

17. Recommended Practice for Signal Equipment Room Inspection

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Abstract: This recommended practice provides guidelines for inspecting rail transit signal equipment rooms.

Keywords: bungalow, hut, inspection, relay room, signal equipment room, signal, train control room, wayside

Introduction

(This introduction is not a part of APTA RT-SC-RP-017-03, *Recommended Practice for Signal Equipment Room Inspection*.)

APTA rail transit safety standards and recommended practices represent an industry consensus on practices for rail transit systems to help achieve a high level of safety for passengers, employees, and the general public. This document was created by and for those parties concerned with its provisions; namely, rail transit systems (operating agencies), manufacturers, consultants, engineers, and general interest groups. This recommended practice provides guidelines for inspecting rail transit signal equipment rooms.

APTA recommends this practice for:

- Individuals or organizations that inspect, maintain, and/or operate rail transit systems
- Individuals or organizations that contract with others for the inspection, maintenance, and/or operation of rail transit systems
- Individuals or organizations that influence how rail transit systems are inspected, maintained, and/or operated (including but not limited to consultants, designers, and contractors)

The application of any practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of how a rail transit system operates. In such cases, the government regulations override any conflicting practices this document recommends.

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Recommended Practice for Signal Equipment Room Inspection

1. Overview

1.1 Scope

This document establishes recommended guidelines for inspecting and testing rail transit signal equipment rooms.

1.2 Purpose

The purpose of this recommended practice is to promote safe and reliable rail transit operations through signal equipment room inspection.

2. Definitions and acronyms

For the purposes of this recommended practice, the following definitions and acronyms apply:

2.1 Definitions

2.1.1 alternating current (ac) ground detector: A device used to monitor ac power supplies for grounded conditions and to display an alarm when ground conditions are detected. *Syn:* **ac ground fault detector.**

2.1.2 automatic train control: The method and, by extension the specific system for automatically controlling train movement, enforcing train safety, and directing train operations. Automatic train control includes three major functions: automatic train operation, automatic train protection, and automatic train supervision.

2.1.3 automatic transfer switch: An electrical switching device that automatically switches over to the alternate source of power without interruption of ac power if the normal source of power drops off or drops under prescribed voltage levels. The transfer switch will automatically switch to its normal source of power after a pre-determined amount of time and a prescribed voltage level is restored to the normal side of the transfer switch.

2.1.4 direct current (dc) ground detector: A device used to monitor dc power supplies for grounded conditions and to display an alarm when ground conditions are detected. *Syn:* **dc ground fault detector.**

2.1.5 hazard: Any real or potential condition that can cause injury, death, or damage or loss of equipment or property.

2.1.6 local control panel: A panel displaying a line diagram of the trackage in and near a particular interlocking or group of interlockings, and equipped with various pushbuttons, electric switches, indicator lights, and audible alarms to allow control and monitoring of that section of trackage. *Syn:* **interlocking control panel.**

2.1.7 operations control center (OCC): A location or locations designed, equipped, and staffed for the purposes of monitoring and controlling RTS activities from a central location or locations. *Syn:* **rail control center, rail operations center, rail service control center.**

2.1.8 original equipment manufacturer (OEM): The enterprise that initially designs and builds a piece of equipment.

2.1.9 personal protective equipment (PPE): All clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

2.1.10 rail transit system (RTS): The organization or portion of an organization that operates rail transit service and related activities. *Syn:* **operating agency, operating authority, transit agency, transit authority, transit system.**

2.1.11 rectifier unit: A device that converts alternating current to direct current. *See also:* **traffic rectifier.**

2.1.12 signal equipment room drawing: A combination of drawings that includes signal schematics, plant layout, equipment location, track plans, and information for other signal equipment controlled from the signal equipment room.

2.1.13 signal equipment room: A train control room, relay room, bungalow, or hut located in a passenger station or yard or at some other strategic point to house signal equipment. *Syn:* **train control room.**

2.1.14 traffic rectifier: A device that converts alternating current to direct current for traffic circuits. *See also:* **rectifier unit.**

2.1.15 train control room: A device used in signal systems, which provides, a dc voltage for traffic circuits.

