

MUNICIPALITY OF NORTH PERTH

BRIDGE AND CULVERT INSPECTIONS 2013

LISTOWEL, WALLACE AND ELMA WARDS



Submitted by:

GAMSBY AND MANNEROW LIMITED
CONSULTING PROFESSIONAL ENGINEERS

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File No. 313-031



Gamsby and Mannerow
ENGINEERS

Summary Action Report

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa
 Structure No: 25-01
 MTO Site No: 25-01

Inspection Date: 11/15/2013 mm/dd/yyyy Condition Index Value (BCI) 70.65
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|-----------------------------|
| Barriers | Posts | | Pedestrian/vehicular hazard |
| Barriers | Railing Systems | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------|--|----------|------------|
| Barriers | Railing Systems | Replace steel beam guide rail incl. end treatments | 1-5 | \$30,000 |

| | |
|----------------------------------|--------------------|
| Total Repair/Rehabilitation Cost | \$30,000.00 |
| Total Associated Work Cost | \$12,000.00 |
| Total Cost | \$42,000.00 |

Overall Comments

Structure is in overall good condition; Guide rail replacement required in the next 5 years..

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------------|------------|
| Structure Name: | North Perth Line 90 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 90 | | | | |
| Location: | 170m east of Highway #23 | | | | |
| Latitude/Northing: | 43d48'55" | Longitude/Easting: | 80d53'02" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 5.0 m | Detour Length: | 0.00 km | Skew Angle: | 45 degrees |
| Deck Width: | 17.0 m | | m | Structure Dir.: | East/West |
| Deck Area: | 85.0 m2 | | | | |
| Trav Deck Wdt | 6.7 m | | | | |

Bridge Span BS-00020 6.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1980 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Field Inspection Information

Structure No.: 25-01

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 70.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, camera, hammer
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Guide rail replacement required in the next 5 years..

Comments

BCI Change Replace steel beam guide rail to improve vehicle safety at structure
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Element Data

Barriers - Posts

| | | | | | |
|-----------------|-----------|----------|--|--------|-----------|
| Element Group: | Barriers | | Length: | Width: | |
| Element Name: | Posts | | Height: | Count: | 40 |
| Location: | Each side | | Total Quantity: 40.00 | | |
| Material: | Wood | | | | |
| Element Type: | Posts | Subtype: | Environment: Severe | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 15.00 | 25.00 | | |

Comments:

Medium to severe weathering, checking and splitting; 3 posts have splintered off; Severe end rot of most posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|-----------------------------|------|------|--|
| Pedestrian/vehicular hazard | None | None | |
|-----------------------------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|------|--|--|--|
| None | | | |
|------|--|--|--|

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|----------|--|-------|-----------|---|
| Element Group: | Barriers | | Length: | 34.00 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 68.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel Flex Beam on wood post railing | Subtype: | Environment: Severe | | | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 27.00 | 41.00 | | | |

Comments:

Medium to severe permanent bending deformations from vehicle impacts throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|-----------------------------|------|------|--|
| Pedestrian/vehicular hazard | None | None | |
|-----------------------------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|--|---------|-----------|--|
| | 1-5 yrs | 30,000.00 | Replace steel beam guide rail incl. end treatments |
|--|---------|-----------|--|

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 17.00 Width: 4.40
 Height: 2.80 Count: 1
 Total Quantity: 170.00

Condition Data:

Environment:
 Limited Inspected

Comments:

Light honeycombing on both legs; Narrow to wide stained horizontal and vertical cracking on legs with moisture; Cold joints and bug holes along both legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 24.00 Width: 6.70
 Height: Count: 1
 Total Quantity: 160.80

Condition Data:

Environment:
 Limited Inspected

Comments:

Isolated wide transverse crack east of structure; Very light settlement at all corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Medium sediment build up throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Footings not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Hwy #23 and Roa

Structure No: 25-01

MTO Site No: 25-01

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|--|----------|--------------------|
| Barriers | Railing Systems | Replace steel beam guide rail incl. end treatments | 1-5 | \$30,000 |
| Total Repair/Rehabilitation Cost | | | | \$30,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 1,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 3,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 12,000.00 |
| Total Repair/Rehabilitation Cost | | 30,000.00 |
| Total Cost | | 42,000.00 |

Summary Action Report

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin
Structure No: 25-02
MTO Site No: 25-02

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/15/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 73.98 |
| Next Biennial Inspection: | 11/15/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost **\$0.00**

Total Cost **\$0.00**

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin

Structure No: 25-02

MTO Site No: 25-02

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------------|-------------|
| Structure Name: | North Perth Road 157 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 157 | | | | |
| Location: | 325m south of Line 90 | | | | |
| Latitude/Northing: | 43d48'19" | Longitude/Easting: | 80d52'07" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 9.9 m | Detour Length: | 9.10 km | Skew Angle: | 45 degrees |
| Deck Width: | 16.0 m | | m | Structure Dir.: | North/South |
| Deck Area: | 158.4 m2 | | | | |
| Trav Deck Wdt | 7.0 m | | | | |

Bridge Span BS-00021 8.80 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1977 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin
 Structure No: 25-02
 MTO Site No: 25-02

Field Inspection Information

Structure No.: 25-02

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin
 Structure No: 25-02
 MTO Site No: 25-02

Element Data

Culverts - Barrels

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Culverts | Length: 17.00 | Width: 8.80 | | |
| Element Name: | Barrels | | | Height: 2.40 | Count: 1 |
| Location: | All | Total Quantity: 231.20 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 7.20 | 224.00 | |

Comments:

Medium vertical stained cracking with efflorescence on legs; Light scaling on exterior faces; 3 pvc weep holes per side with rust staining and incrustations; Narrow cracks with moisture on soffit at west end; Some light honeycombing on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|------|--|--|--|
| None | | | |
|------|--|--|--|

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|---------------------|---------|-----------|
| Element Group: | Decks | Length: 25.60 | Width: 7.00 | | |
| Element Name: | Wearing surface | | | Height: | Count: 1 |
| Location: | Over structure | Total Quantity: 179.20 | | | |
| Material: | Gravel | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 179.20 | |

Comments:

Very light potholes throughout wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|------|--|--|--|
| None | | | |
|------|--|--|--|

Municipal Structure Inspection Form

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin

Structure No: 25-02

MTO Site No: 25-02

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Hard, gravel bottom

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin

Structure No: 25-02

MTO Site No: 25-02

Foundations - Foundation (below grade level)

| | | | | | | |
|-----------------|--------------------------------|----------|------|--------------|---|----------|
| Element Group: | Foundations | | | | Length: | Width: |
| Element Name: | Foundation (below grade level) | | | | Height: | Count: 1 |
| Location: | Below culvert legs | | | | Total Quantity: 1.00 | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Footings not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | |
|-----------------|----------------------------|----------|------|--------------|--|----------|
| Element Group: | Retaining walls | | | | Length: | Width: |
| Element Name: | Walls | | | | Height: | Count: 2 |
| Location: | West embankments | | | | Total Quantity: 2.00 | |
| Material: | Stone | | | | | |
| Element Type: | Retained soil systems wall | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 2.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 157 - Bridge between Line 89 and Lin

Structure No: 25-02

MTO Site No: 25-02

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin
 Structure No: 25-04
 MTO Site No: 25-04

Inspection Date: 11/19/2013 mm/dd/yyyy Condition Index Value (BCI) 75.24
 Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|----------|-----------------------|----------|------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |

| | |
|----------------------------------|--------------------|
| Total Repair/Rehabilitation Cost | \$5,000.00 |
| Total Associated Work Cost | \$5,000.00 |
| Total Cost | \$10,000.00 |

Overall Comments

Structure is in overall good condition; Deck drain replacement required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Inventory Data

| | | | | | |
|--------------------|-------------------------------------|--------------------|--|-----------------|-------------|
| Structure Name: | North Perth Road 170 - Bridge Betwe | Hwy No. | | Key Photo | |
| Crossing Over: | Navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 176 | | | | |
| Location: | 605m north of Line 87 | | | | |
| Latitude/Northing: | 43d47'54" | Longitude/Easting: | 81d01'56" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 17.7 m | Detour Length: | 9.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 9.4 m | | m | Structure Dir.: | North/South |
| Deck Area: | 166.4 m2 | | | | |
| Trav Deck Wdt | 8.2 m | | | | |

Bridge Span BS-00010 15.40 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1962 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Field Inspection Information

Structure No.: 25-04

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 75.2
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition; Deck drain replacement required.
 Comments
 BCI Change Replace deck drains to improve drainage and prolong life of structure.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 8.50 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Height: 2.20 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 37.40 | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 0.40 | 0.60 |
| | | | Good |
| | | | Excellent |
| | | | 36.40 |

Comments:

Light scaling and honeycombing; Hairline to narrow cracking; Moisture and staining from deck drains; 4 weepers below water level with light erosion of concrete.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 5.20 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.65 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 55.12 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | |
| | | | Good |
| | | | Excellent |
| | | | 55.12 |

Comments:

Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 26.70 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 53.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 0.10 | 0.10 | 53.20 | | |

Comments:

Light scaling and abrasions; Hairline cracking; Random light spalls with exposed corroded rebar.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|------|---|--------|--------------|----------|
| Element Group: | Decks | | Length: | 17.70 | Width: | 9.10 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 161.07 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Moderate |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.20 | 160.87 | | |

Comments:

Not visible; Based on 2011 inspection - Light to medium scaling; Light abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 15.40 | Width: | 8.50 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.68 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 151.84 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.60 | 0.60 | 150.64 | | |

Comments:

Light scaling and light delamination and spalling with exposed corroded rebar on faces; Exposed corroded rebar chairs, light honeycombing and wet areas at deck drain locations all on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 4 | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 4.00 | | | | |

Comments:

Medium corrosion throughout; Drains do not extend below soffit or up to surface asphalt grade.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 25.70 | Width: | 8.20 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 210.74 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | | 210.74 | |

Comments:

Structure completely paved over this year.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion on embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Flooding up and downstream of structure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | At abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|--|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 25.70 | Width: | 0.60 |
| Element Name: | Curbs | | | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 43.69 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 0.20 | 1.20 | 42.29 | | | | |

Comments:

Light scaling, popouts and abrasions; Isolated spalls with exposed corroded rebar at northwest; Hairline to narrow stained cracking on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | | | | |
|-----------------|------------------|----------|------|--------------|--|--|--------|---|
| Element Group: | Signs | | | | Length: | | Width: | |
| Element Name: | Signs | | | | Height: | | Count: | 4 |
| Location: | At each approach | | | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Hazard markers | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | Each | | 4.00 | | | | | |

Comments:

Signs are bent and faded throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 170 - Bridge Between Line 87 and Lin

Structure No: 25-04

MTO Site No: 25-04

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|----------|-----------------------|----------|-------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$5,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 1,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 2,000.00 |
| Contingencies | 10% | 1,000.00 |
| Engineering | | 1,000.00 |
| Total Associated Work Cost | | 5,000.00 |
| Total Repair/Rehabilitation Cost | | 5,000.00 |
| Total Cost | | 10,000.00 |

Summary Action Report

Structure Name: Vines Bridge

Structure No: 25-05

MTO Site No: 25-05

Inspection Date: 11/19/2013 mm/dd/yyyy
Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.80

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost \$0.00

Total Cost \$0.00

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

| Inventory Data | | | |
|--------------------|------------------------|--------------------|--|
| Structure Name: | Vines Bridge | Hwy No. | |
| Crossing Over: | Navigable Water | Crossing Under: | |
| Road Name: | North Perth Line 87 | | |
| Location: | 1110m west of Road 175 | | |
| Latitude/Northing: | 43d47'16" | Longitude/Easting: | 81d01'20" |
| Owner: | North Perth 100.00% | Heritage Status: | N |
| MTO Region: | 30-Southwestern | Road Class: | Collector |
| MTO District: | 33-Owen Sound | Lane Type: | |
| Old County: | 25-Perth | Posted Speed: | 50 Lanes: 2 |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m |
| Material: | C - CIP Concrete | No. of Spans: | 1 |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle |
| Deck Length: | 20.3 m | Detour Length: | 9.10 km |
| Deck Width: | 8.8 m | | m |
| Deck Area: | 178.6 m ² | Skew Angle: | 0 degrees |
| Trav Deck Wdt | 7.4 m | Structure Dir.: | East/West |

Bridge Span BS-00009 18.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1976 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Field Inspection Information

Structure No.: 25-05

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|---|----------------------|-------|----------------------|
| Element Group: | Abutments | Length: 8.50 Width: 2.70 Height: 2.70 Count: 2 | | | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Total Quantity: 45.90 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> Environment: <input type="text"/> | | | |
| Prot. System: | None | <input type="checkbox"/> Benign <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | <input type="text"/> | <input type="text"/> | 45.90 | <input type="text"/> |

Comments:

Narrow cracking; Light scaling; Bug holes.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|---|----------------------|-------|----------------------|
| Element Group: | Abutments | Length: 6.80 Width: 2.70 Height: 2.70 Count: 4 | | | |
| Element Name: | Wingwalls | | | | |
| Location: | Each quadrant | Total Quantity: 73.44 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Wingwalls | Subtype: <input type="text"/> Environment: <input type="text"/> | | | |
| Prot. System: | None | <input type="checkbox"/> Benign <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | <input type="text"/> | <input type="text"/> | 73.44 | <input type="text"/> |

Comments:

Hairline wet and stained pattern cracking throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|------------------|------|----------|-------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 5.85 | Width: | 7.40 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | At each approach | | | | Total Quantity: 86.58 | | | |
| Material: | Asphalt | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | | | 86.58 | | | | |

Comments:

Light cracking at ends of deck.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|----------|--------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 30.70 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | At each barrier | | | | Total Quantity: 122.80 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | 122.80 | | | | |

Comments:
Light corrosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 32.00 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 38.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 3.60 | 34.80 | | |

Comments:
Hairline wet and stained pattern cracking; Narrow to medium vertical stained cracks, some with efflorescence; Random light popouts with exposed corroded form ties; Medium salt staining at post locations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 20.30 | Width: | 8.50 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 172.55 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.50 | 172.05 | | |

Comments:
Isolated medium longitudinal cracks; Light scaling and abrasions; Random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 18.30 | Width: | 8.50 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.90 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 188.49 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 188.49 | | |

Comments:

Hairline cracking throughout; Hairline to narrow cracking with efflorescence and salt staining on face at joint locations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|---------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 4 |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light corrosion at surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Embankments & Streams - Embankments

| | | | | | | | |
|-----------------|-----------------------|------|----------|------|--|--------|---|
| Element Group: | Embankments & Streams | | | | Length: | Width: | |
| Element Name: | Embankments | | | | Height: | Count: | 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | | |
| Material: | Vegetation / Rocks | | | | | | |
| Element Type: | Embankments | | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | Each | | | 4.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | | |
|-----------------|-----------------------|------|----------|------|--|--------|---|
| Element Group: | Embankments & Streams | | | | Length: | Width: | |
| Element Name: | Streams and Waterways | | | | Height: | Count: | 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | | |
| Material: | | | | | | | |
| Element Type: | Streams and Waterways | | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | All | | | 1.00 | | | |

Comments:

Stream encroaching on west abutment with light erosion; Sediment build up along east abutment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|--|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 32.00 | Width: | 0.70 |
| Element Name: | Curbs | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | Total Quantity: 60.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 2.50 | 5.00 | 53.30 | | |

Comments:

Light to severe abrasions throughout; Random light popouts; Medium delamination and spalling at joints; Isolated narrow to medium transverse cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Vines Bridge**

Structure No: **25-05**

MTO Site No: **25-05**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

Some light bending and fading.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Vines Bridge

Structure No: 25-05

MTO Site No: 25-05

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|---------------------|----------------------------------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| | Total Associated Work Cost | 0.00 |
| | Total Repair/Rehabilitation Cost | 0.00 |
| | Total Cost | 0.00 |

Summary Action Report

Structure Name: Holt Bridge

Structure No: 25-06

MTO Site No: 25-06

Inspection Date: 11/19/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 70.99

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|-----------------------------|
| Approaches | Wearing surface | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|-----------------|-----------------|---------|----------------------------|---------------|
| Approaches | Wearing surface | | Bridge Surface Repair | |
| Decks | Deck top | | Bridge Cleaning | |
| Sidewalks/curbs | Curbs | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Inventory Data

| | | | | |
|--------------------|-----------------------|--------------------|--|-----------|
| Structure Name: | Holt Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 175 | | | |
| Location: | 250m south of Line 87 | | | |
| Latitude/Northing: | 43d47'00" | Longitude/Easting: | 81d01'02" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 19.6 m | Heritage Status: | N | |
| Deck Width: | 9.8 m | Road Class: | Local | |
| Deck Area: | 192.1 m ² | Lane Type: | | |
| Trav Deck Wdt | 8.7 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km m | |
| | | Skew Angle: | 30 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00008 18.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1967 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Field Inspection Information

Structure No.: 25-06

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 71.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Annual maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: Holt Bridge

Structure No: 25-06

MTO Site No: 25-06

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 10.40 | Width: 2 | | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Height: 3.00 | Count: 2 | | |
| Material: | Cast-in-place concrete | Total Quantity: 62.40 | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 4.40 | 4.40 | 53.60 | |

Comments:

Medium to wide vertical stained cracks with efflorescence; 3 weepers per side with rust staining and incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 6.90 | Width: 4 | | |
| Element Name: | Wingwalls | | | | |
| Location: | Each quadrant | Height: 2.85 | Count: 2 | | |
| Material: | Cast-in-place concrete | Total Quantity: 78.66 | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 0.40 | 1.20 | 77.06 | |

Comments:

Hairline to wide stained cracking, some with efflorescence

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|------------------|------|------|--------|--|------|--------------|--------|
| Element Group: | Approaches | | | | Length: | 6.10 | Width: | 8.70 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | At each approach | | | | Total Quantity: 106.14 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 2.00 | 4.00 | 100.14 | | | | |

Comments:

Severe potholes.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Pedestrian/vehicular hazard | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|------|--------|--|-------|--------------|--------|
| Element Group: | Barriers | | | | Length: | 31.00 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | At each barrier | | | | Total Quantity: 124.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | | | Subtype: | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | 124.00 | | | | |

Comments:

Light corrosion throughout; Light corrosion of bolts of posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Barriers - Barrier/Parapet Walls

Element Group:

Element Name:

Location:

Material:

Element Type:

Prot. System:

Length: 31.80 Width:

Height: 0.60 Count:

Total Quantity: 38.16

Subtype:

Environment:

Limited Inspected

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|---------------------------------|-----------------------------------|-----------------------------------|------------------------------------|----------------------|
| <input type="text" value="m2"/> | <input type="text" value="1.80"/> | <input type="text" value="5.40"/> | <input type="text" value="30.96"/> | <input type="text"/> |

Comments:

Narrow to wide full height stained vertical cracks; Light scaling and salt staining; Exposed corroded form ties.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
| None | None | None | |

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
| None | | | |

None

Decks - Deck top

Element Group:

Element Name:

Location:

Material:

Element Type:

Prot. System:

Length: 19.60 Width: 9.50

Height: Count:

Total Quantity: 186.20

Subtype:

Environment:

Limited Inspected

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|---------------------------------|----------------------|----------------------|-------------------------------------|----------------------|
| <input type="text" value="m2"/> | <input type="text"/> | <input type="text"/> | <input type="text" value="186.20"/> | <input type="text"/> |

Comments:

Light scaling and abrasions of exposed portions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck annually |

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
| None | | | |

None

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 18.30 | Width: | 10.40 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.90 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 223.26 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 22.30 | 200.96 | | |

Comments:

Narrow to wide stained cracking, some with efflorescence and light scaling on exterior faces; Narrow to medium wet pattern cracking throughout underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 4 | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Medium corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Holt Bridge

Structure No: 25-06

MTO Site No: 25-06

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:
Medium erosion of embankments at abutment corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | 1.00 | | | |

Comments:
Medium erosion of stream at structure, encroaching onto abutments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 31.80 | Width: | 0.55 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 47.70 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 3.30 | 44.40 | | |

Comments:

Narrow to medium stained cracking throughout; Light scaling; Light to medium abrasions at joints.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Holt Bridge**

Structure No: **25-06**

MTO Site No: **25-06**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:
 Generally bent and faded.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Summary Action Report

Structure Name: Ash Bridge

Structure No: 25-08

MTO Site No: 25-08

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/19/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 69.31 |
| Next Biennial Inspection: | 11/19/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|-----------------|---------|---------|----------------------------|--------|
| Sidewalks/curbs | Curbs | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Inventory Data

| | | | | |
|--------------------|-----------------------|--------------------|--|-----------|
| Structure Name: | Ash Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 171 | | | |
| Location: | 170m south of Line 87 | | | |
| Latitude/Northing: | 43d46'33" | Longitude/Easting: | 80d59'47" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 19.1 m | Heritage Status: | N | |
| Deck Width: | 9.8 m | Road Class: | Local | |
| Deck Area: | 187.2 m ² | Lane Type: | | |
| Trav Deck Wdt | 8.6 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km | |
| | | | m | |
| | | Skew Angle: | 20 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00007 18.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1967 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Field Inspection Information

Structure No.: 25-08

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 69.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Annual maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: Ash Bridge

Structure No: 25-08

MTO Site No: 25-08

Element Data

Abutments - Abutment walls

| Element Group: | Abutments | Length: 10.00 Width: 3.60 | Count: 2 | | | | | | | | | | |
|-----------------|--|--|----------|-----------|------|-----------|----|------|------|-------|--|--|--|
| Element Name: | Abutment walls | | | | | | | | | | | | |
| Location: | Each end | Total Quantity: 72.00 | | | | | | | | | | | |
| Material: | Cast-in-place concrete | Environment: Benign | | | | | | | | | | | |
| Element Type: | Conventional closed | <input type="checkbox"/> Limited Inspected | | | | | | | | | | | |
| Prot. System: | None | | | | | | | | | | | | |
| Condition Data: | <table border="1"> <tr> <th>Units</th> <th>Poor</th> <th>Fair</th> <th>Good</th> <th>Excellent</th> </tr> <tr> <td>m2</td> <td>4.50</td> <td>4.50</td> <td>63.00</td> <td></td> </tr> </table> | Units | Poor | Fair | Good | Excellent | m2 | 4.50 | 4.50 | 63.00 | | | |
| Units | Poor | Fair | Good | Excellent | | | | | | | | | |
| m2 | 4.50 | 4.50 | 63.00 | | | | | | | | | | |

Comments:

Medium to wide full height vertical stained cracks with efflorescence; 3 weepers per side with rust staining and incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| Element Group: | Abutments | Length: 6.90 Width: 3.15 | Count: 4 | | | | | | | | | | |
|-----------------|--|--|----------|-----------|------|-----------|----|--|------|-------|--|--|--|
| Element Name: | Wingwalls | | | | | | | | | | | | |
| Location: | Each quadrant | Total Quantity: 86.94 | | | | | | | | | | | |
| Material: | Cast-in-place concrete | Environment: Benign | | | | | | | | | | | |
| Element Type: | Wingwalls | <input type="checkbox"/> Limited Inspected | | | | | | | | | | | |
| Prot. System: | None | | | | | | | | | | | | |
| Condition Data: | <table border="1"> <tr> <th>Units</th> <th>Poor</th> <th>Fair</th> <th>Good</th> <th>Excellent</th> </tr> <tr> <td>m2</td> <td></td> <td>0.80</td> <td>86.14</td> <td></td> </tr> </table> | Units | Poor | Fair | Good | Excellent | m2 | | 0.80 | 86.14 | | | |
| Units | Poor | Fair | Good | Excellent | | | | | | | | | |
| m2 | | 0.80 | 86.14 | | | | | | | | | | |

Comments:

Hairline to medium stained cracks with efflorescence; Light scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 31.00 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 4 |
| Location: | At each barrier | | Total Quantity: 124.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Double hand railing | Subtype: | | Environment: | Severe | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 124.00 | | |

Comments:
Light corrosion throughout; Light corrosion of bolts at posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 31.80 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 38.16 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 1.80 | 3.30 | 33.06 | | |

Comments:
Medium to wide vertical full height stained cracks; Light to medium salt staining at handrail post locations; Light scaling on exterior; Exposed corroded form ties.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Decks - Deck top

| | | | |
|-----------------|------------------------|---|-----------------------|
| Element Group: | Decks | Length: 19.10 | Width: 9.50 |
| Element Name: | Deck top | | |
| Location: | All | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 181.45 | |
| Element Type: | Deck top | Subtype: | Environment: Moderate |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 181.45 |
| | | | Excellent |

Comments:

Deck only partially visible, assumed to be in good condition based on condition of gravel and soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | |
|-----------------|------------------------------|--|---------------------|
| Element Group: | Decks | Length: 18.30 | Width: 10.00 |
| Element Name: | Soffit-Thick Slab | | |
| Location: | Underside and exterior faces | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 215.94 | |
| Element Type: | Soffit - Thick Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.40 | 44.60 |
| | | | Good 169.94 |
| | | | Excellent |

Comments:

Narrow to wide stained stained cracks with efflorescence on faces; Narrow to medium wet pattern cracking on underside; Exposed corroded rebar chairs on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | Count: 4 |
| Element Name: | Drainage | | Height: | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:

Light to medium corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 31.80 | Width: | 8.60 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 273.48 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 273.48 | | |

Comments:

Light potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ash Bridge**

Structure No: **25-08**

MTO Site No: **25-08**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 31.80 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 50.88 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 50.88 | | |

Comments:
Light scaling abrasions and popouts; Hairline to narrow stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Ash Bridge

Structure No: 25-08

MTO Site No: 25-08

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Ash Bridge

Structure No: 25-08

MTO Site No: 25-08

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Inspection Date: 11/19/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 60.65

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|----------|---------|------------------------|
| Decks | Drainage | | Deck drainage |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-------------------|--|----------|------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$15,000 |
| Decks | Drainage | Replace deck drains | 1-5 | \$5,000 |
| Barriers | Railing Systems | Replace railing with box beam guide rail | 1-5 | \$45,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$50,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$5,000 |
| | | Perform deck condition survey prior to rehabilitation work to determine extent of poor concrete in deck. | 1-5 | \$10,000 |

| | |
|----------------------------------|---------------------|
| Total Repair/Rehabilitation Cost | \$130,000.00 |
| Total Associated Work Cost | \$95,000.00 |
| Total Cost | \$225,000.00 |

Overall Comments

Structure is in overall fair condition; Major rehabilitation work required including concrete repairs, curb and barrier replacement and guide rail installation on approaches; A detailed deck condition survey should be performed prior to rehabilitation work.

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Inventory Data

| | | | | |
|--------------------|-----------------------|--------------------|-------------------|--|
| Structure Name: | Harkes Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 87 | | | |
| Location: | 350m west of Road 171 | | | |
| Latitude/Northing: | 43d46'31" | Longitude/Easting: | 80d59'29" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 19.0 m | Heritage Status: | N | |
| Deck Width: | 8.5 m | Road Class: | Collector | |
| Deck Area: | 161.5 m ² | Lane Type: | | |
| Trav Deck Wdt | 6.2 m | Posted Speed: | 80 Lanes: 2 | |
| Bridge Span | BS-00006 | 18.30 m | AADT: | Trucks: 0 % |
| | | | Min Vert. Clear.: | m |
| | | | No. of Spans: | 1 |
| | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck |
| | | | | <input type="checkbox"/> School <input type="checkbox"/> Bicycle |
| | | | Detour Length: | 9.10 km |
| | | | | m |
| | | | Skew Angle: | 30 degrees |
| | | | Structure Dir.: | East/West |

Historical Data

| | | |
|-------------------------|--------------------|---|
| Year Built: 1956 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Field Inspection Information

Structure No.: 25-09

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 60.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,000.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 10,000.00 |

Investigation Comments

DCS: Perform deck condition survey prior to rehabilitation work to determine extent of poor concrete in deck.

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major rehabilitation work required including concrete repairs, curb and barrier replacement and guide rail installation on approaches; A detailed deck condition survey should be performed prior to rehabilitation work.

BCI Change Justification Repair all poor concrete to extend life of structure; Replace curb and barrier to improve vehicle safety at structure.

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 9.80 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 50.96 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 50.96 |
| Condition Data: | Good | Excellent | |
| | | | |

Comments:

Hairline cracking and light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 5.40 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 58.32 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.40 | 3.90 |
| Condition Data: | Good | Excellent | |
| | 53.02 | | |

Comments:

Narrow to wide cracks with efflorescence; Isolated medium delaminations with narrow stained cracking; Light scaling, efflorescence and salt staining throughout.; Isolated severe popout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|-------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 29.00 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 58.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 15.20 | 42.80 | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar; Light to severe scaling and severe disintegration; Medium to wide stained pattern cracking

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 45,000.00 | Replace railing with box beam guide rail |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|------|---|--------|--------------|----------|
| Element Group: | Decks | | Length: | 19.00 | Width: | 8.20 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | Below wearing surface | | Total Quantity: 155.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Moderate |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 15.58 | 140.22 | | |

Comments:

Not visible, assumed to be in fair to good condition based on condition of soffit and wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 18.30 | Width: | 9.80 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.90 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 212.28 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 32.94 | 51.24 | 128.10 | | |

Comments:

Exterior faces have severe delamination, spalling, exposed corroded rebar, light to severe scaling, severe disintegration and medium to wide stained cracking with efflorescence; Cold joint with wide longitudinal crack on underside at mid; Light honeycombing and hairline to narrow wet cracking on underside

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 50,000.00 | Repair poor concrete |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 2 |
| Location: | Each side of deck | | Total Quantity: 2.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Deck drainage | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Replace deck drains |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 29.00 | Width: | 7.40 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 214.60 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 3.90 | 210.70 | | |

Comments:

Medium full width crack at east end; Light alligator cracking at northwest end of deck.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|-------|--------------|--|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 29.00 | Width: | 0.60 |
| Element Name: | Curbs | | | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 46.40 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 23.20 | 23.20 | | | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar; Light to severe scaling and severe disintegration; Medium to wide stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Remove and replace curb |

Signs - Signs

| | | | | | | | | |
|-----------------|------------------|----------|------|--------------|--|--|--------|---|
| Element Group: | Signs | | | | Length: | | Width: | |
| Element Name: | Signs | | | | Height: | | Count: | 4 |
| Location: | At each approach | | | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Hazard markers | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | Each | | | 4.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Harkes Bridge**

Structure No: **25-09**

MTO Site No: **25-09**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---|-------------------|--|----------|---------------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$15,000 |
| Decks | Drainage | Replace deck drains | 1-5 | \$5,000 |
| Barriers | Railing Systems | Replace railing with box beam guide rail | 1-5 | \$45,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$50,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$5,000 |
| | | Perform deck condition survey prior to rehabilitation work to determine extent of poor concrete in deck. | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$130,000.00 |

Associated Work

| | Comments | Estimated Cost |
|---|----------------------------------|-------------------|
| Approaches | Install guide rail on approaches | 30,000.00 |
| Detours | Road closed during construction | 4,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 10,000.00 |
| Contingencies | 10% | 20,000.00 |
| Engineering | | 30,000.00 |
| Total Associated Work Cost | | 95,000.00 |
| Total Repair/Rehabilitation Cost | | 130,000.00 |
| Total Cost | | 225,000.00 |

Summary Action Report

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Inspection Date: 11/19/2013 mm/dd/yyyy
Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 94.76

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|---------------|----------|---------|----------------------------|--------|
| Decks | Deck top | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall excellent condition; Annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Hilpert Bridge**

Structure No: **25-10**

MTO Site No: **25-10**

Inventory Data

| | | | | |
|--------------------|-----------------------------|--------------------|--|-----------|
| Structure Name: | Hilpert Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 167 | | | |
| Location: | 270m south of Perth Line 88 | | | |
| Latitude/Northing: | 43d47'15" | Longitude/Easting: | 80d57'38" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | IB - I-Beams or Girders | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 19.6 m | Heritage Status: | N | |
| Deck Width: | 10.9 m | Road Class: | Local | |
| Deck Area: | 213.6 m ² | Lane Type: | | |
| Trav Deck Wdt | 10.0 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km | |
| | | | m | |
| | | Skew Angle: | 20 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00005 18.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 2009 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Hilpert Bridge**

Structure No: **25-10**

MTO Site No: **25-10**

Field Inspection Information

Structure No.: 25-10

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 94.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall excellent condition; Annual maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Element Data

Abutments - Ballast walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 11.60 Width:
 Height: 1.20 Count: 2
 Total Quantity: 27.84

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|------|------|-----------|
| | m2 | 0.10 | 0.10 | 0.50 | 27.14 |

Environment:
 Limited Inspected

Comments:

Light spall at northeast.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Abutment walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 11.60 Width:
 Height: 2.30 Count: 2
 Total Quantity: 53.36

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|------|------|-----------|
| | m2 | | 3.50 | 8.80 | 41.06 |

Environment:
 Limited Inspected

Comments:

Narrow to medium vertical cracks above weep holes.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 5.00 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 3.40 | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 68.00 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 0.10 |
| | | | 67.90 |

Comments:

Isolated narrow wet crack on southeast wall at corner of bearing seat

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Approaches - Barriers

| | | | |
|-----------------|-----------------------|--|---------------------|
| Element Group: | Approaches | Length: 24.50 | Width: 4 |
| Element Name: | Barriers | | |
| Location: | Each quadrant | Height: | Count: 4 |
| Material: | Steel | Total Quantity: 98.00 | |
| Element Type: | Steel beam guide rail | Subtype: | Environment: Severe |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m | | 98.00 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|----------|--------|--|--------|--------|-------|
| Element Group: | Approaches | | | | Length: | 5.00 | Width: | 10.00 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | Each end | | | | Total Quantity: 100.00 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | | | 100.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|----------|------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 25.50 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | At each barrier | | | | Total Quantity: 102.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | | 102.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 28.00 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 1.10 | Count: | 2 |
| Location: | Each side | | Total Quantity: 61.60 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 12.30 | 49.30 | |

Comments:

Hairline wet and stained pattern cracking throughout; Small spall on northwest above plaque; Light staining at handrail posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

| | | | | | | |
|-----------------|------------------|----------|--|--------------|-----------|------|
| Element Group: | Beams/MLEs | | Length: | 19.60 | Width: | 0.56 |
| Element Name: | Girders | | Height: | 1.20 | Count: | 5 |
| Location: | Below deck top | | Total Quantity: 399.84 | | | |
| Material: | Precast concrete | | | | | |
| Element Type: | I-type - Girder | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | | 399.84 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Beams/MLEs - Diaphragms

| | | | | | | |
|-----------------|------------------------------|----------|--|------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 1.80 | Width: | 0.30 |
| Element Name: | Diaphragms | | Height: | 0.85 | Count: | 8 |
| Location: | Each end | | Total Quantity: 28.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Rectangular-solid diaphragms | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | | 28.80 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 19.60 | Width: | 10.90 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | Over girders | | Total Quantity: 213.64 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 213.64 | | |

Comments:

Light abrasions; Gravel on deck top.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Decks - Soffit-Thin Slab

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|----------|
| Element Group: | Decks | | Length: | 19.60 | Width: | 0.85 |
| Element Name: | Soffit-Thin Slab | | Height: | 0.24 | Count: | 2 |
| Location: | Exterior faces | | Total Quantity: 42.73 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thin Slab | Subtype: | | | Environment: | Moderate |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 21.36 | 21.37 | |

Comments:

Hairline wet pattern cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thin Slab

| | | | | | | |
|-----------------|--------------------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 19.60 | Width: | 9.20 |
| Element Name: | Soffit-Thin Slab | | Height: | | Count: | 1 |
| Location: | Interior between girders | | Total Quantity: 180.32 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thin Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 18.00 | 162.32 | |

Comments:

Isolated light honeycombing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Decks - Drainage

| | | | | | |
|-----------------|---------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 6 |
| Location: | Each side of deck | | Total Quantity: 6.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | | 6.00 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation / Rocks | | | | |
| Element Type: | Embankments | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | | 1.00 |

Comments:

Not visible, assumed to be in excellent condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Retaining walls - Walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Retaining walls | Length: 8.00 | Width: 1 |
| Element Name: | Walls | | |
| Location: | Northeast quadrant | Height: 3.00 | Count: 1 |
| Material: | Weathering steel | Total Quantity: 24.00 | |
| Element Type: | Steel sheet piles wall | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | Good |
| | | | Excellent |
| | | | 24.00 |

Comments:
Light erosion behind retaining wall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Hilpert Bridge

Structure No: 25-10

MTO Site No: 25-10

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Inspection Date: 11/15/2013 mm/dd/yyyy
Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 75.09

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|----------|---------|-----------------------------|
| Approaches | Barriers | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|----------|---|----------|------------|
| Approaches | Barriers | Replace steel beam guide rail | 6-10 | \$27,000 |
| Decks | Drainage | Extend drains to sit flush with asphalt | 6-10 | \$2,000 |

Total Repair/Rehabilitation Cost **\$29,000.00**

Total Associated Work Cost **\$11,000.00**

Total Cost **\$40,000.00**

Overall Comments

Structure is in overall good condition; Deck drain extensions and guide rail replacement on approaches as well as annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Greer Bridge**

Structure No: **25-12**

MTO Site No: **25-12**

Inventory Data

| | | | | |
|--------------------|-----------------------|--------------------|--|-----------|
| Structure Name: | Greer Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 89 | | | |
| Location: | 670m east of Road 165 | | | |
| Latitude/Northing: | 43d48'23" | Longitude/Easting: | 80d55'47" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 15.8 m | Heritage Status: | N | |
| Deck Width: | 10.3 m | Road Class: | Collector | |
| Deck Area: | 162.7 m ² | Lane Type: | | |
| Trav Deck Wdt | 8.5 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km | |
| | | | m | |
| | | Skew Angle: | 0 degrees | |
| | | Structure Dir.: | East/West | |

Bridge Span BS-00018 12.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1985 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Rehab History

| Year | Description | Amount |
|------|-------------------------------|--------|
| 2012 | Impr.: , Structure paved over | 0.00 |

Municipal Structure Inspection Form

Structure Name: **Greer Bridge**

Structure No: **25-12**

MTO Site No: **25-12**

Field Inspection Information

Structure No.: 25-12

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 75.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 1 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall good condition; Deck drain extensions and guide rail replacement on approaches as well as annual maintenance work required.

BCI Change Justification Extend deck drains flush with surface asphalt to prevent water from ponding between concrete deck and asphalt; Replace steel beam guide rail on approaches with proper design lengths and end treatments to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 9.50 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 74.10 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 1.50 |
| | | | 72.60 |
| | | | |

Comments:
 Light honeycombing and erosion at water line; 3 pvc weepers on each wall with medium cracking around; Narrow to medium vertical cracking throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 6.00 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 64.80 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | |
| | | | 64.80 |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Approaches - Barriers

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Approaches | | Length: | 13.60 | Width: | |
| Element Name: | Barriers | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 54.40 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel beam guide rail | Subtype: | | Environment: | Severe | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 4.00 | | 50.40 | | |

Comments:
Light checking and splitting of wood posts; Light to severe end rot of posts; Connection to barrier wall and end treatments not per OPSD standards.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 27,000.00 | Replace steel beam guide rail |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|----------------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 23.80 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.80 | Count: | 2 |
| Location: | Each side | | Total Quantity: 38.08 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with single railing | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.20 | 37.88 | | |

Comments:
Hairline stained pattern cracking starting to form; Light to medium popouts; Light staining on exterior faces; Bug holes.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 20.80 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 2 |
| Location: | At each barrier | | Total Quantity: 41.60 | | | |
| Material: | Steel | | | | | |
| Element Type: | Single hand railing | Subtype: | | Environment: | Severe | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 41.60 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 15.80 | Width: | 9.50 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 150.10 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | Environment: | Moderate | |
| Prot. System: | Waterproof and paving with AC overlay | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 7.49 | 142.61 | | |

Comments:

Deck top not visible, condition based on 2011 inspection; Light to medium scaling and light abrasions throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 12.00 | Width: | 9.50 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.66 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 129.84 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 1.50 | 128.34 | | |

Comments:

Narrow to medium stained cracking, some with efflorescence on exterior faces; Isolated narrow to medium cracking on underside,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|---------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 4 | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Drains do not sit flush with new surface asphalt.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 2,000.00 | Extend drains to sit flush with asphalt |

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 24.00 | Width: | 8.50 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 204.00 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | | 204.00 | |

Comments:

Structure paved over since last inspection.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion around ends of curb.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Stream bed lined with stone.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|--|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Greer Bridge

Structure No: 25-12

MTO Site No: 25-12

Sidewalks/curbs - Curbs

Element Group: Sidewalks/curbs
 Element Name: Curbs
 Location: Each side
 Material: Cast-in-place concrete
 Element Type: Curbs
 Prot. System: None

Length: 24.00 Width: 1.00
 Height: 0.24 Count: 2
 Total Quantity: 59.52

Subtype: Environment: Severe

Limited Inspected

Condition Data: Units Poor Fair Good Excellent
 m2 59.52

Comments:

Light abrasions; Light to medium popouts; Snow covering south curb at time of inspection.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Signs - Signs

Element Group: Signs
 Element Name: Signs
 Location: At each approach
 Material: Steel
 Element Type: Hazard markers
 Prot. System: None

Length: Width:
 Height: Count: 4
 Total Quantity: 4.00

Subtype: Environment: Severe

Limited Inspected

Condition Data: Units Poor Fair Good Excellent
 Each 4.00

Comments:

Generally bent and faded.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: **Greer Bridge**

Structure No: **25-12**

MTO Site No: **25-12**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|----------|---|----------|--------------------|
| Approaches | Barriers | Replace steel beam guide rail | 6-10 | \$27,000 |
| Decks | Drainage | Extend drains to sit flush with asphalt | 6-10 | \$2,000 |
| Total Repair/Rehabilitation Cost | | | | \$29,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 3,000.00 |
| Engineering | | 3,000.00 |
| Total Associated Work Cost | | 11,000.00 |
| Total Repair/Rehabilitation Cost | | 29,000.00 |
| Total Cost | | 40,000.00 |

Summary Action Report

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 58.44

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|----------------|---------|-----------------------------|
| Abutments | Abutment walls | | Load carrying capacity |
| Abutments | Wingwalls | | Load carrying capacity |
| Embankments & Streams | Embankments | | Unstable embankments |
| Barriers | Hand Railings | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------------|---|----------|------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$20,000 |
| Embankments & | Embankments | Stabilize eroded embankments | 1-5 | \$5,000 |
| Barriers | Hand Railings | Replace railing system with steel beam guide rail and end treatments | 1-5 | \$30,000 |
| Embankments & | Streams and Waterways | Place rock protection along abutments | 1-5 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$20,000 |
| | | Perform a concrete substructure condition survey on the north abutment to determine if repair is feasible or if full replacement of the abutment is required. | 1-5 | \$8,000 |
| | | Perform a load capacity evaluation to determine the load carrying capacity of the structure. | 1-5 | \$8,000 |

Total Repair/Rehabilitation Cost **\$96,000.00**

Total Associated Work Cost **\$55,000.00**

Total Cost **\$151,000.00**

Overall Comments

Structure is in overall fair condition; Some additional investigations should be performed as per above. Once the condition survey has been performed on the north abutment, it will then need to be determined whether rehabilitation work or full structure replacement is more feasible. Barrier replacement should be done soon to limit hazard to vehicles.

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Inventory Data

| | | | | |
|--------------------|-------------------------|--------------------|--|-----------|
| Structure Name: | McAvoy Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 165 | | | |
| Location: | 1050m south of Line 90 | | | |
| Latitude/Northing: | 43d48'57' | Longitude/Easting: | 80d54'47" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | IB - I-Beams or Girders | | | |
| Material: | H - Various | | | |
| Articulation: | | | | |
| Deck Length: | 11.6 m | Heritage Status: | N | |
| Deck Width: | 7.3 m | Road Class: | Local | |
| Deck Area: | 84.7 m ² | Lane Type: | | |
| Trav Deck Wdt | 7.3 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km | |
| | | | m | |
| | | Skew Angle: | 15 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00019 10.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Field Inspection Information

Structure No.: 25-13

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 58.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7,500.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7,500.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 15,000.00 |

Investigation Comments

CSCS: Perform a concrete substructure condition survey on the north abutment to determine if repair is feasible or if full replacement of the abutment is required.
 SE: Perform a load capacity evaluation to determine the load carrying capacity of the structure.

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Some additional investigations should be performed as per above. Once the condition survey has been performed on the north abutment, it will then need to be determined whether rehabilitation work or full structure replacement is more feasible. Barrier replacement should be done soon to limit hazard to vehicles.

BCI Change Justification Repair poor concrete on north abutment to extend life of structure; Replace railing system to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|------|------|-----------|
| Element Group: | Abutments | Length: 8.00 Width: 8.00 Height: 2.70 Count: 1 | | | |
| Element Name: | Abutment walls | | | | |
| Location: | North end only | Total Quantity: 21.60 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> Environment: <input type="text"/> Benign | | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 17.70 | 3.90 | | |

Comments:

Severe delamination, spalling and disintegration throughout; Narrow to wide stained pattern cracking throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Load carrying capacity | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 20,000.00 | Repair poor concrete |

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|------|-------|-----------|
| Element Group: | Abutments | Length: 8.00 Width: 8.00 Height: 2.70 Count: 1 | | | |
| Element Name: | Abutment walls | | | | |
| Location: | South end only | Total Quantity: 21.60 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> Environment: <input type="text"/> Benign | | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | | 21.60 | |

Comments:

Hairline cracking; Light scaling throughout; Light salt and rust staining from girders.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 20,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|----------|--|----------|-----------|
| Element Group: | Abutments | | Length: 4.80 | Width: 2 | |
| Element Name: | Wingwalls | | | | |
| Location: | North walls only | | Height: 2.40 | Count: 2 | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 23.04 | | | |

Comments:
Severe delamination, spalling and disintegration with exposed corroded rebar and narrow to wide cracking with efflorescence.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Load carrying capacity | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 20,000.00 | Repair poor concrete |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|----------|--|----------|-----------|
| Element Group: | Abutments | | Length: 4.80 | Width: 2 | |
| Element Name: | Wingwalls | | | | |
| Location: | South walls only | | Height: 2.40 | Count: 2 | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | | 23.04 | |

Comments:
Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 20,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 20.20 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 40.40 | | | |
| Material: | Steel | | | | | |
| Element Type: | Double hand railing | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 40.40 | | | | |

Comments:
 Light to medium corrosion and light travelling of railing; Light to medium scaling and severe permanent deformations (bending, twisting and rotation) of posts; Light cracking at post connections to deck.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 30,000.00 | Replace railing system with steel beam guide rail and end treatments |

Beams/MLEs - Girders

| | | | | | | |
|-----------------|-----------------|----------|--|--------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 10.30 | Width: | 0.21 |
| Element Name: | Girders | | Height: | 0.50 | Count: | 9 |
| Location: | Below deck top | | Total Quantity: 151.10 | | | |
| Material: | Steel | | | | | |
| Element Type: | I-type - Girder | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 12.10 | 139.00 | | |

Comments:
 Light corrosion throughout; Medium corrosion on bottom flange of exterior girders; Medium corrosion of girders at north end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Decks - Deck top

| | | | | | | |
|-----------------|---|------|---|-------|--------------|----------|
| Element Group: | Decks | | Length: | 11.60 | Width: | 7.30 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | Over girders | | Total Quantity: 84.68 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Cast-in-place concrete on supports deck | | Subtype: | | Environment: | Moderate |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 4.64 | 4.64 | 75.40 | | |

Comments:

Light scaling and abrasions of exposed portion of deck top; Medium to severe scaling of exterior faces

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 11.60 | Width: | 7.30 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 84.68 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 4.70 | 79.98 | | |

Comments:

Light potholes in gravel with water ponding.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | | 2.00 | | |

Comments:
Severe erosion of north embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| Unstable embankments | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Stabilize eroded embankments |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | 1.00 | | | |

Comments:
Medium scour along south abutment and footing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along abutments |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|--|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below each abutment | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Footings only partially visible below water level; Assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | |
|-----------------|----------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:

Bent and twisted throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McAvoy Bridge**

Structure No: **25-13**

MTO Site No: **25-13**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---|-----------------------|---|----------|--------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$20,000 |
| Embankments & | Embankments | Stabilize eroded embankments | 1-5 | \$5,000 |
| Barriers | Hand Railings | Replace railing system with steel beam guide rail and end treatments | 1-5 | \$30,000 |
| Embankments & | Streams and Waterways | Place rock protection along abutments | 1-5 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$20,000 |
| | | Perform a concrete substructure condition survey on the north abutment to determine if repair is feasible or if full replacement of the abutment is required. | 1-5 | \$8,000 |
| | | Perform a load capacity evaluation to determine the load carrying capacity of the structure. | 1-5 | \$8,000 |
| Total Repair/Rehabilitation Cost | | | | \$96,000.00 |

Associated Work

| | Comments | Estimated Cost |
|---|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 15,000.00 |
| Engineering | | 20,000.00 |
| Total Associated Work Cost | | 55,000.00 |
| Total Repair/Rehabilitation Cost | | 96,000.00 |
| Total Cost | | 151,000.00 |

Summary Action Report

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Inspection Date: 11/19/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 73.56

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|-----------------------|----------|--------------------|
| Abutments | Abutment walls | Repair poor concrete | 6-10 | \$5,000 |
| Barriers | Barrier/Parapet Walls | Repair poor concrete | 6-10 | \$5,000 |
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$10,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$25,000.00 |
| Total Associated Work Cost | | | | \$15,000.00 |
| Total Cost | | | | \$40,000.00 |

Overall Comments

Structure is in overall good condition; Minor concrete repairs and deck drain replacement required.

