



APTA-RT-OP-S-004-03, Rev. 3

First Published: June 8, 2003

First Revision: July 26, 2004

Second Revision: Oct. 6, 2016

Third Revision: Jan. 5, 2023

Rail Transit Operating Practices Working
Group

Work Zone Safety Practices

Abstract: This standard provides guidance for the development of rules and requirements for working within rail transit agency work zones and provides suggested approaches for developing such rules and procedures.

Keywords: right-of-way, roadway worker, work zone safety

Summary: This standard provides requirements for rail transit agencies to address situations that are present when workers perform routine and emergency work on an operating rail line. It requires that rail transit agencies perform periodic internal audits—including documentation reviews, work site visits or other methods of compliance evaluation—to ensure compliance with these rules and procedures.

Scope and purpose: This standard establishes the minimum required content for work zone safety practices, which apply to both mainline and yard operations. APTA developed this standard to help rail transit agencies identify and mitigate roadway worker safety concerns. This standard addresses the duties of roadway workers performing work within a work zone on or near the right-of-way (ROW). While referenced in this standard, the corresponding work zone safety duties, responsibilities and authority of yard supervision and train controllers are addressed in a separate standard. Development of such rules and procedures should enhance the safety of all concerned without unnecessarily restricting operation of trains through work zones.

This document represents a common viewpoint of those parties concerned with its provisions, namely transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. APTA standards are mandatory to the extent incorporated by an applicable statute or regulation. In some cases, federal and/or state regulations govern portions of a transit system's operations. In cases where there is a conflict or contradiction between an applicable law or regulation and this document, consult with a legal adviser to determine which document takes precedence.

© 2023 The American Public Transportation Association (APTA). No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of APTA.

Table of Contents

Participants.....	iii
Introduction.....	iv
Note on alternate practices.....	iv
1. Overview	1
2. Rules and procedures	1
2.1 Communication.....	1
2.2 PPE.....	2
2.3 Securement of the work location	2
2.4 Site condition	2
2.5 Worker conduct.....	3
2.6 Equipment operation.....	3
2.7 General.....	3
2.8 Verification of the work plans and/or scope of work.....	3
3. Training	4
4. Safety inspections and compliance	4
Related APTA standards.....	5
Definitions.....	5
Abbreviations and acronyms.....	6
Summary of document changes	6
Document history	7



Participants

The American Public Transportation Association greatly appreciates the contributions of the OPWG Small Working Group, which provided the primary effort in the update of this document: William McClellan, Mark Benedict, Jhaun Jasper, Anthony Onisko, Jim Smith, Andrew Ghiassi, Amanda Nightingale, Kenneth Williams, Paul Chandler, Steve Bethel.

At the time this standard was completed, the working group included the following members:

Brian Riley, MTS Rail, *Chair*

Gary Howard, Metropolitan Transit Authority of Harris County, *Vice Chair*

Roy Aguilera, San Francisco Bay Area Rapid Transit District, *2nd Vice Chair*

Tony Abdallah, *MTA New York City Transit*
Ray Abraham, *Valley Metro*
Mark Benedict, *METRO–Hiawatha Light Rail*
Joseph Black, *Jacobs*
Shanita, Bowman, *WMATA*
Patrick Brouard, *Atkins*
Louis Brown, *Jacobs*
Robb Bury, *Bay Area Rapid Transit District*
Paul Chandler, *Valley Metro*
Andrew Clapham, *Network Rail Consulting*
Kenneth DeBow, *Valley Metro*
Paul Denison, *Sound Transit*
Sidney Dimanche, *Alstom*
Brian Dwyer, *WSP USA*
Ronald Ester, *MBTA*
Lucas Ewing, *Utah Transit Authority*
Anthony Fazio, *SEPTA*
Kim Fjeldsted, *Park City Transit*
Zandra Ford, *Maryland Transit Administration*
Frank Fowler, *Niagara Frontier Transit*
Paula Fraser, *Bay Area Rapid Transit*
Kris Gandham, *Dallas Area Rapid Transit*
Andrew Ghiassi, *Bi-State Development Agency*
Camille Glenn, *Utah Transit Authority*
Andrea Gordon, *MBTA*
Martin Gulley, *Bi-State Development Agency*
Tina Hall, *Charlotte Area Transit System*
Jay Harper, *Gannett Fleming*
Deltrin Harris, *Charlotte Area Transit System*

