Westside Pedestrian Rail Crossings Safety Treatments

TriMet Board Meeting

February 25, 2015

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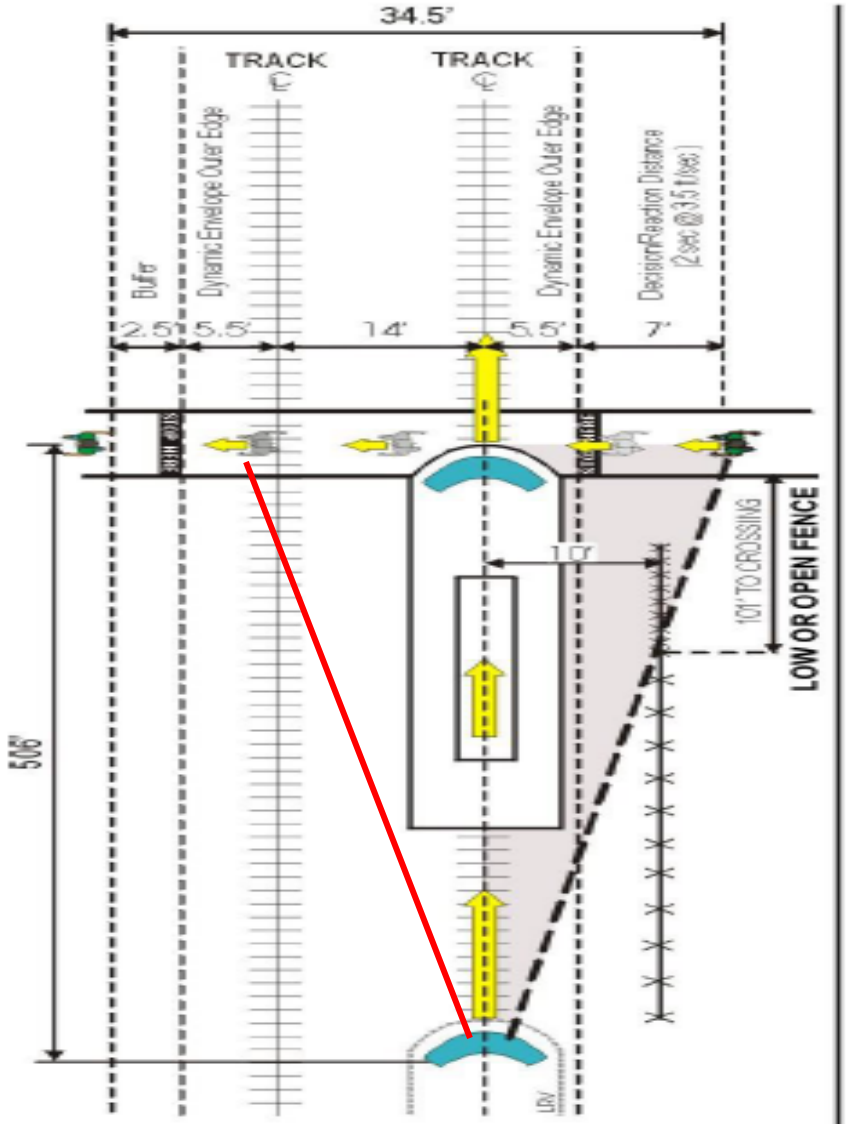
Factors Influencing Crossing Safety Treatments

- **Sight Lines of pedestrians and LRV Operators**
  - Site Triangle
- **Track Geometry**
- **Speed of trains and stopping distances**
- **Usage of crossing**
- **Demographics of area users of the crossing**

FIGURE 15.3.N.4.a-2 PEDESTRIAN SIGHT TRIANGLE ILLUSTRATION

Figure 4. PEDESTRIAN SIGHT TRIANGLE



CASE: LRV Approaching Crossing at 35 mph

Figure 4 illustrates sight distance required for pedestrian to safely cross two tracks, covering a distance of 34.5 feet.

Assumptions:

- Two track configuration
- LRV approaching from left to right on first track
- Time required by pedestrian to travel 34.5 feet, based on 3.5 feet per second walking speed = **9.86 seconds**
- Fence 10 feet from centerline of near track

Minimum Crossing Distance, 34.5 feet, where:

- 7.0 ft is the distance traveled at 3.5 feet per second during decision/reaction period of 2 seconds
- 5.5 ft is the distance from the centerline of the near track to the outer edge of the dynamic envelope of the near track
- 14.0 ft is the distance between the centerlines of the two tracks
- 5.5 ft is the distance from the centerline of the far track to the outer edge of the dynamic envelope of the far track
- 2.5 ft is the width of the buffer/clearance zone beyond the track and dynamic envelope

LRV Braking Distances for Unanticipated Stops

LRV Speed (mph)	LRV Traveled Distance (ft) in 9.86 sec.	Full Service Braking Distance (ft)	Emergency Braking Distance (ft)	Distance of Low or Open Fence
15	217	110	81	43
25	362	244	175	72
35	*506*	*428*	302	*101*
45	651	660	462	130
55	795	942	654	159

Fence Height

Based on distance of 506' covered in 9.86 seconds and 7" reaction time, fence height should not obstruct view 101' from crossing.

