



**Enhanced safety  
for all modes  
with dedicated  
pedestrian and  
bicycle facilities**



**Future Mayo  
Island Park  
Redevelopment  
promotes  
economic growth**



**FY26 Bridge Investment Program Grant  
for**

# **Mayo Bridge Replacement Project**

Prepared for:  
**United States Department of Transportation**

Submitted by:  
**City of Richmond, Virginia**

**PROJECT NARRATIVE**

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## **I. BASIC PROJECT INFORMATION**

## Project Description

### Overview

The Mayo Bridge is a critical transportation link in the historic and economic center of Richmond, Virginia.

The Mayo Bridge carries nearly 36,000 person-trips per day over the James River, connecting Downtown Richmond to thousands of homes and jobs in communities in Southside. It is the designated detour route for I-95, one of the busiest freight corridors on the East Coast. And it is the sole provider of access to Mayo Island, which the City of Richmond is transforming into a public park with passive and active recreational greenspaces in the middle of the James River.

#### BIP Program Goals:

- ✓ Improve the safety, efficiency, and reliability of the movement of people and freight over bridges
- ✓ Reduce the number of bridges in poor condition
- ✓ Reduce the total person miles traveled over bridges in poor condition

Today, the Mayo Bridge is in danger of becoming unusable and unsafe due to naturally occurring deterioration within the bridge's substructure. Both superstructures of the Mayo Bridge are in poor condition, and geotechnical analysis in 2024 revealed alkali-silica reaction in three piers, confirming a full bridge replacement is necessary.<sup>1</sup> In its current condition, the bridge is at risk of being closed to traffic within the next 10 years.

<sup>1</sup> JMT. "Mayo Bridges Design Charette Report." September 4, 2024. [https://www.vdot.virginia.gov/media/vdotvirginiagov/projects/richmond/richmond-mayox27s-bridge-superstructure-replacement/UPC-104888-Design-Charrette-Report-2024-09-04-\(2\).pdf](https://www.vdot.virginia.gov/media/vdotvirginiagov/projects/richmond/richmond-mayox27s-bridge-superstructure-replacement/UPC-104888-Design-Charrette-Report-2024-09-04-(2).pdf)



*Mayo Bridge Today. Source: Bill Dickinson*

The Mayo Bridge needs to be replaced so it can continue to serve this critical link in the city's transportation network.

With this undertaking, the bridge replacement is a rare opportunity to address traffic safety and geometric deficiencies of the current bridge and capitalize on a unique economic development and tourism potential in partnership with the creation of Mayo Island Park. The new Mayo Bridge will reconfigure the roadway, reallocating space to better match the needs, interests, and safety of the people who use the bridge today and address safety issues that have been documented in multiple public engagement efforts and quantified in recorded crash data.

#### BIP Program Goals:

- ✓ Reduce the number of bridges that do not meet current geometric design standards



As this project narrative details, the Mayo Bridge replacement project will support the economic growth and land-use productivity of the commercial districts of Downtown and Manchester, two major growth nodes that are the backbone of the regional economy. The project will also enable the development of Mayo Island into a new destination park that further bolster’s the economic competitiveness of the surrounding area. It will improve community connectivity and reliable access to daily destinations, increase affordable transportation choices, protect motorized and non-motorized travelers from existing safety risks, and reduce the negative environmental impacts of transportation-related greenhouse gas emissions.

The City of Richmond has secured partial funding and implementation partnerships through the Virginia Department of Transportation (VDOT), Central Virginia Transportation Authority (CVTA), as well as other Federal funding sources. However, the project needs the requested \$95.8 million from the Bridge Investment Program to close the funding gap and bring this needed project into reality.

BIP Program Goals:

✓

Provide financial assistance that leverages and encourages non-Federal contributions

