

Twin Cities LRT Structures

Jim Alexander
Director, Design and Engineering
Southwest LRT Project
Metropolitan Council/Metro Transit

Today's Topics

- METRO Green Line:
Washington Avenue Bridge
Retrofit
- Southwest LRT
(METRO Green Line Extension):
Proposed Kenilworth Tunnel



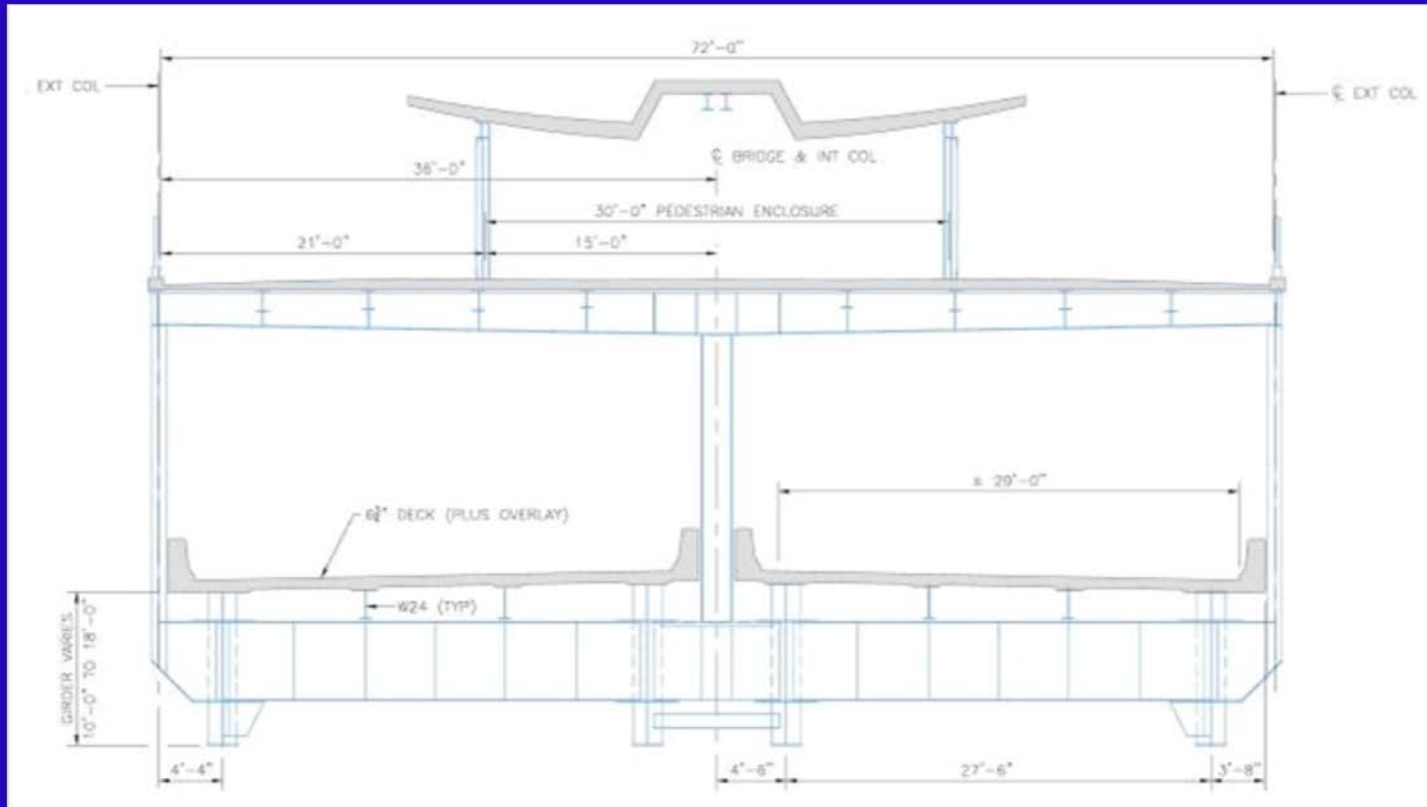
Green Line: Washington Ave Bridge



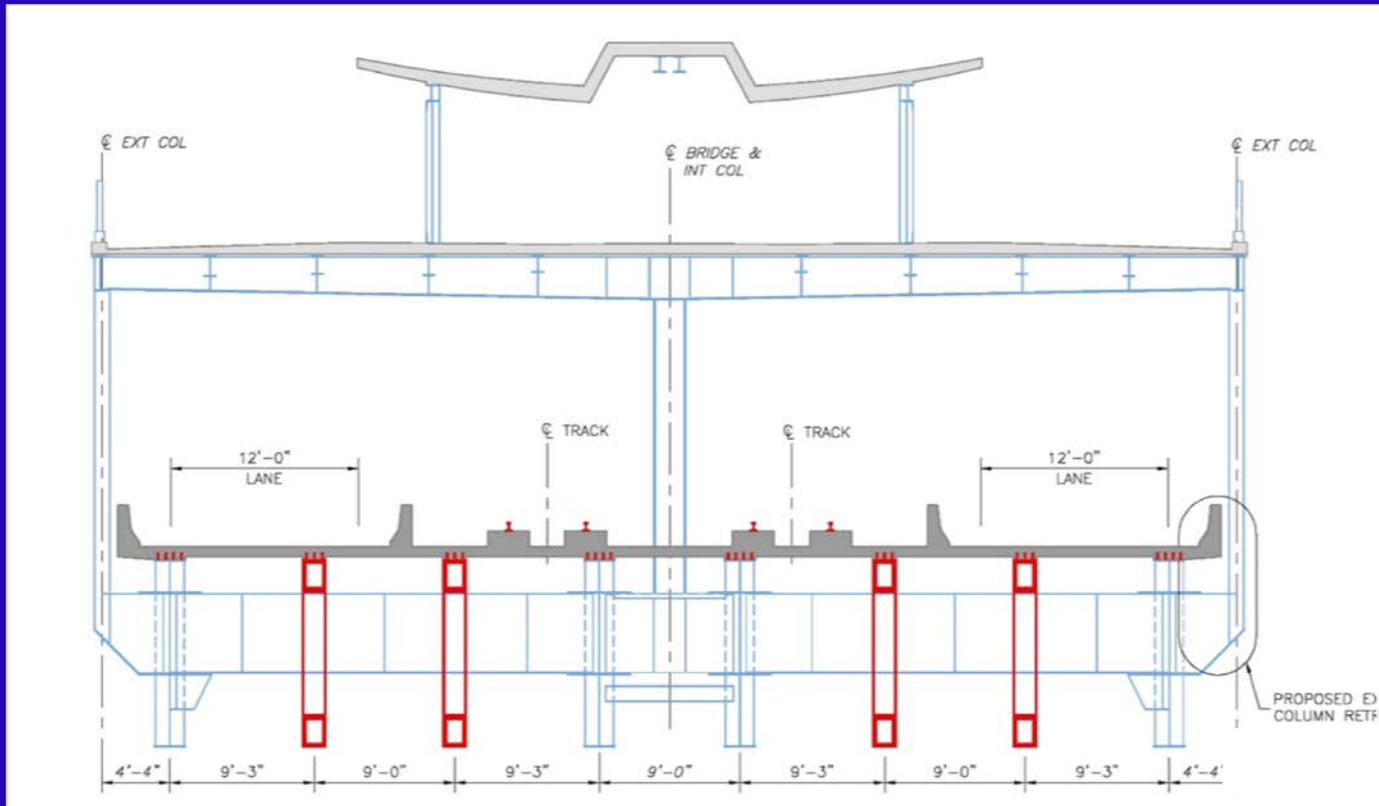
Washington Ave Bridge: Background

- Built 1965
- Connects U of M West Bank and East Bank campuses over the Mississippi River
- Steel plate girder construction
- Fracture-critical 1,131-foot span
- 2 traffic lanes in each direction, carrying 18,700 average daily vehicles on lower deck
- Pedestrian/bicycle upper deck

Washington Ave Bridge: Existing Section



Washington Ave Bridge: New Section



Washington Avenue Bridge: Retrofit

- Reduce traffic lanes to 1 in each direction
- Add center-running LRT double track
- Build 4 new truss girders interlaced with existing steel framing
- Install new full-width composite deck
- Rehab existing bridge piers
- Add infill columns to each pier

