

TOWN OF NEW TECUMSETH

MUNICIPAL STRUCTURE INVENTORY AND INSPECTION - 2014

Prepared by:

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Project Number:

60323335

Date:

January, 2015

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January 23, 2015

Doug Austin, C. Tech
Engineering Co-ordinator
Town of New Tecumseth
10 Wellington Street East
Alliston, Ontario
L9R 1A1

Dear Mr. Austin:

Project No: 60323335

Regarding: Municipal Structure Inventory and Inspection 2014

AECOM is pleased to submit this report with the respect to the results of the 2014 Municipal Structure Inventory and Inspection which outlines the results of our field inspection investigations for the above noted project.

This study was completed for the Structure appraisals using Worktech's Asset Foundation Software. Structures were reviewed in accordance with the Municipal Bridge Appraisal Manual and Municipal Culvert Appraisal Manual.

With this report, all structure related data for those structures appraised in 2014 have been updated to present day values and the content of the report reflects conditions as of the time of the field data collection, in the summer of 2014 for the structure inventory.

We trust that this report will be beneficial to the Town of New Tecumseth in developing their asset management plans and wish to express appreciation for the opportunity for AECOM to participate in the work.

Sincerely,
AECOM Canada Ltd.

Dennis Baxter, P.Eng.
Manager, Bridges, Transportation
dennis.baxter@aecom.com

DLB/jrep
Encl.

Distribution List

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1	✓	Town of New Tecumseth

Revision Log

Revision #	Revised By	Date	Issue / Revision Description
1	DLB	December 4, 2014	Revised as per Town's comments
2	DLB	January 23, 2015	Three (3) additional culverts added to Town's Inventory

AECOM Signatures

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Jeff Parkinson
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Dennis Baxter, P. Eng.
Manager, Bridges, Transportation

Stamp

Executive Summary

The Town of New Tecumseth 2014 Municipal Structure Inventory and Inspection Study provides a summary of structure condition ratings identified during rating surveys conducted by AECOM in 2014. All of the Town of New Tecumseth's structures of 3.0m span or greater were reviewed in 2014. The Town of New Tecumseth's total inventory of eighty-three (83) structures are included in this report.

Data collection and structure ratings were completed in accordance with the Municipal Bridge Appraisal and Municipal Culvert Appraisal Manuals and the Ontario Structure Inspection Manual. The scope of the report includes summaries of collected data, with discussion and analysis regarding same.

A total of eighty-three (83) bridge and culvert structures were appraised in 2014. The assignment included an assessment of fifty-nine (59) bridges and twenty-four (24) culverts which are currently identified on the Town of New Tecumseth's Road System. Key items contained within the inspection report are summarized below:

- Three (3) culverts have been added to the Town's inventory in 2014. The 10th Sideroad structure located north of 14th Line shall be known as Culvert No. 12067. The concrete arch structure and precast concrete box structure (High Flow relief structure) located on Boyne Street north of Sheppard Avenue shall be known as Culvert No. 12068 & 12069.
- Two (2) bridges have existing load limit postings. These existing load limits can be retained.
- There are fourteen (14) bridges designated for further engineering investigations at a total cost of **\$307,000**.
- Four (4) bridges are designated for replacement at a total cost of **\$13,983,000**. The bridge replacement needs are based on travel deck width deficiency, surface width deficiency, vertical clearance and deteriorated condition.
- One (1) culvert is designated for replacement at a total cost of **\$520,000**. The culvert replacement needs is based on deteriorated condition.
- Forty-nine (49) bridges require rehabilitation at an estimated cost of **\$8,681,000**.
- Twelve (12) culverts require rehabilitation at an estimated cost of **\$431,000**.
- Thirty-nine (39) bridges and five (5) culverts require guide rail installation, extension or upgrades at a total cost of **\$3,328,000**. All NOW need guide rail requirement costs provided do not include the potential traffic control costs that may be incurred if the guide rail work is undertaken independent of other necessary works.
- Bridge No. 12063 & 12065 will require on-going monitoring of the piers and abutments every 3 months to ensure safety and serviceability. Monitoring is to be completed by the Town. If a change in the existing condition is identified a structural engineer should be notified.
- A summary of the total structure construction and rehabilitation needs resultant from the 2014 Structure Inspection for the ten year period is estimated to be **\$30,629,000** for the existing Town's structure system. Of this total cost **\$25,448,000** are for NOW needs, **\$4,431,000** are for structure 1-5 year needs and **\$750,000** are for the 6-10 year needs.
- The average age of the Town's bridge structures is **56.5** years; the average age of the culvert structures is **33.6** years.

Recommended funding for the structure inventory would include sufficient capital expenditures that would allow the replacement of infrastructure as it meets its design life.

For new structures, the design lifespan is now 75 years; however, structures constructed prior to 2000 were generally designed for a 50 year lifespan. Accordingly for a typical system annual expenditures are between 1.5% and 2.0% of the value of the entire structure inventory and should be expended annually to ensure that the structure inventory can be maintained in perpetuity. It is noted that as the structures are replaced, the annual allocation could be reduced to 1.5%.

Based on the aforementioned and the data included in this report, for the Town's system the estimated minimum annual capital program for structures should be in the amount of **\$955,000** (or 3.1%) per year for the Town of New Tecumseth to maintain the current system adequacy. However, given the average age of the Town's structures inventory, it is quite probable that expenditures on structures will be even higher than estimated over the next decade as the older structures reach a terminal condition.

All costs contained within the structure appraisal reports include engineering and contingencies, and are based on 2014 construction dollars.

Rehabilitation and replacement recommendations are provided within this report. The costs associated within these recommendations should be budgeted above and beyond the recommended replacement budget to maximize the service life of the structures.

Completion of the 2014 re-inspection of eighty-three (83) bridge and culvert structures on the Town's road system has resulted in reliable and current data being available to the Town to implement a maintenance program ensuring the Town's structures are kept safe and in good repair. Maintenance of the Bridge and Culvert Management Program will require updating of databases on an on-going annual basis to reflect previous year rehabilitation/replacement project updates. It is recommended that the structures be re-inspected under the direction of a qualified structural engineer every two (2) years.

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1. Introduction

The Town of New Tecumseth 2014 Municipal Structure Inventory and Inspection Study provides a summary of structure condition ratings identified during rating surveys conducted by AECOM in 2014. All of the Town of New Tecumseth's structures of 3.0m span or greater were reviewed in 2014. The Town of New Tecumseth's total inventory of eighty-three (83) structures are included in this report.

The Province of Ontario passed amendments in 1997 to existing legislation in the Highway Traffic Act (HTA), The Bridge Act (BA) and the Public Transportation and Highway Improvement Act (PTHIA) that required all bridge, culvert and retaining wall structures with a span greater than 3.0m to be inspected under the direction of a Professional Engineer at no greater than two (2) year intervals. The inspection methodology and reporting must be in accordance with the Ontario Structure Inspection Manual (or equivalent).

Data collection and structure ratings were completed in accordance with the Municipal Bridge Appraisal and Municipal Culvert Appraisal Manuals and the Ontario Structure Inspection Manual.

The scope of the report includes summaries of collected data, with discussion and analysis regarding same.

Also under the new regulations, municipalities are still responsible for passing load limit bylaws. In place of the MTO review, engineering recommendations to support the load limit and the duration for which it is valid, must now be stamped by two (2) professional engineers.

AECOM Canada Ltd. was retained by the Town of New Tecumseth to re-inspect a total of eighty-three (83) bridge and culvert structures on the Town's road system and prioritize the maintenance, repair and replacement works for these structures.

AECOM Canada Ltd. has completed the structure appraisals using WorkTech's Asset Foundation Software.

The procedures used to carry out this 2014 structure inventory are explained in detail in the following manuals published by the Ministry of Transportation and Municipal Engineers Association.

- a) **Municipal Bridge Appraisal Manual**
February 1992
- b) **Municipal Culvert Appraisal Manual**
August 1993
- c) **Ontario Structure Inspection Manual 2000 (OSIM)**
Revised (Nov 2003 and Apr 2008)

This report documents the visual inspection and recommendations for the maintenance, repair or replacement (MR&R) of the structures.

2. Scope of Work

The assignment included an assessment of fifty-nine (59) bridges and twenty-four (24) culverts which are currently identified on the Town of New Tecumseth's Road System. The work involved the following tasks:

1. A visual re-inspection for deficiencies and the recording of any relevant dimensions.
2. An updated photographic inventory of the structure appearance and deficiencies.
3. The compilation of the field review using Worktech Asset Foundation Software.
4. An individual assessment of the condition and state of repair/non-repair of each structure, as well as the recommendation of improvements and estimated costs to bring the existing structure to an acceptable level-of-service.
5. Recommendation of the feasible options and cost-effectiveness of maintaining the existing structure versus possible replacement and the costs and timing of the same.
6. Development of a spread sheet program to determine various condition and appraisal ratings for each structure. The program includes an algorithm to determine an Overall Condition Rating, Functional Needs Rating and Overall Rating for each structure as outlined in **Appendix D**. Relative rankings of bridge and culvert needs have also been provided.
7. Identification of specific budget recommendations for detailed condition surveys and bridge rehabilitation/replacement including associated engineering design and supervision and construction estimates.

3. Structure Categorization

The following definitions were used in the preparation of the Bridge and Culvert Appraisal Sheets:

- Bridge - In general, transfers all live loads through a superstructure to a substructure and foundations. Bridges that were originally designed as a bridge and have some depth of fill placed over the deck have been appraised as a bridge.
- Box or open type structure having less than 600 mm of cover have been appraised as a bridge and those with more than 600 mm of cover have been appraised as a culvert.
- Culvert - In general, transfers all live loads through fill.

4. Structure Appraisals and Identification of Maintenance, Repair and Replacement Needs

A total of eighty-three (83) bridge and culvert structures were appraised in 2014. The results of our inspection and recommendations are summarized on the Municipal Bridge and Culvert Appraisal Sheets which are provided in **Appendix E**. A summary of the results of the inspection and appraisal program for all bridge and culvert structures has been presented in **Appendices B and C**. **Appendix B** contains a list of the fifty-nine (59) bridges inventoried and appraised while **Appendix C** lists the Twenty-four (24) culverts.

Based on a review of our inspection findings, recommendations and cost estimates were developed for structures which required maintenance, repair or replacement as shown in the Recommended Needs section of the structure appraisal sheets. **Tables B1 and C1** included in **Appendix B** and **Appendix C** summarize basic structure data for all bridge and culvert needs identified through the structure appraisal. The priority ranking of the bridges and culverts based on the results of the Bridge and Culvert Management System are also shown. Of the eighty-three (83) bridge and culvert structures that were appraised in 2014, recommendations are summarized in **Sections 4.1 to 4.4** of this report.

All costs contained within the structure appraisal reports include engineering and contingencies, and are based on 2014 construction dollars.

4.1 Load Limit Bylaws

L3 postings govern single unit vehicles; L2 postings govern two unit vehicles; and L1 postings govern vehicle trains. Section 13 of Bill 92 amends Section 123 of the Highway Traffic Act dealing with the load limit by-laws. Municipalities retain the authority to pass load limit by-laws, but approval of the Minister of Transportation is no longer required. Two engineer's stamps for all load limit by-law recommendations, including load posting and duration, generally 2 years, are now required. Load posting assessments are currently being carried out during the annual bridge appraisal updates. Load limit recommendations are summarized in **Table 1**.

Table 1 Load Limit Recommendations

Load Limit Recommendations							
Structure No.	Location	Existing Load Limit			Recommended Load Limit		
		L3	L2	L1	L3	L2	L1
12001	14TH LINE, LOT 9, CONC XIII/XIV, 14TH LINE, 1.50 km E of TOWN ROAD 10	15	-	-	15	-	-
12034	9TH LINE, LOT 6, CONC VIII/IX, 9TH LINE, 0.15 km E of TOTTENHAM ROAD	15	-	-	15	-	-

4.2 Engineering Investigations

There are fourteen (14) bridges designated for further engineering investigations to confirm visual repair recommendations as summarized in **Table 2** at a total cost of **\$307,000**. It is recommended that engineering investigations be completed within 2 to 4 years prior to structure rehabilitations.

Table 2 Engineering Investigations

Engineering Investigations				
Structure No.	Location	Recommended Engineering Investigation	Cost for Budget Purposes	Estimated Rehabilitation Cost
12063	BEETON CREEK CROSSING, 9 th LINE, 0.22 km N of 9 th LINE	Environmental Study	\$50,000	\$115,000
12065	BEATTIE BRIDGE, 13 th LINE, 0.20KM S OF 13TH LINE	Environmental Study	\$50,000	\$67,000
11001	CUNNINGHAM BRIDGE, CHURCH STREET NORTH, ALLISTON, 0.13 km N of VICTORIA STREET WEST	Deck Condition Survey	\$35,000	\$934,000
11010	SPRING CREEK PEDESTRIAN BRIDGE, ALBERT STREET SCHOOL SITE, ALLISTON, 0.05 km S of ALBERT STREET	Load Capacity Evaluation	\$7,000	\$65,000
11011	BOYNE RIVER PEDESTRIAN WALKWAY, DOMINION STREET, ALLISTON, 0.05 km S of FLETCHER CRESCENT	Deck Condition Survey	\$10,000	\$105,000
12002	13TH LINE, LOT 9, CONC XII/XIII, 13TH LINE, 0.90 km W of 10TH SIDEROAD	Deck Condition Survey	\$25,000	\$198,000
12004	12TH LINE, LOT II, CONC XI/XII, 12TH LINE, 0.35 km E of 10TH SIDEROAD	Deck Condition Survey	\$20,000	\$211,000
12005	12TH LINE, LOT 12, CONC XI/XII, 12TH LINE, 1.10 km E of 10TH SIDEROAD	Deck Condition Survey	\$15,000	\$268,000
12012	14TH LINE, LOT 21, CONC XIII/XIV, 14TH LINE, 0.40 km E of 20TH SIDEROAD	Deck Condition Survey	\$15,000	\$317,000
12020	5TH LINE, LOT 21, CONC IV/V, 5TH LINE, 0.30 km E of 20TH SIDEROAD	Deck Condition Survey / Rehabilitate/Replace Analysis	\$15,000	\$150,000
12028	DEADMAN BRIDGE, LOT 10/11, CONC X, 10TH SIDEROAD, 0.40 km N of 10TH LINE	Deck Condition Survey	\$15,000	\$673,000
12032	STRANGWAYS BRIDGE, LOT 10/11, CONC IX, 10TH SIDEROAD, 0.35 km N of 9TH LINE	Deck Condition Survey	\$20,000	\$784,000
12039	6TH LINE, LOT 7, CONC V/VI, 6TH LINE, 0.75 km E of TOTTENHAM ROAD	Deck Condition Survey	\$15,000	\$313,000
12045	4TH LINE, LOT 7, CONC III/IV, 4TH LINE, 1.10 km E of TOTTENHAM ROAD	Deck Condition Survey / Rehabilitate/Replace Analysis	\$15,000	\$231,000

4.3 Structure Removal

- There are no structures designated for removal at this time.

4.4 Structure Replacements

- There are four (4) bridges designated for replacement at this time, as identified in **Table 4** at a total cost of **\$13,983,000**.
- There is one (1) culvert designated for replacement at this time, as identified in **Table 4** at a total cost of **\$520,000**.

4.5 Structure Rehabilitations

- Forty-nine (49) bridges require rehabilitation, as identified in **Table 5** at a total cost of **\$8,681,000**. They are presented in order of priority as determined from the Bridge Improvement Priority Program.
- Twelve (12) culverts require rehabilitation, as identified in **Table 6** at a total cost of **\$431,000**. They are presented in order of priority as determined from the Culvert Improvement Priority Program.
- There are a total of thirty-nine (39) bridges and five (5) culverts that require guide rail installation, extension or upgrades as identified in **Table 7** at a total cost of **\$3,328,000**.
- Overall Structure Inventory with priority rankings for all bridge and culvert structures has been identified in **Tables 8, 9, 10 & 11**.