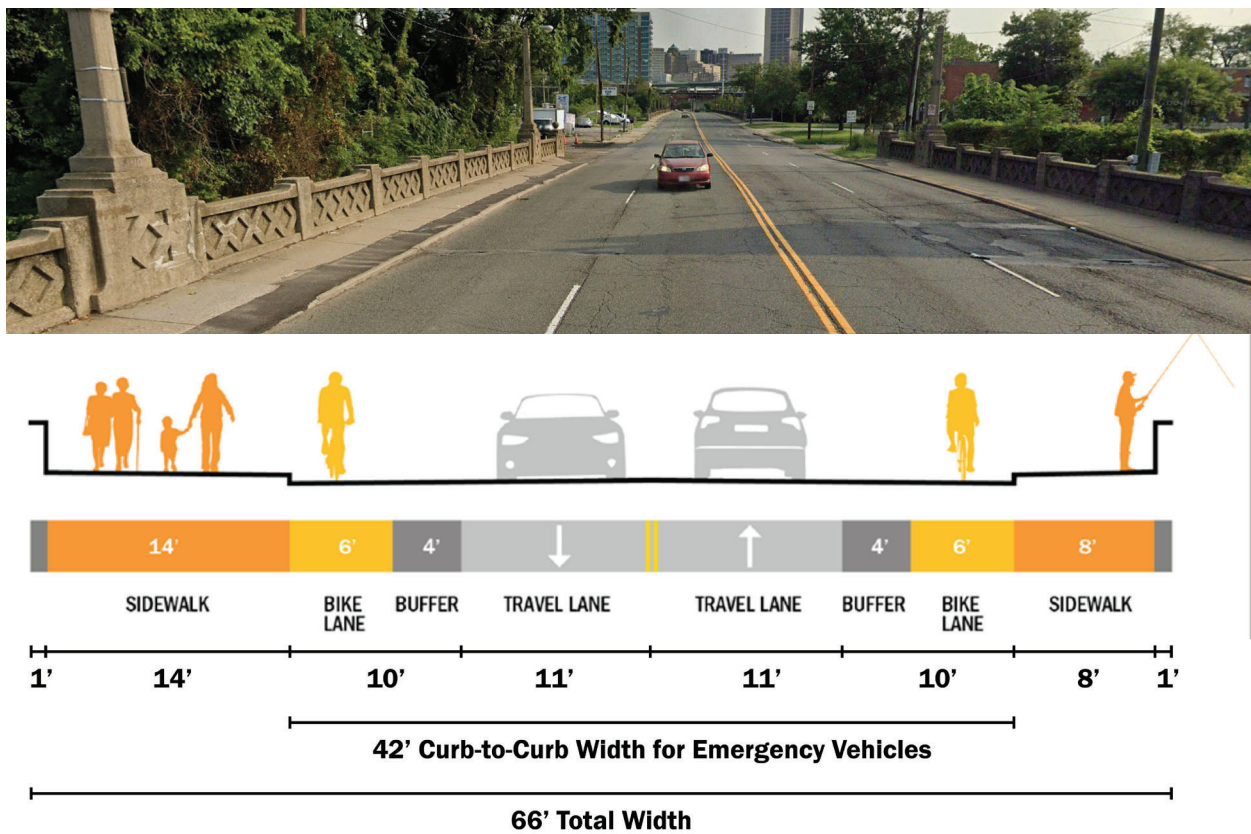
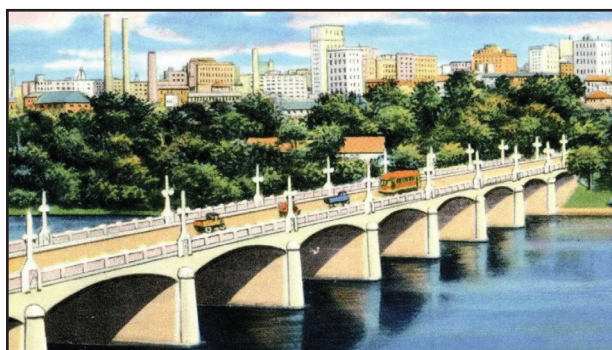


Figure 1. Existing and Future Mayo Bridge Configurations

## Background Context

The Mayo Bridge is a 112-year old crossing of the James River in the heart of Richmond, Virginia, linking Downtown Richmond with the Manchester business district and Southside neighborhoods. This connection of 14th Street on the north bank and Hull Street (now US Route 360) on the south, has been important for more than two centuries – originally opening in 1788 and named after the Mayo family who laid out Richmond’s street grid in 1737.<sup>2</sup>



*Figure 2. Postcard of Mayo Bridge from the early 20th century. Source: Historic Richmond Foundation*

The Mayo Bridge is referenced as a single bridge, but consists of two separate structures, each connecting to Mayo Island in the middle of the James River. It is one of the oldest and most iconic bridges in the City of Richmond today, with construction plans dated to 1911.

Each bridge carries four lanes of traffic (two lanes in each direction), with six-foot sidewalks on both sides. VDOT classifies US 360 (14th Street) as a Principal Arterial. In 2023, the bridge carried an annual average daily traffic volume of 19,000, which includes trucks, personal vehicles, and buses operated by the Greater Richmond Transit Company (GRTC).

