
  - Examples
    - Office trash
    - Kitchen waste
    - Composting
- Medical waste
  - Require special containers
  - Special handling for “sharps”
- Hazardous materials and chemicals
  - Solvents and lubricants
  - Unknown substances
  - Require special handling

Recycling

- Transfer stations
- Office paper
  - White paper
  - Mixed paper
  - Use of toters
- Newspapers
- Cardboard
  - Cardboard baler
- Glass, plastic, steel, and aluminum cans and bottles
- Fluorescent tubes and ballasts
  - Contain mercury; requires special handling
- Electronic equipment
The Waste Audit

• What the audit measures
  o Items not being recycled
  o Contamination in recyclable stream
  o Proper use, size of waste containers
  o Diversion rate
• Implementing improvements
  o Educating tenants
  o Educating janitorial employees
  o Selecting appropriate containers

Solid Waste Consultants

• Can help you…
  o Reduce solid waste stream
  o Improve recycling program
  o Choose right equipment
  o Negotiate better rates for waste removal and recycling

Waste Containers

• Front load
• Rear load
• Roll off
• Compactors

© 2008 BOMA International
Session 6: Janitorial Services (60 minutes)

Objectives:

- Describe the three levels of cleaning: routine, prestige, and clinical.
- Compare and contrast the four types of cleaning: policing, routine, periodic, and project work.
- Compare and contrast the five types of cleaning contracts: fixed price, cost plus percentage, cost plus fixed fee, performance based, and incentive based
- List at least five materials used in green cleaning

Levels of Cleaning

- Routine cleaning
- Prestige cleaning
- Clinical cleaning

Managing Dirt

- Capture dirt before it enters the building
  - Walk-off mats
  - Wet weather mats

Types of Cleaning

- Policing
- Routine
- Periodic
- Project work

Components of Cleaning Contracts

- Labor
  - Area cleaning
  - Team cleaning
- Materials
  - Material Data Safety Sheet (MSDS)
- Equipment
- Evening v. day cleaning™

Types of Contracts

- Fixed price
- Cost plus percentage
- Cost plus fixed fee
- Performance based
- Incentive based
- Union v. non-union vendors
- Vacancy credits
Green Cleaning

- Green Seal standards
- LEED® certification

Window Cleaning

- Rope decent equipment
- Swing stage scaffolding equipment
- ANSI/IWCA I-14.1 Window Cleaning Safety Standard

Carpet Cleaning

- Interim carpet maintenance
- Restorative carpet maintenance
- Carpet cleaning processes
  - Bonnet cleaning
  - Dry cleaning
  - Extraction
  - Low moisture encapsulation

Janitorial Inspections

© 2008 BOMA International
Session 7T: Property Tour (90 minutes)

Objective:

- This tour enables you to continue exploring the mechanical and engineering areas of a commercial building

Tour Highlights

- Elevators and escalators
- Roof systems
- Solid waste and recycling
- Janitorial inspection

© 2008 BOMA International