



# Memo

**Date:** July 28, 2023  
**To:** Levy Oversight Committee  
**From:** Seattle Department of Transportation (SDOT)  
**Subject:** SDOT's Annual Reporting on Bridges and Structures

## Purpose

To provide an overview of annual bridges and structures reporting completed by SDOT that is responsive to the [2015 Levy Ordinance](#), which states: *In addition to the annual progress report, the Director of Transportation will prepare and submit an annual report focusing on bridges and structures including a narrative explaining in detail the condition of bridges and structures within the City of Seattle, especially the Ballard and Magnolia bridges, an assessment of known deficiencies and a funding plan to address known deficiencies.*

Although SDOT performs annual bridge monitoring, we have not assembled the work into a report that is shared annually with the LOC to-date. This memo provides an overview of the reports and studies completed throughout the life of the Levy. It will be updated in 2023 and 2024 with appropriate reports.

## Summary

- The Seattle Department of Transportation (SDOT) bridges and structures receive consistent monitoring, data collection, and evaluation that informs SDOT workplans and regular reporting on status and condition.
- Throughout the life of the Levy, SDOT has collected bridge asset and condition data each year. SDOT has also given presentations about bridge work funded by the Levy to Move Seattle to the Levy Oversight Committee. In these presentations there was also an opportunity for discussion, questions, and answers related to SDOT's bridge work.
- Information has been organized by year below and is available on the Levy to Move Seattle Materials webpage.

## SDOT Asset Status and Condition Reporting

Year	<b>Bridges and Structures Reports</b> <i>Focus on Magnolia and Ballard Bridges, per legislation</i>
2015	<b>Reports</b> <ul style="list-style-type: none"> <li>• <a href="#">Asset Status and Condition Report</a></li> <li>• <a href="#">2015 Capital Projects/Roadway Structures Annual Report</a></li> </ul>
2016	<b>Reports</b> <ul style="list-style-type: none"> <li>• <a href="#">2016 Capital Projects/Roadway Structures Annual Report</a></li> </ul> <b>Bridges and Structures Presentations to Levy Oversight Committee</b> <ul style="list-style-type: none"> <li>• November: <a href="#">Bridges and Structures Update</a></li> </ul>

2017	<p><b>Reports</b></p> <ul style="list-style-type: none"> <li>• <a href="#">2017 Capital Projects/Roadway Structures Annual Report</a></li> <li>• Magnolia and Ballard Bridge Inspection Reports available upon request</li> </ul>
2018	<p><b>Reports</b></p> <ul style="list-style-type: none"> <li>• <a href="#">2018 Capital Projects/Roadway Structure Annual Report</a></li> <li>• Ballard Bridge Inspection Report available upon request</li> </ul>
2019	<p><b>Reports</b></p> <ul style="list-style-type: none"> <li>• <a href="#">2019 Roadway Structures Annual Summary</a></li> <li>• Magnolia and Ballard Bridge Inspection Reports available upon request</li> </ul>
2020	<p><b>Reports</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Strategic Approach to Vehicle Bridge Maintenance is Warranted</a> Bridge Audit and SDOT’s response (<a href="#">summary on SDOT Blog</a>)</li> <li>• <a href="#">Asset Status and Condition Report</a></li> <li>• Magnolia and Ballard Bridge Inspection Reports available upon request</li> <li>• <a href="#">2020 Roadway Structures Annual Summary</a></li> </ul> <p><b>Bridges and Structures Presentations to Levy Oversight Committee</b></p> <ul style="list-style-type: none"> <li>• December: Bridge Seismic Program <a href="#">Memo</a> &amp; Discussion at LOC</li> </ul>
2021	<p><b>Reports</b></p> <ul style="list-style-type: none"> <li>• <a href="#">2021 Roadway Structures Annual Summary</a></li> <li>• Magnolia and Ballard Bridge Inspection Reports available upon request</li> </ul>
2022	<p><b>Reports</b></p> <ul style="list-style-type: none"> <li>• <a href="#">2022 Roadway Structures Annual Summary</a></li> <li>• Magnolia and Ballard Bridge Inspection Reports available upon request</li> </ul> <p><b>Bridges and Structures Presentations to Levy Oversight Committee</b></p> <ul style="list-style-type: none"> <li>• April: <a href="#">Cost Effective Asset Management – Pedestrian Bridge Case Studies</a></li> <li>• December: <a href="#">Delridge Pedestrian Bridge Seismic Retrofit Update</a></li> </ul>
2023	<p><b>Bridges and Structures Presentations to Levy Oversight Committee</b></p> <ul style="list-style-type: none"> <li>• March: <a href="#">Bridge Replacement Planning and Design Program</a></li> <li>• April: <a href="#">Bridge Seismic Program</a></li> </ul>
Regularly Updated	<ul style="list-style-type: none"> <li>• <a href="#">Asset Web Map</a>. The map is updated weekly with asset type, size, condition, location, ownership, and material data when known</li> <li>• Asset and Performance Management <a href="#">“SDOT Infrastructure Assets” reporting</a> indicating replacement value and condition</li> </ul>

## Funding

### ***Levy to Move Seattle Funding for Bridge Maintenance***

Each year, SDOT allocates approximately \$9 million in funding towards maintenance of City bridges. Within the Levy to Move Seattle, we have spent the following on bridge and roadway structures activities through 2022:

- Bridge Spot Repair: \$35.9 million
- Bridge Seismic Improvements: \$28.0 million
- Stairways: \$8.3 million

### ***Identifying Needs and Allocating Funding Through Annual Budget Process***

We assess and inspect each bridge regularly and identify necessary maintenance to address known deficiencies. With that information, we develop an annual workplan for the following year. This workplan is built each year within available funding.

