

WATERFORD POND BRIDGE

Site Number 010053

POND ROAD (MECHANIC STREET), WATERFORD

2.0 km W of County Road 24

Ontario Structure Inspection Manual - Inspection Form

Site Number:

| Inventory Data: | | | |
|--------------------|---|--|---|
| Structure Name | <input type="text" value="Waterford Pond Bridge"/> | | |
| Main Hwy/Road # | <input type="text" value="CON 8 TOWNSEND"/> | <input checked="" type="checkbox"/> On <input type="checkbox"/> Under | Crossing Type: <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Navig. Water <input type="checkbox"/> Ped. <input type="checkbox"/> Other <input checked="" type="checkbox"/> Non-Navig. Water |
| Hwy/Road Name | <input type="text" value="POND ROAD (MECHANIC STREET), WATERFORD"/> | | |
| Structure Location | <input type="text" value="2.0km W of County Road 24"/> | | |
| Latitude | <input n"="" type="text" value="42d 56' 0.5"/> | Longitude | <input type="text" value="80d 18' 46.5" w"=""/> |
| Owner(s) | <input type="text" value="Norfolk County"/> | Heritage Designation: | <input checked="" type="checkbox"/> Not Cons. <input type="checkbox"/> List/not Design. <input type="checkbox"/> Desig. & List <input type="checkbox"/> Cons./not App. <input type="checkbox"/> Desig./not List |
| MTO Region | <input type="text" value="30"/> Southwestern | Road Class: | <input type="checkbox"/> Freeway <input type="checkbox"/> Arterial <input type="checkbox"/> Collector <input checked="" type="checkbox"/> Local |
| MTO District | <input type="text" value="31"/> London / Stratford | Posted Speed | <input type="text" value="80"/> No. of Lanes <input type="text" value="2"/> |
| Old County | <input type="text" value="20"/> Norfolk | AADT | <input type="text" value="1294"/> % Trucks <input type="text"/> |
| Geographic Twp. | <input type="text" value="125"/> Townsend | Inspection Route Sequence | <input type="text"/> |
| Structure Type | <input type="text" value="12"/> Rectangular Culvert | Interchange Number | <input type="text"/> |
| Total Deck Length | <input type="text" value="11.4"/> (m) | Interchange Structure Number | <input type="text"/> |
| Overall Str. Width | <input type="text" value="19.9"/> (m) | Min. Vertical Clearance | <input type="text" value="0.8"/> (m) |
| Total Deck Area | <input type="text" value="226.86"/> (m ²) | Special Route | <input checked="" type="checkbox"/> Truck <input type="checkbox"/> Emergency <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle |
| Roadway Width | <input type="text" value="6.2"/> (m) | Detour Length Around Bridge | <input type="text" value="10"/> (km) |
| Skew Angle | <input type="text"/> (Degrees) | Direction of Structure | <input type="text" value="North / South"/> |
| No. of Spans | <input type="text" value="2"/> | Fill on Structure | <input type="text" value="0.5"/> (m) |
| Span Length | <input type="text" value="5.1, 5.1"/> (m) | | |

| Historical Data: | | | |
|--|---|---------------------------|---|
| Year Built | <input type="text" value="2001"/> | Year of Last Major Rehab. | <input type="text"/> |
| Last OSIM Inspection | <input type="text" value="May 29, 2014"/> | Last Evaluation | <input type="text"/> |
| Last Enhanced OSIM Inspection | <input type="text"/> | Current Load Limit | <input type="text" value="/ /"/> (tonnes) |
| Enhanced Access Equipment (ladder, boat, lift, etc.) | <input type="text"/> | Load Limit By-Law # | <input type="text"/> |
| Last Underwater Inspection | <input type="text"/> | By-Law Expiry Date | <input type="text"/> |
| Last Condition Survey | <input type="text"/> | | |
| Rehab History: | (Date/description) | | |
| | | | |

| Field Inspection Information: | | |
|-------------------------------|--|---|
| Date of Inspection: | July 12, 2016 | Type of Inspection: <input checked="" type="checkbox"/> OSIM <input type="checkbox"/> Enhanced OSIM |
| Inspector: | Ben Buchwald M.Eng., EIT, G. Douglas Vallee Ltd. | |
| Others in Party: | N/A | |
| Access Equipment Used: | Hammer, Binoculars, Measuring Tape, Camera, etc. | |
| Weather: | Sunny | |
| Temperature: | 25 °C | |

