A P T A S T A N D A R D S D E V E L O P M E N T P R O G R A M

RECOMMENDED PRACTICE

American Public Transportation Association
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Operating Practices Working Group

Platform Berthing Requirements

Abstract: This recommended practice provides guidance for the development of rules and techniques for platform berthing of rail transit vehicles and provides suggested approaches for developing such rules and procedures to guide the safe berthing of trains and operation of train doors.

Keywords: platform berthing, door operations, automatic train operation (ATO), automatic train control (ATC), manual train operations, safety.

Summary: This recommended practice provides ways for rail transit agencies (RTAs) to address and prevent situations in which improper platform berthing has occurred and has introduced potential risks or hazards to passenger safety. It recommends that RTAs develop rules and policies that would safeguard employees, customers and infrastructure from potentially unsafe or hazardous situations. It also recommends that RTAs perform periodic internal audits to ensure compliance with these rules and procedures.

Scope and purpose: This recommended practice establishes the minimum required platform berthing safety practices which apply to both automatic and manual train operations. APTA has developed this recommended practice to help RTAs identify and mitigate risks associated with improper platform berthing and door operations. This recommended practice addresses the duties of the operator and other employees of an RTA. Development of such rules and procedures should enhance the safety of all concerned without unnecessarily restricting train operations.

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Introduction

This introduction is not part of APTA RT-OP-RP-027-20 *Recommended Practice for Platform Berthing Requirements.*

This Recommended Practice for Platform Berthing Requirements represents a common viewpoint of those parties concerned with its provisions, namely, transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any recommended practices, recommended practices or guidelines contained herein is voluntary. In some cases, Federal and/or State regulations govern portions of a Rail Transit Agency's (RTA) operations. In those cases, the government regulations take precedence over this recommended practice. APTA recognizes that for certain applications, the recommended practices or practices, as implemented by individual rail transit agencies, may be either more or less restrictive than those given in this document.

This recommended practice applies to platform berthing at all RTAs, whether the RTA utilizes Automatic Train Operation (ATO) / Automatic Train Control (ATC) or manual operations/control for train berthing into station platforms. This recommended practice also addresses various door operations (automatic, semi-automatic, manual, etc.) that are used by RTAs. This recommended practice addresses passenger safety when a train overshoots or stops short at a station platform prior to operating the doors of the train. Trains that stop outside a station platform and erroneously open passenger doors expose passengers to a risk of injury or loss of life. The RTA should consider the use of technologies or designs that would aid in the assurance of design-compliant platform berthing. The RTA should develop a robust procedure that will reduce or eliminate improper platform berthing. The RTA's training department is vital in keeping operators aware of the importance of the procedures and reviewing past incidents and the possible outcomes of having such incidents. The RTA should incorporate platform berthing operating requirements in its Rules Compliance program and perform root cause analysis to increase safety and to correct any/all issues that are discovered.

Note on alternate practices

Individual RTAs may modify the practices in this recommended practice 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 recommended practice 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. An RTA may develop alternates to APTA recommended practices so long as the alternates are based on a safe operating history and are described and documented in the Public Transportation Agency Safety Plan (PTASP).

Documentation of alternate practices shall:
- Identify the specific APTA rail transit safety recommended practice requirements that cannot be met.
- State why each of these requirements cannot be met.
- Describe the alternate methods used.
- 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 recommended practice (operating histories or hazard analysis findings may be used to substantiate this claim).

Platform Berthing Requirements

1.   Introduction

The interface between a train and a station platform is an important element to the safety of passengers and employees. Platform berthing is the term used to describe the positioning of a train at a platform for passengers to board and alight trains. If a train improperly berths at a platform, doors may open to non-platform areas, exposing patrons to risk of falling from the train to the ground or into hazardous conditions. Other hazards are presented by trains that do not berth in their designated or designed locations along a platform. This issue affects all rail transit agencies (RTAs), whether trains operate in automatic mode or trains are manually operated. Given the need to mitigate the risks introduced by improper berthing of trains, RTAs should determine what combination of technology, rules, procedures, or other actions can be used to address this issue.

The RTA should develop appropriate rules, procedures, and compliance programs to ensure the correct berthing of trains and the response to situations when a train does not berth correctly.

The RTA should establish processes for the tracking and analysis of berthing compliance.

2.   Berthing of trains

2.1   Proper berthing of trains

A properly berthed train is one that stops at a pre-determined location or space alongside a station platform. At some RTAs, the proper berthing locations for trains may differ, depending on train length. The RTA should provide berthing markers, such as signage, in stations, along the track, or in another conspicuous location that indicates the point at which the lead car of the train should stop in order to ensure that all doors of the entire train are aligned with the platform. RTAs with ATO systems are encouraged to also provide berthing markers in stations, due to the periodic, manual operation of trains. RTAs should incorporate all required Americans With Disabilities Act (ADA) design criteria into station designs, designation of berthing locations, and announcements to patrons concerning berthing location or changes to location.

