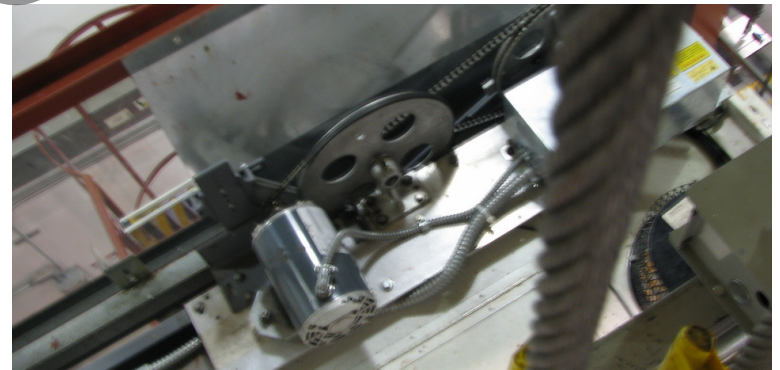
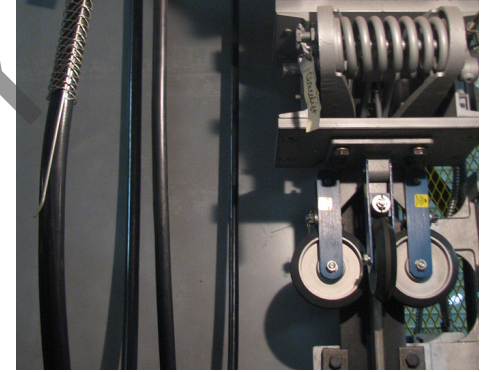
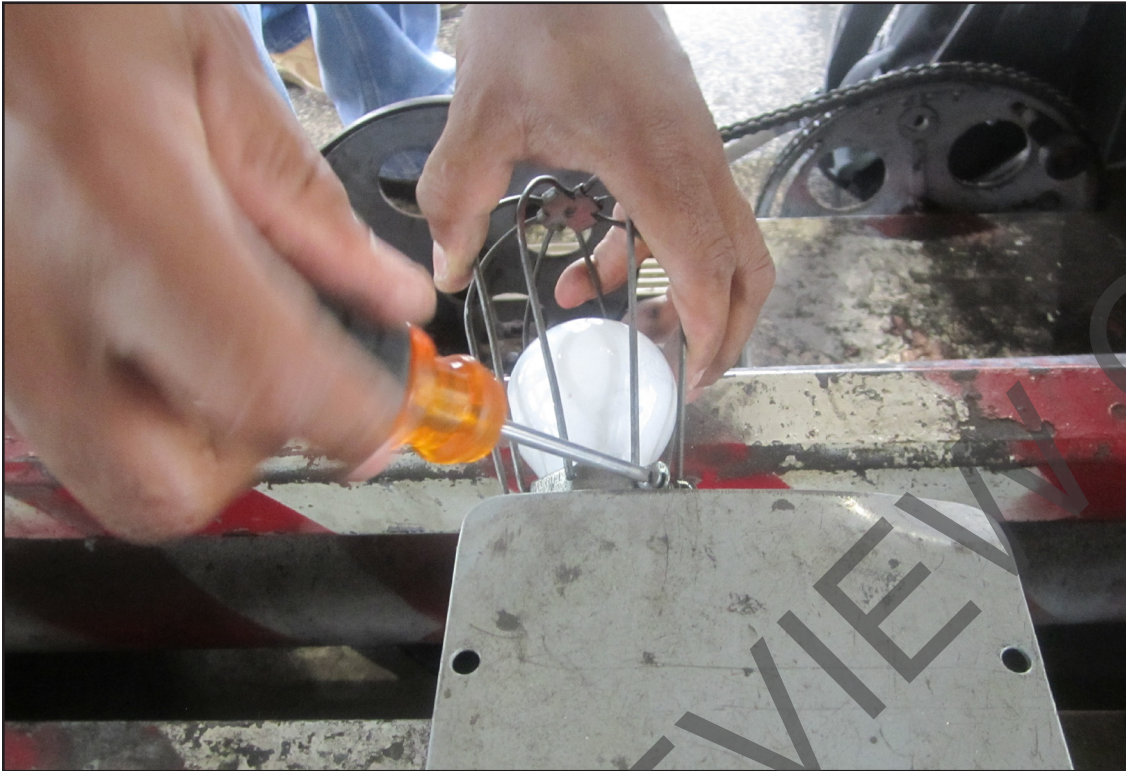


# Instructor Guide



## 219: Elevator: Inspection and Basic Maintenance Module 7B: Electric Traction Hoistway

# Elevator – Electric Traction Hoistway

*Instructor's Guide*



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# Elevator – Electric Traction Hoistway

## Instructor's Guide



### Icons Used In This Guide

	<b>REVIEW</b> slides		<b>INDIVIDUAL ACTIVITY</b>
	<b>ASK</b>		<b>WRITE</b>
	<b>CLASSROOM ACTIVITY</b>		Multimedia
	<b>SMALL GROUP ACTIVITY</b>		<b>REFER</b> participants to

### Agenda

Topic #	Topic Title	Duration
1	Overview	30 Minutes
2	Sensory Inspection	20 Minutes
3	Field Trip	60 Minutes
4	Inspection and Maintenance	120 Minutes
5	Field Trip	60 Minutes
6	Inspection and Maintenance	60 Minutes
7	Lighting	10 Minutes
8	MRL Elevators	20 Minutes
9	Field Trip	60 Minutes
10	Summary	40 Minutes
	<b>Total Time:</b>	480 Minutes

# Elevator – Electric Traction Hoistway

## *Instructor's Guide*



## **Overview**

**Purpose** The purpose of this module is to:

Provide the participant with an overview of inspecting and maintaining components in the hoistway of a traction elevator system within a public transit environment.

## **Objectives**

At the end of this lesson, the transit elevator/escalator trainee will be able to:

- Identify hoistway areas and associated components requiring inspection
- List all hoistway auxiliary lighting requiring inspection
- Identify hoistway areas and associated components requiring cleaning
- Identify hoistway areas and associated components requiring lubrication
- Perform a sensory inspection of a hoistway
- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the Hoistway
- Perform an operational test on all auxiliary lights

## **Materials**

**Mandatory** Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils
- Paper

## **Optional**

You may also want the following for optional activities:

- Chalk board with chalk, large paper with marker, etc.
- Internet connection
- Lab, simulator or out of service elevator
- ASME A17.1
- ASME A17.2
- ASME A17.3
- Bethlehem Rope Technical Bulletin 3 & 6

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** introduction slides

### Instructor's Notes

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### SAY

#### In your own words:

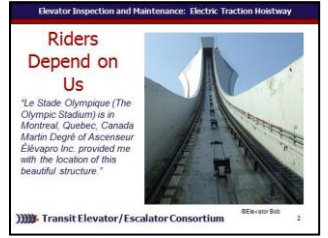
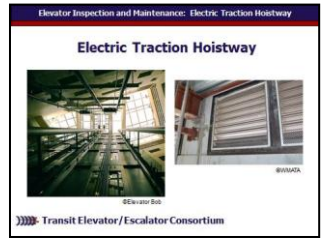
Welcome to the course on inspection and maintenance of electric traction hoistways.  
**Advance**

Imagine being a technician for this electric traction elevator system in Canada! While this is very interesting to see, most hoistways in transit don't look like this one but will require similar maintenance.

