



# Township of Wellington North

P.O. Box 125 • 7490 Sideroad 7 W • Kenilworth • ON • N0G 2E0

## Regular Meeting of Council

Monday, December 2, 2013

Following Committee of Adjustment

Municipal Office Council Chambers, Kenilworth

## AGENDA

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# Township of Wellington North

P.O. Box 125 • 7490 Sideroad 7 W • Kenilworth • ON • N0G 2E0

**TO:** MAYOR AND MEMBERS OF COUNCIL  
MEETING OF DECEMBER 2, 2013

**FROM:** Deb Zehr  
Director of Public Works

**SUBJECT:** Road Needs Assessment and Bridges/Culvert Appraisals

## RECOMMENDATION

THAT Council accept the attached reports as information, for circulation purposes, and comments be forwarded to the Director of Public Works by Dec. 6, 2013.

## PREVIOUS REPORTS PERTINENT TO THIS MATTER

K. Smart Associates Limited – Township of Wellington North 2011 Structure - 6m Span and Greater.

## BACKGROUND

The Township of Wellington North awarded the RFP for engineering services to BM Ross to complete a Road Needs Study and Bridge/Culvert Appraisal to assist with the development of the Township's Asset Management Plan and to make informed decisions about the Township's assets and future capital planning.

This information has been received and the results were unexpected. At the present time staff is meeting with the engineering firm to discuss how to more closely match the report to our future roads/bridges/culvert plans. Prioritizing projects with water/sewer and roads needs to be taken into consideration, as does the Township's limited financial resources.

**PREPARED BY:**

**RECOMMENDED BY:**

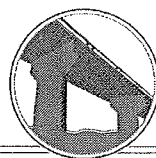
**DEB ZEHR**  
DIRECTOR OF PUBLIC WORKS

**MICHAEL GIVENS**  
CHIEF ADMINISTRATIVE OFFICER

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**MUNICIPALITY OF WELLINGTON NORTH**  
**ROAD MANAGEMENT STUDY**  
**2013**

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**BMROSS**  
engineering better communities

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**MUNICIPALITY OF WELLINGTON NORTH**  
**ROAD MANAGEMENT STUDY**  
**2013**

November 12, 2013

**B. M. ROSS AND ASSOCIATES LIMITED**  
Engineers and Planners  
62 North Street  
Goderich, Ontario N7A 2T4  
Phone: (519) 524-2641  
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[www.bmross.net](http://www.bmross.net)

File No. 13144

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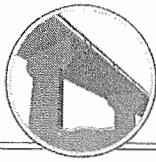
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## **TOWNSHIP OF WELLINGTON NORTH ROAD MANAGEMENT STUDY - 2013**

### **1. PURPOSE**

Roads, like anything else, suffer from the effects of “wear and tear”. Unless the road system is adequately maintained by appropriate rehabilitation strategies at the proper time, it will quickly deteriorate to the point where major expenditures will be required to bring it back to acceptable standards. This neglect is an unwise and a very expensive management strategy which will result in deteriorating road conditions and higher improvement costs.

The methodology used for this study is in general accordance with that outlined in the Ministry of Transportation’s Method and Inventory Manual for Small Lower Tier Municipalities. To help prioritize the needs, assess the relative level of service being provided and the risks associated with delaying work for each road section BMROSS has incorporated some additional asset management type strategies into the evaluation process. Preventative maintenance methods and other strategies to help minimize the cost to keep the roads at an acceptable level of service are incorporated into the recommendations. An estimate of the financial requirements to address the needs and operating expenses based over the next five and ten year periods is calculated using benchmark costs and compared with the anticipated budget amounts.

A road survey was undertaken late in the summer of 2013.

### **2. SCOPE OF THE STUDY**

This study is to help the Township prioritize the road improvement schedule in a cost effective way and help predict future costs assuming the level of service for existing roads remains constant.

Recommendations and probable costs for work to be completed over the next 5 year time period and anticipated for the 6 to 10 year time period are provided. The work in the 6 to 10 year time period is intended as a guide for future long term budgeting purposes with the understanding that deterioration rates and repair needs are less accurate when making longer term projections. An updated needs study should be completed in five years to re-assess the condition of the roads and the priorities for the subsequent five year period.