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Inventory Data

| | | | | | |
|--------------------|------------------------------|--------------------|--|-----------------|-------------|
| Structure Name: | McIntosh Bridge | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 167 | | | | |
| Location: | 1160m north of Perth Line 86 | | | | |
| Latitude/Northing: | 43d45'35" | Longitude/Easting: | 80d59'00" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 9.8 m | Detour Length: | 0.00 km | Skew Angle: | 25 degrees |
| Deck Width: | 8.6 m | | m | Structure Dir.: | North/South |
| Deck Area: | 84.3 m2 | | | | |
| Trav Deck Wdt | 7.4 m | | | | |

Bridge Span BS-00004 9.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1961 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Field Inspection Information

Structure No.: 25-14

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.6
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Minor concrete repairs and deck drain replacement required.

Comments

BCI Change Repair poor concrete and replace deck drains to extend life of structure.
Justification

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 9.50 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 60.80 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 0.70 | 0.70 |
| | | | Good |
| | | | 59.40 |
| | | | Excellent |

Comments:

Light scaling and light to medium honeycombing throughout; 3 weepers per side with rust staining, incrustations, some with severe delamination and severe erosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 6.40 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 69.12 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | |
| | | | Good |
| | | | 69.12 |
| | | | Excellent |

Comments:

Light scaling throughout; Efflorescence and staining from curb above.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 15.20 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 30.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 0.60 | 29.80 | | |

Comments:

Light to medium scaling and hairline to narrow stained cracking throughout; Isolated exposed corroded form ties.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 3.40 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.90 | Count: | 4 |
| Location: | Each end of barrier | | Total Quantity: 12.24 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.70 | 1.40 | 10.14 | | |

Comments:

Light scaling and hairline to narrow stained cracking throughout; Medium delamination, spalling and exposed corroded rebar.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|-------|--------------|----------|
| Element Group: | Decks | | Length: | 9.80 | Width: | 8.30 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 81.34 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Moderate |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 81.34 | | |

Comments:

Not visible, based on condition of soffit and gravel surface, assumed to be in good condition.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 9.10 | Width: | 9.50 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.53 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 96.10 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 4.80 | 91.30 | | |

Comments:

Light to medium scaling and efflorescence on west face; Random hairline stained and wet cracking and exposed corroded rebar chairs on underside; Staining and moisture on underside at drain locations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: McIntosh Bridge

Structure No: 25-14

MTO Site No: 25-14

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|----------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: 4 | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 4.00 | | | |

Comments:

Severe corrosion throughout and loss of section of grates; Drains do not extend below soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 22.00 | Width: | 7.40 |
| Element Name: | Wearing surface | | Height: | Count: | | 1 |
| Location: | Over deck top | | Total Quantity: 162.80 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 162.80 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Medium erosion and lack of vegetation on all embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 22.00 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 39.60 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 7.20 | 10.80 | 21.60 | | |

Comments:

Light scaling throughout; Light delamination and hairline to medium stained cracking with efflorescence on west interior; Severe delamination and severe disintegration with medium horizontal stained cracking on west exterior; Exposed corroded form ties throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 10,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: McIntosh Bridge

Structure No: 25-14

MTO Site No: 25-14

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McIntosh Bridge**

Structure No: **25-14**

MTO Site No: **25-14**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|-----------------------|----------|--------------------|
| Abutments | Abutment walls | Repair poor concrete | 6-10 | \$5,000 |
| Barriers | Barrier/Parapet Walls | Repair poor concrete | 6-10 | \$5,000 |
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$10,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$25,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 5,000.00 |
| Contingencies | 10% | 3,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 15,000.00 |
| Total Repair/Rehabilitation Cost | | 25,000.00 |
| Total Cost | | 40,000.00 |

Summary Action Report

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.81

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Decks | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|-----------------|---------|-----------------------|
| Decks | Wearing surface | | Bridge Surface Repair |
| Decks | Deck top | | Bridge Cleaning |
| Decks | Drainage | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------------|--|----------------------------------|--------------------|
| Embankments & | Streams and Waterways | Place rock protection along north abutment | 1-5 | \$5,000 |
| | | | Total Repair/Rehabilitation Cost | \$5,000.00 |
| | | | Total Associated Work Cost | \$5,000.00 |
| | | | Total Cost | \$10,000.00 |

Overall Comments

Structure is in overall good condition; Some minor work required to improve stream flow at structure.

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Inventory Data

| | | | | |
|--------------------|------------------------|--------------------|--|-----------|
| Structure Name: | Moore Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 157 | | | |
| Location: | 1200m south of Line 90 | | | |
| Latitude/Northing: | 43d47'54" | Longitude/Easting: | 80d52'24" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 10.4 m | Heritage Status: | N | |
| Deck Width: | 9.1 m | Road Class: | Local | |
| Deck Area: | 94.6 m ² | Lane Type: | | |
| Trav Deck Wdt | 7.3 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km | |
| | | | m | |
| | | Skew Angle: | 0 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00022 10.40 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1986 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Field Inspection Information

Structure No.: 25-16

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition; Some minor work required to improve stream flow at structure.
 Comments
 BCI Change Place rock protection along north abutment to prevent further scour and erosion.
 Justification

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Element Data

Abutments - Abutment walls

| | | |
|-----------------|------------------------|---|
| Element Group: | Abutments | Length: 8.60 Width: 2.20 Height: 2.20 Count: 2 |
| Element Name: | Abutment walls | |
| Location: | Each end | Total Quantity: 37.84 |
| Material: | Cast-in-place concrete | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | 37.84 |

Comments:

Hairline cracking and bug holes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Abutments - Wingwalls

| | | |
|-----------------|------------------------|---|
| Element Group: | Abutments | Length: 5.20 Width: 4 Height: 2.15 Count: 4 |
| Element Name: | Wingwalls | |
| Location: | Each quadrant | Total Quantity: 44.72 |
| Material: | Cast-in-place concrete | |
| Element Type: | Wingwalls | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | 0.30 |
| | | 0.30 |
| | | 44.12 |

Comments:

Hairline cracking; Medium to wide stained cracking with efflorescence at joints with soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 16.20 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 4 |
| Location: | At each barrier | | Total Quantity: 64.80 | | | |
| Material: | Steel | | | | | |
| Element Type: | Double hand railing | Subtype: | | Environment: | Severe | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 64.80 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 19.40 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 23.28 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 23.28 | | |

Comments:

Hairline cracking, some with moisture and and staining; Random light popouts; Light staining at handrail post connections.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|-------|--------------|----------|
| Element Group: | Decks | | Length: | 10.40 | Width: | 8.60 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 89.44 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Moderate |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 89.44 | | |

Comments:

Light scaling and abrasions of exposed portions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 10.40 | Width: | 8.60 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.45 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 98.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 98.80 | | |

Comments:

Hairline transverse crack at mid-span.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Decks - Drainage

| | | | | | |
|-----------------|---------------------|----------|--|----------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: 4 | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:

Light corrosion throughout; Drains plugged with debris.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------|
| None | Bridge Cleaning | 1 Year | Clean deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 19.50 | Width: | 7.30 |
| Element Name: | Wearing surface | | Height: | Count: | | 1 |
| Location: | Over deck top | | Total Quantity: 142.35 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 14.20 | 128.15 | | |

Comments:

Medium potholes on approaches.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | 1.00 | | | |

Comments:
Stream out of alignment with structure; Severe scour along north abutment and aggradation along south abutment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along north abutment |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutment walls | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 19.50 | Width: | 0.90 |
| Element Name: | Curbs | | Height: | 0.27 | Count: | 2 |
| Location: | Each side | | Total Quantity: 45.63 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 45.63 | | |

Comments:

Hairline cracking, light abrasions and bug holes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curbs annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Moore Bridge**

Structure No: **25-16**

MTO Site No: **25-16**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|-------------------|
| Embankments & | Streams and Waterways | Place rock protection along north abutment | 1-5 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$5,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 1,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 2,000.00 |
| Contingencies | 10% | 1,000.00 |
| Engineering | | 1,000.00 |
| Total Associated Work Cost | | 5,000.00 |
| Total Repair/Rehabilitation Cost | | 5,000.00 |
| Total Cost | | 10,000.00 |

Summary Action Report

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 70.11

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|-----------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$12,000 |
| Total Repair/Rehabilitation Cost | | | | \$12,000.00 |
| Total Associated Work Cost | | | | \$13,000.00 |
| Total Cost | | | | \$25,000.00 |

Overall Comments

Structure is in overall good condition; Some minor concrete repairs required.

Municipal Structure Inspection Form

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Inventory Data

| | | | | |
|--------------------|--------------------------|--------------------|---|-----------|
| Structure Name: | McDowell Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 87 | | | |
| Location: | 850m east of Highway #23 | | | |
| Latitude/Northing: | 43d44'55" | Longitude/Easting: | 80d55'38" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | BO - Box, Open Footing | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 6.9 m | Heritage Status: | N | |
| Deck Width: | 12.2 m | Road Class: | Collector | |
| Deck Area: | 84.2 m ² | Lane Type: | | |
| Trav Deck Wdt | 6.8 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km m | |
| | | Skew Angle: | 0 degrees | |
| | | Structure Dir.: | East/West | |

Bridge Span BS-00032 6.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1955 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Field Inspection Information

Structure No.: 25-17

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 70.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 6 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some minor concrete repairs required.

Comments

BCI Change Repair poor concrete to extend life of structure.
Justification

Municipal Structure Inspection Form

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Element Data

Culverts - Barrels

Element Group:

Element Name:

Location:

Material:

Element Type:

Prot. System:

Length: 12.20 Width: 6.00
 Height: 1.50 Count: 1
 Total Quantity: 109.80

Subtype:

Environment:

Limited Inspected

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|-------|-------|-----------|
| | m2 | 1.80 | 10.90 | 97.10 | |

Comments:

Severe delamination and spalling, severe disintegration with rust and salt staining all at southeast end; Wet areas and rust staining on soffit at north end; Wide crack with efflorescence across north face; Narrow to medium vertical stained cracking and cold joints with rust staining on legs; Light scaling throughout, medium scaling on north face.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 12,000.00 | Repair poor concrete |

Decks - Wearing surface

Element Group:

Element Name:

Location:

Material:

Element Type:

Prot. System:

Length: 6.90 Width: 6.80
 Height: Count: 1
 Total Quantity: 46.92

Subtype:

Environment:

Limited Inspected

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|----------------|------|------|-------|-----------|
| | m ² | 3.40 | 7.60 | 35.92 | |

Comments:

Wide transverse cracks with some alligating at each transition; Medium progressive edge cracking; Medium settlement at each transition with patching.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|------|----------|---------------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | | Subtype: | Environment: Benign | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 1.00 | 3.00 | | |

Comments:

Medium erosion of northwest embankment; Light erosion of others.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|------|----------|---------------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | | Subtype: | Environment: Benign | | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **McDowell Bridge**

Structure No: **25-17**

MTO Site No: **25-17**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---|---------|-----------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$12,000 |
| Total Repair/Rehabilitation Cost | | | | \$12,000.00 |

Associated Work

| | Comments | Estimated Cost |
|---|-----------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization | 3,000.00 |
| Contingencies | 10% | 2,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 13,000.00 |
| Total Repair/Rehabilitation Cost | | 12,000.00 |
| Total Cost | | 25,000.00 |

Summary Action Report

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.83

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Approaches | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|-----------------|-----------------|---------|----------------------------|---------------|
| Decks | Deck top | | Bridge Cleaning | |
| Approaches | Wearing surface | | Bridge Surface Repair | |
| Sidewalks/curbs | Curbs | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Jackson Bridge**

Structure No: **25-18**

MTO Site No: **25-18**

Inventory Data

| | | | | |
|--------------------|-----------------------|--------------------|---|-----------|
| Structure Name: | Jackson Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 157 | | | |
| Location: | 910m south of Line 87 | | | |
| Latitude/Northing: | 43d44'16" | Longitude/Easting: | 80d55'20" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 15.0 m | Heritage Status: | N | |
| Deck Width: | 9.8 m | Road Class: | Local | |
| Deck Area: | 147.0 m ² | Lane Type: | | |
| Trav Deck Wdt | 8.6 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km | |
| | | | m | |
| | | Skew Angle: | 20 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00031 13.70 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1969 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Jackson Bridge**

Structure No: **25-18**

MTO Site No: **25-18**

Field Inspection Information

Structure No.: 25-18

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 6 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Annual maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Element Data

Abutments - Abutment walls

| | | |
|-----------------|------------------------|---|
| Element Group: | Abutments | Length: 10.30 Width: 2.60 Height: 2.60 Count: 2 |
| Element Name: | Abutment walls | |
| Location: | Each end | Total Quantity: 53.56 |
| Material: | Cast-in-place concrete | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> Environment: <input type="text"/> |
| Prot. System: | None | <input type="checkbox"/> Benign <input type="checkbox"/> Limited Inspected |
| Condition Data: | Units | Poor |
| | Fair | Good |
| | Excellent | |
| | m2 | 53.56 |

Comments:

Hairline cracking throughout; 3 weepers per side with incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | |
|-----------------|------------------------|---|
| Element Group: | Abutments | Length: 5.50 Width: 2.50 Height: 2.50 Count: 4 |
| Element Name: | Wingwalls | |
| Location: | Each quadrant | Total Quantity: 55.00 |
| Material: | Cast-in-place concrete | |
| Element Type: | Wingwalls | Subtype: <input type="text"/> Environment: <input type="text"/> |
| Prot. System: | None | <input type="checkbox"/> Benign <input type="checkbox"/> Limited Inspected |
| Condition Data: | Units | Poor |
| | Fair | Good |
| | Excellent | |
| | m2 | 55.00 |

Comments:

Isolated hairline stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|------|-------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 5.50 | Width: | 8.60 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | Each approach | | | | Total Quantity: 94.60 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | | | Subtype: | | | |
| Prot. System: | None | | | | Environment: | Severe | | |
| Condition Data: | Units | Poor | Fair | Good | <input type="checkbox"/> Limited Inspected | | | |
| | m2 | 3.00 | 3.00 | 88.60 | | | | |

Comments:

Several severe potholes on each approach.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|------|-------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 23.60 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | At each barrier | | | | Total Quantity: 94.40 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | | | Subtype: | | | |
| Prot. System: | Hot dip galvanizing | | | | Environment: | Severe | | |
| Condition Data: | Units | Poor | Fair | Good | <input type="checkbox"/> Limited Inspected | | | |
| | m | | | 94.40 | | | | |

Comments:

Light corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 24.60 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 29.52 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 1.30 | 1.30 | 26.92 | | |

Comments:

Severe delamination and spalling with wide stained cracking; Light salt and rust staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|--------------|-----------|------|
| Element Group: | Decks | | Length: | 15.00 | Width: | 9.50 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 142.50 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 142.50 | | |

Comments:

Partially exposed; Light scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Decks - Soffit-Thick Slab

Element Group: Decks
 Element Name: Soffit-Thick Slab
 Location: Underside and exterior faces
 Material: Cast-in-place concrete
 Element Type: Soffit - Thick Slab
 Prot. System: None
 Condition Data: Units Poor Fair Good Excellent
 m2

Length: 13.70 Width: 10.30
 Height: 0.68 Count: 1
 Total Quantity: 159.74

Subtype: Environment: Benign
 Limited Inspected

Comments:

Hairline wet pattern cracking and exposed corroded rebar chairs on underside; Hairline vertical cracks on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

Element Group: Decks
 Element Name: Drainage
 Location: Each side of deck
 Material: Steel
 Element Type: Steel drain pipes
 Prot. System: Hot dip galvanizing
 Condition Data: Units Poor Fair Good Excellent
 Each

Length: Width:
 Height: Count: 4
 Total Quantity: 4.00

Subtype: Environment: Severe
 Limited Inspected

Comments:

Light corrosion at surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation / Rocks | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

Light erosion of west embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Light sediment build up; Light erosion of stream at west side, encroaching on abutments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|----------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: 1 | |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 24.70 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 39.52 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.20 | 0.20 | 39.12 | | |

Comments:

Isolated wide transverse crack; Narrow stained longitudinal cracking on interior faces; Light abrasions and popouts; One isolated light spall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

South signs are lightly bent and faded.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Jackson Bridge

Structure No: 25-18

MTO Site No: 25-18

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 73.26

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|----------|---------|------------------------|
| Decks | Drainage | | Deck drainage |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|----------|---------|------------------|
| Decks | Drainage | | Bridge Cleaning |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-----------------|---------------------------|----------|------------|
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Wearing surface | Rout and seal wide cracks | 6-10 | \$6,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$13,000 |

Total Repair/Rehabilitation Cost **\$34,000.00**

Total Associated Work Cost **\$21,000.00**

Total Cost **\$55,000.00**

Overall Comments

Structure is in overall good condition; Minor concrete repairs and deck drain replacement required.

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Inventory Data

| | | | | |
|--------------------|---|--------------------|-----------------|------------|
| Structure Name: | Cheesefactory | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 87 | | | |
| Location: | 910m east of Line 157 | | | |
| Latitude/Northing: | 43d44'26" | Longitude/Easting: | 80d54'24" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 14.0 m | | | |
| Deck Width: | 9.6 m | | | |
| Deck Area: | 134.4 m ² | | | |
| Trav Deck Wdt | 8.6 m | | | |
| Heritage Status: | N | | | |
| Road Class: | Collector | | | |
| Lane Type: | | | | |
| Posted Speed: | 80 | Lanes: | 2 | |
| AADT: | | Trucks: | 0 % | |
| Min Vert. Clear.: | m | | | |
| No. of Spans: | 1 | | | |
| Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | |
| Detour Length: | 9.10 km | | Skew Angle: | 30 degrees |
| | m | | Structure Dir.: | East/West |

Bridge Span BS-00030 12.30 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1965 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Field Inspection Information

Structure No.: 25-19

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 6 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Minor concrete repairs and deck drain replacement required.

Comments

BCI Change Replace deck drains and repair poor concrete to extend life of structure.
Justification

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 10.80 | Width: 2 | | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Height: 2.40 | Count: 2 | | |
| Material: | Cast-in-place concrete | Total Quantity: 51.84 | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 1.20 | 50.64 | |

Comments:

Light scaling and honeycombing; Narrow wet cracking; Medium stained vertical crack at the middle of each abutment; 3 weepers per side with rust staining and incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 4.40 | Width: 4 | | |
| Element Name: | Wingwalls | | | | |
| Location: | Each quadrant | Height: 2.35 | Count: 4 | | |
| Material: | Cast-in-place concrete | Total Quantity: 41.36 | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 2.80 | 5.60 | 32.96 | |

Comments:

Medium delamination with medium stained cracking and efflorescence at the corner of each wall; Light scaling; Light to medium popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 13,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 20.10 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 40.20 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 2.20 | 2.00 | 36.00 | | |

Comments:

Severe delamination and spalling with exposed corroded rebar and wide cracking; Concrete patches with light delamination and spalling and medium to wide cracking; Narrow to wide stained cracks throughout; Light scaling and popouts throughout

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|------------------------|------|--|------|--------------|--------|
| Element Group: | Barriers | | Length: | 0.80 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.90 | Count: | 4 |
| Location: | Each end | | Total Quantity: 2.88 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 2.88 | | |

Comments:

Random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Decks - Deck top

| | | |
|-----------------|---------------------------------------|---|
| Element Group: | Decks | Length: 14.00 Width: 9.30 Height: Count: 1 |
| Element Name: | Deck top | |
| Location: | All | Total Quantity: 130.20 |
| Material: | Cast-in-place concrete | |
| Element Type: | Deck top | Subtype: <input type="text"/> |
| Prot. System: | Waterproof and paving with AC overlay | Environment: <input type="text"/> Moderate |
| Condition Data: | Units | <input checked="" type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | |
| | | 130.20 |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | |
|-----------------|------------------------------|---|
| Element Group: | Decks | Length: 12.30 Width: 10.80 Height: 0.60 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 147.60 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | |
| | | 1.47 |
| | | 146.13 |

Comments:

Narrow stained cracking on faces, some with efflorescence; Light scaling on exterior faces; Narrow wet pattern cracking and exposed corroded rebar chairs throughout underside; Active wet areas on underside from deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Decks - Drainage

| | | | | | |
|-----------------|---------------------|----------|--|----------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: 4 | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 4.00 | | | |

Comments:
All deck drains are plugged; Severe corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------|
| Deck drainage | Bridge Cleaning | 1 Year | Clean deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 20.90 | Width: | 8.60 |
| Element Name: | Wearing surface | | Height: | Count: | | 1 |
| Location: | Over deck top | | Total Quantity: 179.74 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 8.60 | 22.60 | 148.54 | | |

Comments:
Wide transverse cracks at each approach; Severe potholes with several patches at west end; Medium ravelling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 6,000.00 | Rout and seal wide cracks |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:
Light sediment build up throughout; Light erosion of stream at north end, encroaching onto abutments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 20.90 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 33.44 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 1.50 | 7.70 | 24.24 | | |

Comments:

Severe delamination and spalling with medium stained cracking; Concrete patches with light delaminations and spalling and medium to wide cracking; Light scaling and popouts throughout; Narrow stained cracking throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Cheesefactory**

Structure No: **25-19**

MTO Site No: **25-19**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-----------------|---------------------------|----------|------------|
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Wearing surface | Rout and seal wide cracks | 6-10 | \$6,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$13,000 |

Total Repair/Rehabilitation Cost **\$34,000.00**

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|-----------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 3,000.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals etc. | 5,000.00 |
| Contingencies | 10% | 5,000.00 |
| Engineering | | 7,000.00 |
| Total Associated Work Cost | | 21,000.00 |
| Total Repair/Rehabilitation Cost | | 34,000.00 |
| Total Cost | | 55,000.00 |

Summary Action Report

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 75.48

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------|---|----------|------------|
| Culverts | Barrels | Consider structure extensions at each end | 1-5 | \$75,000 |
| Barriers | Railing Systems | Add guide rail and end treatments on approaches | 1-5 | \$25,000 |

| | |
|----------------------------------|---------------------|
| Total Repair/Rehabilitation Cost | \$100,000.00 |
| Total Associated Work Cost | \$50,000.00 |
| Total Cost | \$150,000.00 |

Overall Comments

Structure is in overall good condition; Culvert extensions should be considered at each end.

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Inventory Data

| | | | | | |
|--------------------|-------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | Binning Bridge | Hwy No.: | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 152 | | | | |
| Location: | 1240m north of Perth County Line 86 | | | | |
| Latitude/Northing: | 43d43'34" | Longitude/Easting: | 80d54'16" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 6.9 m | Detour Length: | 9.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 8.0 m | | m | Structure Dir.: | North/South |
| Deck Area: | 55.2 m2 | | | | |
| Trav Deck Wdt | 6.4 m | | | | |

Bridge Span BS-00029 6.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1958 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Rehab History

| Year | Description | Amount |
|------|---|--------|
| 2007 | Impr.: , Steel beam and 3-cable guide rail installed at structure | 0.00 |
| 2012 | Impr.: , 3-Cable guide rail removed from approaches | 0.00 |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Field Inspection Information

Structure No.: 25-20

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 75.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 6 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall good condition; Culvert extensions should be considered at each end.

BCI Change Justification Consider structure extensions at each end to eliminate the need for wingwalls and wood headwall, improve embankment slopes and to allow forguid rail installation on approaches.

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Element Data

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 3.60 Width:
 Height: 2.00 Count: 4
 Total Quantity: 28.80

Condition Data: **Units** **Poor** **Fair** **Good** **Excellent**

Environment:
 Limited Inspected

Comments:

Light to medium popouts; Narrow stained cracking at top corners; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Posts

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: Width:
 Height: Count: 8
 Total Quantity: 8.00

Condition Data: **Units** **Poor** **Fair** **Good** **Excellent**

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Barriers - Railing Systems

| | | | | | | |
|-----------------|---------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 6.10 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 12.20 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel Flex Beam on steel post railing | | Subtype: | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 0.50 | | 11.70 | | |

Comments:

Severe permanent deformation from vehicle impact at northwest end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 25,000.00 | Add guide rail and end treatments on approaches |

Culverts - Barrels

| | | | | | | |
|-----------------|------------------------|------|--|-------|--------------|--------|
| Element Group: | Culverts | | Length: | 6.10 | Width: | 7.90 |
| Element Name: | Barrels | | Height: | 2.40 | Count: | 1 |
| Location: | All | | Total Quantity: 77.47 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Open Footing Barrel | | Subtype: | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.20 | 0.80 | 76.47 | | |

Comments:

Light spalls at northwest and east ends with exposed corroded rebar; Narrow stained cracking on west face; Light scaling on faces; Exposed corroded rebar chairs and hairline wet pattern cracking on soffit; Isolated narrow wet cracking on legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 75,000.00 | Consider structure extensions at each end |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 6.90 | Width: | 6.40 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over structure | | Total Quantity: 44.16 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 44.16 | | |

Comments:

Light settlement at each transition; Light ravelling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Embankments are very steep beyond wingwalls; Medium erosion and migration of sediment around ends of wingwalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
Light aggradation and sediment deposits at all corners but the southeast.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Retaining walls - Walls

| | | | | | | |
|-----------------|-----------------|----------|--|------|--------------|--------|
| Element Group: | Retaining walls | | Length: | 6.90 | Width: | 0.20 |
| Element Name: | Walls | | Height: | 0.40 | Count: | 2 |
| Location: | Above each curb | | Total Quantity: 8.28 | | | |
| Material: | Wood | | | | | |
| Element Type: | Headwall | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 8.28 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 6.90 | Width: | 0.30 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 8.28 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 0.10 | 0.30 | 7.88 | | |

Comments:

Light delamination and spall on top at west end; Narrow stained cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:
 Signs mounted to wood posts; Signs generally bent and twisted.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Binning Bridge**

Structure No: **25-20**

MTO Site No: **25-20**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|---|----------|---------------------|
| Culverts | Barrels | Consider structure extensions at each end | 1-5 | \$75,000 |
| Barriers | Railing Systems | Add guide rail and end treatments on approaches | 1-5 | \$25,000 |
| Total Repair/Rehabilitation Cost | | | | \$100,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 20,000.00 |
| Total Associated Work Cost | | 50,000.00 |
| Total Repair/Rehabilitation Cost | | 100,000.00 |
| Total Cost | | 150,000.00 |

Summary Action Report

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Inspection Date: 11/15/2013 mm/dd/yyyy
Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 72.26

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|-----------------|----------------------------|-----------------------|
| Decks | Deck top | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Inventory Data

| | | | | |
|--------------------|------------------------|--------------------|-------------------|---|
| Structure Name: | Patterson Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 152 | | | |
| Location: | 1230m south of Line 88 | | | |
| Latitude/Northing: | 43d44'52" | Longitude/Easting: | 80d53'16" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 12.0 m | Heritage Status: | N | |
| Deck Width: | 9.8 m | Road Class: | Local | |
| Deck Area: | 117.6 m ² | Lane Type: | | |
| Trav Deck Wdt | 8.5 m | Posted Speed: | 80 Lanes: 2 | |
| Bridge Span | BS-00028 | 10.70 m | AADT: | Trucks: 0 % |
| | | | Min Vert. Clear.: | m |
| | | | No. of Spans: | 1 |
| | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck |
| | | | | <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle |
| | | | Detour Length: | 9.10 km |
| | | | | m |
| | | | Skew Angle: | 30 degrees |
| | | | Structure Dir.: | North/South |

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Field Inspection Information

Structure No.: 25-21

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 72.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 6 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Annual maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Element Data

Abutments - Abutment walls

| | | | | | | |
|-----------------|------------------------|--|------|-------|-----------|--|
| Element Group: | Abutments | Length: 10.90 Width: 2.20 Height: 2.20 Count: 2 | | | | |
| Element Name: | Abutment walls | | | | | |
| Location: | Each end | Total Quantity: 47.96 | | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> | | | | |
| Prot. System: | None | Environment: <input type="text"/> Benign | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | <input type="checkbox"/> Limited Inspected |
| | m2 | | | 47.96 | | |

Comments:

Light scaling and bug holes throughout; Isolated narrow cracks, some with moisture and staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | | |
|-----------------|------------------------|--|------|-------|-----------|--|
| Element Group: | Abutments | Length: 5.50 Width: 4 Height: 2.20 Count: 4 | | | | |
| Element Name: | Wingwalls | | | | | |
| Location: | Each quadrant | Total Quantity: 48.40 | | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wingwalls | Subtype: <input type="text"/> | | | | |
| Prot. System: | None | Environment: <input type="text"/> Benign | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | <input type="checkbox"/> Limited Inspected |
| | m2 | | | 48.40 | | |

Comments:

Hairline cracks and light staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|------|-------|--|------|--------------|--------|
| Element Group: | Approaches | | | | Length: | 6.10 | Width: | 8.50 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | Each approach | | | | Total Quantity: 103.70 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 2.00 | 2.00 | 99.70 | | | | |

Comments:
Severe potholes on each approach.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|--------------------------------------|
| None | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually. |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|------|-------|--|-------|--------------|--------|
| Element Group: | Barriers | | | | Length: | 20.60 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | At each barrier | | | | Total Quantity: 82.40 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | | | Subtype: | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | 82.40 | | | | |

Comments:
Light corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 21.60 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 25.92 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.80 | 0.80 | 24.32 | | |

Comments:
Severe delamination with medium stained cracking; Random light popouts; Light scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|--------------|-----------|------|
| Element Group: | Decks | | Length: | 12.00 | Width: | 9.50 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 114.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 114.00 | | |

Comments:
Partially covered with gravel; Light scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 10.70 | Width: | 10.90 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.53 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 127.97 | | | |
| Material: | | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 19.20 | 108.77 | | |

Comments:
Narrow stained cracking on exterior faces; Narrow wet pattern cracking throughout underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|---------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 4 |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:
Light corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion at abutment walls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Sediment build up throughout stream bed.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 21.70 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 34.72 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 3.80 | 3.80 | 27.12 | | |

Comments:

Severe delamination and spalling on exterior faces with medium stained cracking; Light scaling on exterior faces; Light abrasions; Isolated hairline cracking; Random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Patterson Bridge**

Structure No: **25-21**

MTO Site No: **25-21**

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 73.51

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|-----------------------|---------|-----------------------|
| Decks | Deck top | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| Barriers | Barrier/Parapet Walls | | Other |
| Decks | Drainage | | Bridge Cleaning |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|-----------------------|----------|--------------------|
| Embankments & | Embankments | Stabilize embankments | 6-10 | \$5,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$10,000.00 |
| Total Associated Work Cost | | | | \$5,000.00 |
| Total Cost | | | | \$15,000.00 |

Overall Comments

Structure is in overall good condition; Minor concrete repairs and annual maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Inventory Data

| | | | | |
|--------------------|-----------------------|--------------------|-------------------|---|
| Structure Name: | Wallaceville Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 146 | | | |
| Location: | 480m south of Line 88 | | | |
| Latitude/Northing: | 43d44'45" | Longitude/Easting: | 80d51'47" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 9.1 m | Heritage Status: | N | |
| Deck Width: | 9.8 m | Road Class: | Local | |
| Deck Area: | 89.2 m ² | Lane Type: | | |
| Trav Deck Wdt | 8.6 m | Posted Speed: | 80 Lanes: 2 | |
| Bridge Span | BS-00027 | 8.20 m | AADT: | Trucks: 0 % |
| | | | Min Vert. Clear.: | m |
| | | | No. of Spans: | 1 |
| | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck |
| | | | | <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle |
| | | | Detour Length: | 9.10 km |
| | | | | m |
| | | | Skew Angle: | 15 degrees |
| | | | Structure Dir.: | North/South |

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1969 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Field Inspection Information

Structure No.: 25-22

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition; Minor concrete repairs and annual maintenance work required.
 Comments
 BCI Change Repair poor concrete and stabilize embankments to extend life of structure.
 Justification

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|-----------------------|
| Element Group: | Abutments | Length: 10.00 Width: 3.70 | Height: 3.70 Count: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 74.00 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Conventional closed | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 1.90 |
| | | | 72.10 |
| | | | |

Comments:

Narrow wet pattern cracking; Light scaling and honeycombing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|-----------------------|
| Element Group: | Abutments | Length: 6.10 Width: 2.90 | Height: 2.90 Count: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 70.76 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Wingwalls | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 70.76 |
| | | | |

Comments:

Isolated hairline to narrow stained cracking; Light scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|----------|-------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 6.10 | Width: | 8.60 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | Each approach | | | | Total Quantity: 104.92 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 3.00 | 3.00 | 98.92 | | | | |

Comments:

Severe potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|----------------------------------|
| None | Bridge Surface Repair | 1 Year | Grade gravel approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|----------|-------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 19.40 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 2 |
| Location: | At each barrier | | | | Total Quantity: 38.80 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | 38.80 | | | | |

Comments:

Light corrosion throughout railings and posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 20.30 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 24.36 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.60 | 23.76 | | |

Comments:
 Light spall at northwest corner; Narrow to medium vertical stained cracking; Light salt / rust staining; Empty steel conduit on east exterior face.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------------|
| None | Other | 2 Year | Remove conduit from east barrier |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|--------------|-----------|------|
| Element Group: | Decks | | Length: | 9.10 | Width: | 9.50 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 86.45 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.90 | 85.55 | | |

Comments:
 Light to medium scaling and abrasions of partially exposed portion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 8.20 | Width: | 10.00 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.43 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 89.05 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 2.09 | 3.25 | 83.71 | | |

Comments:

Severe delamination and spalling on underside; Exposed corroded rebar chairs on underside; Isolated hairline to narrow cracks throughout underside; One medium crack with moisture and rust staining on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Decks - Drainage

| | | | | | | |
|-----------------|---------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 4 | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Southwest drain plugged with debris.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------|
| None | Bridge Cleaning | 1 Year | Clean deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 3.00 | 1.00 | |

Comments:

Light erosion of northwest embankment; Medium erosion of all others.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Stabilize embankments |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutment | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Top of footing partially visible at north end; Assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 20.50 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 32.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 2.00 | 4.00 | 26.80 | | |

Comments:

Random light popouts; Narrow to wide vertical stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Wallaceville Bridge**

Structure No: **25-22**

MTO Site No: **25-22**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|-----------------------|----------|--------------------|
| Embankments & | Embankments | Stabilize embankments | 6-10 | \$5,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$10,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|--------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization | 2,000.00 |
| Contingencies | 10% | 1,000.00 |
| Engineering | | 2,000.00 |
| Total Associated Work Cost | | 5,000.00 |
| Total Repair/Rehabilitation Cost | | 10,000.00 |
| Total Cost | | 15,000.00 |

Summary Action Report

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Inspection Date: 11/15/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Condition Index Value (BCI) 52.86

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|-------------|---------|------------------------|
| Embankments & Streams | Embankments | | Unstable embankments |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------|--|----------|------------|
| Culverts | Barrels | Repair poor concrete at ends | 1-5 | \$40,000 |
| Culverts | Barrels | Place extensions at each end | 1-5 | \$80,000 |
| Decks | Wearing surface | Remove asphalt, waterproof barrel and repave | 1-5 | \$15,000 |

| | |
|----------------------------------|---------------------|
| Total Repair/Rehabilitation Cost | \$135,000.00 |
| Total Associated Work Cost | \$60,000.00 |
| Total Cost | \$195,000.00 |

Overall Comments

Structure is in overall fair condition; Major concrete repairs and culvert extensions required at each end.

Municipal Structure Inspection Form

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Inventory Data

| | | | | |
|--------------------|------------------------|--------------------|-------------------|--|
| Structure Name: | Salter Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 88 | | | |
| Location: | 540m east of Road 146 | | | |
| Latitude/Northing: | 43d44'49" | Longitude/Easting: | 80d51'16" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | BO - Box, Open Footing | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 8.6 m | Heritage Status: | N | |
| Deck Width: | 12.2 m | Road Class: | Local | |
| Deck Area: | 104.9 m ² | Lane Type: | | |
| Trav Deck Wdt | 7.0 m | Posted Speed: | 80 Lanes: 2 | |
| Bridge Span | BS-00026 | 7.60 m | AADT: | Trucks: 0 % |
| | | | Min Vert. Clear.: | m |
| | | | No. of Spans: | 1 |
| | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck |
| | | | | <input type="checkbox"/> School <input type="checkbox"/> Bicycle |
| | | | Detour Length: | 9.10 km |
| | | | | m |
| | | | Skew Angle: | 0 degrees |
| | | | Structure Dir.: | East/West |

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1960 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Field Inspection Information

Structure No.: 25-23

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 52.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall fair condition; Major concrete repairs and culvert extensions required at each end.

Comments

BCI Change Repair poor concrete to extend life of structure; Place extensions at each end to improve embankments and safety at structure.
 Justification

Municipal Structure Inspection Form

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Element Data

Culverts - Barrels

Element Group:

Element Name:

Location:

Material:

Element Type:

Prot. System:

Length: 12.20 Width: 7.60
 Height: 2.20 Count: 1
 Total Quantity: 146.40

Subtype:

Environment:

Limited Inspected

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|-------|-------|-------|-----------|
| | m2 | 26.30 | 32.40 | 87.70 | |

Comments:

Severe delamination and spalling with exposed corroded rebar, wide cracks with efflorescence, rust staining and stalactites, severe disintegration all at each end; Concrete patches throughout barrel; Medium to severe honeycombing and hairline to narrow stained cracks on legs of barrel; Narrow wet pattern cracking and exposed corroded rebar chairs on interior soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 40,000.00 | Repair poor concrete at ends |
| | 1-5 yrs | 80,000.00 | Place extensions at each end |

Decks - Wearing surface

Element Group:

Element Name:

Location:

Material:

Element Type:

Prot. System:

Length: 8.60 Width: 7.00
 Height: Count: 1
 Total Quantity: 60.20

Subtype:

Environment:

Limited Inspected

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|----------------|-------|-------|------|-----------|
| | m ² | 28.00 | 32.20 | | |

Comments:

Wide longitudinal and transverse cracking with alligatoring; Several patches; Medium progressive edge cracking; Wide longitudinal crack along centreline.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Remove asphalt, waterproof barrel and repave |

Municipal Structure Inspection Form

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 4.00 | | | | |

Comments:
Severe erosion of all embankments, encroaching into stream at ends of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Unstable embankments | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
 Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salter Bridge**

Structure No: **25-23**

MTO Site No: **25-23**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|--|----------|---------------------|
| Culverts | Barrels | Repair poor concrete at ends | 1-5 | \$40,000 |
| Culverts | Barrels | Place extensions at each end | 1-5 | \$80,000 |
| Decks | Wearing surface | Remove asphalt, waterproof barrel and repave | 1-5 | \$15,000 |
| Total Repair/Rehabilitation Cost | | | | \$135,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 20,000.00 |
| Contingencies | 10% | 15,000.00 |
| Engineering | | 20,000.00 |
| Total Associated Work Cost | | 60,000.00 |
| Total Repair/Rehabilitation Cost | | 135,000.00 |
| Total Cost | | 195,000.00 |

Summary Action Report

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Inspection Date: 11/22/2013 mm/dd/yyyy
Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.88

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|----------|----------------------------|------------------|
| Decks | Deck top | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 78 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 78 | | | | |
| Location: | 505m east of Road 172 | | | | |
| Latitude/Northing: | 43d42'55" | Longitude/Easting: | 81d03'47" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BT - Box/Trapezoidal | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 27.4 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 9.3 m | | m | Structure Dir.: | East/West |
| Deck Area: | 254.8 m ² | | | | |
| Trav Deck Wdt | 7.5 m | | | | |

Bridge Span BS-00060 20.50 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1990 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro
 Structure No: 25-24
 MTO Site No: 25-24

Field Inspection Information

Structure No.: 25-24

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 8.70 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Height: 2.00 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 34.80 | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 34.80 |
| | | | Excellent |

Comments:

Isolated hairline cracking; Narrow vertical cracking above weep holes.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 5.10 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 1.80 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 36.72 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 36.72 |
| | | | Excellent |

Comments:

Isolated hairline cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro
 Structure No: 25-24
 MTO Site No: 25-24

Approaches - Wearing surface

| | | | | | | |
|-----------------|------------------|----------|--|-------|--------------|--------|
| Element Group: | Approaches | | Length: | 5.10 | Width: | 7.50 |
| Element Name: | Wearing surface | | Height: | | Count: | 2 |
| Location: | At each approach | | Total Quantity: 76.50 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing Surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 76.50 | | |

Comments:

Light potholes throughout,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|----------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 35.00 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.82 | Count: | 2 |
| Location: | Each side | | Total Quantity: 57.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with single railing | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.80 | 56.60 | | |

Comments:

Random light popouts, some with exposed corroded form ties; Light to medium abrasions at ends; Bug holes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro
 Structure No: 25-24
 MTO Site No: 25-24

Barriers - Hand Railings

| | | | |
|-----------------|------------------------|-----------------------|---------------------|
| Element Group: | Barriers | Length: 33.40 | Width: 2 |
| Element Name: | Hand Railings | | |
| Location: | At each barrier | Height: 66.80 | Count: 2 |
| Material: | Cast-in-place concrete | | |
| Element Type: | Single hand railing | Total Quantity: 66.80 | |
| Prot. System: | Hot dip galvanizing | Subtype: | Environment: Severe |
| Condition Data: | Units | Poor | Fair |
| | m | | Good 66.80 |
| | | | Excellent |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

| | | | |
|-----------------|--------------------------|------------------------|---------------------|
| Element Group: | Beams/MLEs | Length: 27.50 | Width: 1.20 |
| Element Name: | Girders | | |
| Location: | Below deck top | Height: 556.05 | Count: 7 |
| Material: | Precast concrete | | |
| Element Type: | Box/trapezoidal - Girder | Total Quantity: 558.25 | |
| Prot. System: | None | Subtype: | Environment: Benign |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 556.05 |
| | | | Excellent |

Comments:
 Hairline to narrow horizontal cracking on exterior faces; Isolated hairline cracks throughout; Efflorescence and rust staining on faces of girders at joint locations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro
 Structure No: 25-24
 MTO Site No: 25-24

Decks - Deck top

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Decks | Length: 27.40 | Width: 9.00 |
| Element Name: | Deck top | | |
| Location: | All | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 246.60 | |
| Element Type: | Deck top | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 246.60 |
| | | | Excellent |

Comments:
 Light scaling and abrasions; Hairline to narrow longitudinal cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thin Slab

| | | | |
|-----------------|------------------------------|---|---------------------|
| Element Group: | Decks | Length: 25.50 | Width: 9.30 |
| Element Name: | Soffit-Thin Slab | | |
| Location: | Underside and exterior faces | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 243.02 | |
| Element Type: | Soffit - Thin Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 1.20 |
| | | | Excellent 241.82 |

Comments:
 Medium stained cracks on exterior faces at joints.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Slope Protection

| | | | | | | |
|-----------------|-----------------------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Slope Protection | | | | Height: | Count: 1 |
| Location: | At each abutment | | | | Total Quantity: 1.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Hand laid riprap slope protection | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 35.00 | Width: | 0.90 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 77.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.20 | 1.45 | 75.35 | | |

Comments:
 Random light to medium popouts and abrasions; Severe abrasion at northeast end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 78 - Bridge between Road 172 and Ro

Structure No: 25-24

MTO Site No: 25-24

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin
 Structure No: 25-25
 MTO Site No: 25-25

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 69.50
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Decks | Wearing surface | | Rough riding surface |
| Approaches | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|-----------------------|
| Decks | Wearing surface | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|--------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$20,000 |
| Embankments & | Streams and Waterways | Place rock protection along south abutment | 6-10 | \$5,000 |
| Decks | Wearing surface | Waterproof and repave over structure | 6-10 | \$15,000 |
| Total Repair/Rehabilitation Cost | | | | \$50,000.00 |
| Total Associated Work Cost | | | | \$25,000.00 |
| Total Cost | | | | \$75,000.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work and rehabilitation work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 169 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 169 | | | | |
| Location: | 240m south of Line 81 | | | | |
| Latitude/Northing: | 43d43'16" | Longitude/Easting: | 81d02'09" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 15.1 m | Detour Length: | 6.80 km | Skew Angle: | 0 degrees |
| Deck Width: | 8.5 m | | m | Structure Dir.: | North/South |
| Deck Area: | 128.4 m2 | | | | |
| Trav Deck Wdt | 7.3 m | | | | |

Bridge Span BS-00062 13.70 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1965 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Field Inspection Information

Structure No.: 25-25

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 69.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work and rehabilitation work required.