| Additional Investigation Required: | Priority | | |
|--|-------------------------------------|--------|--------|
| | None | Normal | Urgent |
| Material Condition Survey | | | |
| <input checked="" type="checkbox"/> Detailed Deck Condition Survey: | <input checked="" type="checkbox"/> | | |
| <input checked="" type="checkbox"/> Non-destructive Delamination Survey of Asphalt-Covered Deck: | <input checked="" type="checkbox"/> | | |
| <input checked="" type="checkbox"/> Concrete Substructure Condition Survey: | <input checked="" type="checkbox"/> | | |
| <input checked="" type="checkbox"/> Detailed Coating Condition Survey: | <input checked="" type="checkbox"/> | | |
| <input checked="" type="checkbox"/> Detailed Timber Investigation | <input checked="" type="checkbox"/> | | |
| <input checked="" type="checkbox"/> Post-Tensioned Strand Investigation | <input checked="" type="checkbox"/> | | |
| Underwater Investigation: | <input checked="" type="checkbox"/> | | |
| Fatigue Investigation: | <input checked="" type="checkbox"/> | | |
| Seismic Investigation: | <input checked="" type="checkbox"/> | | |
| Structure Evaluation: | <input checked="" type="checkbox"/> | | |
| Monitoring | | | |
| <input checked="" type="checkbox"/> Monitoring of Deformations, Settlements and Movements: | <input checked="" type="checkbox"/> | | |
| <input checked="" type="checkbox"/> Monitoring Crack Widths: | <input checked="" type="checkbox"/> | | |
| Investigation Notes: | | | |
| No hazard signs. | | | |

| Overall Structure Notes: | |
|--------------------------------|---|
| Recommended Work on Structure: | <input checked="" type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Replace <input type="checkbox"/> Maintenance <input type="checkbox"/> Major Rehab. |
| Timing of Recommended Work: | <input type="checkbox"/> 1 to 5 years <input type="checkbox"/> 6 to 10 years |
| Overall Comments: | |
| Date of next Inspection: | July 12, 2018 |

Suspected Performance Deficiencies

- | | | |
|---|--|------------------------------|
| 01 Load carrying capacity | 07 Bearing not uniformly loaded/unstable | 12 Slippery surfaces |
| 02 Excessive deformations (deflections & rotations) | 08 Jammed expansion joint | 13 Flooding/channel blockage |
| 03 Continuing settlement | 09 Pedestrian/vehicular hazard | 14 Undermining of foundation |
| 04 Continuing movements | 10 Rough riding surface | 15 Unstable embankments |
| 05 Seized bearings | 11 Deck drainage | 16 Other |

Maintenance Needs

- | | | |
|--------------------------------------|---------------------------------|--|
| 01 Lift and swing bridge maintenance | 07 Repair to structural steel | 13 Erosion control at bridges |
| 02 Bridge cleaning | 08 Repair of bridge concrete | 14 Concrete sealing |
| 03 Bridge handrail maintenance | 09 Repair of bridge timber | 15 Rout and seal |
| 04 Painting steel bridge structures | 10 Bailey bridges - maintenance | 16 Bridge deck drainage |
| 05 Bridge deck joint repair | 11 Animal/pest control | 17 Scaling (Loose concrete or ACR steel) |
| 06 Bridge bearing maintenance | 12 Bridge surface repair | 18 Other |

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| Rehabilitation Required: | | Element | Priority | | | | Estimated Construction Cost |
|--------------------------|---------|-----------------------|----------|-------------|---------|----------|-----------------------------|
| Rehab | Replace | | Urgent | Within 1 yr | 1-5 yrs | 6-10 yrs | |
| | | Railing System | | | | | |
| | | Barrels | | | | | |
| | | Inlet Components | | | | | |
| | | Outlet Components | | | | | |
| | | Streams and Waterways | | | | | |
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| | | | | | | | |
| Total Cost | | | | | | | \$0 |

| Associated Work: | Comments | Estimated Construction Cost |
|---------------------------|----------|-----------------------------|
| Additional Investigations | | |
| Traffic Management | | |
| Utilities | | |
| Road Allowance | | |
| Environmental Assessment | | |
| Engineering | | |
| Other | | |
| Contingencies | | |
| | | |
| | | |
| Total Cost | | \$0 |

| Justification: | |
|----------------|--|
| Notes: | Construction Cost: \$0 Associated Work Cost: \$0 <hr/> TOTAL Estimated Cost: \$0 |

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Element Data

| | | | | | | | |
|--|-------|-------------------------------|------|---|------|--|----------|
| Element Group: | | 400 Barriers | | | | Length: | 40 |
| Element Name: | | 402 Railing System | | | | Width: | |
| Location: | | Top of Culvert | | | | Height: | 1.9 |
| Material: | | 14 Steel | | | | Count: | 2 |
| Element Type: | | Steel Flex Beam on Steel Post | | | | Total Quantity: | 152 sq.m |
| Environment: | | Severe | | | | Limited Inspection: | |
| Protection System: | | Unknown | | | | Perform. Deficiencies | |
| Condition Data: | Units | Exc. | Good | Fair | Poor | | |
| | sq.m | 0 | 152 | 0 | 0 | | |
| Comments: No hazard signs. Transverse crack in wearing surface. | | | | | | | |
| Recommended Work: | | | | Rehab <input type="checkbox"/> Replace <input type="checkbox"/> | | Maintenance Needs: Rout and Seal | |
| Timing: | | | | Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/> | | <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year | |