<sup>2</sup> See Appendix A for architectural surveys about the Mayo Bridge.

GRTC Routes 1A, 1B, and 1C all use the Mayo Bridge, carrying more than 3,000 bus passengers across the bridge daily.<sup>3,4</sup>

The Mayo Bridge provides emergency egress across the James River and acts as a detour route for I-95. The bridge also facilitates an average of 700 bicycle and pedestrian crossings daily, despite the lack of bicycle facilities and suboptimal pedestrian facilities.<sup>5</sup> It is only 30 feet above the water line, falling within the floodplain, and is currently the only bridge in Richmond below the flood line. As a result, the bridge’s low height makes it a key destination for recreational fishing.

As this grant application details, the replacement of the Mayo Bridge is a critical necessity. The superstructure is in poor condition, and will likely need to be closed to traffic within 10 years. Alkali-silica reaction, commonly known as concrete cancer, is occurring in multiple piers of the bridge’s substructure. Without this connection, Richmond’s two most important economic districts will be disconnected, creating travel disruptions and delays, placing strain on the rest of the city’s transportation network.

The replacement project also presents the rare chance to fully address safety deficiencies for motorized and non-motorized users of the current bridge, with a new roadway configuration that meets current design standards.

### 23 U.S.C. 217(e):

- ✓ Provide safe accommodation of pedestrians and bicyclists

<sup>3</sup> VDOT. “Annual Average Daily Traffic Volume Estimates by Section of Route - Chesterfield Maintenance Area 2023.” <https://data.virginia.gov/dataset/annual-average-daily-traffic-volume-estimates-by-section-of-route-chesterfield-maintenance-area-2023>

<sup>4</sup> GRTC. “Board of Directors Meeting: October 22, 2024.” [https://ridegrtc.com/media/main/GRTC\\_Board\\_Packet\\_10-22-2024.pdf](https://ridegrtc.com/media/main/GRTC_Board_Packet_10-22-2024.pdf)

<sup>5</sup> See Appendix C for pedestrian and bicycle counts from May 2024



Finally, the project is a golden opportunity for economic development and tourism potential in partnership with the creation of Mayo Island Park, and continued growth in land-use productivity of Downtown, Manchester, and Southside.

The need to replace the Mayo Bridge is fortuitously coinciding with the transformation of Mayo Island as a 16-acre public park for the City of Richmond, which is being designed through a community-focused park planning process, currently underway. The bridge replacement will be essential to connecting this new recreational treasure, part of the 600-acre James River Parks System, supporting the city and region's economic competitiveness.

A bridge replacement of this scale is a major investment that will last 75 to 100 years. Just like Downtown and Manchester were very different places 100 years ago, the places the Mayo Bridge connects will continue to evolve, as will the traffic patterns to, from, and within them.

In order to maximize this investment, the new Mayo Bridge needs to be flexible to accommodate the transportation

needs of today, and the ever-evolving traffic patterns and needs of the future. As Downtown and Manchester continue to densify and increase in land-use productivity, the movement of people will inevitably shift toward higher capacity modes.

Walking and bicycling will be quicker, more affordable, and faster forms of transportation because destinations will be closer, and reducing the demand for parking.

The proposed roadway cross-section includes 42 feet curb-to-curb, which provides flexibility over the 75-100 year life of the bridge to respond as traffic needs inevitably change.

Today, the most pressing need to address on the Mayo Bridge is safety, as evidenced by side-swipe crashes and public comments, further described in the Merit Criteria section. The proposed cross-section with buffered bicycle lanes is purposefully designed to improve safety for all modes, reduce speeds, and reduce fatal and injury crashes. This cross-section represents the best geometric configuration given the current needs, and was necessary to garner community



*Figure 3. Photo of Downtown Richmond from Mayo Bridge*

support for this project.

The configuration of the buffered bike lanes is also intentionally flexible and can be restriped in the future to adapt to future traffic needs. Future configurations could consist of bus-only lanes or shared bike/bus lanes to accommodate premium transit service and adding more people-moving capacity; or a directional middle lane for moving more vehicles. The proposed 13-foot sidewalk is also intentionally provided as a space that can be shared between pedestrians and bicyclists, so that if the buffered bike lanes are converted in the future, bicyclists still have a pathway that is not shared with motorized vehicles.

In sum, the Mayo Bridge replacement will ensure that Richmond maintains a critical transportation network connection while embracing the opportunity to meet modern multimodal, environmental, and community enhancement needs. It is a project that builds on Richmond's history, bolsters tourism, and improves safety, efficiency, and reliability for moving people and freight for decades to come.

