

# Bridge Inspection Report

## Weir Road Bridge

**Road Name:** Weir Road  
**Site ID:** EC1  
**Structure Type:** Slab on Prestress Girder  
**Owner:** Edwardsburgh Cardinal  
**Built:** 1983  
**Length:** 27.4 m  
**Width:** 9.8 m  
**Spans:** 1  
**Spans Arrange:** 1 @ 27.4  
**Feature Under:** Navigable Channel  
**Crossing:** South Nation River  
**Location:** 450m north of Cnty Rd 21  
**Inspection Date:** May-24-22  
**Inspector:** Steve Reid, C.E.T.  
**Assistant:**

### Comments:

Both expansion joint seals should be replaced as soon as possible to prevent further damage to the girder ends and abutment walls. It is recommended that this bridge receives a major rehabilitation within 2 years time. Semi-integral conversion should be considered at time of rehab.

### Recommended Investigations:

Planning Study

### Recommended Capital Works:

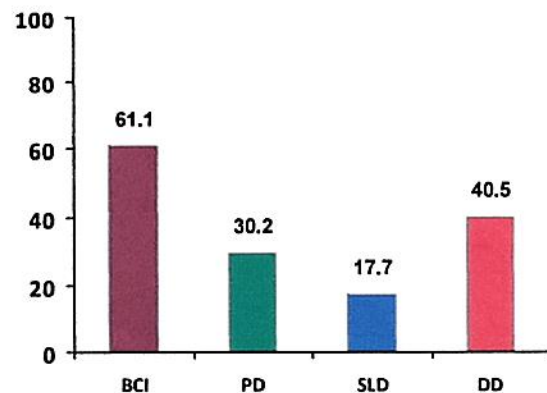
Misc concrete repairs, O'LAY, WP&P, B/Wall, X-jnt, Approach GR,

**Estimated Replacement Value:** \$1,635,000  
*Estimated replacement value is based on replacement in kind*  
**Estimated Remaining Service Life:** 41 Years  
**Rehabilitation Year and Estimated Cost: 2023 \$794,000**



**AADT:** N/A **Latitude:** 44.81369880  
**Lanes:** 2 **Longitude:** -75.57351500  
**Skew:** 0° **Orientation:** N-S  
**Speed:** 80 km/h **Road Width:** 9.6 m  
**Trucks:** **Load Posting:** No Posting

