

# Cost Effective Asset Management - Pedestrian Bridge Case Studies

# Seattle's Roadway Structures



124

Bridges



613

Retaining walls



502

Stairways



238

Areaways



# Levy Bridge Seismic Retrofit Program

- Guided by our SDOT Seismic Retrofit policy guidelines
- Started with 16 bridges in 2016
- CDR phase indicated higher costs than anticipated
- Levy Oversight Committee briefed on reducing the number of projects in December 2020
- Current deliverable is retrofit of 11 bridges
  - Complete/In construction (4): Cowen Park Bridge, West Howe St Bridge, SW Andover Pedestrian Bridge, 8th Ave/133rd Bridge
  - In Design (7): McGraw St Bridge, Admiral Way N & S Bridges, 15th Ave NE/105th St Bridge, 15th Ave NW/Leary Way Bridge, **Delridge Pedestrian Bridge** and **Aurora/N 41st St Pedestrian Bridge**

# Aurora/N 41st Street Pedestrian Bridge

- Original Scope for Seismic Retrofit:
  - carbon fiber wrapping the bridge girders
  - replacing the steel plates and bolts that connect the drop in span into the stairway approaches
  - integrating the footings
- Cost Estimate: \$2.75M



# Delridge Pedestrian Bridge

- Original Scope for Seismic Retrofit:
  - Abutment modifications
  - Reinforcement at the tops of columns
  - Jacketing specific columns
  - Widening spread footings
  - Superstructural slab modifications and torsional bracing
- Cost Estimate: \$4M-\$4.5M and ongoing maintenance costs

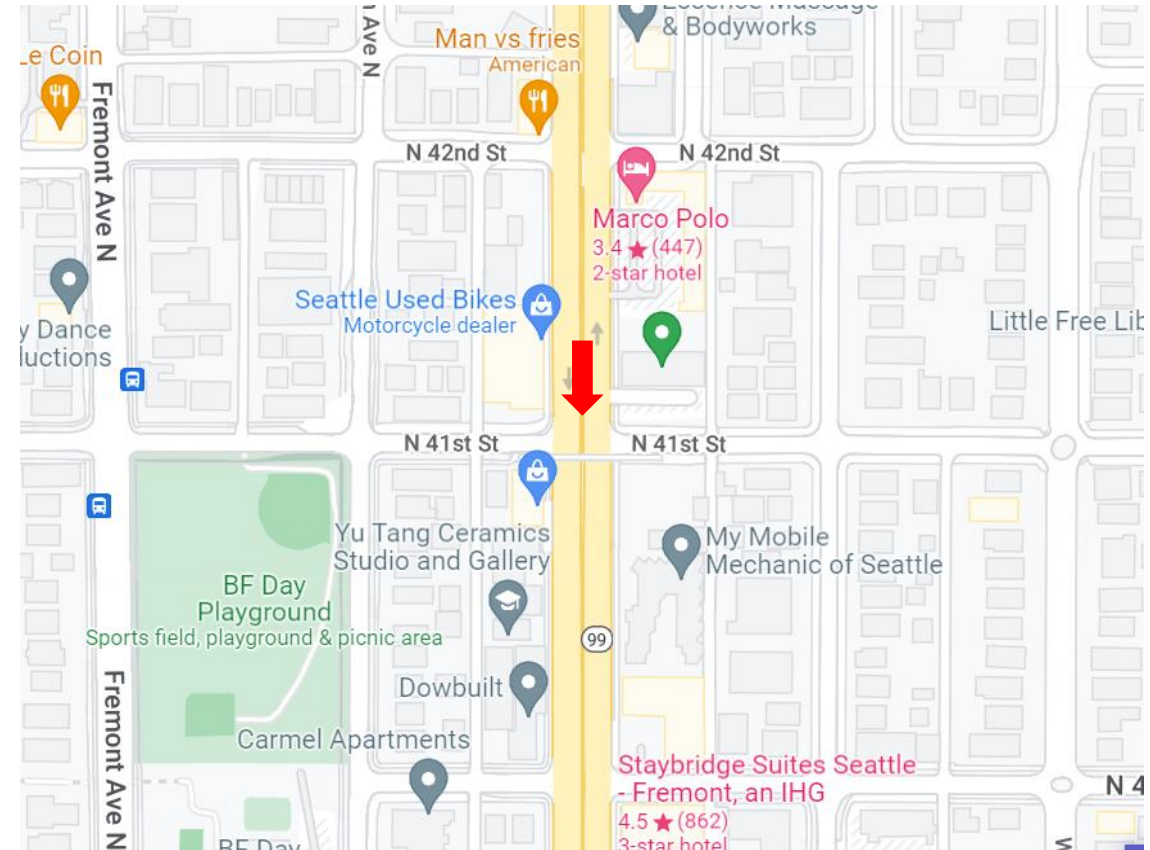


# Grade Separation Considerations

- Traffic volume on the road that needs to be crossed
- Vehicular speeds
- Pedestrian generators and attractors that the crossing connects
- Crash history
- Adjacent land use
- Pedestrian volumes crossing the roadway
- Construction and maintenance costs

