APTA STANDARDS DEVELOPMENT PROGRAM

STANDARD

American Public Transportation Association
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Rail Transit Standards Operating Practices Working Group

On-Track Equipment Safety Requirements

Abstract: This standard provides minimum requirements for on-track equipment (OTE) safety.

Keywords: maintenance vehicle, on-track equipment, railroad maintenance machine, roadway worker protection, track safety, work area, work zone safety

Summary: OTE safety programs must address the protection of all roadway workers conducting work on or near the rail transit agency (RTA) rights-of-way. These programs require adherence to rules and procedures, training, qualification, regular OTE maintenance, and monitoring of OTE safety compliance. This standard incorporates all these elements and introduces a consistent approach throughout the rail transit industry.

Scope and purpose: This standard applies to use of OTE by the RTA and its contractors. It addresses the basic required design elements, vehicle inspection requirements and maintenance, use of equipment in work areas and on track, and operating procedures that govern all actions of the OTE and personnel on or near the OTE. This standard references and incorporates provisions contained in several other APTA standards, which should be reviewed concurrently.

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Introduction

This introduction is not part of APTA RT-OP-S-021-15, Rev. 1, "On-Track Equipment Safety Requirements."

This standard will augment existing APTA standards that address roadway worker protection, by focusing specifically on the use and movement of on-track equipment, which includes hi-rail vehicles and equipment. It is intended for rail transit, and has been developed using federal regulations for railroads contained in 49 CFR Part 214 Subpart C and Subpart D, established in 1997, as a reference.

While there are several standards and industry practices that refer to protection of right-of-way roadway workers, there were no standards at the time of this standard's original development that specifically addressed in a uniform way the movements of OTE, which have been contributory factors in several worker fatalities.

This standard requires that the rail transit industry equip all existing and new OTE with certain minimum design features, such as automatic change-of-direction alarms, backup alarms that provide audible signals, and alarms that are distinguishable from surrounding ambient noise, all of which will serve as secondary warning systems. This standard also requires that the RTA develop operating procedures and guidance for the use of OTE in work zone areas and along the right-of- way.

The work for developing this standard was initially started in response to NTSB recommendation R 12-36 to APTA. The recommendation was as a result of an investigation into a fatal collision between a hi-rail vehicle and roadway workers. The NTSB's recommendation related specifically to OTE audible alerts, but the incident had multiple contributing factors. Potential contributing factors also included the job complexity, workers and equipment in close proximity, and limited audible/visual warning due to loud work environment or size of equipment. This standard also incorporates, as applicable, elements of "Safety Advisory 14-1 Right-of-Way Worker Protection" issued in December 2013 by the FTA.

Currently, there is no FTA regulation pertaining to RWP safety. The best source of data on RWP comes from the FRA through the FAMES Group (Fatality Analysis of Maintenance-of-way Employees and Signalmen). Its report on "Fatal Striking Accidents when Roadway Maintenance Machines Were Present" showed that 22 of the 41 roadway worker fatalities analyzed occurred with one or more OTE in proximity. Some of these workers were struck by the OTE, while others were struck by trains or equipment moving on the adjacent track. Beginning in 2018 and finishing in 2020, the Transit Advisory Committee on Safety conducted detailed work on Roadway Worker Protection, culminating in a final report issued in 2020.

In developing this standard, APTA is appreciative of key expert stakeholders, which included the FTA Office of Safety; personnel for rail transit properties including operations, safety and maintenance-of-way; consultants; American Railroad Engineering and Maintenance-of-Way Association; and the National Rail Construction and Maintenance Association.

Note on alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. A rail transit system may develop alternates to APTA standards so long as the alternates are based on a safe operating history and are described and documented in the

system's safety program plan (or another document that is referenced in the Public Transportation Agency Safety Plan).