**Advance**

### Materials Needed

✓ PPT slides 1, 2



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** module objectives

### Instructor's Notes

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### SAY

#### In your own words:

Today we will

- Identify hoistway areas and associated components, which require inspection
- Identify hoistway areas and associated components, which require cleaning
- Identify hoistway areas and associated components, which require lubrication
- List all hoistway auxiliary lighting which require inspection

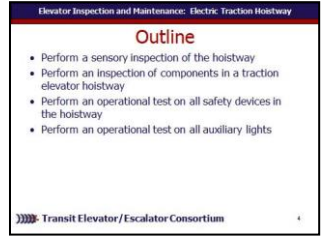
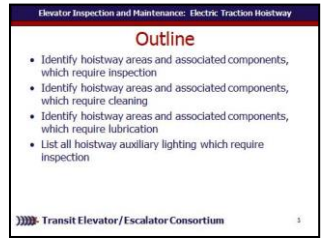
#### Advance

And

- Perform a sensory inspection of the hoistway
- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the hoistway
- Perform an operational test on all auxiliary lights **Advance**

### Materials Needed

✓ PPT slides 3, 4



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** key terms

### Instructor's Notes

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### SAY

#### In your own words:

Lets take a look at some of the key words we will be defining as move through this module:

- Cable Support
- Deflector Sheaves
- Final Limit Switches
- Normal Limit Switches
- Physical Senses
- Sensory Inspection

#### Advance

### Materials Needed

✓ PPT slide 5



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**ASK** participants what they remember about safety and elevators



**SMALL GROUP ACTIVITY**



**WRITE**

### Instructor's Notes

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### SAY

#### In your own words:

Thinking back to other courses or just in general, what do we already know about electric traction hoistways?

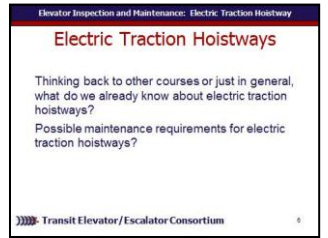
Possible maintenance requirements for electric traction hoistways?

*Allow participants to think for a minute and perhaps discuss with a partner ideas as well as write down any ideas. Discuss participant responses and if possible list them on a chalk board or similar.*

**Advance**

### Materials Needed

✓ PPT slide 6



- ✓ Chalk board or large paper
- ✓ Blank Paper
- ✓ Writing instruments



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

#### In your own words:

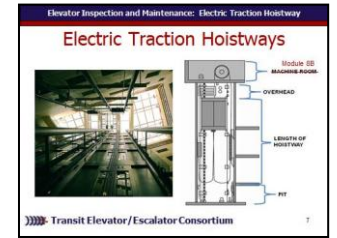
A **hoistway** is a shaft or space typically enclosed by fireproof walls to permit passage of an elevator, dumbwaiter, or material lift between the floors of a building. The hoistway extends from the bottom pit to the top of the shaft, which is generally the underside of the overhead machine room floor or the underside of the roof. Hoistway doors on each floor provide access to the elevator. Many hoistways are constructed with strategic access points along the shaft in the event of a mechanical failure.

**Advance** There are three major areas of the hoistway: overhead, hoistway length, and pit shown here. Inspection and maintenance of the machine room is covered separately in Module 8B of this course.

**Do Not Advance**

### Materials Needed

✓ PPT slide 7



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

#### In your own words:

This module examines the components within each area of the traction hoistway that the elevator technician needs to inspect and maintain regularly.

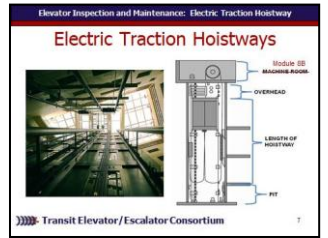
#### Advance

Lets begin by looking at a sensory inspection in an electric traction hoistway.

#### Advance

### Materials Needed

✓ PPT slide 7, 8



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

#### In your own words:

During a **sensory inspection** a good elevator technician relies on the **physical senses** of sight, smell, hearing, and touch while inspecting and maintaining the elevator.

#### Ask

What may indicate a problem within the traction hoistway as indicated by sight?

#### Discuss possible answers

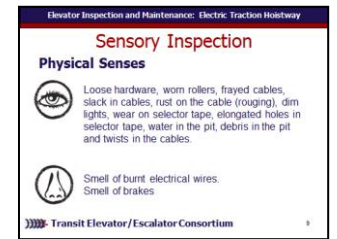
#### Advance for sample answers

Loose hardware, worn rollers, frayed cables, slack in cables, rust on the cable (rouging), dim lights, wear on selector tape, elongated holes in selector tape, water in the pit, debris in the pit and twists in the cables.

#### Advance

### Materials Needed

✓ PPT slide 9



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide



**ASK**

### Instructor's Notes

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**In your own words:**

**Ask**

What may indicate a problem within the traction hoistway as indicated by smell?

**Discuss possible answers**

**Advance for sample answers**

Smell of burnt electrical wires.

**Advance**

**Ask**

What may indicate a problem within the traction hoistway as indicated by hearing?

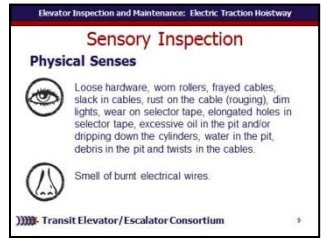
**Discuss possible answers**

**Advance for sample answers**

Rattling or clicking of loose components such as rollers, hardware. Clicking near hoistway door. Clunking of counterweight or car landing on buffer.

**Advance**

✓ PPT slides 9, 10



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What may indicate a problem within the traction hoistway as indicated by touch?

**Discuss possible answers**

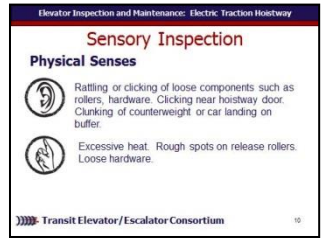
**Advance for sample answers**

Excessive heat. Rough spots on release rollers. Loose hardware

**Advance**

### Materials Needed

✓ PPT slide 10



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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**In your own words:**

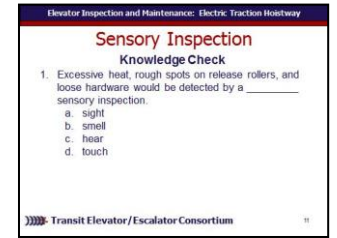
Lets see what we have learned so far:  
Excessive heat, rough spots on release rollers, and loose hardware would be detected by a \_\_\_\_\_ sensory inspection.

- a. sight
- b. smell
- c. hear
- d. touch

**Call on participants for answer**  
**Advance once given the correct answer**  
**Answer: d. touch.**

**Advance.**

✓PPT slide 11



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

**In your own words:**

Clunking of a counterweight or car landing on a buffer would be detected by a \_\_\_\_\_ sensory inspection.

- a. sight
- b. smell
- c. hear
- d. touch

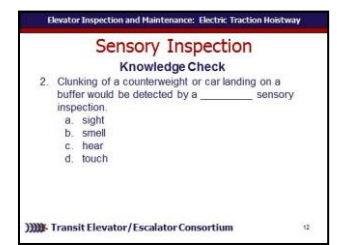
**Call on participants for answer**

**Advance once given the correct answer**

**Answer: c.**

**Advance.**

✓PPT slide 12



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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**In your own words:**

Describe a possible hoistway problem which would be indicated by sight.

***Call on participants for answer***

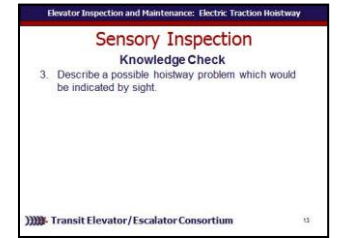
***Advance once given the correct answer***

**Possible Answers:**

Loose hardware, worn rollers, frayed cables, slack in cables, rust on the cable (rouging), dim lights, wear on selector tape, elongated holes in selector tape, excessive oil in the pit and/or dripping down the cylinders, water in the pit, debris in the pit and twists in the cables.

***Advance.***

✓PPT slide 13





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 430 min

This section: 60 min

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



ASK



CLASSROOM  
ACTIVITY

### Instructor's Notes

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In your own words:

*Take time to visit the field to provide an example demonstration and opportunities for participants to perform the following tests:*

- Perform a sensory inspection of the hoistway

**Advance**

✓PPT slide 14



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

**In your own words:**

Again, within the electric traction elevator system there are four main areas: machine room which we will cover later, overhead, length of hoistway, and pit.

**Advance**

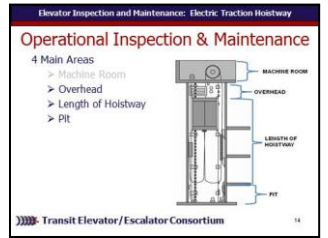
Lets start by looking at overhead components.