Melvyn Henry, *San Francisco MTA*
Jhaun Jasper, *Chicago Transit Authority*
Kenneth Jefferson, *JTA*
Cynthia Lewis, *Maryland Transit Administration*
Stephen Lino, *LACMTA*
Reginald Mason, *Hill International*
William McClellan, *Alternate Concepts*
Javier Molina, *Dallas Area Rapid Transit*
Thomas Newey, *Network Rail Consulting*
Amanda Nightingale, *King County Metro*
Richard Plokhaar, *Gannett Fleming*
Patrick Preusser, *Honolulu DOT*
Gregory Robinson, *Miami-Dade Transit*
Joyce Rose, *WSP USA*
James Ross, *Toronto Transit Commission*
Gerry Ruggiero, *AECOM*
Harold Samms, *JTA*
Duane Sayers, *Regional Transportation District*
James Smith, *Bi-State Development Agency*
Mike Smith, *Regional Transit Authority*
Russell Stone, *Denver Transit Operators*
Constance Sullivan, *Utah Transit Authority*
Peter Sutcliffe, *MaxAccel*
Joseph Tassiello, *NJ Transit*
Debra Thacker, *Valley Metro*
Kenneth Williams, *Hartsfield-Jackson Airport*
Lisa Woodruff, *WMATA*
Henry Woods, *MARTA*
Greg Woods, *ACI*

Project team

Marie Benton, *American Public Transportation Association*
Tdisho Pendleton, *American Public Transportation Association*

Consultant

Christopher Wallgren, *Transportation Resources Associates, TRA*

Introduction

This introduction is not part of APTA-RT-S-OP-004-03, Rev. 3, “Work Zone Safety Practices.”

It is recognized that working on an active railroad can be hazardous without having safety procedures in place and employees who are properly trained. Such hazards include high-voltage power, the movement of large vehicles/equipment through the work zone, and exposure to the hazards of working in a construction zone where tools and machinery are being utilized. This can be further complicated by the unique and sometimes constrained environment of the rail right-of-way.

This standard is intended to supplement other standards with the goal of providing a safe working environment to those working in the ROW. Other APTA standards address different aspects of safety on the ROW, and they should be reviewed concurrently with this standard. For example, APTA RT-OP-S-016-11, “Roadway Worker Protection Requirements,” provides requirements to protect workers from moving trains and/or on-track equipment. APTA RT-OP-S-010-03, “Contractors’ Responsibility for Safety on the ROW,” provides requirements for the transit agency to establish a contractor-specific guideline that describes safety requirements that apply to contractor activities on or near the ROW. APTA RT-OP-S-021-14, “On-Track Equipment Safety Requirements,” contains detailed requirements for the design and operation of on-track equipment. APTA RT-OP-S-020-13, “Rail Transit Track Allocation Program Requirements,” establishes a requirement and framework for a formal process to request and grant access to perform work on or near the ROW. The recommended practice APTA RT-OP-RP-026-20, “Roadway Worker Near-Miss Reporting Requirements,” provides a framework for developing an effective near-miss reporting program for RTAs to implement.

In contrast, this APTA standard on work zone safety practices focuses on the work being performed within the work zone to ensure that workers are trained on the rules and procedures associated with the various work conditions and activities related to work on or near the ROW. These safety practices, as with all other practices, require a formal program framework inclusive of the rules and procedures, training requirements, and compliance program requirements.

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 referenced in the system safety program 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).

Work Zone Safety Practices

1. Overview

The rail transit agency (RTA) shall comply with the provisions of the following APTA standards and regulatory requirements and ensure that their provisions are consistent with this and other standards related to safety on or around the ROW:

- “Roadway Worker Protection Program Requirements,” (APTA RT-OP-S-016-11)
- “Contractors’ Responsibility for Safety on the ROW” (APTA RT-OP-S-010-03)
- “On-Track Equipment Safety Requirements” (APTA RT-OP-S-021-14)
- “Rail Transit Track Allocation Program Requirements” (APTA RT-OP-S-020-13)
- “Roadway Worker Near-Miss Reporting Requirements” (APTA RT-OP-RP-026-20)
- The rail transit agency’s safety management system (SMS) and Public Transportation Agency Safety Plan (PTASP)

2. Rules and procedures

The RTA shall establish work zone safety practices that are complementary to the programs associated with the standards referenced in Section 1. The RTA shall establish a work zone safety practices program that includes rules and/or procedures for employees and contract workers working within the work zone. The content shall include rules and/or procedures pertaining to the proper use of tools and equipment. The program shall focus on rules and/or procedures for personnel within the work zone to avoid injury to themselves and others and the operating environment (e.g., exclusive ROW, semi-exclusive ROW or mixed-traffic operations).