Documentation of alternate practices shall:

- identify the specific APTA rail transit safety standard requirements that cannot be met;
- state why each of these requirements cannot be met;
- describe the alternate methods used; and
- describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

It must be noted that rail transit is not directly comparable to railroads (Amtrak, commuter, freight rail, etc.). RTAs differ greatly in the types of service, vehicles and technology employed, with some systems operating fully automated trains on exclusive rights-of-way and others operating on streets mixed with traffic. Rail transit demands a unique approach to solving its problems, and the APTA Rail Transit Standards Program was enacted to accomplish this complex task.

On-Track Equipment Safety Requirements

1. Background

This standard addresses and strengthens on-track equipment (OTE) safety and related roadway worker protection (RWP) requirements, which were key elements raised by the National Transportation Safety Board (NTSB). According to Safety Advisory 14-1, "Right-of-Way Worker Protection," issued December 2013 by the FTA, roadway worker fatalities "continue to occur on the order of two to six per year." To address this issue, the NTSB requested that the FTA require every RTA to evaluate their roadway worker protection programs and procedures and to issue direction to ensure that they adequately and effectively address appropriate training, communication, maintenance vehicle movement authorities, flagging procedures, rule compliance, and the sharing of a work area by multiple work crews. Unannounced compliance checks, periodic hazard analysis when required, review and revision of RTA RWP programs, and the implementation of appropriate technology are the directives of this standard.

Every RTA requires periodic, scheduled and unscheduled maintenance of its tracks, switches, structures, signals, traction power system and other wayside equipment. The execution of this work requires trained and qualified personnel to be on or about the right-of way (ROW), and their protection is of paramount importance. This protection is accomplished through enhanced design of safety systems on OTE; development of clear rules and procedures that govern the safe actions of roadway workers, the safe use and movement of OTE, and compliance with those rules and procedures.

This standard augments existing APTA standards that address the protection of roadway workers by focusing specifically on the use and movement of OTE. Other issues related to RWP, work zone safety and contractor safety are addressed in other APTA Operating Practices standards.

This standard references and incorporates provisions contained in the following APTA standards, which should be reviewed concurrently with this document:

- APTA RT-OP-S-011-10, "Rule Compliance Program Requirements"
- APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements"
- APTA RT-OP-S-004-03, "Work Zone Safety Practices"
- APTA RT-OP-S-010-03, "Contractor's Responsibility for Safety on the Right-of-Way"
- APTA RT-OP-RP-026-20, "Roadway Worker Near-Miss Reporting Requirements"

"Roadway workers" will be the common term used throughout this document to represent individuals working on the roadway or ROW. Other terms for workers may also be used as appropriate.

2. RTA on-track equipment operating safety requirements

The RTA shall develop rules and/or procedures for the safe use of OTE to include, at a minimum, all requirements established in the following sections of this standard.

The RTA shall develop a process for performing periodic review of the OTE rules and/or procedures. The RTA shall periodically review its RWP program rules and procedures for compliance with its OTE rules and procedures.

The RTA shall ensure that individuals assigned to operate or direct OTE are properly trained and qualified, unless under the direct supervision of a qualified operator, as defined by the RTA.

The RTA shall require contractor-owned and/or -operated OTE to meet the requirements set forth in this Standard.

The elements contained in this standard apply to and govern all persons operating and/or working around OTE, including RTA employees and contractors.

2.1 Physical characteristics plan

In developing its OTE rules and/or procedures, the RTA shall consider, as a minimum, the following elements and address any hazards. In some cases, this information may also be required to be addressed in a site-specific work plan, if determined by the RTA:

- physical characteristics of the RTA (e.g., stations, interlockings, signal locations, traction power substations, rail configuration and condition, wayside traction power equipment that may be energized, bridges, tunnels, viaducts, limited clearance zones, line of sight)
- physical clearance of adjacent areas, including but not limited to structures, rail vehicles and electrical infrastructure
- expected work/tasks for OTE operators and roadway workers
- operating OTE
- types of OTE
- red zones
- low clearances
- no-clearance zones
- automobile traffic
- buried utilities or other hazards, if work involves any portion of equipment to extend below the surface of the right-of-way
- weather/environmental conditions

3. General OTE inspection documentation requirements

The RTA shall develop procedures regarding the requirements for OTE inspection prior to the OTE being operated. These procedures shall also indicate the frequency for inspection of the OTE for operational safety and documentation of the inspection. The RTA shall identify and document the inspection requirements that apply to RTA and contractors' OTE.