Comments

BCI Change Repair poor concrete to extend life of structure.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Element Data

Abutments - Abutment walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 8.40 Width:
 Height: 2.30 Count: 2
 Total Quantity: 38.64

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m2 | 1.80 | 4.20 | 32.64 | |

Environment:
 Limited Inspected

Comments:

Light scaling; Cold joint across south abutment; Sections of light erosion / disintegration on south abutment; Active wet areas from deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
| None | None | None | |

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
| None | | | |

None

None

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 2.80 Width:
 Height: 2.30 Count: 4
 Total Quantity: 25.76

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m2 | | 4.00 | 21.76 | |

Environment:
 Limited Inspected

Comments:

Narrow to medium stained pattern cracks with efflorescence at corners; Random hairline to narrow cracks throughout; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
| None | None | None | |

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
| None | | | |

None

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|------------------|-------|----------|------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 2.30 | Width: | 7.30 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | At each approach | | | | Total Quantity: 33.58 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 33.58 | | | | | | |

Comments:

Large severe potholes and ponding water.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Railing Systems

| | | | | | | | | |
|-----------------|--------------------------------------|------|----------|-------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 19.40 | Width: | |
| Element Name: | Railing Systems | | | | Height: | | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 38.80 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | 3.90 | 5.80 | 29.10 | | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar; Light to severe scaling and disintegration; Narrow to wide stained cracks; Several concrete patches.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin
 Structure No: 25-25
 MTO Site No: 25-25

Decks - Deck top

| | | |
|-----------------|---|---|
| Element Group: | Decks | Length: 15.10 Width: 8.20 Height: Count: 1 |
| Element Name: | Deck top | |
| Location: | All | Total Quantity: 123.82 |
| Material: | Cast-in-place concrete | |
| Element Type: | Deck top | Subtype: <input type="text"/> |
| Prot. System: | Waterproof and paving with AC overlay | Environment: Moderate |
| Condition Data: | Units Poor Fair Good Excellent | <input checked="" type="checkbox"/> Limited Inspected |
| | m2 <input type="text"/> <input type="text"/> <input type="text"/> 123.82 <input type="text"/> | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | |
|-----------------|---|--|
| Element Group: | Decks | Length: 13.70 Width: 8.40 Height: 0.65 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 132.89 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: Benign |
| Condition Data: | Units Poor Fair Good Excellent | <input type="checkbox"/> Limited Inspected |
| | m2 <input type="text"/> 5.30 <input type="text"/> 7.40 <input type="text"/> 120.19 <input type="text"/> | |

Comments:

Severe disintegration on east face; Narrow to medium stained cracks with efflorescence on exterior faces; Narrow crack along underside centreline; Light honeycombing; Active wet areas on underside from drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 20,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin
 Structure No: 25-25
 MTO Site No: 25-25

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|----------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: 6 | |
| Location: | Each side of deck | | Total Quantity: 6.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 6.00 | | | |

Comments:

All drains plugged with debris.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 15.10 | Width: | 7.30 |
| Element Name: | Wearing surface | | Height: | Count: | | 1 |
| Location: | Over deck top | | Total Quantity: 110.23 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 14.60 | 95.63 | | |

Comments:

Light abrasions; Medium settlement at approaches causing water ponding and rough riding surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------------|
| Rough riding surface | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 15,000.00 | Waterproof and repave over structure |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin
 Structure No: 25-25
 MTO Site No: 25-25

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Stream is severely out of alignment with structure causing severe scour along south abutment and aggradation along north abutment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Place rock protection along south abutment |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 19.60 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | Total Quantity: 33.32 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.40 | 1.20 | 31.72 | | |

Comments:

Light to medium scaling; Narrow stained cracking on exterior faces; Light abrasions and popouts; One section of severe abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 81 and Lin

Structure No: 25-25

MTO Site No: 25-25

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|--------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$20,000 |
| Embankments & | Streams and Waterways | Place rock protection along south abutment | 6-10 | \$5,000 |
| Decks | Wearing surface | Waterproof and repave over structure | 6-10 | \$15,000 |
| Total Repair/Rehabilitation Cost | | | | \$50,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 7,000.00 |
| Contingencies | 10% | 5,000.00 |
| Engineering | | 10,000.00 |
| Total Associated Work Cost | | 25,000.00 |
| Total Repair/Rehabilitation Cost | | 50,000.00 |
| Total Cost | | 75,000.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

Inspection Date: 11/22/2013 mm/dd/yyyy
Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.86

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|----------|----------------------------|------------------|
| Decks | Drainage | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

| Inventory Data | | | |
|--------------------|--------------------------------------|--------------------|---|
| Structure Name: | North Perth Road 169 - Bridge betwee | Hwy No. | |
| Crossing Over: | Navigable Water | Crossing Under: | |
| Road Name: | North Perth Road 169 | | |
| Location: | 1050m south of Line 84 | | |
| Latitude/Northing: | 43d43'49" | Longitude/Easting: | 81d01'40" |
| Owner: | North Perth 100.00% | Heritage Status: | N |
| MTO Region: | 30-Southwestern | Road Class: | Collector |
| MTO District: | 33-Owen Sound | Lane Type: | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m |
| Material: | C - CIP Concrete | No. of Spans: | 1 |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle |
| Deck Length: | 20.0 m | Detour Length: | 8.30 km |
| Deck Width: | 9.9 m | | m |
| Deck Area: | 198.0 m2 | Skew Angle: | 20 degrees |
| Trav Deck Wdt | 8.7 m | Structure Dir.: | North/South |

Bridge Span BS-00066 19.90 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1970 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin
 Structure No: 25-26
 MTO Site No: 25-26

Field Inspection Information

Structure No.: 25-26

Inspection Date: 11/22/2013 Inspection Type OSIM Enhanced OSIM BCI: 74.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

Element Data

Abutments - Abutment walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 10.20 Width:
 Height: 2.80 Count: 2
 Total Quantity: 57.12

Condition Data: **Units** **Poor** **Fair** **Good** **Excellent**

Environment:
 Limited Inspected

Comments:

Light honeycombing; Hairline to narrow cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.10 Width:
 Height: 2.80 Count: 4
 Total Quantity: 68.32

Condition Data: **Units** **Poor** **Fair** **Good** **Excellent**

Environment:
 Limited Inspected

Comments:

Light scaling throughout; Light staining at joints; Medium stained cracks at joints.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 30.90 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 4 |
| Location: | At each barrier | | Total Quantity: 123.60 | | | |
| Material: | Steel | | | | | |
| Element Type: | Double hand railing | Subtype: | | Environment: | Severe | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 123.60 | | |

Comments:

Light corrosion; One bolt missing on east side.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 31.90 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 38.28 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.40 | 1.20 | 36.68 | | |

Comments:

Light scaling, popouts and salt staining throughout; Several concrete patches; Severe disintegration on northeast and southwest end posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin
 Structure No: 25-26
 MTO Site No: 25-26

Decks - Deck top

| | | |
|-----------------|--|---|
| Element Group: | Decks | Length: 20.00 Width: 9.60 Height: Count: 1 |
| Element Name: | Deck top | |
| Location: | All | Total Quantity: 192.00 |
| Material: | Cast-in-place concrete | |
| Element Type: | Deck top | Subtype: <input type="text"/> |
| Prot. System: | Waterproof and paving with AC overlay | Environment: <input type="text"/> Moderate |
| Condition Data: | Units: <input type="text"/> m2 Poor: <input type="text"/> Fair: <input type="text"/> Good: <input type="text"/> 192.00 Excellent: <input type="text"/> | <input checked="" type="checkbox"/> Limited Inspected |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | |
|-----------------|--|---|
| Element Group: | Decks | Length: 19.90 Width: 10.40 Height: 0.98 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 245.96 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units: <input type="text"/> m2 Poor: <input type="text"/> Fair: <input type="text"/> Good: <input type="text"/> 245.96 Excellent: <input type="text"/> | <input type="checkbox"/> Limited Inspected |

Comments:

Light scaling and staining on exterior faces; Hairline to narrow cracking with efflorescence on exterior faces; Light honeycombing and hairline wet pattern cracing on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 8 |
| Location: | Each side of deck | | Total Quantity: 8.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 8.00 | | |

Comments:

Drains are plugged with debris; Drains don't extend to meet surface asphalt grade; Light corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | Bridge Cleaning | 1 Year | Clean debris out of deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 32.00 | Width: | 8.70 |
| Element Name: | Wearing surface | | Height: | Count: | | 1 |
| Location: | Over deck top | | Total Quantity: 278.40 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 8.70 | | 269.70 | | |

Comments:

Wide transverse cracking at approaches; Light settlement at north approach.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin
 Structure No: 25-26
 MTO Site No: 25-26

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

Medium erosion around ends of curb.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Sediment build up at northwest corner; Light erosion at northeast corner - encroaching on abutment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin
 Structure No: 25-26
 MTO Site No: 25-26

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 32.00 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 51.20 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 51.20 | | |

Comments:

Light abrasions and popouts; Light scaling and staining on exterior faces; Hairline cracks throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 84 and Lin

Structure No: 25-26

MTO Site No: 25-26

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 84 - Bridge between Road 169 and Road 171
Structure No: 25-27
MTO Site No: 25-27

Inspection Date: 1/15/2014 mm/dd/yyyy Condition Index Value (BCI) 74.79
Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|---------|---------|---|
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| | | | Total Associated Work Cost \$45,000.00 |
| | | | Total Cost \$45,000.00 |

Overall Comments

Structure is in overall good condition; Some minor maintenance work required and guide rail installation should be considered on approaches.

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

| Inventory Data | | | | | | | | | |
|--------------------|---|--------------------|-----------------|-----------|--|--|--|--|--|
| Structure Name: | North Perth Line 84 - Bridge between | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Navigable Water | Crossing Under: | | | | | | | |
| Road Name: | North Perth Line 84 | | | | | | | | |
| Location: | 1060m east of Road 169 | | | | | | | | |
| Latitude/Northing: | 43d44'02" | Longitude/Easting: | 81d00'36" | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Elma | | | | | | | | |
| Structure Type: | RF - Rigid Frame | | | | | | | | |
| Material: | C - CIP Concrete | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 18.3 m | | | | | | | | |
| Deck Width: | 9.6 m | | | | | | | | |
| Deck Area: | 175.7 m ² | | | | | | | | |
| Trav Deck Wdt | 8.0 m | | | | | | | | |
| Heritage Status: | N | | | | | | | | |
| Road Class: | Local | | | | | | | | |
| Lane Type: | | | | | | | | | |
| Posted Speed: | 80 | Lanes: | 2 | | | | | | |
| AADT: | | Trucks: | 0 % | | | | | | |
| Min Vert. Clear.: | m | | | | | | | | |
| No. of Spans: | 1 | | | | | | | | |
| Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | | | |
| Detour Length: | 8.10 km | | Skew Angle: | 0 degrees | | | | | |
| | m | | Structure Dir.: | East/West | | | | | |

Bridge Span BS-00073 18.30 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1987 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro
 Structure No: 25-27
 MTO Site No: 25-27

Field Inspection Information

Structure No.: 25-27

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 74.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, snow Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall good condition; Some minor maintenance work required and guide rail installation should be considered on approaches.

BCI Change Justification Due to large, steep embankments, guide rail should be installed on approaches to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Element Data

Abutments - Abutment walls

| | | |
|-----------------|------------------------|--|
| Element Group: | Abutments | Length: 9.10 Width: 2 Height: 3.50 Count: 2 |
| Element Name: | Abutment walls | |
| Location: | Each end | Total Quantity: 63.70 |
| Material: | Cast-in-place concrete | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Excellent |
| | m2 | <input type="checkbox"/> Limited Inspected |
| | | 63.70 |

Comments:

Hairline to narrow stained vertical cracks; Cold joints.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | |
|-----------------|------------------------|--|
| Element Group: | Abutments | Length: 6.70 Width: 4 Height: 3.10 Count: 4 |
| Element Name: | Wingwalls | |
| Location: | Each quadrant | Total Quantity: 83.08 |
| Material: | Cast-in-place concrete | |
| Element Type: | Wingwalls | Subtype: <input type="text"/> |
| Prot. System: | | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Excellent |
| | m2 | <input type="checkbox"/> Limited Inspected |
| | | 83.08 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Barriers - Hand Railings

| | | | | | | |
|-----------------|----------------------|----------|--|--------|--------------|--------|
| Element Group: | Barriers | | Length: | 30.50 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 4 |
| Location: | On each barrier wall | | Total Quantity: 122.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Double hand railing | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 122.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|---|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 31.50 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.70 | Count: | 2 |
| Location: | Each side | | Total Quantity: 44.10 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 44.10 | | |

Comments:

Hairline to narrow stained pattern cracking; Random light popouts; Light salt staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Decks - Deck top

| | | |
|-----------------|---|---|
| Element Group: | Decks | Length: 18.30 Width: 9.30 Height: Count: 1 |
| Element Name: | Deck top | |
| Location: | All | Total Quantity: 170.19 |
| Material: | Cast-in-place concrete | |
| Element Type: | Deck top | Subtype: <input type="text"/> |
| Prot. System: | Waterproof and paving with AC overlay | Environment: Moderate |
| Condition Data: | <input type="text"/> Units <input type="text"/> Poor <input type="text"/> Fair <input type="text"/> Good <input type="text"/> Excellent | <input checked="" type="checkbox"/> Limited Inspected |
| | <input type="text"/> m2 <input type="text"/> <input type="text"/> <input type="text"/> 170.19 <input type="text"/> | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | |
|-----------------|---|---|
| Element Group: | Decks | Length: 18.30 Width: 9.10 Height: 0.90 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 199.47 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: Benign |
| Condition Data: | <input type="text"/> Units <input type="text"/> Poor <input type="text"/> Fair <input type="text"/> Good <input type="text"/> Excellent | <input checked="" type="checkbox"/> Limited Inspected |
| | <input type="text"/> m2 <input type="text"/> <input type="text"/> 1.60 <input type="text"/> 197.87 <input type="text"/> | |

Comments:

Light staining and wet areas on exterior faces at joint locations

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Decks - Drainage

| | | | | | |
|-----------------|---------------------|--|--------|----------------------|-----------|
| Element Group: | Decks | Length: | Width: | Count: | 4 |
| Element Name: | Drainage | | | | |
| Location: | Each side of deck | Height: | | Total Quantity: 4.00 | |
| Material: | Steel | Subtype: | | Environment: Severe | |
| Element Type: | Steel drain pipes | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | Hot dip galvanizing | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

Light corrosion at surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|--------|------------------------|-----------|
| Element Group: | Decks | Length: | Width: | Count: | 8.00 |
| Element Name: | Wearing surface | | | | |
| Location: | Over deck top | Height: | | Total Quantity: 252.80 | |
| Material: | Asphalt | Subtype: | | Environment: Severe | |
| Element Type: | Wearing surface | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | 0.60 | 12.00 | 240.20 | |

Comments:

Narrow longitudinal cracking at east end; Medium settlements with medium cracking and patches at end of deck; Light wheel track rutting

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro
 Structure No: 25-27
 MTO Site No: 25-27

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|---|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 31.60 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | Total Quantity: 47.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.80 | 2.20 | 44.40 | | |

Comments:

Hairline to medium full width cracks; Random light popouts; One section with light delamination; Light scaling and staining on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curbs annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 3.00 | 1.00 | |

Comments:

3 signs are bent.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 84 - Bridge between Road 169 and Ro

Structure No: 25-27

MTO Site No: 25-27

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|--|------------------|
| Approaches | Install steel bea guide rail on approaches | 30,000.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 4,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 45,000.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 45,000.00 |

Summary Action Report

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro:
 Structure No: 25-28
 MTO Site No: 25-28

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 66.86
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|---|----------|---------------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 6-10 | \$18,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 6-10 | \$27,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$20,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$75,000.00 |
| Total Associated Work Cost | | | | \$75,000.00 |
| Total Cost | | | | \$150,000.00 |

Overall Comments

Structure is in overall fair condition; Major rehabilitation work required including railing system and curb replacement, steel beam guide rail on approaches and concrete repairs.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-----------|
| Structure Name: | North Perth Line 81 - Bridge between | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Line 81 | | | | | | | | |
| Location: | 75m east of Road 169 | | | | | | | | |
| Latitude/Northing: | 43d43'21" | | | Longitude/Easting: | 81d02'00" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Collector | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | RF - Rigid Frame | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 14.0 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 8.6 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 120.4 m2 | | | | m | | | Structure Dir.: | East/West |
| Trav Deck Wdt | 7.5 m | | | | | | | | |

Bridge Span BS-00063 13.80 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1955 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro
 Structure No: 25-28
 MTO Site No: 25-28

Field Inspection Information

Structure No.: 25-28

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 66.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major rehabilitation work required including railing system and curb replacement, steel beam guide rail on approaches and concrete repairs.

BCI Change Justification Replace concrete curb and railing system with box beam guide rail and install steel beam guide rail on approaches to improve vehicle safety; Repair poor concrete to extend life of structure.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Abutments | Length: 8.40 | Width: 2 | | |
| Element Name: | Abutment walls | | | Height: 2.40 | Count: 2 |
| Location: | Each end | Total Quantity: 40.32 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 1.20 | 1.20 | 37.92 | |

Comments:

Wide vertical crack with efflorescence at the middle of each abutment; Light scaling throughout; Active wet areas from drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|------|--|--|--|
| None | | | |
|------|--|--|--|

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Abutments | Length: 2.50 | Width: 4 | | |
| Element Name: | Wingwalls | | | Height: 2.40 | Count: 4 |
| Location: | Each quadrant | Total Quantity: 24.00 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 1.20 | 2.40 | 20.40 | |

Comments:

Areas of narrow to medium cracking with efflorescence, some with medium delamination; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|--|------|----------|----------------------|
| | 6-10 | 5,000.00 | Repair poor concrete |
|--|------|----------|----------------------|

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro
 Structure No: 25-28
 MTO Site No: 25-28

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 18.60 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 37.20 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 3.70 | 7.40 | 26.10 | | |

Comments:

Severe delamination and spalling with exposed corroded rebar; Sections of severe disintegration; Medium to wide transverse cracks through rails; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 27,000.00 | Replace railing system with box beam guide rail |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|------|---|--------|--------------|----------|
| Element Group: | Decks | | Length: | 14.00 | Width: | 8.30 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 116.20 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Moderate |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 116.20 | | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 13.80 | Width: | 8.40 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.68 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 134.69 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 12.80 | 16.10 | 105.79 | | |

Comments:

Severe delamination, spalling and disintegration with narrow to wide cracks with efflorescence and stalactites on south face; Light scaling with efflorescence on north face; Wide full length crack along centreline cold joint of underside with light spalls; Light honeycombing and exposed corroded rebar chairs throughout underside; Active wet areas at deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 20,000.00 | Repair poor concrete |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 4 |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 4.00 | | | | |

Comments:

2 drains are plugged; Drains do not extend below soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 18.60 Width: 7.50
 Height: Count: 1
 Total Quantity: 139.50

Condition Data:

Comments:

Wide transverse crack at west end; Light settlement at west end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: Width:
 Height: Count: 4
 Total Quantity: 4.00

Condition Data:

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|-------|--------------|--|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 18.60 | Width: | 0.55 |
| Element Name: | Curbs | | | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 29.76 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 6.40 | 12.80 | 10.56 | | | | |

Comments:

Severe delamination, spalling and disintegration with narrow to medium stained pattern cracking on south exterior; Light to severe popouts; Light scaling and narrow cracks throughout; Light abrasions on interior faces; Narrow stained pattern cracks on top of south curb with severe delaminations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 18,000.00 | Remove and replace curb |

Signs - Signs

| | | | | | | | | |
|-----------------|------------------|----------|------|--------------|--|--|--------|---|
| Element Group: | Signs | | | | Length: | | Width: | |
| Element Name: | Signs | | | | Height: | | Count: | 4 |
| Location: | At each approach | | | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Hazard markers | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | Each | | | 4.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 169 and Ro

Structure No: 25-28

MTO Site No: 25-28

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-------------------|---|----------|------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 6-10 | \$18,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 6-10 | \$27,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$20,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$5,000 |

Total Repair/Rehabilitation Cost **\$75,000.00**

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---|-------------------|
| Approaches | Install steel beam guide rail on approaches | 30,000.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 5,000.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 9,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 20,000.00 |
| Total Associated Work Cost | | 75,000.00 |
| Total Repair/Rehabilitation Cost | | 75,000.00 |
| Total Cost | | 150,000.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin
 Structure No: 25-29
 MTO Site No: 25-29

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/22/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 74.90 |
| Next Biennial Inspection: | 11/22/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Approaches | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|---------------|-----------------|---------|----------------------------|---------------|
| Decks | Deck top | | Bridge Cleaning | |
| Approaches | Wearing surface | | Bridge Surface Repair | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 169 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 169 | | | | | | | | |
| Location: | 1050m south of Line 78 | | | | | | | | |
| Latitude/Northing: | 43d41'55" | | | Longitude/Easting: | 81d02'11" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | RF - Rigid Frame | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 9.9 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 9.3 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 92.1 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 7.6 m | | | | | | | | |

Bridge Span BS-00059 8.90 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1990 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin
 Structure No: 25-29
 MTO Site No: 25-29

Field Inspection Information

Structure No.: 25-29

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|-----------------------|
| Element Group: | Abutments | Length: 9.00 Width: 2.60 | Height: 2.60 Count: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 46.80 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 46.80 |
| | | | Excellent |

Comments:

Random hairline cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|-----------------------|
| Element Group: | Abutments | Length: 4.90 Width: 2.40 | Height: 2.40 Count: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 47.04 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 47.04 |
| | | | Excellent |

Comments:

Random hairline cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Approaches - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 4.40 Width: 7.60
 Height: Count: 2
 Total Quantity: 66.88

Condition Data:

Comments:

Light to severe potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 16.80 Width: 4
 Height: Count: 4
 Total Quantity: 67.20

Condition Data:

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 18.60 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.70 | Count: | 2 |
| Location: | Each side | | Total Quantity: 26.04 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.10 | 0.40 | 25.54 | | |

Comments:

Light salt staining; Hairline stained pattern cracking; Isolated hairline cracks; Random light popouts; Severe abrasion on west exterior.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 9.90 | Width: | 9.00 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 89.10 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 89.10 | | |

Comments:

Light abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 8.90 | Width: | 9.00 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.45 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 88.11 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 88.11 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 4 | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light corrosion at surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin
 Structure No: 25-29
 MTO Site No: 25-29

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 18.70 | Width: | 0.85 |
| Element Name: | Curbs | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | Total Quantity: 41.14 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 41.14 | | |

Comments:

Light abrasions at ends.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 78 and Lin

Structure No: 25-29

MTO Site No: 25-29

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 75 - Bridge between Road 169 and Road 171
 Structure No: 25-30
 MTO Site No: 25-30

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 48.60
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Decks | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|---------------------|
| | | Install steel beam guide rail over structure | 1-5 | \$30,000 |
| Culverts | Barrels | Repair poor concrete | 1-5 | \$30,000 |
| Culverts | Barrels | Place extensions at each end | 1-5 | \$70,000 |
| Sidewalks/curbs | Curbs | Remove curbs | 1-5 | \$5,000 |
| Embankments & | Streams and Waterways | Place rock protection along culvert legs | 1-5 | \$5,000 |
| Decks | Wearing surface | Waterproof and repave over culvert | 1-5 | \$15,000 |
| Abutments | Wingwalls | Remove wingwalls | 1-5 | \$5,000 |
| | | Perform a concrete substructure condition survey to determine condition of existing concrete in barrel | 1-5 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$165,000.00 |
| Total Associated Work Cost | | | | \$60,000.00 |
| Total Cost | | | | \$225,000.00 |

Overall Comments

Structure is in overall poor condition; Major rehabilitation work is required including concrete repairs, new extensions at each end and steel beam guide rail installation. A concrete substructure condition survey should be performed on the existing barrel to confirm that the existing concrete is sufficient for extensions and to determine the feasibility of rehabilitation vs. replacement.

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Ro

Structure No: 25-30

MTO Site No: 25-30

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|------------|
| Structure Name: | North Perth Line 75 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 75 | | | | |
| Location: | 780m west of Road 166 | | | | |
| Latitude/Northing: | 43d41'09" | Longitude/Easting: | 81d02'06" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 7.3 m | Detour Length: | 8.10 km | Skew Angle: | 25 degrees |
| Deck Width: | 7.9 m | | m | Structure Dir.: | East/West |
| Deck Area: | 57.7 m2 | | | | |
| Trav Deck Wdt | 6.1 m | | | | |

Bridge Span BS-00058 6.50 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1960 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Road 171
 Structure No: 25-30
 MTO Site No: 25-30

Field Inspection Information

Structure No.: 25-30

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 48.6
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5,000.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 5,000.00 |

Investigation Comments

CSCS: Perform a concrete substructure condition survey to determine condition of existing concrete in barrel

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall poor condition; Major rehabilitation work is required including concrete repairs, new extensions at each end and steel beam guide rail installation. A concrete substructure condition survey should be performed on the existing barrel to confirm that the existing concrete is sufficient for extensions and to determine the feasibility of rehabilitation vs. replacement.

BCI Change Justification Repair poor concrete to extend life of structure; Remove curb and wingwalls, place extensions at each end and install guide rail over structure to improve embankments and vehicle safety at structure.

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Ro

Structure No: 25-30

MTO Site No: 25-30

Element Data

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 4.00 Width:
 Height: 2.50 Count: 4
 Total Quantity: 40.00

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|-------|-------|-------|-----------|
| m2 | 14.20 | 14.20 | 11.60 | |

Comments:

Severe delamination and spalling with wide stained cracking with efflorescence; Light to severe scaling and disintegration.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Remove wingwalls |

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 8.70 Width: 6.50
 Height: 3.10 Count: 1
 Total Quantity: 110.49

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|-------|-------|-------|-----------|
| m2 | 19.10 | 25.30 | 66.09 | |

Comments:

Severe delamination, spalling, exposed corroded rebar and disintegration with narrow to wide stained cracking with efflorescence at each end and face; Narrow to medium stained vertical cracks on legs; Severe erosion with narrow horizontal stained cracks and light delamination on legs at water level; Hairline wet cracks and exposed corroded rebar chairs on soffit;

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 30,000.00 | Repair poor concrete |
| | 1-5 yrs | 70,000.00 | Place extensions at each end |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Ro
 Structure No: 25-30
 MTO Site No: 25-30

Decks - Wearing surface

| | | | | | | |
|-----------------|------------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | 7.30 | Width: | 6.10 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over culvert | | Total Quantity: 44.53 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wearing surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 44.53 | | | |

Comments:

Medium settlement with patching at transitions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| Rough riding surface | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Waterproof and repave over culvert |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|------|--------------|--------|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Embankments are very steep and are eroding around wingwalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Ro

Structure No: 25-30

MTO Site No: 25-30

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | 1.00 | | |

Comments:

Severe scouring of stream bed along east leg and aggradation along west leg; Stream banks have been lined with rip rap upstream of culvert.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along culvert legs |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Ro

Structure No: 25-30

MTO Site No: 25-30

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 7.40 | Width: | 0.30 |
| Element Name: | Curbs | | Height: | 0.50 | Count: | 2 |
| Location: | Each side | | Total Quantity: 11.84 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 11.84 | | | | |

Comments:

Severe delamination and disintegration throughout; Narrow to medium vertical cracks with staining; Light to severe scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Remove curbs |

Signs - Signs

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 169 and Ro

Structure No: 25-30

MTO Site No: 25-30

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|---------------------|
| | | Install steel beam guide rail over structure | 1-5 | \$30,000 |
| Culverts | Barrels | Repair poor concrete | 1-5 | \$30,000 |
| Culverts | Barrels | Place extensions at each end | 1-5 | \$70,000 |
| Sidewalks/curbs | Curbs | Remove curbs | 1-5 | \$5,000 |
| Embankments & | Streams and Waterways | Place rock protection along culvert legs | 1-5 | \$5,000 |
| Decks | Wearing surface | Waterproof and repave over culvert | 1-5 | \$15,000 |
| Abutments | Wingwalls | Remove wingwalls | 1-5 | \$5,000 |
| | | Perform a concrete substructure condition survey to determine condition of existing concrete in barrel | 1-5 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$165,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 15,000.00 |
| Engineering | | 24,000.00 |
| Total Associated Work Cost | | 60,000.00 |
| Total Repair/Rehabilitation Cost | | 165,000.00 |
| Total Cost | | 225,000.00 |

Summary Action Report

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin
 Structure No: 25-31
 MTO Site No: 25-31

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 64.78
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Approaches | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|-----------------------|
| Decks | Deck top | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|-----------------------|----------|--------------------|
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$25,000.00 |
| Total Associated Work Cost | | | | \$15,000.00 |
| Total Cost | | | | \$40,000.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work and concrete repairs required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin

Structure No: 25-31

MTO Site No: 25-31

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 166 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 166 | | | | |
| Location: | 250m north of Line 81 | | | | |
| Latitude/Northing: | 43d42'55" | Longitude/Easting: | 81d00'38" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 10.4 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 7.2 m | | m | Structure Dir.: | North/South |
| Deck Area: | 74.9 m2 | | | | |
| Trav Deck Wdt | 6.2 m | | | | |

Bridge Span BS-00065 9.60 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1946 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin
 Structure No: 25-31
 MTO Site No: 25-31

Field Inspection Information

Structure No.: 25-31

Inspection Date: 11/22/2013 Inspection Type OSIM Enhanced OSIM BCI: 64.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work and concrete repairs required.

Comments

BCI Change Repair poor concrete to extend life of structurue.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin

Structure No: 25-31

MTO Site No: 25-31

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 7.10 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Height: 2.40 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 34.08 | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.90 | 3.80 |
| | | | Good |
| | | | 28.38 |
| | | | Excellent |

Comments:

Wide full height vertical cracks with efflorescence at the middle of each abutment; Severe scaling and disintegration on the south wall; Medium erosion at water level on the southeast wall; Random light popouts; Active wet areas from deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 5.80 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.25 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 52.20 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 2.40 |
| | | | Good |
| | | | 49.80 |
| | | | Excellent |

Comments:

Light to medium scaling and staining; Concrete patch on southeast wall with medium cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin

Structure No: 25-31

MTO Site No: 25-31

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|------------------|-------|----------|------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 5.10 | Width: | 6.20 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | At each approach | | | | Total Quantity: 63.24 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 15.80 | 47.44 | | | | | |

Comments:

Medium to severe potholes and water ponding throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Railing Systems

| | | | | | | | | |
|-----------------|--------------------------------------|------|----------|-------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 20.50 | Width: | |
| Element Name: | Railing Systems | | | | Height: | | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 41.00 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | 1.20 | 19.90 | 19.90 | | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar and narrow stained cracks; Light to medium scaling and severe disintegration; Light abrasions; Several concrete patches.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin
 Structure No: 25-31
 MTO Site No: 25-31

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|-------|--------------|--------|
| Element Group: | Decks | | Length: | 10.40 | Width: | 6.90 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 71.76 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 17.90 | 53.86 | | |

Comments:

Light to medium scaling and medium abrasions on exposed portions; Mostly gravel covered.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 9.60 | Width: | 7.10 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.43 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 76.42 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 8.20 | 12.20 | 56.02 | | |

Comments:

Severe delamination with light spalling and exposed corroded rebar; Light salt staining on faces; Light to medium scaling throughout; Wide full length crack along centreline on underside; Active wet areas from deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 10,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin
 Structure No: 25-31
 MTO Site No: 25-31

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 6 |
| Location: | Each side of deck | | Total Quantity: 6.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 6.00 | | | |

Comments:

Deck drains all plugged with debris; Drains don't extend below soffit causing wet areas on concrete.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 2.00 | 2.00 | |

Comments:

Medium erosion of northeast and southwest embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin

Structure No: 25-31

MTO Site No: 25-31

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin

Structure No: 25-31

MTO Site No: 25-31

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 20.50 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 32.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 1.20 | 5.20 | 26.40 | | |

Comments:

Sections of severe disintegration, exposed corroded rebar and hairline to narrow cracking with efflorescence on faces; Light to medium scaling and abrasions; Hairline to narrow cracking throughout; Several concrete patches.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Signs - Signs

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 81 and Lin

Structure No: 25-31

MTO Site No: 25-31

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|-----------------------|----------|--------------------|
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Railing Systems | Repair poor concrete | 6-10 | \$5,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 6-10 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$25,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 5,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 15,000.00 |
| Total Repair/Rehabilitation Cost | | 25,000.00 |
| Total Cost | | 40,000.00 |

Summary Action Report

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Inspection Date: 11/22/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Condition Index Value (BCI) 65.96

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------|-----------------|---------|-----------------------------|
| Sidewalks/curbs | Curbs | | Pedestrian/vehicular hazard |
| Barriers | Railing Systems | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-------------------|--|----------|------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$18,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$35,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$10,000 |
| Decks | Wearing surface | Waterproof and repave | 1-5 | \$15,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work. | 1-5 | \$10,000 |

| | |
|----------------------------------|---------------------|
| Total Repair/Rehabilitation Cost | \$88,000.00 |
| Total Associated Work Cost | \$97,000.00 |
| Total Cost | \$185,000.00 |

Overall Comments

Structure is in overall fair condition; Major rehabilitation work required including concrete repairs, curb and railing system replacement and guide rail installation on approaches; A detailed deck condition survey should be performed prior to rehabilitation work.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 81 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 81 | | | | |
| Location: | 1640m west of Highway #23 | | | | |
| Latitude/Northing: | 43d42'44" | Longitude/Easting: | 80d00'27" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 10.0 m | Detour Length: | 8.50 km | Skew Angle: | 0 degrees |
| Deck Width: | 8.6 m | | m | Structure Dir.: | East/West |
| Deck Area: | 86.0 m2 | | | | |
| Trav Deck Wdt | 6.4 m | | | | |

Bridge Span BS-00064 9.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1955 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Field Inspection Information

Structure No.: 25-32

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 66.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,000.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 10,000.00 |

Investigation Comments

DCS: Perform a detailed deck condition survey prior to rehabilitation work.

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major rehabilitation work required including concrete repairs, curb and railing system replacement and guide rail installation on approaches; A detailed deck condition survey should be performed prior to rehabilitation work.

BCI Change Justification Replace concrete curb and railing system with box beam guide rail and install guide rail on approaches to improve vehicle safety at structure; Repair poor concrete to extend life of structure.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Element Data

Abutments - Abutment walls

| | | |
|-----------------|------------------------|---|
| Element Group: | Abutments | Length: 8.50 Width: 2.80 Height: 2.80 Count: 2 |
| Element Name: | Abutment walls | |
| Location: | Each end | Total Quantity: 47.60 |
| Material: | Cast-in-place concrete | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | |
| | 2.00 | |
| | 2.00 | |
| | 43.60 | |
| | | |

Comments:

Light scaling; Medium to wide stained vertical cracks; 2 weep holes per wall with rust staining and incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Abutments - Wingwalls

| | | |
|-----------------|------------------------|---|
| Element Group: | Abutments | Length: 5.50 Width: 2.45 Height: 2.45 Count: 4 |
| Element Name: | Wingwalls | |
| Location: | Each quadrant | Total Quantity: 53.90 |
| Material: | Cast-in-place concrete | |
| Element Type: | Wingwalls | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | |
| | 1.20 | |
| | 16.30 | |
| | 36.40 | |
| | | |

Comments:

Narrow to wide cracking with efflorescence; Light scaling throughout; Medium to severe rust and salt staining throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro
 Structure No: 25-32
 MTO Site No: 25-32

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|-------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 20.20 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 40.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 16.00 | 24.40 | | | |

Comments:

Severe delamination, spalling, exposed corroded rebar; Narrow to wide stained cracking; Light to severe scaling and severe disintegration; Wide vertical stained cracks through railing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 35,000.00 | Replace railing system with box beam guide rail |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|------|---|-------|--------------|----------|
| Element Group: | Decks | | Length: | 10.00 | Width: | 8.30 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 83.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Moderate |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 83.00 | | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro
 Structure No: 25-32
 MTO Site No: 25-32

Decks - Soffit-Thick Slab

| | | |
|-----------------|--|---|
| Element Group: | Decks | Length: 9.30 Width: 8.50 Height: 0.45 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 87.42 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor: 2.40 Fair: 7.50 Good: 77.52 Excellent: <input type="text"/> | |

Comments:
 Severe delamination with narrow to wide stained cracking with efflorescence throughout faces; Light staining throughout faces; Hairline to narrow wet pattern cracking and light honeycombing on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Decks - Wearing surface

| | | |
|-----------------|--|---|
| Element Group: | Decks | Length: 20.20 Width: 6.40 Height: Count: 1 |
| Element Name: | Wearing surface | |
| Location: | Over deck top | Total Quantity: 129.28 |
| Material: | Asphalt | |
| Element Type: | Wearing surface | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Severe |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor: 2.50 Fair: 25.60 Good: 101.18 Excellent: <input type="text"/> | |

Comments:
 Wide longitudinal crack along centreline; Light to medium settlements at approaches with water ponding; Light ravelling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Waterproof and repave |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion of west embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | 1.00 | | | |

Comments:

Stream out of alignment with structure causing severe scour along west abutment and aggradation along east abutment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 20.20 | Width: | 0.55 |
| Element Name: | Curbs | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | Total Quantity: 32.32 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 32.32 | | | | |

Comments:

Severe delamination, spalling, exposed corroded rebar and disintegration with narrow to wide stained cracks with efflorescence throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 18,000.00 | Remove and replace curb |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 1.00 | 3.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 164 and Ro

Structure No: 25-32

MTO Site No: 25-32

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-------------------|--|----------|------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$18,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$35,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$10,000 |
| Decks | Wearing surface | Waterproof and repave | 1-5 | \$15,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work. | 1-5 | \$10,000 |

Total Repair/Rehabilitation Cost **\$88,000.00**

Associated Work

| | Comments | Estimated Cost |
|---------------------|---|-------------------|
| Approaches | Install steel beam guide rail on approaches | 30,000.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 16,000.00 |
| Contingencies | 10% | 20,000.00 |
| Engineering | | 25,000.00 |
| | Total Associated Work Cost | 97,000.00 |
| | Total Repair/Rehabilitation Cost | 88,000.00 |
| | Total Cost | 185,000.00 |

Summary Action Report

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin
 Structure No: 25-33
 MTO Site No: 25-33

Inspection Date: 1/15/2014 mm/dd/yyyy Condition Index Value (BCI) 74.71
 Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|-------------|---------|------------------------|
| Decks | Drainage | | Deck drainage |
| Embankments & Streams | Embankments | | Unstable embankments |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------|---------------|---------|------------------|
| Decks | Deck top | | Bridge Cleaning |
| Decks | Drainage | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| Barriers | Hand Railings | | Other |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------|------------------------------|----------|--------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Embankments & | Embankments | Stabilize eroded embankemnts | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$10,000.00 |
| Total Associated Work Cost | | | | \$5,000.00 |
| Total Cost | | | | \$15,000.00 |

Overall Comments

Structure is in overall good condition; Minor rehabilitation and maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin

Structure No: 25-33

MTO Site No: 25-33

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 166 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 166 | | | | |
| Location: | 1110m south of Perth Line 86 | | | | |
| Latitude/Northing: | 43d44'13" | Longitude/Easting: | 80d59'38" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 19.0 m | Detour Length: | 6.80 km | Skew Angle: | 0 degrees |
| Deck Width: | 9.7 m | | m | Structure Dir.: | North/South |
| Deck Area: | 184.3 m2 | | | | |
| Trav Deck Wdt | 8.6 m | | | | |

Bridge Span BS-00072 16.80 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin
 Structure No: 25-33
 MTO Site No: 25-33

Field Inspection Information

Structure No.: 25-33

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 74.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Minor rehabilitation and maintenance work required.
 Comments

BCI Change Replace deck drains to prevent further deterioration of concrete.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin

Structure No: 25-33

MTO Site No: 25-33

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Abutments | Length: 9.60 | Width: 2 | | |
| Element Name: | Abutment walls | | | Height: 2.30 | Count: 2 |
| Location: | Each end | Total Quantity: 44.16 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 1.20 | 42.96 | |

Comments:

Hairline cracking; Light honeycombing and scaling; Patchwork along top of south abutment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Abutments | Length: 6.50 | Width: 4 | | |
| Element Name: | Wingwalls | | | Height: 2.45 | Count: 2 |
| Location: | Each quadrant | Total Quantity: 63.70 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 0.20 | 1.20 | 62.30 | |

Comments:

Hairline to narrow stained pattern cracking with salt staining and efflorescence; Light honeycombing; 2 severe popouts on northeast wingwall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin

Structure No: 25-33

MTO Site No: 25-33

Barriers - Hand Railings

| | | |
|-----------------|--|--|
| Element Group: | Barriers | Length: 28.50 Width: 4 Height: Count: 4 |
| Element Name: | Hand Railings | |
| Location: | On each barrier | Total Quantity: 114.00 |
| Material: | Steel | |
| Element Type: | Double hand railing | Subtype: Environment: Severe |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected |
| Condition Data: | Units: <input type="text" value="m"/> Poor: <input type="text"/> Fair: <input type="text"/> Good: <input type="text"/> Excellent: <input type="text"/> | |

Comments:

Light corrosion starting to form; End cap missing at southwest end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| None | Other | 2 Year | Replace missing end cap |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Barrier/Parapet Walls

| | | |
|-----------------|---|---|
| Element Group: | Barriers | Length: 29.50 Width: 2 Height: 0.60 Count: 4 |
| Element Name: | Barrier/Parapet Walls | |
| Location: | Each side | Total Quantity: 35.40 |
| Material: | Cast-in-place concrete | |
| Element Type: | Parapet Wall with two rails | Subtype: Environment: Severe |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected |
| Condition Data: | Units: <input type="text" value="m2"/> Poor: <input type="text"/> Fair: <input type="text"/> Good: <input type="text" value="35.40"/> Excellent: <input type="text"/> | |

Comments:

Light scaling and salt staining; Small spalls with exposed corroded rebar.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin

Structure No: 25-33

MTO Site No: 25-33

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|---|--------|--------------|--------|
| Element Group: | Decks | | Length: | 19.00 | Width: | 9.40 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 178.60 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 178.60 | | |

Comments:

Light scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 16.80 | Width: | 9.60 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.80 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 188.16 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 188.16 | | |

Comments:

Light scaling on exterior faces; Hairline to narrow cracking with efflorescence on exterior faces; Hairline wet cracking on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin
 Structure No: 25-33
 MTO Site No: 25-33

Decks - Drainage

| | | | | | |
|-----------------|-----------------------|------|--|--------------|-----------|
| Element Group: | Decks | | Length: | Width: | 4 |
| Element Name: | Drainage | | Height: | Count: | |
| Location: | Each side of deck top | | Total Quantity: 4.00 | | |
| Material: | Steel | | Subtype: | Environment: | Severe |
| Element Type: | Steel drain pipes | | <input type="checkbox"/> Limited Inspected | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 4.00 | | | |

Comments:

Drains are plugged and covered; Severe corrosion throughout drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| Deck drainage | Bridge Cleaning | 1 Year | Clean out deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|------|--|--------------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | 4 |
| Element Name: | Embankments | | Height: | Count: | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | Subtype: | Environment: | Benign |
| Element Type: | Embankments | | <input type="checkbox"/> Limited Inspected | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 4.00 | | | |

Comments:

Severe erosion and washout of embankments at abutment corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| Unstable embankments | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Stabilize eroded embankemnts |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin
 Structure No: 25-33
 MTO Site No: 25-33

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | 1.00 | | |

Comments:

Severe erosion of stream at abutment corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin
 Structure No: 25-33
 MTO Site No: 25-33

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|---|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 29.60 | Width: | 0.25 |
| Element Name: | Curbs | | Height: | 0.28 | Count: | 2 |
| Location: | Each side | | Total Quantity: 31.38 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 31.38 | | |

Comments:

Hairline to narrow stained cracks; Light abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curbs annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | | |
|-----------------|-----------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At eac approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 84 and Lin

Structure No: 25-33

MTO Site No: 25-33

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------|------------------------------|----------|--------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Embankments & | Embankments | Stabilize eroded embankemnts | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$10,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 1,000.00 |
| Contingencies | 10% | 2,000.00 |
| Engineering | | 2,000.00 |
| Total Associated Work Cost | | 5,000.00 |
| Total Repair/Rehabilitation Cost | | 10,000.00 |
| Total Cost | | 15,000.00 |

Summary Action Report

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Inspection Date: 11/20/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Condition Index Value (BCI) 53.09

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|-----------------------------|
| Decks | Wearing surface | | Rough riding surface |
| Decks | Drainage | | Deck drainage |
| Barriers | Posts | | Pedestrian/vehicular hazard |
| Barriers | Railing Systems | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|---|----------|---------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$15,000 |
| Decks | Drainage | Replace deck drains | 1-5 | \$5,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$30,000 |
| Decks | Soffit-Thin Slab | Repair poor concrete | 1-5 | \$10,000 |
| Embankments & | Streams and Waterways | Place rock protection along west abutment | 1-5 | \$5,000 |
| Decks | Wearing surface | Waterproof and repave over structure | 1-5 | \$15,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$25,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work | 1-5 | \$10,000 |
| | | Perform a concrete substructure condition survey prior to rehabilitation work | 1-5 | \$5,000 |
| | | Structure evaluation required to determine feasibility of rehabilitation vs. full replacement | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$130,000.00 |
| Total Associated Work Cost | | | | \$100,000.00 |
| Total Cost | | | | \$230,000.00 |

Overall Comments

Structure is in overall fair condition; Major rehabilitation work required. Prior to rehabilitation work, a detailed deck condition survey, concrete substructure condition survey and underwater investigation should be completed. Also, a Structure evaluation should be performed to determine feasibility of rehabilitation vs. full replacement.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------|--|--|--|--|--|
| Structure Name: | North Perth Line 81 - Bridge between | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Navigable Water | Crossing Under: | | | | | | | |
| Road Name: | North Perth Line 81 | | | | | | | | |
| Location: | 450m west of Highway #23 | | | | | | | | |
| Latitude/Northing: | 43d42'10" | Longitude/Easting: | 80d59'07" | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Elma | | | | | | | | |
| Structure Type: | TB - T-Beams | | | | | | | | |
| Material: | C - CIP Concrete | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 9.8 m | Heritage Status: | N | | | | | | |
| Deck Width: | 6.7 m | Road Class: | Collector | | | | | | |
| Deck Area: | 65.7 m ² | Lane Type: | | | | | | | |
| Trav Deck Wdt | 6.1 m | Posted Speed: | 80 Lanes: 2 | | | | | | |
| | | AADT: | Trucks: 0 % | | | | | | |
| | | Min Vert. Clear.: | m | | | | | | |
| | | No. of Spans: | 1 | | | | | | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | |
| | | Detour Length: | 8.10 km | | | | | | |
| | | | m | | | | | | |
| | | Skew Angle: | 0 degrees | | | | | | |
| | | Structure Dir.: | East/West | | | | | | |

Bridge Span BS-00050 9.80 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1963 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Field Inspection Information

Structure No.: 25-34

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 53.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,000.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5,000.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,000.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 25,000.00 |

Investigation Comments

DCS: Perform a detailed deck condition survey prior to rehabilitation work
 CSCS: Perform a concrete substructure condition survey prior to rehabilitation work
 SE: Structure evaluation required to determine feasibility of rehabilitation vs. full replacement

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major rehabilitation work required. Prior to rehabilitation work, a detailed deck condition survey, concrete substructure condition survey and underwater investigation should be completed. Also, a Structure evaluation should be performed to determine feasibility of rehabilitation vs. full replacement.