Table 3 Structure Removal

Bridge Removal - 2014							
Bridge No.	Priority	Location	Reason for Improvement	Estimated Remaining Service Life	Impact of Deferral	Interim Works to Extend Life	Removal Cost
-	-	-	-	-	-	-	-

Culvert Removal - 2014							
Culvert No.	Priority	Location	Reason for Improvement	Estimated Remaining Service Life	Impact of Deferral	Interim Works to Extend Life	Removal Cost
-	-	-	-	-	-	-	-

Table 4 Structure Replacements

Bridge Replacements – 2014							
Bridge No.	Priority	Location	Reason for Improvement	Estimated Remaining Service Life	Impact of Deferral	Interim Works to Extend Life	Replacement Cost
12001	9	14TH LINE, LOT 9, CONC XIII/XIV, 14TH LINE, 1.50 km E of TOWN ROAD 10	Travel deck width deficiency and deteriorated condition	5 -10 yrs	Reduced load limit posting	N/A	\$3,430,000
12034	13	9TH LINE, LOT 6, CONC VIII/IX, 9TH LINE, 0.15 km E of TOTTENHAM ROAD	Travel deck width deficiency and deteriorated condition	5 -10 yrs	Reduced load limit posting	Install steel beam guide rails on the bridge approaches	\$5,165,000
12033	14	9TH LINE, LOT 9, CONC VIII/IX, 9TH LINE, 0.90 km W of 10TH SIDEROAD	Travel deck width deficiency and deteriorated condition	>10 yrs	Load limit posting	Install steel beam guide rails on the bridge approaches	\$1,506,000
12037	35	7TH LINE, LOT 7, CONC VI/VII, 7TH LINE, 0.80 km E of TOTTENHAM ROAD	Surface width deficiency and vertical clearance deficiency	>10 yrs	N/A	N/A	\$3,882,000

Culvert Replacements - 2014							
Culvert No.	Priority	Location	Reason for Improvement	Estimated Remaining Service Life	Impact of Deferral	Interim Works to Extend Life	Replacement Cost
11004	1	DUFFERIN STREET SOUTH, DUFFERIN STREET SOUTH, ALLISTON, 0.01 km N of PARSONS ROAD	Deteriorated condition	2 - 3 yrs	Load limit posting	N/A	\$520,000

PROPOSED GRADE SEPARATIONS				
Bridge No.	Location	AADT	Estimated Exposure Index	Cost
11000	VICTORIA STREET, VICTORIA STREET WEST (HWY #89), 0.05 km W of DUFFERIN STREET	16,490	346,290	\$6,707,000

Table 5 Structure Rehabilitations – Bridges

Bridge Rehabilitation Needs by Priority Ranking - 2014					
Bridge No.	Priority	Bridge Name	Location	Recommended Work	Rehabilitation Cost
Rehabilitations					
12063	1	BEETON CREEK CROSSING	9TH LINE, 0.22 km N OF 9TH LINE	Repair miscellaneous piles (14 in total), cross bracing and pier cap members	\$115,000
12065	2	BEATTIE BRIDGE	13 TH LINE, 0.20 km S OF 13TH LINE	Replace miscellaneous piles (5 total) and pier cap at west pier	\$67,000
12020	3	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.30 km E of 20TH SIDEROAD	Reface concrete abutment footings, repair vertical cracks in the abutment faces, repair deck soffit and southeast concrete wingwall and install steel beam guide rails over the structure and on the approaches	\$150,000
12064	4	BAILEY CREEK BRIDGE	10TH LINE, 0.10 km N OF 10TH LINE	Repair miscellaneous piles (7 total), rotted timber pier members and cross bracing.	\$67,000
11001	5	CUNNINGHAM BRIDGE	CHURCH STREET NORTH, ALLISTON, 0.13 km N of VICTORIA STREET WEST	Overlay, waterproof and pave the bridge deck, install new deck expansion joints, replace handrails, overlay concrete sidewalks, clean and paint structural steel girders and restore embankments	\$934,000
12028	6	DEADMAN BRIDGE, LOT 10/11, CONC X	10TH SIDEROAD, 0.40 km N of 10TH LINE	Replace existing concrete deck topping, install new deck expansion joints, replace safety grates, reconstruct curbs and parapet walls in conjunction with the deck topping replacement and install steel beam guiderails on the bridge approaches for traffic protection, repair bottoms of box girders	\$673,000
11011	7	BOYNE RIVER PEDESTRIAN WALKWAY	DOMINION STREET, ALLISTON, 0.05 km S of FLETCHER CRESCENT	Patch concrete spalls and cracks in T-Beam and Abutments	\$105,000
12045	8	4TH LINE, LOT 7, CONC III/IV	4TH LINE, 1.10 km E of TOTTENHAM ROAD	Waterproof top of deck, repave deck, construct concrete headwalls and install gabion retaining walls at the corners of the structure to support the roadway embankments and repair the concrete deck soffit, fascias and wingwalls	\$231,000
12043	10	2ND LINE, LOT 5, CONC I/II	2ND LINE, 0.55 km W of TOTTENHAM ROAD	Install steel beam guide rails over the structure and on the approaches, repair concrete deck soffit, abutments and wingwalls and place rock protection in front of the abutments	\$195,000
12032	11	STRANGWAYS BRIDGE, LOT 10/11, CONC IX	10TH SIDEROAD, 0.35 km N of 9TH LINE	Replace concrete deck topping, install new sealed expansion joints, reconstruct concrete curbs and parapet walls in conjunction with the deck topping replacement, repair girders and wingwalls and install steel beam guiderails on the bridge approaches	\$784,000
12009	12	13TH LINE, LOT 21, CONC XII/XIII	13TH LINE, 0.08 km E of 20TH SIDEROAD	Repair handrails, curbs, wingwalls and deck fascia and install steel beam guide rails on the bridge approaches	\$163,000
12034	13	9TH LINE, LOT 6, CONC VIII/IX	9TH LINE, 0.15 km E of TOTTENHAM ROAD	Install steel beam guide rails on the bridge approaches	\$85,000
12033	14	9TH LINE, LOT 9, CONC VIII/IX	9TH LINE, 0.90 km W of 10TH SIDEROAD	Install steel beam guide rails on the bridge approaches	\$85,000
12006	15	12TH LINE, LOT 14, CONC XI/XII	12TH LINE, 2.10 km E of 10TH SIDEROAD	Place rock protection on the embankments in front of the abutments and install steel beam guide rails on the bridge approaches	\$98,000
12039	16	6TH LINE, LOT 7, CONC V/VI	6TH LINE, 0.75 km E of TOTTENHAM ROAD	Remove granular material from the bridge deck and adjust the approach roads to the new deck profile, widen the superstructure to	\$313,000

				<i>eliminate the deck width deficiency, repair the concrete deck soffit and install steel beam guiderails on the bridge and approaches</i>	
12013	17	11TH LINE, LOT 19, CONC X/XI	11TH LINE, 0.90 km W of 20TH SIDEROAD	Repair concrete deck soffit, handrails, wingwalls, fascias and install steel beam guide rails on the bridge approaches	\$112,000
12015	18	10TH LINE, LOT 21, CONC IX/X	10TH LINE, 0.35 km E of 20TH SIDEROAD	Repair concrete deck, soffit, wearing surface and install steel beam guide rails on the bridge approaches continuous with the guide rail on the structure	\$112,000
12002	19	13TH LINE, LOT 9, CONC XII/XIII	13TH LINE, 0.90 km W of 10TH SIDEROAD	Repair concrete handrails, curbs and deck soffit, T-beam, pier, wingwalls, place rock protection on the embankments in front of the abutments, northwest quadrant and upgrade guide rail.	\$198,000
12054	20	CENTRE STREET NORTH	CENTRE STREET NORTH, BEETON, 0.72 km N of MAIN STREET	Patch repair fascias	\$8,000
12018	21	6TH LINE, LOT 22, CONC V/VI	6TH LINE, 0.75 km E of 20TH SIDEROAD	Replace the concrete curbs and handrails with cantilevered concrete curbs and parapet walls to eliminate the deck width deficiency and install steel beam guide rails on the bridge approaches	\$164,000
12004	22	12TH LINE, LOT II, CONC XI/XII	12TH LINE, 0.35 km E of 10TH SIDEROAD	Repair concrete handrails, curb, deck soffit, T-beams, west abutment, west pier, restore embankments and upgrade guide rail	\$211,000
12012	23	14TH LINE, LOT 21, CONC XIII/XIV	14TH LINE, 0.40 km E of 20TH SIDEROAD	Overlay the bridge deck with latex modified concrete, repair concrete curbs, handrail, soffit, wingwalls, replace rock protection in front of the west abutment, install steel beam guiderails on the bridge approaches	\$317,000
12030	24	BEDER TURF BRIDGE, LOT 5, CONC IX/X	10TH LINE, 0.55 km W of TOTTENHAM ROAD	Repair deck surface and south concrete handrail, soffit, regrade approach surface potholes, and install steel beam guiderails on the bridge approaches	\$131,000
12021	25	4TH LINE, LOT 20, CONC III/IV	4TH LINE, 0.45 km W of 20TH SIDEROAD	Repair curbs, abutments, deck soffit, north and south fascia and install steel beam guide rails over the structure and on the approaches	\$123,000
12049	26	2ND LINE, LOT 21, CONC I/II	2ND LINE, 0.40 km E of 20TH SIDEROAD	Repair curb, soffit and abutments	\$21,000
12024	27	9TH LINE, LOT 16, CONC VIII/IX	9TH LINE, 0.50 km E of 15TH SIDEROAD	Install steel beam guide rails on the bridge approaches, place rock slope protection in the river channel in front of the abutments, seal medium to wide width cracks in handrails and repair curbs	\$184,000
12019	28	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.10 km E of 20TH SIDEROAD	Install steel beam guide rails over the structure and on the approaches, repair concrete deck soffit, curbs, abutments, reface concrete abutment footings and repair vertical cracks in the abutment faces	\$170,000
12010	29	20TH SIDEROAD, LOT 20/21, CON XIII	20TH SIDEROAD, 0.70 km N of 13TH LINE	Repair concrete handrails and retaining walls and install steel beam guide rails on the bridge approaches	\$117,000
12059	30	GILROY BRIDGE, LOT 1, CONC XII	ADJALA - TECUMSETH TOWNLINE, 0.20 km N of 12TH LINE	Replace curbs and handrails with parapet walls, seal cracks in asphalt, restore roadway embankments and install guide rail on the approaches	\$268,000
12044	31	5TH LINE, LOT 7, CONC IV/V	5TH LINE, 0.80 km E of TOTTENHAM ROAD	Patch soffit and wingwalls	\$22,000
12023	32	10TH LINE, LOT 16, CONC IX/X	10TH LINE, 0.63 km E of 15TH SIDEROAD	Repair concrete railing, curbs, wingwalls and install steel beam guide rails on the bridge approaches	\$113,000
12026	33	BROOM BRIDGE, LOT 18, CONC IX/X	10TH LINE, 1.20 km E of 15TH SIDEROAD	Install steel beam guide rails on the bridge approaches, patch curbs and wingwalls	\$99,000
12029	34	McCARRON BRIDGE, LOT 7, CONC IX	10TH LINE, 1.10 km E of TOTTENHAM ROAD	Install steel beam guide rails on the bridge approaches, patch curb and seal crack in southwest wingwall	\$103,000
12016	36	9TH LINE LOT 21 CONC VIII/IX	9TH LINE, 0.40 km E of 20TH SIDEROAD	Repair deck soffit and wingwalls, replace the concrete curbs and handrails with cantilevered concrete curbs and parapet walls to eliminate the deck width deficiency and install steel beam guide rails on the bridge approaches	\$164,000

12008	37	JEBB BRIDGE, LOT 20/21, CONC XII	20TH SIDEROAD, 0.68 km N of 12TH LINE	Seal crack in concrete deck and install steel beam guide rail on the bridge approaches	\$96,000
12047	38	RANSOM BRIDGE	10TH SIDEROAD, 0.25 km N of 4TH LINE	Install steel beam guide rails over the structure and on the approaches and seal crack in wearing surface	\$116,000
12003	39	MAYNARD BRIDGE, LOT 10/11, CONC XII	10TH SIDEROAD, 0.35 km N of 12TH LINE	Backfill eroded areas of the embankments and place rock protection and install steel beam guide rails on the approaches at the structure, repair parapet walls, curbs and deck soffit	\$139,000
12005	40	12TH LINE, LOT 12, CONC XI/XII	12TH LINE, 1.10 km E of 10TH SIDEROAD	Patch waterproof and pave the bridge deck, repair concrete handrails and curbs, backfill eroded areas of the roadway embankments and stream banks, place rock protection and install steel beam guide rail on the bridge approaches	\$268,000
11010	41	SPRING CREEK PEDESTRIAN BRIDGE	ALBERT STREET SCHOOL SITE, ALLISTON, 0.05 km S of ALBERT STREET	Clean and paint structural steel	\$65,000
12036	42	7TH LINE, LOT 7, CONC VI/VII	7TH LINE, 1.10 km E of TOTTENHAM ROAD	Widen super structure to eliminate the deck width deficiency and upgrade guiderail end treatments	\$230,000
12050	43	20TH SIDEROAD, LOT 20/21, CONC 1	20TH SIDEROAD, 0.30 km N of HIGHWAY 9	Upgrade guide rail end treatments, upgrade timber guide rail posts, seal cracks in the asphalt, patch potholes, patch repair soffit and replace expansion joint seals	\$146,000
12025	44	EAST VARCOE BRIDGE, LOT 16, CONC X/X1	11TH LINE, 0.95 km E of 15TH SIDEROAD	Install steel beam guide rails on the bridge approaches	\$85,000
12011	45	20TH SIDEROAD, LOT 20/21, CONC XIII	20TH SIDEROAD, 0.40 km S of 14TH LINE	Patch repair wingwalls and install guide rail on the approaches and restore embankments	\$124,000
12014	46	20TH SIDEROAD, LOT 20/21, CONC X	20TH SIDEROAD, 0.50 km N of 10TH LINE	Install steel beam guide rails on the bridge approaches, patch repair soffit and wingwalls	\$99,000
12007	47	15TH SIDEROAD, LOT 15/16, CONC XI	15TH SIDEROAD, 0.10 km S of 12TH LINE	Upgrade guide rail end treatments and patch repair end dams	\$99,000
12038	48	7TH LINE, LOT 5, CONC VI/VII	7TH LINE, 0.50 km W of TOTTENHAM ROAD	Install steel beam guide rails on the bridge approaches, patch soffit and wingwalls and consider reconstructing the curbs with cantilevered sections and replacing railings to eliminate the travel deck width need	\$265,000
12035	50	FISH BRIDGE, LOT 5, CONC VIII/IX	9TH LINE, 0.50 km W of TOTTENHAM ROAD	Install steel beam guide rails on the bridge approaches and patch repair handrails, soffit, fascia and curbs	\$113,000
12022	51	WEST VARCOE BRIDGE (LOT 16, CONC X/XI)	11TH LINE, 0.65 km E of 15TH SIDEROAD	Install steel beam guide rails on the bridge approaches, patch handrails, curbs and abutments	\$106,000
11002	55	JJE McCAGUE BRIDGE	BOYNE STREET, ALLISTON, 0.35 km N of VICTORIA STREET EAST	Patch concrete end post, sidewalks, restore undermined areas, place rock protection in front of abutments	\$28,000

Table 6 Structure Rehabilitations – Culverts

Culvert Rehabilitation Needs by Priority Ranking - 2014					
Culvert No.	Priority	Culvert Name	Location	Recommended Work	Rehabilitation Cost
Rehabilitations					
12051	2	17TH SIDEROAD, LOT 17/18, CONC I	17TH SIDEROAD, 0.07 km S of 2ND LINE	Repair concrete on soffit and abutment	\$21,000
12041	3	MILL STREET WEST	MILL STREET WEST, TOTTENHAM, 0.35 km W of QUEEN STREET	Patch repair abutment wall & soffit	\$21,000
12042	4	3RD LINE, LOT 4, CONC II/III	3RD LINE, 0.75 km W of TOTTENHAM ROAD	Patch repair soffit and abutments	\$16,000
12017	5	7TH LINE, LOT 22, CONC VI/VII	7TH LINE, 1.20 km E of 20TH SIDEROAD	Install steel beam guide rails over the structure and on the approaches	\$89,000
11012	7	CPR PEDESTRIAN UNDERPASS	WELLINGTON STREET, ALLISTON, 0.10 km E of CENTRE STREET	Repair abutment	\$7,000
12040	9	TECUMSETH HEIGHTS DRIVE	TECUMSETH HEIGHTS DRIVE, 0.12 km S of 6TH LINE	Patch repair barrel and wingwall	\$19,000
11005	10	BEATTIE AVENUE	BEATTIE AVENUE, ALLISTON, 0.10 km S of CUNNINGHAM DRIVE	Restore grouted rip-rap slope protection	\$7,000
12052-1-2	11	LILLY STREET EAST	LILLY STREET EAST, BEETON, 0.09 km E of CENTRE STREET	Upgrade guide rail	\$61,000
11007	14	EIGHTH AVENUE	EIGHTH AVENUE, ALLISTON, 0.03 km S of TUPPER BOULEVARD	Repair areas of culvert	\$13,000
11008	19	CHURCH STREET SOUTH	CHURCH STREET SOUTH, ALLISTON, 0.27 km N of ALDERSON COURT	Upgrade guide rail end treatments	\$59,000
12053	20	ENGLISH DRIVE	ENGLISH DRIVE, BEETON, 0.09 km E of CENTRE STREET NORTH	Upgrade guide rail end treatments	\$59,000
12062	21	7TH LINE, LOT 22, CONC VI/VII	7TH LINE, 0.54 km E of 20TH SIDEROAD	Upgrade guide rail end treatments	\$59,000

Table 7 Summary of NOW Guide Rail Requirements

Older structures often lack approach guide rail or incorporate approach guide rail systems with buried or terminal ends that are considered to be deficient relative to current standards for end treatments. Additionally, railing systems on older structures often require augmentation with guide rail type systems installed in front of the railings. There are thirty-nine (39) bridges and five (5) culverts that require guide rail installation, extension or upgrades as identified in **Table 7a** at a total cost of **\$3,328,000**.