3.1 Pre-work OTE inspections

The RTA shall develop a procedure that clearly identifies the inspection process to be followed by the OTE operator prior to OTE operation.

The RTA shall establish and require the completion of an OTE pre-work inspection checklist prior to the initial operation of the OTE and require retention of that checklist on the OTE throughout the work period. This shall include provisions indicating the following:

- The operator of OTE shall check the OTE components for compliance per the requirements of the RTA prior to using the OTE at the start of the operator's work shift, in a manner prescribed by the RTA.
- Any noncomplying safety-related condition that cannot be repaired immediately shall be tagged and dated in a manner prescribed by the RTA and reported to the designated official.

The RTA shall identify the types of roadway workers who are authorized to complete the checklist.

The pre-work checklist shall include a list of safety items that shall be operational, including the following at a minimum:

- light system, including headlight, tail and brake lights, and warning lights
- alert systems, including audible movement alert and change of direction alarm horn
- brake system
- shunting functionality, if equipment is designed to shunt and is operational
- hi-rail components, where applicable
- securement of any tools, materials, equipment or other items transported on the OTE

The RTA shall determine which defects could inhibit the safe operation of OTE and whether or not the unit can be operated with alternate safeguards as formally identified and required by the RTA.

The RTA shall develop procedures governing the use of failed OTE, including the movement of the OTE to a safe place of repair.

The RTA shall require the documentation of pre-work and any OTE inspection activities.

The RTA shall determine if certain environmental conditions will allow for work to be continued if headlights and/or horns are found to be noncompliant. The RTA shall identify mitigating procedures, which will serve as an acceptable temporary substitution under these circumstances. The RTA shall identify who is authorized to make the decision to continue work and the procedures to be followed and documentation to be retained if such conditions are permitted.

3.2 OTE lockout/tagout procedures

The RTA shall develop lockout/tagout (LOTO) procedures for each type of OTE operated at the RTA, regardless of whether equipment is defective or under maintenance. The RTA shall require that contractors meet the RTA's requirements, at a minimum. The term "lockout/tagout" shall not be intended to mean instructions related specifically to lockout or tagout requirements for the RTA's wayside traction power systems.

3.3 OTE inspections

The RTA shall develop procedures for the initial and periodic inspection and maintenance of OTE owned or leased by the RTA. The RTA shall establish qualification requirements for the individuals responsible for performing such inspections.

The RTA shall establish requirements that contractors conduct periodic inspection and/or maintenance of the contractor's OTE, which can be verified by the RTA.

The RTA shall establish requirements for RTA-based inspections of contractor equipment prior to use.

In addition to the OTE inspection requirements, the RTA shall establish inspection requirements specific to hi-rail vehicles and equipment used by the RTA.

4. OTE operations alert system requirements

"OTE operations alert system" refers to equipment installed on the OTE, wayside or track that provides audible alarms and visual warnings for the purpose of alerting OTE presence and/or movement to roadway workers.

The RTA shall determine the appropriate types of alert systems necessary for the RTA's specific environmental and equipment considerations.

The RTA shall equip all OTE with the alert systems described in Section 4.1 of this standard.

In the period before existing OTE is equipped with permanent alert systems described in Section 4.1 of this standard, the RTA shall equip existing OTE with a portable horn or other audible warning device that produces a sound loud enough to be heard by roadway workers and other OTE operators within the immediate work area.

The RTA shall establish a timeline for ensuring that all existing and new OTE is equipped with alert systems in accordance with this standard.