In general, the assessment process is divided into the following major components:

1. Prepare an inventory of the road system using information supplied by the Municipality, information from our previous assessment reports and road map network data.
- 2.



2. Review the road sections with a Municipal staff member to assess the condition of the roads, note maintenance problems, preventative maintenance options and collect historical information about repairs to road sections
3. Assemble and summarize the operational cost and typical capital budget information provided by the Municipality.
4. Enter and assemble the information gathered to assess the statistical condition of the roads, issues identified during our review and develop a priority list of the needs.
5. Prepare the road assessment report in draft format, present it to Municipal staff to review for comments then revise and finalize the report as per comments.

Note: Assessment of the road sections for conformance with current provincial standards for horizontal and vertical alignment is beyond the scope of this study. If a road section is reconstructed, conformance should be reviewed during the design stage and the road section should be modified as required. Conformance with standards of the 'uniform traffic control devices (signage) manuals' was not within the scope of this study.

### **3. ASSESSMENT AND PRIORITIZING METHODOLOGY**

The methodology used in this study to assess the condition of the roads and identify when reconstruction needs will theoretically be necessary are generally completed in accordance with the MTO's Method and Inventory Manual. However, the Manual does not provide specific direction on how to assess risk and evaluate the level of service being provided by the asset. Municipalities are required to implement an asset management plan and this information may be helpful when preparing the plan. Also, while the Manual explains how to calculate the theoretical year of need, it does not provide direction on how to prioritize the short-term improvement needs when incorporating risk and how to assess the level of service being provided. An explanation of the procedures used from the Manual, the assumptions used and asset management related strategies used to assess these components and prioritize the improvements are outlined in this section of the report.

#### **3.1 Inventory of Road Sections**

The Township's road system was divided into road sections with each section typically one block long. An inventory of each of these road sections was gathered in the field and entered onto an Appraisal Sheet as shown in Figure No. 1. Copies of the data are provided to the Township in a separate bound document from this report. Each sheet will show two road sections from the database where the information is stored. When Township staff provided previous construction information for the road sections it was included in the road appraisal sheets. This information was used to help determine the proper type of road improvement.

Boundary road sections where costs are shared with the bordering municipality or township have been included in the total inventory length. When costs are provided for these sections the entire expected cost is indicated with no adjustment for division between Municipalities.

Traffic volume ranges were either provided based on traffic count data or estimates provided by Township staff members at the time of the field review.

**Figure No. 1**  
**Sample Road Appraisal Sheet**

Township of Wellington North: Road Appraisal Sheet

<b>Section No.</b>	53	<b>Asset ID.</b>	6714	<b>Recommended Road Improvements and Probable Cost</b>		<b>Inspection Date:</b>	2013-08-15
<b>Road Name</b>	Sideroad 10 West			<b>Spot Road and Drainage (\$,000)</b>	<b>Remarks</b>		
From	Conc 4 S			Maintenance:	0.0		
To	Hwy 6			Maintenance:	0.0		
Former Municipality	Arthur Township			Other:			
Length (m)	2480			Sub-Total 1:	0.0		
Speed Limit (km/h)	80			<b>Specific Maintenance (\$,000)</b>	<b>Remarks</b>		
Boundary Road	No			Maintenance:	0.0		
Road Classification	4			Maintenance:	0.0		
Road Side Environment	Rural			Other:			
Road Maintenance Class	4			Sub-Total 2:	0.0		
Surface Type	Gravel			<b>Construction (\$,000)</b>	<b>Remarks</b>		
Curb:	Type	No.	L (m)	Construction:	669.6	Rural Full Reconstruction - Gravel Surface	
		None	0	0			
Platform Width (m)	8			Additional:	0.0	<input type="checkbox"/> Sidewalk <input type="checkbox"/> Storm <input type="checkbox"/> Minor Storm	
Surface Width (m)	6.7			Other:			
ROW Width (m)	20.1			Sub-Total 3:	669.6	Theoretical Year of Need	> 2023
Winter Maintenance	Yes			<b>Total:</b>	<b>669.6</b>	Proposed Year of Need	> 2023
Traffic Range (vpd)	50-199			<b>Construction History and Sidewalk History</b>			
Traffic Type	Trucks/Farm Equipmen						
Traffic Count Year	2010						
Traffic Count (vpd)	103						
Sidewalks:	Width	Length	Type	Condition			
Road Condition Rating	6.5						
Drainage Rating	Fair						
Other Notes:	Needs to be rebuilt. Has frost boils						