Bridge Guide Rail Requirements - 2014				
Bridge No.	Bridge Name	Location	Recommended Work	Estimated Cost
12002	13TH LINE, LOT 9, CONC XII/XIII	13TH LINE, 0.90 km W of 10TH SIDEROAD	Upgrade guide rail	\$78,000
12003	MAYNARD BRIDGE, LOT 10/11, CONC XII	10TH SIDEROAD, 0.35 km N of 12TH LINE	Install steel beam guide rail on approaches	\$78,000
12004	12TH LINE, LOT II, CONC XI/XII	12TH LINE, 0.35 km E of 10TH SIDEROAD	Upgrade guide rail	\$78,000
12005	12TH LINE, LOT 12, CONC XI/XII	12TH LINE, 1.10 km E of 10TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12006	12TH LINE, LOT 14, CONC XI/XII	12TH LINE, 2.10 km E of 10TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12007	15TH SIDEROAD, LOT 15/16, CONC XI	15TH SIDEROAD, 0.10 km S of 12TH LINE	Upgrade guide rail end treatments	\$78,000
12008	JEBB BRIDGE, LOT 20/21, CONC XII	20TH SIDEROAD, 0.68 km N of 12TH LINE	Install steel beam guide rail on approaches	\$78,000
12009	13TH LINE, LOT 21, CONC XII/XIII	13TH LINE, 0.08 km E of 20TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12010	20TH SIDEROAD, LOT 20/21, CON XIII	20TH SIDEROAD, 0.70 km N of 13TH LINE	Install steel beam guide rail on approaches	\$78,000
12011	20TH SIDEROAD, LOT 20/21, CONC XIII	20TH SIDEROAD, 0.40 km S of 14TH LINE	Install steel beam guide rail on approaches	\$78,000
12012	14TH LINE, LOT 21, CONC XIII/XIV	14TH LINE, 0.40 km E of 20TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12013	11TH LINE, LOT 19, CONC X/XI	11TH LINE, 0.90 km W of 20TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12014	20TH SIDEROAD, LOT 20/21, CONC X	20TH SIDEROAD, 0.50 km N of 10TH LINE	Install steel beam guide rail on approaches	\$78,000
12015	10TH LINE, LOT 21, CONC IX/X	10TH LINE, 0.35 km E of 20TH SIDEROAD	Install steel beam guide rails on the bridge approaches continuous with the guide rail on the structure	\$78,000
12016	9TH LINE LOT 21 CONC VIII/IX	9TH LINE, 0.40 km E of 20TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12018	6TH LINE, LOT 22, CONC V/VI	6TH LINE, 0.75 km E of 20TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12019	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.10 km E of 20TH SIDEROAD	Install steel beam guide rail over the structure and on the approaches	\$91,000

12020	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.30 km E of 20TH SIDEROAD	Install steel beam guide rail over the structure and on the approaches	\$78,000
12021	4TH LINE, LOT 20, CONC III/IV	4TH LINE, 0.45 km W of 20TH SIDEROAD	Install steel beam guide rail over the structure and on the approaches	\$78,000
12022	WEST VARCOE BRIDGE (LOT 16, CONC X/XI)	11TH LINE, 0.65 km E of 15TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12023	10TH LINE, LOT 16, CONC IX/X	10TH LINE, 0.63 km E of 15TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12024	9TH LINE, LOT 16, CONC VIII/IX	9TH LINE, 0.50 km E of 15TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12025	EAST VARCOE BRIDGE, LOT 16, CONC X/X1	11TH LINE, 0.95 km E of 15TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12026	BROOM BRIDGE, LOT 18, CONC IX/X	10TH LINE, 1.20 km E of 15TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12028	DEADMAN BRIDGE, LOT 10/11, CONC X	10TH SIDEROAD, 0.40 km N of 10TH LINE	Install steel beam guide rail on approaches	\$78,000
12029	McCARRON BRIDGE, LOT 7, CONC IX	10TH LINE, 1.10 km E of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12030	BEDER TURF BRIDGE, LOT 5, CONC IX/X	10TH LINE, 0.55 km W of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12032	STRANGWAYS BRIDGE, LOT 10/11, CONC IX	10TH SIDEROAD, 0.35 km N of 9TH LINE	Install steel beam guide rail on approaches	\$78,000
12033	9TH LINE, LOT 9, CONC VIII/IX	9TH LINE, 0.90 km W of 10TH SIDEROAD	Install steel beam guide rail on approaches	\$78,000
12034	9TH LINE, LOT 6, CONC VIII/IX	9TH LINE, 0.15 km E of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12035	FISH BRIDGE, LOT 5, CONC VIII/IX	9TH LINE, 0.50 km W of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12036	7TH LINE, LOT 7, CONC VI/VII	7TH LINE, 1.10 km E of TOTTENHAM ROAD	Upgrade guide rail end treatments	\$78,000
12038	7TH LINE, LOT 5, CONC VI/VII	7TH LINE, 0.50 km W of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12039	6TH LINE, LOT 7, CONC V/VI	6TH LINE, 0.75 km E of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12043	2ND LINE, LOT 5, CONC I/II	2ND LINE, 0.55 km W of TOTTENHAM ROAD	Install steel beam guide rail over the structure and on the approaches	\$78,000
12045	4TH LINE, LOT 7, CONC III/IV	4TH LINE, 1.10 km E of TOTTENHAM ROAD	Install steel beam guide rail on approaches	\$78,000
12047	RANSOM BRIDGE	10TH SIDEROAD, 0.25 km N of 4TH LINE	Install steel beam guide rail over the structure and on the approaches	\$78,000
12050	20TH SIDEROAD, LOT 20/21, CONC 1	20TH SIDEROAD, 0.30 km N of HIGHWAY 9	Upgrade guide rail end treatments	\$65,000
12059	GILROY BRIDGE, LOT 1, CONC XII	ADJALA-TECUMSETH TOWNLINE, 0.20 km N of 12TH LINE	Install steel beam guide rail on the approaches	\$78,000

Culvert Guide Rail Requirements - 2014				
Culvert No.	Culvert Name	Location	Recommended Work	Estimated Cost
11008	<i>CHURCH STREET SOUTH</i>	<i>CHURCH STREET SOUTH, ALLISTON, 0.27 km N of ALDERSON COURT</i>	<i>Upgrade guide rail end treatments</i>	<i>\$52,000</i>
12017	<i>7TH LINE, LOT 22, CONC VI/VII</i>	<i>7TH LINE, 1.20 km E of 20TH SIDEROAD</i>	<i>Install steel beam guide rails over the structure and on the approaches</i>	<i>\$78,000</i>
12052-1-2	<i>LILLY STREET EAST</i>	<i>LILLY STREET EAST, BEETON, 0.09 km E of CENTRE STREET</i>	<i>Upgrade guide rail</i>	<i>\$52,000</i>
12053	<i>ENGLISH DRIVE</i>	<i>ENGLISH DRIVE, BEETON, 0.09 km E of CENTRE STREET NORTH</i>	<i>Upgrade guide rail end treatments</i>	<i>\$52,000</i>
12062	<i>7TH LINE, LOT 22, CONC VI/VII</i>	<i>7TH LINE, 0.54 km E of 20TH SIDEROAD</i>	<i>Upgrade guide rail end treatments</i>	<i>\$52,000</i>

All guide rail requirement costs provided do not include the potential traffic control costs that may be incurred if the guide rail work is undertaken independent of other necessary works.

Table 8 Overall Bridge Inventory

Overall Bridge Inventory - 2014			
Bridge No.	Priority	Bridge Name	Location
11000	-	VICTORIA STREET PROPOSED GRADE SEPARATION	VICTORIA STREET WEST (#89), 0.05 km W of DUFFERIN STREET
11001	5	CUNNINGHAM BRIDGE	CHURCH STREET NORTH, ALLISTON, 0.13 km N of VICTORIA STREET WEST
11002	55	JJE McCAGUE BRIDGE	BOYNE STREET, ALLISTON, 0.35 km N of VICTORIA STREET EAST
11003	58	SIR FREDRICK BANTING ROAD	SIR FREDRICK BANTING ROAD, ALLISTON, 0.20 km N of VICTORIA STREET EAST
11010	41	SPRING CREEK PEDESTRIAN BRIDGE	ALBERT STREET SCHOOL SITE, ALLISTON, 0.05 km S of ALBERT STREET
11011	7	BOYNE RIVER PEDESTRIAN WALKWAY	DOMINION STREET, ALLISTON, 0.05 km S of FLETCHER CRESCENT
12001	9	14TH LINE, LOT 9, CONC XIII/XIV	14TH LINE, 1.50 km E of COUNTY ROAD 10
12002	19	13TH LINE, LOT 9, CONC XII/XIII	13TH LINE, 0.90 km W of 10TH SIDEROAD
12003	39	MAYNARD BRIDGE, LOT 10/11, CONC XII	10TH SIDEROAD, 0.35 km N of 12TH LINE
12004	22	12TH LINE, LOT II, CONC XI/XII	12TH LINE, 0.35 km E of 10TH SIDEROAD
12005	40	12TH LINE, LOT 12, CONC XI/XII	12TH LINE, 1.10 km E of 10TH SIDEROAD
12006	15	12TH LINE, LOT 14, CONC XI/XII	12TH LINE, 2.10 km E of 10TH SIDEROAD
12007	47	15TH SIDEROAD, LOT 15/16, CONC XI	15TH SIDEROAD, 0.10 km S of 12TH LINE
12008	37	JEBB BRIDGE, LOT 20/21, CONC XII	20TH SIDEROAD, 0.68 km N of 12TH LINE
12009	12	13TH LINE, LOT 21, CONC XII/XIII	13TH LINE, 0.08 km E of 20TH SIDEROAD
12010	29	20TH SIDEROAD, LOT 20/21, CONC XIII	20TH SIDEROAD, 0.70 km N of 13TH LINE
12011	45	20TH SIDEROAD, LOT 20/21, CONC XIII	20TH SIDEROAD, 0.40 km S of 14TH LINE
12012	23	14TH LINE, LOT 21, CONC XIII/XIV	14TH LINE, 0.40 km E of 20TH SIDEROAD
12013	17	11TH LINE, LOT 19, CONC X/XI	11TH LINE, 0.90 km W of 20TH SIDEROAD
12014	46	20TH SIDEROAD, LOT 20/21, CONC X	20TH SIDEROAD, 0.50 km N of 10TH LINE
12015	18	10TH LINE, LOT 21, CONC IX/X	10TH LINE, 0.35 km E of 20TH SIDEROAD
12016	36	9TH LINE LOT 21 CONC VIII/IX	9TH LINE, 0.40 km E of 20TH SIDEROAD
12018	21	6TH LINE, LOT 22, CONC V/VI	6TH LINE, 0.75 km E of 20TH SIDEROAD
12019	28	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.10 km E of 20TH SIDEROAD
12020	3	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.30 km E of 20TH SIDEROAD
12021	25	4TH LINE, LOT 20, CONC III/IV	4TH LINE, 0.45 km W of 20TH SIDEROAD
12022	51	WEST VARCOE BRIDGE (LOT 16, CONC X/XI)	11TH LINE, 0.65 km E of 15TH SIDEROAD
12023	32	10TH LINE, LOT 16, CONC IX/X	10TH LINE, 0.63 km E of 15TH SIDEROAD
12024	27	9TH LINE, LOT 16, CONC VIII/IX	9TH LINE, 0.50 km E of 15TH SIDEROAD
12025	44	EAST VARCOE BRIDGE, LOT 16, CONC X/X1	11TH LINE, 0.95 km E of 15TH SIDEROAD

12026	33	BROOM BRIDGE, LOT 18, CONC IX/X	10TH LINE, 1.20 km E of 15TH SIDEROAD
12027	57	11TH LINE, LOT 15, CONC X/XI	11TH LINE, 0.35 km W of 15TH SIDEROAD
12028	6	DEADMAN BRIDGE, LOT 10/11, CONC X	10TH SIDEROAD, 0.40 km N of 10TH LINE
12029	34	McCARRON BRIDGE, LOT 7, CONC IX	10TH LINE, 1.10 km E of TOTTENHAM ROAD
12030	24	BEDER TURF BRIDGE, LOT 5, CONC IX/X	10TH LINE, 0.55 km W of TOTTENHAM ROAD
12031	56	10TH LINE, LOT 13, CONC IX/X	10TH LINE, 1.40 km E of 10TH SIDEROAD
12032	11	STRANGWAYS BRIDGE, LOT 10/11, CONC IX	10TH SIDEROAD, 0.35 km N of 9TH LINE
12033	14	9TH LINE, LOT 9, CONC VIII/IX	9TH LINE, 0.90 km W of 10TH SIDEROAD
12034	13	9TH LINE, LOT 6, CONC VIII/IX	9TH LINE, 0.15 km E of TOTTENHAM ROAD
12035	50	FISH BRIDGE, LOT 5, CONC VIII/IX	9TH LINE, 0.50 km W of TOTTENHAM ROAD
12036	42	7TH LINE, LOT 7, CONC VI/VII	7TH LINE, 1.10 km E of TOTTENHAM ROAD
12037	35	7TH LINE, LOT 7, CONC VI/VII	7TH LINE, 0.80 km E of TOTTENHAM ROAD
12038	48	7TH LINE, LOT 5, CONC VI/VII	7TH LINE, 0.50 km W of TOTTENHAM ROAD
12039	16	6TH LINE, LOT 7, CONC V/VI	6TH LINE, 0.75 km E of TOTTENHAM ROAD
12043	10	2ND LINE, LOT 5, CONC I/II	2ND LINE, 0.55 km W of TOTTENHAM ROAD
12044	31	5TH LINE, LOT 7, CONC IV/V	5TH LINE, 0.80 km E of TOTTENHAM ROAD
12045	8	4TH LINE, LOT 7, CONC III/IV	4TH LINE, 1.10 km E of TOTTENHAM ROAD
12046	54	4TH LINE, LOT 9, CONC III/IV	4TH LINE, 0.85 km W of 10TH SIDEROAD
12047	38	RANSOM BRIDGE	10TH SIDEROAD, 0.25 km N of 4TH LINE
12049	26	2ND LINE, LOT 21, CONC I/II	2ND LINE, 0.40 km E of 20TH SIDEROAD
12050	43	20TH SIDEROAD, LOT 20/21, CONC 1	20TH SIDEROAD, 0.30 km N of HIGHWAY 9
12054	20	CENTRE STREET NORTH	CENTRE STREET NORTH, BEETON, 0.72 km N of MAIN STREET
12056	52	2ND LINE, LOT 22, CONC I/II	2ND LINE, 0.80 km E of 20TH SIDEROAD
12057	53	ADJALA-TECUMSETH T/L, LOT 1, CONC IX	ADJALA-TECUMSETH TOWNLINE, 0.30 km N of 9TH LINE
12058	49	ADJALA-TECUMSETH T/L, LOT 1, CONC X	ADJALA-TECUMSETH TOWNLINE, 1.15 km N of 10TH LINE
12059	30	GILROY BRIDGE, LOT 1, CONC XII	ADJALA-TECUMSETH TOWNLINE, 0.20 km N of 12TH LINE
12063	1	BEETON CREEK CROSSING	9th Line, 0.22KM N OF 9TH LINE
12064	4	BAILEY CREEK BRIDGE	10th Line, 0.10KM N OF 10TH LINE
12065	2	BEATTIE BRIDGE	13th Line, 0.20KM S OF 13TH LINE

