

**LOT 18-19 CONCESSION 4, SOUTH WALSINGHAM**

Site Number 002120

**EAST ¼ LINE ROAD, SOUTH WALSINGHAM**

0.97 km S of County Road 24

**Ontario Structure Inspection Manual - Inspection Form**

**Site Number:**

| Inventory Data:    |   |  |   |
|--------------------|---|--|---|
| Structure Name     | <input type="text" value="Lot 18-19 Concession 4"/>             |  |   |
| Main Hwy/Road #    | <input type="text" value="CHARLOTTEVILLE E1/4"/>                | <input checked="" type="checkbox"/> On<br><input type="checkbox"/> Under | Crossing Type: <input type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Navig. Water<br><input type="checkbox"/> Ped. <input type="checkbox"/> Other <input checked="" type="checkbox"/> Non-Navig. Water |
| Hwy/Road Name      | <input type="text" value="EAST ¼ LINE ROAD, SOUTH WALSINGHAM"/> |  |   |
| Structure Location | <input type="text" value="0.97km S of County Road 24"/>         |  |   |
| Latitude           | <input n"="" type="text" value="42d 40' 28.8"/>                 | Longitude  | <input type="text" value="80d 28' 20" 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<br><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="190"/> % Trucks <input type="text"/>  |
| Geographic Twp.    | <input type="text" value="585"/> South Walsingham               | 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="6.6"/> (m)                            | Interchange Structure Number   | <input type="text"/>  |
| Overall Str. Width | <input type="text" value="22"/> (m)                             | Min. Vertical Clearance  | <input type="text" value="2.2"/> (m)  |
| Total Deck Area    | <input type="text" value="145.2"/> (m <sup>2</sup> )            | Special Route  | <input type="checkbox"/> Truck <input type="checkbox"/> Emergency <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle   |
| Roadway Width      | <input type="text" value="14.5"/> (m)                           | Detour Length Around Bridge  | <input type="text" value="10"/> (km)  |
| Skew Angle         | <input type="text" value="15"/> (Degrees)                       | Direction of Structure   | <input type="text" value="East / West"/>  |
| No. of Spans       | <input type="text" value="1"/>                                  | Fill on Structure  | <input type="text" value="1.5"/> (m)  |
| Span Length        | <input type="text" value="6.0"/> (m)                            |  |   |

| Historical Data:                                     |   |                           |   |
|--|---|---------------------------|---|
| Year Built   | <input type="text" value="1962"/>         | Year of Last Major Rehab. | <input type="text"/>                      |
| Last OSIM Inspection                                 | <input type="text" value="July 2, 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)

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**Site Number:**

| Field Inspection Information: |  |   |
|-------------------------------|--|---|
| Date of Inspection:           | July 19, 2016                                    | Type of Inspection: <input checked="" type="checkbox"/> OSIM <input type="checkbox"/> Enhanced OSIM |
| Inspector:                    | Matt Alderson, G. Douglas Vallee Ltd.            |   |
| Others in Party:              | N/A  |   |
| Access Equipment Used:        | Hammer, Binoculars, Measuring Tape, Camera, etc. |   |
| Weather:                      | Sunny  |   |
| Temperature:                  | 24 °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 signs or barriers.  |                                     |        |        |

| Overall Structure Notes:       |   |
|--------------------------------|---|
| Recommended Work on Structure: | <input type="checkbox"/> None <input type="checkbox"/> Minor Rehab. <input type="checkbox"/> Replace<br><input checked="" 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 19, 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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**Site Number:** 002120