**Review locations of overhead components as indicated on diagram:**

- Refuge space
- Sprinkler head
- Smoke detector
- Heat detector
- Limit switches

**Advance**

✓ PPT slides 15, 16



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to Course book

### Instructor's Notes

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### SAY

**In your own words:**  
*Refer participants to*

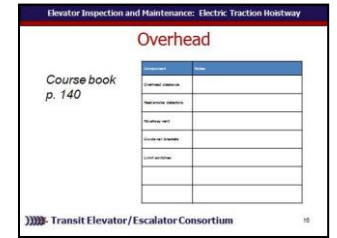
**Participant Course book**

*for chart to write additional notes.*

**Advance**

### Materials Needed

✓ PPT slide 17



✓ Course book

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**  
 Where is overhead clearance?  
**Allow participants to discuss answer.**  
**Advance**  
**Advance and share photo.**  
**Advance**

Many hydraulic elevators have very limited overhead clearance.

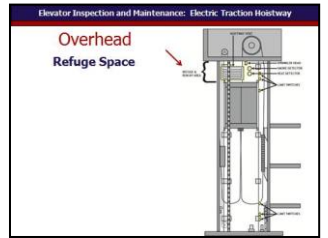
**Ask**  
 What is refuge space?  
**Allow participants to discuss answer.**  
**Advance**

Elevators require a certain amount of overhead clearance (refuge or runby space) to accommodate essential components on top of the car.

**Do Not Advance**

### Materials Needed

✓ PPT slides 18, 19



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to  
ASME A17.1  
ASME A17.2  
ASME A17.3

### Instructor's Notes

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### SAY

#### In your own words:

Overhead clearance is measured from the upper level floor to the lowest obstruction in the top of the hoistway. Make sure that this area is free of any debris or hazards. Make sure that necessary warning signs are in place.

**Advance**

*Refer participants to*

***A17.1 Sections 1 and 2.4.7.1, A17.2 Section 3.4.1 and A17.3 Sections 1 and 2.4, for a detailed review of code requirements for overhead clearance***

**Advance**

### Materials Needed

✓ PPT slide 19



- ✓ ASME A17.1
- ✓ ASME A17.2
- ✓ ASME A17.3

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

Lets talk about heat and smoke detectors.  
Who maintains these items?

**Allow participants to discuss answer.**

**Advance and share diagram.**

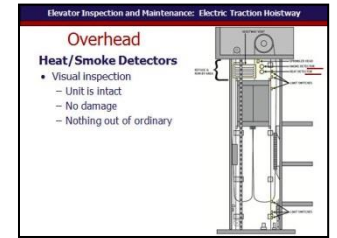
**Advance**

While the job to check the operation of heat and smoke detectors is generally left to fire inspectors, elevator technicians should visually check these components. Make sure the unit is intact and not separated from its base. Also check that there is no damage such as cracks. Visually note anything out of the ordinary.

**Advance**

### Materials Needed

✓ PPT slide 20



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a hoistway vent?

**Allow participants to discuss answer.**

**Advance and share photo.**

**Advance**

The hoistway vents located at the top of the overhead allows heat to dissipate from the hoistway.

**Advance**

Make sure the **hoistway vent** is intact and secure. If louvers are present, make sure they are operational. Check for debris stuck to the vent, obstructing the flow of air. One item that is commonly found here is newspaper.

**Advance**

### Materials Needed

✓ PPT slides 21, 22



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

Lets talk about guide rail brackets. What are guide rail brackets?

**Allow participants to discuss answer.**

**Advance**

Examine the guide rail brackets for loose fastenings and proper fit at the joints. Check for corrosion. Because rail brackets have a protruding ledge that runs horizontally, dirt and dust can collect on top. Make sure to clean these surfaces.

**Advance**

**Ask**

What is a limit switch?

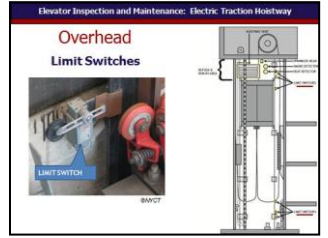
**Allow participants to discuss answer.**

**Advance and share photo.**

**Advance**

### Materials Needed

✓ PPT slides 23, 24





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

There are three types of limit switches in the hoistway of transit elevators. One set is located in the overhead and the other set is located in the pit.

**Advance** If limit switches appear sticky, clean the arm or activator.

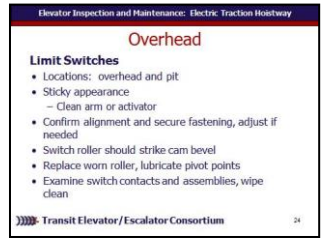
**Advance** Check that the switches and cams are aligned correctly and are securely fastened and adjust accordingly.

**Advance** The switch roller should strike the bevel of the cam and should be adjusted accordingly.

**Advance** Replace worn rollers and lubricate pivot pins.

**Advance**

✓ PPT slide 25



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

### Instructor's Notes

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#### In your own words:

Examine the switch contacts and assembly for proper movement (contacts should wipe) and reaction and, where required, repair or replace.

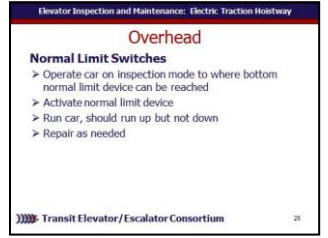
**Note:** you may need a ladder to reach some of the switches in order to test them.

#### Advance

For **Normal Limit Switches**, operate the car on inspection mode to a point where the bottom normal limit device can be reached. Activate the normal limit device. The car should run up, but not down. If not functioning as designed, correct the defect as required.

#### Advance

✓ PPT slides 25, 26



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



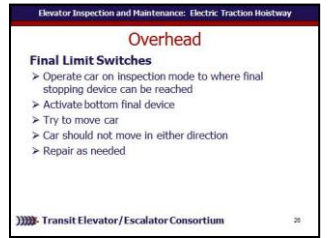
**REVIEW** slide

#### In your own words:

For **Final Limit Switches**, operate the car on inspection speed to a point where the final stopping device can be reached. Activate the bottom final device and try to move the car. The car should not move in either direction. If the car moves repair the defect.

#### **Advance**

✓ PPT slide 27



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

**In your own words:**

Lets see what we have learned so far:  
What should Yvonne do when performing an inspection and maintenance of a limit switch?

**Call on participants for answer**

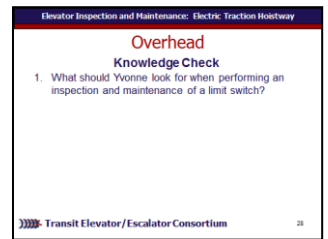
**Advance once given the correct answer**

**Answer:**

- Sticky appearance
  - Clean arm or activator
- Confirm alignment and secure fastening, adjust if needed
- Switch roller should strike cam bevel
- Replace worn roller, lubricate pivot points
- Examine switch contacts and assemblies, wipe clean

**Advance**

✓ PPT slide 28



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

**In your own words:**

Yes or No. When testing a final limit switch, the car should not move in either direction.

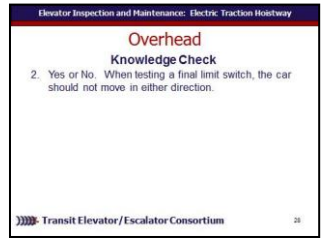
***Call on participants for answer***

***Advance once given the correct answer***

**Answer: Yes**

***Advance***

✓ PPT slide 29



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

**In your own words:**

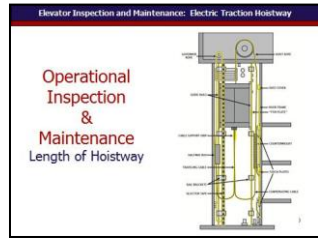
***Review locations of length of hoistway components as indicated on diagram:***

- Governor rope
- Hoist rope
- Guide rails
- Dust cover
- Door frame
- Fish plate
- Cable support grip
- Counterweight
- Halfway box
- Traveling cable
- Fascia plates
- Rail brackets
- Selector tape
- Compensating cable

**Advance**

### Materials Needed

✓ PPT slide 30



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to Course book

### Instructor's Notes

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### SAY

**In your own words:**  
*Refer participants to*

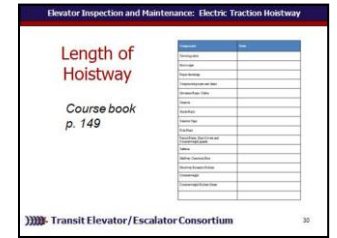
**Participant Course book**

*for chart to write additional notes.*

**Advance**

### Materials Needed

✓ PPT slide 32



✓ Course book

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a halfway junction box?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

**Sheaves**

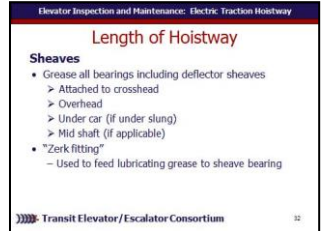
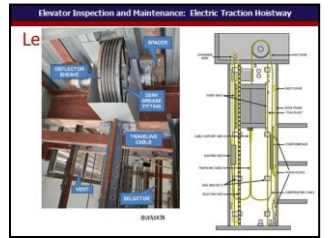
Grease all sheave bearings in the hoistway, including the **deflector sheaves** attached to the crosshead, in the overhead, under the car (if under slung), and mid shaft (if applicable).