The RTA shall identify the departments whose employees are affected by these work zone safety requirements. The RTA shall identify how these requirements apply to each class of employee. The RTA shall identify which department(s) have ownership of the roadway worker protection (RWP) or ROW access program.

At a minimum, the RTA shall develop appropriate rules and/or procedures related to work zone safety that incorporate the topics in this section.

2.1 Communication

The RTA shall develop, as a minimum, appropriate work zone safety rules and/or procedures applicable to employees and contract workers concerning the following:

- job/safety briefing (including site specific worker safety practices)
- the use of communications equipment and practices within the work zone
- testing of communication equipment (such as radios) prior to commencing work
- restrictions on personal electronic device usage
- flagging/alerts/advanced train approach warning technology/audible signals (air horn, whistle, etc.)
- communications equipment failures (e.g., radios) and alternative means of communications

APTA-RT-S-OP-004-03, Rev. 3
Work Zone Safety Practices

- shift change/handoff communication protocol for OCC and field personnel
- job/safety briefing for times when working conditions change
- briefing on any adjacent rail operations, vehicle traffic or other rail operating environment hazards
- site-specific worker safety practices: accident/incident/occurrence event reporting protocols

2.2 PPE

The RTA shall develop work zone safety PPE requirements including but not limited to the following:

- fall protection
- confined space
- reflective vest, hard hat, hard-sole shoes, eye protection, weather-related apparel, etc.
- power-related PPE (arc flash suits, gloves, etc.)

2.3 Securement of the work location

The RTA shall establish requirements for securement and protection of the work location, including the following:

- ensuring that tracks are properly marked
- operating conditions through the area
- electrical/power protections
- lockout/tagout
- ground strap placement and usage
- power verification, removal and restoration
- methods of protecting the power-down status of the work area
- track protection
- fire prevention measures (e.g., related to welding or other hot work)
- different requirements, as necessary, for mainline, sidings, spur tracks, yard tracks and other work locations

2.4 Site condition

The RTA shall develop, as a minimum, appropriate work zone safety rules and/or procedures concerning the following:

- release of work area to the work crew
- keeping tools clear of the trackway and adjacent fouling envelope, as defined by the RTA
- disposal of waste
- removal of excess material or placement of materials in a place of safety
- considerations during different weather conditions
- considerations for jurisdictional restrictions or advisories on certain types of work (e.g. hot work during a dry season)
- knowledge of geographical location and physical characteristics where work will occur (mileposts, types of track, OCS/third rail, etc.)
- evacuation routes in case of a hazardous situation or accident/incident to a predetermined safe zone
- verification of infrastructure and operating condition of the work site area
- accounting for removal of all tools, equipment and personnel from ROW upon completion of work
- cleaning up worksite upon pause or completion of work
- returning work site to a safe operating condition
- release of work area to rail operations

- no-clearance areas
- barriers (derailleurs, missing rail ties, etc.)

2.5 Worker conduct

The RTA shall develop, as a minimum, appropriate work zone safety rules and/or procedures concerning the following:

- prohibited actions
- proper behavior
- fitness-for-duty requirements

2.6 Equipment operation

The RTA shall develop, as a minimum, appropriate work zone safety rules and/or procedures concerning the following:

- working on or around on-track equipment (OTE)
- use of tools/equipment (non-OTE) and specialized equipment
- program to verify that people who are using the equipment are qualified to use it and that their safety qualification is current

2.7 General

The RTA shall develop, as a minimum, appropriate work zone safety rules and/or procedures concerning the following:

- observing and reporting unsafe conditions or actions
- safety of movement/work on ballasted and direct fixation track
- safety of movement/work in mixed traffic (adjacent on-track traffic on any ROW or non-rail traffic in in street-running operations)
- first aid/medical assistance
- near-miss reporting and data collection
- right to challenge/good-faith challenge (see APTA-RT-RP-OP-026-20)
- adherence to track allocation parameters (time, boundaries, etc.)
- responding to emergencies within any work zones, including work zones not under the active control of the OCC or on inactive track
- workers reporting in and out of the work zone
- pre-work job safety briefing (method of protection)
- follow-up job safety briefing (change in conditions/method of protection)
- work zone shift change protocols
- contractor compliance with RTA requirements (see APTA RT-OP-S-010-03)

2.8 Verification of the work plans and/or scope of work

The RTA shall develop, as a minimum, appropriate work zone safety rules and/or procedures concerning the following:

- review of site location drawings and current site conditions
- review of all state/local permitting requirements
- verification and execution of technical work plans (by various RTA departments)
- interaction and coordination to avoid unintentionally affecting other system elements
- interaction and coordination for multiple users (“piggyback”)

- impact on utilities
- insurance requirements, as applicable

3. Training

The RTA shall implement a work zone safety practices training program. This shall include initial and refresher training on the rule and procedure requirements listed in this standard. This may also include organizational safety stand-downs or post-incident learning events. The RTA shall integrate work zone safety practices training with its RWP training program.

The refresher training program shall include the following types of training:

- periodic (to be defined by the RTA)
- quality assurance/quality control review for roadway workers who work in the ROW
- return to work
- reinstruction

4. Safety inspections and compliance

The RTA shall implement a compliance program for the oversight of work zone safety practices in accordance with APTA RT-S-OP-011-04, “Rule Compliance Program Requirements.” In addition, the RTA shall develop a formal compliance check program of periodic work zone compliance audits. The RTA shall identify the roles and responsibilities of the various departments for performing audits. This shall include the roles and responsibilities of the track, structures, wayside, operations and safety departments.

The RTA shall identify any requirements for immediate responses to a rule and/or procedure violation, such as stoppage of work or correction of incorrect practices.

Related APTA standards

APTA RT-OP-S-010-03, “Contractors’ Responsibility for Safety on the ROW”
APTA RT-OP-S-016-11, “Roadway Worker Protection Program Requirements”
APTA RT-OP-S-020-13, “Rail Transit Track Allocation Program Requirements”
APTA RT-OP-S-021-14, “On-Track Equipment Safety Requirements”
APTA RT-OP-RP-026-20, “Roadway Worker Near-Miss Reporting Requirements”
APTA RT-S-OP-011-04, “Rule Compliance Program Requirements”

Definitions

For the purposes of this standard, the following terms and definitions apply. The job titles listed used in this standard are for informational purposes only. It is up to the individual rail transit agency to determine and utilize titles as it finds appropriate.

audible signals: A signal conveyed by a horn, bell or whistle.

Control Center/Central Control/Operations Control Center: The facility where train control, train dispatching and/or train supervision are accomplished for the entire rail transit agency or for specific segments of a system if there is more than one control center. Also called the “train command center.”

fouling a track: The placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or other on-track equipment. The proximity distance is determined by the RTA.

mainline: Tracks upon which scheduled service is operated and that are designated as such.

rail transit agency (RTA): The organization that operates rail transit service and related activities. It is also known as the transit system, transit agency, operating agency, operating authority, transit authority or other similar term.

right-of-way (ROW): The area at track level or above track level at a distance from the centerline of the track, as specified by the transit system.

roadway worker: Any employee of an RTA, or 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.

temporary warning device: A sign, flag, light, disc or target installed when roadway workers are present to alert and direct the actions of train operators of approaching trains and removed when no longer needed.

train: Any motorcar, locomotive or other self-propelled on-rail vehicle, with or without other cars coupled. A regular train is a train authorized by a schedule. An extra train is any train that is not in the schedule.

train controller/dispatcher/supervisor: An employee, usually stationed in a control center, authorized and responsible to direct the operation of trains on the mainline. Some rail transit agencies may employ other employees, subordinate to the controller, to facilitate train movements at critical locations.

train operator: The onboard employee who controls the movement of a train.

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

work zone: A section of track where train operations are temporarily restricted due to the presence of one or more roadway workers; may be designated by use of a temporary warning device.

yard: A facility within defined limits that has a system of tracks used for making up trains, storing trains and other purposes. A maintenance facility may be included.

yard supervision: Any employees who supervise the movement of trains within a yard.