2.2 Acronyms

ac	alternating current
dc	direct current
HVAC	heating, ventilating and air conditioning
LED	light emitting diode
OCC	operations control center
OEM	original equipment manufacturer
PPE	personal protective equipment
RTS	rail transit system

3. Inspection provisions

3.1 Inspection frequency

The inspection procedures in this recommended practice should be performed as deemed necessary by the RTS.

The RTS should determine the need for additional inspection and testing frequencies for wayside signal equipment rooms. A review of the following factors may be useful in making this assessment:

- OEM-recommended intervals
- Industry experience
- Operating environment/conditions
- Historical data
- Reliability-centered maintenance program development
- Failure analysis
- RTS testing and experience
- Regulatory requirements

The frequency of tasks should comply with applicable federal, state, and local regulations.

3.2 Training

The RTS and/or their maintenance contractors should develop and execute training programs that provide employees with the knowledge and skills necessary to safely and effectively perform the tasks outlined in this recommended practice.

3.3 Materials

The following materials are recommended for inspecting signal equipment rooms:

- Dust cloths and/or other RTS approved dusting utensils
- RTS-approved cleaning utensils
- RTS-approved cleaning solutions
- Additional materials as required by the OEM and/or RTS

3.4 Tools

The following tools are recommended for inspecting signal equipment rooms:

- RTS-approved portable radio
- Standard tools carried by maintenance personnel
- Additional tools as recommended by the OEM and/or RTS

* Calibrate in accordance with OEM and/or RTS requirements.

3.5 Personal protective equipment

Personal protective equipment, as required by the RTS, should be worn at all times during inspection.

3.6 Safety

RTS safety rules, procedures, and practices shall be followed at all times during inspection.

3.7 Inspection procedure

The signal equipment room inspection procedures in this recommended practice may be modified for each rail transit system's requirements but should contain the steps listed in Sections 3.7.1-3.7.17 as a minimum.

The signal equipment room inspection should ensure that the rooms are presentable, environmental controls are functioning properly, reference materials for corrective maintenance and troubleshooting are available, and conditions with the potential to adversely impact operations are identified and corrected.

3.7.1 Notify the operations control center (OCC) and/or other authorities of the inspection activities to be performed.

3.7.2 Check the condition and/or operation of:

- a) door locks and other security features
- b) fire alarm/suppression indication
- c) fire extinguisher
- d) exterior room emergency lights
- e) interior room lights
- f) phones
- g) HVAC control equipment

h) AC and DC ground fault detectors

i) power supply meters

j) failure indicator lamps

- 3.7.3** Check the room logbook for entries made concerning problems and conditions.
- 3.7.4** Inspect room for signs of water leaks or standing water.
- 3.7.5** Inspect room for conditions that may jeopardize the safe and reliable operation of train control equipment or pose a safety hazard for signal maintenance personnel.
- 3.7.6** Ensure room is clean and that containers with trash, rags and other forms of debris are emptied and/or placed in approved containers.
- 3.7.7** Ensure flammable and/or combustible materials are properly stored.
- 3.7.8** Ensure equipment room drawings and other reference materials are complete and in good condition.
- 3.7.9** Ensure both the room normal and reserve ac incoming power breakers (if so equipped) are in the ON position.
- 3.7.10** Ensure the room automatic transfer switch (if so equipped) normal and reserve ac power breakers are in the ON position and the by-pass breaker is in the OFF position.
- 3.7.11** Ensure ac line incoming voltage meter voltage levels are in accordance with RTS specifications.
- 3.7.12** Inspect the room for blown fuses or the blown fuse indicator (if so equipped) for active alarms.
- 3.7.13** If present, check the local control panel indication lamps for proper illumination when test push button is operated.
- 3.7.14** Inspect printed circuit board modules for correct LED indications, active alarms or faults.
- 3.7.15** Inspect equipment covers and doors to ensure they are in good condition and are secured.
- 3.7.16** Document actions taken and/or problems and conditions identified in the room logbook.
- 3.7.17** Notify OCC and/or other authorities when inspection is complete.

3.8 Correction of deficiencies

Deficiencies identified during signal equipment room inspection should be corrected and documented in accordance with OEM and/or RTS requirements.

3.9 Documentation

Inspection activities should be documented, reviewed, and filed in accordance with RTS procedures.

Annex A

(informative)

Bibliography

- [B1] Original equipment manufacturer (OEM) specifications for signal equipment room inspection.
- [B2] Rail transit system (RTS) procedures for signal equipment room inspection.