**Advance** The grease fitting, many times referred to as “Zerk fitting”, is used to feed lubricating grease into the sheave bearing.

**Advance**

### Materials Needed

✓ PPT slides 32, 33





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a traveling cable?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

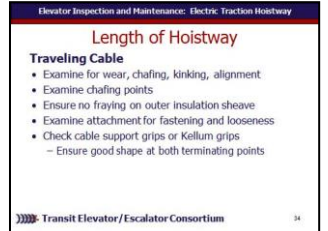
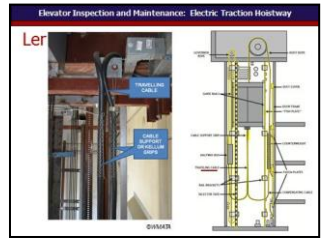
**Advance**

Look for wear, chafing, kinking and alignment. Examine for chafing points such as caused by exposure to beams, bolts, or rough wall. Make sure that there is no fraying on the outer insulation sheave. Protect cable from chafing. Examine attachment points for secure fastening and looseness. Fasten securely. Check that the **cable support or Kellum grips** are present and in good shape at both terminating points of the traveling cable.

**Advance**

### Materials Needed

✓ PPT slides 34 35



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide



**ASK**

### Instructor's Notes

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**In your own words:**

**Ask**

What is a hoist ropes?

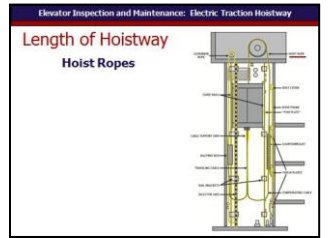
**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

✓ PPT slide 36



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

For hoist ropes –  
Inspect the ropes for corrosion (rouging),  
crown wear, broken strands and equal  
tension.

**Advance** Examine the shackles, springs,  
bolts and cotter pins.

**Advance** Verify that the ropes are securely  
fastened and free of dirt and excessive oil.

**Advance** Using a rope gauge, check for  
proper rope size.

**Advance** Verify that the cable being threaded  
through the shackles, to prevent the rotation  
of the ropes, is a minimum of 1/2 inch.

**Advance**

✓ PPT slide 37



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

Examine ropes for signs of lubricant build-up of

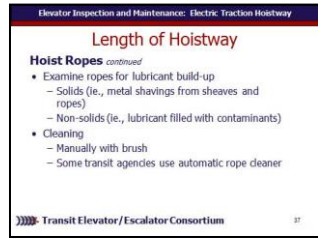
**Advance** solids, such as metal shavings from sheaves and ropes;

**Advance** and non-solids, such as lubricant filled with contaminants.

**Advance** The acceptable method of cleaning elevator ropes is manually with a brush. Some transit properties use an automatic rope cleaner.

**Advance**

✓ PPT slide 38



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to Bethlehem Rope Technical Bulletin 3 & 6

### Instructor's Notes

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### SAY

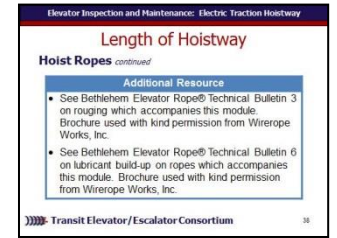
**In your own words:**  
*Refer participants to*

- Bethlehem Elevator Rope® Technical Bulletin 3 on rouging which accompanies this module. Brochure used with kind permission from Wirerope Works, Inc.
- Bethlehem Elevator Rope® Technical Bulletin 6 on lubricant build-up on ropes which accompanies this module. Brochure used with kind permission from Wirerope Works, Inc.

**Advance**

### Materials Needed

✓ PPT slide 39



✓ Bethlehem Rope Technical Bulletin 3 & 6

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a rope fastenings?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

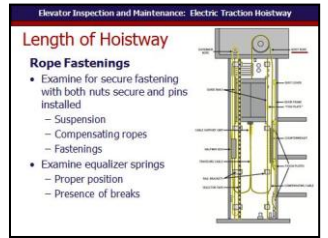
Examine the suspension, compensating ropes and fastenings for secure fastening with both nuts secure and cotter pins installed.

**Advance** Examine equalizer springs for proper positioning and the presence of any breaks.

**Advance**

### Materials Needed

✓ PPT slide 40



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What are compensating ropes and chains?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

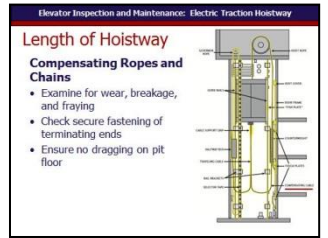
**Advance**

Look for wear, breakage, rust (**rouging**) and fraying ropes. Check that terminating ends are securely fastened. Make sure they are not dragging on the pit floor. If they are dragging this means that runby space may be inadequate.

**Advance**

### Materials Needed

✓ PPT slide 41



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a governor rope or cable?

**Allow participants to discuss answer.**

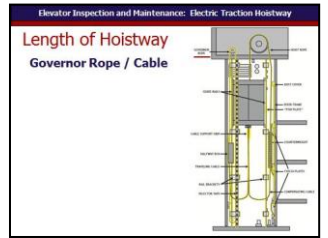
**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

### Materials Needed

✓ PPT slide 42





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

ASME code prohibits any lubrication of the governor cable. Lubricating the governor rope or cable will affect the of the governor jaws to engage correctly in an emergency.

**Advance** Check for crown wear, broken strands, or reduced cable diameter. Some transit agencies provide their mechanics with a pocket-sized some gauge to check rope diameter and whether or not the diameter may be worn beyond allowable specifications.

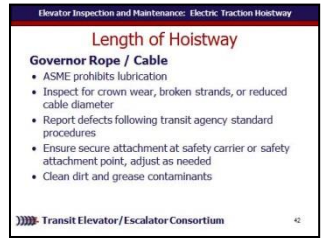
**Advance** Report defects with the governor rope and follow the standard maintenance procedures of the transit agency.

**Advance** Check that there is a secure attachment at the safety carrier or safety attachment point and adjust accordingly.

**Advance** Clean dirt and grease contamination.

**Advance**

✓ PPT slide 43



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What are guide rails, brackets, or joints?

**Allow participants to discuss answer.**

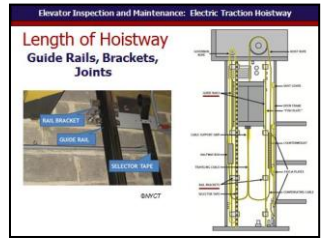
**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

### Materials Needed

✓ PPT slide 44



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

### Instructor's Notes

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**In your own words:**

Inspect the guide rails, guide rail brackets, rail joints and connecting plate for corrosion and loose hardware and repair as required.

**Advance** Clean guide rails of any lint and dirt. Check rails for nicks, gouges and burs and repair as required. Check alignment visually or with a laser. This is especially significant in earthquake-prone areas.

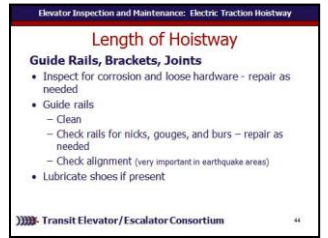
**Advance** If use shoes, then have to lubricate.