Abbreviations and acronyms

OCC	Operations Control Center
OTE	on-track equipment
PTASP	Public Transportation Agency Safety Plan
ROW	right-of-way
RTA	rail transit agency
RWP	roadway worker protection

Summary of document changes

- Participants list was updated.
- “Rail transit system (RTS)” was changed to “rail transit agency (RTA).”
- The Summary notes that this standard provides “requirements,” in lieu of “ways,” as used in the previous version of the document, for rail transit agencies to address situations when workers work on the operation rail line. It also notes that the standard “requires,” instead of “recommends,” that rail transit agencies perform periodic internal audits, including documentation reviews, work site visits or other methods of compliance evaluation.
- “Yard masters” was changed to “yard supervision.”
- Selected unnecessary or inapplicable lines were removed from Section 1.
- In Section 1, it was noted that the APTA recommended practice “Roadway Worker Near-Miss Reporting Requirements” provides a framework for developing an effective near-miss reporting program for RTAs to implement.
- “System Safety Program Plan (SSPP)” was changed to “Public Transportation Agency Safety Plan (PTASP).”
- It was added that RTAs shall also comply with the provisions of the following APTA standards and regulatory requirements and ensure that their provisions are consistent with this and other standards related to safety on or around the ROW:
 - “Roadway Worker Near-Miss Reporting Requirements,” APTA RT-OP-RP-026-20
 - The PTASP
- In Section 2, it was noted that the RTA shall establish work zone safety practices “that are complementary to the program associated with the standards referenced in Section 1.”
- In Section 2.1, it was noted that the work zone safety rules and/or procedures developed by the RTA must be “applicable to employees and contract workers.” In addition to what was included in the previous version, it was added that these rules and/or procedures shall also include the following:
 - restrictions on personal electronic device usage
 - advanced train approach technology and audible signals
 - alternative means of communications
 - job/safety briefing from times when working conditions change

APTA-RT-S-OP-004-03, Rev. 3
Work Zone Safety Practices

- briefing on any adjacent rail operations, vehicle traffic or other rail operating environmental hazards
- site-specific worker safety practices: accident/incident/occurrence event reporting protocols
- In Section 2.2, “work zone safety rules and/or procedures” was changed to “work zone safety PPE requirements.” Confined space was added to the PPE requirements, and certain other PPE requirements were written more specifically.
- Section 2.3 was renamed “Securement of the work location.” In this section, APTA establishes that an RTA must have requirements for securement and protection of work locations and provides such minimum requirements.
- In Section 2.4, the following were added to the list of minimum appropriate work zone safety rules and/or procedures:
 - release of work area to the work crew
 - considerations for jurisdictional restrictions or advisories on certain types of work (e.g., hot work during a dry season)
 - verification of infrastructure and operation condition of the work site area
 - release of work area to rail operations
 - no-clearance areas
 - barriers (derailleurs, missing rail ties, etc.)
- In Section 2.7, it was noted that the minimum appropriate work zone safety rules and/or procedures developed by the RTA shall also include the following:
 - right to challenge/good-faith challenge (see APTA-RT-RP-OP-026-20)
 - adherence to track allocation parameters (time, boundaries, etc.)
 - contractor compliance with RTA requirements (see APTA RT-OP-S-010-03)
- In Section 2.8, it was noted that the minimum appropriate work zone safety rules and/or procedures developed by the RTA shall also include the following:
 - review of all state/local permitting requirements
 - insurance requirements, as applicable
- In Section 3, it was noted that the RTA work zone safety practices training program “may also include organizational safety stand-downs or post-incident learning events.”
- A portion of Section 4 was removed.
- Two additional related APTA standards were added: “Roadway Worker Near-Miss Reporting Requirements” and “Rule Compliance Program Requirements.”
- There are minor grammatical and vocabulary changes throughout the document.

Document history

Document Version	Working Group Vote	Public Comment/ Technical Oversight	Rail CEO Approval	Policy & Planning Approval	Publish Date
First published	Dec. 15, 2002	—	Jan. 10, 2003	June 8, 2003	June 8, 2003
First revision	—	—	—	—	July 26, 2004
Second revision	Oct. 14, 2015	Jan. 1, 2016	May 19, 2016	Sept. 9, 2016	Oct. 6, 2016
Third revision	June 28, 2022	July 11, 2022	October 10, 2022	November 11, 2022	Jan. 5, 2023