### 3.2 Condition Assessing

During the field review, the characteristics of each road section were recorded and condition scores were assigned to each road section. The condition scores included a condition rating which takes into account the structural condition and integrity of the road and a drainage condition score assessing the suitability of the drainage system for the granular base of the road system. Both of these scores are based on a visual review unless Municipal staff provided additional information about the performance or construction history of the road section.

As outlined in the MTO manual, the Condition Rating number takes into consideration the surface condition and structural adequacy of the road section based on the visual inspection. The rating numbers are assigned on a scale of 1 to 10 with the lower numbers describing those roads with the most structural distress. The higher the rating number, the better the condition of the road. The rating number does not consider the road width, vertical and horizontal alignment, or an assessment of the road to determine if it is constructed in accordance with suitable standards. In this way it is possible to have a road with a condition rating of 10 but the alignment or other components which were not within the scope of this review could be substandard.

Note: for paved roads of either hot mix or surface treatment, the condition rating may be misleading because roads with a poor structural base or inadequate drainage that have been recently resurfaced, will appear to be very good. Additional information on the rating system is contained in the M.T.O. manual.

Drainage of the road base has a significant impact on the performance of the road and the amount of maintenance required. MTO added a drainage condition score to later versions of the Inventory Manual. With this study the drainage condition rating for each road section is scored as good, fair or poor. The score is relative for the drainage system that appears to be provided, when compared against the optimum drainage system. No material samples were collected to assess the drainage capabilities of the granular base in the road and drainage tile along the sides of the roads were not inspected as part of this report. The score is assigned based on information supplied by the Township staff about maintenance activities for the road section and visual observations at the time of review. If there is no evidence to indicate otherwise, it will be assumed that the drainage system is suitable for the road section and a drainage rating of good is assigned.

As per the Manual, road sections with a Condition Rating of 5 or less at the time of this Road Appraisal, or within the five year forecast; theoretically, have a need for improvement. A cost to address this need is calculated for each, except for the roads that have traffic volumes less than 50 AADT. If these lower volume roads have a condition rating of 5 and a gravel surface, only routine maintenance is recommended.

### **3.3 Assumed Life Expectancy of Road Types**

The life of a road is affected by many factors. These include the structural components in the road, the drainage provided for the granular base, the amount and type of traffic on the road and weather conditions. Many of these cannot be precisely determined from a visual inspection. To predict how quickly the condition of the road will deteriorate and when rehabilitation needs will be required, it is necessary to make an assumption about how long each different road type will last.

For high class bituminous pavements (hot mix), the forecast condition rating is adjusted for each year for the remaining life of the pavement prior to resurfacing. The MTO manual suggests that the life of a single lift hot mix pavement is about 10 years. Using this life cycle, the condition rating would drop by 0.5 per year. Starting with a new condition rating of 10, this would mean that the condition rating would drop to 5 and require a resurfaced lift after 10 years. Assuming the road has been constructed appropriately to current cross-section standards, the projected life expectancy of a road system is affected primarily by the amount of traffic on the road. Table 1, shows the assumed life expectancies used for the different types of roads with different traffic ranges.

**Table 1**  
**Assumed Probable Useful Life Expectancy for Roads Based on Traffic Range**

Traffic Range	Surface Type							
	2-HCB	1-HCB	1-LCB	2-LCB	Gravel	Concrete	Unit Paver	Earth
0-49	30	15	6	6	100	30	20	100
50-199	27	13	6	6	100	27	18	100
200-499	24	11	6	6	100	24	16	100
500-999	21	9	6	6	80	21	14	100
>1000	18	7	5	5	60	18	12	100

**Assumptions Used When Predicting the Probable Life Expectancies:**

- The above probable life expectancies would be applicable if the road is constructed to typical standards with a granular base and drainage that is suitable for the application.
- It is anticipated that there may be localized repairs and maintenance work such as crack sealing necessary to achieve the probable life expectancy.
- With the LCB surface it is assumed one lift of LCB would only be applied if two lifts were originally applied and this new lift was applied when the road surface is still in sound condition.
- Shaded cells are typically not recommended, assumed not being used or are not tracked as part of this road study.
- The actual service life of a road section is variable. The Municipality should review statistical information and over time adjust the life expectancies to match experience.

