

Seattle Department of Transportation

ROADWAY STRUCTURES

2022 Annual Summary



Fairview Ave N Bridge



Seattle
Department of
Transportation

ASSET CONDITION

Bridges

SDOT assesses the condition of 35 pedestrian and 86 vehicular bridges. All bridges are inspected, at a minimum, on a 24-month cycle. The bridge condition and bridge type can also increase the frequency of the bridge inspections or require more specialized types of inspection such as inspection for nonredundant steel tension members, underwater (60-month cycle) or special inspection of atypical or non-standard bridge components.

Bridge conditions are rated in accordance with the Federal Highway Administration's (FHWA) National Bridge Inspection Standards (NBIS). The system rates bridges on their current condition compared to when they were new and considers the condition of the key components of the bridge: the deck, superstructure, and substructure.

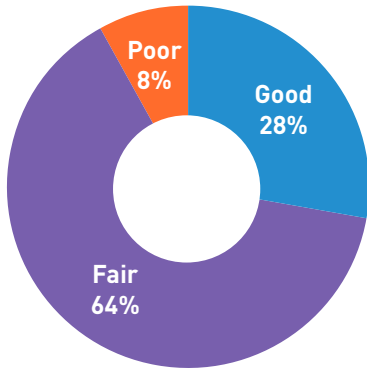
The structural condition of a bridge's key components is used to determine if there are structural or maintenance issues that need to be addressed. SDOT, in keeping with NBIS, ranks **vehicular bridges** in good, fair or poor condition based on the lowest ranking of those three components. SDOT ranks **pedestrian bridges** by the lowest condition state of each individual bridge element. Read more about component-level assessments from the [FHWA](#) and [WSDOT](#).

If a bridge is rated in poor condition, it is still safe for the traveling public. A bridge in poor condition has significant structural or maintenance issues, and to ensure ongoing safety, inspection frequency may be increased or other measures such as restricting the load capacity by re-striping or posting weight limits on the bridge may be implemented until repairs are made.

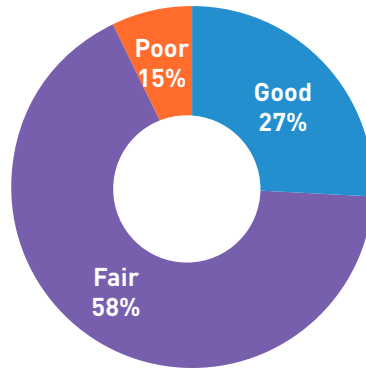


West Seattle High-Rise Bridge and Spokane St Swing Bridge

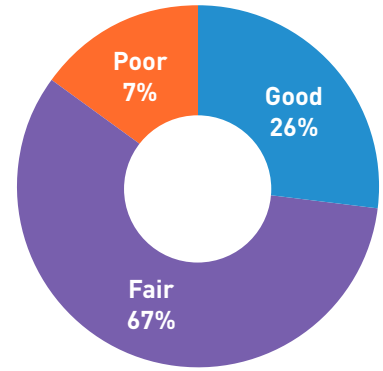
Overall Bridge Condition



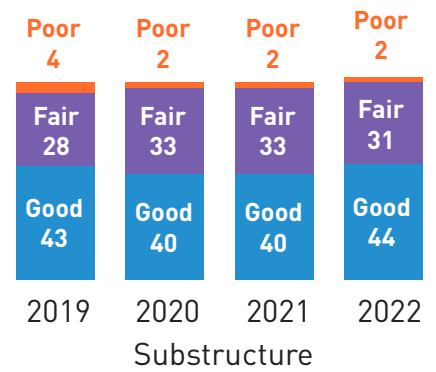
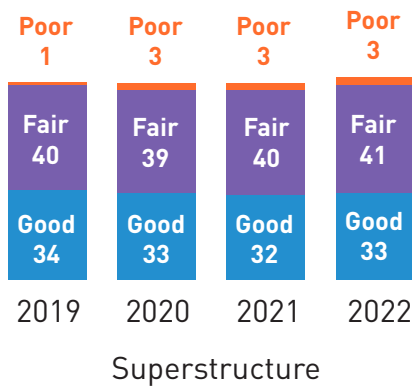
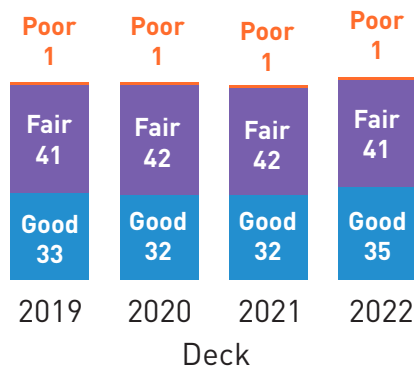
Pedestrian Bridge Condition



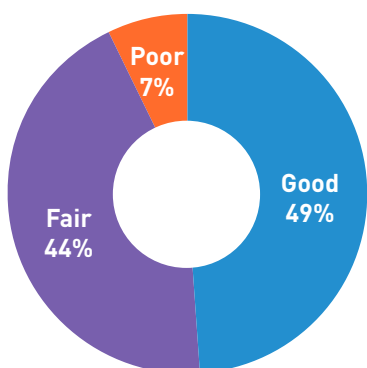
Vehicular Bridge Condition



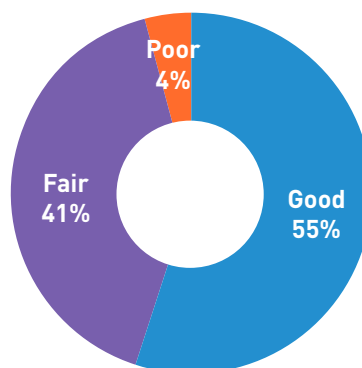
Main Component Condition



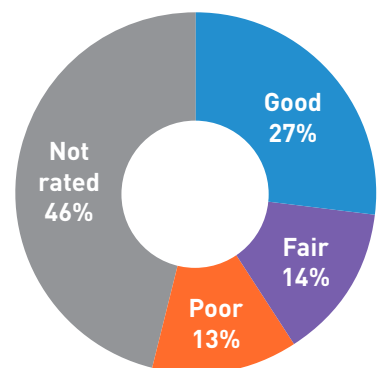
Retaining Wall Condition



Stairway Condition



Areaway Condition



STRUCTURAL OPERATIONS AND MAINTENANCE HIGHLIGHTS

Levy to Move Seattle Highlights



Bridge Maintenance

Completed 354 bridge spot repairs, including repairing:

- Cracks on the Magnolia Bridge, 4th Ave Over Argo Bridge, Emerson St Bridge, Nickerson Interchange, Ballard Bridge, and Fauntleroy Expressway.
- Expansion joints on the Ballard Bridge, SW Admiral Way Bridge 15th Ave/Leary Bridge, and Jose Rizal Bridge.
- Bridge rails on the Ballard Bridge, SW Admiral Way Bridge, and Fremont Bridge.
- Concrete spalls at the Spokane St Viaduct, S Jackson St Bridge, 4th Ave S Bridge, University Bridge, and others.

Stairway Rehabilitation

- SW Spokane St & SW Admiral Way Dr & 2nd Ave N: Rebuilt to current standards
- E Prospect St & McGilvra Blvd E
- W Dravus St between 9th & 10th Ave W
- S Holgate St between 16th & 17th Ave S
- SW Findlay St between 37th & 38th Ave SW

Other Maintenance

- Restored power to University Bridge after outage
- Repaired Willcox Retaining Walls
- Repaired traffic gates on movable bridges
- Relocated conduit and wiring within to allow for the install of the lift turn cylinder on the Spokane St Swing Bridge
- Fabricated Cloverdale Stairway protection railing
- Prepared deluge system for West Seattle High-Rise Bridge reopening

Bridge Load Rating

- Phinney Ave N/N 57th St
- West Seattle High-Rise Bridge – West Approach
- Interlaken Blvd/26th Ave E

BRIDGE INSPECTIONS

Completed 100% of NBI bridges

Routine: 48
Fracture Critical: 21
Special: 3
Safety/Other: 98
Underwater: 7
Condition: 35
Short Span: 8

COMPLETED WORK ORDERS

Bridges: 363
Stairways: 41
Retaining Walls: 11
Areaways: 1

BRIDGE OPENINGS

Variance from 2021 identified at right

Ballard: 3,261	↓ 144
Fremont: 4,439	↓ 668
University: 2,646	↓ 209
Spokane: 1,729	↓ 19
South Park: 772	↑ 39

EMERGENCY RESPONSE

Accidents: 3
Operational: 26
Other Maintenance: 8

OTHER INSPECTIONS

Stairway: 127
Retaining Walls: 113
Areaways: 106

OTHER

Plan Review: 290*

*Final count is still being confirmed

GLOSSARY

Bridge Inspection Types:

- **Routine:** Regularly scheduled inspections consisting of documenting observations, measurements, or both, used to determine the physical and functional condition of the bridge at a point in time.
- **Non-redundant Steel Tension Member (NSTM) (previously Fracture Critical):** Inspection to assess the structural condition of each NSTM member, whose failure could result in the partial or total collapse of the bridge.
- **Private/Other:** Inspection of privately-owned structures that spans across the public right-of-way.
- **Condition:** Inspection to assess the condition of pedestrian structures or other bridge structures that may not meet National Bridge Inspection Standards guidelines for a “routine” inspection.
- **Short Span:** Inspection used for vehicular bridges that are 20 feet or less.
- **Special:** Inspection to assess the condition of special features on a bridge, such as the electrical and mechanical elements of a moveable bridge.
- **Underwater:** In-water inspections to examine the underwater elements of the bridge to determine their structural condition and adequacy.

Bridge Load Rating: Activity to determine a bridge’s capacity to carry specific types of vehicle loads. This information is used to manage and enforce legal vehicle loads on bridges. This is important for bridge safety and long-term health.

Activities include:

- Analyzing the vehicle load capacity of bridges
- Field verification tests
- Monitoring deficient bridges
- Posting or restricting the weight and or type of vehicle for bridges or structures with reduced load ratings.

Component level assessment: Detailed assessment of the condition state of the individual bridge components, which includes and is not limited to the deck, the substructure, and the superstructure (defined in this glossary, below).

Deck: The surface on which a vehicle drives on, or for pedestrian structures, the surface a pedestrian walks/rolls on.

Other Inspections: Inspections to assess the condition of other roadway structures that are not identified as a bridge, such as areaways, retaining walls, and stairways.

Substructure: Typically refers to all the other elements of the bridge that supports the superstructure.

Superstructure: Typically used to reference all the bridge elements that are part of the bridge that is supported on the bearings and including the bearings.

Sufficiency rating: The Federal Highway Administration (FHWA) describes sufficiency rating as “a method of evaluating highway bridge data by calculating four separate factors to obtain a numeric value which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge.”

Roadway Structures Mission

Make the most of Seattle's transportation investment, preserve infrastructure, manage capital improvements and maintain and operate bridges, retaining walls, stairways and areaways to provide a safe and reliable transportation system.

Seattle Department of Transportation
700 5th Avenue, Suite 3800
PO Box 34996
Seattle, WA 98124-4996
(206) 684-ROAD (7623)
www.seattle.gov/transportation



Seattle
Department of
Transportation