BCI Change Justification Replace concrete railing with box beam guide rail and install steel beam guide rail on approaches to improve vehicle safety; Repair poor concrete to extend life of structure.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 6.40 | Width: 0.50 | | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Height: 3.60 | Count: 2 | | |
| Material: | Cast-in-place concrete | Total Quantity: 52.48 | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 10.40 | 10.40 | 31.68 | |

Comments:

Severe delamination along water line of west abutment; Severe delamination, spalling and disintegration with exposed corroded rebar at girder ends; Isolated light spalls with exposed corroded rebar; Concrete patch with delamination and wide cracking at southwest corner; 2 weepers with severe incrustation.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Repair poor concrete |

Abutments - Bearings

| | | | | | |
|-----------------|------------------|---|---------------------|------|-----------|
| Element Group: | Abutments | Length: | Width: | | |
| Element Name: | Bearings | | | | |
| Location: | At each abutment | Height: | Count: 8 | | |
| Material: | Steel | Total Quantity: 8.00 | | | |
| Element Type: | Plate bearing | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 8.00 | | | |

Comments:

Severe corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 4.70 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.90 | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 54.52 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 17.00 | 25.60 |
| | | Good | Excellent |
| | | 11.92 | |

Comments:

Severe delamination with medium to wide stained cracking with efflorescence - mostly on west walls; Light scaling, staining and efflorescence throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 25,000.00 | Repair poor concrete |

Barriers - Railing Systems

| | | | |
|-----------------|--------------------------------------|--|---------------------|
| Element Group: | Barriers | Length: 17.80 | Width: 2 |
| Element Name: | Railing Systems | | |
| Location: | Each side | Height: | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 35.60 | |
| Element Type: | Concrete Post and continuous railing | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m | 7.60 | 17.80 |
| | | Good | Excellent |
| | | 10.20 | |

Comments:

Newer sections have light abrasions and hairline wet pattern cracking; Older sections have severe delamination and spalling with exposed corroded rebar and wide cracking, complete loss of section from vehicle impacts; Solid sections at west end have light to medium abrasions and scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 30,000.00 | Replace railing system with box beam guide rail |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Barriers - Posts

| | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|
| Element Group: | Barriers | | Length: | Width: | |
| Element Name: | Posts | | Height: | Count: | 7 |
| Location: | Each side | | Total Quantity: 7.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Posts | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 7.00 | | | |

Comments:

Severe disintegration; Medium cracking and concrete patches throughout; Posts do not provide adequate support.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

| | | | | | | |
|-----------------|--------------------------|----------|--|-------|-----------|------|
| Element Group: | Beams/MLEs | | Length: | 9.80 | Width: | 0.45 |
| Element Name: | Girders | | Height: | 0.66 | Count: | 4 |
| Location: | Below deck top | | Total Quantity: 69.38 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Rectangle-solid - Girder | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 2.90 | 66.48 | | |

Comments:

Light to medium honeycombing; Exposed corroded rebar chairs; Medium vertical cracks with efflorescence; Efflorescence on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Decks - Deck top

| | | | |
|-----------------|---------------------------------------|---|-----------------------|
| Element Group: | Decks | Length: 9.80 | Width: 6.70 |
| Element Name: | Deck top | | |
| Location: | All | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 65.66 | |
| Element Type: | Deck top | Subtype: | Environment: Moderate |
| Prot. System: | Waterproof and paving with AC overlay | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 32.83 |
| | | | 32.83 |
| | | | Excellent |

Comments:

Not visible, assumed to be in good to fair condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thin Slab

| | | | |
|-----------------|------------------------------|--|---------------------|
| Element Group: | Decks | Length: 9.80 | Width: 6.70 |
| Element Name: | Soffit-Thin Slab | | |
| Location: | Underside and exterior faces | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 68.60 | |
| Element Type: | Soffit - Thin Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.80 | 7.20 |
| | | | 59.60 |
| | | | Excellent |

Comments:

Severe delamination, spalling and disintegration with exposed corroded rebar and narrow to medium cracking with efflorescence on exterior faces; Narrow to medium wet cracking with efflorescence and light honeycombing on underside,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|----------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: 6 | |
| Location: | Each side of deck | | Total Quantity: 6.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 6.00 | | | |

Comments:

All deck drains are plugged / paved over.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Deck drainage | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Replace deck drains |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 17.80 | Width: | 6.10 |
| Element Name: | Wearing surface | | Height: | Count: | | 1 |
| Location: | Over deck top | | Total Quantity: 108.58 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 33.24 | 75.34 | | |

Comments:

Light settlement at east transition and medium settlement at west transition with several potholes and patches.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------------|
| Rough riding surface | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Waterproof and repave over structure |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

Embankments are very steep with light erosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Comments:

Stream is out of alignment with structure causing severe erosion along west abutment and severe aggradation along east embankment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along west abutment |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | 1.00 | | |

Comments:

Footings partially visible along west abutment with severe delamination, erosion and disintegration. Rest of footings not visible but appear to be stable based on condition of superstructure. West footing should be inspected closer for undermining when water levels are down.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 17.80 | Width: | 0.30 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 21.36 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 1.50 | 2.50 | 17.36 | | |

Comments:

Light scaling throughout; Newer sections with narrow to medium wet pattern cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-34

MTO Site No: 25-34

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|---|----------|---------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$15,000 |
| Decks | Drainage | Replace deck drains | 1-5 | \$5,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$30,000 |
| Decks | Soffit-Thin Slab | Repair poor concrete | 1-5 | \$10,000 |
| Embankments & | Streams and Waterways | Place rock protection along west abutment | 1-5 | \$5,000 |
| Decks | Wearing surface | Waterproof and repave over structure | 1-5 | \$15,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$25,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work | 1-5 | \$10,000 |
| | | Perform a concrete substructure condition survey prior to rehabilitation work | 1-5 | \$5,000 |
| | | Structure evaluation required to determine feasibility of rehabilitation vs. full replacement | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$130,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---|-------------------|
| Approaches | Install steel beam guide rail on approaches | 30,000.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 17,000.00 |
| Contingencies | 10% | 18,000.00 |
| Engineering | | 30,000.00 |
| Total Associated Work Cost | | 100,000.00 |
| Total Repair/Rehabilitation Cost | | 130,000.00 |
| Total Cost | | 230,000.00 |

Summary Action Report

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa
Structure No: 25-35
MTO Site No: 25-35

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 74.40
Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------------|-----------------|----------------------------|------------------|
| Decks | Wearing surface | | Bridge Cleaning |
| Embankments & Streams | Embankments | | Bridge Cleaning |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-----------|
| Structure Name: | North Perth Line 81 - Bridge between | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Line 81 | | | | | | | | |
| Location: | 75m east of Highway #23 | | | | | | | | |
| Latitude/Northing: | 43d42'16" | | | Longitude/Easting: | 80d59'22" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Collector | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | RF - Rigid Frame | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 12.2 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 8.6 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 104.9 m2 | | | | m | | | Structure Dir.: | East/West |
| Trav Deck Wdt | 7.4 m | | | | | | | | |

Bridge Span BS-00051 10.90 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1950 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Field Inspection Information

Structure No.: 25-35

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 8.40 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 53.76 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 53.76 |
| Good | Excellent | | |

Comments:

Light scaling and honeycombing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 6.50 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 72.80 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 0.60 | 0.60 |
| Good | Excellent | | |

Comments:

Severe delamination and wide cracking at northeast corner; Light staining at corners; Light honeycombing on southeast wall; Light scaling and popouts throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 23.80 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 47.60 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 2.90 | 2.90 | 41.80 | | |

Comments:

Light scaling and abrasions throughout; Medium to wide vertical cracks on railing; Severe delamination and light spalling with exposed corroded rebar; Light disintegration at base of posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|------|---|--------|--------------|----------|
| Element Group: | Decks | | Length: | 12.20 | Width: | 8.30 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 101.26 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Moderate |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 101.26 | | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 10.90 | Width: | 8.40 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.55 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 103.55 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 103.55 | | |

Comments:

Light scaling on exterior faces; Hairline wet pattern cracking and exposed corroded rebar chairs on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 2 |
| Location: | Each side of deck | | Total Quantity: 2.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | | | | |

Comments:

Severe corrosion throughout; Deck drains may have been paved over (not visible on surface); No surface drainage issues noted.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Decks - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|----------|--------|--|-------|--------|------|
| Element Group: | Decks | | | | Length: | 23.80 | Width: | 7.40 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 1 |
| Location: | Over deck top | | | | Total Quantity: 176.12 | | | |
| Material: | Asphalt | | | | | | | |
| Element Type: | Wearing surface | | Subtype: | | Environment: | | Severe | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m ² | | | 176.12 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | Bridge Cleaning | 1 Year | Clean gravel and debris off wearing surface annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | | | |
|-----------------|-----------------------|------|----------|------|--|--|--------|---|
| Element Group: | Embankments & Streams | | | | Length: | | Width: | |
| Element Name: | Embankments | | | | Height: | | Count: | 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | | | |
| Element Type: | Embankments | | Subtype: | | Environment: | | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | Each | | | 4.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------------|
| None | Bridge Cleaning | 2 Year | Remove tree from southeast embankment |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Light sediment build up along abutments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 23.80 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: | | | 42.84 |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 1.80 | 3.60 | 37.44 | | |

Comments:
 Severe delamination with narrow to wide stained pattern cracking; Wide transverse cracks throughout; Light scaling and abrasions; Random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Hwy #23 and Roa

Structure No: 25-35

MTO Site No: 25-35

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin

Structure No: 25-38

MTO Site No: 25-38

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 74.31 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|-------------|---------|------------------------|
| Embankments & Streams | Embankments | | Unstable embankments |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|-----------------------|-------------|---------|----------------------------|--------|
| Embankments & Streams | Embankments | | Erosion Control at Bridges | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin

Structure No: 25-38

MTO Site No: 25-38

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 158 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 158 | | | | |
| Location: | 440m south of Line 81 | | | | |
| Latitude/Northing: | 43d41'32" | Longitude/Easting: | 80d58'16" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 6.9 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 17.1 m | | m | Structure Dir.: | North/South |
| Deck Area: | 118.0 m2 | | | | |
| Trav Deck Wdt | 6.8 m | | | | |

Bridge Span BS-00049 6.20 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1965 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin
 Structure No: 25-38
 MTO Site No: 25-38

Field Inspection Information

Structure No.: 25-38

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin
 Structure No: 25-38
 MTO Site No: 25-38

Element Data

Culverts - Barrels

| | | | | | |
|-----------------|------------------------|--|---------------------|--------|-----------|
| Element Group: | Culverts | Length: 17.10 | Width: 6.20 | | |
| Element Name: | Barrels | | | | |
| Location: | All | Height: 2.40 | Count: 1 | | |
| Material: | Cast-in-place concrete | Total Quantity: 188.10 | | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 3.80 | 184.30 | |

Comments:

Narrow stained pattern cracking at top of exterior face of legs; Random narrow vertical wet and stained pattern cracking on legs; Light to medium honeycombing on legs at water level; Hairline to narrow wet pattern cracking on soffit; Exposed corroded rebar chairs with small spalls on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|---------------------|-------|-----------|
| Element Group: | Decks | Length: 6.90 | Width: 6.80 | | |
| Element Name: | Wearing surface | | | | |
| Location: | Over culvert | Height: | Count: 1 | | |
| Material: | Asphalt | Total Quantity: 46.92 | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 46.92 | |

Comments:

Light progressive edge cracking along both edges.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin

Structure No: 25-38

MTO Site No: 25-38

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|------|----------|---------------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | | Subtype: | Environment: Benign | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | 2.00 | | | |

Comments:

Medium to severe erosion of embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|----------------------------|------------|------------------------------|
| Unstable embankments | Erosion Control at Bridges | 2 Year | Stabilize eroded embankments |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|------|----------|---------------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | | Subtype: | Environment: Benign | | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Light scour and sediment build up through culvert.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin

Structure No: 25-38

MTO Site No: 25-38

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 158 - Bridge between Line 78 and Lin

Structure No: 25-38

MTO Site No: 25-38

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 75 - Bridge between Road 154 and Ro

Structure No: 25-39

MTO Site No: 25-39

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 72.96 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 154 and Ro

Structure No: 25-39

MTO Site No: 25-39

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 75 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 75 | | | | |
| Location: | 880m east of Perth County Road 147 | | | | |
| Latitude/Northing: | 43d38'58" | Longitude/Easting: | 80d57'33" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | CR - Culvert Round | Min Vert. Clear.: | m | | |
| Material: | CS Corrugated Steel | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 3.6 m | Detour Length: | 8.10 km | Skew Angle: | 5 degrees |
| Deck Width: | 17.0 m | | m | Structure Dir.: | East/West |
| Deck Area: | 61.2 m2 | | | | |
| Trav Deck Wdt | 6.5 m | | | | |

Bridge Span BS-00046 3.60 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1985 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 154 and Ro
 Structure No: 25-39
 MTO Site No: 25-39

Field Inspection Information

Structure No.: 25-39

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 154 and Ro

Structure No: 25-39

MTO Site No: 25-39

Element Data

Culverts - Barrels

| | | | | | |
|-----------------|---------------------|--|---------------------|--------|-----------|
| Element Group: | Culverts | Length: | Width: | | |
| Element Name: | Barrels | | | | |
| Location: | All | Height: | Count: | | |
| Material: | Corrugated steel | Total Quantity: 193.31 | | | |
| Element Type: | Pipe round barrel | Subtype: | Environment: Benign | | |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 0.70 | 9.90 | 182.71 | |

Comments:

Light corrosion to water level; Medium global permanent deformation along east side at middle; Severe local permanent deformation at north end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|---------------------|-------|-----------|
| Element Group: | Decks | Length: | Width: | | |
| Element Name: | Wearing surface | | | | |
| Location: | Over culvert | Height: | Count: | | |
| Material: | Gravel | Total Quantity: 27.30 | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 27.30 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 154 and Ro

Structure No: 25-39

MTO Site No: 25-39

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion of south embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 75 - Bridge between Road 154 and Ro

Structure No: 25-39

MTO Site No: 25-39

| Repair/Rehabilitation Required |
|---------------------------------------|
| Associated Work |

| | Comments | | Estimated Cost |
|----------------------------------|----------|--|----------------|
| Approaches | | | 0.00 |
| Detours | | | 0.00 |
| Traffic Control | | | 0.00 |
| Utilities | | | 0.00 |
| Right-of-Way | | | 0.00 |
| Environmental Study | | | 0.00 |
| Other | | | 0.00 |
| Contingencies | 10% | | 0.00 |
| Engineering | | | 0.00 |
| Total Associated Work Cost | | | 0.00 |
| Total Repair/Rehabilitation Cost | | | 0.00 |
| Total Cost | | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
 Structure No: 25-67
 MTO Site No: 25-67

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 67.04
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|-----------------------------|
| Decks | Wearing surface | | Rough riding surface |
| Barriers | Railing Systems | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|------------------|
| Decks | Wearing surface | | Bridge Cleaning |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|---|----------|---------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$5,000 |
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$20,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$40,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$10,000 |
| Decks | Wearing surface | Waterproof and repave over structure | 1-5 | \$15,000 |
| Total Repair/Rehabilitation Cost | | | | \$90,000.00 |
| Total Associated Work Cost | | | | \$95,000.00 |
| Total Cost | | | | \$185,000.00 |

Overall Comments

Structure is in overall fair condition; Major rehabilitation work required including railing system and curb replacement, steel beam guide rail on approaches and concrete repairs.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-67

MTO Site No: 25-67

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|---|-----------------|-------------|
| Structure Name: | North Perth Road 169 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 169 | | | | | | | | |
| Location: | 270m south of Perth County Line 72 | | | | | | | | |
| Latitude/Northing: | 43d40'21" | | | Longitude/Easting: | 81d04'22" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | RF - Rigid Frame | | | AADT: | | Trucks: | 0 | % | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 34.3 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 6.6 m | | | Detour Length: | 7.70 km | | | Skew Angle: | 35 degrees |
| Deck Area: | 226.4 m ² | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 5.6 m | | | | | | | | |

Bridge Span BS-00056 24.60 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1957 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
 Structure No: 25-67
 MTO Site No: 25-67

Field Inspection Information

Structure No.: 25-67

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 67.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: o/c, light rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major rehabilitation work required including railing system and curb replacement, steel beam guide rail on approaches and concrete repairs.

BCI Change Justification Replace concrete curbs and railing system with box beam guide rail and install steel beam guide rail on approaches to improve vehicle safety; Repair poor concrete to extend life of structure.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
 Structure No: 25-67
 MTO Site No: 25-67

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--------------------------|--|
| Element Group: | Abutments | Length: 7.80 Width: 2.30 | Height: 2.30 Count: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 35.88 | |
| Material: | Cast-in-place concrete | Environment: Benign | |
| Element Type: | Conventional closed | Subtype: | <input type="checkbox"/> Limited Inspected |
| Prot. System: | None | | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.50 | 1.50 |
| | | | Good |
| | | | 32.88 |
| | | | Excellent |
| | | | |

Comments:

Light delaminations; Light scaling; Severe popouts; 3 weep holes per side with rust staining and incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--------------------------|--|
| Element Group: | Abutments | Length: 4.90 Width: 1.40 | Height: 1.40 Count: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 27.44 | |
| Material: | Cast-in-place concrete | Environment: Benign | |
| Element Type: | Wingwalls | Subtype: | <input type="checkbox"/> Limited Inspected |
| Prot. System: | None | | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 1.90 |
| | | | Good |
| | | | 25.54 |
| | | | Excellent |
| | | | |

Comments:

Hairline to medium wet cracking; Light scaling and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
 Structure No: 25-67
 MTO Site No: 25-67

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|------|-------|--|------|--------------|--------|
| Element Group: | Approaches | | | | Length: | 4.85 | Width: | 5.60 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 1 |
| Location: | South approach | | | | Total Quantity: 27.16 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | | 6.80 | 20.36 | | | | |

Comments:

Medium potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Railing Systems

| | | | | | | | | |
|-----------------|--------------------------------------|-------|------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | | | Length: | 34.30 | Width: | |
| Element Name: | Railing Systems | | | | Height: | | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 68.60 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Concrete Post and continuous railing | | | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | 68.60 | | | | | | |

Comments:

Severe delamination, spalling and exposed corroded rebar; Light to severe scaling and severe disintegration; Medium to wide stained pattern cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 40,000.00 | Replace railing system with box beam guide rail |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
 Structure No: 25-67
 MTO Site No: 25-67

Decks - Deck top

| | | |
|-----------------|---------------------------------------|---|
| Element Group: | Decks | Length: 24.60 Width: 6.30 Height: Count: 1 |
| Element Name: | Deck top | |
| Location: | All | Total Quantity: 154.98 |
| Material: | Cast-in-place concrete | |
| Element Type: | Deck top | Subtype: <input type="text"/> |
| Prot. System: | Waterproof and paving with AC overlay | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="text"/> |
| | Poor | <input type="text"/> |
| | Fair | <input type="text"/> |
| | Good | <input type="text"/> 154.98 |
| | Excellent | <input type="text"/> |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | |
|-----------------|------------------------------|--|
| Element Group: | Decks | Length: 24.60 Width: 7.80 Height: 0.25 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 204.18 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="text"/> |
| | Poor | <input type="text"/> 3.70 |
| | Fair | <input type="text"/> 4.90 |
| | Good | <input type="text"/> 195.58 |
| | Excellent | <input type="text"/> |

Comments:

Medium delaminations with medium to wide pattern cracking with efflorescence on exterior faces; Hairline to narrow wet cracks; Severe delamination, spalling and exposed corroded rebar on the underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-67

MTO Site No: 25-67

Decks - Wearing surface

| | | | | | | |
|-----------------|----------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 29.45 | Width: | 5.60 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top and north approach | | Total Quantity: 164.92 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 27.16 | 137.76 | | |

Comments:

Light to medium abrasions; Medium settlement, wide cracking and water ponding with several patches at north approach.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| Rough riding surface | Bridge Cleaning | 1 Year | Clean gravel off wearing surface annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Waterproof and repave over structure |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|------|--------------|--------|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-67

MTO Site No: 25-67

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | At abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-67

MTO Site No: 25-67

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 34.30 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 54.88 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 13.70 | 41.18 | | | |

Comments:

Severe delamination, spalling and disintegration; Narrow to wide stained cracking; Light to severe scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 20,000.00 | Remove and replace curb |

Signs - Signs

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Signs are bent and faded.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-67

MTO Site No: 25-67

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|-------------------|---|----------|------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$5,000 |
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$20,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$40,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$10,000 |
| Decks | Wearing surface | Waterproof and repave over structure | 1-5 | \$15,000 |

Total Repair/Rehabilitation Cost **\$90,000.00**

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---|-------------------|
| Approaches | Install steel beam guide rail on approaches | 30,000.00 |
| Detours | Road closed during construction | 4,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 20,000.00 |
| Engineering | | 25,000.00 |
| Total Associated Work Cost | | 95,000.00 |
| Total Repair/Rehabilitation Cost | | 90,000.00 |
| Total Cost | | 185,000.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
Structure No: 25-68
MTO Site No: 25-68

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 73.09
Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------------|-----------------------|----------------------------|------------------|
| Embankments & Streams | Streams and Waterways | | Other |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-68

MTO Site No: 25-68

| Inventory Data | | | | | | | | | |
|--------------------|---|--------------------|-----------------|-------------|--|--|--|--|--|
| Structure Name: | North Perth Road 169 - Bridge betwee | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | | | | | |
| Road Name: | North Perth Road 169 | | | | | | | | |
| Location: | 350m south of Perth County Line 72 | | | | | | | | |
| Latitude/Northing: | 43d40'20" | Longitude/Easting: | 80d04'22" | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Elma | | | | | | | | |
| Structure Type: | BO - Box, Open Footing | | | | | | | | |
| Material: | C - CIP Concrete | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 6.9 m | | | | | | | | |
| Deck Width: | 14.6 m | | | | | | | | |
| Deck Area: | 100.7 m ² | | | | | | | | |
| Trav Deck Wdt | 5.8 m | | | | | | | | |
| Heritage Status: | N | | | | | | | | |
| Road Class: | Local | | | | | | | | |
| Lane Type: | | | | | | | | | |
| Posted Speed: | 80 | Lanes: | 2 | | | | | | |
| AADT: | | Trucks: | 0 % | | | | | | |
| Min Vert. Clear.: | m | | | | | | | | |
| No. of Spans: | 1 | | | | | | | | |
| Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | | | |
| Detour Length: | 7.70 km | | Skew Angle: | 0 degrees | | | | | |
| | m | | Structure Dir.: | North/South | | | | | |

Bridge Span BS-00055 6.10 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1957 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin
 Structure No: 25-68
 MTO Site No: 25-68

Field Inspection Information

Structure No.: 25-68

Inspection Date: 11/22/2013 Inspection Type OSIM Enhanced OSIM BCI: 73.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-68

MTO Site No: 25-68

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 14.60 Width: 6.10
 Height: 2.80 Count: 1
 Total Quantity: 170.82

Condition Data: Units Poor Fair Good Excellent

Comments:

Light to medium scaling on faces; Light honeycombing throughout; Hairline to narrow stained vertical cracks throughout legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.90 Width: 5.80
 Height: Count: 1
 Total Quantity: 40.02

Condition Data: Units Poor Fair Good Excellent

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-68

MTO Site No: 25-68

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Medium erosion of all embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Stream is a deep stagnant pool at east; Tree at west end in stream is blocking flow of water.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------|
| None | Other | 2 Year | Remove tree from west end |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-68

MTO Site No: 25-68

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 72 and Lin

Structure No: 25-68

MTO Site No: 25-68

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
 Structure No: 25-69
 MTO Site No: 25-69

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 74.12
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------------|-----------------|---------|-----------------------|
| Decks | Deck top | | Bridge Cleaning |
| Decks | Drainage | | Bridge Cleaning |
| Joints | Seals/sealants | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |
| Total Associated Work Cost | | | \$45,000.00 |
| Total Cost | | | \$45,000.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required and steel beam guide rail should be installed on approaches.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 166 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 166 | | | | |
| Location: | 1260m south of Perth County Line 72 | | | | |
| Latitude/Northing: | 43d39'23" | Longitude/Easting: | 81d03'27" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | IB - I-Beams or Girders | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 26.2 m | Detour Length: | 8.10 km | Skew Angle: | 20 degrees |
| Deck Width: | 9.6 m | | m | Structure Dir.: | North/South |
| Deck Area: | 251.5 m2 | | | | |
| Trav Deck Wdt | 7.4 m | | | | |

Bridge Span BS-00054 24.50 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1979 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
 Structure No: 25-69
 MTO Site No: 25-69

Field Inspection Information

Structure No.: 25-69

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments: Structure is in overall good condition; Some maintenance work required and steel beam guide rail should be installed on approaches.

BCI Change Justification: Install guide rail on approaches to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Element Data

Abutments - Ballast walls

| | | | |
|-----------------|------------------------|---|---------------------|
| Element Group: | Abutments | Length: 10.20 | Width: 2 |
| Element Name: | Ballast walls | | |
| Location: | At each abutment | Total Quantity: 28.56 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Ballast Walls | Subtype: | Environment: Benign |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 28.56 |
| Good | Excellent | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
| None | None | None | |

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
| None | | | |

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 10.20 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 63.24 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 6.30 |
| Good | Excellent | | |

Comments:

Hairline to medium wet and stained, vertical and pattern cracking; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
| None | None | None | |

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Abutments - Bearings

| | | | | | |
|-----------------|-------------------------|----------|---|--------|-----------|
| Element Group: | Abutments | | Length: | Width: | |
| Element Name: | Bearings | | Height: | Count: | 8 |
| Location: | At each abutment | | Total Quantity: 8.00 | | |
| Material: | Other | | | | |
| Element Type: | Elastomeric pad bearing | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|---|
| Element Group: | Abutments | | Length: | 8.10 | Width: | |
| Element Name: | Wingwalls | | Height: | 3.00 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 97.20 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 97.20 | | |

Comments:

Hairline stained cracks; Random light popouts; Light salt and rust staining throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|------------------|-------|----------|-------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 6.70 | Width: | 7.40 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | At each approach | | | | Total Quantity: 99.16 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 12.00 | 25.00 | 62.16 | | | | |

Comments:

Medium to severe potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| None | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|----------|--------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 37.40 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | Each side | | | | Total Quantity: 149.60 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | 149.60 | | | | |

Comments:

Light corrosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
 Structure No: 25-69
 MTO Site No: 25-69

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|------|-----------------------|-------|-----------|--|
| Element Group: | Barriers | | Length: | 39.40 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 47.28 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | | Subtype: | | | Environment: |
| Prot. System: | None | | | | Severe | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | <input type="checkbox"/> Limited Inspected |
| | m2 | | | 47.28 | | |

Comments:

Hairline to narrow stained cracks throughout; Light salt staining and random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

| | | | | | | |
|-----------------|------------------|------|------------------------|--------|-----------|---|
| Element Group: | Beams/MLEs | | Length: | 24.50 | Width: | 0.55 |
| Element Name: | Girders | | Height: | 1.40 | Count: | 4 |
| Location: | Below deck top | | Total Quantity: 436.10 | | | |
| Material: | Precast concrete | | | | | |
| Element Type: | I-type - Girder | | Subtype: | | | Environment: |
| Prot. System: | None | | | | Benign | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | <input checked="" type="checkbox"/> Limited Inspected |
| | m2 | 0.20 | 0.40 | 435.50 | | |

Comments:

Limited inspection of girder ends; Isolated light spall at north end with exposed corroded rebar.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Beams/MLEs - Diaphragms

| | | | | | | |
|-----------------|------------------------------|----------|---|-------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 2.00 | Width: | 0.45 |
| Element Name: | Diaphragms | | Height: | 1.00 | Count: | 9 |
| Location: | At ends and mid-span | | Total Quantity: 44.10 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Rectangular-solid diaphragms | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 44.10 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 26.20 | Width: | 9.60 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 251.52 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 251.52 | | |

Comments:

Random light popouts; Light abrasions; Excessive amounts of gravel on deck top is causing ponding at ends.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Decks - Soffit-Thin Slab

| | | | |
|-----------------|------------------------------|--|---------------------|
| Element Group: | Decks | Length: 24.50 | Width: 9.60 |
| Element Name: | Soffit-Thin Slab | | |
| Location: | Underside and exterior faces | Height: 0.23 | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 240.84 | |
| Element Type: | Soffit - Thin Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 4.80 |
| | | | 236.04 |
| | | | Excellent |

Comments:
Medium alkali-aggregate reaction.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | |
|-----------------|---------------------|--|---------------------|
| Element Group: | Decks | Length: | Width: |
| Element Name: | Drainage | | |
| Location: | Each side of deck | Height: | Count: 4 |
| Material: | Steel | Total Quantity: 4.00 | |
| Element Type: | Steel drain pipes | Subtype: | Environment: Severe |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | Each | | 4.00 |
| | | | Good |
| | | | Excellent |

Comments:
Drains completely plugged with debris.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | Bridge Cleaning | 1 Year | Clean debris from deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Slope Protection

| | | | | | | |
|-----------------|-----------------------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Slope Protection | | | | Height: | Count: 1 |
| Location: | At abutments | | | | Total Quantity: 1.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Hand laid riprap slope protection | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
 Structure No: 25-69
 MTO Site No: 25-69

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible; Assumed to be in good condition based on condition of superstructure,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Joins - Seals/sealants

| | | | | | | |
|-----------------|------------------|----------|---|-------|--------------|--------|
| Element Group: | Joins | | Length: | 9.60 | Width: | |
| Element Name: | Seals/sealants | | Height: | | Count: | 2 |
| Location: | Each end of deck | | Total Quantity: 19.20 | | | |
| Material: | Other | | | | | |
| Element Type: | Compression seal | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 19.20 | | |

Comments:

Only partially visible, gravel covered.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | Bridge Cleaning | 1 Year | Clean gravel and debris from joints annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 39.50 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.45 | Count: | 2 |
| Location: | Each side | | Total Quantity: 82.95 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 82.95 | | |

Comments:

Light abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curbs annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: 25-69

MTO Site No: 25-69

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---|------------------|
| Approaches | Install steel beam guide rail on approaches | 30,000.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 5,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 45,000.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 45,000.00 |

Summary Action Report

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Inspection Date: 11/22/2013 mm/dd/yyyy
Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.65

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------------|----------------|----------------------------|--------------------|
| Joints | Seals/sealants | | Bridge Cleaning |
| Embankments & Streams | Embankments | | Other |
| | | Total Associated Work Cost | \$45,000.00 |
| | | Total Cost | \$45,000.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required and guide rail should be installed on approaches.

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-----------|
| Structure Name: | North Perth Line 71 - Bridge between | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Line 71 | | | | | | | | |
| Location: | 950m west of Highway #23 | | | | | | | | |
| Latitude/Northing: | 43d38'42" | | | Longitude/Easting: | 81d03'00" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Collector | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | IB - I-Beams or Girders | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 32.3 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 9.3 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 300.4 m ² | | | | m | | | Structure Dir.: | East/West |
| Trav Deck Wdt | 7.6 m | | | | | | | | |

Bridge Span BS-00053 31.40 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1983 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Field Inspection Information

Structure No.: 25-70

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall good condition; Some maintenance work required and guide rail should be installed on approaches.

BCI Change Justification Install guide rail on approaches to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Element Data

Abutments - Ballast walls

| | | | |
|-----------------|------------------------|---|---------------------|
| Element Group: | Abutments | Length: 8.60 | Width: 2 |
| Element Name: | Ballast walls | | |
| Location: | At each abutment | Total Quantity: 25.80 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Ballast Walls | Subtype: | Environment: Benign |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 2.50 |
| | | | 23.30 |
| | | | |

Comments:

Active wet areas and light staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 8.60 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 17.20 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 17.20 |
| | | | |

Comments:

Hairline to narrow stained vertical cracks; Wet areas and light staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Abutments - Bearings

| | | | | | |
|-----------------|-------------------------|----------|---|--------|-----------|
| Element Group: | Abutments | | Length: | Width: | |
| Element Name: | Bearings | | Height: | Count: | 8 |
| Location: | At each abutment | | Total Quantity: 8.00 | | |
| Material: | Other | | | | |
| Element Type: | Elastomeric pad bearing | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|---|
| Element Group: | Abutments | | Length: | 4.00 | Width: | |
| Element Name: | Wingwalls | | Height: | 2.00 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 32.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 32.00 | | |

Comments:

Wet areas and light staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Approaches - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 5.70 Width: 7.60
 Height: Count: 2
 Total Quantity: 86.64

Condition Data: Units Poor Fair Good Excellent

Environment:
 Limited Inspected

Comments:

Medium transverse cracks at each end of deck.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 35.60 Width: 4
 Height: Count: 4
 Total Quantity: 142.40

Condition Data: Units Poor Fair Good Excellent

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 37.60 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 45.12 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 45.12 | | |

Comments:

Hairline to narrow stained cracks; Light salt staining at handrail connections; Random light popouts; Light scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

| | | | | | | |
|-----------------|------------------|----------|--|--------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 31.40 | Width: | 0.55 |
| Element Name: | Girders | | Height: | 1.47 | Count: | 5 |
| Location: | Below deck top | | Total Quantity: 720.63 | | | |
| Material: | Precast concrete | | | | | |
| Element Type: | I-type - Girder | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 2.16 | 4.25 | 714.22 | | |

Comments:

Small delaminated sections at ends with spalling; Horizontal stained cracking on exterior bottom flanges.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Beams/MLEs - Diaphragms

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 1.40 | Width: | 0.45 |
| Element Name: | Diaphragms | | Height: | 1.00 | Count: | 9 |
| Location: | At ends and mid-span | | Total Quantity: 30.87 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Rectangular-solid diaphragms | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 30.87 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 32.30 | Width: | 9.00 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 290.70 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 290.70 | | |

Comments:

Random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Decks - Soffit-Thin Slab

| | | | |
|-----------------|------------------------------|--|---------------------|
| Element Group: | Decks | Length: 31.40 | Width: 9.30 |
| Element Name: | Soffit-Thin Slab | | |
| Location: | Underside and exterior faces | Height: 0.23 | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 299.24 | |
| Element Type: | Soffit - Thin Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 299.24 |

Comments:
Random hairline cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | |
|-----------------|---------------------|--|---------------------|
| Element Group: | Decks | Length: | Width: |
| Element Name: | Drainage | | |
| Location: | Each side of deck | Height: | Count: 6 |
| Material: | Steel | Total Quantity: 6.00 | |
| Element Type: | Steel drain pipes | Subtype: | Environment: Severe |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | Each | | 6.00 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Large tree located on southwest embankment,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------------|
| None | Other | 2 Year | Remove tree from embankment |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Slope Protection

| | | | | | | |
|-----------------|-----------------------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Slope Protection | | | | Height: | Count: 1 |
| Location: | At each abutment | | | | Total Quantity: 1.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Hand laid riprap slope protection | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Joins - Seals/sealants

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Joins | | Length: | 8.80 | Width: | |
| Element Name: | Seals/sealants | | Height: | | Count: | 2 |
| Location: | Each end of deck | | Total Quantity: 17.60 | | | |
| Material: | Other | | | | | |
| Element Type: | Compression seal | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 8.80 | 8.80 | | |

Comments:

Light corrosion throughout steel armouring; Joints full of debris; Fair condition based on leakage noted on substructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean debris out of joints annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 38.00 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 68.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.20 | 0.50 | 67.70 | | |

Comments:

Light abrasions; Random light popouts; Disintegration on northeast corner.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Hwy #23 and Roa

Structure No: 25-70

MTO Site No: 25-70

| Repair/Rehabilitation Required |
|---------------------------------------|
| Associated Work |

| | Comments | Estimated Cost |
|----------------------------------|---|------------------|
| Approaches | Install steel beam guide rail on approaches | 30,000.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 5,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 45,000.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 45,000.00 |

Summary Action Report

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Inspection Date: 11/20/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.38

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Approaches | Wearing surface | | Rough riding surface |
| Decks | Drainage | | Deck drainage |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------------|-----------------|---------|-----------------------|
| Decks | Deck top | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |
| Decks | Drainage | | Bridge Cleaning |
| Joints | Seals/sealants | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| Total Associated Work Cost | | | \$0.00 |
| Total Cost | | | \$0.00 |

Overall Comments

Structure is in overall good condition; Maintenance work required.

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Inventory Data

| | | | | |
|--------------------|--------------------------|--------------------|---|-----------|
| Structure Name: | 14th Concession Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 66 | | | |
| Location: | 360m east of Highway #23 | | | |
| Latitude/Northing: | 43d37'24" | Longitude/Easting: | 81d02'56" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Elma | | | |
| Structure Type: | IB - I-Beams or Girders | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 28.1 m | Heritage Status: | N | |
| Deck Width: | 8.4 m | Road Class: | Local | |
| Deck Area: | 236.0 m ² | Lane Type: | | |
| Trav Deck Wdt | 7.3 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 8.10 km | |
| | | | m | |
| | | Skew Angle: | 35 degrees | |
| | | Structure Dir.: | East/West | |

Bridge Span BS-00039 27.90 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1972 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Field Inspection Information

Structure No.: 25-71

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: -3 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Maintenance work required.
 Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Element Data

Abutments - Ballast walls

| | | | | | |
|-----------------|---------------------------------|---|-----------------------|--------------|-----------|
| Element Group: | Abutments | Length: 10.30 | Width: 2 | | |
| Element Name: | Ballast walls | | | Height: 1.40 | Count: 2 |
| Location: | At each abutment behind girders | Total Quantity: 28.84 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Ballast Walls | Subtype: | Environment: Moderate | | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 7.20 | 21.64 | |

Comments:

Light staining and leakage from expansion joints noted on visible portions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Abutments | Length: 10.30 | Width: 1.20 | | |
| Element Name: | Abutment walls | | | Height: 3.50 | Count: 2 |
| Location: | Each end | Total Quantity: 96.82 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 2.80 | 94.02 | |

Comments:

Medium vertical stained cracking on east abutment; Light scaling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Abutments - Bearings

| | | | | | |
|-----------------|-------------------------|----------|---|--------|-----------|
| Element Group: | Abutments | | Length: | Width: | |
| Element Name: | Bearings | | Height: | Count: | 8 |
| Location: | At each abutment | | Total Quantity: 8.00 | | |
| Material: | Other | | | | |
| Element Type: | Elastomeric pad bearing | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|---|
| Element Group: | Abutments | | Length: | 9.20 | Width: | |
| Element Name: | Wingwalls | | Height: | 3.20 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 117.76 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 117.76 | | |

Comments:

Light scaling; Light salt staining at joints.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|----------|-------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 8.20 | Width: | 7.30 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | Each approach | | | | Total Quantity: 119.72 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | Subtype: | | Environment: | Severe | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 7.40 | 15.20 | 97.12 | | | | |

Comments:

Medium to severe potholes in gravel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | | | |
|-----------------|---------------------|------|----------|--------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 43.00 | Width: | |
| Element Name: | Hand Railings | | | | Height: | | Count: | 4 |
| Location: | At each barrier | | | | Total Quantity: 172.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Double hand railing | | Subtype: | | Environment: | Severe | | |
| Prot. System: | Hot dip galvanizing | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m | | | 172.00 | | | | |

Comments:

Light corrosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Barriers - Barrier/Parapet Walls

Element Group: Barriers
 Element Name: Barrier/Parapet Walls
 Location: Each side
 Material: Cast-in-place concrete
 Element Type: Parapet Wall with two rails
 Prot. System: None

Length: 44.30 Width:
 Height: 0.60 Count: 2
 Total Quantity: 53.16

Subtype: Environment: Severe
 Limited Inspected

Condition Data: Units Poor Fair Good Excellent
 m2 0.50 1.30 51.36

Comments:
 Random light popouts; Light scaling and salt staining; Severe abrasion at southwest corner; Isolated narrow to medium cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

Element Group: Beams/MLEs
 Element Name: Girders
 Location: Below deck top
 Material: Precast concrete
 Element Type: I-type - Girder
 Prot. System: None

Length: 27.90 Width: 0.55
 Height: 1.40 Count: 4
 Total Quantity: 496.62

Subtype: Environment: Benign
 Limited Inspected

Condition Data: Units Poor Fair Good Excellent
 m2 496.62

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Beams/MLEs - Diaphragms

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 1.40 | Width: | 0.25 |
| Element Name: | Diaphragms | | Height: | 1.10 | Count: | 9 |
| Location: | Ends and middle | | Total Quantity: 30.87 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Rectangular-solid diaphragms | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 30.87 | | |

Comments:

Some light honeycombing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 28.10 | Width: | 8.10 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | Over girders | | Total Quantity: 227.61 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 227.61 | | |

Comments:

Random light abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Decks - Soffit-Thin Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 27.90 | Width: | 10.30 |
| Element Name: | Soffit-Thin Slab | | Height: | 0.20 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 292.95 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thin Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 292.95 | | |

Comments:

Light salt staining on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|---------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 8 | | |
| Location: | Each side of deck | | Total Quantity: 8.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 8.00 | | | | |

Comments:

Light to medium corrosion at surface; Drains plugged with debris.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------|
| Deck drainage | Bridge Cleaning | 1 Year | Clean deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Joints - Seals/sealants

| | | | | | | |
|-----------------|------------------|----------|---|--------|-----------|--|
| Element Group: | Joints | | Length: | 10.30 | Width: | |
| Element Name: | Seals/sealants | | Height: | Count: | 2 | |
| Location: | Each end of deck | | Total Quantity: 20.60 | | | |
| Material: | | | | | | |
| Element Type: | Compression seal | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 20.60 | | | |

Comments:

Joints mostly covered with gravel; Some cracking of rubber seal noted; Assumed to be in fair condition based on leakage and staining noted on ballast wall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean expansion joints annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|-------|
| Element Group: | Sidewalks/curbs | | Length: | 44.40 | Width: | 0.55 |
| Element Name: | Curbs | | Height: | 0.23 | Count: | 2 |
| Location: | Each side | | Total Quantity: | | | 69.26 |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 69.26 | | |

Comments:

Light scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curb annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: 14th Concession Bridge

Structure No: 25-71

MTO Site No: 25-71

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hw

Structure No: 25-73

MTO Site No: 25-73

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 74.92 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------------|-------------|---------|------------------|
| Decks | Deck top | | Bridge Cleaning |
| Decks | Drainage | | Bridge Cleaning |
| Sidewalks/curbs | Curbs | | Bridge Cleaning |
| Embankments & Streams | Embankments | | Other |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|----------|-----------------------|----------|--------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$5,000.00 |
| Total Associated Work Cost | | | | \$5,000.00 |
| Total Cost | | | | \$10,000.00 |

Overall Comments

Structure is in overall good condition; Deck drain replacement and some maintenance work required,

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hwy

Structure No: 25-73

MTO Site No: 25-73

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|------------|
| Structure Name: | North Perth Line 66 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 66 | | | | |
| Location: | 2800m east of Highway #23 | | | | |
| Latitude/Northing: | 43d37'00" | Longitude/Easting: | 81d01'53" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 13.8 m | Detour Length: | 8.10 km | Skew Angle: | 40 degrees |
| Deck Width: | 9.6 m | | m | Structure Dir.: | East/West |
| Deck Area: | 132.5 m ² | | | | |
| Trav Deck Wdt | 8.6 m | | | | |

Bridge Span BS-00040 12.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hwy

Structure No: 25-73

MTO Site No: 25-73

Field Inspection Information

Structure No.: 25-73

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Comments: Structure is in overall good condition; Deck drain replacement and some maintenance work required,
 BCI Change Justification: Replace deck drains to prolong life of structure.

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hwy

Structure No: 25-73

MTO Site No: 25-73

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 12.50 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Height: 2.60 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 65.00 | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 65.00 |
| | | | Excellent |

Comments:

Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 5.80 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.45 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 56.84 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 56.84 |
| | | | Excellent |

Comments:

Light scaling; Hairline stained cracks; Light salt staining at corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hwy

Structure No: 25-73

MTO Site No: 25-73

Approaches - Wearing surface

| | | | | | | |
|-----------------|------------------|----------|--|-------|--------------|--------|
| Element Group: | Approaches | | Length: | 5.00 | Width: | 8.60 |
| Element Name: | Wearing surface | | Height: | | Count: | 2 |
| Location: | At each approach | | Total Quantity: 86.00 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing Surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 86.00 | | |

Comments:

Light potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 22.80 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 4 |
| Location: | At each barrier | | Total Quantity: 91.20 | | | |
| Material: | Steel | | | | | |
| Element Type: | Double hand railing | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 91.20 | | |

Comments:

Isolated light corrosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hw

Structure No: 25-73

MTO Site No: 25-73

Barriers - Barrier/Parapet Walls

Element Group: Barriers
 Element Name: Barrier/Parapet Walls
 Location: Each side
 Material: Cast-in-place concrete
 Element Type: Parapet Wall with two rails
 Prot. System: None

Length: 23.80 Width:
 Height: 0.60 Count: 2
 Total Quantity: 28.56

Subtype: Environment: Severe

Limited Inspected

Condition Data: Units Poor Fair Good Excellent
 m2 0.10 1.90 26.56

Comments:

Small light spalls with exposed corroded rebar; Random light popouts; Light to medium scaling and honeycombing throughout; Medium salt and rust staining; Isolated hairline stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

Element Group: Decks
 Element Name: Deck top
 Location: All
 Material: Cast-in-place concrete
 Element Type: Deck top
 Prot. System: None

Length: 13.80 Width: 9.30
 Height: Count: 1
 Total Quantity: 128.34

Subtype: Environment: Severe

Limited Inspected

Condition Data: Units Poor Fair Good Excellent
 m2 128.34

Comments:

Light abrasions and popouts; Water ponding on deck due to gravel build up.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hw

Structure No: 25-73

MTO Site No: 25-73

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 12.10 | Width: | 12.50 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.60 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 165.77 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 165.77 | | |

Comments:

Hairline to narrow wet pattern cracking on underside; Light staining and scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 4 |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 4.00 | | | | |

Comments:

All drains are plugged and have severe corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------|
| None | Bridge Cleaning | 1 Year | Clean deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hw

Structure No: 25-73

MTO Site No: 25-73

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

Light erosion of all embankments; Tree growing on southwest embankment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------------|
| None | Other | 2 Year | Remove tree from southwest embankment |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | 1.00 | | |

Comments:

Heavy sediment build up at both abutments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hw

Structure No: 25-73

MTO Site No: 25-73

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | 1 |
| Element Name: | Foundation (below grade level) | | Height: | Count: | |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 23.80 | Width: | 0.25 |
| Element Name: | Curbs | | Height: | 0.28 | Count: | 2 |
| Location: | Each side | | Total Quantity: 25.23 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.30 | 24.93 | | |

Comments:

Narrow to medium stained cracks throughout; Light scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off curbs annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hw

Structure No: 25-73

MTO Site No: 25-73

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Hwy

Structure No: 25-73

MTO Site No: 25-73

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|----------|-----------------------|----------|-------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$5,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 1,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 2,000.00 |
| Contingencies | 10% | 1,000.00 |
| Engineering | | 1,000.00 |
| Total Associated Work Cost | | 5,000.00 |
| Total Repair/Rehabilitation Cost | | 5,000.00 |
| Total Cost | | 10,000.00 |

Summary Action Report

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin
Structure No: 25-74
MTO Site No: 25-74

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 74.12
Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|---------------|----------|---------|----------------------------|--------|
| Decks | Drainage | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Minor maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin

Structure No: 25-74

MTO Site No: 25-74

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 159 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 159 | | | | | | | | |
| Location: | 780m south of Line 66 | | | | | | | | |
| Latitude/Northing: | 43d36'34" | | | Longitude/Easting: | 81d02'09" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | RF - Rigid Frame | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 10.7 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 9.8 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 104.9 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 8.6 m | | | | | | | | |

Bridge Span BS-00041 9.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1965 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin
 Structure No: 25-74
 MTO Site No: 25-74

Field Inspection Information

Structure No.: 25-74

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Minor maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin
 Structure No: 25-74
 MTO Site No: 25-74

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 20.80 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 41.60 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | 0.50 | 3.10 | 38.00 | | |

Comments:

Light to medium scaling throughout; Medium vertical cracking at connections to posts; Severe delamination and spalling with exposed corroded rebar and wide cracking on northwest post

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|------|---|--------|--------------|--------|
| Element Group: | Decks | | Length: | 10.70 | Width: | 9.50 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 101.65 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 101.65 | | |

Comments:

Not visible, assumed to be in good condition based on condition of soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin

Structure No: 25-74

MTO Site No: 25-74

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|---|-------|--------------|--------|
| Element Group: | Decks | | Length: | 9.10 | Width: | 9.70 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.50 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 97.37 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 3.20 | 94.17 | | |

Comments:

Light to medium scaling and staining on faces; Narrow crack with efflorescence on west face; Hairline wet pattern cracking and exposed corroded rebar chairs on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|-------------------|----------|--|------|--------------|--------|
| Element Group: | Decks | | Length: | | Width: | |
| Element Name: | Drainage | | Height: | | Count: | 4 |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Light corrosion throughout; Two of the drains are plugged with debris.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------------|
| None | Bridge Cleaning | 1 Year | Clean deck drains annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin
 Structure No: 25-74
 MTO Site No: 25-74

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 20.80 | Width: | 8.60 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 178.88 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 178.88 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Medium erosion of all embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin

Structure No: 25-74

MTO Site No: 25-74

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition base on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin

Structure No: 25-74

MTO Site No: 25-74

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|--|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 20.80 | Width: | 0.58 |
| Element Name: | Curbs | | | | Height: | 0.28 | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 35.78 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 1.00 | 2.30 | 32.48 | | | | |

Comments:

Light delaminations; Narrow to wide stained cracks; Light to medium scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | | | | |
|-----------------|------------------|----------|------|--------------|--|--|--------|---|
| Element Group: | Signs | | | | Length: | | Width: | |
| Element Name: | Signs | | | | Height: | | Count: | 4 |
| Location: | At each approach | | | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Hazard markers | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | Each | | | 4.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 60 and Lin

Structure No: 25-74

MTO Site No: 25-74

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin
Structure No: 25-75
MTO Site No: 25-75

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 73.28 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin

Structure No: 25-75

MTO Site No: 25-75

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 159 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 159 | | | | |
| Location: | 110m south of Line 66 | | | | |
| Latitude/Northing: | 43d36'54" | Longitude/Easting: | 81d01'53" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 8.5 m | Detour Length: | 8.10 km | Skew Angle: | 5 degrees |
| Deck Width: | 14.6 m | | m | Structure Dir.: | North/South |
| Deck Area: | 124.1 m2 | | | | |
| Trav Deck Wdt | 5.6 m | | | | |

Bridge Span BS-00042 7.40 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1967 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin
 Structure No: 25-75
 MTO Site No: 25-75

Field Inspection Information

Structure No.: 25-75

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin

Structure No: 25-75

MTO Site No: 25-75

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|---|-------------|
| Element Group: | Culverts | Length: 14.60 | Width: 7.40 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 195.64 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Open Footing Barrel | Environment: <input type="text" value="Benign"/> | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 9.80 |
| | | | 185.84 |
| | | | |

Comments:

Hairline wet pattern cracking and light honeycombing on soffit; Light to medium scaling on legs and exterior faces; Narrow stained vertical cracks on legs; Cold joints on legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|-------------|
| Element Group: | Decks | Length: 8.50 | Width: 5.60 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 47.60 | |
| Material: | Gravel | Subtype: <input type="text"/> | |
| Element Type: | Wearing surface | Environment: <input type="text" value="Severe"/> | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 47.60 |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin

Structure No: 25-75

MTO Site No: 25-75

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Embankments are steep with light erosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin

Structure No: 25-75

MTO Site No: 25-75

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to e in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 159 - Bridge between Line 66 and Lin

Structure No: 25-75

MTO Site No: 25-75

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro

Structure No: 25-76

MTO Site No: 25-76

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 74.50 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost **\$0.00**

Total Cost **\$0.00**

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro

Structure No: 25-76

MTO Site No: 25-76

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|------------|
| Structure Name: | North Perth Line 66 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 66 | | | | |
| Location: | 1100m west of Road 154 | | | | |
| Latitude/Northing: | 43d36'44" | Longitude/Easting: | 81d01'22" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 5.7 m | Detour Length: | 8.10 km | Skew Angle: | 15 degrees |
| Deck Width: | 14.8 m | | m | Structure Dir.: | East/West |
| Deck Area: | 84.4 m ² | | | | |
| Trav Deck Wdt | 5.5 m | | | | |

Bridge Span BS-00043 5.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1980 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro:
 Structure No: 25-76
 MTO Site No: 25-76

Field Inspection Information

Structure No.: 25-76

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro

Structure No: 25-76

MTO Site No: 25-76

Element Data

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|-------------|----------|-----------|
| Element Group: | Abutments | Length: 4.40 | Width: 5.00 | Count: 1 | |
| Element Name: | Wingwalls | | | | |
| Location: | Northeast quadrant | Total Quantity: 14.08 | | | |
| Material: | Cast-in-place concrete | Environment: Benign | | | |
| Element Type: | Wingwalls | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | | 14.08 | |

Comments:

Light scaling throughout; Light disintegration at east end; Hairline stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Culverts - Barrels

| | | | | | |
|-----------------|------------------------|--|-------------|----------|-----------|
| Element Group: | Culverts | Length: 15.30 | Width: 5.00 | Count: 1 | |
| Element Name: | Barrels | | | | |
| Location: | All | Total Quantity: 165.24 | | | |
| Material: | Cast-in-place concrete | Environment: Benign | | | |
| Element Type: | Open Footing Barrel | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 2.60 | 162.64 | |

Comments:

Hairline wet and stained pattern cracking on soffit; Hairline to medium vertical stained cracks on legs; Light scaling on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro

Structure No: 25-76

MTO Site No: 25-76

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 5.70 | Width: | 5.50 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over culvert | | Total Quantity: 31.35 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 31.35 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro

Structure No: 25-76

MTO Site No: 25-76

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Light sediment build up throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 66 - Bridge between Road 159 and Ro:

Structure No: 25-76

MTO Site No: 25-76

| Repair/Rehabilitation Required |
|---------------------------------------|
| Associated Work |

| | Comments | | Estimated Cost |
|----------------------------------|----------|--|----------------|
| Approaches | | | 0.00 |
| Detours | | | 0.00 |
| Traffic Control | | | 0.00 |
| Utilities | | | 0.00 |
| Right-of-Way | | | 0.00 |
| Environmental Study | | | 0.00 |
| Other | | | 0.00 |
| Contingencies | 10% | | 0.00 |
| Engineering | | | 0.00 |
| Total Associated Work Cost | | | 0.00 |
| Total Repair/Rehabilitation Cost | | | 0.00 |
| Total Cost | | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin

Structure No: 25-77

MTO Site No: 25-77

Inspection Date: 11/20/2013 mm/dd/yyyy
Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Condition Index Value (BCI) 70.30

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|---------|-----------------------|----------------------------------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$5,000 |
| | | | Total Repair/Rehabilitation Cost | \$5,000.00 |
| | | | Total Associated Work Cost | \$5,000.00 |
| | | | Total Cost | \$10,000.00 |

Overall Comments

Structure is in overall good condition; Some concrete rehabilitation required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin

Structure No: 25-77

MTO Site No: 25-77

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 154 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 154 | | | | | | | | |
| Location: | 230m south of Line 66 | | | | | | | | |
| Latitude/Northing: | 43d36'18" | | | Longitude/Easting: | 81d00'36" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | BO - Box, Open Footing | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 6.9 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 13.4 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 5 degrees |
| Deck Area: | 92.5 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 5.3 m | | | | | | | | |

Bridge Span BS-00044 6.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin
 Structure No: 25-77
 MTO Site No: 25-77

Field Inspection Information

Structure No.: 25-77

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 70.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some concrete rehabilitation required.