2.2   Improper berthing of trains

RTAs with both automated and manually operated trains all have the potential of experience improper berthing of trains. RTAs may experience improper berthing due to, but not limited to, the following reasons:
- Incorrect train length or operator misunderstanding of train length
- Incorrect command sent to train via ATC system
- Train ATC malfunction
- Station ATC malfunction
- Train malfunction (e.g. braking issue)
- Door malfunction
- Rail condition (weather, environment, defect)
- Operator error on ATO train being operated in manual mode
- Train Speed into platform
- Degraded visibility of berthing markers
- Passenger interference with door openings
- Operator inattention to or lack of familiarity with station design
- Inconsistent or lack of properly marked berthing/stop locations along platform

- Insufficient or lack of planning for reverse running differences in berthing/stop locations
- Insufficient or lack of planning for single tracking impacts on berthing/stop locations

Examples of improper berthing include, but are not limited to:
- Overshooting or stopping short of a platform, resulting in situations where a portion of train is outside of platform parameters
- Misalignment with berthing markers, platform screen doors, or other platform barriers or structures
- Off-platform door opening (e.g. wrong side door opening)

3. Rules and Procedures

The RTA should have platform berthing rules and/or procedures in order to minimize risk of injury to passengers, employees, and/or others. The RTA should identify the departments whose employees are affected by these platform berthing safety requirements.

At a minimum, the RTA should develop rules and/or procedures related to platform berthing that incorporate the following modes of operation: ATO, ATO/manual, and manual train operations, as applicable.

3.1 Automatic Train Control System

ATC systems are designed to berth trains at designated locations automatically. The RTA should ensure that the ATC system is designed to only allow automatic door openings at designated locations, taking into consideration alternative operation conditions such as reverse running or single tracking, which may require door opening on the opposite side of a train. In situations where the ATO component of the ATC system is disabled or a manual operating mode is selected, the RTA should establish procedures for the manual berthing of trains at designated locations and verification of position prior to door activation.

3.2 Manual Train Operations

RTAs that operate in manual mode should develop, as a minimum, platform berthing rules and/or procedures concerning train operator actions in stopping the train at the designated location and verifying the proper berthing location prior to door activation.

3.3 Overshooting Platforms / Stopping Short of Platform

The RTA should develop, as a minimum, procedures and policies for when a train either overshoots or stops short of a platform. The RTA should develop policies and procedures that address considerations such as, but not limited to:
- bypass operations,
- reversing an overshot train back into the station,
- opening of a limited number of doors on a platform,
- service and/or schedule management,
- train evacuations, and
- safety protocols in the event that customers are evacuated or offloaded from a train that overshoots or stops short of a platform.

The RTA should take into consideration, track environment, traction power supply (third rail) and physical train layout, weather and location of train.

3.4   Reverse Running

The RTA should review all conditions under which reverse running or other alternate routing of trains results in trains entering a station against the normal flow of traffic.

The RTA should develop rules and procedures concerning reverse running operations and berthing at the designated location on the platform in order to ensure that all doors of the entire train are aligned with the platform.

The RTA should evaluate station design and berthing marker placement as they relate to reverse running and enact designs that are consistent with markings established for the normal flow of traffic.

The RTA should incorporate all Americans with Disabilities Act (ADA) requirements into designs, rules, and procedures concerning reverse running berthing locations.

3.5   Door operations in relation to platform berthing

The RTA should develop, as a minimum, appropriate safety rules and/or procedures concerning:
Activating doors (safely opening and closing doors) at the platform on the platform side(s)
- Options for door activation with one or more train doors not located adjacent to a platform
- Door operations in emergency situations (e.g. evacuations)

4.   Training

The RTA should incorporate platform berthing requirements into initial train operations training. Additionally, the RTA should evaluate how platform berthing may be incorporated into other types of training, such as, but not limited to, refresher training, return to work training, or reinstruction. Training may use any of the following forms of instruction or other actions as identified by the RTA:
- Classroom Instruction
- Field Instruction
- On the job instruction during revenue or nonrevenue conditions or both, and under daytime, nighttime, and peak hour conditions, as applicable
- Computer based training, if available
- Simulator training, if available

5.   Safety Inspections and Compliance

The RTA should include an internal oversight function to ensure that platform berthing rules and procedures are being followed. The RTA should maintain a process for documenting compliance and non-compliance.

The RTA should identify any requirements for immediate responses to a rule and/or procedure violations, such as retraining, rule/policy development and corrective action.

If applicable, the RTA should conduct platform berthing compliance checks in accordance with APTA RT-OP-S-011-03 (Standard for Rule Compliance Program Requirements). In addition, the RTA should develop a formal compliance check program of periodic compliance audits. The RTA should identify the roles and responsibilities of the various departments for performing audits. This shall include the roles and responsibilities of operators, supervisors, controllers, managers and the safety department. Compliance checks may not be applicable in some ATC systems.

6. Incident Investigation and Data Collection/Analysis

The RTA should identify the roles and responsibilities of the operations and safety departments to gather and investigate/analyze data related to improper berthing or door opening incidents.

The data and information collected should be shared with various affected departments.

Related APTA Standards

- APTA RT-OP-S-011-03 Standard for Rule Compliance
- 49 CFR Part 670 National Transportation Safety Plan
- 49 CFR Part 673 Public Transportation Agency Safety Plan

Definitions

For the purposes of this recommended practice, the following terms and definitions apply. The job titles listed used in this recommended practice is for informational purposes only. It is up to the individual rail transit system to determine and utilize titles as it finds appropriate. Each person, or his/her designee, shall perform the tasks described below.

automatic train control: The system for automatically controlling train movement, enforcing train safety, and directing train operations. ATC must include automatic train protection and may include automatic train operation and/or automatic train supervision.

automatic train operation: The subsystem within the automatic train control system that performs any or all of the functions of speed regulation, programmed stopping, door control, performance level regulation, or other functions otherwise assigned to the train operator.

rail transit agency: 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.

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

Abbreviations and acronyms

ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ATC	automatic train control
ATO	automatic train operation
NATSA	North American Transit Services Association
RTA	rail transit agency

Summary of changes

This is a new document, hence there are no changes.

Document history

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