Table 9 Overall Bridge Inventory by Priority Ranking

Overall Bridge Inventory by Priority Ranking - 2014			
Bridge No.	Priority	Bridge Name	Location
12063	1	BEETON CREEK CROSSING	9th Line, 0.22KM N OF 9TH LINE
12065	2	BEATTIE BRIDGE	13th Line, 0.20KM S OF 13TH LINE
12020	3	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.30 km E of 20TH SIDEROAD
12064	4	BAILEY CREEK BRIDGE	10th Line, 0.10KM N OF 10TH LINE
11001	5	CUNNINGHAM BRIDGE	CHURCH STREET NORTH, ALLISTON, 0.13 km N of VICTORIA STREET WEST
12028	6	DEADMAN BRIDGE, LOT 10/11, CONC X	10TH SIDEROAD, 0.40 km N of 10TH LINE
11011	7	BOYNE RIVER PEDESTRIAN WALKWAY	DOMINION STREET, ALLISTON, 0.05 km S of FLETCHER CRESCENT
12045	8	4TH LINE, LOT 7, CONC III/IV	4TH LINE, 1.10 km E of TOTTENHAM ROAD
12001	9	14TH LINE, LOT 9, CONC XIII/XIV	14TH LINE, 1.50 km E of COUNTY ROAD 10
12043	10	2ND LINE, LOT 5, CONC I/II	2ND LINE, 0.55 km W of TOTTENHAM ROAD
12032	11	STRANGWAYS BRIDGE, LOT 10/11, CONC IX	10TH SIDEROAD, 0.35 km N of 9TH LINE
12009	12	13TH LINE, LOT 21, CONC XII/XIII	13TH LINE, 0.08 km E of 20TH SIDEROAD
12034	13	9TH LINE, LOT 6, CONC VIII/IX	9TH LINE, 0.15 km E of TOTTENHAM ROAD
12033	14	9TH LINE, LOT 9, CONC VIII/IX	9TH LINE, 0.90 km W of 10TH SIDEROAD
12006	15	12TH LINE, LOT 14, CONC XI/XII	12TH LINE, 2.10 km E of 10TH SIDEROAD
12039	16	6TH LINE, LOT 7, CONC V/VI	6TH LINE, 0.75 km E of TOTTENHAM ROAD
12013	17	11TH LINE, LOT 19, CONC X/XI	11TH LINE, 0.90 km W of 20TH SIDEROAD
12015	18	10TH LINE, LOT 21, CONC IX/X	10TH LINE, 0.35 km E of 20TH SIDEROAD
12002	19	13TH LINE, LOT 9, CONC XII/XIII	13TH LINE, 0.90 km W of 10TH SIDEROAD
12054	20	CENTRE STREET NORTH	CENTRE STREET NORTH, BEETON, 0.72 km N of MAIN STREET
12018	21	6TH LINE, LOT 22, CONC V/VI	6TH LINE, 0.75 km E of 20TH SIDEROAD
12004	22	12TH LINE, LOT II, CONC XI/XII	12TH LINE, 0.35 km E of 10TH SIDEROAD
12012	23	14TH LINE, LOT 21, CONC XIII/XIV	14TH LINE, 0.40 km E of 20TH SIDEROAD
12030	24	BEDER TURF BRIDGE, LOT 5, CONC IX/X	10TH LINE, 0.55 km W of TOTTENHAM ROAD
12021	25	4TH LINE, LOT 20, CONC III/IV	4TH LINE, 0.45 km W of 20TH SIDEROAD
12049	26	2ND LINE, LOT 21, CONC I/II	2ND LINE, 0.40 km E of 20TH SIDEROAD
12024	27	9TH LINE, LOT 16, CONC VIII/IX	9TH LINE, 0.50 km E of 15TH SIDEROAD
12019	28	5TH LINE, LOT 21, CONC IV/V	5TH LINE, 0.10 km E of 20TH SIDEROAD
12010	29	20TH SIDEROAD, LOT 20/21, CON XIII	20TH SIDEROAD, 0.70 km N of 13TH LINE
12059	30	GILROY BRIDGE, LOT 1, CONC XII	ADJALA-TECUMSETH TOWNLINE, 0.20 km N of 12TH LINE

12044	31	5TH LINE, LOT 7, CONC IV/V	5TH LINE, 0.80 km E of TOTTENHAM ROAD
12023	32	10TH LINE, LOT 16, CONC IX/X	10TH LINE, 0.63 km E of 15TH SIDEROAD
12026	33	BROOM BRIDGE, LOT 18, CONC IX/X	10TH LINE, 1.20 km E of 15TH SIDEROAD
12029	34	McCARRON BRIDGE, LOT 7, CONC IX	10TH LINE, 1.10 km E of TOTTENHAM ROAD
12037	35	7TH LINE, LOT 7, CONC VI/VII	7TH LINE, 0.80 km E of TOTTENHAM ROAD
12016	36	9TH LINE LOT 21 CONC VIII/IX	9TH LINE, 0.40 km E of 20TH SIDEROAD
12008	37	JEBB BRIDGE, LOT 20/21, CONC XII	20TH SIDEROAD, 0.68 km N of 12TH LINE
12047	38	RANSOM BRIDGE	10TH SIDEROAD, 0.25 km N of 4TH LINE
12003	39	MAYNARD BRIDGE, LOT 10/11, CONC XII	10TH SIDEROAD, 0.35 km N of 12TH LINE
12005	40	12TH LINE, LOT 12, CONC XI/XII	12TH LINE, 1.10 km E of 10TH SIDEROAD
11010	41	SPRING CREEK PEDESTRIAN BRIDGE	ALBERT STREET SCHOOL SITE, ALLISTON, 0.05 km S of ALBERT STREET
12036	42	7TH LINE, LOT 7, CONC VI/VII	7TH LINE, 1.10 km E of TOTTENHAM ROAD
12050	43	20TH SIDEROAD, LOT 20/21, CONC 1	20TH SIDEROAD, 0.30 km N of HIGHWAY 9
12025	44	EAST VARCOE BRIDGE, LOT 16, CONC X/X1	11TH LINE, 0.95 km E of 15TH SIDEROAD
12011	45	20TH SIDEROAD, LOT 20/21, CONC XIII	20TH SIDEROAD, 0.40 km S of 14TH LINE
12014	46	20TH SIDEROAD, LOT 20/21, CONC X	20TH SIDEROAD, 0.50 km N of 10TH LINE
12007	47	15TH SIDEROAD, LOT 15/16, CONC XI	15TH SIDEROAD, 0.10 km S of 12TH LINE
12038	48	7TH LINE, LOT 5, CONC VI/VII	7TH LINE, 0.50 km W of TOTTENHAM ROAD
12058	49	ADJALA-TECUMSETH T/L, LOT 1, CONC X	ADJALA-TECUMSETH TOWNLINE, 1.15 km N of 10TH LINE
12035	50	FISH BRIDGE, LOT 5, CONC VIII/IX	9TH LINE, 0.50 km W of TOTTENHAM ROAD
12022	51	WEST VARCOE BRIDGE (LOT 16, CONC X/X1)	11TH LINE, 0.65 km E of 15TH SIDEROAD
12056	52	2ND LINE, LOT 22, CONC I/II	2ND LINE, 0.80 km E of 20TH SIDEROAD
12057	53	ADJALA-TECUMSETH T/L, LOT 1, CONC IX	ADJALA-TECUMSETH TOWNLINE, 0.30 km N of 9TH LINE
12046	54	4TH LINE, LOT 9, CONC III/IV	4TH LINE, 0.85 km W of 10TH SIDEROAD
11002	55	JJE McCAGUE BRIDGE	BOYNE STREET, ALLISTON, 0.35 km N of VICTORIA STREET EAST
12031	56	10TH LINE, LOT 13, CONC IX/X	10TH LINE, 1.40 km E of 10TH SIDEROAD
12027	57	11TH LINE, LOT 15, CONC X/XI	11TH LINE, 0.35 km W of 15TH SIDEROAD
11003	58	SIR FREDRICK BANTING ROAD	SIR FREDRICK BANTING ROAD, ALLISTON, 0.20 km N of VICTORIA STREET EAST
11000	-	VICTORIA STREET PROPOSED GRADE SEPARATION	VICTORIA STREET WEST (#89), 0.05 km W of DUFFERIN STREET

Table 10 Overall Culvert Inventory

Overall Culvert Inventory - 2014			
Culvert No.	Priority	Culvert Name	Location
11004	1	DUFFERIN STREET SOUTH	DUFFERIN STREET SOUTH, ALLISTON, 0.01 km N of PARSONS ROAD
11005	10	BEATTIE AVENUE	BEATTIE AVENUE, ALLISTON, 0.10 km S of CUNNINGHAM DRIVE
11006	6	KING STREET SOUTH	KING STREET SOUTH, ALLISTON, 0.05 km N of BEATTIE AVENUE
11007	14	EIGHTH AVENUE	EIGHTH AVENUE, ALLISTON, 0.03 km S of TUPPER BOULEVARD
11008	19	CHURCH STREET SOUTH	CHURCH STREET SOUTH, ALLISTON, 0.27 km N of ALDERSON COURT
11009	13	INDUSTRIAL PARKWAY/SPRING CREEK	INDUSTRIAL PARKWAY, ALLISTON, 0.51 km S of YOUNG STREET
11012	7	CPR PEDESTRIAN UNDERPASS	WELLINGTON STREET, ALLISTON, 0.10 km E of CENTRE STREET
12017	5	7TH LINE, LOT 22, CONC VI/VII	7TH LINE, 1.20 km E of 20TH SIDEROAD
12040	9	TECUMSETH HEIGHTS DRIVE	TECUMSETH HEIGHTS DRIVE, 0.12 km S of 6TH LINE
12041	3	MILL STREET WEST	MILL STREET WEST, TOTTENHAM, 0.35 km W of QUEEN STREET
12042	4	3RD LINE, LOT 4, CONC II/III	3RD LINE, 0.75 km W of TOTTENHAM ROAD
12048	18	4TH LINE, LOT 14, CONC III/IV	4TH LINE, 1.90 km E of 10TH SIDEROAD
12051	2	17TH SIDEROAD, LOT 17/18, CONC I	17TH SIDEROAD, 0.07 km S of 2ND LINE
12052-1-2	11	LILLY STREET EAST	LILLY STREET EAST, BEETON, 0.09 km E of CENTRE STREET
12052-2-2	16	LILLY STREET EAST	LILLY STREET EAST, BEETON, 0.09 km E of CENTRE STREET
12053	20	ENGLISH DRIVE	ENGLISH DRIVE, BEETON, 0.09 km E of CENTRE STREET NORTH
12055	8	15TH SIDEROAD, LOT 15/16, CONC V	15TH SIDEROAD, 0.50 km N of 5TH LINE
12060	12	15TH SIDEROAD, LOT 15/16, CONC I	15TH SIDEROAD, 0.30 km N of HIGHWAY 9
12061	15	20TH SIDEROAD, LOT 20/21, CONC IV	20TH SIDEROAD, 0.60 km N of 4TH LINE
12062	21	7TH LINE, LOT 22, CONC VI/VII	7TH LINE, 0.54 km E of 20TH SIDEROAD
12066	17	PARSONS ROAD CULVERT	PARSONS ROAD, ALLISTON, 0.1 km S of ALBERT STREET
12067	22	10 th SIDEROAD CULVERT	10 th SIDEROAD, 0.27 km N of 14 th LINE
12068	23	BOYNE STREET CULVERT	BOYNE STREET, 0.06 km N of SHEPHARD AVENUE
12069	24	BOYNE STREET HIGH FLOW RELIEF CULVERT	BOYNE STREET, 0.07 km N of SHEPHARD AVENUE

Table 11 Overall Culvert Inventory by Priority Ranking

Overall Culvert Inventory by Priority Ranking - 2014			
Culvert No.	Priority	Culvert Name	Location
11004	1	DUFFERIN STREET SOUTH	DUFFERIN STREET SOUTH, ALLISTON, 0.01 km N of PARSONS ROAD
12051	2	17TH SIDEROAD, LOT 17/18, CONC I	17TH SIDEROAD, 0.07 km S of 2ND LINE
12041	3	MILL STREET WEST	MILL STREET WEST, TOTTENHAM, 0.35 km W of QUEEN STREET
12042	4	3RD LINE, LOT 4, CONC II/III	3RD LINE, 0.75 km W of TOTTENHAM ROAD
12017	5	7TH LINE, LOT 22, CONC VI/VII	7TH LINE, 1.20 km E of 20TH SIDEROAD
11006	6	KING STREET SOUTH	KING STREET SOUTH, ALLISTON, 0.05 km N of BEATTIE AVENUE
11012	7	CPR PEDESTRIAN UNDERPASS	WELLINGTON STREET, ALLISTON, 0.10 km E of CENTRE STREET
12055	8	15TH SIDEROAD, LOT 15/16, CONC V	15TH SIDEROAD, 0.50 km N of 5TH LINE
12040	9	TECUMSETH HEIGHTS DRIVE	TECUMSETH HEIGHTS DRIVE, 0.12 km S of 6TH LINE
11005	10	BEATTIE AVENUE	BEATTIE AVENUE, ALLISTON, 0.10 km S of CUNNINGHAM DRIVE
12052-1-2	11	LILLY STREET EAST	LILLY STREET EAST, BEETON, 0.09 km E of CENTRE STREET
12060	12	15TH SIDEROAD, LOT 15/16, CONC I	15TH SIDEROAD, 0.30 km N of HIGHWAY 9
11009	13	INDUSTRIAL PARKWAY/SPRING CREEK	INDUSTRIAL PARKWAY, ALLISTON, 0.51 km S of YOUNG STREET
11007	14	EIGHTH AVENUE	EIGHTH AVENUE, ALLISTON, 0.03 km S of TUPPER BOULEVARD
12061	15	20TH SIDEROAD, LOT 20/21, CONC IV	20TH SIDEROAD, 0.60 km N of 4TH LINE
12052-2-2	16	LILLY STREET EAST	LILLY STREET EAST, BEETON, 0.09 km E of CENTRE STREET
12066	17	PARSONS ROAD CULVERT	PARSONS ROAD, ALLISTON, 0.1 km S of ALBERT STREET
12048	18	4TH LINE, LOT 14, CONC III/IV	4TH LINE, 1.90 km E of 10TH SIDEROAD
11008	19	CHURCH STREET SOUTH	CHURCH STREET SOUTH, ALLISTON, 0.27 km N of ALDERSON COURT
12053	20	ENGLISH DRIVE	ENGLISH DRIVE, BEETON, 0.09 km E of CENTRE STREET NORTH
12062	21	7TH LINE, LOT 22, CONC VI/VII	7TH LINE, 0.54 km E of 20TH SIDEROAD
12067	22	10 th SIDEROAD CULVERT	10 th SIDEROAD, 0.27 km N of 14 th LINE
12068	23	BOYNE STREET CULVERT	BOYNE STREET, 0.06 km N of SHEPHARD AVENUE
12069	24	BOYNE STREET HIGH FLOW RELIEF CULVERT	BOYNE STREET, 0.07 km N of SHEPHARD AVENUE

4.6 Monitoring

- Bridge No. 12063 & 12065 will require on-going monitoring to ensure safety and serviceability as shown in **Table 12**. Monitoring is to be completed by the Town. If a change in the existing condition is identified a structural engineer should be notified.

Table 12 Monitoring

Monitoring		
Structure No.	Location	Monitoring Requirements
12063	BEETON CREEK CROSSING, 9th Line, 0.22 km N OF 9TH LINE	Monitor piers and abutments every 3 months
12065	BEATTIE BRIDGE, 13 TH LINE, 0.20 km S OF 13TH LINE	Monitor piers and abutments every 3 months

5. Structure Inventory and Construction Needs Summary

- **Tables 13 and 14** which follow provide a summary of the total structure construction and rehabilitation needs resultant from the 2014 Structure Inspections. For the ten year period, the rehabilitation needs are estimated to be **\$30,629,000** for the existing Town's structure system. Of this total cost **\$25,448,000** are for NOW needs, **\$4,431,000** are for structure 1-5 year needs and **\$750,000** are for the 6-10 year needs.