Comments

BCI Change Repair poor concrete to prolong life of structure.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin

Structure No: 25-77

MTO Site No: 25-77

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|-------------|
| Element Group: | Culverts | Length: 13.40 | Width: 6.10 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 140.70 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Open Footing Barrel | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 2.40 | 14.10 |
| | | | 124.20 |
| | | | Excellent |

Comments:

Severe delamination, spalling and exposed corroded rebar with severe disintegration and medium to wide cracking with efflorescence on southeast leg; Medium to wide pattern cracking with efflorescence at top of legs on exterior faces; Light to medium scaling on exterior faces; Light to medium scaling and honeycombing throughout barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|-------------|
| Element Group: | Decks | Length: 6.90 | Width: 5.30 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 36.57 | |
| Material: | Gravel | Subtype: <input type="text"/> | |
| Element Type: | Wearing surface | Environment: <input type="text"/> Severe | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 36.57 |
| | | | Excellent |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin

Structure No: 25-77

MTO Site No: 25-77

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion of embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin

Structure No: 25-77

MTO Site No: 25-77

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 60 and Lin

Structure No: 25-77

MTO Site No: 25-77

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|-----------------------|----------|-------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$5,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 1,000.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 1,000.00 |
| Contingencies | 10% | 1,000.00 |
| Engineering | | 1,000.00 |
| Total Associated Work Cost | | 5,000.00 |
| Total Repair/Rehabilitation Cost | | 5,000.00 |
| Total Cost | | 10,000.00 |

Summary Action Report

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 62.95 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Approaches | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|-----------------------|
| Decks | Deck top | | Bridge Cleaning |
| Approaches | Wearing surface | | Bridge Surface Repair |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|---|----------|---------------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$18,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$30,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$20,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$78,000.00 |
| Total Associated Work Cost | | | | \$92,000.00 |
| Total Cost | | | | \$170,000.00 |

Overall Comments

Structure is in overall fair conditon; Major concrete rehabilitation, curb and railing system replacemet and some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-----------|
| Structure Name: | North Perth Line 71 - Bridge between | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Line 71 | | | | | | | | |
| Location: | 615m east of Road 154 | | | | | | | | |
| Latitude/Northing: | 43d37'32" | | | Longitude/Easting: | 81d00'11" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | RF - Rigid Frame | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 9.8 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 8.6 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 84.3 m2 | | | | m | | | Structure Dir.: | East/West |
| Trav Deck Wdt | 7.4 m | | | | | | | | |

Bridge Span BS-00045 9.20 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1962 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Field Inspection Information

Structure No.: 25-78

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 63.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair conditon; Major concrete rehabilitation, curb and railing system replacemet and some maintenance work required.

BCI Change Justification Repair poor concrete to prolong life of structure; Replace curb and railing system to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 8.40 Width: 2.60 | Count: 2 | | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Total Quantity: 43.68 | | | |
| Material: | Cast-in-place concrete | Subtype: | Environment: Benign | | |
| Element Type: | Conventional closed | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | 2.40 | 41.28 | |

Comments:

Medium vertical stained cracks; 3 weepers per side with salt staining and incrustations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 4.90 Width: 2.40 | Count: 4 | | |
| Element Name: | Wingwalls | | | | |
| Location: | Each quadrant | Total Quantity: 47.04 | | | |
| Material: | Cast-in-place concrete | Subtype: | Environment: Benign | | |
| Element Type: | Wingwalls | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 5.50 | 8.30 | 33.24 | |

Comments:

Light to medium scaling and popouts; Isolated hairline stained cracks; Severe delamination with wide stained cracking and efflorescence at each corner.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Approaches - Wearing surface

| | | | | | | | | |
|-----------------|------------------|------|------|-------|--|--------|--------|------|
| Element Group: | Approaches | | | | Length: | 4.50 | Width: | 7.40 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 2 |
| Location: | At each approach | | | | Total Quantity: 66.60 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing Surface | | | | Subtype: | | | |
| Prot. System: | None | | | | Environment: | Severe | | |
| Condition Data: | Units | Poor | Fair | Good | <input type="checkbox"/> Limited Inspected | | | |
| | m2 | 3.50 | 7.00 | 56.10 | | | | |

Comments:

Light to severe potholes at each approach.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|-------------------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Grade gravel on approaches annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Railing Systems

| | | | | | | | | |
|-----------------|--------------------------------------|------|-------|------|--|--------|--------|---|
| Element Group: | Barriers | | | | Length: | 18.60 | Width: | |
| Element Name: | Railing Systems | | | | Height: | | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 37.20 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Concrete Post and continuous railing | | | | Subtype: | | | |
| Prot. System: | None | | | | Environment: | Severe | | |
| Condition Data: | Units | Poor | Fair | Good | <input type="checkbox"/> Limited Inspected | | | |
| | m | 4.50 | 32.70 | | | | | |

Comments:

Light to severe scaling and severe disintegration; Southwest post separated from curb and railing displaced due to vehicle impact; Narrow to wide stained cracking throughout; Small light spalls with exposed corroded rebar on posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 30,000.00 | Replace railing system with box beam guide rail |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac
 Structure No: 25-78
 MTO Site No: 25-78

Decks - Deck top

| | | |
|-----------------|------------------------|--|
| Element Group: | Decks | Length: 9.80 Width: 8.30 Height: Count: 1 |
| Element Name: | Deck top | |
| Location: | All | Total Quantity: 81.34 |
| Material: | Cast-in-place concrete | |
| Element Type: | Deck top | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Severe |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | 81.34 |

Comments:

Light scaling abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | |
|-----------------|------------------------------|---|
| Element Group: | Decks | Length: 9.20 Width: 8.40 Height: 0.50 Count: 1 |
| Element Name: | Soffit-Thick Slab | |
| Location: | Underside and exterior faces | Total Quantity: 86.48 |
| Material: | Cast-in-place concrete | |
| Element Type: | Soffit - Thick Slab | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Limited Inspected |
| | Poor | |
| | Fair | |
| | Good | |
| | Excellent | |
| | m2 | 10.50 |
| | | 17.80 |
| | | 58.18 |

Comments:

Severe delamination and wide cracking with efflorescence on south face; Severe delamination and spalling with exposed corroded rebar and a full length medium crack on the underside; Light to medium scaling, salt staining and efflorescence on north face.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 20,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 18.80 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.25 | Count: | 2 |
| Location: | Each side | | Total Quantity: 31.96 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 12.80 | 19.16 | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar and narrow to wide stained cracks; Light to severe scaling and disintegration; Severe abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 18,000.00 | Remove and replace curb |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 71 - Bridge between Road 158 ad Roac

Structure No: 25-78

MTO Site No: 25-78

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|---|----------|--------------------|
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$18,000 |
| Barriers | Railing Systems | Replace railing system with box beam guide rail | 1-5 | \$30,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$20,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$78,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | Add guide rail on approaches | 30,000.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 16,000.00 |
| Contingencies | 10% | 15,000.00 |
| Engineering | | 25,000.00 |
| Total Associated Work Cost | | 92,000.00 |
| Total Repair/Rehabilitation Cost | | 78,000.00 |
| Total Cost | | 170,000.00 |

Summary Action Report

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin
 Structure No: 25-79
 MTO Site No: 25-79

Inspection Date: 11/22/2013 mm/dd/yyyy Condition Index Value (BCI) 54.40
 Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|-----------------------|
| Decks | Wearing surface | | Bridge Surface Repair |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|---------------------------------------|----------|---------------------|
| | | Install guide rail over structure | 1-5 | \$20,000 |
| Culverts | Barrels | Repair poor concrete | 1-5 | \$15,000 |
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$10,000 |
| Embankments & | Streams and Waterways | Place rock protection along south leg | 1-5 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$60,000.00 |
| Total Associated Work Cost | | | | \$60,000.00 |
| Total Cost | | | | \$120,000.00 |

Overall Comments

Structure is in overall fair condition; Major concrete rehabilitation required and guide rail should be installed over structure. Also, consideration should be given to completely removing curbs and wingwalls and placing new extensions at each end which will improve embankments and vehicle safety and limit the amount of guide rail required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin

Structure No: 25-79

MTO Site No: 25-79

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 154 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 154 | | | | |
| Location: | 310m south of Perth County Line 72 | | | | |
| Latitude/Northing: | 43d38'11" | Longitude/Easting: | 80d59'09" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 8.2 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 7.3 m | | m | Structure Dir.: | North/South |
| Deck Area: | 59.9 m2 | | | | |
| Trav Deck Wdt | 5.7 m | | | | |

Bridge Span BS-00052 7.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1951 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin
 Structure No: 25-79
 MTO Site No: 25-79

Field Inspection Information

Structure No.: 25-79

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 54.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major concrete rehabilitation required and guide rail should be installed over structure. Also, consideration should be given to completely removing curbs and wingwalls and placing new extensions at each end which will improve embankments and vehicle safety and limit the amount of guide rail required.

BCI Change Justification Repair poor concrete to extend life of structure; Install guide rail over structure to improve vehicle safety.

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin

Structure No: 25-79

MTO Site No: 25-79

Element Data

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 2.70 | Width: 7.30 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.15 | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 23.22 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 8.60 | 14.62 |
| | | Good | Excellent |

Comments:

Severe delamination, spalling, exposed corroded rebar and disintegration with wide stained cracking with efflorescence; Medium scaling throughout; Severe popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 7.30 | Width: 7.30 |
| Element Name: | Barrels | | |
| Location: | All | Height: 2.40 | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 88.33 | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 9.10 | 11.40 |
| | | Good | Excellent |

Comments:

Severe delamination, spalling, exposed corroded rebar and disintegration with medium to wide stained cracking with efflorescence on exterior faces; Hairline to narrow wet pattern cracking on soffit; Light to medium scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin
 Structure No: 25-79
 MTO Site No: 25-79

Decks - Wearing surface

| | | | | | | | | |
|-----------------|-----------------|------|------|-------|--|--------|--------|------|
| Element Group: | Decks | | | | Length: | 8.20 | Width: | 5.70 |
| Element Name: | Wearing surface | | | | Height: | | Count: | 1 |
| Location: | Over culvert | | | | Total Quantity: 46.74 | | | |
| Material: | Gravel | | | | | | | |
| Element Type: | Wearing surface | | | | Subtype: | | | |
| Prot. System: | None | | | | Environment: | Severe | | |
| Condition Data: | Units | Poor | Fair | Good | <input type="checkbox"/> Limited Inspected | | | |
| | m ² | 8.15 | 8.15 | 30.44 | | | | |

Comments:

Multiple medium to severe potholes over structure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|--------------------------------------|
| None | Bridge Surface Repair | 1 Year | Grade gravel over structure annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | | | |
|-----------------|-----------------------|------|------|------|--|--------|--------|---|
| Element Group: | Embankments & Streams | | | | Length: | | Width: | |
| Element Name: | Embankments | | | | Height: | | Count: | 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | | | |
| Element Type: | Embankments | | | | Subtype: | | | |
| Prot. System: | None | | | | Environment: | Benign | | |
| Condition Data: | Units | Poor | Fair | Good | <input type="checkbox"/> Limited Inspected | | | |
| | Each | | 4.00 | | | | | |

Comments:

Embankments are very steep and all have light erosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin

Structure No: 25-79

MTO Site No: 25-79

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | 1.00 | | |

Comments:

Stream is out of alignment with structure causing severe scour along south leg and aggradation along north leg.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along south leg |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin

Structure No: 25-79

MTO Site No: 25-79

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 12.80 | Width: | 0.30 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 15.36 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 8.70 | 6.66 | | | |

Comments:

Severe delamination, spalling and disintegration with narrow to medium stained cracking with efflorescence throughout; Medium scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Remove and replace curb |

Signs - Signs

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 72 and Lin

Structure No: 25-79

MTO Site No: 25-79

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|---------------------------------------|----------|--------------------|
| | | Install guide rail over structure | 1-5 | \$20,000 |
| Culverts | Barrels | Repair poor concrete | 1-5 | \$15,000 |
| Sidewalks/curbs | Curbs | Remove and replace curb | 1-5 | \$10,000 |
| Embankments & | Streams and Waterways | Place rock protection along south leg | 1-5 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$60,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | Add guide rail on approaches | 30,000.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 8,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 10,000.00 |
| Total Associated Work Cost | | 60,000.00 |
| Total Repair/Rehabilitation Cost | | 60,000.00 |
| Total Cost | | 120,000.00 |

Summary Action Report

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin
Structure No: 25-271
MTO Site No: 25-271

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 74.52
Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------------|-------------|----------------------------|------------------|
| Embankments & Streams | Embankments | | Other |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: 25-271

MTO Site No: 25-271

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 154 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 154 | | | | |
| Location: | 1250m south of Line 60 | | | | |
| Latitude/Northing: | 43d34'52" | Longitude/Easting: | 81d00'29" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 9.0 m | Detour Length: | 8.00 km | Skew Angle: | 30 degrees |
| Deck Width: | 16.6 m | | m | Structure Dir.: | North/South |
| Deck Area: | 149.4 m2 | | | | |
| Trav Deck Wdt | 5.6 m | | | | |

Bridge Span BS-00033 6.50 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin
 Structure No: 25-271
 MTO Site No: 25-271

Field Inspection Information

Structure No.: 25-271

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: -5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin
 Structure No: 25-271
 MTO Site No: 25-271

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|---|-------------|
| Element Group: | Culverts | Length: 19.20 | Width: 5.50 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 190.08 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Open Footing Barrel | Environment: <input type="text" value="Benign"/> | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 0.20 | 2.20 |
| | | | Good |
| | | | 187.68 |
| | | | Excellent |
| | | | |

Comments:

Light to medium scaling on faces; Light honeycombing on legs and soffit; Narrow cracks at corners of legs; Light rust staining; Isolated small spall with exposed corroded rebar on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|-------------|
| Element Group: | Decks | Length: 9.00 | Width: 5.60 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 50.40 | |
| Material: | Gravel | Subtype: <input type="text"/> | |
| Element Type: | Wearing surface | Environment: <input type="text" value="Severe"/> | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 50.40 |
| | | | Good |
| | | | Excellent |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: 25-271

MTO Site No: 25-271

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | 1.00 | 1.00 | | |

Comments:

Severe erosion of east embankments; Tree growing at southwest corner of culvert.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | Other | 2 Year | Stabilize eroded embankments, remove tree |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: 25-271

MTO Site No: 25-271

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
 Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: 25-271

MTO Site No: 25-271

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|---------------------|----------------------------------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| | Total Associated Work Cost | 0.00 |
| | Total Repair/Rehabilitation Cost | 0.00 |
| | Total Cost | 0.00 |

Summary Action Report

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro:
 Structure No: 25-272
 MTO Site No: 25-272

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 73.07
 Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Decks | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|-----------------------|
| Decks | Wearing surface | | Bridge Surface Repair |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|-------------------------------|----------|--------------------|
| Culverts | Barrels | Replace 300 dia. CSP | 1-5 | \$2,000 |
| Embankments & | Embankments | Remove trees from embankments | 1-5 | \$1,000 |
| Decks | Wearing surface | Repave over structure | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$13,000.00 |
| Total Associated Work Cost | | | | \$7,000.00 |
| Total Cost | | | | \$20,000.00 |

Overall Comments

Structure is in overall good condition; Some minor rehabilitation work required including repaving over structure.

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: 25-272

MTO Site No: 25-272

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 60 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 60 | | | | |
| Location: | 630m west of Road 154 | | | | |
| Latitude/Northing: | 43d35'37" | Longitude/Easting: | 81d01'42" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 6.9 m | Detour Length: | 8.00 km | Skew Angle: | 0 degrees |
| Deck Width: | 19.5 m | | m | Structure Dir.: | East/West |
| Deck Area: | 134.6 m ² | | | | |
| Trav Deck Wdt | 6.6 m | | | | |

Bridge Span BS-00036 6.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1968 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro
 Structure No: 25-272
 MTO Site No: 25-272

Field Inspection Information

Structure No.: 25-272

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: -3 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments: Structure is in overall good condition; Some minor rehabilitation work required including repaving over structure.

BCI Change Justification: Repave over structure to prevent ongoing costly maintenance work.

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: 25-272

MTO Site No: 25-272

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|----------------------|
| Element Group: | Culverts | Length: 19.50 | Width: 6.10 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 255.45 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Open Footing Barrel | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | <input type="text"/> | 12.80 |
| | | <input type="text"/> | 242.65 |
| | | <input type="text"/> | <input type="text"/> |
| | | <input type="text"/> | <input type="text"/> |

Comments:

Light to medium scaling and honeycombing throughout; Exposed corroded rebar chairs on soffit; Severely corroded 300 dia. CSP in east wall causing rust staining and incrustations; Narrow cracking at top of legs on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------------------|
| | 1-5 yrs | 2,000.00 | Replace 300 dia. CSP |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|----------------------|
| Element Group: | Decks | Length: 6.90 | Width: 6.60 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 45.54 | |
| Material: | Asphalt | Subtype: <input type="text"/> | |
| Element Type: | Wearing surface | Environment: <input type="text"/> Severe | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | 3.30 | 13.20 |
| | | <input type="text"/> | 29.04 |
| | | <input type="text"/> | <input type="text"/> |

Comments:

Medium settlement at west and light settlement at east transition both with patches and wide transverse cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|----------------------|-----------------------|--------|----------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Patch transitions annually |
|----------------------|-----------------------|--------|----------------------------|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|-----------------------|
| | 1-5 yrs | 10,000.00 | Repave over structure |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro
 Structure No: 25-272
 MTO Site No: 25-272

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 1.00 | 3.00 | |

Comments:

Light erosion of all embankments; Large trees located on northwest and southeast embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 1,000.00 | Remove trees from embankments |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: 25-272

MTO Site No: 25-272

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
 Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: 25-272

MTO Site No: 25-272

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|-------------------------------|----------|--------------------|
| Culverts | Barrels | Replace 300 dia. CSP | 1-5 | \$2,000 |
| Embankments & | Embankments | Remove trees from embankments | 1-5 | \$1,000 |
| Decks | Wearing surface | Repave over structure | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$13,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 2,000.00 |
| Contingencies | 10% | 1,000.00 |
| Engineering | | 2,000.00 |
| Total Associated Work Cost | | 7,000.00 |
| Total Repair/Rehabilitation Cost | | 13,000.00 |
| Total Cost | | 20,000.00 |

Summary Action Report

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Inspection Date: 11/19/2013 mm/dd/yyyy
 Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 72.93

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|---------|---------|-----------------------------|
| Signs | Signs | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|---------|---------|------------------|
| Signs | Signs | | Other |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|---------------------|
| | | Add guide rail over structure | 1-5 | \$15,000 |
| Embankments & | Streams and Waterways | Place rock protection along west footing | 1-5 | \$5,000 |
| Decks | Wearing surface | Waterproof barrel and repave | 1-5 | \$15,000 |
| Total Repair/Rehabilitation Cost | | | | \$35,000.00 |
| Total Associated Work Cost | | | | \$85,000.00 |
| Total Cost | | | | \$120,000.00 |

Overall Comments

Structure is in overall good condition; Guide rail should be added over structure and on approaches.

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Inventory Data

| | | | | |
|--------------------|------------------------|--------------------|--|-----------|
| Structure Name: | Ludwing Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Line 87 | | | |
| Location: | 335m east of Road 165 | | | |
| Latitude/Northing: | 43d45'44" | Longitude/Easting: | 80d57,18" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | BO - Box, Open Footing | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 7.0 m | Heritage Status: | N | |
| Deck Width: | 8.1 m | Road Class: | Collector | |
| Deck Area: | 56.7 m ² | Lane Type: | | |
| Trav Deck Wdt | 6.4 m | Posted Speed: | 80 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 9.10 km m | |
| | | Skew Angle: | 0 degrees | |
| | | Structure Dir.: | East/West | |

Bridge Span BS-00003 6.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1960 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Field Inspection Information

Structure No.: 25-287

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 72.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Guide rail should be added over structure and on approaches.

Comments

BCI Change Waterproof barrel to prevent further concrete deterioration.
 Justification

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Element Data

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 3.00 | Width: 6.10 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.50 | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 30.00 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 0.30 | 1.20 |
| | | | Good |
| | | | 28.50 |
| | | | Excellent |

Comments:

Light to medium scaling; Narrow to wide stained cracks throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 8.00 | Width: 6.10 |
| Element Name: | Barrels | | |
| Location: | All | Height: 2.40 | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 87.20 | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 4.40 |
| | | | Good |
| | | | 82.80 |
| | | | Excellent |

Comments:

Light to medium scaling, narrow to medium stained cracking with moisture and efflorescence and a cold joint joint with leakage and staining all on exterior faces; Hairline to narrow wet and stained pattern cracking on soffit; Isolated hairline cracks and exposed corroded form ties on legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|-------|--------------|--------|
| Element Group: | Decks | | Length: | 7.00 | Width: | 6.40 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over culvert | | Total Quantity: 44.80 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 2.50 | 5.50 | 36.80 | | |

Comments:

Wide transverse crack just west of structure; Light settlement at south transitions and medium settlement with patching at north transitions; Medium longitudinal cracking along south edge; Light wheel track rutting.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Waterproof barrel and repave |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|------|--------------|--------|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Steep embankments; Slopes migrating around ends of wingwalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | 1.00 | | |

Comments:

Stream out of alignment with structure; Light aggradation along east leg and severe scour along west leg.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along west footing |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Only partially visible below west leg, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Sidewalks/curbs - Curbs

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.80 Width: 0.30
 Height: 0.50 Count: 2
 Total Quantity: 10.88

Condition Data:

Environment:
 Limited Inspected

Comments:
 Light to medium scaling throughout; Hairline to narrow stained cracking; Random light popouts; Severe abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: Width:
 Height: Count:
 Total Quantity: 0.00

Condition Data:

Environment:
 Limited Inspected

Comments:
 Only small reflectors present at structure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------------------|
| Pedestrian/vehicular hazard | Other | 1 Year | Place hazard markers at structure |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Ludwing Bridge**

Structure No: **25-287**

MTO Site No: **25-287**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--|----------|--------------------|
| | | Add guide rail over structure | 1-5 | \$15,000 |
| Embankments & | Streams and Waterways | Place rock protection along west footing | 1-5 | \$5,000 |
| Decks | Wearing surface | Waterproof barrel and repave | 1-5 | \$15,000 |
| Total Repair/Rehabilitation Cost | | | | \$35,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | Add guide rail on approaches | 30,000.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 14,000.00 |
| Engineering | | 20,000.00 |
| Total Associated Work Cost | | 85,000.00 |
| Total Repair/Rehabilitation Cost | | 35,000.00 |
| Total Cost | | 120,000.00 |

Summary Action Report

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/19/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 74.41 |
| Next Biennial Inspection: | 11/19/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|---------------|-----------------|---------|----------------------------|---------------|
| Decks | Wearing surface | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some minor maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

| Inventory Data | | | | | | | | | |
|--------------------|--|--|--|--------------------|--|---------|-----------------|-------------|--|
| Structure Name: | Boundary Bridge #4 | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 172 | | | | | | | | |
| Location: | 900m south of Perth County Line 86 at dwy #86565 | | | | | | | | |
| Latitude/Northing: | 43d45'23" | | | Longitude/Easting: | 81d02'12" | | | | |
| Owner: | North Perth 50.00% | | | | | | | | |
| Shared With: | Huron East | | | Heritage Status: | N | | | | |
| MTO Region: | 30-Southwestern | | | Road Class: | Local | | | | |
| MTO District: | 33-Owen Sound | | | Lane Type: | | | | | |
| Old County: | 25-Perth | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Geo Twp.: | Elma | | | AADT: | 330 | Trucks: | 5 % | | |
| Structure Type: | RF - Rigid Frame | | | Min Vert. Clear.: | m | | | | |
| Material: | C - CIP Concrete | | | No. of Spans: | 1 | | | | |
| Articulation: | | | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Length: | 19.3 m | | | Detour Length: | 0.00 km | | Skew Angle: | 40 degrees | |
| Deck Width: | 8.7 m | | | | m | | Structure Dir.: | North/South | |
| Deck Area: | 167.0 m ² | | | | | | | | |
| Trav Deck Wdt | 7.4 m | | | | | | | | |

Bridge Span BS-00012 18.40 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Field Inspection Information

Structure No.: **BB-04**

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some minor maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Element Data

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 11.53 | Width: 2 | | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Height: 2.70 | Count: 2 | | |
| Material: | Cast-in-place concrete | Total Quantity: 62.26 | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 0.20 | 0.20 | 61.86 | |

Comments:

Section of light disintegration on northwest corner.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | |
|-----------------|------------------------|--|---------------------|-------|-----------|
| Element Group: | Abutments | Length: 7.60 | Width: 4 | | |
| Element Name: | Wingwalls | | | | |
| Location: | Each quadrant | Height: 1.72 | Count: 4 | | |
| Material: | Cast-in-place concrete | Total Quantity: 52.29 | | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 0.10 | 3.60 | 48.59 | |

Comments:

Light to medium scaling throughout; Narrow to medium stained cracking, some with efflorescence and wet areas; Random light popouts; Lights spalls with exposed corroded rebar on southeast.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Approaches - Barriers

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Approaches | | Length: | 147.00 | Width: | |
| Element Name: | Barriers | | Height: | | Count: | 1 |
| Location: | Each quadrant | | Total Quantity: 147.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel beam guide rail | Subtype: | | Environment: | Severe | |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 3.00 | 144.00 | | |

Comments:
Random light permanent deformation throughout from vehicle impacts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 27.55 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 55.10 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 3.00 | 52.10 | | |

Comments:
Several patches with hairline cracks; Random narrow stained cracks on posts; Light abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|----------|---|--------|--------------|----------|
| Element Group: | Decks | | Length: | 19.30 | Width: | 8.65 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 166.95 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Moderate |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 166.95 | | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 18.40 | Width: | 11.50 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.45 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 228.16 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 2.70 | 225.46 | | |

Comments:

Light to medium scaling and narrow to medium stained cracks, some with efflorescence on exterior faces; Exposed corroded rebar chairs and medium cracking with efflorescence on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Decks - Drainage

| | | | | | |
|-----------------|---------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 6 |
| Location: | Each side of deck | | Total Quantity: 6.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 6.00 | | | |

Comments:

Steel plates over old deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 27.55 | Width: | 7.40 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 203.87 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 203.87 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | Bridge Cleaning | 1 Year | Clean gravel off wearing surface annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Embankments & Streams - Embankments

| | | | | | | | |
|-----------------|-----------------------|------|----------|------|--|--------------|--------|
| Element Group: | Embankments & Streams | | | | Length: | Width: | |
| Element Name: | Embankments | | | | Height: | Count: 4 | |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | | |
| Material: | Vegetation / Rocks | | | | | | |
| Element Type: | Embankments | | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | Each | | | 4.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | | |
|-----------------|-----------------------|------|----------|------|--|--------------|--------|
| Element Group: | Embankments & Streams | | | | Length: | Width: | |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 | |
| Location: | Below structure | | | | Total Quantity: 1.00 | | |
| Material: | | | | | | | |
| Element Type: | Streams and Waterways | | Subtype: | | | Environment: | Benign |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | All | | | 1.00 | | | |

Comments:

Stream encroaching on abutments at east corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|--|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 27.55 | Width: | 0.60 |
| Element Name: | Curbs | | | | Height: | 0.35 | Count: | 2 |
| Location: | Each side | | | | Total Quantity: 52.35 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 0.30 | 0.30 | 51.75 | | | | |

Comments:
Light abrasions and scaling; Random cracking on top and exterior face; Light delamination with narrow stained cracks at corners on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | | | | |
|-----------------|------------------|----------|------|--------------|--|--|--------|---|
| Element Group: | Signs | | | | Length: | | Width: | |
| Element Name: | Signs | | | | Height: | | Count: | 4 |
| Location: | At each abutment | | | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | | | |
| Element Type: | Hazard markers | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | Each | | | 4.00 | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #4**

Structure No: **BB-04**

MTO Site No: **BB-04**

| |
|---------------------------------------|
| Repair/Rehabilitation Required |
| Associated Work |

| | Comments | | Estimated Cost |
|----------------------------------|----------|--|----------------|
| Approaches | | | 0.00 |
| Detours | | | 0.00 |
| Traffic Control | | | 0.00 |
| Utilities | | | 0.00 |
| Right-of-Way | | | 0.00 |
| Environmental Study | | | 0.00 |
| Other | | | 0.00 |
| Contingencies | 10% | | 0.00 |
| Engineering | | | 0.00 |
| Total Associated Work Cost | | | 0.00 |
| Total Repair/Rehabilitation Cost | | | 0.00 |
| Total Cost | | | 0.00 |

Summary Action Report

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Inspection Date: 11/19/2013 mm/dd/yyyy
Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 73.68

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|---------------|----------|---------|----------------------------|---------------|
| Decks | Deck top | | Bridge Cleaning | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some minor maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Inventory Data

| | | | | |
|--------------------|-------------------------------------|--------------------|--|-----------|
| Structure Name: | Boundary Bridge #5 | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 172 | | | |
| Location: | 3.6km south of Perth County Line 86 | | | |
| Latitude/Northing: | 4842439 | Longitude/Easting: | 495711 | |
| Owner: | North Perth 50.00% | Heritage Status: | N | |
| Shared With: | Huron East | Road Class: | Local | |
| MTO Region: | 30-Southwestern | Lane Type: | | |
| MTO District: | 33-Owen Sound | Posted Speed: | 80 Lanes: 2 | |
| Old County: | 25-Perth | AADT: | 330 Trucks: 5 % | |
| Geo Twp.: | Elma | Min Vert. Clear.: | m | |
| Structure Type: | RF - Rigid Frame | No. of Spans: | 1 | |
| Material: | C - CIP Concrete | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| Articulation: | | Detour Length: | 0.00 km m | |
| Deck Length: | 19.3 m | Skew Angle: | 0 degrees | |
| Deck Width: | 8.7 m | Structure Dir.: | North/South | |
| Deck Area: | 167.0 m ² | | | |
| Trav Deck Wdt | 7.4 m | | | |

Bridge Span BS-00013 18.40 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1958 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Field Inspection Information

Structure No.: **BB-05**

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some minor maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|----------|
| Element Group: | Abutments | Length: 8.65 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Total Quantity: 65.74 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Conventional closed | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 0.50 |
| | | | 65.24 |
| | | | |
| | | | |

Comments:

Light scaling; Random narrow to medium cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|----------|
| Element Group: | Abutments | Length: 4.95 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 37.62 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Wingwalls | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 0.80 |
| | | | 36.82 |
| | | | |
| | | | |

Comments:

Light to medium scaling; Light salt staining on southwest; Random light popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Barriers - Railing Systems

| | | | | | | |
|-----------------|--------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 28.30 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 2 |
| Location: | Each side | | Total Quantity: 56.60 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete Post and continuous railing | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 5.50 | 51.10 | | |

Comments:

Light to medium scaling throughout; Several small light spalls with exposed corroded rebar; Random light popouts and abrasions; Narrow to medium cracking on railing and posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 19.30 | Width: | 8.65 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 166.95 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.50 | 33.40 | 133.05 | | |

Comments:

Isolated light delamination at ends; Light to medium abrasions throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 18.40 | Width: | 8.65 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.75 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 186.76 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.10 | 3.20 | 183.46 | | |

Comments:

Light to medium scaling and random light popouts on exterior faces; Random narrow to medium wet pattern cracks, light delamination and spalling and exposed corroded rebar chairs on underside.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Drainage

| | | | | | | |
|-----------------|---------------------|----------|--|----------|--------------|--------|
| Element Group: | Decks | | Length: | Width: | | |
| Element Name: | Drainage | | Height: | Count: 4 | | |
| Location: | Each side of deck | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Steel drain pipes | Subtype: | | | Environment: | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 4.00 | | | |

Comments:

Medium corrosion throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Stream encroaching on abutments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 28.30 | Width: | 0.60 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | Each side | | Total Quantity: 50.94 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 2.50 | 48.44 | | |

Comments:
Random narrow to medium cracks; Random light popouts; Light to medium scaling and abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #5**

Structure No: **BB-05**

MTO Site No: **BB-05**

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Inspection Date: 11/19/2013 mm/dd/yyyy
Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.91

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|----------------|----------------------------|------------------|
| Decks | Deck top | | Bridge Cleaning |
| Joints | Seals/sealants | | Bridge Cleaning |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Inventory Data

| | | | | |
|--------------------|-------------------------------------|--------------------|--|-----------|
| Structure Name: | Boundary Bridge #6 | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 172 | | | |
| Location: | 4.9km south of Perth County Line 86 | | | |
| Latitude/Northing: | 4841335 | Longitude/Easting: | 495082 | |
| Owner: | North Perth 50.00% | Heritage Status: | N | |
| Shared With: | Huron East | Road Class: | Local | |
| MTO Region: | 30-Southwestern | Lane Type: | | |
| MTO District: | 33-Owen Sound | Posted Speed: | 80 Lanes: 2 | |
| Old County: | 25-Perth | AADT: | 330 Trucks: 5 % | |
| Geo Twp.: | Elma | Min Vert. Clear.: | m | |
| Structure Type: | IB - I-Beams or Girders | No. of Spans: | 1 | |
| Material: | C - CIP Concrete | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| Articulation: | | Detour Length: | 0.00 km m | |
| Deck Length: | 22.8 m | Skew Angle: | 30 degrees | |
| Deck Width: | 9.2 m | Structure Dir.: | North/South | |
| Deck Area: | 208.6 m ² | | | |
| Trav Deck Wdt | 7.4 m | | | |

Bridge Span BS-00014 22.20 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1978 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Field Inspection Information

Structure No.: **BB-06**

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Element Data

Abutments - Ballast walls

| | | |
|-----------------|---------------------------------|--|
| Element Group: | Abutments | Length: 9.80 Width: 2 Height: 1.20 Count: 2 |
| Element Name: | Ballast walls | |
| Location: | Behind girders at each abutment | Total Quantity: 23.52 |
| Material: | Cast-in-place concrete | |
| Element Type: | Ballast Walls | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="text"/> |
| | Poor | <input type="text"/> |
| | Fair | <input type="text"/> |
| | Good | <input type="text"/> 23.52 |
| | Excellent | <input type="text"/> |

Comments:

Hairline wet pattern cracks on northwest corner.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Abutment walls

| | | |
|-----------------|------------------------|--|
| Element Group: | Abutments | Length: 9.80 Width: 2 Height: 2.72 Count: 2 |
| Element Name: | Abutment walls | |
| Location: | Each end | Total Quantity: 53.31 |
| Material: | Cast-in-place concrete | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="text"/> |
| | Poor | <input type="text"/> |
| | Fair | <input type="text"/> |
| | Good | <input type="text"/> 53.31 |
| | Excellent | <input type="text"/> |

Comments:

Random hairline to narrow cracks; Narrow full height vertical cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Abutments - Bearings

| | | | | | |
|-----------------|-------------------------|----------|--|--------|-----------|
| Element Group: | Abutments | | Length: | Width: | |
| Element Name: | Bearings | | Height: | Count: | 8 |
| Location: | At each abutment | | Total Quantity: 8.00 | | |
| Material: | Other | | | | |
| Element Type: | Elastomeric pad bearing | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|---|
| Element Group: | Abutments | | Length: | 6.15 | Width: | |
| Element Name: | Wingwalls | | Height: | 2.00 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 49.20 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 49.20 | | |

Comments:

Light scaling and salt staining throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 34.50 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.60 | Count: | 2 |
| Location: | Each side | | Total Quantity: 41.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 2.70 | 38.70 | | |

Comments:

Narrow to medium wet and stained vertical cracking at post locations; Random narrow stained pattern cracking throughout; Light scaling, salt staining and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Girders

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Beams/MLEs | | Length: | 22.20 | Width: | 0.50 |
| Element Name: | Girders | | Height: | 1.20 | Count: | 4 |
| Location: | Below deck top | | Total Quantity: 346.32 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | I-type - Girder | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 346.32 | | |

Comments:

Light rust staining from exposed corroded rebar chairs on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 22.80 | Width: | 9.15 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | Over girders | | Total Quantity: 208.62 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 208.62 | | |

Comments:

Light abrasions throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thin Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 22.20 | Width: | 9.80 |
| Element Name: | Soffit-Thin Slab | | Height: | 0.45 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 227.55 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thin Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 227.55 | | |

Comments:

Exposed corroded rebar chairs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Decks - Drainage

| | | | | | |
|-----------------|---------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 8 |
| Location: | Each side of deck | | Total Quantity: 8.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Joints - Seals/sealants

| | | | | | | |
|-----------------|------------------|----------|--|--------|-----------|--|
| Element Group: | Joints | | Length: | 9.80 | Width: | |
| Element Name: | Seals/sealants | | Height: | Count: | 2 | |
| Location: | Each end of deck | | Total Quantity: 19.60 | | | |
| Material: | | | | | | |
| Element Type: | Compression seal | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 19.60 | | |

Comments:

Joints full of gravel and debris; No signs of leakage on substructure below.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Bridge Cleaning | 1 Year | Clean expansion joints annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 34.50 | Width: | 0.90 |
| Element Name: | Curbs | | Height: | 0.20 | Count: | 2 |
| Location: | Each side | | Total Quantity: 75.90 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 75.90 | | |

Comments:
Light abrasions and bug holes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Signs - Signs

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Signs | | Length: | | Width: | |
| Element Name: | Signs | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | | |
| Material: | Steel | | | | | |
| Element Type: | Hazard markers | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #6**

Structure No: **BB-06**

MTO Site No: **BB-06**

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Inspection Date: 11/22/2013 mm/dd/yyyy
Next Biennial Inspection: 11/22/2015 mm/dd/yyyy

Condition Index Value (BCI) 74.77

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|----------------|----------------------------|------------------|
| Decks | Deck top | | Bridge Cleaning |
| Joints | Seals/sealants | | Bridge Cleaning |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Inventory Data

| | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------|
| Structure Name: | Boundary Bridge #7 | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 172 | | | |
| Location: | 3.40km north of Perth County Line 72 | | | |
| Latitude/Northing: | 4839699 | Longitude/Easting: | 494140 | |
| Owner: | North Perth 50.00% | Heritage Status: | N | |
| Shared With: | Huron East | Road Class: | Local | |
| MTO Region: | 30-Southwestern | Lane Type: | | |
| MTO District: | 33-Owen Sound | Posted Speed: | 80 Lanes: 2 | |
| Old County: | 25-Perth | AADT: | 330 Trucks: 5 % | |
| Geo Twp.: | Elma | Min Vert. Clear.: | m | |
| Structure Type: | IB - I-Beams or Girders | No. of Spans: | 1 | |
| Material: | C - CIP Concrete | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| Articulation: | | Detour Length: | 0.00 km m | |
| Deck Length: | 26.2 m | Skew Angle: | 25 degrees | |
| Deck Width: | 9.1 m | Structure Dir.: | North/South | |
| Deck Area: | 238.4 m ² | | | |
| Trav Deck Wdt | 7.4 m | | | |

Bridge Span BS-00061 26.20 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1977 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Field Inspection Information

Structure No.: **BB-07**

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, rain Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Element Data

Abutments - Ballast walls

| | | |
|-----------------|------------------------|--|
| Element Group: | Abutments | Length: 9.90 Width: 2 Height: 1.40 Count: 2 |
| Element Name: | Ballast walls | |
| Location: | At each abutment | Total Quantity: 27.72 |
| Material: | Cast-in-place concrete | |
| Element Type: | Ballast Walls | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Excellent |
| | m2 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 27.72 <input type="checkbox"/> |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Abutment walls

| | | |
|-----------------|------------------------|--|
| Element Group: | Abutments | Length: 9.90 Width: 2 Height: 4.10 Count: 2 |
| Element Name: | Abutment walls | |
| Location: | Each end | Total Quantity: 81.18 |
| Material: | Cast-in-place concrete | |
| Element Type: | Conventional closed | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | Units | <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Good <input type="checkbox"/> Excellent |
| | m2 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 81.18 <input type="checkbox"/> |

Comments:

Narrow vertical stained cracks; 3 weep holes per side with incrustation on north abutment; Light staining but no active moisture during inspection.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Abutments - Bearings

| | | | | | |
|-----------------|-------------------------|----------|---|--------|-----------|
| Element Group: | Abutments | | Length: | Width: | |
| Element Name: | Bearings | | Height: | Count: | 8 |
| Location: | At each abutment | | Total Quantity: 8.00 | | |
| Material: | Other | | | | |
| Element Type: | Elastomeric pad bearing | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Wingwalls

| | | | | | | |
|-----------------|------------------------|----------|--|-------|-----------|---|
| Element Group: | Abutments | | Length: | 6.85 | Width: | |
| Element Name: | Wingwalls | | Height: | 2.73 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 74.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Wingwalls | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 3.70 | 71.10 | | |

Comments:

Narrow stained pattern cracking; Light scaling and salt staining throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Approaches - Wearing surface

| | | | | | | |
|-----------------|------------------|----------|--|--------|--------------|--------|
| Element Group: | Approaches | | Length: | 6.85 | Width: | 7.40 |
| Element Name: | Wearing surface | | Height: | | Count: | 2 |
| Location: | At each approach | | Total Quantity: 101.38 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing Surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 101.38 | | |

Comments:

Light potholes throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Barriers - Barrier/Parapet Walls

| | | | | | | |
|-----------------|-----------------------------|----------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 39.90 | Width: | |
| Element Name: | Barrier/Parapet Walls | | Height: | 0.61 | Count: | 2 |
| Location: | Each side | | Total Quantity: 48.68 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Parapet Wall with two rails | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 1.50 | 47.18 | | |

Comments:

Narrow to medium vertical stained cracks at post locations, some with efflorescence; Light staining at post locations; Light scaling on exterior; Light popouts

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Beams/MLEs - Girders

| | | | | | | |
|-----------------|------------------|----------|---|--------------|-----------|------|
| Element Group: | Beams/MLEs | | Length: | 26.20 | Width: | 0.40 |
| Element Name: | Girders | | Height: | 1.40 | Count: | 4 |
| Location: | Below deck top | | Total Quantity: 419.20 | | | |
| Material: | Precast concrete | | | | | |
| Element Type: | I-type - Girder | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 419.20 | | |

Comments:

Limited inspection of ends.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Diaphragms

| | | | | | | |
|-----------------|------------------------------|----------|---|--------------|-----------|------|
| Element Group: | Beams/MLEs | | Length: | 2.00 | Width: | 0.30 |
| Element Name: | Diaphragms | | Height: | 1.00 | Count: | 9 |
| Location: | At ends and mid-span | | Total Quantity: 41.40 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Rectangular-solid diaphragms | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 41.40 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Decks - Deck top

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Decks | Length: 26.20 | Width: 8.80 |
| Element Name: | Deck top | | |
| Location: | All | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 230.56 | |
| Element Type: | Deck top | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 230.56 |
| | | | Excellent |

Comments:

Light abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Bridge Cleaning | 1 Year | Clean gravel off deck top annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thin Slab

| | | | |
|-----------------|------------------------------|--|---------------------|
| Element Group: | Decks | Length: 26.20 | Width: 9.90 |
| Element Name: | Soffit-Thin Slab | | |
| Location: | Underside and exterior faces | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 267.24 | |
| Element Type: | Soffit - Thin Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 1.70 |
| | | | Excellent 265.54 |

Comments:

Light scaling and narrow cracks with efflorescence on exterior faces; Exposed corroded rebar chairs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Decks - Drainage

| | | | | | |
|-----------------|---------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 8 |
| Location: | Each side of deck | | Total Quantity: 8.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | Hot dip galvanizing | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 8.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Embankments & Streams - Streams and Waterways

| | | | | | | | |
|-----------------|-----------------------|------|----------|------|--|--------|---|
| Element Group: | Embankments & Streams | | | | Length: | Width: | |
| Element Name: | Streams and Waterways | | | | Height: | Count: | 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | | |
| Material: | | | | | | | |
| Element Type: | Streams and Waterways | | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | All | | | 1.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | | | |
|-----------------|--------------------------------|------|----------|------|---|--------|---|
| Element Group: | Foundations | | | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | | | Height: | Count: | 1 |
| Location: | Below abutments | | | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | | | |
| Element Type: | Foundation (below grade level) | | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | All | | | 1.00 | | | |

Comments:

Not visible; Assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Joins - Seals/sealants

| | | | | | | |
|-----------------|------------------|----------|---|------|--------------|--------|
| Element Group: | Joins | | Length: | 9.90 | Width: | |
| Element Name: | Seals/sealants | | Height: | | Count: | 2 |
| Location: | Each end of deck | | Total Quantity: 19.80 | | | |
| Material: | Other | | | | | |
| Element Type: | Compression seal | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 19.80 | | | |

Comments:

Limited inspection due to gravel and debris; Light corrosion throughout steel armouring; Assumed to be in fair condition based on some leakage noted on substructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------------------|
| None | Bridge Cleaning | 1 Year | Clean debris from joints annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 39.90 | Width: | 0.87 |
| Element Name: | Curbs | | Height: | 0.22 | Count: | 2 |
| Location: | Each side | | Total Quantity: 86.98 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | 0.20 | 86.78 | | |

Comments:

Light abrasions throughout; Medium abrasions at ends; Isolated hairline transverse cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Signs - Signs

| | | | | | |
|-----------------|------------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 4 |
| Location: | At each approach | | Total Quantity: 4.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Boundary Bridge #7**

Structure No: **BB-07**

MTO Site No: **BB-07**

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin
 Structure No: E-1
 MTO Site No: E-1

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 69.09
 Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------|-----------------------|----------|--------------------|
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$3,000 |
| Total Repair/Rehabilitation Cost | | | | \$8,000.00 |
| Total Associated Work Cost | | | | \$7,000.00 |
| Total Cost | | | | \$15,000.00 |

Overall Comments

Structure is in overall good condition; Some concrete rehabilitation required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin

Structure No: E-1

MTO Site No: E-1

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 169 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 169 | | | | |
| Location: | 500m north of Line 60 | | | | |
| Latitude/Northing: | 43d37'52" | Longitude/Easting: | 81d06'20" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 3.7 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 7.9 m | | m | Structure Dir.: | North/South |
| Deck Area: | 29.2 m2 | | | | |
| Trav Deck Wdt | 6.5 m | | | | |

Bridge Span BS-00038 3.10 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1955 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin
 Structure No: E-1
 MTO Site No: E-1

Field Inspection Information

Structure No.: E-1

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 69.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: -3 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some concrete rehabilitation required.

