



# Inspection and Maintenance of Highway Grade Crossings

Course 204

PARTICIPANT GUIDE

 SIGNALS TRAINING CONSORTIUM

# Introduction and Overview to Inspection and Maintenance of Highway Grade Crossings

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## **Participant Guide**

Signals Maintenance Training Consortium

**COURSE 201**

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Signals Training  
Consortium Use Only

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## How to Use the Participant Guide

### Purpose of the Course

The purpose of the *Inspection and Maintenance of Grade Crossings* course is to assist the participant in demonstrating proper and safe procedures for inspecting and maintaining highway grade crossings and their associated components.

### Approach of the Book

Each course module begins with an outline, a statement of purpose and objectives, and a list of key terms. The *outline* will discuss the main topics to be addressed in the module. *Learning objectives* define the basic skills, knowledge, and abilities course participants should be able to demonstrate to show that they have learned the material presented in the module. A list of *key terms* identifies important terminology that will be introduced in each course module. *Review exercises* conclude each module to assist the participants in reviewing key information.

# Module 1

## OVERVIEW AND SAFETY

### Outline

- 1-1 Overview
- 1-2 Safety
- 1-3 Tools
- 1-4 General Schedules
- 1-5 Record Keeping
- 1-6 Summary

### Purpose and Objectives

The purpose of this module is to provide the participant with an overview for maintenance and inspection of highway grade crossings.

Following the completion of this module, the participant should be able to complete the exercises with an accuracy of 70% or greater:

- Describe safety practices as related to grade crossing inspection & maintenance
- Identify tools and describe their required care necessary for highway grade crossing inspection and maintenance
- Identify agency specific schedules for grade crossing inspection and maintenance
- Describe inspection, maintenance & testing documentation for reporting as per agency regulations

### Key Terms

- Catenary wire
- Communication
- Defective equipment
- Frequency selective voltmeter
- General public
- Hot gloves
- Insulated shepherds hook
- Insulated Shotgun
- Jumper wire
- On-track protection
- Personal fall arrest system
- Personal safety
- Potential hazards
- Rail system
- Reflective vest
- Secure the worksite
- Third rail
- Torque wrench
- Vehicle strobe light

## 1-1 OVERVIEW

In the previous course, *Course 101 Overview and Introduction to Signals*, the participant was introduced to highway grade crossings, their basic components and their basic operation. The approach to this next level of training, Course 204, is to help the participant hone necessary skills for inspecting and maintaining highway grade crossings and their systems. In doing so, this module supplements and enhances agency-specific on-the-job, classroom and other training required.

This course was developed by a consortium of signal specialists from several rail transit systems that, on the federal level, are governed by the Federal Railroad Administration (FRA) or the Federal Transit Administration (FTA). Each federal agency provides the baseline for compliance in areas of safety, testing, maintenance, and record keeping pertaining to track circuits. The approach of this module uses the guidelines outlined in FRA §234 for inspection, testing, maintenance and repair. Each signal maintainer should refer to the RTS SOP for applicable testing and maintenance. The FRA guidelines also prescribe standards to ensure that personnel working with, and affected by, safety-critical train control system related products receive appropriate training and testing.

One focus of this module is on the practice of safety for signal maintainers working around grade crossings. As such, this module supplements standard safety policies of the participant's rail transit system as well as the principles of safety covered in your orientation and in Course 100 of this series of courses, particularly the module on *Signal Maintainer Worker Safety*.

Safety extends to the proper use of tools when inspecting and maintaining highway grade crossings. This module discusses the safe use of standard tools the signal maintainer can expect to use when working on highway grade crossings.

Every rail transit system adheres to strict record keeping and timetables for inspection and maintenance. These practices ensure the safety of rail passengers, workers, and properties. This module gives a thorough overview of maintenance record keeping.

This module forms the foundation of the specifics of preventive maintenance for the other modules which cover specific maintenance steps of highway grade crossing warning devices and systems. Within this module highway grade crossing worker safety, tools, and maintenance timetables are presented.

Some common acronyms are used throughout this course are:


- APTA The American Public Transportation Association
- AREMA American Railway Engineering and Maintenance-of-Way Association
- FRA Federal Railroad Administration
- FTA Federal Transit Administration.
- OEM Original Equipment Manufacturer
- PPE Personal Protective Equipment
- RTS Rail Transit System

## 1-2 SAFETY

Ensuring proper operation of highway grade crossings and their warning systems is mandatory and accomplished through effective maintenance & testing. Maintenance, inspection and testing of the highway grade crossing can create potentially dangerous situations to the employees responsible for completing these tasks. Strict adherence to sound safety practices and constant awareness are the requirements for avoiding accidents and fatalities.

The signal maintainer must have complete knowledge of all safety rules, policies, and guidelines of each RTS when inspecting and maintaining grade crossings. Roadway Worker Safety training along with any previous course work should be followed. Compliance with applicable federal, state and local requirements including OSHA, the CFR 49 Section 234 and the MUTCD is mandatory.

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Regulations for the safety of highway grade crossing maintenance can be located in:

- **Code of Federal Regulations (CFR)**, Part 49 Section 234
- **Manual on Uniform Traffic Control Devices (MUTCD)**
- **Roadway Worker Protection Training**
- **State safety oversight agency**

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To prevent injuries, the signal maintainer must complete training & testing, follow supervisor and mentor lead, follow agency rules and procedures, maintain careful and accurate records, and use reference material when required.



**Warning: Safety Precaution!**

Your safety, your co-worker's safety and the safety of the public depend on you. Always follow your agency's specific requirements for safety as related to any highway grade crossing inspection and maintenance practices.

Safety and highway grade crossing maintenance can be considered in three categories: personal safety, the protection of train movement and equipment, and the safety of the general public.