### **Specific Project Improvements**

The Mayo Bridge Replacement Project includes the following components:

- Construction of two new bridge structures, approximately 898 feet in length (south) and 579 feet in length (north);
- Environmental review of the bridge replacement project in compliance with the National Environmental Policy Act of 1969 (NEPA), including evaluation of potential effects to historic properties;
- Floodwall coordination;
- Cultural resources/aesthetics/DHR coordination;
- MOT/detours during construction coordination;
- Right-of-way acquisition;
- Park coordination;
- Utility relocation; and
- Demolition of multiple spans of the existing bridge.

The proposed roadway cross-section is shown previously in Figure 1.



Project History

Since 2011, the City of Richmond has been investigating options to either rehabilitate the existing Mayo Bridge structures or replace them with new structures.

A structural analysis and feasibility study was performed, and in January 2024, a geotechnical core evaluation revealed the presence of alkali-silica gel in the substructure units, significantly increasing the risk of reusing them.

Based on these findings, VDOT and the City of Richmond determined complete replacement of both bridges was in the public’s best interest.

A design charrette was facilitated in June 2024 to explore design alternatives for complete replacement, and a traffic

analysis was conducted in December 2024 to determine the traffic operational impacts of the proposed roadway configuration.

Preliminary engineering currently underway. The NEPA process planned to begin in the Fall of 2025 and conclude in Fall 2027.

As of July 15, 2025, approximately \$1.8 million of the \$192 million project cost has been expended to date.

Table 1. Project Costs and Previously Incurred Costs

Project Phase	Total Project Costs	Expended as of 7/15/2025
Preliminary Engineering	\$7,775,000	\$1,763,582
Right-of-Way	\$17,157,256	-
Construction	\$166,657,065	-
Total All Project Phases	\$191,589,321	\$1,763,582

## Project Location

The Mayo Bridge replacement project is located in the heart of the City of Richmond, which is the capital of the Commonwealth of Virginia and the center of the Richmond Metropolitan Statistical Area and the Greater Richmond Region.

**The project is located within the boundary of the Richmond, VA 2020 Census-designated Urban Area.**

The project is located at the convergence of the fall line of the James River. It is a VDOT-classified principal arterial, connecting 14th Street in the Shockoe Slip neighborhood on the north bank to Hull Street (U.S. Route 360) in the Old Manchester neighborhood on the south bank, some of the oldest parts of Richmond.

It also connects the Manchester-Floodwall Walk, a trail along the south bank of the James River, to the Canal Walk trail along the north bank. Three GRTC bus routes traverse the Mayo Bridge, connecting to the downtown transit transfer station and Amtrak intercity passenger rail. The Mayo Bridge provides the only point of access to Mayo Island, the site of the future Mayo Island Park.

The Mayo Bridge consists of two bridge structures on either side of Mayo Island. The south bridge (VDOT Str. 127-1849, Fed ID 21583) is an eleven (11) span, 867' long, arch structure between the south bank of the James River and Mayo Island, and the north bridge (VDOT Str. 127-1857, Fed ID 21584) is a seven (7) span, 559' long arch structure between Mayo Island and the north bank of the James River.



Figure 4. Project Location



**The Mayo Bridge Replacement Project will contribute to the functioning and growth of the economy.** The Mayo Bridge is a critical connection linking downtown Richmond – the region’s largest employment hub and the second most dense in the Commonwealth of Virginia for jobs and housing – with Manchester and Southside Richmond.

Richmond’s Downtown Business Improvement District estimates that Downtown and Manchester together host:

- 76% of Richmond’s office space;
- 25% of Richmond’s retail businesses;
- 33% of Richmond’s restaurants and bars;
- 70% of Richmond’s hotel rooms; and
- 60% of all of Richmond’s new residential construction.<sup>6</sup>

Maintaining this critical connection is necessary to avoid disrupting travel patterns for employees, customers, and goods movement in this commercial hub.

Additionally, providing access, especially safe and comfortable walking and biking access, to the future Mayo Island Park will be an economic asset for the City of Richmond. Parks are powerful engines for economic development in the post-pandemic era.<sup>7</sup> Access to the Mayo Island Park will boost Richmond’s attractiveness to future residents and businesses.