Washington Avenue Bridge: Infill Piers and Trusses



← Before retrofit



After retrofit →

Washington Avenue Bridge: Pier Rehab and Infill



Washington Avenue Bridge: Infill Piers



Washington Avenue Bridge: Original Deck



Washington Avenue Bridge: Deck Removal



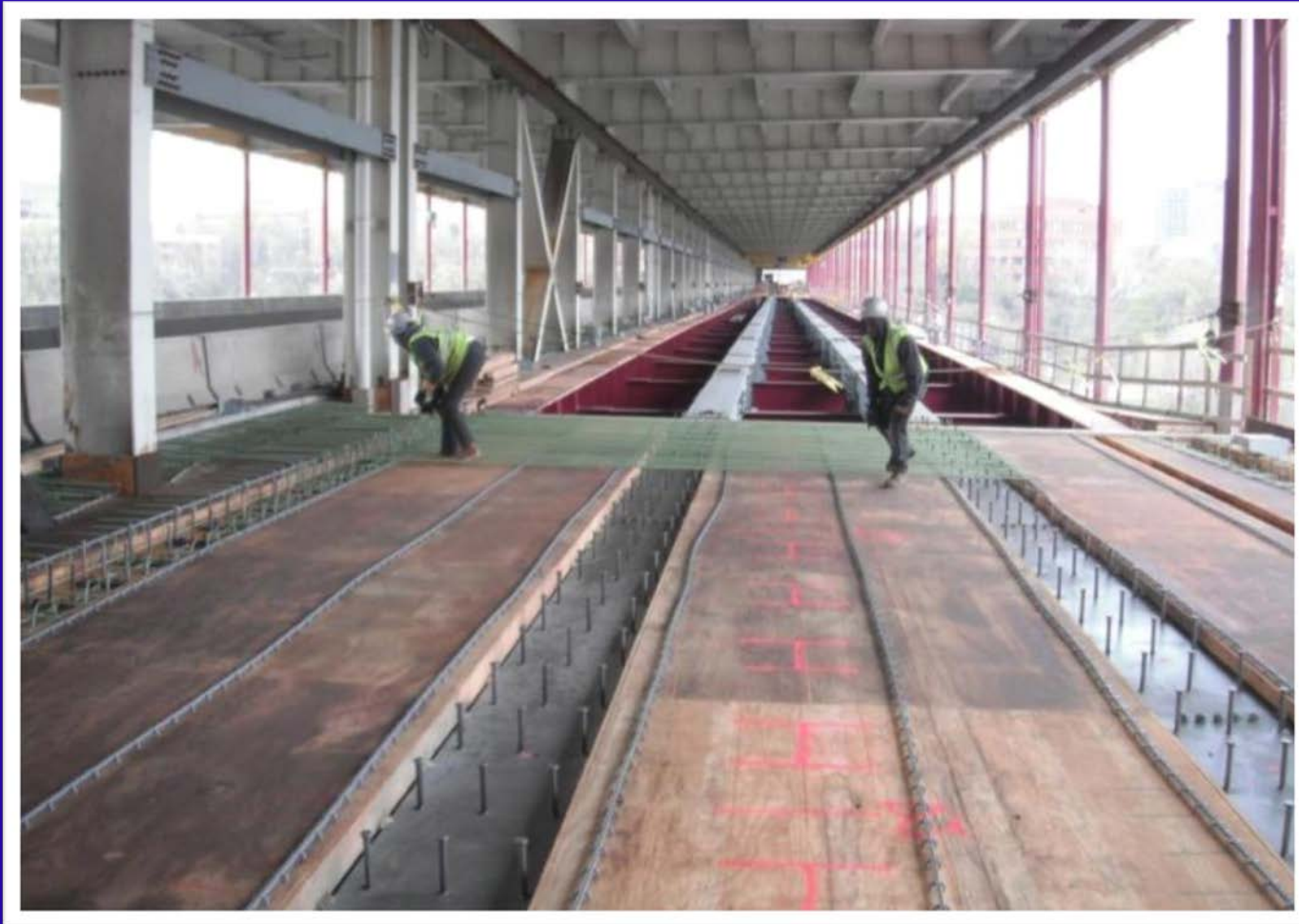
Washington Avenue Bridge: New Truss Installation



