Deep Dive: Bridges

Levy Oversight Committee

October 3, 2023

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Summary

- Levy dollars have invested in new bridges, bridge seismic reinforcement projects, bridge repairs and bridge replacement planning & design
- The type of work needed to maintain bridges is dependent on both overall condition and specific deficiencies
- There have been adjustments to the bridge seismic program workplan over the life of the Levy, and we are here to ensure you have a full understanding of how and why those adjustments were made
- We are planning strategically for the future of Seattle's bridges

Outline

- Bridge Seismic Program history
- Bridge work funded by the Levy to Move Seattle
- Where to find more information about SDOT's Bridge Program
- Overview of Draft Bridge Strategic Asset Management Plan

This information is also available with more detail in the memo provided to the LOC on July 28, 2023.

History of the Bridge Seismic Program

- **2015** – Levy Ordinance commits to "seismically reinforce 16 vulnerable bridges."
- **2015** – A list of 16 bridges was socialized in 2015 Levy outreach materials.
- **2020** – SDOT presented a memo to the Levy Oversight Committee explaining that upon completion of all 16 *Concept Design Reports* (CDRs), the estimated costs to complete the full scope of work for the 16 evaluated bridges exceeded the program budget.
  - SDOT received concurrence from the LOC to remove bridges from the workplan.
  - Five bridges were then removed from the workplan, leaving a total of 11 bridges to receive seismic reinforcements during the life of the Levy (2016-2024).
- **2023** - SDOT identified additional bridges to complete within the levy timeframe to meet the Ordinance commitment. SDOT is currently moving forward with design.
- **2024** – Construction will continue/start on the remaining bridges.

Cost Estimates in 2020 Bridge Seismic memo

No.	Bridge	Programmed Amount (2016 + Contingency)[1]	Updated Cost Estimate for Design & Construction, Including CDR development (2020)[2]
1	SW Andover Pedestrian Bridge4	$1,023,626	$2,776,201
2	Ballard Bridge (Bascule)	$7,140,065	$32,449,070
3	Fremont Bridge (Bascule)	$7,116,560	$29,110,232
4	Admiral Way North Bridge[3]	$7,401,221	$15,465,788
5	Admiral Way South Bridge[3]	$3,700,606	
6	Delridge Pedestrian Bridge	$1,500,000	$3,338,544
7	15th Ave NW/Leary Way Bridge	$1,153,000	$4,637,350
8	15th Ave NE over 105th Ave NE	$3,421,423	$5,990,000
9	McGraw St Bridge	$6,320,460	$8,248,594
10	1st Ave over Argo RR Bridge	$3,947,795	$253,711,840
11	4th Ave over Argo RR Bridge	$3,947,795	$249,176,280
12	4th Ave S Bridge (Main St – Seattle Blvd)	$8,667,980	$109,496,422
13	N 41st St Pedestrian Bridge	$611,901	$2,956,078
14	Cowen Park Bridge[4]	$6,842,845	$6,584,934
15	W. Howe St Bridge[4]	$1,073,627	$4,193,933
16	8th Ave /133rd Ave Bridge[4,5]	$3,163,298	$2,691,045
	Total:	**$67,032,2024**	**$730,826,371**

[1] Includes contingency of 10-20% for each project through the 2018 Levy Assessment and Updated Workplan.

[2] Assumes 30% design contingency, 30% overall construction contingency, 4% inflation and 5% construction contingency for retrofits involving complex foundation improvements and/or in-water work

[3] Seismic work for Admiral Way N Bridge and Admiral Way S Bridge will be completed together as the bridges are currently tied together at the deck.

[4] Bridges either going out for bid in Q4 2020/Q1 2021 (Andover and 8th) or construction completed (Cowen and W. Howe).

[5] Grant funding awarded and included in total.

Why are the cost estimates from 2020 higher than the original cost estimates?

- Earlier estimate:
  - Based upon limited data and analysis
  - Based upon structure type
  - Seismic reinforcements were scaled based upon budget
  - No foundation improvements were considered
  - Limited historical cost data

What is included in a Concept Design Report (CDR)?

- Identify seismic vulnerabilities based upon two level events:
  - Lower design event: structure to remain repairable
  - High design event: reduce risk of collapse, structure not repairable
- Identify probable seismic reinforcement needs
- Conduct Post-Seismic analysis; validates seismic reinforcements
- 10% concept drawings
- Provide probable construction cost

This information is also available with more detail in the memo provided to the LOC on July 28, 2023.

Current status of the Bridge Seismic Program

SDOT is committed to seismically reinforcing 16 vulnerable bridges as outlined in the 2015 Ordinance.

