



U.S. Department of Transportation
Federal Transit Administration



Platform Track Intrusion Detection System Evaluation for Los Angeles County Metropolitan Transportation Authority

Background

The Los Angeles County Metropolitan Transportation Authority (LACMTA) is focused on several strategies to improve safety at rail passenger station platforms and reduce vulnerabilities, risks, and system delays. Track intrusions represent not only a safety hazard but also a security risk, and unauthorized track entry has the potential to lead to vandalism or theft, which creates additional safety, security, and operational hazards.

Objectives

The purpose of this project was to demonstrate that the Platform Track Intrusion Detection System (PTIDS) can be relied upon to increase safety and security at/near passenger platforms by detecting bodies/obstacles intruding into the ROW and providing immediate warning to rail operation safety systems and personnel.

Findings

The PTIDS appeared to be functionally capable of alerting operations safety systems and personnel when a track/tunnel intrusion occurs at the platform area.

LACMTA currently relies on signage, audible announcements/warnings, and tactile paving to discourage passengers from entering the ROW at rail stations and on rail operators, closed circuit television observers, and others to report persons/obstacles entering the ROW at rail stations. This project evaluated the ability of the PTIDS to detect bodies/obstacles intruding into the right-of-way and provide immediate warning to rail operations safety systems and personnel.

This project evaluated the capabilities of the PTIDS at/near passenger platforms to detect bodies/obstacles intruding into the right-of-way and provide immediate warning to rail operations safety systems and personnel. The system monitors the track area in front of the platform through a row of transmitter and receiver sensor module pairs on each side of the track. The plane between the transmitter and receiver modules is set to a reasonable height below the platform and above the top and rail. An object is detected by the STID function when it falls through this plane and interrupts the radar signal between the transmission modules and corresponding receiver modules.

The PTIDS technology was installed and tested at the Civic Center Station platform on the Red Line operated by LACMTA for a six-month period, after which its effectiveness was evaluated and its scalability system-wide was determined. Results showed that the object detection system appeared to be functionally capable of alerting operations safety systems and personnel when a track/tunnel intrusion occurs at the platform area, aside from the few false negatives that occurred. Depending upon the requirements of the transit authority and its detection needs on the track at the platform area, this system appeared to require no additional development, integration, or customization and could be considered “turn-key” after adjusting expectations related to false negatives.

Benefits

Although data are limited, FTA has long recognized the importance of providing safety of passengers in above-ground, elevated, or underground rail passenger transit system open platform configurations. This report is an excellent resource for the transit industry and promoting improvement of existing and future on platform passenger safety protection technology.

Project Information

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This research project was conducted by Kane Sutton of the Transportation Technology Center, Inc. For more information, contact FTA Project Manager Roy Chen at (202) 366-0462 or RoyWei-Shun.Chen@dot.gov. All research reports can be found at <https://www.transit.dot.gov/about/research-innovation>.