



# Elevator Maintenance Lunch and Learn Presentation

NAME:

DATE:

*Continuing Professional Development (CPD) 1 point toward renewal of the professional designations offered by BOMI International.*

# Objectives



- What are the differences in elevator equipment types?
- Learn about service tools offered by providers.
- Planning for the future – obsolescence.
- Tips for code requirements and natural disasters.
- Safety around your building and equipment.

# Table of Contents

## GUIDE TO TODAY'S AGENDA



- Introductions
- Elevator history
- Planning for the future
- Service technologies
- Safety precautions & procedures
- Code reminders

# Elevator History

WHERE DID IT ALL START

Worldwide,  
more than  
**1.37 billion**  
people ride  
on elevators  
each day.



*“The biggest assets of companies go up and down elevators every day.”*

– Famous adage

# Elevator History

## WHEN WAS THE FIRST ELEVATOR BUILT?

The first reference to an elevator is in the works of the Roman architect Vitruvius, who reported that Archimedes built the first elevator probably in 236 B.C.



The first elevator may have been built by Archimedes in 236 B.C.

# Elevator History

WHERE DID THE FIRST HYDRAULIC ELEVATOR APPEAR?

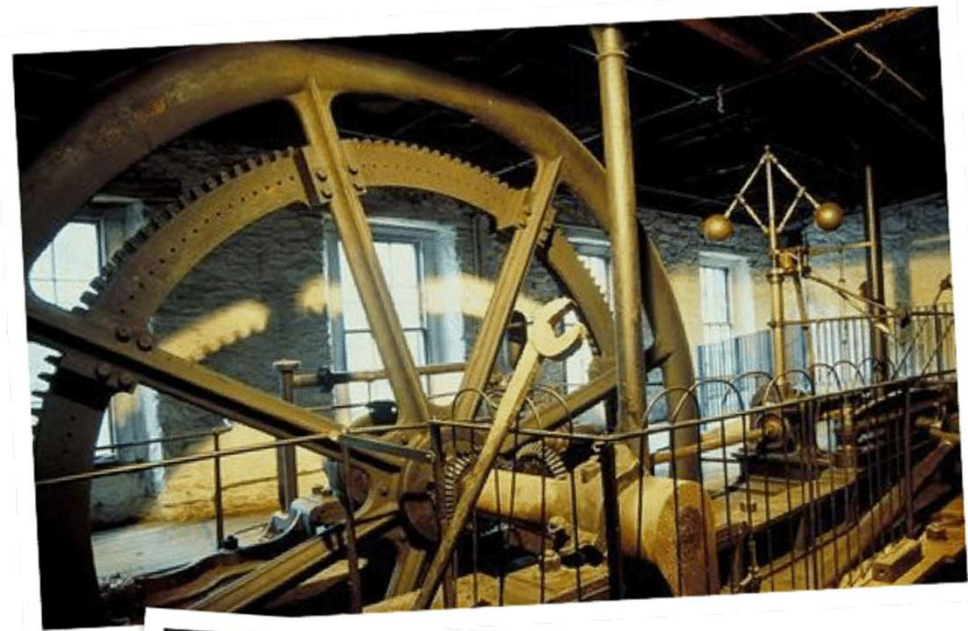


In 1823, an “ascending room” provided paying visitors with a wonderful view of London.

# Elevator History

## WHERE DID THE FIRST HYDRAULIC ELEVATOR APPEAR?

- Primitive steam-powered cable and hydraulic elevators appeared around 1850.



# Introduction

Why is elevator knowledge important to you?

- More than half the people in the world live in cities.
- In 2050, the world's population will have grown to 9 billion people, with almost 2/3 of them living in cities.

The challenge: to design buildings that are environmentally efficient and ensure smooth, safe people flow.

