Measure Name Rock treatments to restrict access

Definition Rocks installed alongside or across the tracks that make footing unreliable to deter or delay entry to the railroad right-of-way from a crossing.

Tags:

Type of Incident:

- ☒ Non-Motorized Users Only
- ☐ Motor Vehicles Only
- ☐ Both

Intervention Strategy:

- ☐ Data: application and planning
- ☐ Education: outreach and messaging
- ☐ Enforcement: policy development and rulemaking
- ☒ Engineering: technological and physical deterrents

Type of Problem:

- ☒ Non-Motorized Users Violating Warning Devices
- ☐ Motor Vehicles Violating Warning Devices
- ☐ Vehicle ROW Incursion
- ☐ Vehicle Congestion
- ☐ Blocked Crossing
- ☐ Vehicle Hang-up

Measure Category:

- ☐ Risk Assessment
- ☐ Policy and Enforcement
- ☐ Collaboration, Training, and Education
- ☐ Public Communication
- ☒ Physical Barriers
- ☐ Detection and Lighting
- ☐ Infrastructure Modification
- ☐ Post-Incident Management
- ☐ Warning Devices

Description

This measure refers to installation of large, irregularly sized rocks on the ground outside of the tracks to prevent people from using the railroad right-of-way (ROW) as a shortcut to get onto the tracks. Unlike anti-trespass panels, the rocks can only be installed along the ROW outside the track gauge. In the U.S., rocks are most often installed at grade crossings that are close to train stations. These crossings tend to have train passengers using the ROW between the crossing and the station as a shortcut to the station platform.

This measure is most effective when combined with proper channelization that prevents people from walking around the rocks or accidently tripping and falling. The rocks should extend the entire length of the ROW from the crossing to the end of the platform, or they should be placed on a section of ROW at a grade crossing as well as towards the ends of the platform. The California Public Utilities Commission presents an alternative involving extending the ballasted area to the platform railing but notes that, if it proves ineffective, larger rocks should be placed to discourage walking on the ROW [1].

Although there are no known studies evaluating the effectiveness of rock treatment in reducing trespass, multiple commuter rail lines currently use this type of landscaping treatment, including Caltrain, Metrolink, and SunRail.

Additional search terms: *trespass guard, deterrent, ballast, trespass*

Advantages

- Rock treatments are relatively easy to install.
- Most rock treatments are low cost, reflecting the type of landscaping selected, and they can usually be installed by in-house staff.
- Many states use rock treatments for highway projects (especially near bridges), suggesting that rock treatments may be available for railroad ROW application.

Drawbacks

- Without proper maintenance, rock treatments may become filled with dirt, fallen debris, or snow, thus reducing their effectiveness.
- Rock treatments can only be used along the ROW outside the gauge. As such, pedestrians can still access the ROW by walking between the rails.
- Rock treatments can make it difficult for railroad maintenance workers and first responders to access the railroad ROW.
- Rock treatments can make it more difficult for passengers to exit the railroad ROW during an emergency evacuation.

Notable Practices

- Consider safety and operational impacts on train and roadway users when scheduling installation of rocks treatments.
- Rock treatments could become less effective without proper care. Develop a maintenance strategy to remove dirt, fallen debris, and snow from the rock treatments.
- Rock treatments are usually installed at crossings close to stations. Consider laying the rocks along entire length of the ROW from the end of the platform to the crossing, or at a defined section of ROW at the ends of the platform and at the grade crossing. If used at each end of platform and crossing, the rock bed should be long enough so that people cannot jump over it.
- Consider adding a snowplow lift sign if rock treatments are installed in near the roadway in snowy areas so that they do not become damaged during snow plowing.
- Post warning and prohibitive signs near the rock treatment.

References

[1] California Public Utilities Commission. (2008). Pedestrian-Rail Crossings In California.

Excerpt: This document reviews design and placement of warning devices that are currently used at pedestrian-rail at-grade crossings in California.

Additional Resources

Related Measures

- Anti-trespass panels
- Pedestrian channelization

Images

Figure 1. Example of rock treatments at a grade crossing in Burlingame, CA from Google Street View

Figure 2. Example of rock treatments at a grade crossing in Orlando, FL
Image Credit: Volpe Center

Figure 3. Rock treatments to prevent commuters from using ROW as a shortcut between station and crossing. Image Credit: Volpe Center