MODERNIZING PHILADELPHIA’S TROLLEY CORRIDORS

RAILVOLUTION ‘18 - PITTSBURGH
JENNIFER DOUGHERTY & BETSY MASTAGLIO
• Trolley system:
  ➢ 6 routes
  ➢ 68.4 miles
  ➢ 73,653 average daily ridership
  ➢ Up to 3 min AM peak headways on some routes

GENERAL SLIDES ON THE IMPORTANCE OF SEPTA'S TROLLEY SYSTEM – RIDERSHIP, TUNNEL…

~ 80,000 Weekday Riders
~ 68 miles of track
6 Routes
130 Vehicles
15 minutes or better all-day service
5 minute or better service in peak
1981

How to Ride SEPTA’s New Light Rail Vehicle

This Light Rail Vehicle — called an LRV for short — is very special.

It is dramatically different from the old trolley cars in more than 70 major ways. Those changes are all around you providing vastly improved comfort, convenience and communications.

This leaflet tells you how to use the new LRV and its features...

Southeastern Pennsylvania Transportation Authority

9/1/81 graphics
EXISTING VEHICLE

High Floors

Single-door Boarding
WHAT DOES TROLLEY MODERNIZATION LOOK LIKE?

- Low-friction fare payment
- Multi-door boarding
- Low floors

Credit: Metro Transit
Credit: Portland Streetcar
"Low-friction" fare payment
HOW DOES TROLLEY MODERNIZATION OPERATE?

Analysis of Modernization Scenarios for SEPTA Route 34
Method A:
Current ADA Ramp deployment on a sampling of buses

Method B:
Determine trip rate for Customized Community Transportation (CCT) & disabled reduced fare eligible registrants within an eighth mile of trolley corridors
## MODERNIZATION SCENARIOS FOR SEPTA ROUTE 34

<table>
<thead>
<tr>
<th>Scenario (AM Peak)</th>
<th>Eastbound* surface travel time change from base</th>
<th>Westbound surface travel time change from base</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BASE</strong> Existing Kawasaki fleet</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Vehicle option A: Front-door boarding with operator-assist ADA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1 New vehicles</td>
<td>+0.4%</td>
<td>+1.2%</td>
</tr>
<tr>
<td>A2 New vehicles + TSP</td>
<td>−1.9%</td>
<td>−8.0%</td>
</tr>
<tr>
<td>A3 New vehicles + TSP + Stop consolidation</td>
<td>−9.8%</td>
<td>−11.6%</td>
</tr>
<tr>
<td><strong>Vehicle option B: 2-door boarding/low-friction fare payment, automated ADA ramp</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1 New vehicles</td>
<td>−12.9%</td>
<td>−7.8%</td>
</tr>
<tr>
<td>B2 New vehicles + TSP</td>
<td>−15.1%</td>
<td>−12.8%</td>
</tr>
<tr>
<td>B3 New vehicles + TSP + Stop consolidation</td>
<td>−19.8%</td>
<td>−14.8%</td>
</tr>
</tbody>
</table>

* Peak direction for the AM peak (higher trolley passenger boardings and auto traffic volumes).

Source: DVRPC, 2015
HOW WILL PASSENGERS BOARD MODERN TROLLEYS?
WHAT DOES AN ADA COMPLIANT TROLLEY STATION LOOK LIKE?

- ADA COMPLIANT RAMP
- DETECTABLE WARNING STRIP
- NEAR-LEVEL BOARDING
- ACCESSIBLE BOARDING AND WAITING AREAS
About 70% of existing system...

...and everything else.
How small a “box” do we have to cram all this stuff into?
STATION ELEMENTS

The building blocks we need to include

Platform:
The preferred size and arrangement of design elements of the platform are consistent across all station types. Their placement allows for the greatest accessibility. Access to the platform and its relationship to the cartway vary outside the platform footprint.