The OTE alert provisions contained in this section of this standard shall apply only when OTE is operating on track.

The RTA shall provide for an alert system mode that can be activated when rubber tire OTE is operating in a working mode on pavement containing embedded track.

4.1 Minimum requirements for an OTE operations alert system

The minimum requirements for an OTE operations alert system are the following:

- audible OTE movement alarm
- audible OTE change-of-direction alarm, minimum of 3 seconds in length
- OTE lighting

The RTA shall require that any audible alarm activates automatically when the vehicle begins movement or changes direction of movement.

The RTA shall require that any audible alarm produces a sound loud enough to be heard by roadway workers and other OTE operators within the immediate work area.

All audible alarms installed on OTE shall be distinguishable from the surrounding noise.

The RTA shall establish a procedure for the temporary use of alternate alerts in the event that the automatic system stops functioning while at the work site or during track travel.

The RTA shall establish a procedure for the temporary use of alternate alerts when noise ordinances prohibit the use of the audible alarms.

The RTA shall require that audible alarms are discussed in the pre-work safety briefing, including a discussion of any different alarm sounds that may be used on specific equipment.

4.1.1 Audible OTE movement alarms

OTE shall be designed so that the movement alarm may be interrupted by the OTE operator when operating the OTE in work mode if the function of the OTE would result in a constant, or almost constant, sounding of the device. The equipment shall include a function so that it cannot be permanently overridden and will default to the automatic mode after an established time period. Work mode shall not include the movement of OTE during track travel. The use of OTE audible alarms shall be determined by the RTA or any prevailing regulatory requirements.

Any triggering mechanism (on/off or override switch) for the device shall be clearly identifiable and within easy reach of the OTE operator.

The RTA shall establish minimum requirements for the use of existing OTE that is not yet equipped with OTE movement alarm equipment, including but not limited to sounding the horn prior to movement from a stationary location or when changing direction.

4.1.2 Audible OTE change-of-direction alarm

The OTE change-of-direction alarm shall be distinguishable from the movement alarm and shall be a minimum of 3 seconds in length.

4.1.3 OTE lighting requirements

At a minimum, the RTA shall equip each existing OTE with a permanent illumination device or portable light that is securely mounted on the OTE. New OTE shall be equipped with permanent illumination devices. The illumination device or portable light shall be capable of illuminating obstructions on the track ahead for a distance of 300 ft under normal weather and atmospheric conditions when the OTE is operated during the period between one-half hour after sunset and one-half hour before sunrise or in dark areas such as tunnels.

4.1.3.1 Alternating flashing warning lights for direction of OTE movement

The RTA shall equip all OTE with alternating flashing white lights that remain on when the vehicle is moving.

> **NOTE:** Alternating flashing lights can be accomplished using strobe, LED or other white lights with a single or double flash pattern between 60 and 120 fpm.

Such lighting shall not be part of the headlight of the OTE. When the vehicle starts moving, these lights shall activate automatically and be visible on the end of the vehicle facing the direction of movement. These lights shall automatically turn off when the vehicle is not in a drive mode.

4.1.3.2 Flashing warning lights for OTE

The RTA shall equip all OTE with a flashing warning light or system of warning lights mounted in a way that provides 360 deg. of warnings on the outside of the vehicle.

4.1.4 OTE-related technology

4.1.4.1 Use of new OTE-related technologies

In order to promote multiple layers of protection, the RTA shall consider the use of available technologies as an overlay to the existing OTE safety protocols. However, this recommendation is made with three very strong caveats:

- Use the technology in addition to—not in place of—the established on-track safety rules and procedures.
- Do not use the technology in a way that would put workers at risk in the event of a failure of the technology.
- Conduct a hazard analysis and thoroughly test and evaluate the performance of the technology in the specific physical and operating environments of the RTA.