Figure NOT TO SCALE

Pedestrian Grade Crossing Treatments

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Generic Concept – Angled Crossings

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Orenco
Bedsted Barriers and Active Warning

Active Warning

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Elam Young

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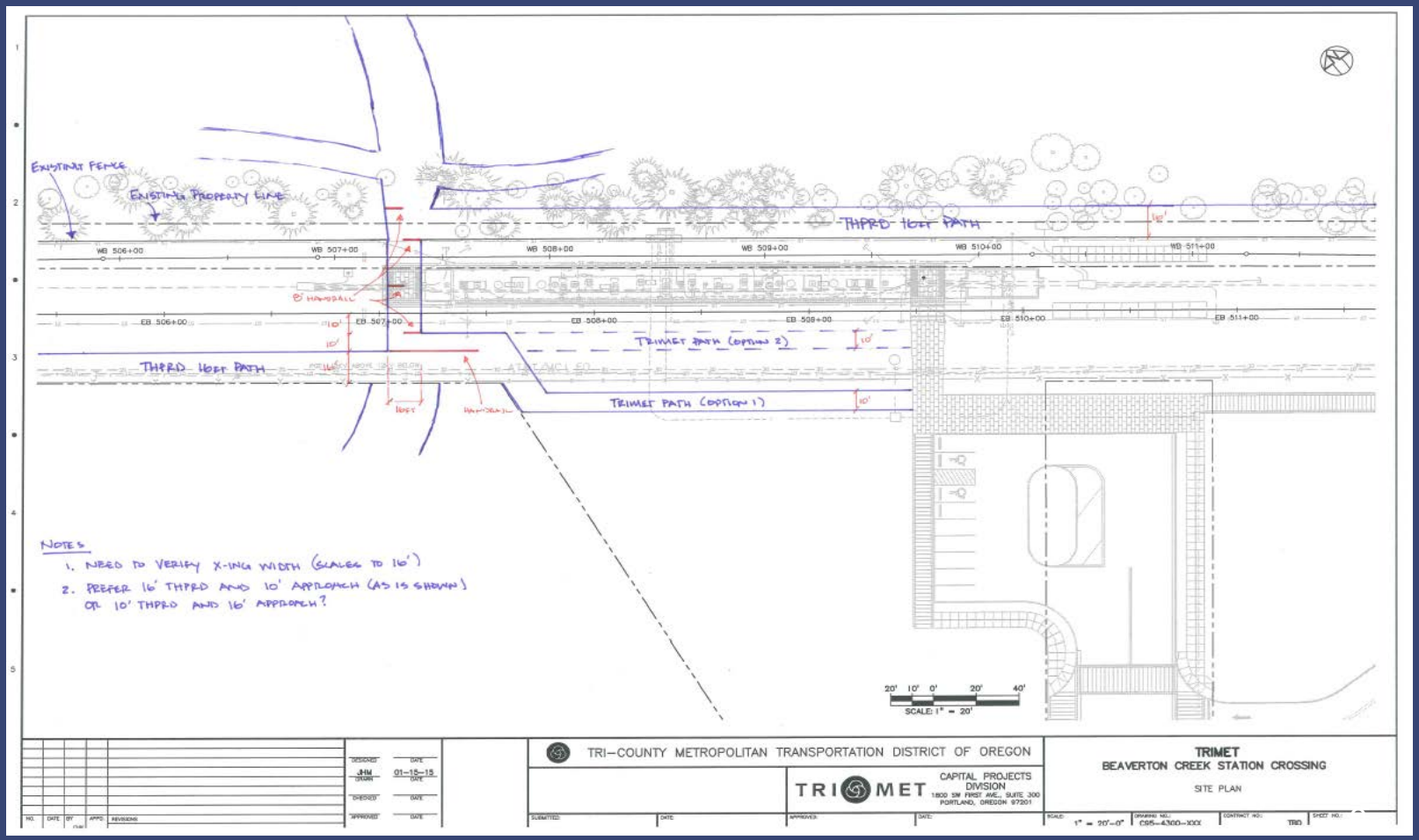
Work in Progress – Beaverton Creek



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Closing Remarks

- Pedestrian safety is paramount
- Crossings designed to channel pedestrians through crossing
- Provide audible and visual warning of approaching trains
- Monitor and evaluate pedestrian behaviors
- Revise crossing strategies as warranted

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