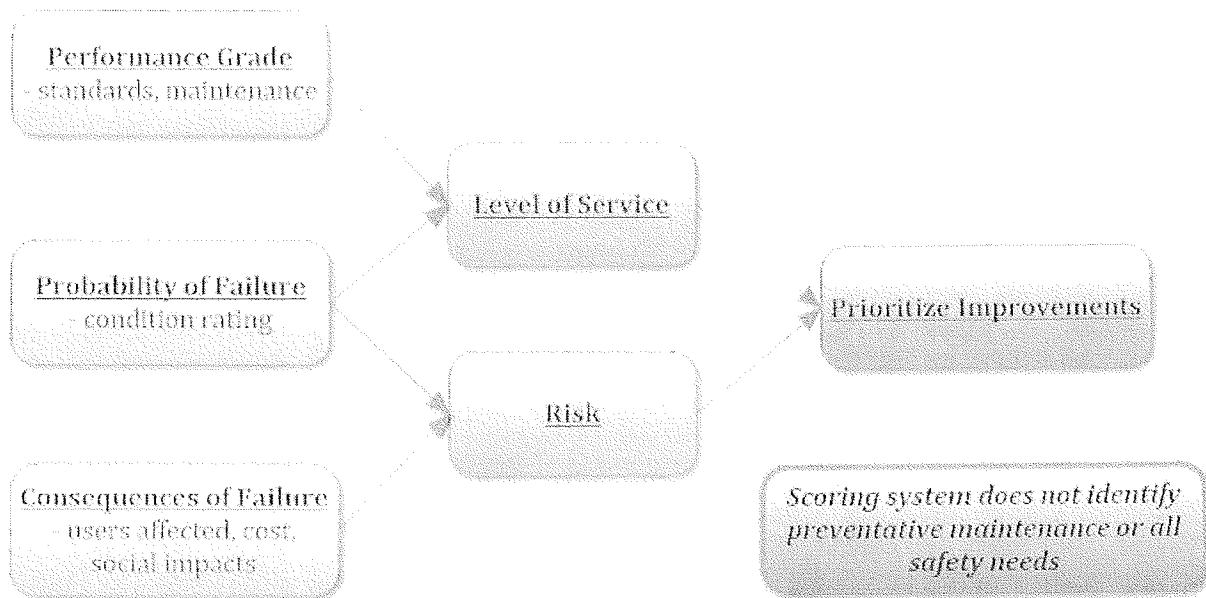
Low Class Bituminous road surfaces (LCB) are generally able to last about six years between re-surfacing. This would be equivalent to a condition rating drop of 0.83 each year. For this study it has been assumed that two lifts of surface treatment will be placed the first time a low class bitumen is applied on a road and a single lift is only applied on an existing LCB road that still has a uniform surface and it appears structurally sound.

For roads with a gravel surface, it is assumed that the future condition rating will deteriorate very slowly due to continued routine, loose top maintenance. The projected life of low volume gravel roads with regular grading and triennial applications of gravel is 100 years and can be more. This would mean that the condition rating for the next five and even ten year period would stay virtually the same for low volume gravel roads. Generally, a gravel road will not be identified as a road section with a need unless it has a current condition rating of 5.

**3.4 Methodology to Prioritize Improvements**

When developing a Road Maintenance Program or Asset Management Plan, we believe there are three key factors that should be taken into consideration; the probability of failure, the consequence of failure and the performance grade. While these factors can include many components, the **probability of failure** factor is generally represented by the condition rating or age of an asset. The **consequence of failure** is a score based on the number of users affected if the asset cannot be used safely or other social impacts and the cost of the asset. The **performance grade** should incorporate the relative maintenance requirements of the asset and a comparison of how the asset was built versus the appropriate design standard for that particular asset. In a simplified way these components are used in this study as illustrated in Figure 2 to develop a theoretical priority score for the improvements.

