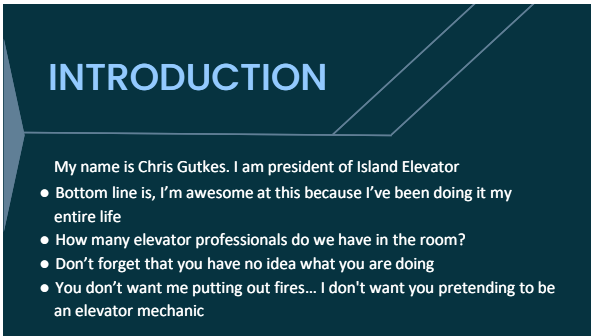




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2



3

GOALS FOR TODAY



-  Safety evacuate the passenger from the elevator
-  Basic familiarity with elevator equipment
-  Basic safety training while engaging with the equipment
-  I will get you to the point where you have visual on the passenger
-  Evacuation and first aid will be taught by a professional

4

THE PROBLEMS

- Elevator manufacturers
- Elevator industry (mechanics)
- Building codes
- The public


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ELEVATOR MANUFACTURERS

- Over 60 manufacturers
- Elevators installed at different time periods conform to existing codes
- Elevator features and operations may vary
- Preplanning and examination of other elevators WILL be beneficial

6

BUILDING CODES



- Codes change from year to year
 - Elevator drop key holes (not in all elevators)
 - Elevator side door emergency exits
 - Detectors in the machine room/hoistway


7

WHAT IS AN ELEVATOR SHAFT?

AN ELEVATOR SHAFT

A hole in the center of the building with a hard stop at the bottom

Also known as an Elevator Hoistway




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FALLING HAZARDS

OSHA defines a falling hazard as a distance 4' or more

The average height between floors in a building 12'



How many people in this room can fly?

There are two types of people when they fall **FLAPPERS & SCREAMERS**

You do not want to find out which one you are

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COMMON TYPES OF ELEVATORS: TRACTION & HYDRAULIC

Tracton

- Traction can be **OVERHEAD, BASEMENT**
- Car, counterweight and traction sheave, driven by a motor
- Speed governors
- Room necessary at the top of the elevator shaft
- More expensive
- Faster

Hydraulic

- Car, cylinder and pumping system
- Pump pushes hydraulic fluid into a cylinder(s), which lifts the elevator
- Heavy construction not required
- Overhead space not needed
- Less expensive
- Slower
- Height limited by cylinder length
- All have a piston and hydraulic fluid in common

NO BRAKE!!!!

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Traction Elevator

Labels in diagram include: Heavy Duty Hoist Machine, Telephone Connection To Remote Monitoring Location, Micro-processor Based Control And Solid State Motor Drive, Traction Steel Cables, Galvanized Wireway, Door Operator, Emergency Lighting, Underwriters Laboratories 1 1/2 In. 10" Label Door With Vertical Retardant Design, Door Interlocks with Flame Retardant Wiring, Pushbutton, Pit Stop Switch, Counterweights, Oil Buffers, Smoke Detection, Roulled Hoistway Switches.

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Hydraulic Elevator

Types of Hydraulic

- Conventional
- Holeless
- Rope-Hydraulic

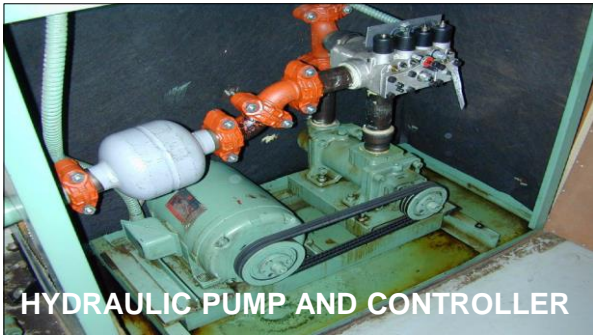
Labels in diagram include: Cabin guide rails, Cabin, Hydraulic tank, pump and valve, Controller, Plunger, Cylinder.

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HYDRAULIC PUMP AND CONTROLLER

13



HYDRAULIC PUMP AND CONTROLLER

14



Hydraulic Controller


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CAUSES FOR STALLED ELEVATORS

- Power failure / fuses
- Malfunction of control components
- Activation of safety equipment
 - Occupant stupidity / overloaded
 - Interlock trip / limit switches
- Mechanical malfunction

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MAJOR ENGAGEMENT AREAS WITHIN THE ELEVATOR SYSTEM



- MACHINE ROOM
- CARTOP
- PIT
- CAB/ENTRANCE

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MACHINE ROOM

- Typically located adjacent to the shaft but can be located anywhere in the building
- The machine room should be locked by code (but not always the case)
- The machine room should be labeled by code (but not always the case)
- There may be multiple machines in a machine room
- Machines should be numbered



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MACHINE ROOM

- **Traction Machine Room** comprised of: machine controller and governor
- **Hydraulic Machine Room** comprised of: power unit and controller
- If one car is shutdown, the others are running
- Uncovered equipment will chew up and spit you out, especially with that bulky uniform you're wearing



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MACHINE ROOM

- **Disconnects:** Mainline, cab lighting and maybe others
- **Do not remove the controller cover:** Some are very tricky and if the power is still on you could electrocute yourself
- **Batteries/lowering devices:** May or may not be engaged

Questions:
 What if you can't find the machine room?
 What if you can't open the machine room?