**Advance**

With roller guides, rails don't get as dirty though they are more prone to dust.< Inspect for wear; lubricate per OEM or Authority recommendations; check roller guides for fit and alignment with rail; inspect guide rail for loose fastenings and fit. Clean.

**Advance**

✓ PPT slides 45, 46



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a selector tape?

**Allow participants to discuss answer.**

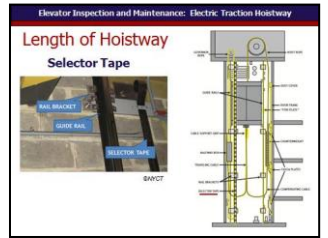
**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

### Materials Needed

✓ PPT slide 47



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

Examine the stationary **selector tape** by shining a flashlight beam parallel with the tape and check for any bends or cracks.

**Advance** Examine the sensor guides on the stationary tape for wear. If the guide groove is twice the width of the tape thickness, it should be replaced.

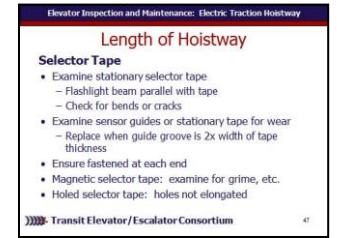
**Advance** Make sure that the selector tape is securely fastened at each end.

**Advance** For magnetic selector tapes, examine the magnets on tape for grime build up or materials that may interfere with their operation.

**Advance** For ones with holes, make sure that the holes are not elongated.

**Advance**

✓ PPT slide 48



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides



**ASK**

### Instructor's Notes

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**In your own words:**

**Ask**

What is a fish plate?

**Allow participants to discuss answer.**

**Advance and share**

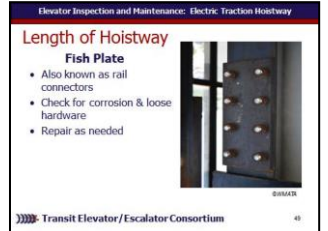
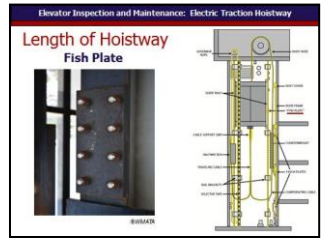
- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

Inspect the fish plates checking for corrosion and loose hardware. Repair defects as required.

**Advance**

✓ PPT slides 49, 50



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a fascia plate? A dust cover?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

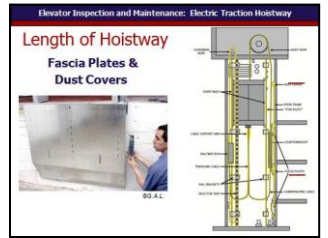
**Advance**

Inspect the fish plates checking for corrosion and loose hardware. Repair defects as required.

**Advance**

### Materials Needed

✓ PPT slide 51



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

### Instructor's Notes

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#### In your own words:

Examine the entire shaft and ensure that all fascia plates and dust covers are in place, aligned correctly, and securely fastened.

#### **Advance**

Examine the **fascia plate** for presence of scrapes. Check and secure loose **dust covers**.

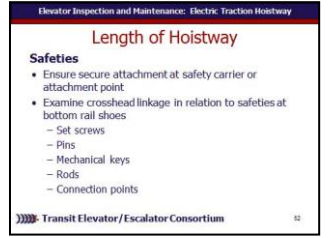
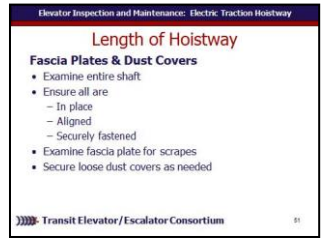
#### **Advance**

Ensure a secure attachment at the safety carrier or safety attachment point.

**Advance** Examine the crosshead linkage (where applicable) for the condition of the set screws, pins, mechanical keys, rods and connection points to the safeties located at the bottom rail shoes.

#### **Advance**

✓ PPT slides 52, 53





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

If the plank/safety switch is located on the cross head, activate and verify that the elevator will not move.

**Advance** On elevators with “type B” safeties, clean and lubricate the threaded rod and drum beneath the car in the safety plank.

**Advance** Examine the tail rope that attaches to the safety carrier. Verify that it is rust-free and tight on the drum. Also check that the tail rope is in the deflector pulleys, so that when activated it will deploy as designed and not kink or break.

**Advance**

✓ PPT slide 54



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a halfway junction box?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

**Advance**

At the junction box , ensure that the terminating end of the traveling cable is securely fastened to hoistway box.

**Advance** Make sure it is securely fastened to the bulkhead.

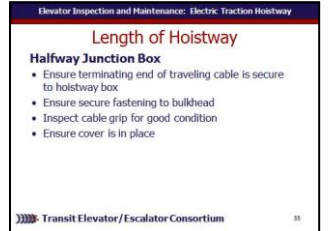
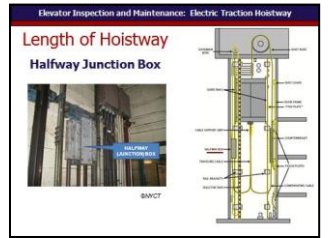
**Advance** Make sure cable support grip is present and in good condition.

**Advance** Make sure cover is in place.

**Advance**

### Materials Needed

✓ PPT slides 55, 56



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide

### Instructor's Notes

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### SAY

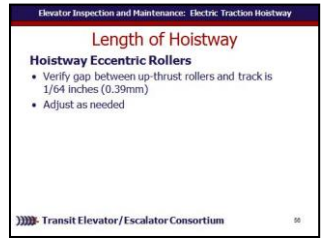
**In your own words:**

Verify that the gap between the up-thrust rollers and the track is 1/64 inch (0.39mm).  
Adjust as required.

**Advance**

### Materials Needed

✓ PPT slide 57



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a counterweight and a counterweight guard?

**Allow participants to discuss answer.**

**Advance and share**

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

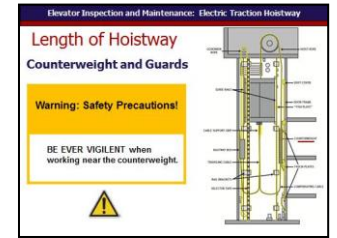
**Advance**

Safety Warning - BE EVER VIGILENT when working near the counterweight

**Advance**

### Materials Needed

✓ PPT slide 58



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

Examine the elevator counterweight and its assemblies.

**Advance** Check and tighten rods and bolts as required.

**Advance** Examine shackles and verify all shackle fastenings are tight and secure.

**Advance** Grease sheave bearing (only applies to 2:1 roping configuration).

**Advance** Make sure counterweight runby is still adequate per code requirements.

**Advance** Though presence of rust does not affect the integrity of the counterweight, the technician should check on the source of the dampness that may cause problems for other hoistway components.

**Advance** Experienced mechanics call the counterweight the “silent killer” hence the necessity of having the guard in place.

**Advance**

✓ PPT slide 59



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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**In your own words:**

Lets look at counterweight rollers and shoes.  
**Advance**

Inspect the guide rollers for wear and damage and replace as required. Examine the guide rollers for fit and alignment. Guide rollers should contact the rails with sufficient force to make a firm contact with the rail.

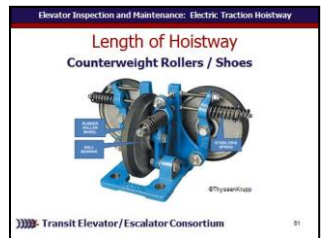
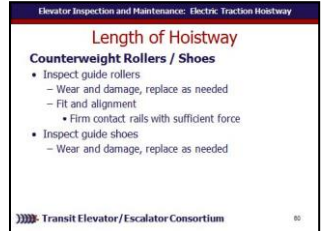
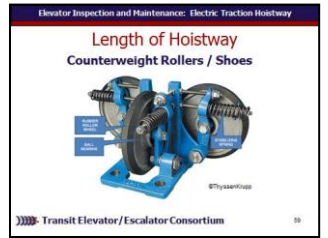
**Advance** Inspect all counterweight guide shoes for wear and damage and replace as required.