Figure 2  
Relationship between Data Collected and Calculated Priority Scores



BMROSS has experimented with a scoring system to help prioritize the improvement needs as per the relationship shown in Figure 1 and as a starting point have implemented a suggested scoring and weighing system. For this study, the platform width of the road surface and the drainage condition score was used to calculate a performance grade for each road section. If the platform width of a road section is adequate for its application a score of 1 was applied. If the width was somewhat narrow, a score of 3 was applied and if the road was significantly narrower than it should be, a score of 5 was applied. Similarly the good, fair and poor drainage condition ratings were assigned a score of 1, 3 and 5. The average of the platform width score and drainage score were used in the evaluation.

The condition rating as described earlier was used for the probability of failure factor. Traditionally, the MTO Manual only used the condition rating to determine when it is time to rehabilitate a section of road and the methodology to calculate that process was presented earlier. With this study the theoretical year of need is still calculated and shown on the final results for comparison with the priority rating. When combining the condition rating with the other components to prioritize the work, the condition ratings are changed to a score from 1 to 5 where a road section with a condition rating of 1 is in good condition and 5 is ready for reconstruction.

The consequence of failure value has been calculated based on the assumed or supplied traffic volumes on each road section. A score of 1 means it has an average annual daily traffic value of less than 50 and a road with greater than a 1000 vehicles per day would have a score of 5.

Figure 2 suggests that combining the probability of failure rating with the performance standard gives a level of service value and combining the probability of failure and consequence of failure value yields the risk score for each asset. Although these are just relative numbers, Municipalities may choose to define a targeted average level of service or risk value for their roads system. These may be set at different values for different classes of roads. They can also monitor and track these average scores over time for future comparison purposes. The theoretical priority score for each asset is the combined score of the level of service factor and the risk factor. Defining the desired level of service or acceptable levels of risk are beyond the scope of this study so only the priority score has been presented and used.

The theoretical priority score can be used as a guide to help prioritize improvement work on the assets however there are other factors that should be taken in account when prioritizing the road improvements. Factors including preventative maintenance activities, scheduling tasks to coincide with integrated assets within the same area, financial and timing restraints and other activities taking place within the locale must be considered by Municipal staff. It is impossible to take into account all these other factors in a simplified scoring system. For this reason, the theoretical score of highest priorities established on an individual asset basis should only be used as a guide and the best sequence for improvements should be established by the Municipality. Additional considerations about preventative maintenance will be discussed in Section 7 of this report.

For low traffic volume roads with asphalt surfaces it is recommended that surface reconstruction be delayed until other work is required on streets in the immediate area. Work on urban streets should be co-ordinated with repairs to nearby or adjoining road sections and with other infrastructure, when possible, to minimize costs.

#### **4. SUMMARY OF ROAD DATA COLLECTED**

The road system was assembled on maps, data collected and condition ratings assigned for each of the road sections. A road section was generally defined as an individual block. In rural areas these would have lengths of approximately 2km and run between intersections. Similarly, urban areas and urban fringe road sections were divided up by blocks or in some cases, sections with similar surface characteristics.

Appendix A-1 is a summary of the complete road inventory, listed by road section number. Appendix A-2 gives the same information sorted by road name. For additional data, such as road widths and roadside environment, the individual appraisal sheets must be referenced. The maps enclosed in Appendix B-1 identify the location, name and inventory number and surface type for each section.

Table 2 shows a summary of the lengths of different surfaces currently owned by the Township. Unless directed otherwise we have assumed all HCB roads have two lifts of asphalt. Table 3 summarizes the lengths of different cross section types.