**The Mayo Bridge Replacement Project will promote greater land-use productivity.** The Richmond 300 Master Plan’s Future Land Use Map designates the areas on either side of the Mayo Bridge as Downtown Mixed-Use and Destination Mixed- Use, two of the most mixed-use and transit- oriented Future Land Use categories within *Richmond 300*.<sup>8</sup>

Despite the density of residential and employment activity in the surrounding areas today and projected in the future, the Mayo Bridge doesn’t have the infrastructure safety to promote active transportation modes.

A public comment from a VDOT survey notes that “[They] used to live in an apartment across the bridge and would walk across it to get to and from work. [They] moved out because it was far too dangerous to continuously walk across that bridge.”<sup>9</sup>

Replacing the currently degrading Mayo Bridge with a bridge that provides high-quality bicycle and pedestrian facilities will bring the full potential for transportation-efficient land use of the compact, walkable development patterns in Downtown and Manchester into reality.

6 Venture Richmond. “Downtown Richmond Commercial Facts & Figures.” <https://venturerichmond.com/work-downtown/commercial-facts/>

7 Trust for Public Land. “Park Investment and Economic Vitality.” September 2024. [https://www.tpl.org/wp-content/uploads/2024/09/TPL-Park-Investment-and-Economic-Vitality-in-Cities-09\\_19\\_24.pdf](https://www.tpl.org/wp-content/uploads/2024/09/TPL-Park-Investment-and-Economic-Vitality-in-Cities-09_19_24.pdf)

8 City of Richmond. “Richmond 300: A Guide for Growth.” 2020. <https://www.rva.gov/planning-development-review/master-plan>

9 See Appendix H, “Public Comments” addendum

## Lead Applicant

The Mayo Bridge Replacement Project is a partnership between the City of Richmond and VDOT, who both understand and are committed to delivering this critical project. The City and VDOT executed an agreement<sup>10</sup> for administration of the project, outlining the roles and responsibilities of each entity.

**The City of Richmond's Department of Public Works (DPW) is the lead applicant** and project sponsor for this BIP grant application. VDOT is the project co-applicant.

DPW is responsible for 832 center lane miles of street, 836 miles of sidewalk, and 85 bridges, including the Mayo Bridge. DPW has experience with receipt and expenditure of several Federal-aid highway program funds under 23 U.S.C. in the past, including:

- FY 2010 TIGER Planning grant for Hull Street Corridor Revitalization Project (\$100,000)
- FY 2022 RAISE grant for Arthur Ashe Boulevard Bridge Replacement (\$18,400,000)
- FY 2022 Reconnecting Communities Community Planning Grant (\$1,350,000)
- FY 2022 SS4A Action Planning Grant (\$762,414)
- FY 2023 SS4A Implementation Grant (\$10,768,909)
- FY 2024 SS4A Planning & Demonstration Grant (\$1,000,000)

Additionally, the City is experienced in receiving and administering Federal funds for other projects, such as over \$2.7 million for the Broad Rock Boulevard Grade Separation Study and Development funded through the FY 2023-2024 Railroad Crossing Elimination Grant Program through FRA, and \$155 million from the American Rescue Plan Act funding.

## Other Public and Private Parties

**VDOT is the project co-applicant.** Per the agreement between VDOT and the City of Richmond, VDOT will design, construct, and administer the project. The City will contribute local funds as outlined in the agreement, provide a liaison for city approval processes, and provide for maintenance upon project completion. The Mayo Bridge will remain under the ownership of the City. This complex bridge replacement project will benefit from VDOT's administration and statewide expertise.

**The Mayo Bridge Replacement Project is a prime example of a partnership between a local government and a state DOT to build a critical infrastructure project as quickly as possible.** This BIP grant application demonstrates both parties' strong commitment to this project.

<sup>10</sup> See Appendix G – VDOT/City of Richmond Mayo Bridge Agreement

## **Additional Eligibility Requirements**

### **Maintenance Commitment**

As the owner of the Mayo Bridge, the City of Richmond will be responsible for bridge maintenance. The City has a robust process for conducting annual bridge inspections, maintaining an inventory of bridge condition, and prioritizing maintenance activities, in accordance with VDOT, NBI, and FHWA guidelines.

Estimated maintenance costs for the future bridge include \$60,000 for inspection every year and \$10 million every five years for maintenance after the new bridge opens, per the City of Richmond Bridge Engineer.

Funds to cover these maintenance costs will come from the City's General Funds, the Central Virginia Transportation Authority, State of Good Repair program, and VDOT's Revenue Sharing program.