**Advance**

**Review illustration with participants pointing out the rubber roller wheel, ball bearing, and stabilizing spring.**

**Advance**

✓ PPT slides 60, 61, 62



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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**In your own words:**

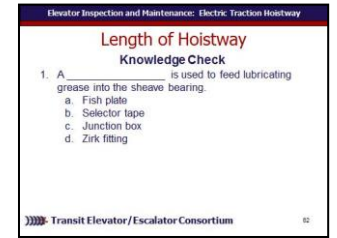
Lets see what we have learned so far:  
A \_\_\_\_\_ is used to feed lubricating grease into the sheave bearing.

- a. Fish plate
- b. Selector tape
- c. Junction box
- d. Zerk fitting

*Call on participants for answer  
Advance once given the correct answer*

**Answer: d.  
Advance**

✓PPT slide 63



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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**In your own words:**

Tom is given the task to perform inspection and maintenance of the counterweight and counterweight guards. What must Tom do to complete this task?

**Call on participants for answer**

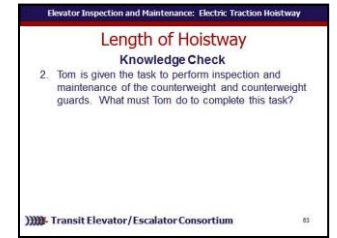
**Advance once given the correct answer**

**Answer:**

- Examine counterweight and assemblies
- Tighten rods and bolts as needed
- Verify shackle fastenings are tight and secure
- 2:1 roping configuration – grease sheave bearing
- Ensure runby is adequate per code
- Inspect sources of any dampness
- “Silent Killer” – ensure guard is in place

**Advance**

✓PPT slide 64





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 250 min

This section: 60 min

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



ASK



CLASSROOM  
ACTIVITY

### Instructor's Notes

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In your own words:

*[Take time to visit the field to provide an example demonstration and opportunities for participants to perform the following tests:*

- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the hoistway

**Advance**

✓PPT slide 65



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

**In your own words:**

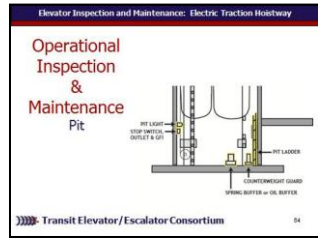
***Review locations of overhead components as indicated on diagram:***

- Pit light
- Stop switch, outlet, and GFI
- Pit ladder
- Counterweight guard
- Spring buffer or oil buffer

**Advance**

### Materials Needed

✓ PPT slide 66



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to  
Course book

### Instructor's Notes

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### SAY

**In your own words:**

***Refer participants to***

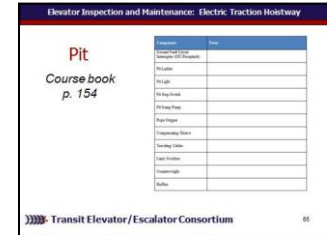
**Participant Course book**

***for chart to write additional notes.***

***Advance***

### Materials Needed

✓ PPT slide 67



✓ Course book

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

#### In your own words:

The **pit** floor should be cleaned using a dustpan and broom. Never pick up trash with your bare hand. Clean the pit floor of any oil, grease, dirt and debris

**Advance** Examine the bottom level landing sills and clean as required.

**Advance** Examine the fascia below the lower landing for secure fastening. Make necessary repairs as required.

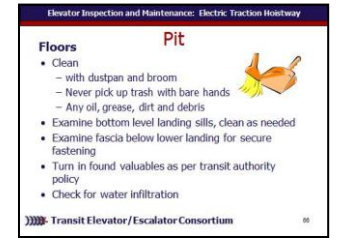
**Advance** Any valuable items found in the pit, such as keys, jewelry or other items, must be turned in to appropriate person or department as per your local transit agency policy.

**Advance** Check for water infiltration. Clean the pit floor of any oil, grease, dirt and debris.

**Advance**

### Materials Needed

✓ PPT slide 68



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is governor tension sheave

**Allow participants to discuss answer.**

**Advance**

The governor rope tension sheave is required to keep proper tension on the governor cable during operation of the elevator.

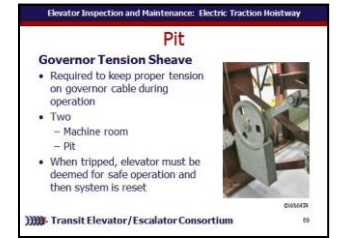
**Advance** There are two governor sheaves: one in the machine room and one in the pit.

**Advance** If the elevator has experienced an overspeed condition in which the governor tripped and set the safety, it will be necessary to reset the system after the elevator has been deemed safe for operation.

**Advance**

### Materials Needed

✓ PPT slide 69



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What does GFI stand for?

**Allow participants to discuss answer.**

**Advance**

Ground Fault Circuit Interrupter (GFI Receptacle)

Set and reset the GFI to make sure it is functioning properly. If it is not, replace it.

**Advance**

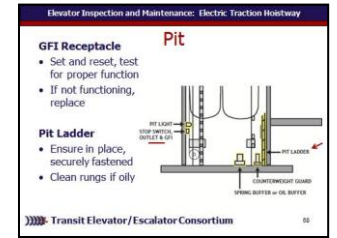
**Pit Ladder**

Make sure the **pit ladder** is in place and securely fastened. Check to make sure the rungs are not oily. If they are, clean them.

**Advance**

### Materials Needed

✓ PPT slide 70



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

#### In your own words:

#### Pit Light

Check the operation of the pit lighting and receptacles. Verify that the pit light has required safety guard installed.

#### Advance

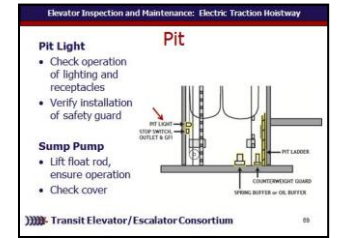
#### Pit Sump Pump

Verify that the **sump pump** is operational by lifting the **float rod**. If it is not functioning as designed, correct the defect. Note that sump pumps in pits, where provided, must be covered. Check that the cover is secured and level with the pit floor.

#### Advance

### Materials Needed

✓ PPT slide 71



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

### Instructor's Notes

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#### In your own words:

Pit Stop Switch

#### **Advance**

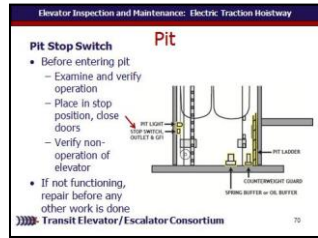
Examine the condition and verify operation of the **stop switch** before entering the pit. Verify that the pit stop switch is operational and prevents the car from moving when activated.

Place the pit stop switch in the stop position and close the doors to verify that it will prevent operation of the elevator.

**Advance** If the pit stop switch does not function properly, it must be repaired before any other work is done. Make necessary repairs as required.

#### **Advance**

✓ PPT slide 72





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

### Instructor's Notes

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#### In your own words:

Rope gripper safety warning:  
Whenever Working on Rope Gripper, KEEP HANDS CLEAR. Forces created can cause injury.

#### **Advance**

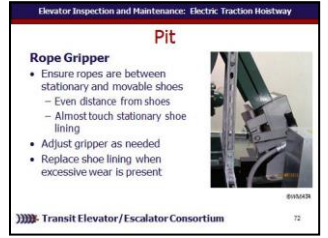
Check that the ropes between the stationary and movable shoes on the rope gripper. Ropes should be an even distance from the shoes - side to side and top to bottom. Ropes should almost touch the stationary shoe lining. Uneven ropes or a gripper that is installed at a bad angle will cause excessive and accelerated brake lining wear.

#### **Advance**

Adjust gripper as necessary and **Advance** replace shoe lining when there is excessive wear.

#### **Advance**

✓ PPT slides 73, 74



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide



**ASK**

### Instructor's Notes

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**In your own words:**

**Ask**

What is compensating sheave?

**Allow participants to discuss answer.**

**Advance**

Activate the compensating sheave switch and verify that it will prevent the car from moving.

**Advance** Clean the switch and lubricate the pivot point as required.

**Advance** Verify that the compensating sheave is not landed and is within the limit of the guide rails.

**Advance** Grease the bearings as required.

**Advance**

✓ PPT slide 75



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide



**ASK**

### Instructor's Notes

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**In your own words:**

**Ask**

Again what is a traveling cable?