4.1.4.2 Consideration for detection of OTE on the right-of-way technologies

The RTA shall consider the feasibility and reliability of OTE detection systems (such as automatic vehicle locator systems) that provide for the identification of the presence and/or movement of OTE on the track. If the RTA determines that such systems are technologically feasible and provide reliability, as established by the RTA, it may require the installation of such systems.

4.1.5 Visual reflective device

The RTA shall equip the front, rear and sides of all on-track equipment with visual reflective tape and/or other high-visibility reflective materials.

The RTA shall establish specific requirements for the design and placement of reflective tape and/or other high-visibility reflective materials on OTE.

4.2 Safety considerations in OTE design

The RTA shall consider current and future safe operating practices and safety-related technologies in the design and development of specifications for new OTE. The RTA shall consider evaluating new operating environments or system modifications that may have an impact on how OTE is used or the types of OTE being introduced to the RTA.

4.3 OTE acceptance testing requirements

The RTA shall incorporate the design provisions of this standard into acceptance testing requirements for OTE, as appropriate.

5. OTE operating rules and procedures

The RTA shall develop operating rules and procedures for normal and atypical conditions that address the following areas:

- OTE operator responsibilities
- OTE movement rules
- the use of shunting and non-shunting equipment, including requirements for turning shunting on and off
- roadway workers when working on or around OTE

Procedures shall include but not be limited to hazard mitigations such as the following:

- preventing a person from being struck by OTE in motion or operation
- preventing injury or property damage related to placement and/or movement of OTE payloads
- preventing any part of the OTE from being struck by a train or other OTE on another track
- preventing any part of the OTE from contacting a train, other OTE or wayside fixed infrastructure
- stopping the OTE short of other machines or obstructions on the track
- preventing derailment accident events

The RTA shall incorporate OTE rules and requirements into its RWP training, as applicable.

5.1 OTE operator responsibilities

The RTA shall identify the minimum responsibilities for OTE operators and wayside workers engaged in work around OTE, consistent with APTA standards APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements"; APTA RT-OP-S-004-03, "Work Zone Safety Practices"; APTA RT-OP-S-011-10, "Rule Compliance Program Requirements"; and APTA RT-OP-RP-026-20, "Roadway Worker Near-Miss Reporting Requirements."

5.2 OTE movement rules

The RTA shall develop and implement rules governing the movement of OTE on the mainline and in the yard. At a minimum, the movement rules shall address the following:

- OTE and train separation distance during track travel
- OTE and roadway worker separation
- limits of movement being clearly communicated and acknowledged by the qualified protection employee (QPE) and/or the OTE operator
- allowances for moving multiple pieces of work equipment in a bloc, as defined by RTA, including, at a minimum, communication, spacing between units and speed
- allowances for moving multiple pieces of OTE past wayside signals
- maximum authorized speeds on mainline, through stations and over other operating infrastructure (pocket tracks, crossovers, special work, etc.) as determined by the RTA, accounting for the following:
    - type of OTE
    - OTE weight
    - payload
    - line of sight
    - reverse or normal running
    - interlockings/frogs/switches
- a defined transfer point and communication channel when control of OTE is transferred from the Operations Control Center to the QPE/work area
- movement of OTE when entering and leaving mainline territory
- movement of OTE past signals, switches and grade crossings
- verification of the switch position
- movement of OTE within the work zone controlled by the QPE
- movement of OTE through adjoining working limits
- movement of OTE where the operator in a cab has an obstructed view, and use of a pilot, video system or safe operating protocol, as determined by the RTA, may be required
- movement of OTE with the audible alert manually overridden via use of the triggering mechanism referenced in Section 4.1.1 of this standard

- idling restrictions related to noise and exhaust
- proper securement of unattended OTE
- emergency procedures

The RTA shall develop rules on movement alarms and OTE lighting involving track travel, while working in a work zone, and when changing direction.

5.3 Roadway workers when working on or around OTE

The RTA shall define the process for how roadway workers will communicate with the OTE operator.