Washington Avenue Bridge: New Truss Installation



Washington Avenue Bridge: New Deck Installation



Washington Avenue Bridge: New Deck with LRT Tracks



Washington Avenue Bridge: Retrofit Complete



Washington Avenue Bridge: Retrofit Complete

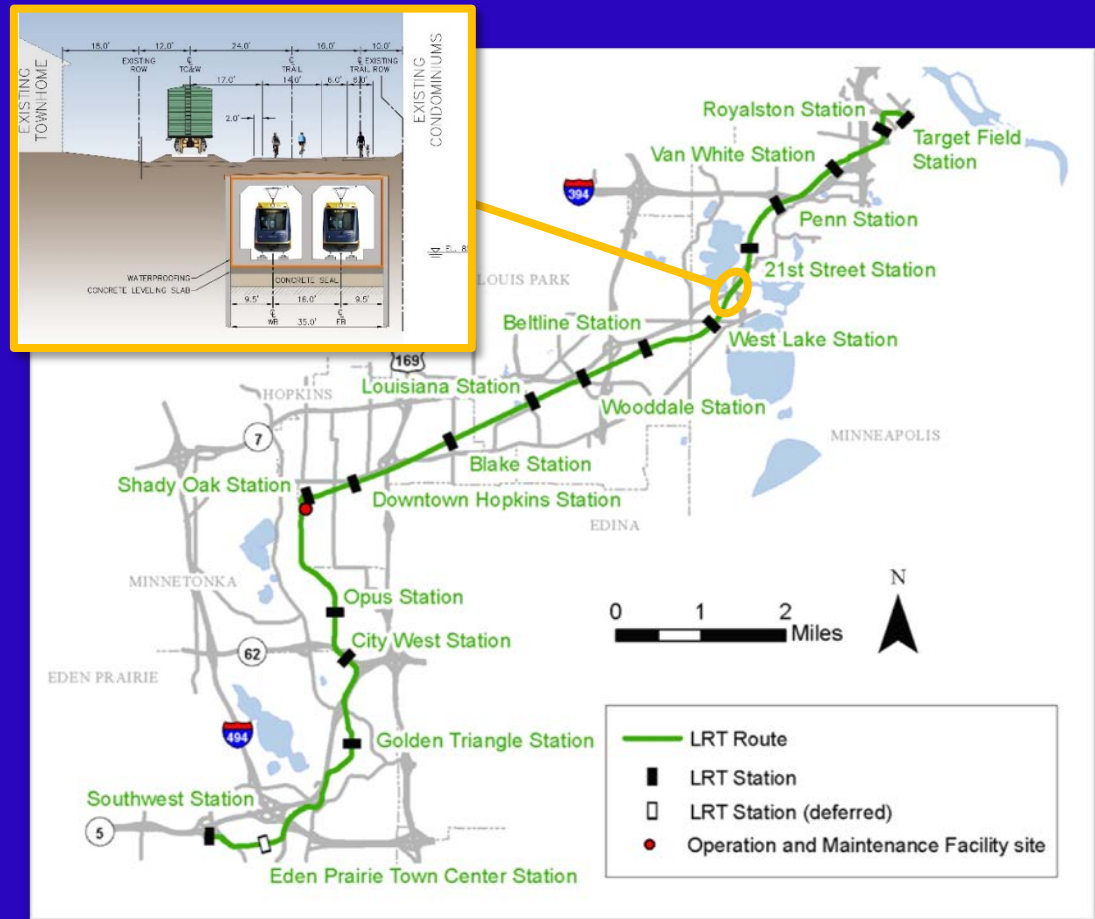


Washington Avenue Bridge Results

- Saved 2 years on LRT project schedule (vs new bridge construction)
- Saved \$80-\$100 million in LRT construction costs
- Additional 75 years service life
- Conformance to current design standards
- 2013 American Council of Engineering Companies Excellence Award

Southwest LRT Project Overview

- 14.5 miles
 - 16 new stations (including 1 deferred)
 - 34,000 weekday boardings anticipated in 2040
- * Environmental review of the project is ongoing and all of the project details remain subject to change throughout that process.