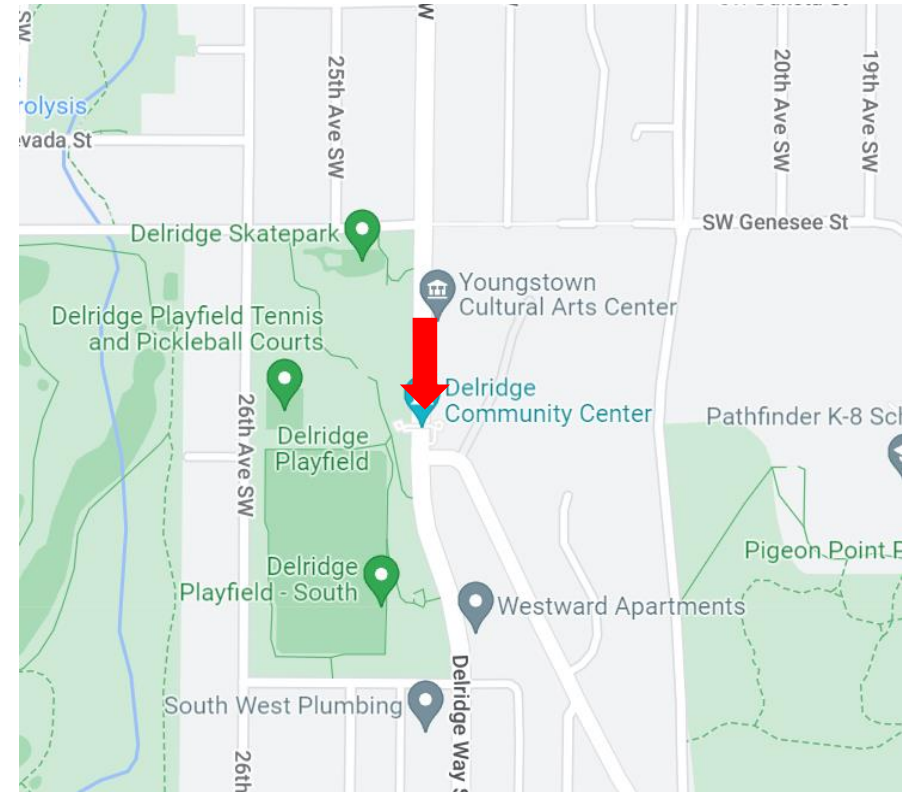
# Aurora/N 41<sup>st</sup> Street Pedestrian Bridge

- 6 travel lanes + median
- 58,000 vehicles per day along Aurora at 40 MPH
- 515+ people cross the bridge/day
- 6 crashes; no pedestrian or fatal collision in a 4-block radius in 3 years (in contrast to patterns of crashes along most of Aurora)
- Closest crosswalk 5 blocks north



# Delridge Pedestrian Bridge at Youngstown

- 5 travel lanes
- 20,000 vehicles per day pass under along Delridge at 25 MPH
- 50+ people cross the bridge/day
- 80+ people cross at grade/day
- No reported collisions in a 4-block radius in 3 years
- Alternative to using bridge is the ADA-compliant signalized crossing (75 feet away)





# Analysis

CRITERIA	AURORA/41st ST PED BRIDGE	DELRIDGE PED BRIDGE
Pedestrian counts on bridge	500 people/day	53 people/day
Pedestrian counts at grade	0 people/day	84 people/day
Vehicle counts under bridge	58,000 vehicles/day	20,000 vehicles/day
3-year Collision History (within 4 block radius)	6 crashes	None reported
Speed limit	40 MPH	25 MPH
Adjacent Land Use	commercial street; school within 2 blocks	single and multi-family homes, organizations, and open space
Most cost-effective approach	Investment in Retrofit	No investment in retrofit

# Next Steps on Aurora/N 41st Ped Bridge

- Complete seismic retrofit design in 2022
- Initiate construction with Levy funds in 2023
- Public engagement process would inform community members prior to construction about retrofit process, timing, and pedestrian detour routes
- People driving and taking transit on Aurora Ave N would be informed of any construction-related traffic impacts
- SDOT would continue longer-term planning for an at-grade crossing here to understand operations, costs, and potential funding sources.



# Next Steps on Delridge Pedestrian Bridge

- Seismic retrofit design started in 2021
- Design choices that require infill of ramps/abutments, column and deck changes that alter the original design
- Identify construction timing with respect to community disruption (9-12 month duration)



# Next Steps on Delridge Pedestrian Bridge

*Assess ability to remove the bridge with crossing and other site improvements in order to achieve Levy goal of seismic safety for a low-use facility*

- The Delridge - RapidRide H Line project installed pedestrian improvements in the area, including a new crosswalk, signal improvements, new RapidRide stations, and sidewalks
- The crosswalk is ADA compliant and available to all users, the bridge would still be non-compliant after retrofit
- Costs savings with demolition = ~\$3 million; can be put towards installing a community-requested cross walk, upgrading the signal and adding art with the Office of Arts and Culture



# Delridge Community Engagement

## Delridge Neighborhood Development Association

- Expressed preference for retrofit
- Pedestrian bridge serves as neighborhood gateway; interest in beautifying bridge if retrofitted

## Seattle Parks & Recreation; Delridge Community Center

- Mixed feedback; at grade crossing is more accessible for people walking, but bridge offers an alternative crossing on a busy street

## Community surveys, emails, in-person comments

- 63% of survey respondents want the bridge to be retrofitted
- 96% of respondents from Cooper School Artist Lofts/Youngstown prefer retrofit
- People not wanting to see more changes to the neighborhood

# Next Steps

## Delridge Ped Bridge

- Engagement with adjacent property owners and community
- Design and scope removal and crosswalk projects
- Refine cost estimates
- Explore gateway treatments and public art options
- Identify other investment opportunities

## Aurora/N 41<sup>st</sup> St Ped Bridge

- Complete design in 2022
- Construction to begin spring 2023

# Thank you.

