Pedestrian Crossings of Public Transit Rail Services

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Overview

• Project sponsored by the Transit Cooperative Research Program (TCRP)
• Research objective = develop *Guidebook*
• Focus of this project was pedestrians at commuter rail, light rail, and streetcar crossings
• Research team included knowledge of roadway design/traffic control devices, rail, and pedestrian accessibility

*Guidebook and Final Report are now available (links provided at end)
Study Method
Literature – Characteristics

• Pedestrian characteristics:
  • Pedestrians are slow.
  • Pedestrians are flexible.
  • Pedestrians are fragile.
  • Pedestrians are sensitive to their surroundings.
  • Pedestrians may be inattentive.
  • Pedestrians prefer direct paths.
  • Pedestrians may ignore warning signs.
Pedestrians also include special groups:
- Children pedestrians.
- Older pedestrians.
- Recent immigrants.
- People with disabilities.
Literature – Crossing Locations

• Pedestrian-rail crossing types:
  • Adjacent to a motor vehicle crossing.
  • At stations adjacent to motor vehicle crossing.
  • At stations.
  • Not adjacent to motor vehicle crossing or in a station.

• Rail transit alignments:
  • Exclusive alignments.
  • Semi-exclusive alignments.
  • Non-exclusive alignments.
Crashes

- Collisions between rail & pedestrians are not common, but consequences are severe
  - 4% of all injuries BUT 41% of all fatalities.

Source: National Transit Database
Surveys – Online and Phone

- Gain more information on state of the practice
- Variety of crossing treatments currently in use – some in greater use than others
- Effectiveness of treatments – typically not known because...
  - Uniqueness of crossings.
  - Commonly implemented with other treatments (system of treatments are needed at a crossing).
  - Challenges with gathering effectiveness data.
Site Visits

- Observe in-field installation of range of treatments
- Observe pedestrian interaction with treatments
- Observe challenges faced by pedestrians at crossings
- Team of 3 – rail, design/devices, accessibility
- Site visit locations – Boston, Portland, Los Angeles
Documents

• TCRP Report 175: *Guidebook on Pedestrian Crossings of Public Transit Rail Services*
  http://www.trb.org/Main/Blurbs/172320.aspx

• TCRP Web-Only Document 63, *Treatments Used at Pedestrian Crossings of Public Transit Rail Services*
  http://www.trb.org/Main/Blurbs/172337.aspx
TCRP Report 175: Guidebook on Pedestrian Crossings of Public Transit Rail Services
TCRP Report 175 Guidebook

1. Introduction
2. Rail Transit Services
3. Pedestrian Safety
4. NEPA-Related Issues
5. Accessibility/ADA Considerations
6. Treatment Selection
7. Treatment Considerations
8. Pedestrian Treatments (34 treatments)
9. Case Studies (4 case studies)
Pedestrian Treatment Layout

• Sections:
  • Description
  • Applications
  • Implementation
  • Benefits
  • Cost
• Photos or Diagrams
TCRP Report 175: Guidebook on Pedestrian Crossings of Public Transit Rail Services

Treatments
Channelization

- Guide pedestrians to appropriate crossing locations
Barriers

- General
- Offset pedestrian crossing
- Pedestrian fencing
Barriers (con’t)

• Maze fencing
• Between-car barriers at transit platform edges
• Temporary
Design of the Crossing

- Clearly define pedestrian crossing
- Smooth and level surface
- Sight distance improvements
- Stop and terminal
- Illumination
Design of the Crossing (con’t)

- Flangeway filler
- Pedestrian refuge
- Sidewalk relocation
- On-road bollards
Signs

- Passive signs
- Unique warning messages
- Signs for enforcement
- Blank-out warning
Signals

- Timing considerations near railroad crossings
- Flashing light signals assembly
- In-pavement flashing lights
Pavement Markings

- Pedestrian stop line
- Detectable warnings
- Word or symbol
- Dynamic envelope markings
Infrastructure

- Audible crossing warning devices
- Pedestrian automatic gates
- Pedestrian automatic gate with horizontal hanging bar
- Pedestrian swing gates
Operations

- Required stop
- Reduced speed
- Rail safety ambassador program
TCRP Report 175: Guidebook on Pedestrian Crossings of Public Transit Rail Services

Case Studies
Example – Station Entrance

• Before –
  • NB cross 3 tracks
  • SB cross 1 track

• After –
  • all cross 1 track
Example – Pedestrian Path

• Before

• After
Example – Detectable Warning

To station
TCRP Report 175: Guidebook on Pedestrian Crossings of Public Transit Rail Services
Reports

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