| | | | | | | | |
|--|-------|---------------------|------|---|------|---|------------|
| Element Group: | | 1200 Culverts | | | | Length: | 19.92 |
| Element Name: | | 1203 Barrels | | | | Width: | 5.1 |
| Location: | | Under Road | | | | Height: | 0.8 |
| Material: | | 12 Precast Concrete | | | | Count: | 2 |
| Element Type: | | Box | | | | Total Quantity: | 133.5 sq.m |
| Environment: | | Moderate | | | | Limited Inspection: | X |
| Protection System: | | Unknown | | | | Perform. Deficiencies | |
| Condition Data: | Units | Exc. | Good | Fair | Poor | | |
| | sq.m | 0 | 133 | 0.5 | 0 | | |
| Comments: Precast twin concrete on footing. Limited inspection due to water level. Some minor vertical cracks in walls. | | | | | | | |
| Recommended Work: | | | | Rehab <input type="checkbox"/> Replace <input type="checkbox"/> | | Maintenance Needs: | |
| Timing: | | | | Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/> | | <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year | |

| | | | | | | | |
|---|-------|-----------------------|------|---|------|--|----------|
| Element Group: | | 1200 Culverts | | | | Length: | 11.4 |
| Element Name: | | 1201 Inlet Components | | | | Width: | 0.3 |
| Location: | | North | | | | Height: | 0.8 |
| Material: | | 12 Precast Concrete | | | | Count: | 1 |
| Element Type: | | | | | | Total Quantity: | 4.1 sq.m |
| Environment: | | Moderate | | | | Limited Inspection: | |
| Protection System: | | Unknown | | | | Perform. Deficiencies | |
| Condition Data: | Units | Exc. | Good | Fair | Poor | | |
| | sq.m | 0 | 4.1 | 0 | 0 | | |
| Comments: Minor scaling on culvert tops. | | | | | | | |
| Recommended Work: | | | | Rehab <input type="checkbox"/> Replace <input type="checkbox"/> | | Maintenance Needs: Repair of Bridge Concrete | |
| Timing: | | | | Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/> | | <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year | |

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Element Data

| | | | | | | | | |
|--|-------|------------------------|------|---|------|-----------------------|--|----------|
| Element Group: | | 1200 Culverts | | | | Length: | | 11.4 |
| Element Name: | | 1202 Outlet Components | | | | Width: | | 0.3 |
| Location: | | South | | | | Height: | | 0.8 |
| Material: | | 12 Precast Concrete | | | | Count: | | 1 |
| Element Type: | | | | | | Total Quantity: | | 4.1 sq.m |
| Environment: | | Moderate | | | | Limited Inspection: | | |
| Protection System: | | Unknown | | | | Perform. Deficiencies | | |
| Condition Data: | Units | Exc. | Good | Fair | Poor | | | |
| | sq.m | 0 | 3.9 | 0.2 | 0 | | | |
| Comments: Minor scaling on culvert tops. Parging deteriorated on South outlet. | | | | | | | | |
| Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Timing: Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/> | | | | Maintenance Needs: Repair of Bridge Concrete <input type="checkbox"/> Urgent <input checked="" type="checkbox"/> 1 year <input type="checkbox"/> 2 year | | | | |

| | | | | | | | | |
|--|-------|----------------------------|------|---|------|-----------------------|--|--------|
| Element Group: | | 1400 Embankments & Streams | | | | Length: | | |
| Element Name: | | 1401 Streams and Waterways | | | | Width: | | |
| Location: | | | | | | Height: | | |
| Material: | | | | | | Count: | | 1 |
| Element Type: | | | | | | Total Quantity: | | 1 Each |
| Environment: | | Moderate | | | | Limited Inspection: | | |
| Protection System: | | Unknown | | | | Perform. Deficiencies | | |
| Condition Data: | Units | Exc. | Good | Fair | Poor | | | |
| | Each | 0 | 1 | 0 | 0 | | | |
| Comments: Road crosses a large pond. | | | | | | | | |
| Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/> Timing: Urgent <input type="checkbox"/> < 1yr <input type="checkbox"/> 1 - 5 yr <input type="checkbox"/> 6 - 10 yr <input type="checkbox"/> | | | | Maintenance Needs: <input type="checkbox"/> Urgent <input type="checkbox"/> 1 year <input type="checkbox"/> 2 year | | | | |



Figure 1 East Approach



Figure 2 West Approach



Figure 3 Upstream



Figure 4 Downstream



Figure 5 East Barrel



Figure 6 West Barrel



Figure 7 Patching and Centreline Crack in Wearing Surface



Figure 8 Typical Spalling at Outside Curb Edges