The City has committed to funding ongoing maintenance and preservation upon completion of the project, as documented in the evidenced in the agreement between VDOT and the City of Richmond.<sup>11</sup>

### **Asset Management Plan**

The Mayo Bridge Replacement Project is consistent with the objectives in VDOT's Virginia Transportation Asset Management Plan (TAMP), which FHWA certified as meeting the requirements in 23 CFR 515.13 on August 8, 2022.<sup>12</sup>

The TAMP describes the Commonwealth of Virginia's transportation asset management processes and methodologies to meet federal requirements. For bridge condition, asset management performance is measured by the General Condition Rating (GCR) and the percentage of bridges on each highway system in Good or Fair condition.

The target for GCR is an average weighted score of 5.6 or higher. Both Mayo Bridge structures have a superstructure GCR rating of 4 and a substructure GCR rating of 5. These are below the 5.6 performance target. Replacing the Mayo Bridge will result in a higher GCR rating in line with the GCR performance target.

The current target for the percentage of non-poor (sufficient) condition structures is 93% for Virginia's primary highway system, which includes the Mayo Bridge.<sup>13</sup> The superstructures of both Mayo Bridge structures are in poor condition. Replacing the Mayo Bridge will bring the structures into sufficient condition, aligned with this performance target.

<sup>11</sup> See Appendix G: VDOT/City of Richmond Mayo Bridge Agreement

<sup>12</sup> VDOT. "Transportation Asset Management Plan." 2022. See Appendix I

<sup>13</sup> OIPI et. al. "Performance Measure for VTrans Goals and Objectives." Presentation to the CTB. March 18, 2025. <https://ctb.virginia.gov/media/ctb/agendas-and-meeting-minutes/2025/03/2025-03-ctb-vtrans-measures.pdf>





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## **II. NATIONAL BRIDGE INVENTORY DATA**

## II. National Bridge Inventory Data

The following is an excerpt of relevant data from the National Bridge Inventory.

	Mayo Bridge South	Mayo Bridge North
Structure Number	21583	21584
Year Built	1913	1913
Structure Type	Concrete Arch-Deck	Concrete Arch-Deck
Structure Length	256.3 Meters	162.5 meters
Number of Spans	11	7
Type of Service	Highway-pedestrian	Highway-pedestrian
Traffic Lanes On the Structure	4	4
Curb/Sidewalk Widths	2.0 meters on both sides	2.0 meters on both sides
Total Horizontal Clearance	13.3 meters	13.3 meters
Bridge Roadway Width, Curb-to-Curb	13.4 meters	13.4 meters
2022 Average Daily Traffic	17,082	17,082
2045 Future Average Daily Traffic	19,046	19,046
Bridge Railings	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.
Transitions	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.
Approach Guardrail	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.
Approach Guardrail Ends	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.	Inspected feature does not meet currently acceptable standards or a safety feature is required and none is provided.
Superstructure Condition	4: Poor Condition	4: Poor Condition
Substructure Condition	5: Fair Condition	5: Fair Condition

	Mayo Bridge South	Mayo Bridge North
<b>Operating Rating</b>	92.4 metric tons	92.4 metric tons
<b>Inventory Rating</b>	70.9 metric tons	70.9 metric tons
<b>Structural Evaluation</b>	4: Meets minimum tolerable limits to be left in place as is	4: Meets minimum tolerable limits to be left in place as is
<b>Deck Geometry</b>	2: Basically intolerable requiring high priority of replacement	2: Basically intolerable requiring high priority of replacement
<b>Bridge Posting</b>	5: Equal to or above legal loads	5: Equal to or above legal loads
<b>Waterway Adequacy</b>	5: Bridge deck above roadway approaches. Occasional overtopping of roadway approaches with insignificant traffic delays.	5: Bridge deck above roadway approaches. Occasional overtopping of roadway approaches with insignificant traffic delays.
<b>Type of Work</b>	31: Replacement of bridge or other structure because of substandard load carrying capacity or substandard bridge roadway geometry.	31: Replacement of bridge or other structure because of substandard load carrying capacity or substandard bridge roadway geometry.
<b>Inspection Date</b>	June 2024	June 2024
<b>Historical Significance</b>	Bridge is eligible for the National Register of Historic Places	Bridge is eligible for the National Register of Historic Places
<b>Maintenance Responsibility</b>	City or Municipal Highway Agency	City or Municipal Highway Agency
<b>Functional Classification</b>	Other Principal Arterial	Other Principal Arterial
<b>Highway System</b>	Inventory Route is on the National Highway System	Inventory Route is on the National Highway System
<b>Detour Length</b>	6 kilometers	6 kilometers