Southwest LRT Development Timeline

2013

- Project Development

2014

- Municipal Consent

2014-15

- Engineering, Supplemental Draft EIS

2016

- Final EIS, Full Funding Grant Agreement

2017-19

- Heavy Construction

2020

- Passenger Operations

Kenilworth LRT Tunnel: Background

- Existing freight rail / recreational trail corridor
- 59-foot pinch point
- Co-locate with freight rail and trail
- 2,336-foot tunnel length
- Cast-in-place, concrete, cut-and-cover construction
- Pedestrian/bicycle trail located on top of LRT tunnel

Kenilworth LRT Tunnel



West Lake LRT Station

LRT Tunnel

Kenilworth Channel crossing

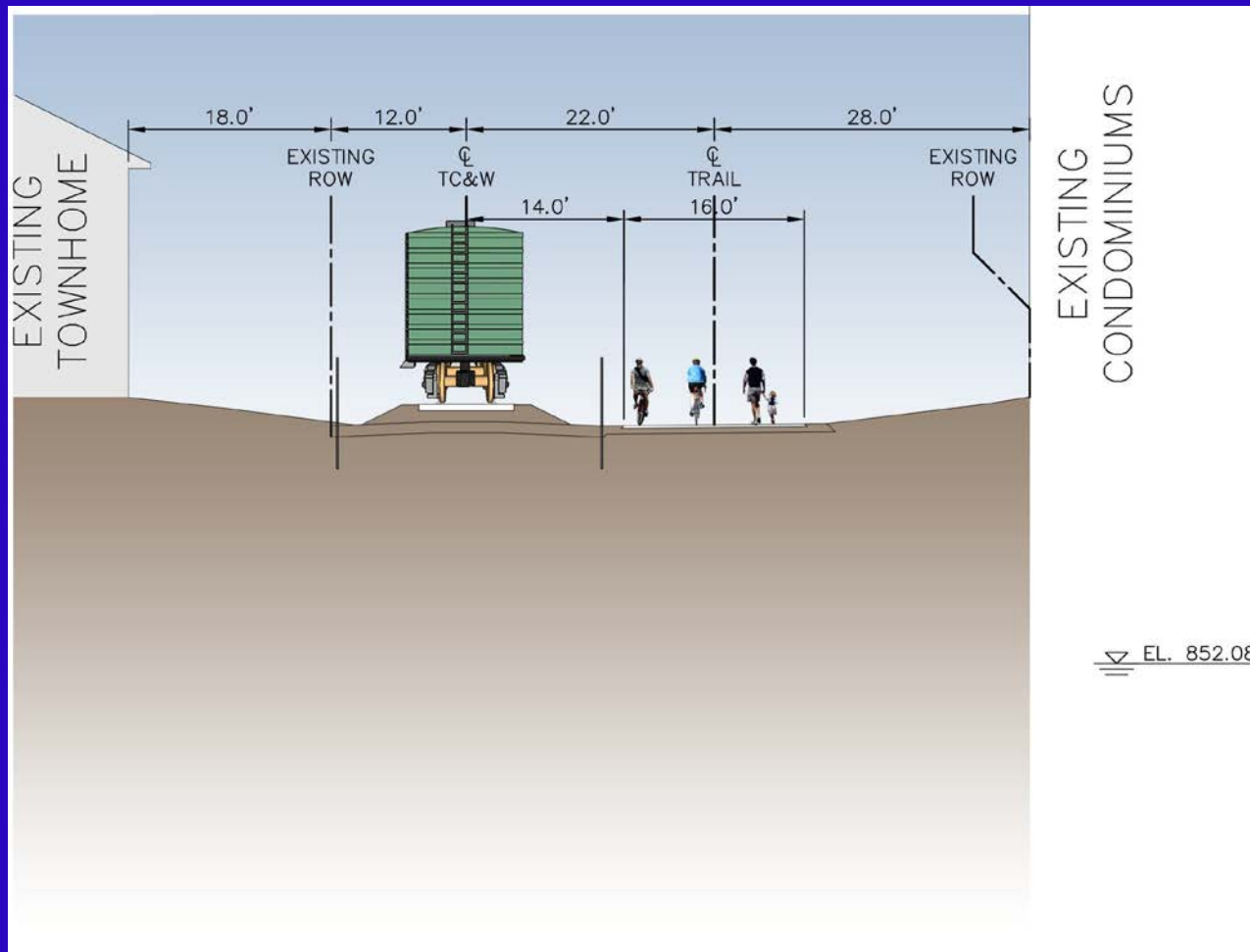
Kenilworth LRT Tunnel



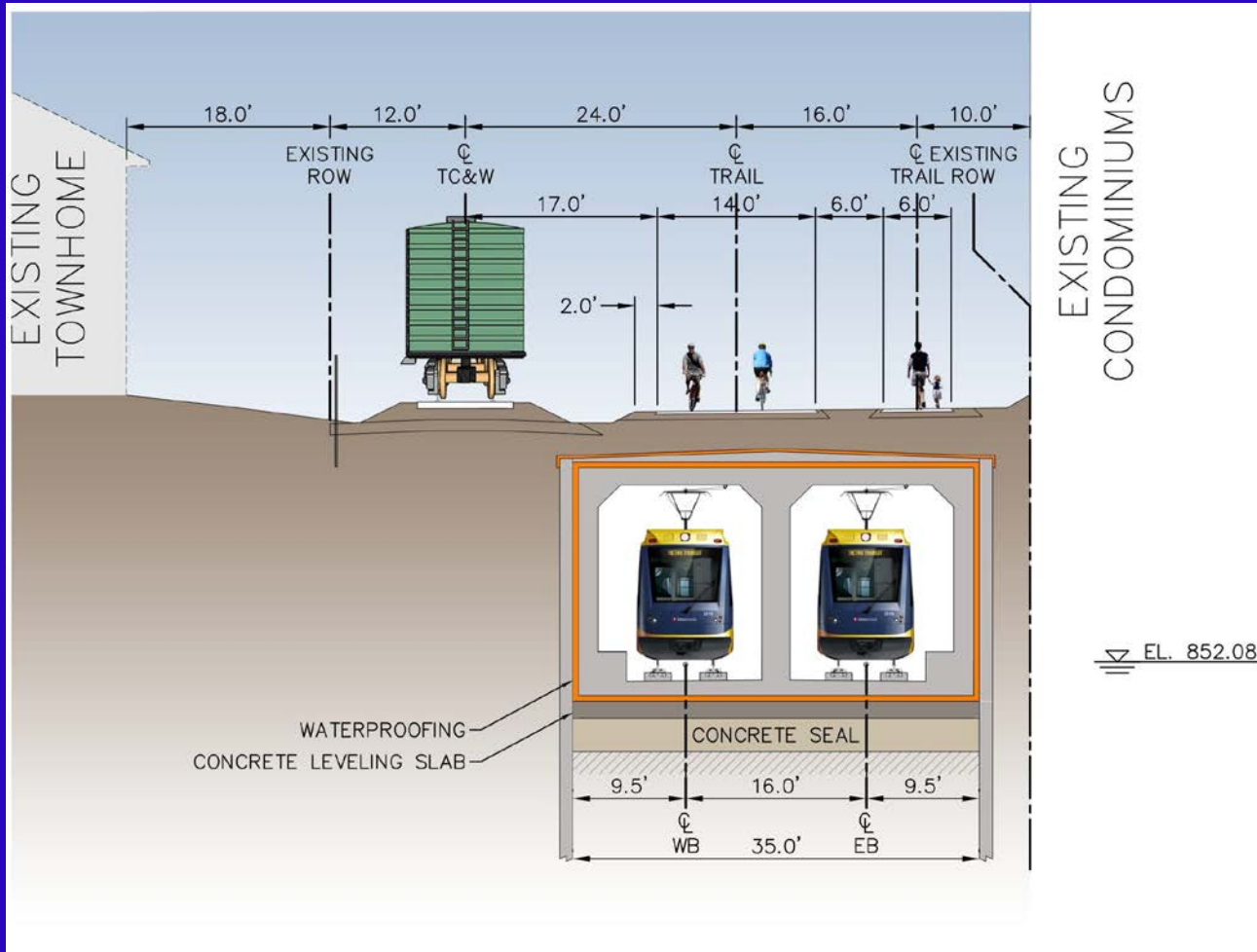
Kenilworth LRT Tunnel

- Video

Kenilworth LRT Tunnel: Existing



Kenilworth Shallow LRT Tunnel: proposed



More Information

Online:

www.SWLRT.org

Email:

SWLRT@metrotransit.org

Twitter:

www.twitter.com/SouthwestLRT