Table 13 Bridge Improvement Needs Summary

Not Adjusted for Owners Share (\$)				
	NOW	1-5	6-10	Total
Const	14,163,000.00	0.00	0.00	14,163,000.00
Const Extra	6,527,000.00	0.00	0.00	6,527,000.00
Inspection	140,000.00	167,000.00	0.00	307,000.00
Rehab	3,670,000.00	2,529,000.00	554,000.00	6,753,000.00
Rehab Extra	621,000.00	1,215,000.00	92,000.00	1,928,000.00
Total	25,121,000.00	3,911,000.00	646,000.00	29,678,000.00

Adjusted for Owners Share (\$)				
	NOW	1-5	6-10	Total
Const	13,106,100.00	0.00	0.00	13,106,100.00
Const Extra	5,995,550.00	0.00	0.00	5,995,550.00
Inspection	140,000.00	167,000.00	0.00	307,000.00
Rehab	3,670,000.00	2,529,000.00	554,000.00	6,753,000.00
Rehab Extra	621,000.00	1,215,000.00	92,000.00	1,928,000.00
Total	23,532,650.00	3,911,000.00	646,000.00	28,089,650.00

Bridge No. 12037 – 7th Line, Lot 7, Conc VI/VII located 0.8km E of Tottenham Road, constructed in 1930 carries 7th Line under the CPR railway mileage marker 38.01. The bridge is assumed to have shared ownership with the Canadian Pacific Railway (Assumed 85% New Tecumseth Ownership, 15% CPR Ownership). The appraisal for Bridge No. 12037 includes improvement needs and all associated costs and the rationale for those assumptions. The structures assumed to have shared ownership are detailed in **Table 13 – Adjusted for Owner Share**.

Table 14 Culvert Improvement Needs Summary

Not Adjusted for Owners Share (\$)				
	NOW	1-5	6-10	Total
Const	0.00	364,000.00	0.00	364,000.00
Const Extra	0.00	156,000.00	0.00	156,000.00
Inspection	0.00	0.00	0.00	0.00
Rehab	286,000.00	0.00	96,000.00	382,000.00
Rehab Extra	41,000.00	0.00	8,000.00	49,000.00
Total	327,000.00	520,000.00	104,000.00	951,000.00

Adjusted for Owners Share (\$)				
	NOW	1-5	6-10	Total
Const	0.00	364,000.00	0.00	364,000.00
Const Extra	0.00	156,000.00	0.00	156,000.00
Inspection	0.00	0.00	0.00	0.00
Rehab	286,000.00	0.00	96,000.00	382,000.00
Rehab Extra	41,000.00	0.00	8,000.00	49,000.00
Total	327,000.00	520,000.00	104,000.00	951,000.00

5.1 Structure Inventory Replacement Value

Table 15 (below) provides a conservative estimate of structure replacement costs on a per structure basis. The costs have been prepared based on weighted average of each structure type from the municipal database. The values shown in **Table 15** include the construction costs based on the costs obtained from recent contracts, and adjustments factors including basic construction, contingency, engineering, and terrain type. The cost of structures is more variable than the cost of the road construction as factors such as the roadside environment, the feature the structure is spanning, construction material, and anticipated lifespan influence the costing to a greater degree.

Table 15 Structure Replacement Value

Structure Type	Range of Replacement Values	Average Replacement Value
Bridge	\$316,363 - \$2,014,338	\$739,993
Culvert	\$268,369 - \$894,495	\$500,960

6. Normal Structure Maintenance

A summary of normal structure maintenance for all bridge and culvert structures has been presented in **Table 16** (below) as a result of the 2014 re-inspections.

Table 16 Normal Structure Maintenance Summary

Bridge Maintenance		
Bridge No.	Location	Maintenance Requirements
11002	JJE McCague Bridge, Boyne Street, Alliston, 0.35 km N of Victoria Street East	Replace junction box cover plates and replace missing handrail connection bolts.
11010	Spring Creek Pedestrian Bridge, Albert Street School Site, Alliston, 0.05 km S of Albert Street	Replace missing handrail braces, reattach loose brace, replace broken longitudinal brace on west side and remove debris on top of abutments.
11011	Boyne River Pedestrian Walkway, Dominion Street, Alliston, 0.05 km S of Fletcher Crescent	Replace missing bolt and railing fasteners and repair handrails.
12006	12th Line, Lot 14, Conc XI/XII, 12th Line, 2.10 km E of 10th Sideroad	Replace broken cross brace, tighten guide rail and clean channel.
12009	13th Line, Lot 21, Conc XII/XIII, 13th Line, 0.08 km E of 20th Sideroad	Patch wearing surface and unplug deck drains.
12011	20th Sideroad, Lot 20/21, Conc XIII, 20th Sideroad, 0.40 km S of 14th Line	Unplug deck drains and remove beaver dam from watercourse
12013	11th Line, Lot 19, Conc X/XI, 11th Line, 0.90 km W of 20th Sideroad	Repair asphalt wearing surface and unblock drains.
12014	20th Sideroad, Lot 20/21, Conc X, 20th Sideroad, 0.50 km N of 10th Line	Clean deck drains
12015	10th Line, Lot 21, Conc IX/X, 10th Line, 0.35 km E of 20th Sideroad	Clean deck drains and remove beaver dam.
12016	9th Line, Lot 21 Conc VIII/IX, 9th Line, 0.40 km E of 20th Sideroad	Clear deck drains
12022	WEST VARCOE BRIDGE (LOT 16, CONC X/XI), 11TH LINE, 0.65 km E of 15TH SIDEROAD	Repair surface treatment
12023	10th Line, Lot 16, Conc IX/X, 10th Line, 0.63 km E of 15th Sideroad	Clean deck drains
12027	11TH LINE, LOT 15, CONC X/XI, 11TH LINE, 0.35 km W of 15TH SIDEROAD	Repair steel beam guiderail
12031	10th Line, Lot 13, Conc IX/X, 10th Line, 1.40 km E of 10th Sideroad	Remove beaver dam from watercourse, restore west stream bank and seal cracks in approaches.
12032	STRANGWAYS BRIDGE, LOT 10/11, CONC IX, 10TH SIDEROAD, 0.35 km N of 9TH LINE	Remove trees and beaver dam from under structure
12034	9TH LINE, LOT 6, CONC VIII/IX, 9TH LINE, 0.15 km E of TOTTENHAM ROAD	Replace damaged hazard markers
12036	7th Line, Lot 7, Conc VI/VII, 7th Line, 1.10 km E of Tottenham Road	Restore roadway embankment.
12039	6th Line, Lot 7, Conc V/VI, 6th Line, 0.75 km E of Tottenham Road	Repair hazard markers.
12044	5th Line, Lot 7, Conc IV/V, 5th Line, 0.80 km E of Tottenham Road	Remove beaver dam from watercourse.
12049	2ND LINE, LOT 21, CONC I/II, 2ND LINE, 0.40 km E of 20TH SIDEROAD	Restore hazard markers and remove sand and vegetation from deck top
12050	20th Sideroad, Lot 20/21, Conc 1, 20th Sideroad, 0.30 km N of Highway 9	Clean deck expansion joints, deck drains, deck top and patch pot holes

12054	<i>Centre Street North, Centre Street North, Beeton, 0.72 km N of Main Street</i>	<i>Repair handrail.</i>
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Culvert Maintenance		
Culvert No.	Location	Maintenance Requirements
11005	<i>Beattie Avenue, Beattie Avenue, Alliston, 0.10 km S of Cunningham drive</i>	<i>Replace broken and deteriorated guiderail posts.</i>
11008	<i>Church Street South, Church Street South, Alliston, 0.27 km N of Alderson court</i>	<i>Replace broken wooden guide rail post and patch pothole on northwest approach.</i>
12040	<i>Tecumseth Heights Drive, Tecumseth Heights Drive, 0.12 km S of 6th Line</i>	<i>Replace wooden posts as required and reattach cables and tighten.</i>
12041	<i>Mill Street West, Mill Street West, Tottenham, 0.35 km W of Queen Street</i>	<i>Repair sidewalks</i>
12051	<i>17th Sideroad, Lot 17/18, Conc I, 17th Sideroad, 0.07 km S of 2nd Line</i>	<i>Tighten loose cables, replace deteriorated/broken guide rail posts and extend guide rail cable at northwest</i>
12053	<i>English Drive, English Drive, Beeton, 0.09 km E of Centre Street North</i>	<i>Replace broken wood post on sidewalk guiderail and repair chain link fence</i>

7. Recommended Program Funding Levels

Recommended program funding level calculations are typically based on the length of or number of the infrastructure types and average widths of same within the database.

It should be noted that the budgetary recommendations in this report do not include items in the budget related to development and growth. Those items are in addition to the recommendations in this report and should require another funding source.

7.1 Capital Replacements

Recommended funding for the structures inventory would include sufficient capital expenditures that would allow the replacement of infrastructure as it meets its design life.

For new structures, the design lifespan is now 75 years; however, structures constructed prior to 2000 were generally designed for a 50 year lifespan. Accordingly for a typical system annual expenditures are between 1.5% and 2.0% of the value of the entire structure inventory and should be expended annually to ensure that the structure inventory can be maintained in perpetuity. It is noted that as the structures are replaced, the annual allocation could be reduced to 1.5%.

The average age of the Town's bridge structures is **56.5** years; the average age of the culvert structures is **33.6** years.

Based on the aforementioned and the data shown in **Section 4** of this report, the estimated minimum annual capital program for structures should be in the amount of **\$955,000** (or 3.1%) per year for the Town of New Tecumseth to maintain the current system adequacy. However, given the average age of the Town of New Tecumseth's structures inventory, it is quite probable that expenditures on structures will be even higher than estimated over the next decade as the older structures reach a terminal condition.

7.2 Major Maintenance

Rehabilitation and replacement recommendations are provided within this report (**see section 4**). The costs associated within these recommendations should be budgeted above and beyond the recommended replacement budget suggested in **Section 7.1** to maximize the service life of the structures.

8. Conclusions

Completion of the 2014 re-inspection of the eighty-three (83) bridge and culvert structures on the Town's road system has resulted in reliable and current data being available to the Town to implement a maintenance program ensuring the Town's structures are kept safe and in good repair.

Maintenance of the Bridge and Culvert Management Program will require updating of the database on an on-going annual basis to reflect previous year rehabilitation/replacement project updates. It is recommended that the structures be re-inspected by a qualified structure engineer every two (2) years.

We trust that the foregoing will assist you in implementing a cost effective structure maintenance, repair and replacement program.

Appendix A

Key Plans

Appendix B

Bridge Improvement Needs

Town of New Tecumseth

Bridge Improvement Needs

Data Last Refreshed January 23, 2015
2:29:15PM

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12063	1.00	BEETON CREEK CROSSING	9th Line	0.22KM N OF 9TH LINE	1930 1930	0	0	0	O-WAT, Over	06	32.00	4.10	ENV 50,000	Rehab	RSB	NOW	98,000
														Rehab Extra	brMB	NOW	4,000
														Rehab Extra	brWPTF	NOW	13,000
														Total Cost NOW			115,000
												Total Cost	115,000				
												Municipal %	100				
												MunicipalCost	115,000				
12065	2.00	BEATTIE BRIDGE	13th Line	0.20KM S OF 13TH LINE	1930 1930	0	0	0	O-WAT, Over	07	40.00	4.10	ENV 50,000	Rehab	RSB	NOW	52,000
														Rehab Extra	brMB	NOW	2,000
														Rehab Extra	brWPTF	NOW	13,000
														Total Cost NOW			67,000
												Total Cost	67,000				
												Municipal %	100				
												MunicipalCost	67,000				
12020	3.00	5TH LINE, LOT 21, CONC IV/V	5TH LINE	0.30 km E of 20TH SIDEROAD	1945 1945	0	0	0	O-WAT, Over	1	4.40	9.80	DCS 10,000 RRA 5,000	Rehab	IAG	NOW	78,000
														Rehab	RIR	NOW	13,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			98,000
														Rehab	CDS	1-5	13,000
														Rehab	RSB	1-5	39,000
Total Cost 1-5			52,000														
												Total Cost	150,000				
												Municipal %	100				
												MunicipalCost	150,000				
12064	4.00	BAILEY CREEK BRIDGE	10th Line	0.10KM N OF 10TH LINE	1930 1930	0	0	0	O-WAT, Over	05	27.00	4.10		Rehab	RSB	1-5	52,000
														Rehab Extra	brMB	1-5	2,000
														Rehab Extra	brWPTF	1-5	13,000
														Total Cost 1-5			67,000
												Total Cost	67,000				
												Municipal %	100				
												MunicipalCost	67,000				

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations				
						L3t	L2t	L1t						Category	Type	TON	Cost(1)	
11001	5.00	CUNNINGHAM BRIDGE	CHURCH STREET NORTH, ALLISTON	0.13 km N of VICTORIA STREET WEST	1963 1963	0	0	0	O-WAT, Over	1	29.60	12.30	DCS 35,000	Rehab	CSS	1-5	260,000	
														Rehab	OWP	1-5	202,000	
														Rehab	RCS	1-5	65,000	
														Rehab	RIR	1-5	67,000	
														Rehab	TJR	1-5	99,000	
														Rehab Extra	brAPP	1-5	104,000	
														Rehab Extra	brTCP	1-5	130,000	
																Total Cost	1-5	927,000
														Rehab	EIR	6-10	7,000	
																Total Cost	6-10	7,000
												Total Cost	934,000					
												Municipal %	100					
												MunicipalCost	934,000					
12028	6.00	DEADMAN BRIDGE, LOT 10/11, CONC X	10TH SIDEROAD	0.40 km N of 10TH LINE	1968 1968	0	0	0	O-WAT, Over	1	17.10	10.40	DCS 15,000	Rehab	IAG	NOW	78,000	
														Rehab Extra	brTCP	NOW	7,000	
																Total Cost	NOW	85,000
														Rehab	CDR	1-5	156,000	
														Rehab	RCS	1-5	33,000	
														Rehab	RIR	1-5	39,000	
														Rehab	RSP	1-5	20,000	
														Rehab	TJR	1-5	86,000	
														Rehab Extra	brAPP	1-5	65,000	
														Rehab Extra	brENV	1-5	20,000	
														Rehab Extra	brMB	1-5	26,000	
														Rehab Extra	brTCP	1-5	130,000	
														Rehab Extra	brWPTF	1-5	13,000	
																Total Cost	1-5	588,000
												Total Cost	673,000					
												Municipal %	100					
												MunicipalCost	673,000					