**Table 2**  
**Inventory by Road Surface**

Road Surface Type	Length (Km)
Gravel	236.8
LCB	15.3
HCB - 1 lift	41.0
HCB - 2 lifts	95.6
Unit Pavers	0.0
Concrete	0.0
<b>Total</b>	<b>388.6</b>

**Table 3**  
**Inventory by Road Cross Section**

Roadside Environment	Length (Km)
Urban	26.1
Semi-Urban	20.0
Rural	342.5
<b>Total</b>	<b>388.6</b>

Based on the information in Table 2 and the assumed deterioration rates discussed in Section 3 of this report, the approximate theoretical number of kilometres which should be improved each year in order to maintain the road system is as shown in Table 4. These amounts assume that the Municipality has been improving road sections in accordance with Table 4 continuously since the start of the road system. If this is not the case and less work has been completed in past years or if past work is deteriorating faster than projected, more kilometres must be improved in the future in order to put the road improvements back on track.

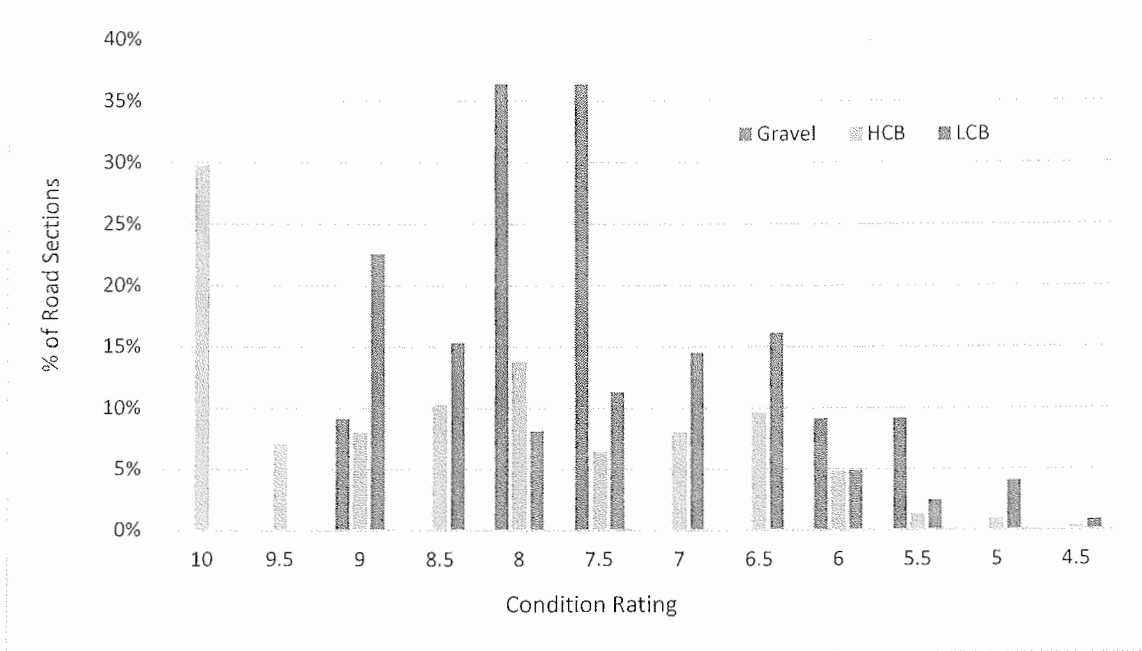
**Table 4**  
**Theoretical Kilometres of Improvements  
Per Year Required to Maintain Road System**

Surface	Assumed Life *	Recommended (km/year)
Gravel	100	2.4
LCB	6	2.6
HCB – 1 lift	15	2.7
HCB – 2 lifts	30	3.2

\* For simplicity the assumed life expectancy used in this Table is the maximum life expectancies listed in Table 1.

The recent road appraisal indicates that the average condition rating of the roads at the time of review was 7.8. When splitting them into different road surface types the weighted average ratings were 8.2 for the HCB roads, 7.9 for the LCB roads and 7.5 for the gravel roads. Figure 3 shows a distribution of the condition ratings for the paved and gravel road surfaces.

**Figure 3  
Condition Rating by Road Surface**



**5. NORMAL MAINTENANCE NEEDS (FIXED COSTS)**

The Municipality’s first consideration for use of road funds is to address the normal maintenance or fixed cost needs. These items include the normal day-to-day activities to keep the road system operational and include road surface grading and re-surfacing of gravel roads, roadside maintenance, safety devices and overhead. Funds must be provided for these fixed costs and winter snow removal costs prior to considering expenditures for a construction program. Based on previous years’ experience, Municipal staff provided annual fixed cost amounts. The expected costs per year, in 2013 dollars, as provided by the Municipality, are shown in Table 5. The amounts should be inflated by an appropriate factor for subsequent years.

