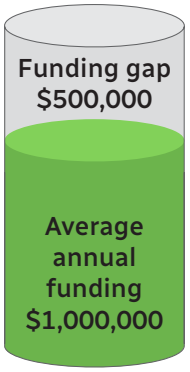
Bridges and culverts

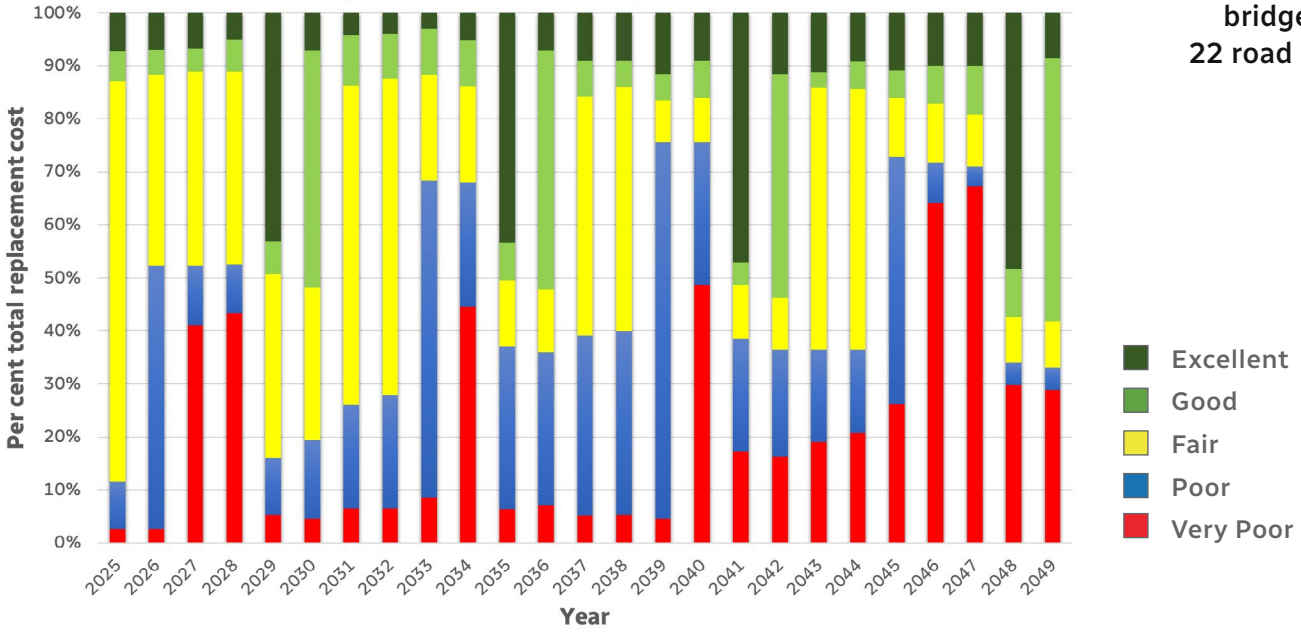
Total asset replacement value	**$96 million**
Current condition	**GOOD**
Projected condition in 25 years	**GOOD**
Annual funding needed to meet target performance	**$1.5 million**
Annual average funding	**$1,000,000**
Annual funding gap	**$500,000**
Funding source	**Tax base and stormwater user fees**
Data maturity level	**High**



Annual funding needed $1.5 million

Assets include 57 pedestrian bridges and 22 road culverts.

Projected annual performance of bridge assets



A FEATURED STORY

Connecting Communities, Supporting Active Lifestyles

This year, we replaced two aging pedestrian bridges, enhancing safety and connectivity across our growing active transport network. Looking ahead, several bridge and culvert projects are planned to improve access, manage stormwater, and protect local waterways. These future upgrades will support our road network and enhance vibrant, active communities by making it easier and safer to walk, cycle, and connect. Together, we're building a healthier, more resilient future—one step and pedal at a time.