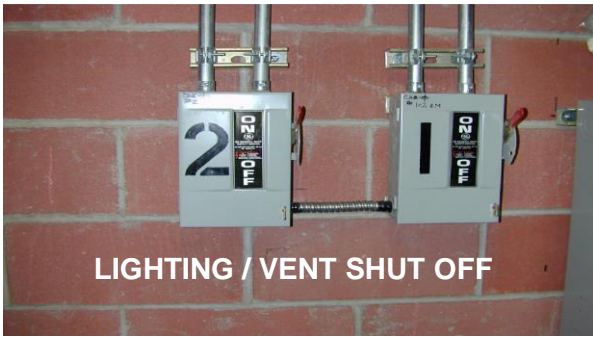
HAZARDS
 Electrocution and pinching/Crushing

20

MAIN SHUTOFF



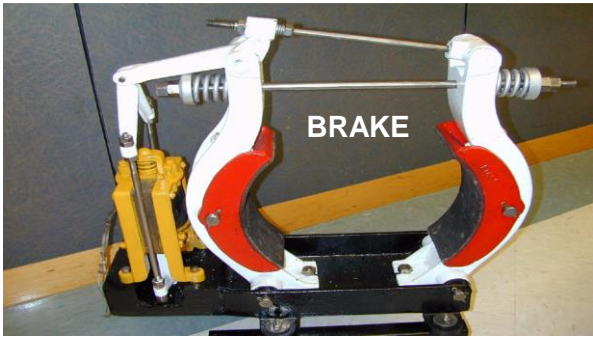
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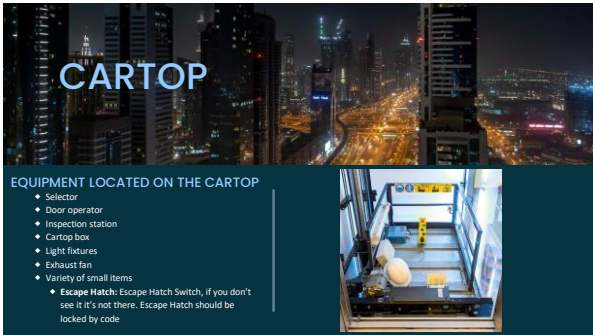
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CARTOP

- On smaller elevators, it can be crowded on top
- You are now exposing yourself to a variety of hazards on the top of the car
- **DO NOT LET THE DOOR CLOSE BEHIND YOU**
- **HIT THE STOP SWITCH**



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CARTOP

HAZARDS

- Tripping Hazard
- Electrical Hazard
- Falling Hazard
- Pinching/Crushing/Caught in between




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The Pit

Pit Equipment


Pit Equipment can include:

- Pit steel
- Pit ladder
- Pit lighting
- Buffers: car/counterweight
- Governor tension sheave
- Comp sheaves (unlikely on long island)



Question

Is there an instance where you ever need to get in the pit?



30

PIT HAZARDS

- Breakings knees and ankles
- Electrocutation
- Falling hazards
- Crushing- car comes down on you or counterweight comes down on you

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ENTERING THE CAB


- Entering the car at floor level
- Entering the car when its high
- Entering the car when its low
- Danger zone is the threshold
- If it can be done: **HIT THE STOP SWITCH** - you may get the alarm bell



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ELEVATOR DOORS

- Emergency keys
 - Moon shaped
 - T shaped
 - Drop key
- Door picking tools (top and side)
- Door piling tools (6ft and 8ft)
- Types of doors
 - Single sliding
 - Two speed
 - Center opening
 - Swing

Rescue tools

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ELEVATOR DOORS

- Single slide
 - Slides horizontally to one side
- Two speed
 - Two panels in different planes moving at different speeds
- Center opening
 - Two panels in the same plane moving away from each other
- Swing door



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Single Sliding Door



Two Speed Door



Center Opening Door

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HOW TO PICK A DOOR

- The door key: Different keys for different manufacturers
- Door lock
- Door operator- power should shut off
- Restrictor/Car door interlock
- Door key security



Question
 What if you have to break the door lock?

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