Comments

BCI Change Repair poor concrete to prolong life of structure.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin

Structure No: E-1

MTO Site No: E-1

Element Data

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 2.60 | Width: 3.10 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 1.70 | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 17.68 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.70 | 2.40 |
| | | | Good |
| | | | 13.58 |
| | | | Excellent |

Comments:

Light delamination with narrow to wide stained pattern cracks with efflorescence; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 3,000.00 | Repair poor concrete |

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 7.80 | Width: 3.10 |
| Element Name: | Barrels | | |
| Location: | All | Height: 1.80 | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 52.26 | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 0.60 | 3.70 |
| | | | Good |
| | | | 47.96 |
| | | | Excellent |

Comments:

Light scaling throughout; Light to severe popouts; Wide vertical crack on north leg with rust staining and efflorescence; Hairline to narrow cracking on soffit; Cold joints on legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin

Structure No: E-1

MTO Site No: E-1

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 3.70 | Width: | 6.50 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over culvert | | Total Quantity: 24.05 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 24.05 | | |

Comments:

Several small potholes.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin

Structure No: E-1

MTO Site No: E-1

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin

Structure No: E-1

MTO Site No: E-1

Sidewalks/curbs - Curbs

| | | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|--|------|--------|------|--|
| Element Group: | Sidewalks/curbs | | | | Length: | 8.30 | Width: | 0.30 | |
| Element Name: | Curbs | | | | Height: | 0.35 | Count: | 2 | |
| Location: | Each side | | | | Total Quantity: 10.79 | | | | |
| Material: | Cast-in-place concrete | | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | | |
| | m2 | 3.10 | 4.60 | 3.09 | | | | | |

Comments:

Light to medium scaling throughout; Light delaminations; Narrow to wide stained pattern cracking with efflorescence

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

Signs - Signs

| | | | | | | | | | |
|-----------------|------------------|----------|------|--------------|--|--|--------|---|--|
| Element Group: | Signs | | | | Length: | | Width: | | |
| Element Name: | Signs | | | | Height: | | Count: | 2 | |
| Location: | At each approach | | | | Total Quantity: 2.00 | | | | |
| Material: | Steel | | | | | | | | |
| Element Type: | Hazard markers | Subtype: | | Environment: | Severe | | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | | |
| | Each | | | 2.00 | | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Bridge between Line 60 and Lin

Structure No: E-1

MTO Site No: E-1

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------|-----------------------|----------|-------------------|
| Sidewalks/curbs | Curbs | Repair poor concrete | 6-10 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$3,000 |
| Total Repair/Rehabilitation Cost | | | | \$8,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 1,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 2,000.00 |
| Contingencies | 10% | 2,000.00 |
| Engineering | | 2,000.00 |
| Total Associated Work Cost | | 7,000.00 |
| Total Repair/Rehabilitation Cost | | 8,000.00 |
| Total Cost | | 15,000.00 |

Summary Action Report

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin
Structure No: E-2
MTO Site No: E-2

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 72.93 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: E-2

MTO Site No: E-2

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 154 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 154 | | | | | | | | |
| Location: | 15m south of Line 60 | | | | | | | | |
| Latitude/Northing: | 43d35'26" | | | Longitude/Easting: | 81d01'11" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | BO - Box, Open Footing | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 5.6 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 15.6 m | | | Detour Length: | 8.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 87.4 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 6.2 m | | | | | | | | |

Bridge Span BS-00034 4.80 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1960 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: E-2

MTO Site No: E-2

Field Inspection Information

Structure No.: E-2

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 72.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: -5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: E-2

MTO Site No: E-2

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 15.60 Width: 4.80
 Height: 2.40 Count: 1
 Total Quantity: 149.76

Condition Data: Units Poor Fair Good Excellent
 m2 0.70 7.50 141.56

Environment:
 Limited Inspected

Comments:

Wide horizontal cracks (7mm max. at northwest) and medium pattern cracking with efflorescece where culvert top meets legs on exterior; Light to medium scaling and honeycombing throughout; Medium crack with efflorescence and isolated light delamination on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 5.60 Width: 6.20
 Height: Count: 1
 Total Quantity: 34.72

Condition Data: Units Poor Fair Good Excellent
 m² 34.72

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: E-2

MTO Site No: E-2

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 1.00 | | 3.00 | | |

Comments:

Severe erosion of northeast embankment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: E-2

MTO Site No: E-2

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
 Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 58 and Lin

Structure No: E-2

MTO Site No: E-2

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro:
 Structure No: E-3
 MTO Site No: E-3

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 73.71
 Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|-----------------|---------|------------------------|
| Decks | Wearing surface | | Rough riding surface |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|-----------------|---------|-----------------------|
| Decks | Wearing surface | | Bridge Surface Repair |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------|------------------------------|----------------------------------|--------------------|
| Embankments & | Embankments | Stabilize eroded embankments | 1-5 | \$5,000 |
| Decks | Wearing surface | Repave over structure | 1-5 | \$10,000 |
| | | | Total Repair/Rehabilitation Cost | \$15,000.00 |
| | | | Total Associated Work Cost | \$10,000.00 |
| | | | Total Cost | \$25,000.00 |

Overall Comments

Structure is in overall good condition; Minor rehabilitation work required including repaving over structure and stabilizing embankments.

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: E-3

MTO Site No: E-3

| Inventory Data | | | | | | | | | | |
|--------------------|--------------------------------------|--------------------|-------------------|---|---------|-----------------|-----------|--|--|-----------|
| Structure Name: | North Perth Line 60 - Bridge between | Hwy No. | | | | | | | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | | | | | | |
| Road Name: | North Perth Line 60 | | | | | | | | | |
| Location: | 400m west of Road 154 | | | | | | | | | |
| Latitude/Northing: | 43d35'37" | Longitude/Easting: | 81d01'31" | | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | Heritage Status: | N | | | | | | |
| MTO District: | 33-Owen Sound | | Road Class: | Collector | | | | | | |
| Old County: | 25-Perth | | Lane Type: | | | | | | | |
| Geo Twp.: | Elma | | Posted Speed: | 80 | Lanes: | 2 | | | | |
| Structure Type: | BO - Box, Open Footing | | AADT: | | Trucks: | 0 | % | | | |
| Material: | C - CIP Concrete | | Min Vert. Clear.: | m | | | | | | |
| Articulation: | | | | | | | | | | |
| Deck Length: | 5.5 m | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | |
| Deck Width: | 15.9 m | | Detour Length: | 8.10 km | | Skew Angle: | 0 degrees | | | |
| Deck Area: | 87.5 m ² | | | m | | Structure Dir.: | East/West | | | |
| Trav Deck Wdt | 6.5 m | | | | | | | | | |

Bridge Span BS-00035 4.90 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1965 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro
 Structure No: E-3
 MTO Site No: E-3

Field Inspection Information

Structure No.: E-3

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: -5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| | | | Total Cost: | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall good condition; Minor rehabilitation work required including repaving over structure and stabilizing embankments.

BCI Change Justification Repave over structure to prevent ongoing costly maintenance work.

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: E-3

MTO Site No: E-3

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 15.90 Width: 4.90
 Height: 3.00 Count: 1
 Total Quantity: 173.31

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|------|--------|-----------|
| | m2 | 0.30 | 3.50 | 169.51 | |

Comments:

Light scaling and honeycombing throughout, medium scaling on exterior faces; Light spalling with exposed corroded rebar on legs and soffit; Light disintegration on northwest leg; Hairline to narrow wet pattern cracking on legs; Exposed corroded rebar chairs on soffit; Narrow stained pattern cracking at top of exterior legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 5.50 Width: 6.50
 Height: Count: 1
 Total Quantity: 35.75

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|----------------|------|-------|------|-----------|
| | m ² | 3.30 | 26.00 | 6.45 | |

Comments:

Severe settlement with medium to wide transverse cracking and several patches at each transition; Light ravelling; Medium longitudinal crack along centreline.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-----------------------|------------|----------------------------|
| Rough riding surface | Bridge Surface Repair | 1 Year | Patch transitions annually |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repave over structure |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: E-3

MTO Site No: E-3

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | 2.00 | | | |

Comments:

Medium to severe erosion of embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Stabilize eroded embankments |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Light sedimentation throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: E-3

MTO Site No: E-3

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 154 and Ro

Structure No: E-3

MTO Site No: E-3

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|------------------------------|----------|--------------------|
| Embankments & | Embankments | Stabilize eroded embankments | 1-5 | \$5,000 |
| Decks | Wearing surface | Repave over structure | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$15,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 3,000.00 |
| Contingencies | 10% | 2,000.00 |
| Engineering | | 3,000.00 |
| Total Associated Work Cost | | 10,000.00 |
| Total Repair/Rehabilitation Cost | | 15,000.00 |
| Total Cost | | 25,000.00 |

Summary Action Report

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro
Structure No: E-4
MTO Site No: E-4

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 74.39
Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro

Structure No: E-4

MTO Site No: E-4

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 81 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 81 | | | | |
| Location: | 600m east of Road 158 | | | | |
| Latitude/Northing: | 43d41'32" | Longitude/Easting: | 80d57'40" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 5.5 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 16.2 m | | m | Structure Dir.: | East/West |
| Deck Area: | 89.1 m2 | | | | |
| Trav Deck Wdt | 7.6 m | | | | |

Bridge Span BS-00048 4.90 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1965 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro

Structure No: E-4

MTO Site No: E-4

Field Inspection Information

Structure No.: E-4

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 74.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro

Structure No: E-4

MTO Site No: E-4

Element Data

Culverts - Barrels

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Culverts | Length: 16.20 | Width: 4.90 | | |
| Element Name: | Barrels | | | Height: 2.70 | Count: 1 |
| Location: | All | Total Quantity: 166.86 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 0.30 | 2.30 | 164.26 | |

Comments:

Cold joint at top of exterior face of legs with medium stained cracking; Light honeycombing and salt staining on legs; One medium vertical, actively wet, stained crack on west leg; Hairline wet cracks; Exposed corroded rebar chairs on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|---------------------|---------|-----------|
| Element Group: | Decks | Length: 5.50 | Width: 7.60 | | |
| Element Name: | Wearing surface | | | Height: | Count: 1 |
| Location: | Over culvert | Total Quantity: 41.80 | | | |
| Material: | Asphalt | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 41.80 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro

Structure No: E-4

MTO Site No: E-4

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Sedimentation along east leg.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro

Structure No: E-4

MTO Site No: E-4

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:
 Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 81 - Bridge between Road 154 and Ro

Structure No: E-4

MTO Site No: E-4

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 60 - Bridge between Road 164 and Road 166
Structure No: E-5
MTO Site No: E-5

Inspection Date: 11/20/2013 mm/dd/yyyy Condition Index Value (BCI) 100.00
Next Biennial Inspection: 11/20/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in excellent condition.

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 164 and Ro

Structure No: E-5

MTO Site No: E-5

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 60 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 60 | | | | |
| Location: | 740m West of Highway #23 | | | | |
| Latitude/Northing: | 43d36'42" | Longitude/Easting: | 81d04'22" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 3.1 m | Detour Length: | 8.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 17.0 m | | m | Structure Dir.: | East/West |
| Deck Area: | 51.9 m2 | | | | |
| Trav Deck Wdt | 6.6 m | | | | |

Bridge Span BS-00037 2.44 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 2013 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 164 and Ro

Structure No: E-5

MTO Site No: E-5

Field Inspection Information

Structure No.: E-5

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 100.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: -3 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in excellent condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 164 and Ro

Structure No: E-5

MTO Site No: E-5

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 17.00 | Width: 2.44 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 103.70 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good |
| | | | Excellent |
| | | | 103.70 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|---------------------|
| Element Group: | Decks | Length: 3.10 | Width: 6.60 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 20.46 | |
| Material: | Asphalt | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | Good |
| | | | Excellent |
| | | | 20.46 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 164 and Ro

Structure No: E-5

MTO Site No: E-5

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 164 and Ro
 Structure No: E-5
 MTO Site No: E-5

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | |
|-----------------|-----------------|----------|--|------|-----------|---|
| Element Group: | Retaining walls | | Length: | 4.00 | Width: | |
| Element Name: | Walls | | Height: | 2.00 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 32.00 | | | |
| Material: | Gabion Basket | | | | | |
| Element Type: | Gabions wall | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | | 32.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Bridge between Road 164 and Ro

Structure No: E-5

MTO Site No: E-5

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
Structure No: E-6
MTO Site No: E-6

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/22/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 66.40 |
| Next Biennial Inspection: | 11/22/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: E-6

MTO Site No: E-6

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | North Perth Road 166 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 166 | | | | |
| Location: | 600m north of Perth County Line 72 | | | | |
| Latitude/Northing: | 43d40'15" | Longitude/Easting: | 81d02'42" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | CA - Culvert Pipe Arch | Min Vert. Clear.: | m | | |
| Material: | CS Corrugated Steel | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 4.4 m | Detour Length: | 8.10 km | Skew Angle: | 30 degrees |
| Deck Width: | 17.0 m | | m | Structure Dir.: | North/South |
| Deck Area: | 74.8 m2 | | | | |
| Trav Deck Wdt | 6.6 m | | | | |

Bridge Span BS-00057 4.40 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1990 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
 Structure No: E-6
 MTO Site No: E-6

Field Inspection Information

Structure No.: E-6

Inspection Date: 11/22/2013 Inspection Type: OSIM Enhanced OSIM BCI: 66.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: E-6

MTO Site No: E-6

Element Data

Culverts - Barrels

| | | | |
|-----------------|---------------------|--|---------------------|
| Element Group: | Culverts | Length: 19.60 | Width: 4.40 |
| Element Name: | Barrels | | |
| Location: | All | Height: 2.80 | Count: 1 |
| Material: | Corrugated steel | Total Quantity: 221.67 | |
| Element Type: | Pipe Arch barrel | Subtype: | Environment: Benign |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 55.40 |
| | | | 166.27 |
| | | | |

Comments:

Light global permanent deformation (sagging) throughout barrel; Light rust staining and leakage at bolt hole locations; Light local permanent deformation at west end; Missing bolts; Isolated hairline cracks at some bolt locations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|---------------------|
| Element Group: | Decks | Length: 8.20 | Width: 6.60 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Height: | Count: 1 |
| Material: | Gravel | Total Quantity: 54.12 | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 54.12 |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin
 Structure No: E-6
 MTO Site No: E-6

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation / Rocks | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 1.00 | 3.00 | |

Comments:

Medium erosion on southeast embankment.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Bridge between Line 72 and Lin

Structure No: E-6

MTO Site No: E-6

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 172 - Culvert between Line 78 and Lin
Structure No: E-7
MTO Site No: E-7

Inspection Date: 11/19/2013 mm/dd/yyyy Condition Index Value (BCI) 78.23
Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|-----------------------|-------------|---------|----------------------------|--------|
| Embankments & Streams | Embankments | | Erosion Control at Bridges | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Lin
 Structure No: E-7
 MTO Site No: E-7

| Inventory Data | | | | | | | | | |
|--------------------|--|--------------------|-----------------|-------------|--|--|--|--|--|
| Structure Name: | North Perth Road 172 - Culvert betwe | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | | | | | |
| Road Name: | North Perth Road 172 | | | | | | | | |
| Location: | 200m north of Line 78 | | | | | | | | |
| Latitude/Northing: | 43d43'13" | Longitude/Easting: | 81d04'02" | | | | | | |
| Owner: | North Perth | 50.00% | | | | | | | |
| Shared With: | Huron East | | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Elma | | | | | | | | |
| Structure Type: | CR - Culvert Round | | | | | | | | |
| Material: | CS Corrugated Steel | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 2.4 m | | | | | | | | |
| Deck Width: | 17.0 m | | | | | | | | |
| Deck Area: | 41.5 m2 | | | | | | | | |
| Trav Deck Wdt | 6.5 m | | | | | | | | |
| Heritage Status: | N | | | | | | | | |
| Road Class: | Local | | | | | | | | |
| Lane Type: | | | | | | | | | |
| Posted Speed: | 80 | Lanes: | 2 | | | | | | |
| AADT: | | Trucks: | 0 % | | | | | | |
| Min Vert. Clear.: | m | | | | | | | | |
| No. of Spans: | 1 | | | | | | | | |
| Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | | | |
| Detour Length: | 0.00 km | | Skew Angle: | 0 degrees | | | | | |
| | m | | Structure Dir.: | North/South | | | | | |

Bridge Span BS-00016 2.44 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Lin

Structure No: E-7

MTO Site No: E-7

Field Inspection Information

Structure No.: E-7

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 78.2
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Lin
 Structure No: E-7
 MTO Site No: E-7

Element Data

Culverts - Barrels

| | | | |
|-----------------|---------------------|--|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Barrels | | |
| Location: | All | Height: | Count: |
| Material: | Corrugated steel | Total Quantity: 130.31 | |
| Element Type: | Pipe round barrel | Subtype: | Environment: Benign |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 6.50 |
| | | | 97.71 |
| | | | 26.10 |

Comments:

Light permanent global deformation of barrel; Light corrosion of barrel to water level.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|---------------------|
| Element Group: | Decks | Length: | Width: |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Height: | Count: |
| Material: | Gravel | Total Quantity: 15.86 | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 15.86 |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Lin
 Structure No: E-7
 MTO Site No: E-7

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:
 Medium erosion of embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|----------------------------|------------|------------------------------|
| None | Erosion Control at Bridges | 2 Year | Stabilize eroded embankments |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Comments:
 Severe ponding at inlet and outlet with severe erosion of banks likely caused by constriction of flow due to insufficient size of pipe; Undermining of barrel at ends.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Lin

Structure No: E-7

MTO Site No: E-7

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 172 - Culvert between Line 78 and Li
Structure No: E-8
MTO Site No: E-8

Inspection Date: 11/19/2013 mm/dd/yyyy Condition Index Value (BCI) 79.95
Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need | |
|-----------------------|-------------|---------|----------------------------|--------|
| Embankments & Streams | Embankments | | Erosion Control at Bridges | |
| | | | Total Associated Work Cost | \$0.00 |
| | | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Li

Structure No: E-8

MTO Site No: E-8

Inventory Data

| | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------|
| Structure Name: | North Perth Road 172 - Culvert betwe | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 172 | | | |
| Location: | 500m north of Line 78 | | | |
| Latitude/Northing: | 43d43'11" | Longitude/Easting: | 81d03'55" | |
| Owner: | North Perth 50.00% | Heritage Status: | N | |
| Shared With: | Huron East | Road Class: | Local | |
| MTO Region: | 30-Southwestern | Lane Type: | | |
| MTO District: | 33-Owen Sound | Posted Speed: | 80 Lanes: 2 | |
| Old County: | 25-Perth | AADT: | Trucks: 0 % | |
| Geo Twp.: | Elma | Min Vert. Clear.: | m | |
| Structure Type: | CR - Culvert Round | No. of Spans: | 1 | |
| Material: | CS Corrugated Steel | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| Articulation: | | Detour Length: | 0.00 km m | |
| Deck Length: | 2.4 m | Skew Angle: | 0 degrees | |
| Deck Width: | 17.3 m | Structure Dir.: | North/South | |
| Deck Area: | 42.2 m2 | | | |
| Trav Deck Wdt | 6.4 m | | | |

Bridge Span BS-00015 2.44 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Li
 Structure No: E-8
 MTO Site No: E-8

Field Inspection Information

Structure No.: E-8

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 80.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Li
 Structure No: E-8
 MTO Site No: E-8

Element Data

Culverts - Barrels

| | | | |
|-----------------|---------------------|--|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Barrels | | |
| Location: | All | Height: | Count: |
| Material: | Corrugated steel | Total Quantity: 132.60 | |
| Element Type: | Pipe round barrel | Subtype: | Environment: Benign |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | Good |
| | | | Excellent |
| | | | 106.10 |
| | | | 26.50 |

Comments:

Light local permanent deformations at ends; Light corrosion to water level.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|---------------------|
| Element Group: | Decks | Length: | Width: |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Height: | Count: |
| Material: | Gravel | Total Quantity: 15.62 | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | Good |
| | | | Excellent |
| | | | 15.62 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Li
 Structure No: E-8
 MTO Site No: E-8

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Embankments | | Height: | Count: 4 | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 4.00 | | |

Comments:
 Medium erosion of all embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|----------------------------|------------|------------------------------|
| None | Erosion Control at Bridges | 2 Year | Stabilize eroded embankments |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|----------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: 1 | |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Comments:
 Significant ponding at inlet and outlet with severe erosion of banks likely caused by constriction of flow due to insufficient size of pipe.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 172 - Culvert between Line 78 and Li

Structure No: E-8

MTO Site No: E-8

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin
 Structure No: E-9
 MTO Site No: E-9

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/20/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 28.01 |
| Next Biennial Inspection: | 11/20/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|---------|---------|------------------------|
| Culverts | Barrels | | Load carrying capacity |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|---------|-----------------------|----------|------------|
| Culverts | Barrels | Replace culvert | 1-5 | \$275,000 |

| | |
|----------------------------------|---------------------|
| Total Repair/Rehabilitation Cost | \$275,000.00 |
| Total Associated Work Cost | \$95,000.00 |
| Total Cost | \$370,000.00 |

Overall Comments

Structure is in overall poor condition; Replacement recommended in the next 5 years.

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 154 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 154 | | | | | | | | |
| Location: | 260m north of Line 78 | | | | | | | | |
| Latitude/Northing: | 43d40'22" | | | Longitude/Easting: | 80d57'26" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | BO - Box, Open Footing | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 4.3 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 12.2 m | | | Detour Length: | 0.00 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 51.9 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 4.6 m | | | | | | | | |

Bridge Span BS-00047 3.66 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

Field Inspection Information

Structure No.: E-9

Inspection Date: 11/20/2013 Inspection Type: OSIM Enhanced OSIM BCI: 28.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall poor condition; Replacement recommended in the next 5 years.

Comments

BCI Change Replace culvert due to deteriorating condition of existing structure.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin
 Structure No: E-9
 MTO Site No: E-9

Element Data

Culverts - Inlet Components

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Inlet Components | | |
| Location: | East exterior face | Height: | Count: |
| Material: | Cast-in-place concrete | Total Quantity: 3.40 | |
| Element Type: | Inlet Components | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 3.40 | |
| | | | Good |
| | | | Excellent |

Comments:

Severe delamination and spalling; Severe disintegration with loss of section; Exposed corroded rebar; Wide cracks with efflorescence.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Barrels | | |
| Location: | Legs only | Height: | Count: |
| Material: | Cast-in-place concrete | Total Quantity: 78.08 | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 27.00 | 51.08 |
| | | | Good |
| | | | Excellent |

Comments:

Severe erosion and loss of section with wide cracks and severe delamination along top of footings throughout; Severe scaling and disintegration with severe delamination and spalling at ends; Wide vertical stained cracks; Rodent hole burrowed under legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Load carrying capacity | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 275,000.00 | Replace culvert |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 12.20 | Width: 3.66 |
| Element Name: | Barrels | | |
| Location: | Soffit only | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 44.65 | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 6.70 | 37.95 |
| | | Good | Excellent |

Comments:

Severe disintegration with wide cracks, efflorescence, severe delamination and spalling and exposed corroded rebar at each end; Light to medium scaling; Medium to wide wet pattern cracking with efflorescence; Random severe popouts and spalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 275,000.00 | Replace culvert |

Culverts - Outlet Componentets

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Outlet Componentets | | |
| Location: | West exterior face | Height: | Count: |
| Material: | Cast-in-place concrete | Total Quantity: 3.40 | |
| Element Type: | Outlet Components | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 3.40 | |
| | | Good | Excellent |

Comments:

Severe delamination and spalling; Severe disintegration with loss of section; Exposed corroded rebar; Wide cracks with efflorescence.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 4.30 | Width: | 4.60 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over culvert | | Total Quantity: 19.78 | | | |
| Material: | Gravel | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 19.78 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | 2.00 | | | |

Comments:

Embankments are steep and have medium to severe erosion.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Comments:

Debris located in stream at outlet and approximately 30m downstream preventing proper flow through culvert, leading to sediment build up throughout culvert and severe scouring of embankments downstream.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Comments:

Exposed portion of footings appear to have been refaced; Medium to severe disintegration throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 154 - Bridge between Line 81 and Lin

Structure No: E-9

MTO Site No: E-9

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|-----------------------|----------|---------------------|
| Culverts | Barrels | Replace culvert | 1-5 | \$275,000 |
| Total Repair/Rehabilitation Cost | | | | \$275,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 25,000.00 |
| Contingencies | 10% | 20,000.00 |
| Engineering | | 45,000.00 |
| Total Associated Work Cost | | 95,000.00 |
| Total Repair/Rehabilitation Cost | | 275,000.00 |
| Total Cost | | 370,000.00 |

Summary Action Report

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa

Structure No: E-10

MTO Site No: E-10

Inspection Date: 1/15/2014 mm/dd/yyyy
Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Condition Index Value (BCI) 65.57

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------|-----------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$10,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$20,000.00 |
| Total Associated Work Cost | | | | \$15,000.00 |
| Total Cost | | | | \$35,000.00 |

Overall Comments

Structure is in overall fair condition; Some minor concrete repair required.

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa

Structure No: E-10

MTO Site No: E-10

Inventory Data

| | | | | | |
|--------------------|---------------------------------------|--------------------|---|-----------------|-----------|
| Structure Name: | North Perth Line 60 - Culvert between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 60 | | | | |
| Location: | 1.6km east of Highway 23 | | | | |
| Latitude/Northing: | 43d36'07" | Longitude/Easting: | 81d02'50" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Elma | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 8.1 m | Detour Length: | 0.00 km | Skew Angle: | 0 degrees |
| Deck Width: | 4.3 m | | m | Structure Dir.: | East/West |
| Deck Area: | 34.8 m ² | | | | |
| Trav Deck Wdt | 6.5 m | | | | |

Bridge Span BS-00084 3.66 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa
 Structure No: E-10
 MTO Site No: E-10

Field Inspection Information

Structure No.: E-10

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 65.6
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, snow Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall fair condition; Some minor concrete repair required.

Comments

BCI Change Repair poor concrete to extend life of structure
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa

Structure No: E-10

MTO Site No: E-10

Element Data

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 1.50 Width:
 Height: 1.05 Count: 4
 Total Quantity: 6.30

Environment:
 Limited Inspected

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|------|-----------|
| m2 | 1.10 | 2.70 | 2.50 | |

Comments:

Light to severe scaling and severe disintegration; Light delaminations with horizontal narrow to medium stained cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 10,000.00 | Repair poor concrete |

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 8.10 Width: 3.66
 Height: 1.50 Count: 1
 Total Quantity: 53.95

Environment:
 Limited Inspected

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m2 | 2.90 | 5.80 | 45.25 | |

Comments:

Light to severe scaling and severe disintegration on exterior faces; Light delaminations with horizontal narrow to medium stained cracking on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 10,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa

Structure No: E-10

MTO Site No: E-10

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 6.66 | Width: | 6.50 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over structure | | Total Quantity: 43.29 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 43.29 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|---|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Not visible.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa
 Structure No: E-10
 MTO Site No: E-10

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|---|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa

Structure No: E-10

MTO Site No: E-10

Signs - Signs

| | | | | | |
|-----------------|----------------|----------|--|--------|-----------|
| Element Group: | Signs | | Length: | Width: | |
| Element Name: | Signs | | Height: | Count: | 2 |
| Location: | Each approach | | Total Quantity: 2.00 | | |
| Material: | Steel | | | | |
| Element Type: | Hazard markers | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 2.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 60 - Culvert between Hwy #23 and Roa

Structure No: E-10

MTO Site No: E-10

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------|-----------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$10,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$20,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 3,000.00 |
| Contingencies | 10% | 5,000.00 |
| Engineering | | 5,000.00 |
| Total Associated Work Cost | | 15,000.00 |
| Total Repair/Rehabilitation Cost | | 20,000.00 |
| Total Cost | | 35,000.00 |

Summary Action Report

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin
 Structure No: E-12
 MTO Site No: E-12

Inspection Date: 1/15/2014 mm/dd/yyyy Condition Index Value (BCI) 39.08
 Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|---------------|--------------------------------|---------|------------------------|
| Foundations | Foundation (below grade level) | | Continuous movement |
| Culverts | Barrels | | Continuous movement |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|--|----------|---------------------|
| Culverts | Barrels | Replace culvert | 1-5 | \$249,000 |
| | | Continue to monitor movement of barrel legs frequently | 1-5 | \$1,000 |
| Total Repair/Rehabilitation Cost | | | | \$250,000.00 |
| Total Associated Work Cost | | | | \$95,000.00 |
| Total Cost | | | | \$345,000.00 |

Overall Comments

Structure is in overall poor condition; Replacement should be considered in the next five years; Also, a temporary bracing system may be installed to prevent further movement of barrel legs prior to replacement. Potential movement of barrel legs to be monitored until replacement.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin

Structure No: E-12

MTO Site No: E-12

| Inventory Data | | | | | | | | | |
|--------------------|---|--------------------|-----------------|-------------|--|--|--|--|--|
| Structure Name: | North Perth Road 169 - Culvert betwe | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | | | | | |
| Road Name: | North Perth Road 169 | | | | | | | | |
| Location: | 340m north of Line 78 | | | | | | | | |
| Latitude/Northing: | 43d42'34" | Longitude/Easting: | 81d02'40" | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Elma | | | | | | | | |
| Structure Type: | BO - Box, Open Footing | | | | | | | | |
| Material: | C - CIP Concrete | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 12.2 m | | | | | | | | |
| Deck Width: | 3.7 m | | | | | | | | |
| Deck Area: | 44.5 m2 | | | | | | | | |
| Trav Deck Wdt | 6.5 m | | | | | | | | |
| Heritage Status: | N | | | | | | | | |
| Road Class: | Local | | | | | | | | |
| Lane Type: | | | | | | | | | |
| Posted Speed: | 80 | Lanes: | 2 | | | | | | |
| AADT: | | Trucks: | 0 % | | | | | | |
| Min Vert. Clear.: | m | | | | | | | | |
| No. of Spans: | 1 | | | | | | | | |
| Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | | | |
| Detour Length: | 0.00 km | | Skew Angle: | 0 degrees | | | | | |
| | m | | Structure Dir.: | North/South | | | | | |

Bridge Span BS-00083 3.05 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin
 Structure No: E-12
 MTO Site No: E-12

Field Inspection Information

Structure No.: E-12

Inspection Date: 1/15/2014 Inspection Type OSIM Enhanced OSIM BCI: 39.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, snow Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1,000.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 1,000.00 |

Investigation Comments

MDMS: Continue to monitor movement of barrel legs frequently

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall poor condition; Replacement should be considered in the next five years; Also, a temporary bracing system may be installed to prevent further movement of barrel legs prior to replacement. Potential movement of barrel legs to be monitored until replacement.

BCI Change Justification Replacement of culvert required based on suspected movement and undermining of barrel legs.

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin
 Structure No: E-12
 MTO Site No: E-12

Element Data

Culverts - Barrels

| | | | | | |
|-----------------|------------------------|--|---------------------|--------------|-----------|
| Element Group: | Culverts | Length: 12.20 | Width: 3.05 | | |
| Element Name: | Barrels | | | Height: 1.50 | Count: 1 |
| Location: | All | Total Quantity: 73.81 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 16.90 | 42.30 | 14.61 | |

Comments:

Suspected movement of barrel legs (100mm difference in span measured from top to bottom at each end); Light to medium scaling and narrow to medium stained cracking on exterior faces; Wide cracks at top of legs on exterior faces; Medium to wide wet cracking throughout soffit; Delamination and spalling and severe popouts on soffit; Severe erosion of barrel legs at water level with loss of section and undermining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Continuous movement | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 249,000.00 | Replace culvert |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|---|---------------------|---------|-----------|
| Element Group: | Decks | Length: 3.65 | Width: 6.50 | | |
| Element Name: | Wearing surface | | | Height: | Count: 1 |
| Location: | Over culvert | Total Quantity: 23.73 | | | |
| Material: | Gravel | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 23.73 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin
 Structure No: E-12
 MTO Site No: E-12

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|---|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | 1.00 | 3.00 | | |

Comments:

Large tree growing at southeast corner.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin
 Structure No: E-12
 MTO Site No: E-12

Foundations - Foundation (below grade level)

| | | | | | | | |
|-----------------|--------------------------------|----------|------|--------------|---|--------|---|
| Element Group: | Foundations | | | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | | | Height: | Count: | 1 |
| Location: | Below culvert legs | | | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | | Environment: | Benign | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | All | 1.00 | | | | | |

Comments:

Typically 0.5m of top of footing exposed with severe erosion and loss of section; Remainder assumed to be in poor condition due to suspected failure based on movement of barrel legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Continuous movement | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | | |
|-----------------|----------------------------|----------|------|--------------|--|--------|---|
| Element Group: | Retaining walls | | | | Length: | Width: | |
| Element Name: | Walls | | | | Height: | Count: | 1 |
| Location: | Southwest quadrant | | | | Total Quantity: 1.00 | | |
| Material: | Stone | | | | | | |
| Element Type: | Retained soil systems wall | Subtype: | | Environment: | Benign | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | m ² | | | 1.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 169 - Culvert between Line 81 and Lin

Structure No: E-12

MTO Site No: E-12

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|--|----------|---------------------|
| Culverts | Barrels | Replace culvert | 1-5 | \$249,000 |
| | | Continue to monitor movement of barrel legs frequently | 1-5 | \$1,000 |
| Total Repair/Rehabilitation Cost | | | | \$250,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 25,000.00 |
| Contingencies | 10% | 20,000.00 |
| Engineering | | 45,000.00 |
| Total Associated Work Cost | | 95,000.00 |
| Total Repair/Rehabilitation Cost | | 250,000.00 |
| Total Cost | | 345,000.00 |

Summary Action Report

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin
 Structure No: E-13
 MTO Site No: E-13

Inspection Date: 1/15/2014 mm/dd/yyyy Condition Index Value (BCI) 56.83
 Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|--------------------------------|---------|------------------------|
| Embankments & Streams | Embankments | | Unstable embankments |
| Foundations | Foundation (below grade level) | | Continuous movement |
| Culverts | Barrels | | Continuous movement |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|--------------------------------|---|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 1-5 | \$39,000 |
| Embankments & | Embankments | Stabilize eroded embankments | 1-5 | \$5,000 |
| Foundations | Foundation (below grade level) | Place rock protection along footings | 1-5 | \$5,000 |
| | | Continue to monitor movement of legs frequently | 1-5 | \$1,000 |
| Total Repair/Rehabilitation Cost | | | | \$50,000.00 |
| Total Associated Work Cost | | | | \$40,000.00 |
| Total Cost | | | | \$90,000.00 |

Overall Comments

Structure is in overall poor condition; Major rehabilitation work is required. Potential movement of barrel legs to be monitored annually; A temporary bracing system may be installed to prevent further leg movement.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin

Structure No: E-13

MTO Site No: E-13

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|---|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 166 - Culvert betwe | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 166 | | | | | | | | |
| Location: | 640m north of Line 84 | | | | | | | | |
| Latitude/Northing: | 43d44'05" | | | Longitude/Easting: | 80d59'45" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Elma | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | BO - Box, Open Footing | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 15.7 m | | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 4.3 m | | | Detour Length: | 6.80 km | | | Skew Angle: | 10 degrees |
| Deck Area: | 67.5 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 7.0 m | | | | | | | | |

Bridge Span BS-00082 3.66 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin
 Structure No: E-13
 MTO Site No: E-13

Field Inspection Information

Structure No.: E-13

Inspection Date: 1/15/2014 Inspection Type OSIM Enhanced OSIM BCI: 56.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast, snow Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1,000.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 1,000.00 |

Investigation Comments

MDMS: Continue to monitor movement of legs frequently

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall poor condition; Major rehabilitation work is required. Potential movement of barrel legs to be monitored annually; A temporary bracing system may be installed to prevent further leg movement.

BCI Change Justification Repair poor concrete to extend life of structure; Place rock protection along footings to protect footings from further scour and to prevent further movement of barrel legs.

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin

Structure No: E-13

MTO Site No: E-13

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 15.70 Width: 3.66
 Height: 1.83 Count: 1
 Total Quantity: 114.92

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|-------|-------|-------|-----------|
| m2 | 13.10 | 32.70 | 69.12 | |

Environment:
 Limited Inspected

Comments:

Suspected movement of barrel legs (180mm difference in span measured at top and bottom at each end); Severe delamination, spalling and disintegration with wide cracking with efflorescence on exterior faces; Wide crack at top of legs on exterior face (measured 20mm max.); Delamination, spalling and exposed corroded rebar on soffit; Severe erosion and medium stained cracking of legs at water level; Cold joints on legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Continuous movement | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 39,000.00 | Repair poor concrete |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 4.30 Width: 7.00
 Height: Count: 1
 Total Quantity: 30.10

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|----------------|------|------|-------|-----------|
| m ² | | | 30.10 | |

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin

Structure No: E-13

MTO Site No: E-13

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 4.00 | | | | |

Comments:

Embankments are generally steep and severely eroded.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| Unstable embankments | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Stabilize eroded embankments |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | 1.00 | | | |

Comments:

Medium scour of stream bed along footing at southeast and northwest corners.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin
 Structure No: E-13
 MTO Site No: E-13

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | | | |

Comments:

Top of footings partially exposed, but difficult to see below water level; Assumed to be in poor condition due to suspected failure based on rotation of barrel legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------------------|
| Continuous movement | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Place rock protection along footings |

Municipal Structure Inspection Form

Structure Name: North Perth Road 166 - Culvert between Line 86 and Lin

Structure No: E-13

MTO Site No: E-13

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|--------------------------------|---|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 1-5 | \$39,000 |
| Embankments & | Embankments | Stabilize eroded embankments | 1-5 | \$5,000 |
| Foundations | Foundation (below grade level) | Place rock protection along footings | 1-5 | \$5,000 |
| | | Continue to monitor movement of legs frequently | 1-5 | \$1,000 |
| Total Repair/Rehabilitation Cost | | | | \$50,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 5,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 10,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 15,000.00 |
| Total Associated Work Cost | | 40,000.00 |
| Total Repair/Rehabilitation Cost | | 50,000.00 |
| Total Cost | | 90,000.00 |

Summary Action Report

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Inspection Date: 12/23/2013 mm/dd/yyyy
 Next Biennial Inspection: 12/23/2015 mm/dd/yyyy

Condition Index Value (BCI) 63.26

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------------|--|----------|--------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$5,000 |
| Sidewalks/curbs | Curbs | Repair poor concrete | 1-5 | \$5,000 |
| Decks | Drainage | Replace deck drains. | 1-5 | \$5,000 |
| Barriers | Posts | Repair poor concrete | 1-5 | \$2,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$40,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work. | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$67,000.00 |
| Total Associated Work Cost | | | | \$28,000.00 |
| Total Cost | | | | \$95,000.00 |

Overall Comments

Structure is in overall fair condition; Concrete rehabilitation work is required; Also, a detailed deck condition survey should be completed prior to rehabilitation work to determine overall condition of deck.

Municipal Structure Inspection Form

Structure Name: **Elizabeth Street Bridge**

Structure No: **L-1**

MTO Site No: **L-1**

| Inventory Data | | | | | | | | | |
|--------------------|--|--------------------|-----------------|------------|--|--|--|--|--|
| Structure Name: | Elizabeth Street Bridge | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | | | | | |
| Road Name: | Elizabeth Street | | | | | | | | |
| Location: | 75m east of Wallace Ave. | | | | | | | | |
| Latitude/Northing: | 43d44'00" | Longitude/Easting: | 80d57'07" | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Town of Listowel | | | | | | | | |
| Structure Type: | RF - Rigid Frame | | | | | | | | |
| Material: | C - CIP Concrete | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 18.9 m | | | | | | | | |
| Deck Width: | 11.7 m | | | | | | | | |
| Deck Area: | 221.1 m ² | | | | | | | | |
| Trav Deck Wdt | 8.1 m | | | | | | | | |
| Heritage Status: | N | | | | | | | | |
| Road Class: | Collector | | | | | | | | |
| Lane Type: | | | | | | | | | |
| Posted Speed: | 50 | Lanes: | 2 | | | | | | |
| AADT: | | Trucks: | 0 % | | | | | | |
| Min Vert. Clear.: | m | | | | | | | | |
| No. of Spans: | 1 | | | | | | | | |
| Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | | | |
| Detour Length: | 0.60 km | | Skew Angle: | 30 degrees | | | | | |
| | m | | Structure Dir.: | East/West | | | | | |

Bridge Span BS-00067 15.20 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 1955 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Rehab History

| Year | Description | Amount |
|------|--|--------|
| 1987 | Impr.: , Concrete deck repaired and resurfaced with low slump fibre reinforced exposed concrete deck. Deck sealed with penetrating sealer. | 0.00 |
| 2010 | Impr.: , Railing panels re-coated. | 0.00 |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Field Inspection Information

Structure No.: L-1

Inspection Date: 12/23/2013 Inspection Type: OSIM Enhanced OSIM BCI: 63.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party: Matt Scott
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,000.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 10,000.00 |

Investigation Comments

DCS: Perform a detailed deck condition survey prior to rehabilitation work.

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Concrete rehabilitation work is required; Also, a detailed deck condition survey should be completed prior to rehabilitation work to determine overall condition of deck.

BCI Change Justification Repair poor concrete to extend life of structure.

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Element Data

Abutments - Abutment walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 13.30 Width:
 Height: 2.70 Count: 2
 Total Quantity: 71.82

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m2 | 4.90 | 5.50 | 61.42 | |

Environment:
 Limited Inspected

Comments:

Medium full height vertical cracks; Severe honeycombing at water level; Delamination where abutment meets retaining wall; wet areas from deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Barriers - Railing Systems

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 3.37 Width:
 Height: Count: 10
 Total Quantity: 33.70

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m | | | 33.70 | |

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Barriers - Posts

| | | | | | |
|-----------------|---------------------------|----------|--|--------|-----------|
| Element Group: | Barriers | | Length: | Width: | |
| Element Name: | Posts | | Height: | Count: | 8 |
| Location: | Each side, between panels | | Total Quantity: 8.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Posts | Subtype: | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | 1.00 | 7.00 | |

Comments:
Sections of exposed rebar; isolated medium cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 2,000.00 | Repair poor concrete |

Barriers - Posts

| | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|
| Element Group: | Barriers | | Length: | Width: | |
| Element Name: | Posts | | Height: | Count: | 4 |
| Location: | End posts | | Total Quantity: 4.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Posts | Subtype: | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 0.50 | 1.00 | 2.50 | |

Comments:
Severe delamination, spalling and exposed corroded rebar; Hairline to narrow cracking throughout; Light abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 2,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 18.90 | Width: | 11.70 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 221.13 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 221.13 | | |

Comments:

Light scaling abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 15.20 | Width: | 13.30 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.70 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 223.44 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 33.90 | 33.90 | 155.64 | | |

Comments:

Severe delamination, spalling, exposed corroded rebar and disintegration; Wide cracking with efflorescence; Wide full length crack along centreline of underside with efflorescence; Light honeycombing around deck drains. Wet areas from deck drains.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 40,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 6 |
| Location: | Each side of deck | | Total Quantity: 6.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 6.00 | | | |

Comments:

Deck drains do not extend below soffit causing deterioration of concrete.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Replace deck drains. |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Severe scour at location of storm sewer outlet (southeast corner); Rest is good.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|---|-------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 18.30 | Width: | 0.55 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 1 |
| Location: | South side | | Total Quantity: 15.56 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 3.80 | 4.40 | 7.36 | | |

Comments:

Narrow to medium cracking; Severe disintegration.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|---|------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 5.10 | Width: | 0.55 |
| Element Name: | Curbs | | | | Height: | | Count: | 1 |
| Location: | Northeast side | | | | Total Quantity: 2.81 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 1.20 | 1.61 | | | | | |

Comments:

Severe delamination.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Sidewalks/curbs - Sidewalk and medians

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|---|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 16.40 | Width: | 1.80 |
| Element Name: | Sidewalk and medians | | | | Height: | 0.23 | Count: | 1 |
| Location: | North side only | | | | Total Quantity: 33.29 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Sidewalks and Medians | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | | 2.70 | 30.59 | | | | |

Comments:

Narrow to medium transverse and longitudinal cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Sidewalks/curbs - Sidewalk and medians

| | | | | | | |
|-----------------|------------------------|----------|---|--------------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 16.40 | Width: | 1.20 |
| Element Name: | Sidewalk and medians | | Height: | 0.15 | Count: | 1 |
| Location: | North side only | | Total Quantity: 22.14 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Sidewalks and Medians | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 22.14 | | |

Comments:
 Light abrasions along face.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Elizabeth Street Bridge

Structure No: L-1

MTO Site No: L-1

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---|-------------------|--|----------|--------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$5,000 |
| Sidewalks/curbs | Curbs | Repair poor concrete | 1-5 | \$5,000 |
| Decks | Drainage | Replace deck drains. | 1-5 | \$5,000 |
| Barriers | Posts | Repair poor concrete | 1-5 | \$2,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$40,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work. | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$67,000.00 |

Associated Work

| | Comments | Estimated Cost |
|---|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 3,000.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 8,000.00 |
| Contingencies | 10% | 7,000.00 |
| Engineering | | 10,000.00 |
| Total Associated Work Cost | | 28,000.00 |
| Total Repair/Rehabilitation Cost | | 67,000.00 |
| Total Cost | | 95,000.00 |

Summary Action Report

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

| | | | | |
|---------------------------|-----------|------------|-----------------------------|-------|
| Inspection Date: | 1/15/2014 | mm/dd/yyyy | Condition Index Value (BCI) | 61.30 |
| Next Biennial Inspection: | 1/15/2016 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|-------------|---------|------------------------|
| Embankments & Streams | Embankments | | Unstable embankments |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|----------------------|---|----------|---------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$10,000 |
| Sidewalks/curbs | Curbs | Replace west curb | 1-5 | \$10,000 |
| Embankments & | Embankments | Install gabion baskets along southeast embankment | 1-5 | \$5,000 |
| Barriers | Railing Systems | Replace railing system | 1-5 | \$30,000 |
| Sidewalks/curbs | Sidewalk and medians | Replace east sidewalk | 1-5 | \$15,000 |
| Retaining walls | Walls | Repair poor concrete | 1-5 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$80,000.00 |
| Total Associated Work Cost | | | | \$55,000.00 |
| Total Cost | | | | \$135,000.00 |

Overall Comments

Structure is in overall fair condition; Major concrete rehabilitation and railing system replacement is required; A detailed deck condition survey should be completed prior to rehabilitation work to determine overall condition of deck.