**Element Data**

|   |       |                                   |      |  |      |                       |        |
|---|-------|-----------------------------------|------|--|------|-----------------------|--------|
| Element Group:  |       | 1600 Approaches                   |      |  |      | Length:               |        |
| Element Name:   |       | 1601 Wearing Surface (Approaches) |      |  |      | Width:                |        |
| Location:   |       | Top of Fill                       |      |  |      | Height:               |        |
| Material:   |       |                                   |      |  |      | Count:                | 1      |
| Element Type:   |       |                                   |      |  |      | Total Quantity:       | 1 Each |
| Environment:  |       | Severe                            |      |  |      | Limited Inspection:   |        |
| Protection System:  |       | Unknown                           |      |  |      | Perform. Deficiencies |        |
| Condition   | Units | Exc.                              | Good | Fair   | Poor |                       |        |
| Data:   | Each  | 0                                 | 0    | 1  | 0    |                       |        |
| Comments:<br>Surface has rutting and small pothole at edge. Polishing of road surface at edges. Settlement at road edges at culvert.        |       |                                   |      |  |      |                       |        |
| Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/>   |       |                                   |      | Maintenance Needs: Bridge Surface Repair   |      |                       |        |
| 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:               | 22         |
| Element Name:   |       | 1203 Barrels  |      |   |      | Width:                | 10.4       |
| Location:   |       |               |      |   |      | Height:               |            |
| Material:   |       |               |      |   |      | Count:                | 1          |
| Element Type:   |       |               |      |   |      | Total Quantity:       | 228.8 sq.m |
| Environment:  |       | Moderate      |      |   |      | Limited Inspection:   |            |
| Protection System:  |       | Unknown       |      |   |      | Perform. Deficiencies |            |
| Condition   | Units | Exc.          | Good | Fair  | Poor |                       |            |
| Data:   | sq.m  | 0             | 206  | 22.8  | 0    |                       |            |
| Comments:<br>Drains present. Exposed reinforcing ties on soffit. Minor deterioration of concrete walls underneath drain outlets. Staining.  |       |               |      |   |      |                       |            |
| 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:               | 6.6      |
| Element Name:   |       | 1201 Inlet Components |      |  |      | Width:                | 0.3      |
| Location:   |       | East End              |      |  |      | Height:               | 2.2      |
| Material:   |       |                       |      |  |      | Count:                | 1        |
| Element Type:   |       |                       |      |  |      | Total Quantity:       | 4.4 sq.m |
| Environment:  |       | Moderate              |      |  |      | Limited Inspection:   |          |
| Protection System:  |       | Unknown               |      |  |      | Perform. Deficiencies |          |
| Condition   | Units | Exc.                  | Good | Fair   | Poor |                       |          |
| Data:   | sq.m  | 0                     | 4.4  | 0  | 0    |                       |          |
| Comments:<br>Overgrown vegetation on top of inlet.  |       |                       |      |  |      |                       |          |
| Recommended Work: Rehab <input type="checkbox"/> Replace <input type="checkbox"/>   |       |                       |      | Maintenance Needs: Erosion Control at Bridges  |      |                       |          |
| 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:               | 6.6      |
| Element Name:  |       | 1202 Outlet Components |      |   |      | Width:                | 0.3      |
| Location:  |       | West End               |      |   |      | Height:               | 2.2      |
| Material:  |       |                        |      |   |      | Count:                | 1        |
| Element Type:  |       |                        |      |   |      | Total Quantity:       | 4.4 sq.m |
| Environment:   |       | Moderate               |      |   |      | Limited Inspection:   |          |
| Protection System:   |       | Unknown                |      |   |      | Perform. Deficiencies |          |
| Condition  | Units | Exc.                   | Good | Fair  | Poor |                       |          |
| Data:  | sq.m  | 0                      | 4.4  | 0   | 0    |                       |          |
| Comments:<br>Overgrown vegetation on top of outlet.  |       |                        |      |   |      |                       |          |
| 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:   |       | 1400 Embankments & Streams |      |  |      | Length:               |       |
| Element Name:  |       | 1401 Streams and Waterways |      |  |      | Width:                |       |
| Location:  |       |                            |      |  |      | Height:               |       |
| Material:  |       |                            |      |  |      | Count:                | 1     |
| Element Type:  |       |                            |      |  |      | Total Quantity:       | 1 All |
| Environment:   |       |                            |      |  |      | Limited Inspection:   |       |
| Protection System:   |       | Unknown                    |      |  |      | Perform. Deficiencies |       |
| Condition  | Units | Exc.                       | Good | Fair   | Poor |                       |       |
| Data:  | All   | 0                          | 1    | 0  | 0    |                       |       |
| Comments:<br>Vegetation growing at culvert inlet. Minor erosion at quadrants and build up of streambed material along North wall.              |       |                            |      |  |      |                       |       |
| Recommended Work:    Rehab <input type="checkbox"/> Replace <input type="checkbox"/>   |       |                            |      | Maintenance Needs:    Erosion Control at Bridges   |      |                       |       |
| 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:   |       | 1300 Foundations                     |      |   |      | Length:               |   |
| Element Name:  |       | 1301 Foundation (below ground level) |      |   |      | Width:                |   |
| Location:  |       |                                      |      |   |      | Height:               |   |
| Material:  |       |                                      |      |   |      | Count:                | 1 |
| Element Type:  |       |                                      |      |   |      | Total Quantity:       | 1 |
| Environment:   |       |                                      |      |   |      | Limited Inspection:   | X |
| Protection System:   |       | Unknown                              |      |   |      | Perform. Deficiencies |   |
| Condition  | Units | Exc.                                 | Good | Fair  | Poor |                       |   |
| Data:  |       |                                      |      |   |      |                       |   |
| Comments:<br>Not visible.  |       |                                      |      |   |      |                       |   |
| 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 |      |                       |   |



Figure 1 North Approach



Figure 2 South Approach





Figure 3 West Profile, Outlet



Figure 4 Upstream





Figure 5 Downstream



Figure 6 Barrel, Looking East





Figure 7 Barrel, Looking West



Figure 8 North Wall



Figure 9 South Wall



Figure 10 Weeping Holes Full of Debris





Figure 11 West Soffit



Figure 12 Deterioration at Weeping Holes





Figure 13 Cracking & Settlement at Road Edges at Culvert