Figure 42 | Platform elements
CURB EXTENSION STATION
The “customer’s perspective”
The “customer’s perspective”
Curb Extension Station

A curb extension station uses the parking lane to create space for a boarding platform. Beyond providing a trolley station, curb extensions improve pedestrian safety by shortening crossing distances at intersections, calming traffic by narrowing the roadway, and making pedestrians more visible to drivers. Curb extensions also offer space for street furniture and other public amenities.

Design Recommendations:

1. **Additional Platform Entrances:** Steps should be provided to create additional, non-accessible platform entrances. Consider using railings to channelize passenger movement towards vehicle doors.

   At stations with wide sidewalks, consider reconstructed the entire corner to provide a barrier-free transition between sidewalk and platform. (See Figure 56, page 39 for a peer practice example.) This configuration eliminates the need for railings, ramps, and steps, but requires a clear maintenance agreement between SEPTA and the sidewalk's owner.

2. **Street Furniture:** Consider using street furniture, bicycle racks, or landscaping to delineate the platform and sidewalk.

3. **Walk Zone:** Preserve either a 5'-minimum or 6'-minimum walk zone on the sidewalk, depending on the street's classification in the Philadelphia Complete Streets Handbook. (See page 32, “Arrangement at Intersection” for further walk zone guidance.)

4. **Cross-street Curb Extension:** While space allows, continue the curb extension onto cross streets to further increase pedestrian safety.

Key design dimensions:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Minimum</th>
<th>Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform length</td>
<td>80 ft.</td>
<td>100 ft.</td>
</tr>
<tr>
<td>Platform width</td>
<td>8 ft. 6 in.</td>
<td>12 ft.</td>
</tr>
<tr>
<td>Platform height</td>
<td>10 in.</td>
<td>10 in.</td>
</tr>
<tr>
<td>Station footprint</td>
<td>100 ft.</td>
<td>120 ft.</td>
</tr>
</tbody>
</table>

For use in the following cross-sections:
Route 34 - 45th and Baltimore

Existing Conditions

EXISTING CONDITIONS

Modern Trolley Station

45th and Baltimore - Alternate 1
45th and Baltimore - Alternate 2

Maps

Pros & Cons

Station Creation?
45th Street and Baltimore Avenue Analysis

Outbound Alternatives
Alternative A: Nearside station. This station would need to be combined with Inbound Alternatives B, since Alternative A (farside inbound at 45th Street) would create a pinch-point as the station platforms or curb extension would be directly across from each other.
Alternative B: Farside station. This configuration must be considered since a nearside inbound station is not feasible. This outbound station location would work with both inbound Alternatives A and B. However, a combination with Inbound A is preferred since it is located at a controlled intersection.

Inbound Alternatives
Alternative A: Farside station. The island created by Baltimore Avenue, Springfield Avenue and 45th Street has enough frontage on Baltimore Avenue to accommodate the ADA accessible station length. Recent greening efforts may be impacted by station construction. This alternative only works with Outbound Alternative B.
Alternative B: This farside station option accommodates a nearside outbound station at 45th Street without locating the complimentary inbound station as far away as 44th Street. However, this creates a station at a mid-block, uncontrolled location.
Alternative C: This is the current inbound stop location. Due to multiple curb cuts for a gas station, an ADA accessible station cannot be constructed at this location.

Station Creation Potential
Pros
- Straight track
- Serves an institution for a population with physical challenges - HMS School

Cons
- Current inbound stop is located at a gas station with curb cuts.

Partnership Project Potential
Philadelphia Water Department stormwater management potential is in the pedestrian piazzas, footway, and cartway.

Station Discussion
45th Street is a complex intersection for trolley modernization with a gas station on the southwest corner. The gas station has multiple curb cuts and even if one curb cut were closed, there would still be insufficient length for an ADA accessible station to be constructed at the current inbound stop location.

Therefore, Farside inbound stops must be considered at this intersection. This also necessitates that the outbound station also be made farside. Two ADA accessible platforms of curb extensions if constructed across the street from one another would cause a pinch point in the travel lanes that is too narrow to be considered.

If Farside stations are to be avoided for causing backup issues into intersections or inhibiting right-hand turns, consolidation with 44th Street or 46th Street must be considered.
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