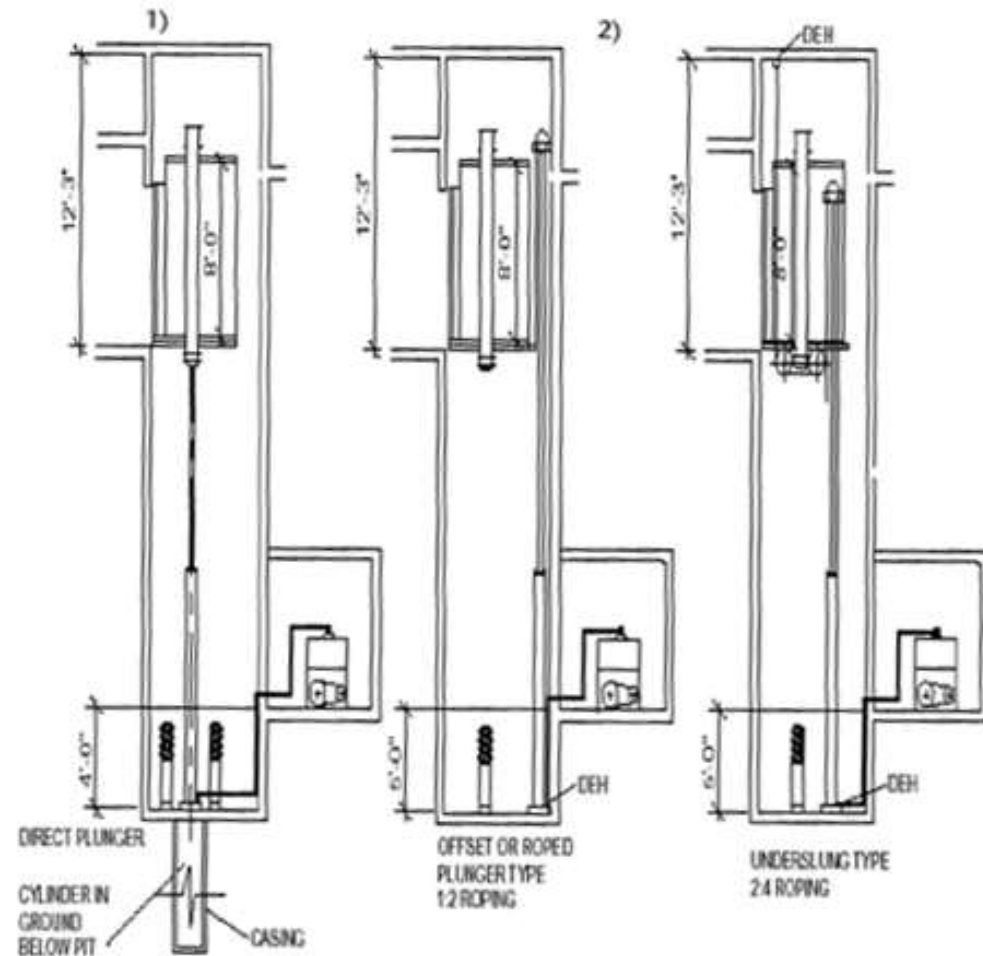




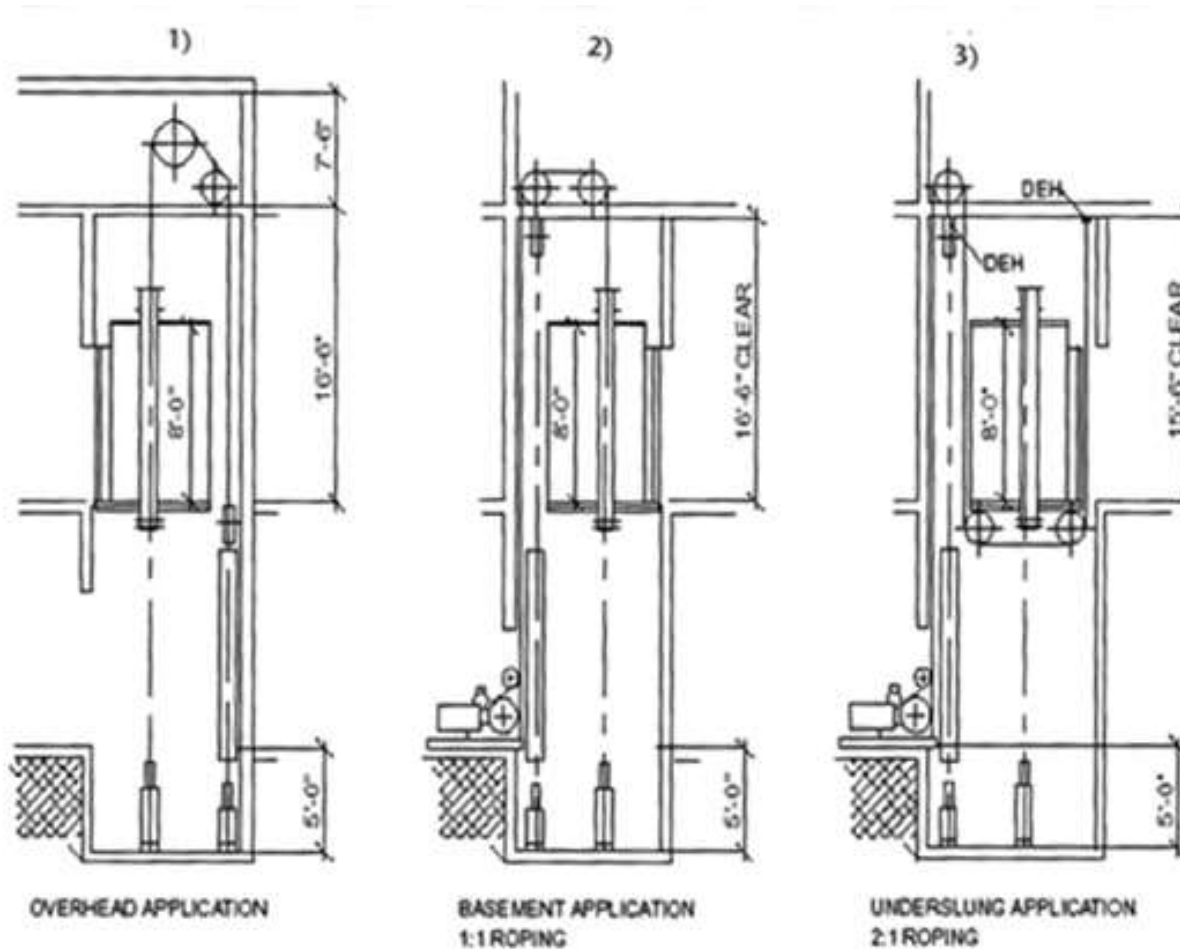
# Hydraulic Applications

There are three main hydraulic elevator configurations:

- The most basic configuration is a holed hydraulic.
- If drilling is not an option, a holeless hydraulic can be used.
- When travel is more than two stories, roped hydraulic can be used.



# Traction Applications



# A Technological Breakthrough in 1996

In 1996, a new elevator system was introduced to the market.

This elevator technology uses:

- a permanent magnet synchronous motor (PMSM)
- a variable voltage, variable frequency drive (VVVF)

In addition, this technology:

- saves energy
- eliminates the traditional machine room
- eliminates hydraulic oil
- simplifies installation, and
- provides sustainable ownership.





Planning for the future

# Planning for the future

## WHAT TO CONSIDER WHEN EVALUATING YOUR EQUIPMENT



- Building type
- Usage
- Environment
- Customer needs
- Equipment type
- Technical characteristics
- Monitoring technologies
- Code Requirements

# Planning for the future

## BUDGETING OPPORTUNITIES



- Planning the future based on analysis
    - Work with service provider
      - Plan short, medium, and long-term equipment updates/modernizations including timing and financial aspects.
  - Stay up-to-date on industry changes:
    - CODE
    - SAFETY
    - ACCESSIBILITY
    - PERFORMANCE & RELIABILITY
    - AESTHETICS
    - ECO-EFFICIENCY
    - MODERNIZATION
- \* Ask questions regarding code to stay informed!

# Planning for the future

## OBSOLESCENCE - COMPONENTS



### Obsolescence - aging equipment

- Parts beyond 10 – 12 years old classified as “aging”
- Unscheduled downtime
- Extended downtime
- Unbudgeted (costly) expenses
- Patching a problem (short term fix) and still have an old system in the end.
- Poor performance of equipment.
- Unhappy tenants/end users.