**Allow participants to discuss answer.**

**Advance**

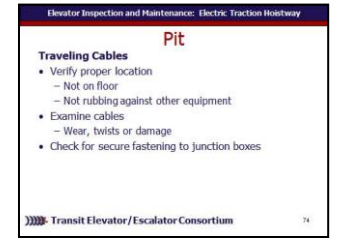
Verify that the traveling cable is not touching the pit floor or rubbing against any other equipment.

**Advance** Examine the cables for wear, twists or damage (may need to inspect from top of the car).

**Advance** Check that the traveling cable is securely fastened to all junction boxes (may need to inspect from on top of the car).

**Advance**

✓ PPT slide 76



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

Again, what do we know about limit switches?

**Discuss participant ideas.**

There are three types of limit switches in the hoistway of transit elevators. One set is located in the overhead and the other set is located in the pit. Inspection and maintenance in a traction systems is similar to hydraulic systems.

**Advance** If limit switches appear sticky, clean the arm or activator.

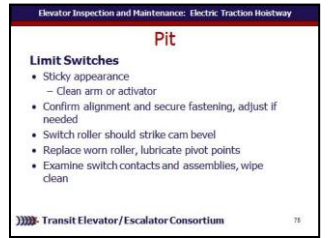
**Advance** Check that the switches and cams are aligned correctly and are securely fastened and adjust accordingly.

**Advance** The switch roller should strike the bevel of the cam and should be adjusted accordingly.

**Advance**

### Materials Needed

✓ PPT slide 77



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

#### In your own words:

Replace worn rollers and lubricate pivot pins.

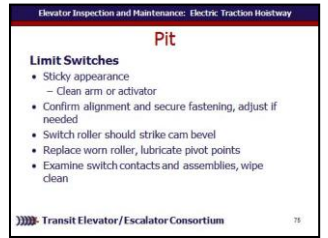
**Advance** Examine the switch contacts and assembly for proper movement (contacts should wipe) and reaction and, where required, repair or replace.

**Note:** you may need a ladder to reach some of the switches in order to test them.

**Advance**

### Materials Needed

✓ PPT slide 77



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

#### In your own words:

For **Normal Limit Switches**, operate the car on inspection mode to a point where the bottom normal limit device can be reached. Activate the normal limit device. The car should run up, but not down. If not functioning as designed, correct the defect as required.

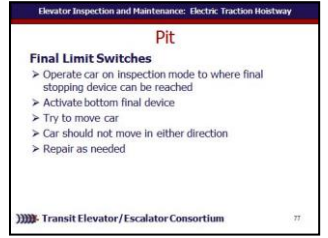
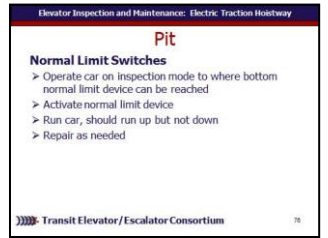
#### **Advance**

For **Final Limit Switches**, operate the car on inspection speed to a point where the final stopping device can be reached. Activate the bottom final device and try to move the car. The car should not move in either direction. If the car moves repair the defect.

#### **Advance**

### Materials Needed

✓ PPT slides 78, 79



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

**In your own words:**

**Advance**

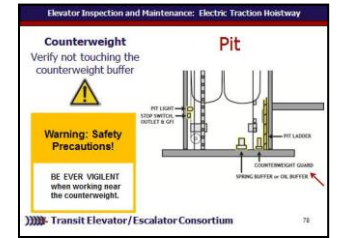
Verify that the counterweight is not touching the counterweight buffer.

And remember when working near the counterweight, be ever vigilant!

**Advance**

### Materials Needed

✓ PPT slides 80



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What is a buffer?

**Discuss participant ideas.**

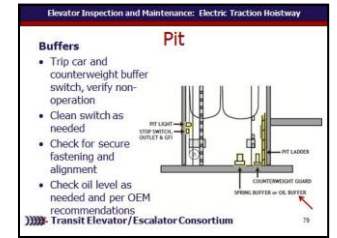
**Advance**

Inspect the operation of the car and counterweight buffer switch (if applicable) by tripping and verifying that the car will not run. Clean the switch as required. Check that the car and counterweight buffers are securely fastened and are aligned with the striker plates. Where oil buffers are used, check the oil level adding oil per OEM recommendations.

**Advance**

### Materials Needed

✓ PPT slide 81





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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**In your own words:**

Lets see what we have learned so far:  
What should Bobby do before entering the pit with regard to the pit stop switch?

**Call on participants for answer**

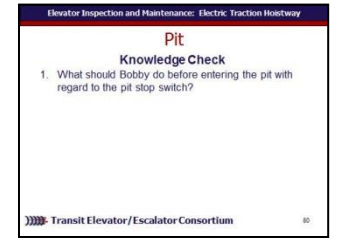
**Advance once given the correct answer**

**Answer:**

- Examine and verify operation
- Place in stop position, close doors
- Verify non-operation of elevator

**Advance**

✓PPT slide 82



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

**In your own words:**

**Yes or No.** Whenever Working on Rope Gripper, Jim should keep hands clear as forces created can cause injury.

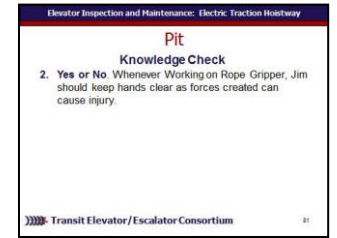
*Call on participants for answer*

*Advance once given the correct answer*

**Answer: Yes**

**Advance**

✓PPT slide 83



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to Course book

### Instructor's Notes

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### SAY

**In your own words:**  
*Refer participants to*

**Participant Course book**

*for chart to write additional notes.*

**Advance**

### Materials Needed

✓ PPT slide 84



✓ Course book

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

What do we see on the top of the car here?

***Discuss participant ideas.***

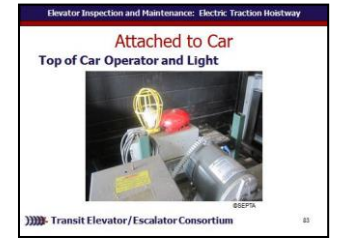
***Advance***

***Discuss photo and title.***

***Advance***

### Materials Needed

✓ PPT slide 85



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

**In your own words:**

For the Stop Switch

**Advance**

Before entering the top-of-car, place the **stop switch** in the stop position. Then allow the doors to close and verify that the car will not run.

And for the Top of Car Operator and Light

**Advance**

Examine the top of car operator, stop switch and light by testing for proper operation. Any needed repairs must be made to the top-of-car operator, stop switch and light before proceeding with any other maintenance.

Always maintain the guard on the top car light. If the guard is missing, it must be replaced. Make all needed repairs.

**Advance**

### Materials Needed

✓ PPT slides 86



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slides

### Instructor's Notes

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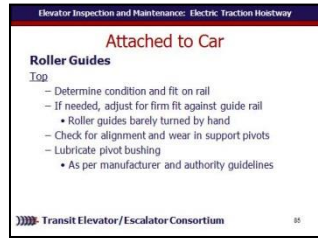
**In your own words:**

#### Roller Guides

Examine the **roller guides** atop the car to determine the condition of the rollers and fit on the rail. If required, adjust for a firm fit against the guide rail whereby the roller guides are just barely able to be turned by hand. Check for proper roller guide alignment with the guide rail. Check the support pivots for evidence of wear. Lubricate the pivot bushing per manufacturer and authority guidelines.

#### Advance

✓ PPT slides 87



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

**In your own words:**

#### Bottom Roller Guides

Examine the lower roller guides to determine the condition of the tires and fit on the rail. If required, adjust for firm fit against the rail whereby the roller guides are just barely able to be turned by hand. Check for proper roller guide alignment with the guide rail. Check the support pivots for evidence of wear. Lubricate the pivot bushing with a couple of drops of 3-in-1 machine oil through the hole in the housing. Make necessary repairs or adjustments as required.