The RTA shall develop a procedure establishing those specific types of signaling to be used by roadway workers or other wayside personnel "on the ground" to communicate with OTE operators during equipment operations to ensure mutual understanding, safe movement of OTE and worker protection.

5.3.1 Red zones

For each piece of OTE, the RTA shall establish the areas where OTE mechanical actions (swing arms, moving parts, etc.) would pose a hazard to roadway workers. Roadway workers shall not enter the red zone until/unless the operator of the OTE makes eye contact with the roadway workers, ceases operation and removes their hands from the controls. The RTA shall establish requirements for roadway workers and OTE operators to establish confirmation of the roadway worker's position entering and within the red zone. The RTA shall define the means of confirmation in the OTE plan. The equipment operator shall be the individual who controls entry into the red zone.

5.3.2 Proper clearances

The RTA shall require the placement of lookout(s) (or other designated individuals, such as watch persons, flag persons, employees in charge, etc.) to observe OTE clearance, give timely warning, and give direction/guidance to the OTE operator for all operations when it is difficult for the operator to observe clearance. The RTA shall identify requirements for the lookout to communicate with the OTE operator in these cases.

6. OTE requirement for pre-work safety briefings

Specific requirements for the pre-work safety briefing are contained in APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements."

The RTA shall require that when OTE is in use, the pre-work safety briefing shall also include hazard identification and mitigation, as well as information unique to the use of OTE, including but not limited to the following:

- The specific type of OTE that is to be used in the work activity and operating parameters.
- OTE audible and visual alerts and alarms.
- Special instructions relating to the work zone around OTE and minimum distances between machines while working and traveling.
- Mounting and dismounting OTE on the field side, not on a live track side, when possible.
- Identifying and reviewing environmental conditions (e.g., wet, icy, oily/greasy rails) affecting the stopping distance of OTEs.
- Identifying vehicle lighting requirements under different conditions, such as transition from day to night.
- LOTO/power removal—how OTE operators shall clearly communicate signals for slowing, stopping and changing direction, as well as movement of payloads.

- Procedures for establishing clear communication and maintaining proper clearance between OTE operators and workers on the ground under adverse weather conditions (if applicable). Communicating changes in direction is imperative.
- Transfer of non-shunting equipment onto the mainline.
- Movement authority with respect to signals, switches and grade crossings.
- Procedures for establishing clear communications when OTE operations are transferred from one operator to another.

7. Track allocation program requirements

The RTA shall establish a track allocation program that defines the process to schedule and authorize access to the ROW for OTE and roadway workers. For details on track allocation program requirements, see APTA RT-OP-S-020-14, "Rail Transit Track Allocation Program Requirements," and APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements."

Each RTA shall establish procedures for notifications to revenue equipment operations for areas of the railroad that have been allocated for maintenance or nonrevenue operations.

The RTA shall establish requirements for contractor involvement in the RTA's track allocation process.

8. Contractor's responsibility for safety on the right-of-way

The RTA shall provide appropriate rules, regulations and procedures for the conduct of contractors who will perform work on the ROW and operating/interfacing with OTE. For details on the contractor's responsibility while on the ROW, see APTA RT-OP-S-010-03, "Contractors' Responsibility for Safety on the Right-of-Way." The RTA shall also incorporate the requirements of this APTA standard into the contractor's requirements.

The RTA shall establish contractual requirements that contractors will provide records, when requested, to show that workers are qualified to operate OTE. Each RTA shall establish contractual requirements that contractors are to provide maintenance documentation, inspection records and weight documentation to ensure that equipment is within its intended operating parameters and in a state of good repair.

The RTA shall establish requirements for contractors to maintain OTE in accordance with the manufacturer's requirements or other requirements as indicated by the RTA.

The RTA shall establish requirements for contractors to provide OTE and OTE operators that are compliant with the provisions of this standard, unless provisions or a written and signed waiver is granted by the RTA.