**Component Upgrades can help improve performance, decrease equipment energy consumptions and minimize unscheduled downtime.**

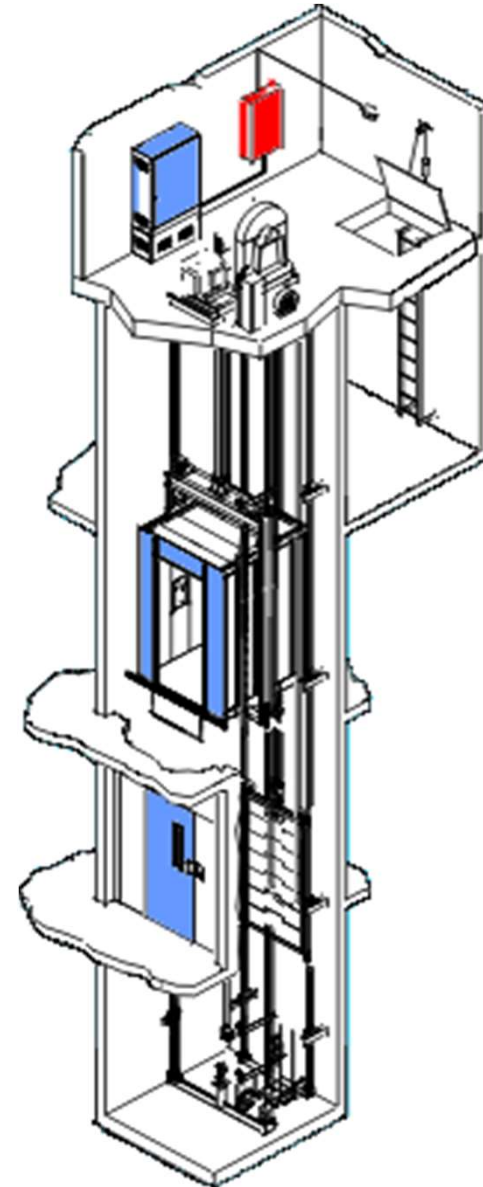
# Planning for the future

## EQUIPMENT

Your equipment should be:

- Safe
- Functionally Correct
- Clean, Neat and Organized
- Properly Lubricated
- Customer Acceptable

Take a close look at your equipment!







Service Delivery

# Service Technology

## PRODUCTIVITY TOOLS

- Dynamic scheduling
- Mapping technology
- Safety locator (GPS)



# Service Extensions

## TECHNOLOGY EMPOWERS

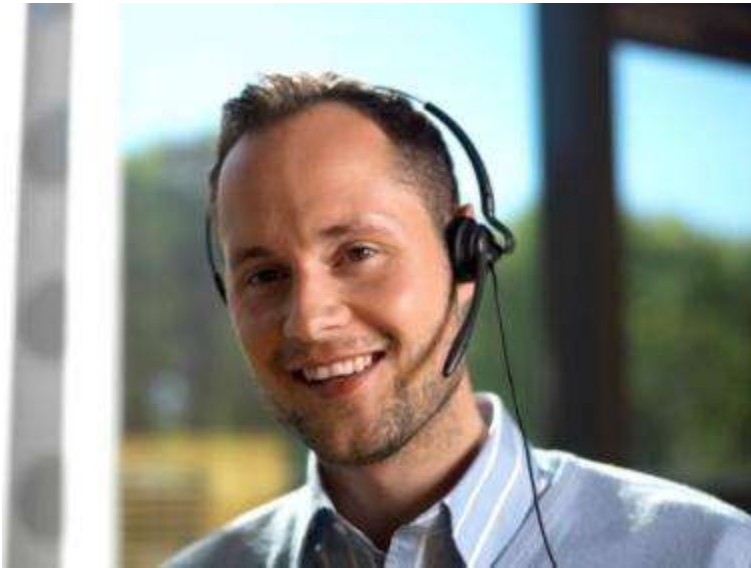
### Email Notification and Online Tools

- Customer notification service provides an email notification anytime work is completed on your equipment. This includes preventative maintenance, callouts and repairs.
- Web-based tools that provides real time service history and reports to support in facility and asset management
- Provide confirmation that you are receiving the agreed maintenance that you rely on
- Receive work order tickets through email



# Voice Monitoring

ARE YOUR ELEVATOR PHONES MONITORED 24/7?