**Table 5  
Previous 5 Year Annual Average Expenditures**

Category	Cost/year
Gravel, Re-Surfacing and Dust Control	\$308,000
Routine Road Maintenance	\$82,000
Sub-Total: Maintenance	\$390,000/year
Road and Storm Sewer Construction	\$977,000
<b>Total Road Expenditures</b>	<b>\$1,367,000/year</b>

When upgrades and rehabilitation work on the road sections are delayed, additional maintenance dollars will be required to keep the road network at the desired level of service.



## **6. GENERAL COMMENTS ABOUT THE ROAD SYSTEM**

### **6.1 Paved Roads**

The heart of the Municipality is serviced north/south by Queen's Highway #6 and in the north by #89 for east/west flow. In addition to these roads, County Roads 6, 14 & 16 provide north/south routes for the west side, east central and east parts of the Municipality. The County maintains road 109 in an east/west direction servicing the south area.

There is an extensive network of Municipal paved roads serving both east /west and north/south traffic flows. Most village roads are paved. Most residents live on a paved road or within 2 kilometres of a paved road. It appears that properties in the municipality generally have good access to nearby paved roads.

As noted earlier, the High Class Bituminous roads have a weighted average score of 8.2 and the Low Class Bituminous roads 7.9. This indicates that the paved roads in Wellington North are generally well maintained and provide a good level of service to the community. In order to sustain this standard of service, maintenance programs need to continue at the current level.

### **6.2 Gravel Roads**

The Municipality has an extensive gravel road network which appears to provide a reasonably good level of service for its users. Residents are generally familiar with living near and driving on a gravel surface. The weighted average score for the gravel roads is 7.5. Ratings in this range are intended to indicate that the road will provide a reasonable level of service for low speed agriculture related vehicles and low traffic volumes. There will always be minor deficiencies with gravel surfaced roads due to dust and stone scatter as well as potholing and rutting during certain weather conditions which will prohibit gravel sections from having a condition rating above 9.

The most notable concerns for the gravel roads are areas of occasional flooding, sections which remain soft during the spring melt and locations of frost boils. Some of these concerns can be solved with localized drainage improvements while others can only be fully resolved with a complete reconstruction of the deficient road sections. For most of the gravel sections the short-term spring condition is an inconvenience which can be tolerated.

## **7. SPECIFIED MAINTENANCE AND CONSTRUCTION NEEDS**

For each road section where a need has been identified within the next five years, the type of improvement and its probable cost is shown on the Road Appraisal Sheet. Road improvements are listed under three categories: spot road and drainage; specific maintenance; construction. The specific maintenance activities generally act as preventative maintenance to extend the life of the road before complete reconstruction. An explanation of how they were calculated and strategies that may help to reduce the operating cost of the roads follow.

Adequate drainage of the road base is one of the most important factors to ensure the road structure achieves its expected life. A poorly drained road will become spongy and overtime, silt will pump up into the granular base, further compounding the drainage problem. Cleaning out the ditches may be adequate for many rural sections. Some sections will require sub-drains with outlets or another method like French drains to release trapped water from the road structure.

Good drainage is especially important for asphalt roads. They are expected to provide a smooth running surface for many years without repairs. Freeze/thaw cycles of trapped water under the road causes premature cracking and potholing in the asphalt. Poorly drained gravel roads are less noticeably affected because grading and regular applications of gravel renew the surface.

A good preventative maintenance program is vital to minimize the cost of maintaining a road system by extending its service life.

For gravel roads, regular grading and the triennial application of gravel is a cost effective maintenance strategy. This can be augmented with spot repairs to address localized problems. For low volume gravel roads with traffic below 50 AADT, it is generally recommended that only additional maintenance and possible spot repairs be completed as there is not sufficient traffic to warrant a major reconstruction.