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Inventory Data

| | | | | |
|--------------------|------------------------|--------------------|---|-----------|
| Structure Name: | Davidson Street Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | Davidson Street | | | |
| Location: | 10m south of Queen St. | | | |
| Latitude/Northing: | 43d44'03" | Longitude/Easting: | 80d56'51" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Town of Listowel | | | |
| Structure Type: | RF - Rigid Frame | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 17.9 m | Heritage Status: | N | |
| Deck Width: | 9.9 m | Road Class: | Collector | |
| Deck Area: | 177.2 m ² | Lane Type: | | |
| Trav Deck Wdt | 7.3 m | Posted Speed: | 50 Lanes: 2 | |
| | | AADT: | Trucks: 0 % | |
| | | Min Vert. Clear.: | m | |
| | | No. of Spans: | 1 | |
| | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| | | Detour Length: | 0.90 km | |
| | | | m | |
| | | Skew Angle: | 30 degrees | |
| | | Structure Dir.: | North/South | |

Bridge Span BS-00069 16.80 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1955 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Rehab History

| Year | Description | Amount |
|------|--|--------|
| 1983 | Impr.: , New topping on sidewalk and deck. | 0.00 |

Municipal Structure Inspection Form

Structure Name: **Davidson Street Bridge**

Structure No: **L-2**

MTO Site No: **L-2**

Field Inspection Information

Structure No.: L-2

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 61.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major concrete rehabilitation and railing system replacement is required; A detailed deck condition survey should be completed prior to rehabilitation work to determine overall condition of deck.

BCI Change Justification Repair poor concrete to extend life of structure; Replace sidewalk, curb and railing system to improve pedestrian / vehicle safety at structure.

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Element Data

Abutments - Abutment walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 11.10 Width:
 Height: 2.40 Count: 2
 Total Quantity: 53.28

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|------|-------|-----------|
| | m2 | 5.30 | 8.00 | 39.98 | |

Environment:
 Limited Inspected

Comments:

Severe honeycombing at water level; Severe delamination with efflorescence and salt staining on south wall; Active wet areas from leakage at southwest.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.50 Width:
 Height: 3.50 Count: 1
 Total Quantity: 22.75

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|------|-------|-----------|
| | m2 | 2.80 | 3.30 | 16.65 | |

Environment:
 Limited Inspected

Comments:

Severe delamination and disintegration; Severe honeycombing with leakage; Narrow wet cracks; Efflorescence, salt and rust staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.50 Width:
 Height: 3.20 Count: 1
 Total Quantity: 20.80

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m2 | 0.80 | 2.20 | 17.80 | |

Environment:
 Limited Inspected

Comments:

Light scaling; Wide full height crack with salt staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Barriers - Railing Systems

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 2.35 Width:
 Height: Count: 20
 Total Quantity: 47.00

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m | 4.20 | 8.40 | 34.40 | |

Environment:
 Limited Inspected

Comments:

Medium flaking of paint with light to medium corrosion; Severe local permanent deformations of panels.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 30,000.00 | Replace railing system |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Barriers - Posts

| | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|
| Element Group: | Barriers | | Length: | Width: | |
| Element Name: | Posts | | Height: | Count: | 18 |
| Location: | Each side | | Total Quantity: 18.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Posts | Subtype: | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar; Severe disintegration; Narrow to medium stained cracking; Severe abrasion on northwest post.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 17.90 | Width: | 9.90 |
| Element Name: | Deck top | | Height: | | Count: | 1 |
| Location: | All | | Total Quantity: 177.21 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | Environment: | Severe | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 3.25 | 6.50 | 167.46 | | |

Comments:

Medium to wide transverse and longitudinal cracking; Light to medium abrasions and popouts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 16.80 | Width: | 11.10 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.83 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 214.37 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 25.40 | 25.40 | 163.57 | | |

Comments:

Severe delamination and disintegration with wide cracking with efflorescence on faces; Severe delamination, spalling and exposed corroded rebar on underside; Wide longitudinal crack along centreline of underside with efflorescence.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|----------|--------------|--------|
| Element Group: | Embankments & Streams | | Length: | Width: | | |
| Element Name: | Embankments | | Height: | Count: 4 | | |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 1.00 | | 3.00 | | |

Comments:

Very severe erosion of southeast embankment at retaining wall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| Unstable embankments | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Install gabion baskets along southeast embankment |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Retaining walls - Walls

| | | | | | | |
|-----------------|--------------------------|----------|--|--------------|-----------|---|
| Element Group: | Retaining walls | | Length: | 6.20 | Width: | |
| Element Name: | Walls | | Height: | 3.70 | Count: | 1 |
| Location: | Northwest concrete | | Total Quantity: 22.94 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Reinforced concrete wall | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 2.50 | 2.50 | 17.94 | | |

Comments:

Severe delamination; Light scaling; Wide transverse crack with efflorescence; cold joints.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Retaining walls - Walls

| | | | | | | |
|-----------------|--------------------------|----------|--|--------------|-----------|---|
| Element Group: | Retaining walls | | Length: | 6.50 | Width: | |
| Element Name: | Walls | | Height: | 3.50 | Count: | 1 |
| Location: | Southeast quadrant | | Total Quantity: 22.75 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Reinforced concrete wall | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 4.50 | 5.20 | 13.05 | | |

Comments:

Severe disintegration around inlet pipes; Medium to severe honeycombing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|--|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 23.70 | Width: | 0.70 |
| Element Name: | Curbs | | | | Height: | 0.30 | Count: | 1 |
| Location: | West side | | | | Total Quantity: 23.70 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 20.80 | 2.90 | | | | | |

Comments:
Severe delamination and disintegration on exterior faces; Medium delamination with narrow to medium cracks on interior; Light abrasions and rust staining throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Replace west curb |

Sidewalks/curbs - Sidewalk and medians

| | | | | | | | | |
|-----------------|------------------------|----------|-------|--------------|---|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 29.50 | Width: | 1.90 |
| Element Name: | Sidewalk and medians | | | | Height: | 0.30 | Count: | 1 |
| Location: | East side | | | | Total Quantity: 64.90 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Sidewalks and Medians | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 15.50 | 15.50 | 33.90 | | | | |

Comments:
Severe delamination, spalling and disintegration on exterior faces; Medium delaminations with hairline to narrow cracking on interior; Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Replace east sidewalk |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Sidewalks/curbs - Sidewalk and medians

| | | | | | | |
|-----------------|------------------------|----------|---|--------------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 6.70 | Width: | 3.00 |
| Element Name: | Sidewalk and medians | | Height: | 0.15 | Count: | 1 |
| Location: | Northwest quadrant | | Total Quantity: 21.11 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Sidewalks and Medians | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 21.11 | | |

Comments:
Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Replace east sidewalk |

Municipal Structure Inspection Form

Structure Name: Davidson Street Bridge

Structure No: L-2

MTO Site No: L-2

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-----------------|----------------------|---|----------|------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$10,000 |
| Sidewalks/curbs | Curbs | Replace west curb | 1-5 | \$10,000 |
| Embankments & | Embankments | Install gabion baskets along southeast embankment | 1-5 | \$5,000 |
| Barriers | Railing Systems | Replace railing system | 1-5 | \$30,000 |
| Sidewalks/curbs | Sidewalk and medians | Replace east sidewalk | 1-5 | \$15,000 |
| Retaining walls | Walls | Repair poor concrete | 1-5 | \$5,000 |
| Abutments | Wingwalls | Repair poor concrete | 1-5 | \$5,000 |

Total Repair/Rehabilitation Cost **\$80,000.00**

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 25,000.00 |
| Total Associated Work Cost | | 55,000.00 |
| Total Repair/Rehabilitation Cost | | 80,000.00 |
| Total Cost | | 135,000.00 |

Summary Action Report

Structure Name: **Union Street Bridge**

Structure No: **L-3**

MTO Site No: **L-3**

Inspection Date: 1/15/2014 mm/dd/yyyy
 Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Condition Index Value (BCI) 64.90

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------|----------------------|---------|-----------------------------|
| Sidewalks/curbs | Sidewalk and medians | | Pedestrian/vehicular hazard |
| Sidewalks/curbs | Curbs | | Pedestrian/vehicular hazard |
| Sidewalks/curbs | Curbs | | Pedestrian/vehicular hazard |
| Barriers | Posts | | Pedestrian/vehicular hazard |
| Barriers | Posts | | Pedestrian/vehicular hazard |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|----------------------|---|----------|---------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$5,000 |
| Sidewalks/curbs | Curbs | Replace north and south curb | 1-5 | \$15,000 |
| Barriers | Railing Systems | Replace railing system | 1-5 | \$40,000 |
| Sidewalks/curbs | Sidewalk and medians | Replace south sidewalk | 1-5 | \$10,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$10,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$90,000.00 |
| Total Associated Work Cost | | | | \$50,000.00 |
| Total Cost | | | | \$140,000.00 |

Overall Comments

Structure is in overall fair condition; Major rehabilitation work and sidewalk, curb and railing system replacement required. A detailed deck condition survey should be completed prior to rehabilitation work to determine the overall condition of the deck.

Municipal Structure Inspection Form

Structure Name: **Union Street Bridge**

Structure No: **L-3**

MTO Site No: **L-3**

Inventory Data

| | | | | | |
|--------------------|----------------------------|--------------------|--|-----------------|------------|
| Structure Name: | Union Street Bridge | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | Union Street | | | | |
| Location: | 20m west of Richileau Ave. | | | | |
| Latitude/Northing: | 43d43'45" | Longitude/Easting: | 80d57'27" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 50 Lanes: 2 | | |
| Geo Twp.: | Town of Listowel | AADT: | Trucks: 0 % | | |
| Structure Type: | RF - Rigid Frame | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 15.6 m | Detour Length: | 0.00 km | Skew Angle: | 30 degrees |
| Deck Width: | 9.8 m | | m | Structure Dir.: | East/West |
| Deck Area: | 152.9 m ² | | | | |
| Trav Deck Wdt | 7.4 m | | | | |

Bridge Span BS-00071 15.20 m

Historical Data

| | | |
|-------------------------|--------------------------|---------------------------|
| Year Built: 1970 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | Contract No. When Built: | Last Evaluation: |
| Last Enhanced OSIM: | Current Load Limit: | t t t |
| Last Enhanced Access: | Bylaw No.: | |
| Last Underwater Insp. | Bylaw Exp. Date: | |
| Last Condition Survey.: | | |

Rehab History

| Year | Description | Amount |
|------|---|--------|
| 1988 | Impr.: , Deck repaired with low slump overlay, waterproofed and paved. Handrail posts repaired with latex modified concrete. Exterior faces repaired. | 0.00 |

Municipal Structure Inspection Form

Structure Name: **Union Street Bridge**

Structure No: **L-3**

MTO Site No: **L-3**

Field Inspection Information

Structure No.: L-3

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 64.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,000.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 10,000.00 |

Investigation Comments

DCS: Perform a detailed deck condition survey prior to rehabilitation work

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major rehabilitation work and sidewalk, curb and railing system replacement required. A detailed deck condition survey should be completed prior to rehabilitation work to determine the overall condition of the deck.

BCI Change Justification Repair poor concrete to extend life of structure; Replace sidewalk, curb and railing system to improve vehicle safety at structure.

Municipal Structure Inspection Form

Structure Name: Union Street Bridge

Structure No: L-3

MTO Site No: L-3

Element Data

Abutments - Abutment walls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 11.20 Width:
 Height: 2.70 Count: 2
 Total Quantity: 60.48

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|------|-------|-----------|
| | m2 | 7.00 | 7.00 | 46.48 | |

Environment:
 Limited Inspected

Comments:

Severe honeycombing on both.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 5,000.00 | Repair poor concrete |

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 5.60 Width:
 Height: 3.60 Count: 4
 Total Quantity: 80.64

| Condition Data: | Units | Poor | Fair | Good | Excellent |
|-----------------|-------|------|-------|-------|-----------|
| | m2 | 2.20 | 32.20 | 46.24 | |

Environment:
 Limited Inspected

Comments:

Severe leachate and salt staining throughout; Light honeycombing.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Union Street Bridge

Structure No: L-3

MTO Site No: L-3

Barriers - Railing Systems

| | | | | | | |
|-----------------|---------------------------------------|------|--|-------|--------------|--------|
| Element Group: | Barriers | | Length: | 3.35 | Width: | |
| Element Name: | Railing Systems | | Height: | | Count: | 12 |
| Location: | Each side | | Total Quantity: 40.20 | | | |
| Material: | Steel | | | | | |
| Element Type: | Concrete Post and steel panel railing | | Subtype: | | Environment: | Severe |
| Prot. System: | Unknown | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 40.20 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 40,000.00 | Replace railing system |

Barriers - Posts

| | | | | | | |
|-----------------|------------------------|------|--|------|--------------|--------|
| Element Group: | Barriers | | Length: | | Width: | |
| Element Name: | Posts | | Height: | | Count: | 10 |
| Location: | Each side | | Total Quantity: 10.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Posts | | Subtype: | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 9.00 | 1.00 | | | |

Comments:

Severe delamination and spalling; Severe disintegration; Narrow to wide pattern cracking throughout all posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Union Street Bridge

Structure No: L-3

MTO Site No: L-3

Barriers - Posts

| | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|
| Element Group: | Barriers | | Length: | Width: | |
| Element Name: | Posts | | Height: | Count: | 4 |
| Location: | End posts | | Total Quantity: 4.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Posts | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 2.00 | 2.00 | | |

Comments:

Severe delamination; Narrow to wide pattern cracking throughout; Severe popouts; Severe disintegration on top of posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Deck top

| | | | | | | |
|-----------------|---------------------------------------|----------|---|--------|-----------|------|
| Element Group: | Decks | | Length: | 15.60 | Width: | 9.80 |
| Element Name: | Deck top | | Height: | Count: | | 1 |
| Location: | All | | Total Quantity: 152.88 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Deck top | Subtype: | Environment: | | Moderate | |
| Prot. System: | Waterproof and paving with AC overlay | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 152.88 | | |

Comments:

Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Union Street Bridge**

Structure No: **L-3**

MTO Site No: **L-3**

Decks - Soffit-Thick Slab

| | | | | | | |
|-----------------|------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 15.20 | Width: | 11.20 |
| Element Name: | Soffit-Thick Slab | | Height: | 0.95 | Count: | 1 |
| Location: | Underside and exterior faces | | Total Quantity: 199.12 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Soffit - Thick Slab | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 9.10 | 11.60 | 178.42 | | |

Comments:

Severe delaminations with narrow to wide horizontal cracking with efflorescence and staining throughout faces; Narrow to medium longitudinal cracking along underside edges with efflorescence and stalactites; Active wet areas.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Repair poor concrete |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|--------------|--------|
| Element Group: | Decks | | Length: | 26.00 | Width: | 7.40 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 192.40 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 192.40 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Union Street Bridge

Structure No: L-3

MTO Site No: L-3

Embankments & Streams - Embankments

| | | | | | |
|-----------------|-----------------------|----------|------|--|-----------|
| Element Group: | Embankments & Streams | | | Length: | Width: |
| Element Name: | Embankments | | | Height: | Count: 4 |
| Location: | Each quadrant | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign |
| Prot. System: | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Slope Protection

| | | | | | |
|-----------------|--------------------------|----------|------|--|-----------|
| Element Group: | Embankments & Streams | | | Length: | Width: |
| Element Name: | Slope Protection | | | Height: | Count: 1 |
| Location: | Each quadrant | | | Total Quantity: 1.00 | |
| Material: | Gabion Basket | | | | |
| Element Type: | Gabions slope protection | Subtype: | | Environment: | Benign |
| Prot. System: | None | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Union Street Bridge

Structure No: L-3

MTO Site No: L-3

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structure | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Union Street Bridge**

Structure No: **L-3**

MTO Site No: **L-3**

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|-------|--------------|---|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 26.00 | Width: | 0.55 |
| Element Name: | Curbs | | | | Height: | 0.30 | Count: | 1 |
| Location: | North side | | | | Total Quantity: 22.10 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 9.10 | 13.00 | | | | | |

Comments:

Severe delamination and spalling with exposed corroded rebar; Severe disintegration; Narrow to wide stained cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Replace north and south curb |

Sidewalks/curbs - Curbs

| | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|---|-------|--------|------|
| Element Group: | Sidewalks/curbs | | | | Length: | 14.50 | Width: | 0.55 |
| Element Name: | Curbs | | | | Height: | 0.30 | Count: | 1 |
| Location: | South side | | | | Total Quantity: 12.33 | | | |
| Material: | Cast-in-place concrete | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m2 | 5.00 | 9.50 | | | | | |

Comments:

Severe delamination with narrow to wide stained cracking throughout; Severe disintegration.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 15,000.00 | Replace north and south curb |

Municipal Structure Inspection Form

Structure Name: Union Street Bridge

Structure No: L-3

MTO Site No: L-3

Sidewalks/curbs - Sidewalk and medians

| | | | | | | |
|-----------------|------------------------|----------|---|-------|--------------|--------|
| Element Group: | Sidewalks/curbs | | Length: | 15.50 | Width: | 1.75 |
| Element Name: | Sidewalk and medians | | Height: | 0.10 | Count: | 1 |
| Location: | South side | | Total Quantity: 28.68 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Sidewalks and Medians | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 23.40 | 5.28 | | | |

Comments:
Severe disintegration and honeycombing throughout; Narrow to wide stained cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------|
| Pedestrian/vehicular hazard | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 10,000.00 | Replace south sidewalk |

Municipal Structure Inspection Form

Structure Name: **Union Street Bridge**

Structure No: **L-3**

MTO Site No: **L-3**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---|----------------------|---|----------|--------------------|
| Abutments | Abutment walls | Repair poor concrete | 1-5 | \$5,000 |
| Sidewalks/curbs | Curbs | Replace north and south curb | 1-5 | \$15,000 |
| Barriers | Railing Systems | Replace railing system | 1-5 | \$40,000 |
| Sidewalks/curbs | Sidewalk and medians | Replace south sidewalk | 1-5 | \$10,000 |
| Decks | Soffit-Thick Slab | Repair poor concrete | 1-5 | \$10,000 |
| | | Perform a detailed deck condition survey prior to rehabilitation work | 1-5 | \$10,000 |
| Total Repair/Rehabilitation Cost | | | | \$90,000.00 |

Associated Work

| | Comments | Estimated Cost |
|---|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | Coordination with utilities | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 11,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 23,000.00 |
| Total Associated Work Cost | | 50,000.00 |
| Total Repair/Rehabilitation Cost | | 90,000.00 |
| Total Cost | | 140,000.00 |

Summary Action Report

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Inspection Date: 1/15/2014 mm/dd/yyyy
 Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Condition Index Value (BCI) 73.47

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------|--------------------------|----------|---------------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Posts | Weld all split posts | 6-10 | \$5,000 |
| Joints | Seals/sealants | Replace expansion joints | 6-10 | \$80,000 |
| Decks | Wearing surface | Waterproof and repave | 6-10 | \$15,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$110,000.00 |
| Total Associated Work Cost | | | | \$50,000.00 |
| Total Cost | | | | \$160,000.00 |

Overall Comments

Structure is in overall good condition; Minor concrete repairs, expansion joint replacement and waterproof and repaving all required in the next ten years.

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Inventory Data

| | | | | |
|--------------------|---------------------------|--------------------|---|-----------|
| Structure Name: | Elma Street Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | Elma Street | | | |
| Location: | 100m west of Wallace Ave. | | | |
| Latitude/Northing: | 43d43'52" | Longitude/Easting: | 80d57'18" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | Heritage Status: | N | |
| MTO District: | 33-Owen Sound | Road Class: | Collector | |
| Old County: | 25-Perth | Lane Type: | | |
| Geo Twp.: | Elma | Posted Speed: | 50 Lanes: 2 | |
| Structure Type: | SS - Solid Slab | AADT: | Trucks: 0 % | |
| Material: | C - CIP Concrete | Min Vert. Clear.: | m | |
| Articulation: | | No. of Spans: | 3 | |
| Deck Length: | 22.8 m | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | |
| Deck Width: | 11.6 m | Detour Length: | 1.00 km | |
| Deck Area: | 264.5 m2 | | m | |
| Trav Deck Wdt | 9.2 m | Skew Angle: | 0 degrees | |
| | | Structure Dir.: | East/West | |

Bridge Span BS-00070 14.00 m
 Bridge Span BS-00075 4.40 m
 Bridge Span BS-00076 4.40 m

Historical Data

Year Built: 1965 Superstruct. Year: Year of Last Major Rehab:
 Last OSIM Inspection: Contract No. When Built:
 Last Enhanced OSIM: Last Evaluation:
 Last Enhanced Access: Current Load Limit: t t t
 Last Underwater Insp. Bylaw No.:
 Last Condition Survey: Bylaw Exp. Date:

Rehab History

| Year | Description | Amount |
|------|--|--------|
| 1995 | Impr.: , Deck repaired with low slump overlay, waterproofed and paved. | 0.00 |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Field Inspection Information

Structure No.: L-4

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 73.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:

Timing of Recommended Work:

Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall good condition; Minor concrete repairs, expansion joint replacement and waterproof and repaving all required in the next ten years.

BCI Change Justification Repair poor concrete to extend life of structure; Replace expansion joints and waterproof and repave to prevent further water leakage and deterioration of concrete substructure.

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Element Data

Abutments - Abutment walls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 10.70 | Width: 2 |
| Element Name: | Abutment walls | | |
| Location: | Each end | Height: 1.50 | Count: 2 |
| Material: | Cast-in-place concrete | Total Quantity: 32.10 | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 3.70 |
| | | | 28.40 |
| | | | |

Comments:

Narrow to medium vertical cracks on both abutments; Active wet areas throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Bearings

| | | | |
|-----------------|-------------------------|--|---------------------|
| Element Group: | Abutments | Length: | Width: |
| Element Name: | Bearings | | |
| Location: | At abutments | Height: | Count: 12 |
| Material: | Other | Total Quantity: 12.00 | |
| Element Type: | Elastomeric pad bearing | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | Each | | 12.00 |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 3.10 Width:
 Height: 1.90 Count: 4
 Total Quantity: 23.56

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m2 | 2.20 | 3.50 | 17.86 | |

Environment:
 Limited Inspected

Comments:

Medium delaminations with wide stained and wet cracking; Severe disintegration on southwest wingwall; Light staining throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Repair poor concrete |

None

Rehab/Repair Recommendations: Priority 6-10, Total Cost 5,000.00, Comments: Repair poor concrete

Barriers - Railing Systems

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 2.75 Width:
 Height: Count: 18
 Total Quantity: 49.50

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m | | 3.70 | 45.80 | |

Environment:
 Limited Inspected

Comments:

Medium flaking of coating with light corrosion; Severe local permanent deformations of panels.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

Rehab/Repair Recommendations: Priority, Total Cost, Comments: None

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Barriers - Posts

| | | | | | | |
|-----------------|-----------|----------|------|--------------|--|-----------|
| Element Group: | Barriers | | | | Length: | Width: |
| Element Name: | Posts | | | | Height: | Count: 16 |
| Location: | Each side | | | | Total Quantity: 16.00 | |
| Material: | Steel | | | | | |
| Element Type: | Posts | Subtype: | | Environment: | Severe | |
| Prot. System: | Unknown | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 3.00 | 3.00 | 10.00 | | |

Comments:

Three posts are split along weld seam; Steel bulging on three posts.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Weld all split posts |

Barriers - Posts

| | | | | | | |
|-----------------|------------------------|----------|------|--------------|--|----------|
| Element Group: | Barriers | | | | Length: | Width: |
| Element Name: | Posts | | | | Height: | Count: 4 |
| Location: | End posts | | | | Total Quantity: 4.00 | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Posts | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Weld all split posts |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Decks - Deck top

| | | | |
|-----------------|---------------------------------------|---|-----------------------|
| Element Group: | Decks | Length: 22.80 | Width: 11.60 |
| Element Name: | Deck top | | |
| Location: | All | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 264.48 | |
| Element Type: | Deck top | Subtype: | Environment: Moderate |
| Prot. System: | Waterproof and paving with AC overlay | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good 264.48 |
| | | | Excellent |

Comments:
Not visible, assumed to be in good condition based on condition of wearing surface.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Soffit-Thick Slab

| | | | |
|-----------------|------------------------------|--|---------------------|
| Element Group: | Decks | Length: 22.80 | Width: 10.70 |
| Element Name: | Soffit-Thick Slab | | |
| Location: | Underside and exterior faces | Height: | Count: 1 |
| Material: | Cast-in-place concrete | Total Quantity: 266.76 | |
| Element Type: | Soffit - Thick Slab | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 1.70 | 11.40 |
| | | | Good 253.66 |
| | | | Excellent |

Comments:
Hairline to narrow wet pattern cracking; Wide stained cracking on faces at bearing locations.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Decks - Drainage

| | | | | | |
|-----------------|-------------------|----------|--|--------|-----------|
| Element Group: | Decks | | Length: | Width: | |
| Element Name: | Drainage | | Height: | Count: | 10 |
| Location: | Each side of deck | | Total Quantity: 10.00 | | |
| Material: | Steel | | | | |
| Element Type: | Steel drain pipes | Subtype: | Environment: Severe | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | 10.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| None | None | None | Severe corrosion throughout. |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace deck drains |

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------|-----------|------|
| Element Group: | Decks | | Length: | 28.00 | Width: | 9.20 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over deck top | | Total Quantity: 257.60 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | 9.20 | 9.20 | 239.20 | | |

Comments:

Wide transverse cracks; Medium longitudinal cracking; Several random narrow cracks.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 15,000.00 | Waterproof and repave |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Embankments & Streams - Slope Protection

| | | | | | | |
|-----------------|--------------------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Slope Protection | | | | Height: | Count: 1 |
| Location: | At each abutment | | | | Total Quantity: 1.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Crushed stone slope protection | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Below structures | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments and piers | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Footings partially exposed at abutments and appear stable.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Joins - Seals/sealants

| | | | | | | |
|-----------------|------------------|----------|--|------|--------------|--------|
| Element Group: | Joins | | Length: | 9.20 | Width: | |
| Element Name: | Seals/sealants | | Height: | | Count: | 2 |
| Location: | Each end of deck | | Total Quantity: 18.40 | | | |
| Material: | Other | | | | | |
| Element Type: | Compression seal | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | 18.40 | | | |

Comments:

Active wet areas on abutments indicate that joints are leaking and are therefore considered to be in fair condition; Light scaling of concrete end dams.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 80,000.00 | Replace expansion joints |

Piers - Shafts/columns/Piles Bents

| | | | | | | |
|-----------------|------------------------------------|----------|--|--------|--------------|--------|
| Element Group: | Piers | | Length: | 10.80 | Width: | 0.45 |
| Element Name: | Shafts/columns/Piles Bents | | Height: | 3.60 | Count: | 2 |
| Location: | Each end | | Total Quantity: 162.00 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Concrete shafts, pier walls /shaft | Subtype: | | | Environment: | Benign |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 162.00 | | |

Comments:

Light corrosion of steel armoring on north.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Sidewalks/curbs - Curbs

| | | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|---|-------|--------|------|--|
| Element Group: | Sidewalks/curbs | | | | Length: | 28.00 | Width: | 0.60 | |
| Element Name: | Curbs | | | | Height: | 0.23 | Count: | 1 | |
| Location: | South side | | | | Total Quantity: 23.24 | | | | |
| Material: | Cast-in-place concrete | | | | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | | |
| | m2 | | | 23.24 | | | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Sidewalk and medians

| | | | | | | | | | |
|-----------------|------------------------|----------|------|--------------|---|-------|--------|------|--|
| Element Group: | Sidewalks/curbs | | | | Length: | 28.00 | Width: | 1.80 | |
| Element Name: | Sidewalk and medians | | | | Height: | 0.23 | Count: | 1 | |
| Location: | North side | | | | Total Quantity: 56.84 | | | | |
| Material: | Cast-in-place concrete | | | | | | | | |
| Element Type: | Sidewalks and Medians | Subtype: | | Environment: | Severe | | | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | | |
| | m2 | | | 56.84 | | | | | |

Comments:

Hairline cracking and light abrasions.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Elma Street Bridge**

Structure No: **L-4**

MTO Site No: **L-4**

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|---------------|-----------------|--------------------------|----------|------------|
| Decks | Drainage | Replace deck drains | 6-10 | \$5,000 |
| Barriers | Posts | Weld all split posts | 6-10 | \$5,000 |
| Joints | Seals/sealants | Replace expansion joints | 6-10 | \$80,000 |
| Decks | Wearing surface | Waterproof and repave | 6-10 | \$15,000 |
| Abutments | Wingwalls | Repair poor concrete | 6-10 | \$5,000 |

Total Repair/Rehabilitation Cost **\$110,000.00**

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, etc. | 10,000.00 |
| Contingencies | 10% | 15,000.00 |
| Engineering | | 20,000.00 |
| Total Associated Work Cost | | 50,000.00 |
| Total Repair/Rehabilitation Cost | | 110,000.00 |
| Total Cost | | 160,000.00 |

Summary Action Report

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Inspection Date: 12/23/2013 mm/dd/yyyy
 Next Biennial Inspection: 12/23/2015 mm/dd/yyyy

Condition Index Value (BCI) 73.48

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------------|---|----------|---------------------|
| Culverts | Barrels | Repair poor concrete throughout tunnel | 6-10 | \$75,000 |
| Barriers | Hand Railings | Replace hand railing on west side | 6-10 | \$5,000 |
| Retaining walls | Walls | Continue to monitor rotation of east wall. | 1-5 | \$1,000 |
| Retaining walls | Walls | Continuously monitor crack widths on all retaining walls. | 1-5 | \$1,000 |
| Total Repair/Rehabilitation Cost | | | | \$82,000.00 |
| Total Associated Work Cost | | | | \$53,000.00 |
| Total Cost | | | | \$135,000.00 |

Overall Comments

Structure is in overall good condition; Concrete rehabilitation work required throughout tunnel.

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

| Inventory Data | | | | | | | | | |
|--------------------|---|--------------------|-----------------|-------------|--|--|--|--|--|
| Structure Name: | Listowel Tunnel | Hwy No. | | Key Photo | | | | | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | | | | | |
| Road Name: | | | | | | | | | |
| Location: | Underneath Listowel's downtown core | | | | | | | | |
| Latitude/Northing: | 43d43'54" | Longitude/Easting: | 80d57'11" | | | | | | |
| Owner: | North Perth | 100.00% | | | | | | | |
| MTO Region: | 30-Southwestern | | | | | | | | |
| MTO District: | 33-Owen Sound | | | | | | | | |
| Old County: | 25-Perth | | | | | | | | |
| Geo Twp.: | Town of Listowel | | | | | | | | |
| Structure Type: | BC - Box, Closed Footing | | | | | | | | |
| Material: | C - CIP Concrete | | | | | | | | |
| Articulation: | | | | | | | | | |
| Deck Length: | 213.5 m | | | | | | | | |
| Deck Width: | 10.9 m | | | | | | | | |
| Deck Area: | 2,327.2 m ² | | | | | | | | |
| Trav Deck Wdt | 0.0 m | | | | | | | | |
| Heritage Status: | N | | | | | | | | |
| Road Class: | Arterial | | | | | | | | |
| Lane Type: | | | | | | | | | |
| Posted Speed: | 50 | Lanes: | 0 | | | | | | |
| AADT: | | Trucks: | 0 % | | | | | | |
| Min Vert. Clear.: | m | | | | | | | | |
| No. of Spans: | 1 | | | | | | | | |
| Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | | | | | |
| Detour Length: | 0.00 km | | Skew Angle: | degrees | | | | | |
| | m | | Structure Dir.: | North/South | | | | | |

Bridge Span BS-00068 9.80 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Rehab History

| Year | Description | Amount |
|------|---|--------|
| 2007 | Impr.: , 2 sections of retaining wall replaced between the north side of the tunnel and Elizabeth St. | 0.00 |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Field Inspection Information

Structure No.: L-5

Inspection Date: 12/23/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party: Matt Scott
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera, flashlight
 Weather: Overcast Temperature: -5 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|-------------------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1,000.00 |
| Monitoring of Crack Widths | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1,000.00 |
| Total Cost: | | | | 2,000.00 |

Investigation Comments

MDMS: Continue to monitor rotation of east wall.
 MCW: Continuously monitor crack widths on all retaining walls.

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Comments: Structure is in overall good condition; Concrete rehabilitation work required throughout tunnel.
 BCI Change Justification: Repair poor concrete throughout tunnel to extend life of structure.

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Element Data

Barriers - Hand Railings

| | | | | | |
|-----------------|-------------------------------------|--|--------------|----------|-----------|
| Element Group: | Barriers | Length: 67.00 | Width: | Count: 2 | |
| Element Name: | Hand Railings | | | | |
| Location: | North of Elizabeth St. (both sides) | Total Quantity: 134.00 | | | |
| Material: | Steel | Subtype: | Environment: | Benign | |
| Element Type: | Double hand railing | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m | 4.50 | | 129.50 | |

Comments:

Light corrosion; Paint peeling throughout; Severe permanent deformation at northwest corner; Loose connection to wall at northeast corner; Severe outward rotation on west side.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace hand railing on west side |

Barriers - Hand Railings

| | | | | | |
|-----------------|---|--|--------------|----------|-----------|
| Element Group: | Barriers | Length: 100.50 | Width: | Count: 2 | |
| Element Name: | Hand Railings | | | | |
| Location: | Between Elizabeth St. and Tunnel (both) | Total Quantity: 201.00 | | | |
| Material: | Steel | Subtype: | Environment: | Benign | |
| Element Type: | Double hand railing | <input type="checkbox"/> Limited Inspected | | | |
| Prot. System: | None | | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m | | 100.50 | | 100.50 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Replace hand railing on west side |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 213.50 Width: 9.80
 Height: 3.20 Count: 1
 Total Quantity: 5,551.00

Condition Data:

Environment:
 Limited Inspected

Comments:

Random sections of severe delamination and disintegration; Light honeycombing; Hairline to wide vertical, pattern and random cracking throughout, some with efflorescence; Some barrel joints are actively wet with rust and salt staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|--|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 75,000.00 | Repair poor concrete throughout tunnel |

Embankments & Streams - Slope Protection

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: Width:
 Height: Count: 1
 Total Quantity: 1.00

Condition Data:

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Embankments & Streams - Slope Protection

| | | | | | |
|-----------------|--------------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Slope Protection | | Height: | Count: | 1 |
| Location: | South end | | Total Quantity: 1.00 | | |
| Material: | Gabion Basket | | | | |
| Element Type: | Gabions slope protection | Subtype: | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through tunnel | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Retaining walls - Walls

| | | | |
|-----------------|-------------------------------------|--|-----------------------|
| Element Group: | Retaining walls | Length: 66.70 Width: 4.00 | Height: 4.00 Count: 2 |
| Element Name: | Walls | | |
| Location: | North of Elizabeth St. (both sides) | Total Quantity: 533.60 | |
| Material: | Cast-in-place concrete | Subtype: | Environment: Benign |
| Element Type: | Reinforced concrete wall | <input type="checkbox"/> Limited Inspected | |
| Prot. System: | None | | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 80.04 |
| | | | 453.56 |
| | | | Excellent |

Comments:

East wall has inward rotation towards river (180mm from top to bottom - no change noted since 2011 inspection); Narrow to medium vertical cracking; Leakage at joints with cracking; Narrow to medium cracks at weep hole locations; Severe erosion at storm outlet.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| Rehab | 1-5 yrs | 1,000.00 | Continue to monitor rotation of east wall. |
| Rehab | 1-5 yrs | 1,000.00 | Continuously monitor crack widths on all retaining walls. |

Retaining walls - Walls

| | | | |
|-----------------|------------------------------------|--|-----------------------|
| Element Group: | Retaining walls | Length: 20.00 Width: 4.30 | Height: 4.30 Count: 1 |
| Element Name: | Walls | | |
| Location: | South of Elizabeth St. (west side) | Total Quantity: 86.00 | |
| Material: | Cast-in-place concrete | Subtype: | Environment: Benign |
| Element Type: | Reinforced concrete wall | <input type="checkbox"/> Limited Inspected | |
| Prot. System: | None | | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | 86.00 |
| | | | Good |
| | | | Excellent |

Comments:

Section replaced in November 2006; Full height hairline to narrow cracking; Light alkali aggregate reactions starting to form.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| Rehab | 1-5 yrs | 1,000.00 | Continue to monitor rotation of east wall. |
| Rehab | 1-5 yrs | 1,000.00 | Continuously monitor crack widths on all retaining walls. |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Retaining walls - Walls

| | | |
|-----------------|--|--|
| Element Group: | Retaining walls | Length: 80.50 Width: 4.30 Height: 4.30 Count: 1 |
| Element Name: | Walls | |
| Location: | South of Elizabeth St. (west side) | Total Quantity: 346.15 |
| Material: | Cast-in-place concrete | |
| Element Type: | Reinforced concrete wall | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | <input type="checkbox"/> Limited Inspected | |
| | Units: <input type="text"/> m ² | Poor: <input type="text"/> 7.20 |
| | Fair: <input type="text"/> 8.90 | Good: <input type="text"/> 330.05 |
| | Excellent: <input type="text"/> | |

Comments:

Section replaced in July 2007; Narrow to wide vertical cracking; Weepers do not extend past wall causing salt / rust staining; Rock protection has been placed along wall since last inspection and stream has been diverted away from wall to centre of channel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| Rehab | 1-5 yrs | 1,000.00 | Continue to monitor rotation of east wall. |
| Rehab | 1-5 yrs | 1,000.00 | Continuously monitor crack widths on all retaining walls. |

Retaining walls - Walls

| | | |
|-----------------|--|---|
| Element Group: | Retaining walls | Length: 100.50 Width: 4.30 Height: 4.30 Count: 1 |
| Element Name: | Walls | |
| Location: | Between Elizabeth St. and Tunnel (east) | Total Quantity: 432.15 |
| Material: | Cast-in-place concrete | |
| Element Type: | Reinforced concrete wall | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: <input type="text"/> Benign |
| Condition Data: | <input type="checkbox"/> Limited Inspected | |
| | Units: <input type="text"/> m ² | Poor: <input type="text"/> 24.70 |
| | Fair: <input type="text"/> 24.70 | Good: <input type="text"/> 382.75 |
| | Excellent: <input type="text"/> | |

Comments:

Narrow to wide vertical cracking with efflorescence and salt staining, some with leakage; Light scaling throughout; Light erosion at weepers.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| Rehab | 1-5 yrs | 1,000.00 | Continue to monitor rotation of east wall. |
| Rehab | 1-5 yrs | 1,000.00 | Continuously monitor crack widths on all retaining walls. |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|-------------------------------------|----------|--|--------------|-----------|-------|
| Element Group: | Sidewalks/curbs | | Length: | 67.00 | Width: | 0.40 |
| Element Name: | Curbs | | Height: | 0.30 | Count: | 2 |
| Location: | North of Elizabeth St. (both sides) | | Total Quantity: | | | 93.80 |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | 0.80 | 3.50 | 89.50 | | |

Comments:

Light scaling and staining along curb top; Light to medium abrasions; Random light popouts; Random narrow to medium cracks throughout Sections of severe delamination and spalling.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Listowel Tunnel

Structure No: L-5

MTO Site No: L-5

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------------|---|----------|--------------------|
| Culverts | Barrels | Repair poor concrete throughout tunnel | 6-10 | \$75,000 |
| Barriers | Hand Railings | Replace hand railing on west side | 6-10 | \$5,000 |
| Retaining walls | Walls | Continue to monitor rotation of east wall. | 1-5 | \$1,000 |
| Retaining walls | Walls | Continuously monitor crack widths on all retaining walls. | 1-5 | \$1,000 |
| Total Repair/Rehabilitation Cost | | | | \$82,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 15,000.00 |
| Contingencies | 10% | 15,000.00 |
| Engineering | | 23,000.00 |
| Total Associated Work Cost | | 53,000.00 |
| Total Repair/Rehabilitation Cost | | 82,000.00 |
| Total Cost | | 135,000.00 |

Summary Action Report

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Inspection Date: 1/15/2014 mm/dd/yyyy
Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Condition Index Value (BCI) 70.08

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost **\$0.00**

Total Cost **\$0.00**

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Inventory Data

| | | | | | |
|--------------------|------------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | Salisbury Avenue Box Culvert | Hwy No.: | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | Salisbury Avenue | | | | |
| Location: | 75m north of Erie St. | | | | |
| Latitude/Northing: | 43d43'38" | Longitude/Easting: | 80d57'28" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 50 Lanes: 2 | | |
| Geo Twp.: | Town of Listowel | AADT: | Trucks: 0 % | | |
| Structure Type: | BC - Box, Closed Footing | Min Vert. Clear.: | m | | |
| Material: | P - Precast Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 19.8 m | Detour Length: | 0.00 km | Skew Angle: | 28 degrees |
| Deck Width: | 3.5 m | | m | Structure Dir.: | North/South |
| Deck Area: | 69.3 m ² | | | | |
| Trav Deck Wdt | 6.1 m | | | | |

Bridge Span BS-00077 3.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 2004 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Field Inspection Information

Structure No.: L-6

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 70.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Element Data

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|-----------|
| Element Group: | Abutments | Length: 6.10 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 48.80 | |
| Material: | Cast-in-place concrete | Subtype: <input type="text"/> | |
| Element Type: | Wingwalls | Environment: <input type="text"/> Benign | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 5.00 | 10.00 |
| | | | Good |
| | | | 33.80 |
| | | | Excellent |
| | | | |

Comments:

Wide wet and stained vertical and diagonal cracks on each wall with efflorescence.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | |
|-----------------|---------------------------|--|-----------|
| Element Group: | Barriers | Length: 15.60 | Width: 2 |
| Element Name: | Hand Railings | | |
| Location: | On headwall and wingwalls | Total Quantity: 31.20 | |
| Material: | Steel | Subtype: <input type="text"/> | |
| Element Type: | Double hand railing | Environment: <input type="text"/> Benign | |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m | | 31.20 |
| | | | Good |
| | | | Excellent |
| | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Culverts - Barrels

| | | | |
|-----------------|--|--|-------------|
| Element Group: | Culverts | Length: 19.80 | Width: 3.00 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 190.08 | |
| Material: | Precast concrete | Environment: Benign | |
| Element Type: | Box barrel | <input type="checkbox"/> Limited Inspected | |
| Prot. System: | None | | |
| Condition Data: | Units: <input type="text" value="m2"/> Poor: <input type="text"/> Fair: <input type="text" value="15.20"/> Good: <input type="text" value="174.88"/> Excellent: <input type="text"/> | | |

Comments:
Medium rust and salt staining at all precast joints and on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|--|--|-------------|
| Element Group: | Decks | Length: 3.50 | Width: 6.10 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 21.35 | |
| Material: | Asphalt | Environment: Severe | |
| Element Type: | Wearing surface | <input type="checkbox"/> Limited Inspected | |
| Prot. System: | None | | |
| Condition Data: | Units: <input type="text" value="m<sup>2</sup>"/> Poor: <input type="text"/> Fair: <input type="text"/> Good: <input type="text" value="21.35"/> Excellent: <input type="text"/> | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Retaining walls - Walls

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|---|
| Element Group: | Retaining walls | | Length: | 2.00 | Width: | |
| Element Name: | Walls | | Height: | 1.00 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 8.00 | | | |
| Material: | Gabion Basket | | | | | |
| Element Type: | Gabions wall | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 8.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|---|
| Element Group: | Retaining walls | | Length: | 3.40 | Width: | |
| Element Name: | Walls | | Height: | 1.00 | Count: | 2 |
| Location: | Each end of barrel | | Total Quantity: 6.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Headwall | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 6.80 | | |

Comments:

Light salt staining and wet areas on west wall; Concrete patch at top of east wall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 3.50 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.15 | Count: | 2 |
| Location: | Each side | | Total Quantity: | | | 4.55 |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 4.55 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Salisbury Avenue Box Culvert**

Structure No: **L-6**

MTO Site No: **L-6**

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

| | | | | |
|---------------------------|-----------|------------|-----------------------------|-------|
| Inspection Date: | 1/15/2014 | mm/dd/yyyy | Condition Index Value (BCI) | 72.68 |
| Next Biennial Inspection: | 1/15/2016 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost **\$0.00**

Total Cost **\$0.00**

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: **Wallace Avenue Box Culvert**

Structure No: **L-7**

MTO Site No: **L-7**

Inventory Data

| | | | | | |
|--------------------|----------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | Wallace Avenue Box Culvert | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | Wallace Avenue | | | | |
| Location: | 140m north of Erie St. | | | | |
| Latitude/Northing: | 43d43'35" | Longitude/Easting: | 80d57'25" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 50 Lanes: 2 | | |
| Geo Twp.: | Town of Listowel | AADT: | Trucks: 0 % | | |
| Structure Type: | BC - Box, Closed Footing | Min Vert. Clear.: | m | | |
| Material: | P - Precast Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 25.0 m | Detour Length: | 0.00 km | Skew Angle: | 28 degrees |
| Deck Width: | 3.5 m | | m | Structure Dir.: | North/South |
| Deck Area: | 87.5 m ² | | | | |
| Trav Deck Wdt | 8.5 m | | | | |

Bridge Span BS-00078 3.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 2004 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: **Wallace Avenue Box Culvert**

Structure No: **L-7**

MTO Site No: **L-7**

Field Inspection Information

Structure No.: L-7

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 72.7
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

Element Data

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Abutments | Length: 6.10 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Height: 2.30 | Count: 4 |
| Material: | Cast-in-place concrete | Total Quantity: 56.12 | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 4.00 | 8.50 |
| | | | Good |
| | | | 43.62 |
| | | | Excellent |

Comments:

Wide wet and stained vertical cracks on each wall with efflorescence; Concrete patches at tops of walls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | |
|-----------------|-------------------------------|--|---------------------|
| Element Group: | Barriers | Length: 15.60 | Width: 2 |
| Element Name: | Hand Railings | | |
| Location: | Top of headwall and wingwalls | Height: | Count: 4 |
| Material: | Steel | Total Quantity: 31.20 | |
| Element Type: | Double hand railing | Subtype: | Environment: Benign |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m | | 31.20 |
| | | | Good |
| | | | Excellent |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

Culverts - Barrels

| | | |
|-----------------|---|---|
| Element Group: | Culverts | Length: 25.00 Width: 3.00 Height: 1.80 Count: 1 |
| Element Name: | Barrels | |
| Location: | All | Total Quantity: 240.00 |
| Material: | Precast concrete | |
| Element Type: | Box barrel | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: Benign |
| Condition Data: | <input type="text"/> Units <input type="text"/> Poor <input type="text"/> Fair <input type="text"/> Good <input type="text"/> Excellent | <input checked="" type="checkbox"/> Limited Inspected |
| | <input type="text"/> m2 <input type="text"/> <input type="text"/> 3.90 <input type="text"/> 236.10 <input type="text"/> | |

Comments:
 Medium salt and rust staining, efflorescence and light honeycombing on exterior faces; Light staining at all precast joints; Hairline cracking; Light disintegration at corners where barrel meets wingwalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | |
|-----------------|---|--|
| Element Group: | Decks | Length: 3.50 Width: 7.50 Height: Count: 1 |
| Element Name: | Wearing surface | |
| Location: | Over culvert | Total Quantity: 26.25 |
| Material: | Asphalt | |
| Element Type: | Wearing surface | Subtype: <input type="text"/> |
| Prot. System: | None | Environment: Severe |
| Condition Data: | <input type="text"/> Units <input type="text"/> Poor <input type="text"/> Fair <input type="text"/> Good <input type="text"/> Excellent | <input type="checkbox"/> Limited Inspected |
| | <input type="text"/> m ² <input type="text"/> <input type="text"/> <input type="text"/> 26.25 <input type="text"/> | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

Retaining walls - Walls

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|---|
| Element Group: | Retaining walls | | Length: | 2.00 | Width: | |
| Element Name: | Walls | | Height: | 1.20 | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 9.60 | | | |
| Material: | Gabion Basket | | | | | |
| Element Type: | Gabions wall | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 9.60 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|---|
| Element Group: | Retaining walls | | Length: | 3.40 | Width: | |
| Element Name: | Walls | | Height: | 1.20 | Count: | 2 |
| Location: | Each end of barrel | | Total Quantity: 8.16 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Headwall | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 8.16 | | |

Comments:
Light staining.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 3.50 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.15 | Count: | 2 |
| Location: | Each side | | Total Quantity: | | | 4.55 |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 4.55 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Wallace Avenue Box Culvert

Structure No: L-7

MTO Site No: L-7

| |
|---------------------------------------|
| Repair/Rehabilitation Required |
| Associated Work |

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

| | | | | |
|---------------------------|-----------|------------|-----------------------------|-------|
| Inspection Date: | 1/15/2014 | mm/dd/yyyy | Condition Index Value (BCI) | 74.51 |
| Next Biennial Inspection: | 1/15/2016 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

Inventory Data

| | | | | | |
|--------------------|----------------------------|--------------------|---|-----------------|-------------|
| Structure Name: | Reserve Avenue Box Culvert | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | Reserve Avenue | | | | |
| Location: | 15m north of Bright St. | | | | |
| Latitude/Northing: | 43d43'29" | Longitude/Easting: | 80d57'15" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 50 Lanes: 2 | | |
| Geo Twp.: | Town of Listowel | AADT: | Trucks: 0 % | | |
| Structure Type: | BC - Box, Closed Footing | Min Vert. Clear.: | m | | |
| Material: | P - Precast Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 88.4 m | Detour Length: | 0.00 km | Skew Angle: | 0 degrees |
| Deck Width: | 3.5 m | | m | Structure Dir.: | North/South |
| Deck Area: | 309.4 m ² | | | | |
| Trav Deck Wdt | 6.5 m | | | | |

Bridge Span BS-00079 3.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 2004 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

Field Inspection Information

Structure No.: L-8

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 74.5
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

Element Data

Abutments - Wingwalls

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.10 Width:
 Height: 1.00 Count: 2
 Total Quantity: 12.20

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|------|-----------|
| m2 | 0.50 | 2.00 | 9.70 | |

Environment:
 Limited Inspected

Comments:

Wide wet and stained vertical crack on each wall.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 15.20 Width:
 Height: Count: 1
 Total Quantity: 15.20

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|-------|-----------|
| m | | | 15.20 | |

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

Culverts - Barrels

| | | | | | |
|-----------------|------------------|---|---------------------|--------|-----------|
| Element Group: | Culverts | Length: 88.40 | Width: 3.00 | | |
| Element Name: | Barrels | | | | |
| Location: | All | Height: 1.80 | Count: 1 | | |
| Material: | Precast concrete | Total Quantity: 848.64 | | | |
| Element Type: | Box barrel | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 2.20 | 4.40 | 842.04 | |

Comments:

Limited access to barrel at time of inspection - should be inspected during milder temperatures; Light staining at precast joints; Light corrosion and rust staining on concrete at joint plates; Delamination and spalling at corners where barrel meets wingwalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|---------------------|-------|-----------|
| Element Group: | Decks | Length: 3.50 | Width: 6.10 | | |
| Element Name: | Wearing surface | | | | |
| Location: | Over culvert | Height: | Count: 1 | | |
| Material: | Asphalt | Total Quantity: 21.35 | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 21.35 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

Sidewalks/curbs - Curbs

| | | | | | | |
|-----------------|------------------------|----------|--|--------------|-----------|------|
| Element Group: | Sidewalks/curbs | | Length: | 3.50 | Width: | 0.50 |
| Element Name: | Curbs | | Height: | 0.15 | Count: | 2 |
| Location: | Each side | | Total Quantity: | | | 4.55 |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Curbs | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 4.55 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Reserve Avenue Box Culvert

Structure No: L-8

MTO Site No: L-8

| |
|---------------------------------------|
| Repair/Rehabilitation Required |
| Associated Work |

| | Comments | | Estimated Cost |
|----------------------------------|----------|--|----------------|
| Approaches | | | 0.00 |
| Detours | | | 0.00 |
| Traffic Control | | | 0.00 |
| Utilities | | | 0.00 |
| Right-of-Way | | | 0.00 |
| Environmental Study | | | 0.00 |
| Other | | | 0.00 |
| Contingencies | 10% | | 0.00 |
| Engineering | | | 0.00 |
| Total Associated Work Cost | | | 0.00 |
| Total Repair/Rehabilitation Cost | | | 0.00 |
| Total Cost | | | 0.00 |

Summary Action Report

Structure Name: Nichol Avenue Box Culvert

Structure No: L-9

MTO Site No: L-9

| | | | | |
|---------------------------|-----------|------------|-----------------------------|-------|
| Inspection Date: | 1/15/2014 | mm/dd/yyyy | Condition Index Value (BCI) | 71.83 |
| Next Biennial Inspection: | 1/15/2016 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|-----------------------|-----------------------|----------------------------|------------------|
| Culverts | Barrels | | Other |
| Embankments & Streams | Streams and Waterways | | Other |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition; Some maintenance work required.