### ***Responding to the 2020 Office of the City Auditor Report, [Strategic Approach to Vehicle Bridge Maintenance is Warranted](#)***

In this report, 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 in order 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 work to respond to Recommendation 10 is underway now. The *Bridge Strategic Asset Management Plan* will recommend bridge maintenance cycles to preserve, extend and improve the condition of Seattle bridges, as well as the critical life-cycle data to inform considerations of which bridges should be replaced or rehabilitated, and on what cycle. This information will be combined with recommendations on associated staffing levels and technology improvements to create a holistic, proactive approach to bridge preservation that plans for the right treatment at the right time. This will allow us to be even more proactive with securing necessary funding.

The *DRAFT Bridge Strategic Asset Management Plan* will be a key input into the city’s work 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 future funding plan to holistically address transportation funding needs on a citywide scale.

## Appendix 1: Work Across a Bridge's Lifespan

**As of 2022, we own, inspect, maintain, and/or operate almost 280 bridges; this includes both private and City-owned assets.** This is in addition to nearly [1,500 other types of roadway structures](#)—such as retaining walls, stairways, and underground support walls. Some of these structures may need repairs, but all these structures need ongoing maintenance, inspections, monitoring, and preservation.

**For many bridges, especially older and movable bridges, there are multiple activities underway each year attending to the needs of the bridge in consideration of its lifespan.** These activities include routine maintenance, annual or biannual inspections to meet city, state and/or federal requirements, condition-based evaluation of bridges to determine the weight the bridge can carry (bridge load rating program), large capital improvement construction projects, which could include major repair, rehabilitation or seismic reinforcement to strengthen the bridge for earthquakes and planning for the bridge's ultimate replacement.

**We are committed to continuing a thorough and proactive asset preservation program.** This maximizes the life of our infrastructure so we can rely on it to remain safe and operational. The following bullets summarize SDOT's multiple concurrent bridge work programs.

**PRESENT |** *Our proactive maintenance approach means we work to prevent or mitigate issues with our bridges and roadway structures. Examples of proactive maintenance include:*

- **Regular inspections.**
- **Repainting bridges.** In addition to providing an aesthetic appeal, paint coating protects bridge metal from corrosion and rust due to salt and moisture in the air. Steel bridges are repainted every 10 to 20 years.
- **Performing bridge cooling on our moveable bridges.** When temperatures are projected to reach over 85 degrees for three consecutive days, we spray our moveable bridges with water to keep them cool. High temperatures can cause bridge steel to expand beyond its normal operational range, potentially creating problems for a bridge's opening and closing functions and/or damaging the bridge.
- **Bridge Load Rating Program:** Managing and enforcing legal vehicle loads on bridges, which is important for bridge safety and long-term health. Activities include:
  - Analyzing the vehicle load capacity of bridges
  - Field verification tests
  - Monitoring deficient bridges

### **NOW AND INTO THE FUTURE |**

- **Capital Improvement Program:** Besides regular maintenance, some structures may require more significant work or major improvements. Being in a seismically active part of the country, the City also devotes funds to increasing the resiliency of earthquake-vulnerable bridges through seismic reinforcements and retrofits. Major maintenance projects often involve a multi-year planning, design, and construction process, for example when SDOT is comprehensively rehabbing or renewing the control systems in a movable bridge. These major maintenance projects are completed under our Capital Improvement Program. These investments ensure the City's bridges and other roadway structures remain safe and operational.

- **Bridge Strategic Asset Management Plan:** As mentioned in the Funding Plan section, above, SDOT is responding to the 2020 Office of the City Auditor Report, [Strategic Approach to Vehicle Bridge Maintenance is Warranted](#). This includes developing a Life-Cycle Cost Analysis to inform a proactive maintenance approach. Planned for completion in Fall 2023, the Life Cycle Cost Analysis will inform our understanding of which bridges require what treatment and on what schedule to improve their condition, and provide us up an updated estimated useful life of each bridge. This information, along with staffing analyses and a technology assessment, will be essential inputs to creating a truly proactive asset preservation program.
- **Bridge Replacement Planning and Design:** The Levy to Move Seattle included funding to study the replacement of high-priority bridges across the city. This program allows us to develop an important cost estimate data point that informs our proactive rehabilitation and replacement program and provides a foundation for pursuing future funding opportunities. For many of these bridges, we complete an alternatives analysis where we analyze alternative transportation scenarios, weighing factors such as environmental impact, ease of mobility and access, cost, construction duration and impact. The alternatives analyses provide a foundation for the eventual environmental permitting processes that would be required. [Recently completed alternatives analysis](#) include Magnolia Bridge and Ballard Bridge. University Bridge North Approach, plus several others, are in progress now.