Bridge Condition



BCI = Bridge Condition Index MTO Calculation

PD = Parabolic Depreciation  
% retained value

SLD = Straight Line Depreciation  
% retained value

DD = Defects and Damage  
% loss of retained value



## Component Inspection Information

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unprotected BSRC Deck (1)</b><br><b>Deck Surface</b>            | <b>Defects</b> 40.0% <b>Minor Scaling, Moderate Scaling, Moderate Polished</b><br><b>Damage</b> 7.0% <b>Moderate Delamination, Moderate Spalling</b><br><b>Maintenance</b> None<br><b>Capital Rec.</b> Repair in 2 years<br><i>No tining present on deck surface. Deck has minor scaling throughout &amp; minor delaminated areas. Delaminations predominantly in the northbound lane (East side). Sandy fine granulars accumulating on shoulders on deck, mainly east side. Chain drag in 2022 confirms previous findings.</i> |
| <b>Length:</b> 27.4 m<br><b>Width:</b> 9.8 m<br><b>Height:</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Soffit (1)</b><br><b>Deck Soffit</b>                            | <b>Defects</b> 10.0% <b>Minor Staining, Minor Scaling, Minor Leaching/Seepage</b><br><b>Damage</b> 5.0% <b>Moderate Delamination, Moderate Spalling</b><br><b>Maintenance</b> None<br><b>Capital Rec.</b> Repair in 2 years<br><i>The soffit interior is in good condition. One damp area noted near the SE end. The exterior edges are spalled due to the lack of curbs or drainage present on deck. Utility attached to the west side.</i>                                                                                    |
| <b>Length:</b> 27.4 m<br><b>Width:</b> 9.8 m<br><b>Height:</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Asphalt Wear Surf (2)</b><br><b>Approach Wear Surf</b>          | <b>Defects</b> 0.0% <b>Moderate Ravelling</b><br><b>Damage</b> 1.0% <b>Minor Cracking</b><br><b>Maintenance</b> None<br><b>Capital Rec.</b> None<br><i>North approach has been renewed since 2019. The south side is acceptable.</i>                                                                                                                                                                                                                                                                                            |
| <b>Length:</b> 30 m<br><b>Width:</b> 8.5 m<br><b>Height:</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>X- Joint Conventional (2)</b><br><b>Expansion Joints</b>        | <b>Defects</b> 10.0% <b>Minor Scaling/Abrasion</b><br><b>Damage</b> 80.0% <b>Major Torn/Perforated Seal</b><br><b>Maintenance</b> None<br><b>Capital Rec.</b> Replace in 1 year<br><i>North &amp; south seals are both detached. Debris is spilling onto bearing seats. Tops of ballast walls &amp; end dams have minor spalling/delaminations along armouring.</i>                                                                                                                                                             |
| <b>Length:</b> 9.8 m<br><b>Width:</b><br><b>Height:</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Timber Post &amp; Guide Rail (4)</b><br><b>Approach Barrier</b> | <b>Defects</b> 0.0%<br><b>Damage</b> 15.0% <b>Moderate Decay, Minor Impact</b><br><b>Maintenance</b> None<br><b>Capital Rec.</b> Replace in 2 years <b>Perf Def: Does'nt Meet New Standard</b><br><i>Approach guide rail is generally in good condition with some minor vehicle scrapes. The wood posts and spacer blocks are in varied states of decay with local replacement required. Buried end treatments do not meet the current standards. Guide rail is overgrown with vegetation.</i>                                  |
| <b>Length:</b> 33 m<br><b>Width:</b><br><b>Height:</b> 0.6 m       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |





## Component Inspection Information

|                                  |                                                                                                                                                                                                                                        |                                                 |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| <b>Conc Post Steel Panel (2)</b> | Defects <b>0.0%</b>                                                                                                                                                                                                                    |                                                 |
| <i>Barrier</i>                   | Damage <b>3.0%</b>                                                                                                                                                                                                                     | <b>Minor Impact</b>                             |
| Length: <b>27.4 m</b>            | Maintenance <b>None</b>                                                                                                                                                                                                                |                                                 |
| Width:                           | Capital Rec. <b>Replace in 2 years</b>                                                                                                                                                                                                 |                                                 |
| Height: <b>0.6 m</b>             | <i>The concrete posts have light cracking &amp; scaling on the spray side. The flex beam &amp; HSS sections are in good condition.</i>                                                                                                 |                                                 |
| <b>Concrete-Prestressed (4)</b>  | Defects <b>3.0%</b>                                                                                                                                                                                                                    | <b>Minor Shrinkage Cracking, Minor Graffiti</b> |
| <i>Girders</i>                   | Damage <b>3.0%</b>                                                                                                                                                                                                                     | <b>Minor Delamination, Minor Spalling</b>       |
| Length: <b>27.4 m</b>            | Maintenance <b>None</b>                                                                                                                                                                                                                |                                                 |
| Width: <b>0.5 m</b>              | Capital Rec. <b>Repair in 2 years</b>                                                                                                                                                                                                  |                                                 |
| Height: <b>1.44 m</b>            | <i>Girders are generally in good condition. Girder ends have developed minor delaminations &amp; spalls due to the detached expansion joint seals. Bottom of girder, 2nd from west at south end has a moderate spall near bearing.</i> |                                                 |
| <b>RC Diaphragm (6)</b>          | Defects <b>0.0%</b>                                                                                                                                                                                                                    |                                                 |
| <i>Diaphragms</i>                | Damage <b>4.0%</b>                                                                                                                                                                                                                     | <b>Minor Cracking, Minor Delamination</b>       |
| Length: <b>1.9 m</b>             | Maintenance <b>None</b>                                                                                                                                                                                                                |                                                 |
| Width:                           | Capital Rec. <b>Repair in 2 years</b>                                                                                                                                                                                                  |                                                 |
| Height: <b>0.8 m</b>             | <i>Diaphragms have minor cracking &amp; delaminations. Notably at the shear key at north end.</i>                                                                                                                                      |                                                 |
| <b>RC Abutment Wall (2)</b>      | Defects <b>10.0%</b>                                                                                                                                                                                                                   | <b>Minor Shrinkage Cracking, Minor Staining</b> |
| <i>Abutment Stem</i>             | Damage <b>25.0%</b>                                                                                                                                                                                                                    | <b>Moderate Delamination, Moderate Spalling</b> |
| Length:                          | Maintenance <b>None</b>                                                                                                                                                                                                                |                                                 |
| Width: <b>9.33 m</b>             | Capital Rec. <b>Repair in 2 years</b>                                                                                                                                                                                                  |                                                 |
| Height: <b>1.3 m</b>             | <i>Moderate delaminations detected on both abutment walls. Debris is accumulating on the north &amp; south bearing seats due to the detached expansion joint seal. Fire pit noted at the north side (noted 2019).</i>                  |                                                 |
| <b>RC Ballast Wall (2)</b>       | Defects <b>4.0%</b>                                                                                                                                                                                                                    | <b>Minor Leaching/Seepage</b>                   |
| <i>Ballast Wall</i>              | Damage <b>1.0%</b>                                                                                                                                                                                                                     | <b>Minor Delamination, Minor Cracking</b>       |
| Length:                          | Maintenance <b>None</b>                                                                                                                                                                                                                |                                                 |
| Width: <b>9.33 m</b>             | Capital Rec. <b>None</b>                                                                                                                                                                                                               |                                                 |
| Height: <b>1.54 m</b>            | <i>The ballast walls were generally in good condition, dampness noted at both walls. Wide crack &amp; delaminated area at NE corner.</i>                                                                                               |                                                 |
| <b>RC Wing Walls (4)</b>         | Defects <b>3.0%</b>                                                                                                                                                                                                                    | <b>Minor Scaling</b>                            |
| <i>Wing Walls</i>                | Damage <b>0.0%</b>                                                                                                                                                                                                                     |                                                 |
| Length: <b>5 m</b>               | Maintenance <b>None</b>                                                                                                                                                                                                                |                                                 |
| Width:                           | Capital Rec. <b>None</b>                                                                                                                                                                                                               |                                                 |
| Height: <b>2.1 m</b>             | <i>The wing walls were generally in good condition, with only some light scaling noted.</i>                                                                                                                                            |                                                 |



## Component Inspection Information

|                                 |      |                                                                                                                                |                    |
|---------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Laminated Rubber Brg (8)</b> |      | Defects                                                                                                                        | 0.0%               |
| <b>Abutment Bearings</b>        |      | Damage                                                                                                                         | 0.0%               |
| Length:                         |      | Maintenance                                                                                                                    | None               |
| Width:                          |      | Capital Rec.                                                                                                                   | None               |
| Height:                         |      | <i>Bearings appeared in good condition. Some debris is accumulating around bearings due to the failed joint seals.</i>         |                    |
| <b>Spread Footing (2)</b>       |      | Defects                                                                                                                        | 0.0%               |
| <b>Abutment Foundation</b>      |      | Damage                                                                                                                         | 0.0%               |
| Length:                         | 10 m | Maintenance                                                                                                                    | None               |
| Width:                          |      | Capital Rec.                                                                                                                   | None               |
| Height:                         |      | <i>Only small area at north end visible.</i>                                                                                   |                    |
| <b>Embankment (4)</b>           |      | Defects                                                                                                                        | 0.0%               |
| <b>Embankment</b>               |      | Damage                                                                                                                         | 0.0%               |
|                                 |      | Maintenance                                                                                                                    | Remove Brush/Trees |
|                                 |      | Capital Rec.                                                                                                                   | None               |
|                                 |      | <i>Small amount of rock protection in front of the abutment walls. Tree growth at south end under bridge requires removal.</i> |                    |