**Advance**

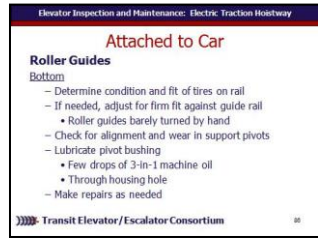
#### Car Guide Shoes

In cases where **guide shoes** are used instead of guide rollers, check pad thickness, tightness of hardware, and that the shoes move freely and smoothly.

**Advance**

### Materials Needed

✓ PPT slides 88, 89



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**ASK**

### Instructor's Notes

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### SAY

**In your own words:**

**Ask**

How do we replace car guides or shoes?

**Discuss participant ideas.**

**Advance**

Replacing Guides/Shoes

When an elevator car is misaligned on the guide rail, it is often because of faulty roller guides and/or guide shoes.

To replace a guide roller start by marking its position on the crosshead by putting a box around the outside of its mounting bracket.

This will make it easy to know exactly where the new roller guide/shoe assembly should be placed. Next, loosen spring tension so that you can pull the rollers back. Lastly, remove the four bolts at the bottom and lift the assembly off.

**Advance**

### Materials Needed

✓ PPT slide 90





# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slides

### Instructor's Notes

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### SAY

**In your own words:**

**Share photo and illustration.**  
**Advance**

Place a new a roller guide assembly inside the box you marked previously. Tighten into place by tightening the four bolts at the bottom and then tighten the spring tension so that the rollers are secure on the guide rail.

**Advance**

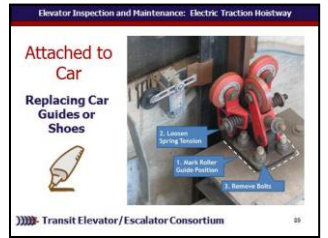
**Car Fan**

Clean car ventilation and fan opening. If necessary, remove the **car fan** and clean the blades or squirrel cage.

**Advance**

### Materials Needed

✓ PPT slides 91, 92, 93



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

**In your own words:**

Lets see what we have learned so far:  
Yes or No. Faulty roller guides or shoes will not result in misaligned car.

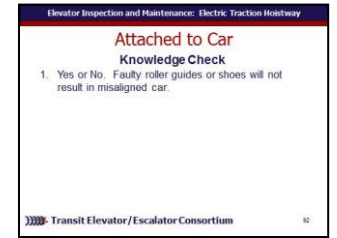
*Call on participants for answer*

*Advance once given the correct answer*

**Answer: No. Faulty roller guides or shoes will result in a misaligned car.**

**Advance**

✓PPT slide 94



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_ Section End Time: \_\_\_\_\_

**DO**

**SAY**

**Materials Needed**



**ASK**

### Instructor's Notes

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**In your own words:**

Lets see what we have learned so far:  
Number in correct order the steps for replacing car guides or shoes

- Remove 4 bolts at bottom and lift off assembly
- Tighten 4 bolts
- Place new roller guides within markings
- Tighten spring tension to secure rollers on guide rail
- Mark by placing box around outside of mounting bracket
- Loosen spring tension to pull back rollers

***Call on participants for answer  
Advance once given the correct answer***

✓PPT slide 95



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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#### In your own words:

Answer:

1. Mark by placing box around outside of mounting bracket
2. Loosen spring tension to pull rollers back
3. Remove 4 bolts at bottom and lift off assembly
4. Place new roller guide within markings
5. Tighten 4 bolts
6. Tighten spring tension to secure rollers on guide rail

**Advance**

✓PPT slide 96



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 130 min

This section: 10 min (1 slide)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide

### Instructor's Notes

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### SAY

**In your own words:**

**Review locations of lighting as indicated on diagram:**

Always in on car top and pit, sometimes in hoistway and on bottom of car.

The presence of lights along the hoistway is much more likely in traction elevators as they generally have longer hoistways than hydraulic elevators.

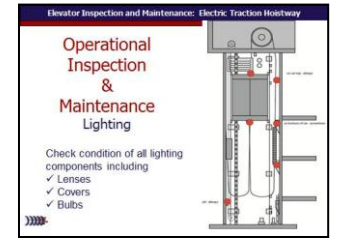
**Advance** Make sure to check the condition of all lighting components including lenses, covers and bulbs.

For more information on inspection and maintenance of lighting in transit elevators refer to Module 2 in this course.

**Advance**

### Materials Needed

✓ PPT slide 97



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO



**REVIEW** slide



**REFER** participants to Course book

### Instructor's Notes

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### SAY

**In your own words:**  
*Refer participants to*

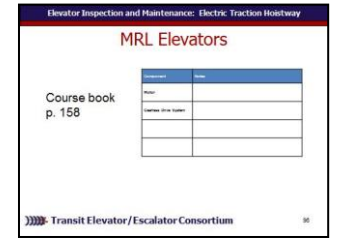
**Participant Course book**

*for chart to write additional notes.*

**Advance**

### Materials Needed

✓ PPT slide 98



✓ Course book

# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

### Instructor's Notes

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#### In your own words:

Inspecting and maintenance of MRL elevators are similar to the procedures for traction elevators.

**Advance** The obvious difference is, of course, that with no machine room, the MRL motor resides in the hoistway itself.

Note: governors are located in hoistway. It is seldom that the elevator technician has to take apart the motor to perform routine maintenance.

**Advance** The technician usually depends on sensory inspections listening, for example, for loud humming noises, or a bearing screaming or knocking.

**Advance** Look for alignment of the motor and check that hardware is securely fastened. Where applicable, follow guidelines to grease fittings. If bearings are sealed, then there is no need to grease fittings. **Advance**

✓ PPT slide 99



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**REVIEW** slide

#### In your own words:

Because MRL elevators operate with a gearless direct drive, listen for unusual noise such as screaming or knocking noise from bearings. Check for the smell of electrical burning which may be a result of burned windings.

#### **Advance**

✓ PPT slide 99



### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**ASK**

### Instructor's Notes

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**In your own words:**

Lets see what we have learned so far:  
Yes or No. MRL elevator inspection and maintenance is similar to hydraulic inspection and maintenance.

**Call on participants for answer**

**Advance once given the correct answer**

**Answer: No. MRL elevator inspection is similar to a traction elevator inspection and maintenance process.**

**Advance**

✓PPT slide 100



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 100 min

This section: 60 min

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



ASK



CLASSROOM  
ACTIVITY

### Instructor's Notes

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In your own words:

*Take time to visit the field to provide an example demonstration and opportunities for participants to perform the following tests:*

- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the hoistway
- Perform an operational test on all auxiliary lights

**Advance**

✓PPT slide 101



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 40 min

This section: 40 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



#### CLASSROOM ACTIVITY

#### Instructor's Notes

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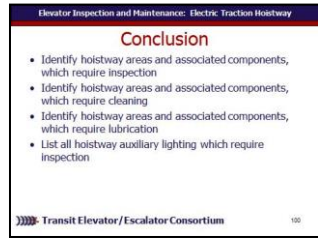


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**In your own words:**  
*Read slide.*  
***For each objective, briefly review what was learned in this module or ask participants to share what they have learned for each learning objective and briefly discuss as a class.***  
**Advance**

*Read slide.*  
***For each objective, briefly review what was learned in this module or ask participants to share what they have learned for each learning objective and briefly discuss as a class.***  
**Advance**

✓PPT slides 102, 103



# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 40 min

This section: 40 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



#### CLASSROOM ACTIVITY

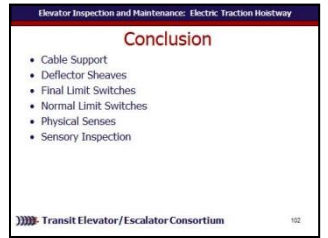
#### In your own words:

Lets take a look at some of the key words we have defined as moved through this module.

***Read slide. Discuss definitions as a group.***

***Advance***

✓PPT slide 104



#### Instructor's Notes

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# Elevator – Electric Traction Hoistway

## Instructor's Guide



Module Length: 480 min

Time remaining: 40 min

This section: 40 min (3 slides)

Section start time: \_\_\_\_\_

Section End Time: \_\_\_\_\_

### DO

### SAY

### Materials Needed



**CLASSROOM  
ACTIVITY**



**INDIVIDUAL ACTIVITY**

### Instructor's Notes

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**In your own words:**

*Administer quizzes.*

- ✓ PPT slide 105
- ✓ Quizzes
- ✓ Pencils