9. Personal protective equipment

The RTA shall identify and establish the proper level of PPE requirements related to the operation of and working around OTE.

10. Rule compliance program

The RTA shall establish a procedure to ensure OTE operators and roadway workers are in compliance with the RTA's operating and safety rules during the performance of their duties.

See APTA RT-OP-S-011-10, "Rule Compliance Program Requirements," for additional information on structuring a comprehensive rule compliance program.

11. Training program structure

The RTA shall ensure that each OTE operator and contractor is trained and qualified for each piece of OTE they operate. The RTA shall verify that individuals assigned to operate or direct OTE are trained and qualified on all requirements of this standard, unless the OTE is operated under the direct supervision of a qualified operator during training, as defined by the RTS.

The RTA shall incorporate OTE awareness, based on the provisions of this standard, into the RWP training program.

The RTA shall establish a process to ensure that all OTE-related training complies with the requirements of APTA RT-OP-S-013-03, "Training of Rail Operating Employees." This shall include, at a minimum, provisions for initial, refresher, return-to-work and post-incident training.

The RTA shall require contractors to appropriately train contractor personnel on the use of equipment and shall establish a process for verifying that contractor personnel are trained.

12. Recordkeeping

The RTA shall establish a program for keeping appropriate OTE equipment and operator records. Information may be recorded on forms provided by the RTA or by electronic means.

The RTA shall require OTE operators to possess proof of qualification while performing work involving OTE.

The RTA shall determine and document the record retention timeline. At a minimum, records shall be composed of the following:

- OTE operator training and/or qualification
- OTE inspection records
- OTE maintenance records

The RTA shall consider, as a minimum, retaining the following training information:

- date and type of training
- date of employee qualification and associated records
- name and qualification of the instructor(s)
- name of the trainee
- specific equipment and safety-related work practice topics
- contractor training

Related APTA standards

APTA RT-OP-S-004-03, "Work Zone Safety Practices"
APTA RT-OP-S-010- 03, "Contractors' Responsibility for Safety on the Right-of-Way" *(previously numbered as APTA RT-S-OP-010-03)*
APTA RT-OP-S-011-10, "Rule Compliance Program Requirements" *(previously numbered as APTA RT-S-OP-11-10)*
APTA RT-OP- S-013-03, "Training of Rail Operations & Station Operations Personnel" *(previously numbered as APTA RT-S-OP-013-03)*
APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements" *(previously numbered as APTA RT-S-OP-016-11)*
APTA RT-OP-S-020-13, "Rail Transit Track Allocation Program Requirements" *(previously numbered as APTA RT-S-OP-020-13)*
APTA RT-OP-RP-026-20, "Roadway Worker Near-Miss Reporting Requirements"

References

Code of Federal Regulations:

49 CFR 214.511 (a), Audible warning device requirements
49 CFR 214.511 (b), Automatic change of direction alarms
49 CFR 214.523 (c), New hi-rail vehicles (requirements for equipment)
49 CFR 517, Retrofitting of existing on-track roadway maintenance machines manufactured on or after Jan. 1, 1991
49 CFR 521, Flagging equipment for on-track roadway maintenance machines and hi-rail vehicles
49 CFR 523, Periodic inspection of hi-rail vehicles
49 CFR 527 (a), On-track roadway maintenance machines; check for compliance prior to using machine at the start of operator's work shift.

FTA Safety Advisory 14-1: Right-of-Way Worker Protection, issued December 2013.