CURRENT STRATEGY

Within the city, bridges fall into two categories: pedestrian bridges and road structures. Pedestrian bridges are meant to support pedestrians, cyclists and maintenance vehicles such as those used for snow clearing. All road structure bridges in the city are storm culverts with a span of three metres or greater, and may support heavy transport, motor vehicles, emergency vehicles, pedestrians and cyclists. Bridges are funded by both the tax base and through stormwater user fees.

Both types of bridge structures are replaced when they reach the end of their useful life. Inspections done every two years determine if there is a need for work to be done, ranging from replacement of railings to asphalt and concrete repairs, right up to full bridge replacement.

ASSET PERFORMANCE

Bridge asset performance is evaluated using historical knowledge, age, and observed conditions. The quality and availability of our asset data (data maturity) are continuously evolving. The current data maturity level for bridge assets is assessed to be high. The city is continuously working to improve asset data quality.

Currently 88% or our bridge assets are considered in fair or better condition. Over the 25 year timeline, with the current level of funding, we anticipate the percentage of our bridge assets with a fair or better profile to decrease from 88% in 2025 to approximately 67% by 2049. Based on the best available bridge asset data, deterioration rates and 2025-2033 capital funding, we estimate that bridge assets have an annual infrastructure funding gap of $500 thousand.

88%

Per cent of bridges assets with a fair or better perormance

LEVELS OF SERVICE

The following tables show the levels of service established by the city for bridge assets. These metrics include the technical and community level of service required as part of the Ontario Regulation 588/17. Service metrics are reported for the prior year ending on December 31.

COMMUNITY LEVELS OF SERVICE

The following table outlines the qualitative descriptions that determine the community levels of service for bridge assets.

SERVICE ATTRIBUTE	QUALITATIVE DESCRIPTION	2024
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	In the City of Waterloo bridges fall into two categories, pedestrian bridges and road structures. Pedestrian bridges are meant to support pedestrians, cyclists and maintenance vehicles such as those used for snow clearing. All road structures in the City are storm culverts with a span of three metres or greater. These structures may support heavy transport, motor vehicles, emergency vehicles, pedestrians and cyclists.
Quality	Description or images of the condition of **bridges** and how this would affect their use.	A number of factors related to the various elements that comprise a bridge structure can affect the condition and use of a bridge. Elements of a bridge include substructures such as foundations and abutments, primary components and secondary components. The elements may be composed of the varying materials which may display ranging levels of defect. Bridges where the severity and extent of any one defect is high, or bridges with a high proportion of elements in a poor condition state and structures with load limits all effect the use of a bridge structure from a public safety, comfort and convenience perspective.
	Description or image of the condition of **culverts** and how this would affect their use.	A number of factors related to the various elements that comprise a Culverts can affect the condition and use of a bridge. Elements of a culvert include barrels, barriers, headwalls, foundations, embankments and streams, etc. The Culvert barrels themselves may be made of concrete, or corrugated steel pipe and may be constructed in several shapes; namely, round, ellipses, pipe arches or rectangular. The other elements that make up the bridge structure may be composed of the varying materials which may display ranging levels of defect. Bridges where the severity and extend of any one defect is high, or bridges with a high proportion of elements in a poor condition state and structures with load limits all effect the use of a bridge structure from a public safety, comfort and convenience perspective.

TECHNICAL LEVELS OF SERVICE

The following table outlines the quantitative metrics that determine the technical level of service for bridges and culverts.

SERVICE ATTRIBUTE	QUANTITATIVE METRICS	2023	2024
Scope	Per cent of bridges in the city with loading or dimensional restrictions.	31.6%	35%
Quality	For bridges in the city, the average bridge condition index value.	74	76
	For structural culverts in the city, the average bridge condition index value.	69	69

The information presented here is based on the best available asset inventory and condition data as of March 2025, as well as funding details from the 2025-2026 approved capital budget and the 2027-2033 capital forecast.

The forecasting model allows staff to project the condition of City assets over a 25-year timeframe and therefore all funding is based on a 25-year average.