2015 National Highway-Rail Grade Crossing Safety Training Conference

Session #5: Grade Crossing Research

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- David Nelson, Michigan Tech Transportation Center
- Marco daSilva, Volpe National Transportation Systems Center
TTI Research Projects

1. TCRP Report 175: Guidebook on Pedestrian Crossings of Public Transit Rail Services

TCRP Report 175

- Project sponsored by the TRB 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
Research Challenges and Issues

- Pedestrians are a lot of things
- Transit rail systems are a lot of things
- Wide variety of treatment options and combinations of treatments
- Effectiveness of treatments not well known
Example – Pedestrian Path

- Before

- After
TCRP Report 175

- 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
• Challenges Addressed
  – Differentiation between crossings with a collision history
  – Need to better differentiate risk levels between crossings
  – Ability to include low-volume, low-collision history passive crossings into the priority process
Primary Accomplishments of Project

- Developed a revised Texas Priority Index
- Developed warrants for passive crossings
- Developed a Texas Passive Crossing Index
- Developed an integrated prioritization methodology
## Passive Crossing Warrants

<table>
<thead>
<tr>
<th>Warrant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5-yr crashes &gt; 0</td>
</tr>
<tr>
<td>2</td>
<td>Total trains/day ≥ 95% (urban/rural)</td>
</tr>
<tr>
<td>3</td>
<td>School buses ≥ 94%</td>
</tr>
<tr>
<td>4</td>
<td>Tracks &gt; 1</td>
</tr>
<tr>
<td>5</td>
<td>Train speed ≥ 49mph and AADT ≥ 75% (urban/rural)</td>
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<tr>
<td>6</td>
<td>AADT or exposure (urban/rural)</td>
</tr>
<tr>
<td>7</td>
<td>Heavy vehicles/day ≥ 95%</td>
</tr>
<tr>
<td>8</td>
<td>Passenger trains &gt; 0</td>
</tr>
<tr>
<td>9</td>
<td>SD obstruction</td>
</tr>
<tr>
<td>10</td>
<td>(HwyNear=1) and (DownStreet=2) and (HwySp&gt;30)</td>
</tr>
<tr>
<td></td>
<td>and [[exposure ≥75%] or (schoolbus≥50%) or (trucks≥75%)]</td>
</tr>
</tbody>
</table>
TxDOT Report 0-6642-1

- TxDOT Report 0-6642-1: Integrated Prioritization Method for Active and Passive Highway-Rail Crossings
  [http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/0-6642-1.pdf](http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/0-6642-1.pdf)
- TTI’s Website: [tti.tamu.edu](http://tti.tamu.edu)