Transit Advisory Committee for Safety, "Roadway Worker Protection Final Report," 2020. https://www.transit.dot.gov/sites/fta.dot.gov/files/2021-07/Roadway-Worker-Protection-TRACS-18-02-Final-Report.pdf

Definitions

alarm: Audible sound designed to provide warnings in a working environment.

alert system (alert): The audio and visual equipment installed to provide warnings in a working environment.

controlled track: Track upon which the RTA's operating rules require that all movement of trains must be authorized by a train dispatcher or a control operator.

contract operator: A contractor who operates and/or maintains a rail transit agency.

employee: An individual who is engaged or compensated by an RTA or by a contractor to an RTA to perform any of the duties defined in this standard.

employer: An RTA, or contractor to an RTA, which directly engages or compensates individuals to perform any of the duties defined in this standard.

flag person: When used in relation to roadway worker safety, flag person means an employee designated by the RTA to direct or restrict the movement of trains past a point on a track to provide on-track safety for roadway workers.

inaccessible track: A method of establishing working limits on non-controlled track by physically preventing entry and movement of trains and equipment.

non-controlled track: Track upon which trains are permitted by RTA rule or special instruction to move without being under an automatic train control system or receiving authorization from a train dispatcher or control operator.

on-track equipment (OTE): A rail-mounted vehicle or equipment, including hi-rail vehicles and equipment, that is not used in revenue service but is used to inspect, maintain and repair the rail system.

on-track safety: The practice of working in a manner that will minimize the danger of being struck by a moving RTA train or other on-track equipment, provided by operating and safety rules that govern track occupancy by personnel, trains and on-track equipment.

Operations Control Center/Control Center/Central Control: The facility where rail operations such as train control, train dispatching, train supervision and related field activities are accomplished for the entire rail transit agency or for specific segments of a system if there is more than one such facility.

place of safety: A location or condition that protects a worker from a train or other on-track equipment.

Public Transportation Agency Safety Plan: A document developed and adopted by the rail transit agency, describing its safety policies, objectives, responsibilities and procedures.

qualified: A status attained by an employee who has successfully completed any required training for, has demonstrated proficiency in, and has been authorized by the employer to perform the duties of a particular position or function.

qualified protection employee (QPE): An individual trained and qualified on on-track safety and operating rules and assigned the responsibility of providing on-track protection. An RTA may use another term for the person in this position.

rail transit agency (RTA): The organization that operates rail transit service and related activities. Also known as the transit system, transit agency, operating agency, operating authority, transit authority and other similar terms.

rail vehicle: A self-propelled vehicle equipped with flanged wheels.

red zone: An area surrounding working equipment, employees using tools and lifting operations that, if entered by an individual, creates the potential for injury as a result of being struck by equipment, tools or material. A red zone may be specifically defined by rule.

roadway: Owned property of the RTA within the controlled area, as defined by the RTA, often referred to as "right-of-way."

roadway worker: Any employee of an RTA, or of a contractor to an RTA, whose duties include inspection, construction, maintenance or repair of RTA track, bridges, roadway, signal and communication systems,

electric traction systems, roadway facilities, or roadway maintenance machinery on or near track or with the potential of fouling a track, and other personnel directly involved with their protection.

track travel: The movement of OTE on track outside of working limits.

train: A rail-mounted vehicle used or intended to be used in revenue service.

watch person/lookout: An employee who has been trained and qualified to provide warning to roadway workers of approaching trains or on-track equipment.

working limits: A segment of track with definite boundaries upon which trains and/or on-track equipment may move only as authorized by the roadway worker having control over that defined segment of track.

Abbreviations and acronyms

FRA Federal Railroad Administration
FTA Federal Transit Administration
LOTO lockout/tagout
OTE on-track equipment
PPE personal protective equipment
PTASP Public Transportation Agency Safety Plan
QPE qualified protection employee
RWP roadway worker protection
RTA rail transit agency

Summary of document changes

- "Rail transit system" was changed to "rail transit agency" (RTA).
- Three items were added to the pre-work checklist in Section 3.1:
  - shunting functionality, if equipment is designed to shunt and is operational
  - hi-rail components, where applicable
  - securement of any tools, materials, equipment or other items transported on the OTE
- "System Safety Program Plan" was changed to "Public Transportation Agency Safety Plan" (PTASP).
- The "Abbreviations and acronyms" section was updated.

Document history

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