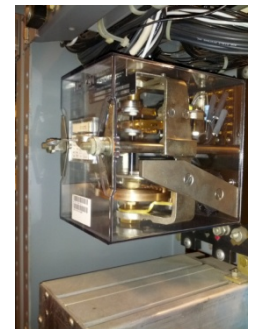


# Instructor Guide



## 101: Introduction and Overview of Track Circuits



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For Signals Training  
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# Signals – Introduction and Overview to Track Circuits

Instructor's Guide



## Icons Used In This Guide



**REVIEW** slides



**ASK**



**CLASSROOM ACTIVITY**



**SMALL GROUP ACTIVITY**



**INDIVIDUAL ACTIVITY**



**WRITE**



**Multimedia**



**REFER** participants to

## Agenda

Topic #	Topic Title	Duration
1	Overview	60 Minutes
2	Types of Track Circuits	30 Minutes
3	AC Track Circuits	90 Minutes
4	Field Trip	90 Minutes
5	AF Track Circuits	30 Minutes
6	Fundamentals of Train Detection	30 Minutes
7	Field Trip	90 Minutes
8	Summary	90 Minutes
	<b>Total Time:</b>	450 Minutes

# Signals – Introduction and Overview to Track Circuits

*Instructor's Guide*



## Overview

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

The purpose of this course is to provide the participant with an introduction to the basics of train detection and rail structure within different types of track circuits.

**Objectives**

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

- Recognize the principles and operations of track circuits
- Name the common of types track circuits
- Record types of track circuits at your location
- List the major components found in track circuits and examine their functions
- List basic components of rail structure
- Describe the difference between shunted and open track circuits

### **Materials**

- Mandatory** Make sure you have the following
- PowerPoint Presentation
  - Coursebook
  - Quizzes
  - Pencils
  - Book: North American Railway Signaling
  - Handouts: AC Track Circuits Major Components
  - Your notes in course book table page 21
- Optional** You may also want the following for optional activities:
- Chalk board with chalk, large paper with marker, etc.
  - Internet connection OR downloaded video(s)
  - Lab, simulator or out of service elevator

# Signals – Introduction and Overview to Track Circuits

## Instructor's Guide



Module Length: 450 min      Time remaining: 450 min      This section: 60 min (9 slides)      Section start time: \_\_\_\_\_      Section End Time: \_\_\_\_\_

DO	SAY	Materials Needed
<div data-bbox="34 432 142 534"></div> <div data-bbox="156 472 614 508"><b>REVIEW</b> introduction slides</div> <div data-bbox="34 554 142 664"></div> <div data-bbox="162 584 359 619"><b>Multimedia</b></div> <div data-bbox="30 793 444 836"><b>Instructor's Notes</b></div> <div data-bbox="30 896 610 1239"> <hr/><hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="678 426 1020 462"><b>In your own words:</b></div> <div data-bbox="678 486 1392 565">Welcome to the course on The Introduction and Overview of track Circuits.</div> <div data-bbox="678 576 836 612"><b>Advance</b></div> <div data-bbox="678 665 1392 829">Riders depend on us. Here is a short video to help us think about what we already may know about track circuits.</div> <div data-bbox="678 886 1392 965"><i>Click on the video camera to link to the Youtube video or pull up from your files.</i></div> <div data-bbox="678 1019 1277 1055"><i>The video is 15 minutes in length.</i></div> <div data-bbox="678 1152 836 1188"><b>Advance</b></div>	<div data-bbox="1499 472 1785 508">✓PPT slides 1, 2</div> <div data-bbox="1541 529 1881 782"> </div> <div data-bbox="1541 796 1881 1049"> </div> <div data-bbox="1505 1093 1875 1215">✓Internet connection OR downloaded video 101.1</div>



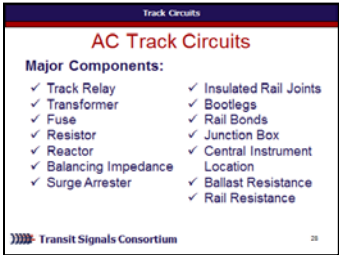



# Signals – Introduction and Overview to Track Circuits

## Instructor's Guide



Module Length: 450 min      Time remaining: 360 min      This section: 90 min (54 slides)      Section start time: \_\_\_\_\_      Section End Time: \_\_\_\_\_

DO	SAY	Materials Needed
<div> <b>REVIEW</b> slides</div> <div> <b>INDIVIDUAL ACTIVITY</b></div> <div><b>Instructor's Notes</b><div></div><div></div><div></div><div></div><div></div><div></div></div>	<p><b>In your own words:</b></p> <p>The full list of major AC track circuit components are here</p> <div><div><div>✓ Track Relay</div><div>✓ Transformer</div><div>✓ Fuse</div><div>✓ Resistor</div><div>✓ Reactor</div><div>✓ Balancing Impedance</div><div>✓ Surge Arrester</div></div><div><div><b>Advance</b></div><div>✓ Insulated Rail Joints</div><div>✓ Bootlegs</div><div>✓ Rail Bonds</div><div>✓ Junction Box</div><div>✓ Central Instrument Location</div><div>✓ Ballast Resistance</div><div>✓ Rail Resistance</div></div></div> <p><b>Distribute handout.</b> <b>Instruct participants to fill in what they know about each component.</b> <b>Allow them 10 minutes to complete.</b> We will discuss each component and how they relate to track circuits in the next series of slides.</p> <p><b>Continued</b></p>	<p>✓ PPT slides 27, 28</p> <div></div> <div></div> <p>✓ Handout: Track Circuits Major Components</p>