## Voice Monitoring - Customer benefits

- Current elevator code requires an approved emergency two-way communications device be installed in elevators
- Consider upgrading your communications device to enhance the safety of your end-users.
- The fastest and most reliable way to ensure passenger safety in an entrapment situation
- 24/7 monitoring of the emergency elevator phones.

# Remote Monitoring

## DATA MONITORING



### **Data Monitoring - Customer benefits**

- Equipment malfunctions can be quickly and efficiently resolved.
- Peace of mind!
- Proactive equipment status monitoring notifies manufacturer in the event of a shutdown.



# Safety Precautions & Procedures

# Safety Precautions & Procedures

PREPARING NOW



- Preparing for severe Weather
  - Blizzard
  - Floods / Tropical Storms
  - Hurricane
  - Earthquake
- What is at risk?
  - End User Safety
  - Machine room
  - Hoistway ventilation
  - Pit
- Proper callout procedures

# Safety Precautions & Procedures

HURRICANE / BLIZZARD / FLOODING / EARTHQUAKE

- Run elevators to weather protected landing.
- Secure elevators on independent service or with run/stop key switch
- If elevators open to the outside, place sandbags along the bottom of hoistway doors. Since this makes the elevator unusable, do this just before shutting down the elevator. Make sure there is signage noting the elevator is out of service due to impending storm.
- Disconnect electrical power
- **DO NOT OPERATE ELEVATOR DURING NATURAL DISASTERS!**
- Talk to your service provider if you are not comfortable performing any of the following steps or feel you may not be able to perform them safely.



# Safety Precautions & Procedures

## PROCEDURE NATURAL DISASTER



- BEFORE starting an elevator
- Do not start an elevator if there is any doubt in your mind about its ability to operate properly!

# Maintenance Procedures

## BEFORE YOU CALL PROCEDURES



- Before you call
  - Expedite service and decrease unnecessary service charges:
    - \*All items above should be verified by authorized personnel and in accordance with local codes and governing authorities.

# Maintenance Procedures

## END-USER SAFETY



- **Elevator leveling problems**
  - Car sill and landing sill not lining up causing a tripping hazard.
- **Elevator door problems including**
  - Electric eye, electronic or mechanical edge failure.
  - Passengers being pinched or bumped by the doors.
- **Loose, broken or missing parts**
  - Including broken or missing comb teeth on escalators.
- **Water damage to any of your unit's components**
- **Changes in noise levels or ride quality**

# Maintenance Procedures

## END-USER SAFETY CONTINUED



Examples of other unsafe conditions which can cause unnecessary risk to your end-users.

- Abuse of equipment
- Unsafe use
- Equipment being worked on by someone other than your service provider!

# Maintenance Procedures

## SAFETY ISSUES



### ▪ **Unmaintained Hoistway**

- Dirt / lint / debris have accumulated in hoistway and pit
  - Fire Hazard

### ▪ **Elevators Cabs**

- Elevator handrail provided to assist passenger during ride
- Buttons properly marked and working
- Elevators leveling properly with in ½” inch of floor level
- Dirt and debris on doors causing them stop
- Handrail loose
- Jerking rattling in cab
- No sharp edges around phone box

### ▪ **Escalators**

- Escalator broken comb teeth



Code Reminders

# Code Reminders

## MACHINE ROOM

Required Items in your machine room that will help your service provider:

- Maintenance log
- Fire Service Log (part of maintenance procedure)
- Oil usage log
- Electrical diagrams (up-to-date wiring diagrams)
- Fire extinguisher
- Maintenance control program location
- How to report problems (callout procedure)
- Feeder location distribution panel
- Light guards
- Secure access to the machine room

\*Code compliance is responsibility of building owners. Building managers / facility managers. Please be aware of your local elevator safety codes effective in your region.

# Summary

- Know your equipment!
  - After all its *your equipment!*
- Stay updated with code requirements in your area.
- Understand how your service provider delivers service to your property!
- Be prepared to budget for capital improvements by asking your service provider.
- Take all reasonable Safety Precautions to minimize damage during natural disasters.



QUESTIONS???