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations													
						L3t	L2t	L1t						Category	Type	TON	Cost(1)										
11011	7.00	BOYNE RIVER PEDESTRIAN WALKWAY	DOMINION STREET, ALLISTON	0.05 km S of FLETCHER CRESCENT	1974 1974	0	0	0	O-WAT, Over	1	30.40	1.80	DCS 10,000	Maintenance	OTH	1-5	0										
														Rehab	EIR	1-5	7,000										
														Rehab	RSB	1-5	65,000										
														Rehab	RSP	1-5	13,000										
														Rehab	WSR	1-5	20,000										
											Total Cost	1-5	105,000														
											Total Cost		105,000														
											Municipal %		100														
											MunicipalCost		105,000														
12045	8.00	4TH LINE, LOT 7, CONC III/IV	4TH LINE	1.10 km E of TOTTENHAM ROAD	1950 1950	0	0	0	O-WAT, Over	1	6.00	9.50	DCS 10,000 RRA 5,000	Rehab	IAG	NOW	78,000										
														Rehab Extra	brAPP	NOW	13,000										
														Rehab Extra	brTCP	NOW	20,000										
																									Total Cost	NOW	111,000
														Rehab	CDS	1-5	26,000										
														Rehab	OTHr	1-5	13,000										
														Rehab	RIR	1-5	26,000										
														Rehab	RRW	1-5	26,000										
														Rehab	RSB	1-5	7,000										
														Rehab Extra	brMB	1-5	9,000										
														Rehab Extra	brWPTF	1-5	13,000										
																									Total Cost	1-5	120,000
											Total Cost		231,000														
											Municipal %		100														
											MunicipalCost		231,000														
12001	9.00	14TH LINE, LOT 9, CONC XIII/XIV	14TH LINE	1.50 km E of COUNTY ROAD 10	1940 1940	15	0	0	O-WAT, Over	3	38.40	7.20		Const	REB	NOW	260,000										
														Const	RSL	NOW	2,964,000										
														Const Extra	bcApp	NOW	130,000										
														Const Extra	bcDET	NOW	13,000										
														Const Extra	bcENV	NOW	50,000										
														Const Extra	bcUTI	NOW	13,000										
																									Total Cost	NOW	3,430,000
																									Total Cost		3,430,000
											Municipal %		100														
											MunicipalCost		3,430,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations														
						L3t	L2t	L1t						Category	Type	TON	Cost(1)											
12043	10.00	2ND LINE, LOT 5, CONC I/II	2ND LINE	0.55 km W of TOTTENHAM ROAD	1934 1934	0	0	0	O-WAT, Over	1	4.30	7.50		Rehab	CDS	1-5	5,000											
														Rehab	IAG	1-5	78,000											
														Rehab	PWP	1-5	19,000											
														Rehab	RIR	1-5	20,000											
														Rehab	RSB	1-5	5,000											
														Rehab	SPI	1-5	20,000											
														Rehab Extra	brAPP	1-5	20,000											
														Rehab Extra	brDET	1-5	13,000											
														Rehab Extra	brMB	1-5	8,000											
														Rehab Extra	brWPTF	1-5	7,000											
														Total Cost													1-5	195,000
														Total Cost														195,000
Municipal %														100														
MunicipalCost														195,000														
12032	11.00	STRANGWAYS BRIDGE, LOT 10/11, CONC IX	10TH SIDEROAD	0.35 km N of 9TH LINE	1968 1968	0	0	0	O-WAT, Over	1	21.90	10.20	DCS 20,000	Rehab	IAG	NOW	78,000											
														Rehab	TJR	NOW	126,000											
														Rehab Extra	brTCP	NOW	7,000											
														Total Cost													NOW	211,000
														Maintenance	OTH	1-5	0											
														Rehab	CDR	1-5	191,000											
														Rehab	RCS	1-5	52,000											
														Rehab	RIR	1-5	52,000											
														Rehab Extra	brAPP	1-5	65,000											
														Rehab Extra	brENV	1-5	20,000											
														Rehab Extra	brMB	1-5	30,000											
														Rehab Extra	brTCP	1-5	130,000											
														Rehab Extra	brWPTF	1-5	13,000											
														Total Cost													1-5	553,000
														Rehab	RSB	6-10	7,000											
														Rehab	RSP	6-10	13,000											
														Total Cost													6-10	20,000
Total Cost														784,000														
Municipal %														100														
MunicipalCost														784,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12009	12.00	13TH LINE, LOT 21, CONC XII/XIII	13TH LINE	0.08 km E of 20TH SIDEROAD	1962 1962	0	0	0	O-WAT, Over	1	10.20	7.30		Maintenance	OTH	NOW	0
														Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	CDS	1-5	20,000
														Rehab	RCS	1-5	4,000
														Rehab	RIR	1-5	7,000
														Rehab	RSB	1-5	26,000
														Rehab Extra	brMB	1-5	7,000
														Rehab Extra	brTCP	1-5	7,000
														Rehab Extra	brWPTF	1-5	7,000
														Total Cost 1-5			78,000
														Total Cost			163,000
Municipal %			100														
MunicipalCost			163,000														
12034	13.00	9TH LINE, LOT 6, CONC VIII/IX	9TH LINE	0.15 km E of TOTTENHAM ROAD	1930 1930	15	0	0	O-RWY, Over	6	27.00	6.50		Const	REB	NOW	117,000
														Const	RSL	NOW	2,548,000
														Const Extra	bcApp	NOW	2,158,000
														Const Extra	bcDET	NOW	67,000
														Const Extra	bcENV	NOW	50,000
														Const Extra	bcMB	NOW	199,000
														Const Extra	bcROW	NOW	13,000
														Const Extra	bcUTI	NOW	13,000
														Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			5,250,000
														Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Total Cost			5,250,000
														Municipal %			100
														MunicipalCost			5,250,000

- Notes:**
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 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations															
						L3t	L2t	L1t						Category	Type	TON	Cost(1)												
12033	14.00	9TH LINE, LOT 9, CONC VIII/IX	9TH LINE	0.90 km W of 10TH SIDEROAD	1920 1920	0	0	0	O-WAT, Over	1	13.20	6.40		Const	REB	NOW	82,000												
														Const	RSL	NOW	1,146,000												
														Const Extra	bcApp	NOW	130,000												
														Const Extra	bcDET	NOW	13,000												
														Const Extra	bcENV	NOW	50,000												
														Const Extra	bcMB	NOW	59,000												
														Const Extra	bcROW	NOW	13,000												
														Const Extra	bcUTI	NOW	13,000												
														Rehab	IAG	NOW	78,000												
														Rehab Extra	brTCP	NOW	7,000												
																											Total Cost	NOW	1,591,000
													Total Cost		1,591,000														
													Municipal %		100														
													MunicipalCost		1,591,000														
12006	15.00	12TH LINE, LOT 14, CONC XI/XII	12TH LINE	2.10 km E of 10TH SIDEROAD	1930 1930	0	0	0	O-WAT, Over	5	23.20	6.10		Rehab	IAG	NOW	78,000												
														Rehab Extra	brTCP	NOW	7,000												
																											Total Cost	NOW	85,000
														Maintenance	OTH	1-5	0												
																											Total Cost	1-5	0
														Rehab	EIR	6-10	13,000												
																											Total Cost	6-10	13,000
													Total Cost		98,000														
													Municipal %		100														
													MunicipalCost		98,000														

- Notes:**
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 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12039	16.00	6TH LINE, LOT 7, CONC V/VI	6TH LINE	0.75 km E of TOTTENHAM ROAD	1960 1960	0	0	0	O-WAT, Over	1	12.00	7.20	DCS 15,000	Rehab	IAG	NOW	78,000
														Rehab	WSO	NOW	104,000
														Rehab Extra	brAPP	NOW	52,000
														Rehab Extra	brDET	NOW	20,000
														Rehab Extra	brMB	NOW	12,000
														Rehab Extra	brWPTF	NOW	20,000
														Total Cost NOW			286,000
														Rehab	CDS	1-5	27,000
														Total Cost 1-5			27,000
														Maintenance	OTH	6-10	0
Total Cost 6-10			0														
Total Cost													313,000				
Municipal %													100				
MunicipalCost													313,000				
12013	17.00	11TH LINE, LOT 19, CONC X/XI	11TH LINE	0.90 km W of 20TH SIDEROAD	1950 1950	0	0	0	O-WAT, Over	1	13.90	7.30		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Rehab	CDS	6-10	13,000
														Rehab	RCS	6-10	7,000
														Rehab	RSB	6-10	7,000
														Total Cost 6-10			27,000
														Total Cost			
Municipal %													100				
MunicipalCost													112,000				

- Notes:**
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 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12015	18.00	10TH LINE, LOT 21, CONC IX/X	10TH LINE	0.35 km E of 20TH SIDEROAD	1960 1960	0	0	0	O-WAT, Over	1	12.00	7.40		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Maintenance	OTH	1-5	0
														Rehab	CDS	1-5	13,000
														Rehab	WSR	1-5	7,000
														Rehab Extra	brTCP	1-5	7,000
														Total Cost 1-5			27,000
														Total Cost			112,000
														Municipal %			100
MunicipalCost			112,000														
12002	19.00	13TH LINE, LOT 9, CONC XII/XIII	13TH LINE	0.90 km W of 10TH SIDEROAD	1940 1940	0	0	0	O-WAT, Over	3	34.00	7.40	DCS 25,000	Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	CDS	1-5	33,000
														Rehab	EIR	1-5	13,000
														Rehab	RCS	1-5	13,000
														Rehab Extra	brTCP	1-5	7,000
														Total Cost 1-5			66,000
														Rehab	RIR	6-10	13,000
														Rehab	RSB	6-10	7,000
														Rehab	RSP	6-10	7,000
														Rehab	SPI	6-10	13,000
														Rehab Extra	brTCP	6-10	7,000
														Total Cost 6-10			47,000
														Total Cost			198,000
Municipal %			100														
MunicipalCost			198,000														
12054	20.00	CENTRE STREET NORTH	CENTRE STREET NORTH, BEETON	0.72 km N of MAIN STREET	1940 1940	0	0	0	O-WAT, Over	2	5.20	15.10		Maintenance	OTH	NOW	0
														Rehab Extra	brMB	NOW	1,000
														Total Cost NOW			1,000
														Rehab	CDS	6-10	7,000
														Total Cost 6-10			7,000
Total Cost			8,000														
Municipal %			100														
MunicipalCost			8,000														

- Notes:**
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2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12018	21.00	6TH LINE, LOT 22, CONC V/VI	6TH LINE	0.75 km E of 20TH SIDEROAD	1960 1960	0	0	0	O-WAT, Over	1	6.80	7.50		Rehab	IAG	NOW	78,000
														Rehab	OTHR	NOW	46,000
														Rehab Extra	brDET	NOW	13,000
														Rehab Extra	brENV	NOW	20,000
														Total Cost NOW			157,000
														Rehab	CDS	1-5	7,000
														Total Cost 1-5			7,000
Total Cost			164,000														
Municipal %			100														
MunicipalCost			164,000														
12004	22.00	12TH LINE, LOT II, CONC XI/XII	12TH LINE	0.35 km E of 10TH SIDEROAD	1945 1945	0	0	0	O-WAT, Over	3	24.90	7.80	DCS 20,000	Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	RIR	1-5	26,000
														Rehab Extra	brAPP	1-5	20,000
														Rehab Extra	brENV	1-5	20,000
														Rehab Extra	brTCP	1-5	7,000
														Total Cost 1-5			73,000
														Rehab	CDS	6-10	13,000
														Rehab	EIR	6-10	13,000
														Rehab	RCS	6-10	7,000
														Rehab	RSB	6-10	7,000
														Rehab	RSP	6-10	13,000
														Total Cost 6-10			53,000
														Total Cost			211,000
Municipal %			100														
MunicipalCost			211,000														

- Notes:**
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 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12012	23.00	14TH LINE, LOT 21, CONC XIII/XIV	14TH LINE	0.40 km E of 20TH SIDEROAD	1960 1960	0	0	0	O-WAT, Over	1	10.20	7.40	DCS 15,000	Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	CDS	1-5	7,000
														Rehab	LMC	1-5	48,000
														Rehab	RCS	1-5	21,000
														Rehab	RIR	1-5	7,000
														Rehab	RSB	1-5	13,000
														Rehab	SPI	1-5	13,000
														Rehab Extra	brAPP	1-5	65,000
														Rehab Extra	brDET	1-5	13,000
														Rehab Extra	brENV	1-5	20,000
														Rehab Extra	brMB	1-5	12,000
														Rehab Extra	brWPTF	1-5	13,000
Total Cost 1-5			232,000														
Total Cost			317,000														
Municipal %			100														
MunicipalCost			317,000														
12030	24.00	BEDER TURF BRIDGE, LOT 5, CONC IX/X	10TH LINE	0.55 km W of TOTTENHAM ROAD	1966 1966	0	0	0	O-WAT, Over	1	16.60	9.80		Rehab	IAG	NOW	78,000
														Rehab Extra	brMB	NOW	5,000
														Rehab Extra	brTCP	NOW	7,000
														Rehab Extra	brWPTF	NOW	13,000
														Total Cost NOW			103,000
														Rehab	RIR	1-5	7,000
														Rehab	WSR	1-5	7,000
														Rehab Extra	brTCP	1-5	7,000
														Total Cost 1-5			21,000
														Rehab	CDS	6-10	7,000
														Total Cost 6-10			7,000
Total Cost			131,000														
Municipal %			100														
MunicipalCost			131,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12021	25.00	4TH LINE, LOT 20, CONC III/IV	4TH LINE	0.45 km W of 20TH SIDEROAD	1970 1970	0	0	0	O-WAT, Over	1	5.00	6.60		Rehab	IAG	NOW	78,000
														Rehab	RIR	NOW	13,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			98,000
														Rehab	CDS	6-10	11,000
														Rehab	RCS	6-10	7,000
														Rehab	RSB	6-10	7,000
														Total Cost 6-10			25,000
														Total Cost			123,000
														Municipal %			100
MunicipalCost			123,000														
12049	26.00	2ND LINE, LOT 21, CONC I/II	2ND LINE	0.40 km E of 20TH SIDEROAD	1940 1940	0	0	0	O-WAT, Over	1	11.00	9.30		Maintenance	OTH	NOW	0
														Total Cost NOW			0
														Rehab	CDS	6-10	7,000
														Rehab	RCS	6-10	7,000
														Rehab	RSB	6-10	7,000
														Total Cost 6-10			21,000
														Total Cost			21,000
														Municipal %			100
														MunicipalCost			21,000
														12024	27.00	9TH LINE, LOT 16, CONC VIII/IX	9TH LINE
Rehab	WSO	NOW	52,000														
Rehab Extra	brTCP	NOW	26,000														
Total Cost NOW			156,000														
Rehab	RCS	1-5	7,000														
Rehab	RIR	1-5	7,000														
Rehab	SPI	1-5	7,000														
Rehab Extra	brTCP	1-5	7,000														
Total Cost 1-5			28,000														
Total Cost			184,000														
Municipal %			100														
MunicipalCost			184,000														

- Notes:**
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 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12019	28.00	5TH LINE, LOT 21, CONC IV/V	5TH LINE	0.10 km E of 20TH SIDEROAD	1945 1945	0	0	0	O-WAT, Over	1	5.00	9.60		Rehab	IAG	NOW	91,000
														Rehab	RIR	NOW	13,000
														Rehab Extra	brDET	NOW	13,000
														Total Cost NOW			117,000
														Rehab	RSB	1-5	39,000
														Total Cost 1-5			39,000
														Rehab	CDS	6-10	7,000
														Rehab	RCS	6-10	7,000
														Total Cost 6-10			14,000
														Total Cost			170,000
Municipal %			100														
MunicipalCost			170,000														
12010	29.00	20TH SIDEROAD, LOT 20/21, CON XIII	20TH SIDEROAD	0.70 km N of 13TH LINE	1960 1960	0	0	0	O-WAT, Over	1	10.20	7.40		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	RIR	6-10	7,000
														Rehab	RRW	6-10	7,000
														Rehab Extra	brMB	6-10	4,000
														Rehab Extra	brTCP	6-10	7,000
														Rehab Extra	brWPTF	6-10	7,000
														Total Cost 6-10			32,000
														Total Cost			117,000
Municipal %			100														
MunicipalCost			117,000														
12059	30.00	GILROY BRIDGE, LOT 1, CONC XII	ADJALA-TECUMSETH TOWNLINE	0.20 km N of 12TH LINE	1956 1956	0	0	0	O-WAT, Over	1	11.40	8.60		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	EIR	1-5	52,000
														Rehab	RIR	1-5	65,000
														Rehab	WSR	1-5	7,000
														Rehab Extra	brENV	1-5	20,000
														Rehab Extra	brTCP	1-5	39,000
														Total Cost 1-5			183,000
														Total Cost			268,000
Municipal %			100														
MunicipalCost			268,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations				
						L3t	L2t	L1t						Category	Type	TON	Cost(1)	
12044	31.00	5TH LINE, LOT 7, CONC IV/V	5TH LINE	0.80 km E of TOTTENHAM ROAD	1955 1955	0	0	0	O-WAT, Over	1	11.00	7.30		Maintenance	OTH	1-5	0	
																Total Cost	1-5	0
														Rehab	CDS	6-10	7,000	
														Rehab	RSB	6-10	7,000	
														Rehab Extra	brMB	6-10	1,000	
														Rehab Extra	brWPTF	6-10	7,000	
																Total Cost	6-10	22,000
																Total Cost		22,000
																Municipal %		100
																MunicipalCost		22,000
12023	32.00	10TH LINE, LOT 16, CONC IX/X	10TH LINE	0.63 km E of 15TH SIDEROAD	1960 1960	0	0	0	O-WAT, Over	1	7.20	7.40		Maintenance	OTH	NOW	0	
														Rehab	IAG	NOW	78,000	
														Rehab Extra	brTCP	NOW	7,000	
																Total Cost	NOW	85,000
														Rehab	RCS	1-5	7,000	
														Rehab	RIR	1-5	7,000	
														Rehab Extra	brTCP	1-5	7,000	
																Total Cost	1-5	21,000
														Rehab	RSB	6-10	7,000	
																Total Cost	6-10	7,000
																Total Cost		113,000
																Municipal %		100
																MunicipalCost		113,000
12026	33.00	BROOM BRIDGE, LOT 18, CONC IX/X	10TH LINE	1.20 km E of 15TH SIDEROAD	1960 1960	0	0	0	O-WAT, Over	1	5.60	8.50		Rehab	IAG	NOW	78,000	
														Rehab Extra	brTCP	NOW	7,000	
																Total Cost	NOW	85,000
														Rehab	RCS	1-5	7,000	
																Total Cost	1-5	7,000
														Rehab	RSB	6-10	7,000	
																Total Cost	6-10	7,000
																Total Cost		99,000
																Municipal %		100
																MunicipalCost		99,000