- SW Andover Pedestrian Bridge - complete
- 8th Ave NW/NW 133rd St Bridge – complete
- Cowen Park Bridge - complete
- W Howe St Bridge - complete
- 15th Ave NE/NE 105th St Bridge
- 15th Ave NW/Leary Way Bridge
- Admiral Way N Bridge
- Admiral Way S Bridge
- Delridge Way Pedestrian Bridge
- McGraw St Bridge
- N 41st St Pedestrian Bridge
- **45th Ave NE Pedestrian Bridge**
- **13th Ave NW/Holman Rd NW Pedestrian Bridge**
- **Rainier and Empire Way (now MLK) Pedestrian Bridge**
- **N 102nd and Aurora Pedestrian Bridge**
- **Lower Spokane St Swing Bridge Silt Removal**

Chosen based on the following criteria:

- These bridges are priorities for seismic improvements given their current vulnerability to seismic events.
- Project costs are likely to fit within program budget and levy timeframe.
- Completing seismic reinforcements on the pedestrian bridges in the workplan align with SDOT's Vision Zero focus on pedestrian safety.
- The pedestrian bridges in the workplan provide important access to transit.
- If these bridges were to fail or become unsafe, there would be substantial impacts to arterial corridors that are critical for both transit and freight travel, as well as the safety of all users
- Including one additional alternative as we move through design process.

Levy to Move Seattle: Bridge-Specific Programs

Program	More Information	Levy investment*	Total investment*
Bridge Repair Backlog *Eliminate the backlog of needed bridge spot repairs*	Presented to LOC in 2023; completed over 2,800 bridge spot repairs to-date	**$27.8M**	**$51.0M**
Bridge Seismic Improvements *Seismically reinforce 16 vulnerable bridges*	16 bridge seismic reinforcement projects completed or planned; workplan adjusted over the life of the Levy.	**$67.4M**	**$81.8M**
Bridge Replacement, Fairview *Replace Seattle's last timber vehicle bridge (on Fairview Avenue)*	Completed in 2021	**$14.7M**	**$52.4M**
Bridge Replacement, Planning & Design *Plan and design high priority bridge replacements to begin construction after 2024. $10M may be used for implementing near-term pedestrian and bicycle safety projects on bridges being studied for replacement.*	Presented to LOC in 2023; completed multiple studies and safety improvement projects and are in progress on others	**$9.9M**	**$14.7M**
Northgate Bridge *Provide additional City funding for a pedestrian and bicycle bridge over I-5 connecting to light rail in Northgate*	Completed in 2021	**$26.7M**	**$53.8M**
Lander St Bridge *Provide local money to design and build the Lander Street Overpass*	Completed in 2020	**$4.3M**	**$62.2M**

** 2016-2022 actual expenses plus 2023-2024 budget*

More information about Bridge Seismic Program & Bridge Maintenance at SDOT

Tableau Dashboard & Annual Reports

- Financial data for all Levy programs
- Summary of recent work
- Status of each project

Bridge Seismic Memos

- Program history & important decisions
- Available on the Levy Oversight Committee webpage and Materials webpage

SDOT "Bridges" Webpage

- Summary of what SDOT does to preserve and maintain bridges, as well as plan for future needs of critical bridges

LOC Presentations

- Photos/stories about each Levy program
- Program challenges & successes
- And more!
- Available on Levy Oversight Committee webpage

This information is also available with more detail in the memo provided to the LOC on July 28, 2023.

Bridge Strategic Asset Management Plan

Why? What is included?

In the 2020 Office of the City Auditor Report, "Strategic Approach to Vehicle Bridge Maintenance is Warranted," the following was highlighted:

- Funding for bridge maintenance and upkeep is a challenge at all levels of government, and particularly for local governments.
- The audit recommended that SDOT undertake a detailed assessment and asset condition data collection effort about the condition of SDOT bridges to accurately estimate bridge maintenance needs and strategically prioritize work.
- Summarizing these and other findings, Recommendation 10 of this audit indicates that "After the Seattle Department of Transportation (SDOT) has accurate condition data, updated estimated useful life calculations, and lifecycle cost data, SDOT should **develop a strategic asset management plan for its bridges** and the **City should develop and implement strategies to fill the bridge maintenance funding gap**."

Planning Ahead to Fund Bridge Maintenance

- The **Bridge Strategic Asset Management Plan (BSAMP)** will identify "right treatment at the right time" that would proactively preserve asset service life
- Recommendations on associated staffing levels and technology improvements to support from reactive to proactive maintenance
- The BSAMP will be a key input into the city's work plan to **identify and program bridge maintenance and replacement funding**.
- In parallel, SDOT is preparing for the end of the Levy to Move Seattle in December 2024, and is **developing a funding plan** to holistically address transportation funding needs on a citywide scale.

Not included: Detailed cost estimates for bridge seismic work.

Conclusion

- We appreciate the LOC's partnership & flexibility in making challenging workplan decisions across the Levy portfolio.
- We are taking key learnings from this Levy into a future funding plan.
- We are meeting the goal for the Bridge Seismic Program outlined in the 2015 Levy Ordinance.
- We would like to hear what the LOC would recommend to ensure clear communication about issues like this in the future.

Discussion Questions:

1. What should be different in the next funding plan?

2. How should future oversight committees approach similar situations?

From the entire SDOT Team:

Thank you!