## Capital Needs Cost Estimate Break-Down

| Item                     | Req'd | Units          | Quantity | Unit Price \$ | Estimated Cost |
|--------------------------|-------|----------------|----------|---------------|----------------|
| Misc Concrete Repairs    | ✓     | m <sup>2</sup> | 30.0     | \$800         | \$24,000       |
| Deck Concrete Overlay    | ✓     | m <sup>2</sup> | 268.5    | \$400         | \$107,408      |
| Deck Replacement         | ✗     | m <sup>2</sup> | 268.5    | \$2,500       | \$0            |
| Barrier Wall Replacement | ✓     | m              | 51.4     | \$3,000       | \$236,400      |
| Expansion Joint          | ✓     | m              | 19.6     | \$5,500       | \$107,800      |
| Waterproof & Pave        | ✓     | m <sup>2</sup> | 268.5    | \$220         | \$59,074       |
| Bearing Replacement      | ✗     | Count          | 8.0      | \$5,000       | \$0            |
| Approach Guide Rail      | ✓     | m              | 80.0     | \$250         | \$40,000       |

*+  
cont.*

Other Work

\$0

|                                            |                  |
|--------------------------------------------|------------------|
| Structural Items Subtotal                  | \$575,000        |
| Mobilization General Sitework              | \$57,000         |
| Estimated Traffic Management & Civil Items | \$30,000         |
| Contract Admin & Contingencies 20%         | \$132,000        |
| <b>Total Rehabilitation Cost Estimate</b>  | <b>\$794,000</b> |

### Recommended Capital Work Summary

Recommended Capital Year 2023

Misc concrete repairs, O'Lay, WP&P, B/Wall, X-jnt, Approach GR,

### Inspection Comments

Both expansion joint seals should be replaced as soon as possible to prevent further damage to the girder ends and abutment walls. It is recommended that this bridge receives a major rehabilitation within 2 years time. Semi-integral conversion should be considered at time of rehab.





Image 572



East elevation

Image 554



South approach

Image 555



Guide rail and posts

Image 556



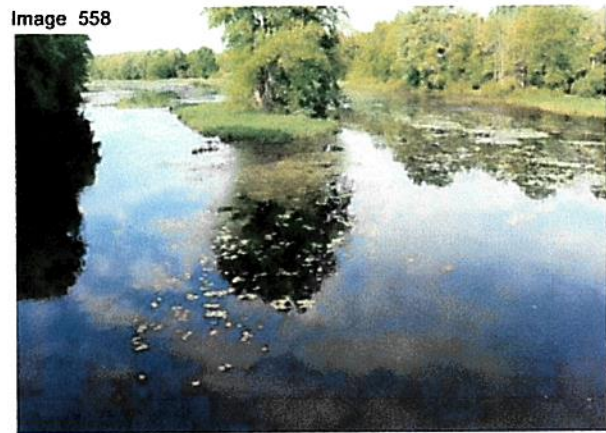
North expansion joint typ.

Image 557



Downstream channel

Image 558



Upstream channel





Image 559



South expansion joint

Image 560



Asphalt on deck typ.

Image 561



Close-up deck damage

Image 562



Close-up north expansion joint seal torn

Image 563



North abutment

Image 565



NE deck soffit spalling



Image 566



Soffit center span typ.

Image 567



Diaphragm and girder north end damage

Image 568



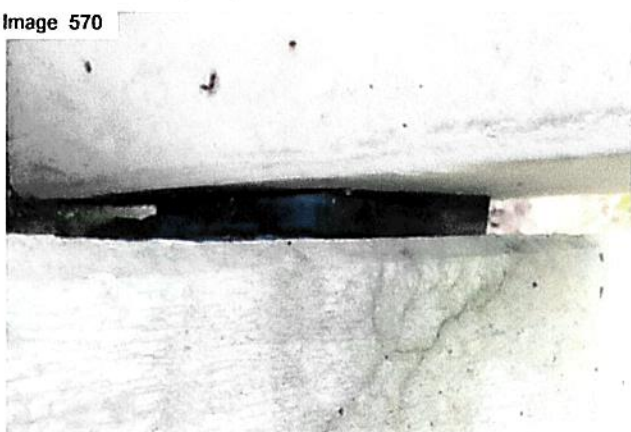
West side soffit spalling

Image 569



South abutment

Image 570



Bearing typ.

Image 571



Damp area on soffit