- Notes:**
1. Cost includes engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12029	34.00	McCARRON BRIDGE, LOT 7, CONC IX	10TH LINE	1.10 km E of TOTTENHAM ROAD	1957 1957	0	0	0	O-WAT, Over	1	12.60	8.50		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Rehab Extra	brWPTF	NOW	4,000
														Total Cost NOW			89,000
														Rehab	RSB	1-5	7,000
														Total Cost 1-5			7,000
														Rehab	RCS	6-10	7,000
Total Cost 6-10			7,000														
Total Cost													103,000				
Municipal %													100				
MunicipalCost													103,000				
12037	35.00	7TH LINE, LOT 7, CONC VI/VII	7TH LINE	0.80 km E of TOTTENHAM ROAD	1930 1930	0	0	0	U-RWY, Under	1	8.10	5.50		Const	REB	NOW	65,000
														Const	RSL	NOW	1,001,000
														Const Extra	bcApp	NOW	1,941,000
														Const Extra	bcDET	NOW	650,000
														Const Extra	bcENV	NOW	65,000
														Const Extra	bcMB	NOW	150,000
														Const Extra	bcROW	NOW	10,000
Total Cost NOW			3,882,000														
Total Cost													3,882,000				
Municipal %													85				
MunicipalCost													3,299,700				
12016	36.00	9TH LINE LOT 21 CONC VIII/IX	9TH LINE	0.40 km E of 20TH SIDEROAD	1960 1960	0	0	0	O-WAT, Over	1	12.00	7.40		Rehab	IAG	NOW	78,000
														Rehab	OTHR	NOW	46,000
														Rehab Extra	brTCP	NOW	26,000
														Total Cost NOW			150,000
														Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Rehab	CDS	6-10	7,000
Rehab	RRW	6-10	7,000														
Total Cost 6-10			14,000														
Total Cost													164,000				
Municipal %													100				
MunicipalCost													164,000				

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12008	37.00	JEBB BRIDGE, LOT 20/21, CONC XII	20TH SIDEROAD	0.68 km N of 12TH LINE	1962 1962	0	0	0	O-WAT, Over	1	13.30	9.90		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	WSR	6-10	7,000
														Rehab Extra	brMB	6-10	4,000
														Total Cost 6-10			11,000
Total Cost			96,000														
Municipal %			100														
MunicipalCost			96,000														
12047	38.00	RANSOM BRIDGE	10TH SIDEROAD	0.25 km N of 4TH LINE	1980 1980	0	0	0	O-WAT, Over	2	9.80	23.10		Rehab	IAG	NOW	78,000
														Rehab	RIR	NOW	13,000
														Rehab Extra	brMB	NOW	4,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			102,000
														Rehab	WSR	1-5	7,000
Rehab Extra	brTCP	1-5	7,000														
Total Cost 1-5			14,000														
Total Cost			116,000														
Municipal %			100														
MunicipalCost			116,000														
12003	39.00	MAYNARD BRIDGE, LOT 10/11, CONC XII	10TH SIDEROAD	0.35 km N of 12TH LINE	1968 1968	0	0	0	O-WAT, Over	3	41.20	10.10		Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			7,000
														Rehab	IAG	1-5	78,000
														Rehab	SPI	1-5	20,000
														Total Cost 1-5			98,000
														Rehab	CDS	6-10	13,000
Rehab	RCS	6-10	7,000														
Rehab	RIR	6-10	7,000														
Rehab Extra	brTCP	6-10	7,000														
Total Cost 6-10			34,000														
Total Cost			139,000														
Municipal %			100														
MunicipalCost			139,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12005	40.00	12TH LINE, LOT 12, CONC XI/XII	12TH LINE	1.10 km E of 10TH SIDEROAD	1945 1945	0	0	0	O-WAT, Over	1	21.10	7.40	DCS 15,000	Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	PWP	1-5	64,000
														Rehab	RCS	1-5	7,000
														Rehab Extra	brAPP	1-5	52,000
														Rehab Extra	brDET	1-5	13,000
														Rehab Extra	brENV	1-5	20,000
														Total Cost 1-5			156,000
														Rehab	EIR	6-10	13,000
														Rehab	RIR	6-10	7,000
														Rehab Extra	brTCP	6-10	7,000
														Total Cost 6-10			27,000
Total Cost			268,000														
Municipal %			100														
MunicipalCost			268,000														
11010	41.00	SPRING CREEK PEDESTRIAN BRIDGE	ALBERT STREET SCHOOL SITE, ALLISTON	0.05 km S of ALBERT STREET	1990 1990	0	0	0	O-WAT, Over	1	18.20	1.60	LCE 7,000	Maintenance	OTH	NOW	0
														Total Cost NOW			0
														Rehab	CSS	6-10	65,000
														Total Cost 6-10			65,000
														Total Cost			65,000
Municipal %			100														
MunicipalCost			65,000														
12036	42.00	7TH LINE, LOT 7, CONC VI/VII	7TH LINE	1.10 km E of TOTTENHAM ROAD	1960 1960	0	0	0	O-WAT, Over	1	12.00	7.10		Rehab	IAG	NOW	78,000
														Rehab	WSO	NOW	104,000
														Rehab Extra	brDET	NOW	13,000
														Rehab Extra	brMB	NOW	26,000
														Rehab Extra	brWPTF	NOW	9,000
														Total Cost NOW			230,000
														Maintenance	OTH	6-10	0
														Total Cost 6-10			0
														Total Cost			230,000
Municipal %			100														
MunicipalCost			230,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12050	43.00	20TH SIDEROAD, LOT 20/21, CONC 1	20TH SIDEROAD	0.30 km N of HIGHWAY 9	1985 1985	0	0	0	O-WAT, Over	1	17.50	9.80		Rehab	IAG	NOW	65,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			72,000
														Maintenance	OTH	1-5	0
														Rehab	TJS	1-5	46,000
														Rehab Extra	brTCP	1-5	7,000
														Total Cost 1-5			53,000
														Rehab	CDS	6-10	7,000
														Rehab	WSR	6-10	7,000
														Rehab Extra	brTCP	6-10	7,000
Total Cost 6-10			21,000														
Total Cost													146,000				
Municipal %													100				
MunicipalCost													146,000				
12025	44.00	EAST VARCOE BRIDGE, LOT 16, CONC X/X1	11TH LINE	0.95 km E of 15TH SIDEROAD	1968 1968	0	0	0	O-WAT, Over	1	6.00	8.60		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Total Cost			85,000
Municipal %													100				
MunicipalCost													85,000				
12011	45.00	20TH SIDEROAD, LOT 20/21, CONC XIII	20TH SIDEROAD	0.40 km S of 14TH LINE	1960 1960	0	0	0	O-WAT, Over	1	10.20	7.40		Maintenance	OTH	NOW	0
														Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	EIR	6-10	20,000
														Rehab	RSB	6-10	7,000
														Rehab Extra	brMB	6-10	5,000
														Rehab Extra	brWPTF	6-10	7,000
														Total Cost 6-10			39,000
														Total Cost			
Municipal %													100				
MunicipalCost													124,000				

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12014	46.00	20TH SIDEROAD, LOT 20/21, CONC X	20TH SIDEROAD	0.50 km N of 10TH LINE	1960 1960	0	0	0	O-WAT, Over	1	13.20	7.40		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Rehab	CDS	6-10	7,000
														Rehab	RSB	6-10	7,000
														Total Cost 6-10			14,000
Total Cost			99,000														
Municipal %			100														
MunicipalCost			99,000														
12007	47.00	15TH SIDEROAD, LOT 15/16, CONC XI	15TH SIDEROAD	0.10 km S of 12TH LINE	1930 1995	0	0	0	O-WAT, Over	1	17.00	8.90		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	CRE	6-10	7,000
														Rehab Extra	brTCP	6-10	7,000
														Total Cost 6-10			14,000
														Total Cost			99,000
														Municipal %			100
MunicipalCost			99,000														
12038	48.00	7TH LINE, LOT 5, CONC VI/VII	7TH LINE	0.50 km W of TOTTENHAM ROAD	1965 1965	0	0	0	O-WAT, Over	1	7.20	7.40		Rehab	IAG	NOW	78,000
														Rehab	WSO	NOW	104,000
														Rehab Extra	brMB	NOW	4,000
														Rehab Extra	brTCP	NOW	65,000
														Total Cost NOW			251,000
														Rehab	CDS	6-10	7,000
														Rehab	RSB	6-10	7,000
														Total Cost 6-10			14,000
Total Cost			265,000														
Municipal %			100														
MunicipalCost			265,000														

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12035	50.00	FISH BRIDGE, LOT 5, CONC VIII/IX	9TH LINE	0.50 km W of TOTTENHAM ROAD	1961 1961	0	0	0	O-WAT, Over	1	9.00	8.60		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Rehab	CDS	6-10	7,000
														Rehab	RCS	6-10	3,000
														Rehab	RIR	6-10	7,000
														Rehab	RIR	6-10	3,000
														Rehab Extra	brMB	6-10	1,000
														Rehab Extra	brWPTF	6-10	7,000
														Total Cost 6-10			28,000
Total Cost			113,000														
Municipal %			100														
MunicipalCost			113,000														
12022	51.00	WEST VARCOE BRIDGE (LOT 16, CONC X/XI)	11TH LINE	0.65 km E of 15TH SIDEROAD	1958 1958	0	0	0	O-WAT, Over	1	8.10	8.60		Rehab	IAG	NOW	78,000
														Rehab Extra	brTCP	NOW	7,000
														Total Cost NOW			85,000
														Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Rehab	RCS	6-10	7,000
														Rehab	RIR	6-10	7,000
														Rehab	RSB	6-10	7,000
														Total Cost 6-10			21,000
														Total Cost			106,000
Municipal %			100														
MunicipalCost			106,000														
11002	55.00	JJE McCAGUE BRIDGE	BOYNE STREET, ALLISTON	0.35 km N of VICTORIA STREET EAST	1980 1980	0	0	0	O-WAT, Over	1	33.90	11.30		Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Rehab	EIR	6-10	7,000
														Rehab	RCS	6-10	7,000
														Rehab	RIR	6-10	7,000
														Rehab Extra	brTCP	6-10	7,000
														Total Cost 6-10			28,000
														Total Cost			28,000
														Municipal %			100
														MunicipalCost			28,000

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
11000	57.00	VICTORIA STREET	VICTORIA STREET WEST (HWY #89)	0.05 km W of DUFFERIN STREET		0	0	0	U-RWY, Under	3	999.90	99.90		Const	NEW	NOW	5,980,000
														Const Extra	bcApp	NOW	77,000
														Const Extra	bcDET	NOW	650,000
														Total Cost NOW			6,707,000
														Total Cost			6,707,000
														Municipal %			85
														MunicipalCost			5,700,950
11003	-	SIR FREDRICK BANTING ROAD	SIR FREDRICK BANTING ROAD, ALLISTON	0.20 km N of VICTORIA STREET EAST	2010 2010	0	0	0	O-WAT, Over	1	30.30	13.10					
12027	-	11TH LINE, LOT 15, CONC X/XI	11TH LINE	0.35 km W of 15TH SIDEROAD	2001 2001	0	0	0	O-WAT, Over	1	18.80	6.10		Maintenance	OTH	NOW	0
														Total Cost NOW			0
														Total Cost			0
														Municipal %			100
														MunicipalCost			0
12031	-	10TH LINE, LOT 13, CONC IX/X	10TH LINE	1.40 km E of 10TH SIDEROAD	2008 2008	0	0	0	O-WAT, Over	1	22.80	10.10		Maintenance	OTH	1-5	0
														Total Cost 1-5			0
														Total Cost			0
														Municipal %			100
														MunicipalCost			0
12046	-	4TH LINE, LOT 9, CONC III/IV	4TH LINE	0.85 km W of 10TH SIDEROAD	1955 1955	0	0	0	O-WAT, Over	1	5.80	8.90					
12056	-	2ND LINE, LOT 22, CONC I/II	2ND LINE	0.80 km E of 20TH SIDEROAD	1980 1980	0	0	0	O-WAT, Over	1	5.60	12.20					
12057	-	ADJALA-TECUMSETH T/L, LOT 1, CONC IX	ADJALA-TECUMSETH TOWNLINE	0.30 km N of 9TH LINE	1950 2013	0	0	0	O-WAT, Over	1	24.00	11.00					

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Bridge No.	Priority	Bridge Name	Road Name	Location	Const . Yr Sub/ Super	Ex. Load Posting			Crossing Type	No. of Spans	Deck Length (m)	Deck Width (m)	Eng. Invest.	Improvement Recommendations				
						L3t	L2t	L1t					Type/ Cost (\$)	Category	Type	TON	Cost(1)	
12058	-	ADJALA-TECUMSETH T/L, LOT 1, CONC X	ADJALA-TECUMSETH TOWNLINE	1.15 km N of 10TH LINE	1950 2013	0	0	0	O-WAT, Over	1	15.80	11.00						

Total Cost of Recommended Improvements

(2)

- Notes:**
1. Cost includes engineering and contingency allowances.
 2. Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

BRIDGE IMPROVEMENT NEEDS

The bridges of span 3.0m and greater under the jurisdiction of the Town of New Tecumseth which were inventoried and appraised are listed in the following table. The bridge inventory section table is arranged numerically by bridge number and provides the following information:

- Local bridge number
- Priority Ranking
- The bridge name
- The bridge locations
- The year of substructure and superstructure construction
- Existing Load Limit Postings
- The crossing type
- The number of spans
- The deck length and deck width
- The requirement for any engineering investigation, year and cost
- The recommended type and time of improvement
- The construction cost of the recommended improvement and the total project cost including engineering and contingency allowances

The following abbreviations are used in Table B1:

bc -	Bridge Construction
br -	Bridge Rehabilitation

Crossing Type

O-WAT -	Over Water
U-RWY -	Under Railway
O-RWY -	Over Railway

Engineering Investigations

SEI	Seismic Investigation
UI	Underwater Investigation
RDI	Routine Detailed Inspection
STI	Structure Investigation
RRA	Rehabilitate/Replace Analysis
LCE	Load Capacity Evaluation
C/S	Condition Survey of Other Components
CN/I	Condition Inspection
DART	DART Survey
DCCS	Detail Coating Condition Survey
DCS	Deck Condition Survey
FI	Fatigue Investigation

Type of Improvements

- **Capital Improvements / Construction Extra**

NEW	New bridge
RBC	Replace Bridge with Culvert
REB	Remove Existing Bridge
RNL	Replace Bridge - New location
RSL	Replace Bridge - Same location
TEB	Twin Existing Bridge
bcApp	Approaches
bcTCP	Traffic Control/Protection
bcUTI	Utility Relocation
bcROW	Right of Way costs
bcENV	Environmental Study Costs
bcDET	Detours

- **Bridge Rehabilitation Improvements / Rehabilitation Extra**

RSP -	Rehabilitate Superstructure
RSB -	Rehabilitate Substructure
RRW -	Rehabilitate/Replace Retaining Walls
RIR -	Railing Improvement/Replacement

- **Deck Rehabilitation Improvements**

WSR -	Wearing Surface Rehabilitation
CDR -	Complete Deck Replacement
OWP -	Overlay, Waterproof and Pave
PWP -	Patch, Waterproof and Asphalt Paving
CDS -	Concrete Deck Soffit Repairs
CR -	Concrete Repairs
PDR -	Partial Deck Replacement
RCS -	Rehabilitation/Replacement of Safety Curbs/Sidewalk
TJM -	Transverse Exp Joint Modification
TJR -	Transverse Expansion Joint Replacement
TJS -	Transverse Expansion Joint Seal Replacement
LMC -	Latex Modified Concrete Overlay
LJM -	Longitudinal Exp Joint Modification
LJR -	Longitudinal Exp Joint Replacement
LJS -	Longitudinal Exp Joint Seal Replacement