Municipal Structure Inspection Form

Structure Name: Nichol Avenue Box Culvert

Structure No: L-9

MTO Site No: L-9

Inventory Data

| | | | | | |
|--------------------|---------------------------|--------------------|--|-----------------|-------------|
| Structure Name: | Nichol Avenue Box Culvert | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | Nichol Avenue | | | | |
| Location: | 15m north of Bright St. | | | | |
| Latitude/Northing: | 43d43'26" | Longitude/Easting: | 80d57'07" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Local | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 50 Lanes: 2 | | |
| Geo Twp.: | Town of Listowel | AADT: | Trucks: 0 % | | |
| Structure Type: | BC - Box, Closed Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 27.5 m | Detour Length: | 0.00 km | Skew Angle: | 0 degrees |
| Deck Width: | 3.5 m | | m | Structure Dir.: | North/South |
| Deck Area: | 96.3 m2 | | | | |
| Trav Deck Wdt | 7.5 m | | | | |

Bridge Span BS-00080 3.00 m

Historical Data

| | | |
|-------------------------|--------------------|--|
| Year Built: 2004 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: Nichol Avenue Box Culvert

Structure No: L-9

MTO Site No: L-9

Field Inspection Information

Structure No.: L-9

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 71.8
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: IOvercast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Some maintenance work required.

Comments

BCI Change
Justification

Municipal Structure Inspection Form

Structure Name: Nichol Avenue Box Culvert

Structure No: L-9

MTO Site No: L-9

Element Data

Culverts - Barrels

Element Group:

Element Name:

Location:

Material:

Element Type: Subtype:

Prot. System: Environment:

Length: 27.50 Width: 3.00
 Height: 1.80 Count: 1
 Total Quantity: 264.00

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|-------|--------|-----------|
| m2 | 5.20 | 13.00 | 245.80 | |

Limited Inspected

Comments:

Light disintegration and delamination at corners where barrel meets channel walls; 2 inlet pipes with rust staining and incrustations on concrete below; 2 inlet pipes and outlet pipe all have delamination and spalling of paring with signs of infiltration; 3 wide transverse cracks on barrel soffit at mid; Several weep holes on legs with rust staining and incrustations; Isolated hairline cracking throughout,

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|-------|--------|------------------------------|
| None | Other | 2 Year | Re-parg inlet / outlet pipes |
|------|-------|--------|------------------------------|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|------|--|--|--|
| None | | | |
|------|--|--|--|

Decks - Wearing surface

Element Group:

Element Name:

Location:

Material:

Element Type: Subtype:

Prot. System: Environment:

Length: 3.50 Width: 7.50
 Height: Count: 1
 Total Quantity: 26.25

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|----------------|------|------|-------|-----------|
| m ² | | | 26.25 | |

Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|------|--|--|--|
| None | | | |
|------|--|--|--|

Municipal Structure Inspection Form

Structure Name: Nichol Avenue Box Culvert

Structure No: L-9

MTO Site No: L-9

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | 1 |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | | Benign |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Debris blocking flow at outlet.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------------|
| None | Other | 2 Year | Remove debris from outlet location |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Sidewalks/curbs - Curbs

| | | | | | |
|-----------------|------------------------|----------|--|--------|-----------|
| Element Group: | Sidewalks/curbs | | Length: | Width: | 0.50 |
| Element Name: | Curbs | | Height: | Count: | 2 |
| Location: | Each side | | Total Quantity: 4.55 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Curbs | Subtype: | Environment: | | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | | 4.55 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Nichol Avenue Box Culvert

Structure No: L-9

MTO Site No: L-9

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Inspection Date: 1/15/2014 mm/dd/yyyy
Next Biennial Inspection: 1/15/2016 mm/dd/yyyy

Condition Index Value (BCI) 75.00

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost \$0.00

Total Cost \$0.00

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Inventory Data

| | | | | |
|--------------------|---------------------------------|--------------------|-------------------|---|
| Structure Name: | Memorial Park Pedestrian Bridge | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | Recreational Trail | | | |
| Location: | Memorial Park | | | |
| Latitude/Northing: | 43d44'01" | Longitude/Easting: | 80d56'44" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Town of Listowel | | | |
| Structure Type: | HT - Half-Through Truss | | | |
| Material: | W - Weathering Steel | | | |
| Articulation: | | | | |
| Deck Length: | 28.6 m | Heritage Status: | N | |
| Deck Width: | 2.1 m | Road Class: | Local | |
| Deck Area: | 58.6 m ² | Lane Type: | | |
| Trav Deck Wdt | 2.0 m | Posted Speed: | Lanes: 0 | |
| Bridge Span | BS-00074 | 27.90 m | AADT: | Trucks: 0 % |
| | | | Min Vert. Clear.: | m |
| | | | No. of Spans: | 1 |
| | | | Special Routes: | <input type="checkbox"/> Transit <input type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle |
| | | | Detour Length: | 0.00 km m |
| | | | Skew Angle: | 0 degrees |
| | | | Structure Dir.: | North/South |

Historical Data

| | | |
|-------------------------|--------------------------|---------------------------|
| Year Built: | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | Contract No. When Built: | Last Evaluation: |
| Last Enhanced OSIM: | Current Load Limit: | t t t |
| Last Enhanced Access: | Bylaw No.: | |
| Last Underwater Insp. | Bylaw Exp. Date: | |
| Last Condition Survey.: | | |

Municipal Structure Inspection Form

Structure Name: **Memorial Park Pedestrian Bridge**

Structure No: **P&R-01**

MTO Site No: **P&R-01**

Field Inspection Information

Structure No.: P&R-01

Inspection Date: 1/15/2014 Inspection Type: OSIM Enhanced OSIM BCI: 75.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -4 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Element Data

Abutments - Ballast walls

| | | | | | |
|-----------------|------------------------|---|---------------------|----------|-----------|
| Element Group: | Abutments | Length: 2.55 | Width: 0.30 | Count: 2 | |
| Element Name: | Ballast walls | | | | |
| Location: | At each abutment | Total Quantity: 1.53 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Ballast Walls | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | | 1.53 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Abutments - Abutment walls

| | | | | | |
|-----------------|------------------------|--|---------------------|----------|-----------|
| Element Group: | Abutments | Length: 2.55 | Width: 0.35 | Count: 2 | |
| Element Name: | Abutment walls | | | | |
| Location: | Each end | Total Quantity: 5.87 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Conventional closed | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | | | 5.87 | |

Comments:

Light staining and scaling throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Abutments - Bearings

| | | | | | |
|-----------------|------------------|----------|---|--------|-----------|
| Element Group: | Abutments | | Length: | Width: | |
| Element Name: | Bearings | | Height: | Count: | 4 |
| Location: | At each abutment | | Total Quantity: 4.00 | | |
| Material: | Weathering steel | | | | |
| Element Type: | Plate bearing | Subtype: | Environment: Benign | | |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | Each | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Barriers - Hand Railings

| | | | | | | |
|-----------------|-----------------------------|----------|--|--------|-----------|--|
| Element Group: | Barriers | | Length: | 28.60 | Width: | |
| Element Name: | Hand Railings | | Height: | Count: | 2 | |
| Location: | Each side, mounted to truss | | Total Quantity: 57.20 | | | |
| Material: | Weathering steel | | | | | |
| Element Type: | Hand Railings-Other | Subtype: | Environment: Severe | | | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 57.20 | | |

Comments:

Composed of 5-20mm rails mounted to each truss; Light patine rusting throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Barriers - Hand Railings

| | | | | | | |
|-----------------|---------------------|----------|--|--------------|-----------|---|
| Element Group: | Barriers | | Length: | 4.40 | Width: | |
| Element Name: | Hand Railings | | Height: | | Count: | 4 |
| Location: | At each approach | | Total Quantity: 17.60 | | | |
| Material: | Wood | | | | | |
| Element Type: | Single hand railing | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m | | | 17.60 | | |

Comments:

Light weathering throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Beams/MLEs - Floor Beams

| | | | | | | |
|-----------------|---------------------------------|----------|--|--------------|-----------|------|
| Element Group: | Beams/MLEs | | Length: | 2.05 | Width: | 0.05 |
| Element Name: | Floor Beams | | Height: | 0.10 | Count: | 22 |
| Location: | Below stringers between trusses | | Total Quantity: 13.53 | | | |
| Material: | Weathering steel | | | | | |
| Element Type: | Box/trapizoidal - Floor Beams | Subtype: | | Environment: | Moderate | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 13.53 | | |

Comments:

Light patina rusting throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Beams/MLEs - Stringers

Element Group: Beams/MLEs

Element Name: Stringers

Location: Below deck top on floor beams

Material: Weathering steel

Element Type: Box/trapizoidal - Stringers

Prot. System: None

Condition Data: Units Poor Fair Good Excellent
 Each

Length: 28.60 Width: 0.05
 Height: 0.05 Count: 2
 Total Quantity: 11.44

Subtype: Environment: Moderate

Limited Inspected

Comments:

Light patina rusting throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Decks - Deck top

Element Group: Decks

Element Name: Deck top

Location: All

Material: Wood

Element Type: Deck top

Prot. System: None

Condition Data: Units Poor Fair Good Excellent
 m2

Length: 28.60 Width: 2.05
 Height: Count: 1
 Total Quantity: 58.63

Subtype: Environment: Severe

Limited Inspected

Comments:

Composed of 2x10 wood boards; Not visible due to snow cover.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

None

None

None

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Below structure | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Dam located below structure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below abutments | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of superstructure.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | |
|-----------------|---------------------------|----------|--|-------|-----------|---|
| Element Group: | Retaining walls | | Length: | 10.50 | Width: | |
| Element Name: | Walls | | Height: | 1.80 | Count: | 2 |
| Location: | In front of each abutment | | Total Quantity: 37.80 | | | |
| Material: | Cast-in-place concrete | | | | | |
| Element Type: | Reinforced concrete wall | Subtype: | Environment: | | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | | 37.80 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: **Memorial Park Pedestrian Bridge**

Structure No: **P&R-01**

MTO Site No: **P&R-01**

Trusses/Arches - Bottom chords

| | | | | | | |
|-----------------|---------------------------------|----------|--|-------|--------------|----------|
| Element Group: | Trusses/Arches | | Length: | 28.60 | Width: | 0.15 |
| Element Name: | Bottom chords | | Height: | 0.10 | Count: | 2 |
| Location: | Each side | | Total Quantity: 28.60 | | | |
| Material: | Weathering steel | | | | | |
| Element Type: | Box/trapizoidal - Bottom Chords | Subtype: | | | Environment: | Moderate |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 28.60 | | |

Comments:

Light patina rusting throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Trusses/Arches - Top chords

| | | | | | | |
|-----------------|------------------------------|----------|--|-------|--------------|--------|
| Element Group: | Trusses/Arches | | Length: | 28.60 | Width: | 0.15 |
| Element Name: | Top chords | | Height: | 0.10 | Count: | 2 |
| Location: | Each side | | Total Quantity: 28.60 | | | |
| Material: | Weathering steel | | | | | |
| Element Type: | Box/trapizoidal - Top Chords | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 28.60 | | |

Comments:

Light patina rusting throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Trusses/Arches - Verticals/diagonals

| | | | | | | |
|-----------------|-----------------------------|----------|--|-------|--------------|--------|
| Element Group: | Trusses/Arches | | Length: | 1.15 | Width: | 0.10 |
| Element Name: | Verticals/diagonals | | Height: | 0.08 | Count: | 88 |
| Location: | Each side | | Total Quantity: | | 36.43 | |
| Material: | Weathering steel | | | | | |
| Element Type: | Box/trapizoidal - Vert/Diag | Subtype: | | | Environment: | Severe |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m2 | | | 36.43 | | |

Comments:

Light patina rusting throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: Memorial Park Pedestrian Bridge

Structure No: P&R-01

MTO Site No: P&R-01

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin
 Structure No: W-1
 MTO Site No: W-1

Inspection Date: 11/19/2013 mm/dd/yyyy Condition Index Value (BCI) 54.09
 Next Biennial Inspection: 11/19/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|-----------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 1-5 | \$35,000 |
| Total Repair/Rehabilitation Cost | | | | \$35,000.00 |
| Total Associated Work Cost | | | | \$35,000.00 |
| Total Cost | | | | \$70,000.00 |

Overall Comments

Structure is in overall fair condition; Major concrete rehabilitation and barrel waterproofing required; A concrete condition survey should be performed on the original culvert prior to rehabilitation work to determine the extent of poor concrete and to determine the feasibility of rehabilitation vs. full replacement.

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin

Structure No: W-1

MTO Site No: W-1

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------------|-------------|
| Structure Name: | North Perth Road 165 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 165 | | | | |
| Location: | 400m north of Line 87 | | | | |
| Latitude/Northing: | 43d45'52" | Longitude/Easting: | 80d57'13" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 5.0 m | Detour Length: | 9.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 14.4 m | | m | Structure Dir.: | North/South |
| Deck Area: | 72.0 m2 | | | | |
| Trav Deck Wdt | 6.9 m | | | | |

Bridge Span BS-00002 4.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1960 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Rehab History

| Year | Description | Amount |
|------|---|--------|
| 1996 | Impr.: , Extensions added to original structure | 0.00 |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin
 Structure No: W-1
 MTO Site No: W-1

Field Inspection Information

Structure No.: W-1

Inspection Date: 11/19/2013 Inspection Type OSIM Enhanced OSIM BCI: 54.1
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Comments Structure is in overall fair condition; Major concrete rehabilitation and barrel waterproofing required; A concrete condition survey should be performed on the original culvert prior to rehabilitation work to determine the extent of poor concrete and to determine the feasibility of rehabilitation vs. full replacement.

BCI Change Justification Repair poor concrete to extend life of structure; Waterproof barrel to prevent further concrete deterioration.

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin

Structure No: W-1

MTO Site No: W-1

Element Data

Abutments - Wingwalls

| | | | |
|-----------------|------------------------|---|---------------------|
| Element Group: | Abutments | Length: 1.60 | Width: 4 |
| Element Name: | Wingwalls | | |
| Location: | Each quadrant | Total Quantity: 7.04 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Wingwalls | Subtype: | Environment: Benign |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 7.04 |
| | | | Excellent |

Comments:

Wingwalls barely visible, assumed to be in good condition.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 3.70 | Width: 4.30 |
| Element Name: | Barrels | | |
| Location: | Extensions at each end | Total Quantity: 61.42 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | 4.30 | 8.60 |
| | | | 48.52 |
| | | | Excellent |

Comments:

Severe delamination and spalling with wide cracks with moisture, staining and efflorescence at joints with original barrel; Hairline wet pattern cracking in isolated locations; Light scaling on exterior faces.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 35,000.00 | Repair poor concrete |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin
 Structure No: W-1
 MTO Site No: W-1

Culverts - Barrels

| | | | | | |
|-----------------|------------------------------|---|-------|-------|-----------|
| Element Group: | Culverts | Length: 7.00 Width: 4.30 Height: 1.50 Count: 1 | | | |
| Element Name: | Barrels | | | | |
| Location: | Original structure at middle | Total Quantity: 51.10 | | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Open Footing Barrel | Subtype: <input type="text"/> | | | |
| Prot. System: | None | Environment: <input type="text"/> Benign | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 16.10 | 20.60 | 14.40 | |

Comments:
 Severe delamination and spalling with exposed corroded rebar and medium wet cracks with efflorescence on soffit at joints with extensions; Narrow to wide pattern and vertical wet cracking on legs; Light to medium scaling and active wet areas on legs; Light to severe popouts throughout; Isolated medium delamination with medium wet cracks and efflorescence on soffit.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 1-5 yrs | 35,000.00 | Repair poor concrete |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|------|-------|-----------|
| Element Group: | Decks | Length: 5.00 Width: 6.90 Height: Count: 1 | | | |
| Element Name: | Wearing surface | | | | |
| Location: | Over culvert | Total Quantity: 34.50 | | | |
| Material: | Asphalt | | | | |
| Element Type: | Wearing surface | Subtype: <input type="text"/> | | | |
| Prot. System: | None | Environment: <input type="text"/> Severe | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 34.50 | |

Comments:
 Isolated light cracks along edges.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin

Structure No: W-1

MTO Site No: W-1

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Sediment deposits throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin

Structure No: W-1

MTO Site No: W-1

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 87 and Lin

Structure No: W-1

MTO Site No: W-1

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|---------|-----------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 1-5 | \$35,000 |
| Total Repair/Rehabilitation Cost | | | | \$35,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 10,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 10,000.00 |
| Total Associated Work Cost | | 35,000.00 |
| Total Repair/Rehabilitation Cost | | 35,000.00 |
| Total Cost | | 70,000.00 |

Summary Action Report

Structure Name: North Perth Line 90 - Bridge between Road 157 and Ro:
 Structure No: W-2
 MTO Site No: W-2

Inspection Date: 11/15/2013 mm/dd/yyyy Condition Index Value (BCI) 73.33
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|---------------|---------|---------|------------------|
| Culverts | Barrels | | Other |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------|------------------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$10,000 |
| Embankments & | Embankments | Stabilize eroded embankments | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$15,000.00 |
| Total Associated Work Cost | | | | \$10,000.00 |
| Total Cost | | | | \$25,000.00 |

Overall Comments

Structure is in overall good condition; Minor concrete repairs required.

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Road 157 and Ro

Structure No: W-2

MTO Site No: W-2

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------------|------------|
| Structure Name: | North Perth Line 90 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 90 | | | | |
| Location: | 250m east of Road 157 | | | | |
| Latitude/Northing: | 43d48'24" | Longitude/Easting: | 80d51'49" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 6.3 m | Detour Length: | 9.10 km | Skew Angle: | 45 degrees |
| Deck Width: | 10.8 m | | m | Structure Dir.: | East/West |
| Deck Area: | 68.0 m2 | | | | |
| Trav Deck Wdt | 6.5 m | | | | |

Bridge Span BS-00023 4.50 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1973 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Road 157 and Road 159
 Structure No: W-2
 MTO Site No: W-2

Field Inspection Information

Structure No.: W-2

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.3
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Minor concrete repairs required.

Comments

BCI Change Repair poor concrete to extend life of structure.
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Road 157 and Ro

Structure No: W-2

MTO Site No: W-2

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 15.30 Width: 4.50
 Height: 2.40 Count: 1
 Total Quantity: 142.29

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|--------|-----------|
| m2 | 1.70 | 3.30 | 137.29 | |

Comments:

Severe delamination, spalling and disintegration with medium stained cracking and efflorescence on south face; Light to severe scaling on north face; Hairline to narrow pattern throughout soffit; Cold joint along each leg; Narrow vertical stained cracks on legs.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|---------------------------------|
| None | Other | 1 Year | Re-attach conduit to north face |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 10,000.00 | Repair poor concrete |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 6.30 Width: 6.50
 Height: Count: 1
 Total Quantity: 40.95

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|----------------|------|------|-------|-----------|
| m ² | | | 40.95 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Road 157 and Ro

Structure No: W-2

MTO Site No: W-2

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 1.00 | | 3.00 | | |

Comments:

Steep slopes; Severe erosion of northwest embankment, light erosion of other embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 5,000.00 | Stabilize eroded embankments |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

Flow at inlet along northwest corner causing some medium scour.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Road 157 and Ro

Structure No: W-2

MTO Site No: W-2

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below each culvert leg | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 90 - Bridge between Road 157 and Ro

Structure No: W-2

MTO Site No: W-2

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-------------|------------------------------|----------|--------------------|
| Culverts | Barrels | Repair poor concrete | 6-10 | \$10,000 |
| Embankments & | Embankments | Stabilize eroded embankments | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$15,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|--|------------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | Traffic Control | 2,000.00 |
| Utilities | Coordinate utility repairs during construction | 1,000.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization | 2,000.00 |
| Contingencies | 10% | 2,000.00 |
| Engineering | | 3,000.00 |
| Total Associated Work Cost | | 10,000.00 |
| Total Repair/Rehabilitation Cost | | 15,000.00 |
| Total Cost | | 25,000.00 |

Summary Action Report

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin
Structure No: W-3
MTO Site No: W-3

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/15/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 73.40 |
| Next Biennial Inspection: | 11/15/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

| | |
|----------------------------|--------|
| Total Associated Work Cost | \$0.00 |
| Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin

Structure No: W-3

MTO Site No: W-3

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|--|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 152 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 152 | | | | | | | | |
| Location: | 800m north of Line 90 | | | | | | | | |
| Latitude/Northing: | 43d48'23" | | | Longitude/Easting: | 80d50'27" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Wallace | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | BO - Box, Open Footing | | | AADT: | | Trucks: | 0 % | | |
| Material: | C - CIP Concrete | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 4.9 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 16.5 m | | | Detour Length: | 9.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 80.9 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 5.5 m | | | | | | | | |

Bridge Span BS-00024 4.30 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1983 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin
 Structure No: W-3
 MTO Site No: W-3

Field Inspection Information

Structure No.: W-3

Inspection Date: 11/15/2013 Inspection Type OSIM Enhanced OSIM BCI: 73.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin

Structure No: W-3

MTO Site No: W-3

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 16.50 Width: 4.30
 Height: 2.40 Count: 1
 Total Quantity: 150.15

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|-------|------|------|--------|-----------|
| m2 | 1.20 | 4.40 | 144.55 | |

Environment:
 Limited Inspected

Comments:

Light delamination and spalling with exposed corroded rebar on soffit at east end; Light to severe honeycombing throughout; Medium stained cracking with efflorescence at southwest exterior joint between top and leg; Hairline to narrow stained vertical cracks on legs; Light to medium scaling throughout; Exposed corroded rebar chairs on soffit with light spalls.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 4.90 Width: 5.50
 Height: Count: 1
 Total Quantity: 26.95

Condition Data:

| Units | Poor | Fair | Good | Excellent |
|----------------|------|------|-------|-----------|
| m ² | | | 26.95 | |

Environment:
 Limited Inspected

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin

Structure No: W-3

MTO Site No: W-3

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion of all embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin

Structure No: W-3

MTO Site No: W-3

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Not visible, assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 90 and Lin

Structure No: W-3

MTO Site No: W-3

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin
Structure No: W-4
MTO Site No: W-4

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/15/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 73.94 |
| Next Biennial Inspection: | 11/15/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|----------------------------|------------------|
| No Maintenance Needs | | | 0 |
| | | Total Associated Work Cost | \$0.00 |
| | | Total Cost | \$0.00 |

Overall Comments

Structure is in overall good condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin

Structure No: W-4

MTO Site No: W-4

| Inventory Data | | | | | | | | | |
|--------------------|--------------------------------------|--|--|--------------------|--|---------|-----|-----------------|-------------|
| Structure Name: | North Perth Road 152 - Bridge betwee | | | Hwy No. | | | | Key Photo | |
| Crossing Over: | Non-navigable Water | | | Crossing Under: | | | | | |
| Road Name: | North Perth Road 152 | | | | | | | | |
| Location: | 900m south of Line 90 | | | | | | | | |
| Latitude/Northing: | 43d47'30" | | | Longitude/Easting: | 80d51'09" | | | | |
| Owner: | North Perth 100.00% | | | | | | | | |
| MTO Region: | 30-Southwestern | | | Heritage Status: | N | | | | |
| MTO District: | 33-Owen Sound | | | Road Class: | Local | | | | |
| Old County: | 25-Perth | | | Lane Type: | | | | | |
| Geo Twp.: | Wallace | | | Posted Speed: | 80 | Lanes: | 2 | | |
| Structure Type: | CA - Culvert Pipe Arch | | | AADT: | | Trucks: | 0 % | | |
| Material: | CS Corrugated Steel | | | Min Vert. Clear.: | m | | | | |
| Articulation: | | | | No. of Spans: | 1 | | | | |
| Deck Length: | 4.7 m | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | | | |
| Deck Width: | 19.7 m | | | Detour Length: | 9.10 km | | | Skew Angle: | 0 degrees |
| Deck Area: | 91.6 m2 | | | | m | | | Structure Dir.: | North/South |
| Trav Deck Wdt | 5.7 m | | | | | | | | |

Bridge Span BS-00025 4.65 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1980 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin
 Structure No: W-4
 MTO Site No: W-4

Field Inspection Information

Structure No.: W-4

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 73.9
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Mostly cloudy Temperature: 2 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in overall good condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin

Structure No: W-4

MTO Site No: W-4

Element Data

Culverts - Barrels

| | | | | | |
|-----------------|------------------|---|---------------------|--------|-----------|
| Element Group: | Culverts | Length: 19.70 | Width: 4.70 | | |
| Element Name: | Barrels | | | | |
| Location: | All | Height: 3.20 | Count: 1 | | |
| Material: | Corrugated steel | Total Quantity: 244.46 | | | |
| Element Type: | Pipe Arch barrel | Subtype: | Environment: Benign | | |
| Prot. System: | None | <input checked="" type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m2 | 1.20 | 4.90 | 238.36 | |

Comments:

Light corrosion to water level; Leakage and rust staining at several bolt locations; Medium local permanent deformation of corrugations at ends.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | | | |
|-----------------|-----------------|--|---------------------|-------|-----------|
| Element Group: | Decks | Length: 4.70 | Width: 5.70 | | |
| Element Name: | Wearing surface | | | | |
| Location: | Over structure | Height: | Count: 1 | | |
| Material: | Gravel | Total Quantity: 26.79 | | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe | | |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | m ² | | | 26.79 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin

Structure No: W-4

MTO Site No: W-4

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin

Structure No: W-4

MTO Site No: W-4

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 4 |
| Location: | Each end | | Total Quantity: 8.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | 1.00 | 1.00 | 6.00 | |

Comments:
 Concrete cut-off collars at each end; Light scaling throughout; Delamination of concrete at connection to barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 152 - Bridge between Line 89 and Lin

Structure No: W-4

MTO Site No: W-4

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro:
 Structure No: W-5
 MTO Site No: W-5

Inspection Date: 11/15/2013 mm/dd/yyyy Condition Index Value (BCI) 69.36
 Next Biennial Inspection: 11/15/2015 mm/dd/yyyy

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------|-------------|---------|------------------------|
| Embankments & Streams | Embankments | | Unstable embankments |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|-------------------------------------|---------|--------------------------------------|----------|---------------------|
| Culverts | Barrels | Repair poor concrete at south end | 6-10 | \$25,000 |
| Culverts | Barrels | Place extensions at each end | 6-10 | \$80,000 |
| Embankments & Streams and Waterways | | Place rock protection along footings | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$110,000.00 |
| Total Associated Work Cost | | | | \$50,000.00 |
| Total Cost | | | | \$160,000.00 |

Overall Comments

Structure is in overall good condition; Major concrete repairs and culvert extensions required at each end.

Municipal Structure Inspection Form

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro

Structure No: W-5

MTO Site No: W-5

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------------|-----------|
| Structure Name: | North Perth Line 88 - Bridge between | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Line 88 | | | | |
| Location: | 250m east of Highway #23 | | | | |
| Latitude/Northing: | 43d46'52" | Longitude/Easting: | 80d55'00" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | BO - Box, Open Footing | Min Vert. Clear.: | m | | |
| Material: | C - CIP Concrete | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 3.8 m | Detour Length: | 9.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 12.2 m | | m | Structure Dir.: | East/West |
| Deck Area: | 46.4 m2 | | | | |
| Trav Deck Wdt | 6.9 m | | | | |

Bridge Span BS-00017 3.00 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1950 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro
 Structure No: W-5
 MTO Site No: W-5

Field Inspection Information

Structure No.: W-5

Inspection Date: 11/15/2013 Inspection Type: OSIM Enhanced OSIM BCI: 69.4
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Sunny Temperature: 1 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Major concrete repairs and culvert extensions required at each end.
 Comments

BCI Change Repair poor concrete to extend life of structure; Place extensions at each end to improve embankments and safety at structure; Place
 Justification rock protection to improve stream alignment and protect footings from erosion.

Municipal Structure Inspection Form

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro

Structure No: W-5

MTO Site No: W-5

Element Data

Culverts - Barrels

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 12.20 Width: 3.00
 Height: 1.80 Count: 1
 Total Quantity: 80.52

Condition Data: Units Poor Fair Good Excellent
 m2

Comments:

Severe delamination and spalling with exposed corroded rebar, wide cracking with efflorescence and severe disintegration at south end; Light to medium honeycombing and narrow wet pattern cracking on soffit; Narrow vertical stained cracks on legs; Light scaling throughout barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|-----------------------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| | 6-10 | 25,000.00 | Repair poor concrete at south end |
| | 6-10 | 80,000.00 | Place extensions at each end |

Decks - Wearing surface

Element Group:
 Element Name:
 Location:
 Material:
 Element Type: Subtype:
 Prot. System:

Length: 3.80 Width: 6.90
 Height: Count: 1
 Total Quantity: 26.22

Condition Data: Units Poor Fair Good Excellent
 m²

Comments:

Light settlement at south transitions and medium settlement at north transitions; Medium progressive edge cracking.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro
 Structure No: W-5
 MTO Site No: W-5

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Vegetation / Rocks | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | 2.00 | 2.00 | | | |

Comments:

All embankments are very steep with medium erosion at south end and severe erosion at north end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|----------------------|------|------|--|
| Unstable embankments | None | None | |
|----------------------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

None

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | 1.00 | | | |

Comments:

Stream out of alignment with structure causing severe scour at northeast corner (inlet).

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|----------------------|-------------------|----------|----------------------|
|----------------------|-------------------|----------|----------------------|

| | | | |
|------|------|------|--|
| None | None | None | |
|------|------|------|--|

| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
|------------------------------|----------|------------|----------|
|------------------------------|----------|------------|----------|

| | | | |
|--|------|----------|--------------------------------------|
| | 6-10 | 5,000.00 | Place rock protection along footings |
|--|------|----------|--------------------------------------|

Municipal Structure Inspection Form

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro

Structure No: W-5

MTO Site No: W-5

Foundations - Foundation (below grade level)

| | | | | | |
|-----------------|--------------------------------|----------|---|--------|-----------|
| Element Group: | Foundations | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | Height: | Count: | 1 |
| Location: | Below culvert legs | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | Environment: | | Benign |
| Prot. System: | None | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

Top of footings only partially visible below water level; Assumed to be in good condition based on condition of barrel.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Line 88 - Bridge between Road 164 and Ro

Structure No: W-5

MTO Site No: W-5

Repair/Rehabilitation Required

Repair/Rehabilitation

| Element Group | Element | Repair/Rehabilitation | Priority | Const Cost |
|----------------------------------|-----------------------|--------------------------------------|----------|---------------------|
| Culverts | Barrels | Repair poor concrete at south end | 6-10 | \$25,000 |
| Culverts | Barrels | Place extensions at each end | 6-10 | \$80,000 |
| Embankments & | Streams and Waterways | Place rock protection along footings | 6-10 | \$5,000 |
| Total Repair/Rehabilitation Cost | | | | \$110,000.00 |

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|---------------------------------|-------------------|
| Approaches | | 0.00 |
| Detours | Road closed during construction | 5,000.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | Mobilization, removals, dewater | 10,000.00 |
| Contingencies | 10% | 10,000.00 |
| Engineering | | 25,000.00 |
| Total Associated Work Cost | | 50,000.00 |
| Total Repair/Rehabilitation Cost | | 110,000.00 |
| Total Cost | | 160,000.00 |

Summary Action Report

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin

Structure No: W-6

MTO Site No: W-6

| | | | | |
|---------------------------|------------|------------|-----------------------------|-------|
| Inspection Date: | 11/19/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 72.61 |
| Next Biennial Inspection: | 11/19/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

Total Associated Work Cost **\$0.00**

Total Cost **\$0.00**

Overall Comments

Structure is in overall good condition; Invert of original barrel should be inspected at a time of low water.

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin

Structure No: W-6

MTO Site No: W-6

Inventory Data

| | | | | | |
|--------------------|--------------------------------------|--------------------|--|-----------------|-------------|
| Structure Name: | North Perth Road 165 - Bridge betwee | Hwy No. | | Key Photo | |
| Crossing Over: | Non-navigable Water | Crossing Under: | | | |
| Road Name: | North Perth Road 165 | | | | |
| Location: | 1250m north of Perth County Line 86 | | | | |
| Latitude/Northing: | 43d44'58" | Longitude/Easting: | 80d57'56" | | |
| Owner: | North Perth 100.00% | Heritage Status: | N | | |
| MTO Region: | 30-Southwestern | Road Class: | Collector | | |
| MTO District: | 33-Owen Sound | Lane Type: | | | |
| Old County: | 25-Perth | Posted Speed: | 80 Lanes: 2 | | |
| Geo Twp.: | Wallace | AADT: | Trucks: 0 % | | |
| Structure Type: | CR - Culvert Round | Min Vert. Clear.: | m | | |
| Material: | CS Corrugated Steel | No. of Spans: | 1 | | |
| Articulation: | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck <input type="checkbox"/> School <input type="checkbox"/> Bicycle | | |
| Deck Length: | 1.5 m | Detour Length: | 9.10 km | Skew Angle: | 0 degrees |
| Deck Width: | 18.7 m | | m | Structure Dir.: | North/South |
| Deck Area: | 28.1 m2 | | | | |
| Trav Deck Wdt | 6.8 m | | | | |

Bridge Span BS-00001 1.50 m

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 1995 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin
 Structure No: W-6
 MTO Site No: W-6

Field Inspection Information

Structure No.: W-6

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 72.6
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Overcast Temperature: -1 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t

Overall Structure is in overall good condition; Invert of original barrel should be inspected at a time of low water.
 Comments

BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin

Structure No: W-6

MTO Site No: W-6

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Barrels | | |
| Location: | Extensions at each end | Height: | Count: |
| Material: | Corrugated steel | Total Quantity: 29.20 | |
| Element Type: | Pipe round barrel | Subtype: | Environment: Benign |
| Prot. System: | Hot dip galvanizing | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 29.20 |
| | | | Excellent |

Comments:

Light corrosion to water level; Light local permanent deformation at east end.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Culverts - Barrels

| | | | |
|-----------------|---------------------------|---|---------------------|
| Element Group: | Culverts | Length: | Width: |
| Element Name: | Barrels | | |
| Location: | Original barrel at middle | Height: | Count: |
| Material: | Corrugated steel | Total Quantity: 58.90 | |
| Element Type: | Pipe round barrel | Subtype: | Environment: Benign |
| Prot. System: | Hot dip galvanizing | <input checked="" type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | 5.90 |
| | | | 53.00 |
| | | | Excellent |

Comments:

Light to medium corrosion to water level; Light corrosion of bolts; Leakage and rust staining at plate joints throughout.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin

Structure No: W-6

MTO Site No: W-6

Decks - Wearing surface

| | | | | | | |
|-----------------|-----------------|----------|--|--------------|-----------|------|
| Element Group: | Decks | | Length: | 1.50 | Width: | 6.80 |
| Element Name: | Wearing surface | | Height: | | Count: | 1 |
| Location: | Over culvert | | Total Quantity: 10.20 | | | |
| Material: | Asphalt | | | | | |
| Element Type: | Wearing surface | Subtype: | | Environment: | Severe | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | m ² | | 2.30 | 7.90 | | |

Comments:

Narrow to medium cracking throughout with light alligating.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|--|--------------|-----------|---|
| Element Group: | Embankments & Streams | | Length: | | Width: | |
| Element Name: | Embankments | | Height: | | Count: | 4 |
| Location: | Each quadrant | | Total Quantity: 4.00 | | | |
| Material: | Vegetation | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | 4.00 | | |

Comments:

Light erosion of all embankments.

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin

Structure No: W-6

MTO Site No: W-6

Embankments & Streams - Streams and Waterways

| | | | | | |
|-----------------|-----------------------|----------|--|--------|-----------|
| Element Group: | Embankments & Streams | | Length: | Width: | |
| Element Name: | Streams and Waterways | | Height: | Count: | |
| Location: | Through culvert | | Total Quantity: 1.00 | | |
| Material: | | | | | |
| Element Type: | Streams and Waterways | Subtype: | Environment: | Benign | |
| Prot. System: | | | <input type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent |
| | All | | | 1.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 165 - Bridge between Line 86 and Lin

Structure No: W-6

MTO Site No: W-6

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |

Summary Action Report

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin
Structure No: W-9
MTO Site No: W-9

| | | | | |
|---------------------------|------------|------------|-----------------------------|--------|
| Inspection Date: | 11/19/2013 | mm/dd/yyyy | Condition Index Value (BCI) | 100.00 |
| Next Biennial Inspection: | 11/19/2015 | mm/dd/yyyy | | |

Performance Deficiencies

| Element Group | Element | Subtype | Performance Deficiency |
|-----------------------------|---------|---------|------------------------|
| No Performance Deficiencies | | | 0 |

Maintenance Needs

| Element Group | Element | Subtype | Maintenance Need |
|----------------------|---------|---------|------------------|
| No Maintenance Needs | | | 0 |

| | |
|----------------------------|--------|
| Total Associated Work Cost | \$0.00 |
| Total Cost | \$0.00 |

Overall Comments

Structure is in excellent condition.

Municipal Structure Inspection Form

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin

Structure No: W-9

MTO Site No: W-9

Inventory Data

| | | | | |
|--------------------|-------------------------------------|--------------------|-------------------|---|
| Structure Name: | North Perth Road 176 - Bridge Betwe | Hwy No. | | Key Photo |
| Crossing Over: | Non-navigable Water | Crossing Under: | | |
| Road Name: | North Perth Road 176 | | | |
| Location: | 1560m north of Line 86 | | | |
| Latitude/Northing: | 43d47'04" | Longitude/Easting: | 81d02'34" | |
| Owner: | North Perth | 100.00% | | |
| MTO Region: | 30-Southwestern | | | |
| MTO District: | 33-Owen Sound | | | |
| Old County: | 25-Perth | | | |
| Geo Twp.: | Wallace | | | |
| Structure Type: | BO - Box, Open Footing | | | |
| Material: | C - CIP Concrete | | | |
| Articulation: | | | | |
| Deck Length: | 4.2 m | Heritage Status: | N | |
| Deck Width: | 17.0 m | Road Class: | Collector | |
| Deck Area: | 70.9 m2 | Lane Type: | | |
| Trav Deck Wdt | 7.0 m | Posted Speed: | 80 Lanes: 2 | |
| Bridge Span | BS-00011 | 3.35 m | AADT: | Trucks: 0 % |
| | | | Min Vert. Clear.: | m |
| | | | No. of Spans: | 1 |
| | | | Special Routes: | <input type="checkbox"/> Transit <input checked="" type="checkbox"/> Truck |
| | | | | <input checked="" type="checkbox"/> School <input type="checkbox"/> Bicycle |
| | | | Detour Length: | 0.00 km |
| | | | | m |
| | | | Skew Angle: | 0 degrees |
| | | | Structure Dir.: | North/South |

Historical Data

| | | |
|-------------------------|--------------------|---------------------------|
| Year Built: 2013 | Superstruct. Year: | Year of Last Major Rehab: |
| Last OSIM Inspection: | | Contract No. When Built: |
| Last Enhanced OSIM: | | Last Evaluation: |
| Last Enhanced Access: | | Current Load Limit: t t t |
| Last Underwater Insp. | | Bylaw No.: |
| Last Condition Survey.: | | Bylaw Exp. Date: |

Municipal Structure Inspection Form

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin
 Structure No: W-9
 MTO Site No: W-9

Field Inspection Information

Structure No.: W-9

Inspection Date: 11/19/2013 Inspection Type: OSIM Enhanced OSIM BCI: 100.0
 Inspector: Brad Walt, C.E.T. Eng. Responsible:
 Others in Party:
 Access Equip: Lift Ladder Boat Bridge Master Other:
 Other Equipment: Measuring tape, hammer, camera
 Weather: Partly cloudy Temperature: 0 °

Additional Investigations Required

| Investigation | ----- Priority ----- | | | Estimated Cost |
|---|-------------------------------------|--------------------------|--------------------------|----------------|
| | None | Normal | Urgent | |
| Detailed Deck Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Delamination Survey of Asphalt-Covered Deck | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Concrete Substructure Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Coating Condition Survey | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Detailed Timber Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Post-Tension Strand Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Underwater Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Fatigue Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Seismic Investigation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Structure Evaluation | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Deformations, Movements and Settlements | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Monitoring of Crack Widths | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0.00 |
| Total Cost: | | | | 0.00 |

Overall Structure Notes

Recommended Work On Structure:
 Timing of Recommended Work:
 Next Inspection Date: Estimated Load Limit: t t t
 Overall Structure is in excellent condition.
 Comments
 BCI Change
 Justification

Municipal Structure Inspection Form

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin

Structure No: W-9

MTO Site No: W-9

Element Data

Culverts - Barrels

| | | | |
|-----------------|------------------------|--|---------------------|
| Element Group: | Culverts | Length: 17.00 | Width: 3.35 |
| Element Name: | Barrels | | |
| Location: | All | Total Quantity: 98.43 | |
| Material: | Cast-in-place concrete | | |
| Element Type: | Open Footing Barrel | Subtype: | Environment: Benign |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m2 | | Good |
| | | | Excellent |
| | | | 98.43 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Decks - Wearing surface

| | | | |
|-----------------|-----------------|--|---------------------|
| Element Group: | Decks | Length: 4.20 | Width: 7.00 |
| Element Name: | Wearing surface | | |
| Location: | Over culvert | Total Quantity: 29.40 | |
| Material: | Asphalt | | |
| Element Type: | Wearing surface | Subtype: | Environment: Severe |
| Prot. System: | None | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair |
| | m ² | | Good |
| | | | Excellent |
| | | | 29.40 |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin

Structure No: W-9

MTO Site No: W-9

Embankments & Streams - Embankments

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Embankments | | | | Height: | Count: 4 |
| Location: | Each quadrant | | | | Total Quantity: 4.00 | |
| Material: | Rip rap | | | | | |
| Element Type: | Embankments | Subtype: | | Environment: | Benign | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | Each | | | | 4.00 | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Embankments & Streams - Streams and Waterways

| | | | | | | |
|-----------------|-----------------------|----------|------|--------------|--|----------|
| Element Group: | Embankments & Streams | | | | Length: | Width: |
| Element Name: | Streams and Waterways | | | | Height: | Count: 1 |
| Location: | Through culvert | | | | Total Quantity: 1.00 | |
| Material: | | | | | | |
| Element Type: | Streams and Waterways | Subtype: | | Environment: | Benign | |
| Prot. System: | | | | | <input type="checkbox"/> Limited Inspected | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | |
| | All | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin

Structure No: W-9

MTO Site No: W-9

Foundations - Foundation (below grade level)

| | | | | | | | |
|-----------------|--------------------------------|----------|------|--------------|---|--------|---|
| Element Group: | Foundations | | | | Length: | Width: | |
| Element Name: | Foundation (below grade level) | | | | Height: | Count: | 1 |
| Location: | Below culvert legs | | | | Total Quantity: 1.00 | | |
| Material: | Cast-in-place concrete | | | | | | |
| Element Type: | Foundation (below grade level) | Subtype: | | Environment: | Benign | | |
| Prot. System: | None | | | | <input checked="" type="checkbox"/> Limited Inspected | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | |
| | All | | | | 1.00 | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Retaining walls - Walls

| | | | | | | | | |
|-----------------|-----------------|----------|------|--------------|--|------|--------|---|
| Element Group: | Retaining walls | | | | Length: | 4.00 | Width: | |
| Element Name: | Walls | | | | Height: | 2.00 | Count: | 4 |
| Location: | Each quadrant | | | | Total Quantity: 32.00 | | | |
| Material: | Gabion Basket | | | | | | | |
| Element Type: | Gabions wall | Subtype: | | Environment: | Benign | | | |
| Prot. System: | None | | | | <input type="checkbox"/> Limited Inspected | | | |
| Condition Data: | Units | Poor | Fair | Good | Excellent | | | |
| | m ² | | | | 32.00 | | | |

Comments:

| Perform Deficiencies | Maintenance Needs | Priority | Maintenance Comments |
|------------------------------|-------------------|------------|----------------------|
| None | None | None | |
| Rehab/Repair Recommendations | Priority | Total Cost | Comments |
| None | | | |

Municipal Structure Inspection Form

Structure Name: North Perth Road 176 - Bridge Between Line 86 and Lin

Structure No: W-9

MTO Site No: W-9

Repair/Rehabilitation Required

Associated Work

| | Comments | Estimated Cost |
|----------------------------------|----------|----------------|
| Approaches | | 0.00 |
| Detours | | 0.00 |
| Traffic Control | | 0.00 |
| Utilities | | 0.00 |
| Right-of-Way | | 0.00 |
| Environmental Study | | 0.00 |
| Other | | 0.00 |
| Contingencies | 10% | 0.00 |
| Engineering | | 0.00 |
| Total Associated Work Cost | | 0.00 |
| Total Repair/Rehabilitation Cost | | 0.00 |
| Total Cost | | 0.00 |