- **Bridge Coating Improvements**

CSR -	Coating Steel Railings
CSS -	Coating Structural Steel

- **Stream/Waterway Improvements**

SPI - Scour Protection Improvements
C/I - Channel Improvements
C/R - Channel Realignment
EIR - Embankment Improvement/Rehab

- **Safety Improvements**

IAG - Installation of Approach Guide rail
IAB - Install Approach Safety Shape Barrier

- **Non Standard Improvements**

OTHm - Maintenance Improvements
OTHR - Rehabilitation Improvements

- **Costing Category**

PC - Preliminary Cost Estimate

Appendix C

Culvert Improvement Needs

Town of New Tecumseth

Culvert Improvement Needs

Data Last Refreshed January 20, 2015
11:06:53AM

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations													
						L3t	L2t	L1t						Category	Type	TON	Cost(1)										
11004	1.00	DUFFERIN STREET SOUTH	DUFFERIN STREET SOUTH, ALLISTON	0.01 km N of PARSONS ROAD	1970	0	0	0	O-WAT, Over	1	3.30	29.70		Const	cREC	1-5	39,000										
														Const	cRSL	1-5	325,000										
														Const Extra	ccAPP	1-5	91,000										
														Const Extra	ccDET	1-5	13,000										
														Const Extra	ccENV	1-5	13,000										
														Const Extra	ccUTI	1-5	39,000										
														Total Cost												1-5	520,000
Total Cost													520,000														
Municipal %													100														
Municipal Cost													520,000														
12051	2.00	17TH SIDEROAD, LOT 17/18, CONC I	17TH SIDEROAD	0.07 km S of 2ND LINE	1950	0	0	0	O-WAT, Over	1	4.30	25.90		Maintenance	cOTH	1-5	0										
														Total Cost												1-5	0
														Rehab	cRSB	6-10	13,000										
														Rehab	cRSP	6-10	7,000										
														Rehab Extra	crMB	6-10	1,000										
														Total Cost												6-10	21,000
														Total Cost													21,000
Municipal %													100														
Municipal Cost													21,000														
12041	3.00	MILL STREET WEST	MILL STREET WEST, TOTTENHAM	0.35 km W of QUEEN STREET	1955	0	0	0	O-WAT, Over	1	4.30	16.20		Maintenance	cOTH	1-5	0										
														Total Cost												1-5	0
														Rehab	cRSB	6-10	13,000										
														Rehab	cRSP	6-10	7,000										
														Rehab Extra	crMB	6-10	1,000										
														Total Cost												6-10	21,000
														Total Cost													21,000
Municipal %													100														
Municipal Cost													21,000														

- Notes:**
- Individual item costs include engineering and contingency allowances.
 - Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12042	4.00	3RD LINE, LOT 4, CONC II/III	3RD LINE	0.75 km W of TOTTENHAM ROAD	1950	0	0	0	O-WAT, Over	1	6.10	16.70		Rehab	cRSB	6-10	7,000
														Rehab	cRSP	6-10	8,000
														Rehab Extra	crMB	6-10	1,000
														Total Cost 6-10			16,000
Total Cost			16,000														
Municipal %			100														
Municipal Cost			16,000														
12017	5.00	7TH LINE, LOT 22, CONC VI/VII	7TH LINE	1.20 km E of 20TH SIDEROAD	1970	0	0	0	O-WAT, Over	1	4.00	20.30		Rehab	cIAG	NOW	78,000
														Rehab Extra	crMB	NOW	4,000
														Rehab Extra	crTCP	NOW	7,000
														Total Cost NOW			89,000
Total Cost			89,000														
Municipal %			100														
Municipal Cost			89,000														
11012	7.00	CPR PEDESTRIAN UNDERPASS	WELLINGTON STREET, ALLISTON	0.10 km E of CENTRE STREET	1909	0	0	0	T-RWY, Through	1	1.80	8.70		Rehab	cRSB	6-10	7,000
														Total Cost 6-10			7,000
														Total Cost			7,000
Municipal %			100														
Municipal Cost			7,000														
12040	9.00	TECUMSETH HEIGHTS DRIVE	TECUMSETH HEIGHTS DRIVE	0.12 km S of 6TH LINE	1988	0	0	0	O-WAT, Over	3	12.00	17.80		Maintenance	cOTH	1-5	0
														Total Cost 1-5			0
														Rehab	cRSB	6-10	7,000
														Rehab	cRSP	6-10	7,000
														Rehab Extra	crMB	6-10	1,000
														Rehab Extra	crWPTF	6-10	4,000
														Total Cost 6-10			19,000
Total Cost			19,000														
Municipal %			100														
Municipal Cost			19,000														
11005	10.00	BEATTIE AVENUE	BEATTIE AVENUE, ALLISTON	0.10 km S of CUNNINGHAM DRIVE	1980	0	0	0	O-WAT, Over	1	4.10	36.00		Maintenance	cOTH	1-5	0
														Total Cost 1-5			0
														Rehab	cEIR	6-10	7,000
														Total Cost 6-10			7,000
Total Cost			7,000														
Municipal %			100														
Municipal Cost			7,000														

- Notes:**
- Individual item costs include engineering and contingency allowances.
 - Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
12052-1-2	11.00	LILLY STREET EAST	LILLY STREET EAST, BEETON	0.09 km E of CENTRE STREET	1970	0	0	0	O-WAT, Over	4	12.00	13.40		Rehab	clAG	NOW	52,000
														Rehab Extra	crMB	NOW	2,000
														Rehab Extra	crTCP	NOW	7,000
														Total Cost	NOW	61,000	
														Total Cost			61,000
														Municipal %			100
														Municipal Cost			61,000
11007	14.00	EIGHTH AVENUE	EIGHTH AVENUE, ALLISTON	0.03 km S of TUPPER BOULEVARD	1996	0	0	0	O-WAT, Over	5	10.80	24.00		Rehab	crSB	6-10	13,000
														Total Cost	6-10	13,000	
														Total Cost			13,000
														Municipal %			100
														Municipal Cost			13,000
11008	19.00	CHURCH STREET SOUTH	CHURCH STREET SOUTH, ALLISTON	0.27 km N of ALDERSON COURT	1994	0	0	0	O-WAT, Over	1	4.50	25.00		Rehab	clAG	NOW	52,000
														Rehab Extra	crTCP	NOW	7,000
														Total Cost	NOW	59,000	
														Maintenance	cOTH	1-5	0
														Total Cost	1-5	0	
														Total Cost			59,000
														Municipal %			100
														Municipal Cost			59,000
12053	20.00	ENGLISH DRIVE	ENGLISH DRIVE, BEETON	0.09 km E of CENTRE STREET NORTH	1993	0	0	0	O-WAT, Over	4	12.20	18.30		Rehab	clAG	NOW	52,000
														Rehab Extra	crTCP	NOW	7,000
														Total Cost	NOW	59,000	
														Maintenance	cOTH	1-5	0
														Total Cost	1-5	0	
														Total Cost			59,000
														Municipal %			100
														Municipal Cost			59,000
12062	21.00	7TH LINE, LOT 22, CONC V/VI/VII	7TH LINE	0.54 km E of 20TH SIDEROAD	2007	0	0	0	O-PED, Over	1	3.70	30.00		Rehab	clAG	NOW	52,000
														Rehab Extra	crTCP	NOW	7,000
														Total Cost	NOW	59,000	
														Total Cost			59,000
														Municipal %			100
														Municipal Cost			59,000

- Notes:**
- Individual item costs include engineering and contingency allowances.
 - Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations			
						L3t	L2t	L1t						Category	Type	TON	Cost(1)
11006	-	KING STREET SOUTH	KING STREET SOUTH, ALLISTON	0.05 km N of BEATTIE AVENUE	1980	0	0	0	O-WAT, Over	1	4.10	22.20					
11009	-	INDUSTRIAL PARKWAY/SPRING CREEK	INDUSTRIAL PARKWAY, ALLISTON	0.51 km S of YOUNG STREET	1998	0	0	0	O-WAT, Over	5	10.80	23.20					
12048	-	4TH LINE, LOT 14, CONC III/IV	4TH LINE	1.90 km E of 10TH SIDEROAD	2002	0	0	0	O-WAT, Over	1	5.10	16.00					
12052-2-2	-	LILLY STREET EAST	LILLY STREET EAST, BEETON	0.09 km E of CENTRE STREET	1993	0	0	0	O-WAT, Over	4	12.00	18.60					
12055	-	15TH SIDEROAD, LOT 15/16, CONC V	15TH SIDEROAD	0.50 km N of 5TH LINE	1960	0	0	0	O-WAT, Over	1	3.40	15.90					
12060	-	15TH SIDEROAD, LOT 15/16, CONC I	15TH SIDEROAD	0.30 km N of HIGHWAY 9	1970	0	0	0	O-WAT, Over	1	3.30	22.70					
12061	-	20TH SIDEROAD, LOT 20/21, CONC IV	20TH SIDEROAD	0.60 km N of 4TH LINE	1970	0	0	0	O-WAT, Over	1	3.40	14.50					

- Notes:**
- Individual item costs include engineering and contingency allowances.
 - Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

Culvert No.	Priority	Culvert Name	Road Name	Location	Const Yr	Ex. Load Posting			Crossing Type	No. of Cells	Total Span (m)	Culvert Length (m)	Eng. Invest. Type/ Cost (\$)	Improvement Recommendations				
						L3t	L2t	L1t						Category	Type	TON	Cost(1)	
12066	-	Parsons Road Culvert	Parsons Road, Alliston	0.1 km S of Albert Street	1990	0	0	0	O-WAT, Over	1	3.10	15.30						
12067	-	10th Sideroad Culvert	10th Sideroad	0.27 km N of 14th Line	2013	0	0	0	O-WAT, Over	1	3.00	55.00						
12068	-	Boyne Street Arch Culvert	Boyne Street, Alliston	0.06 km N of Shephard Avenue	2011	0	0	0	O-WAT, Over	1	5.00	17.00						
12069	-	Boyne Street High Flow Relief Culvert	Boyne Street, Alliston	0.07 km N of Shephard Avenue	2011	0	0	0	O-WAT, Over	1	3.00	17.00						

Total Cost of Recommended Improvements

951,000.00⁽²⁾

- Notes:**
- Individual item costs include engineering and contingency allowances.
 - Total cost includes cost of engineering investigations. Total cost is not adjusted for owner share.

CULVERT IMPROVEMENT NEEDS

The culverts of span 3.0m and greater under the jurisdiction of the Town of New Tecumseth which were inventoried and appraised are listed in the following table. The culvert inventory section table is arranged numerically by culvert number and provides the following information:

- Local culvert number
- Priority Ranking
- The culvert name
- The culvert road name
- The culvert location
- The year of construction
- The year extended
- Load Limit Postings
- The crossing type
- The number of cells
- The total span in metres
- The culvert length
- The requirement for any engineering investigation, year and cost
- The recommended type and time of improvement
- The construction cost of the recommended improvement and the total project cost including engineering and contingency allowances

The following abbreviations are used in Table C1:

c -	Culvert
cc -	Culvert Construction
cr -	Culvert Rehabilitation

Crossing Type

O-WAT -	Over Water
O-PED -	Over Pedestrian Walkway

Culvert Type

CPS-PA/ -	Corrugated Plate Steel Pipe Arch
CPS-PR/ -	Corrugated Plate Steel Pipe Round
CPS-PAS -	Corrugated Plate Steel Pipe Arch with Stiffener and/or Buttress
CPS-PHS -	Corrugated Plate Steel Pipe Horizontal Ellipse with Stiffener and/or Buttress
CPS-PHE -	Corrugated Plate Steel Pipe Horizontal Ellipse
CPR-OTH -	Cast-in-Place Reinforced Concrete Other
CPR-BOX -	Cast-in-Place Reinforced Concrete Box
CPR-FRA -	Cast-in-Place Replacement Concrete Frame
PCC-PR/ -	Precast Concrete Pipe Round
CST-PA/ -	Corrugated Steel Pipe Arch
CST-PR/ -	Corrugated Steel Pipe Round

Type of Improvements

- **Capital Improvements / Construction Extra**

cREC -	Remove Existing Culvert
cRSL -	Replace Culvert, Same Location
ccAPP -	Approaches
ccDET -	Detours
ccTCP -	Traffic Control / Protection
ccUTI -	Utility Relocation
ccROW -	ROW Costs
ccENV -	Environmental Study

- **Rehabilitation Improvements / Rehabilitation Extra**

cRRW -	Rehabilitate/Replace Retaining Walls/Wingwalls
cRSP -	Rehabilitate Superstructure
cRSB -	Rehabilitate Substructure
cRIO -	Rehabilitate Inlet/Outlet Treatment
cRCF -	Rehabilitate Culvert Floor/Invert
crAPP -	Approaches
crDET -	Detours
crTCP -	Traffic Control / Protection
crUTI -	Utility Relocation
crROW -	ROW Costs
crENV -	Environmental Study

- **Stream/Waterway Improvements**

cEIR -	Embankment Improvements/Rehabilitation
cSPI -	Scour Protection Improvements
cC/R -	Channel Realignment
cCH/I -	Channel Improvements

- **Safety Improvements**

clAG -	Installation of Approach Guide rail
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- **Costing Category**

cPC -	Preliminary Cost Estimate
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Appendix D

Bridge and Culvert Management Program

BRIDGE AND CULVERT MANAGEMENT SYSTEM

In order to provide the Town of New Tecumseth with a means to evaluate future maintenance, repair and replacement needs based on updated inspection information, a Bridge & Culvert Management System was developed. The results produced by the program were determined from the following input data for each structure:

- Bridge (or Culvert) Needs ratings (MCR and PCR) identified in Section G of the Municipal Bridge (or Culvert) Appraisal Sheets.
- Functional needs identified in Section H of the Municipal Bridge (or Culvert) Appraisal Sheets.
- Load posting.
- Vehicular traffic at the structure site (AADT).

The following discusses the methodology used in the Bridge & Culvert Management System to determine various condition and appraisal ratings:

1. Material Condition and Performance Condition Ratings (MCR & PCR) in Section G of the Appraisal sheets for bridges and culverts have been input for each structure. The Ontario Structure Inspection Manual (published by the Ministry of Transportation, Ontario), requires that inspectors assign condition ratings from 1 to 6 with 6 representing the best condition. Additional ratings of 9, 0 and Y may also be used. The following table presents the rating values assumed by the program when these ratings are assigned:

MCR OR PCR RATING	ASSUMED RATING VALUE
9 - Component cannot be inspected	6
0 - Component does not exist; Need does not exist	6
Y - Component does not exist; Need exists	1.5

2. The Functional Needs information is included in Section H of the Municipal Bridge and Culvert Appraisal sheets. In cases where data is missing, the program assumes values. Rating values are determined by comparing the Existing Condition information with the Minimum Tolerable requirement. Table 1 presents the ratings assigned by the program for bridges, when the Existing Condition is worse than the Minimum Tolerable. Table 2 presents the assigned rating values for culverts.

Table 1 Functional Needs Ratings for Bridges

Functional Needs	Ratings	
	If Adequate	If Not Adequate
Road Over		
Travel Deck Width	6	2
Level of Service	6	2
Min.Vert. Clearance	6	1
Sidewalks	6	2
Road Under		
Surface Width	6	2
Level of Service	6	2
Min.Vert. Clearance	6	1
Sidewalks	6	2

Table 2 Functional Needs Ratings for Culverts

Functional Needs	Ratings	
	If Adequate	If Not Adequate
Road Over		
Platform Width	6	2
Level of Service	6	2
Roadside Safety	6	1
Road Through		
Surface Width	6	2
Level of Service	6	2
Min.Vert. Clearance	6	1
Sidewalks	6	2

3. For each rated structural component, an Overall Component Condition Rating is calculated by the program, using the following weight factors for the input MCR and PCR.

Overall Component Condition Rating Weights	
MCR	0.4
PCR	0.6

4. Load Posting Ratings are assigned using the following comparisons:

Condition	Assigned Load Posting Rating
If Load Posting is greater than 20 tonnes	6
If Load Posting > 18 tonnes and # 20 tonnes	5
If Load Posting > 16 tonnes and # 18 tonnes	4.5
If Load Posting > 14 tonnes and # 16 tonnes	4
If Load Posting > 12 tonnes and # 14 tonnes	3
If Load Posting > 10 tonnes and # 12 tonnes	2
If Load Posting # 10 tonnes	1

Appendix E

Structure Appraisal Sheets