Maintenance of asphalt roads is more costly and requires specialized equipment. Once a road has been paved, the goal is to extend the surface life as long as reasonably possible. Implementation of a crack sealing program can extend pavement life by reducing points of moisture entry into the road base. The best candidates for crack sealing are newer pavements that are beginning to form cracks. Since these road surfaces will generally be in relatively good condition, cracksealing may not have been identified as a need. If the road has alligator cracking, high-density multiple cracking, poor sub-base drainage or structural damage, crack sealing will not solve the problem. In these cases the damage is too severe.

It is also important to consider an overlay on relatively good single course asphalt roads within a few years after initial installation. The additional asphalt thickness will refresh the ride, strengthen the surface, improve the carrying capacity and extend the service life well beyond that of a single mat. This concept takes advantage of the residual strength of the initial mat before it has become weakened with cracking.

Extending the life of a poorer asphalt mat can include the application of a variety of micro-surfacing products, or pulverizing and an overlay to delay reconstruction of the road. Older asphalt surfaces which are in fair condition can be upgraded with an overlay of hotmix asphalt. Older asphalt in poorer condition can be extended for the short term with an application of micro-surfacing. If distortion is minimal, rigid micro-surfacing products work well. If the asphalt is distorted, a flexible product such as tar and chip on the surface may be more suitable. For poor asphalt surfaces with extreme cracking and alligatoring, pulverizing before an overlay of hotmix asphalt is a more cost effective longer term solution. With an asphalt surfaced road that has relatively low traffic volumes it is possible that the road will provide a suitable riding surface with spot repairs. These are all cost effective strategies which can be used to delay full reconstruction provided a true understanding of the problem can be identified and the appropriate strategy is implemented correctly.

The assumed cross sections for rural and urban environments are as shown in BMROSS Drawings 1, 2 and 3 provided in Appendix B-2. These cross sections are the recommended minimum standard that should be used when existing roads are being reconstructed or new roads are being constructed. It may be appropriate to provide a wider surface on roads that experience high traffic volumes and high speeds. Rehabilitation of an existing road may not achieve the recommended cross section.

The probable costs of the various types of road improvements have been prepared using “benchmark” costs based on work done in similar rural Municipalities. Where applicable, the cost of engineering, supervision and some other assumptions have been included. All these costs are based on 2013 prices and should be adjusted using inflation for work in subsequent years. The bench mark costs used in this study are as shown in Table 6. A more detailed breakdown is presented in Appendix C.

**Table 6**  
**Benchmark Construction Costs for Year 2013**

<b>Rural – 6.6 m Surface Width</b>		
1.	Rural road reconstruction to gravel surface includes excavation, minor cut and fill to subgrade, tree removal, ditching, topsoil, 350 mm Granular “B”, 150 mm Granular “A”, application of calcium chloride	\$270/m
2.	Rural road reconstruction to asphalt surface includes excavation, minor cut and fill to subgrade, tree removal, ditching, topsoil, 350 mm Granular “B”, 150 mm Granular “A”, 50mm HL-4	\$370/m
3.	Rural Paving HL-4, 50 mm	\$100/m
4.	Surface treatment - Single surface - Double surface	\$25/m \$50/m
5.	Rural Paving HL-2, including tack coat (32 mm)	\$80/m
6.	Rural Paving HL-4, including tack coat (50 mm)	\$110/m
7.	Pulverize and pave rural and shoulder grading - 50 mm HL-4	\$140/m
8.	Pulverize surface treatment, then 2 lift surface treatment	\$70/m
<b>Semi-Urban – 6.2 m Surface Width</b>		
1.	Semi-urban road reconstruction to asphalt surface. 40 mm HL-4, 300 mm Granular “B”, 150 mm Granular “A”	\$320/m
2.	Semi-urban asphalt resurfacing	\$95/m
3.	Pulverize and pave (40 mm HL-4)	\$140/m
<b>Urban – 8.5 m Surface Width</b>		
1.	Urban road reconstruction to asphalt surface, 40 mm HL-4, 300 mm Granular “B”, 150 mm Granular “A”, concrete curb and gutter	\$680/m
2.	Remove asphalt and re-pave urban, minor curb repairs (40 mm HL-3 & 40 mm HL-4)	\$320/m
3.	Cold planning and resurfacing, 40 mm HL-3	\$210/m
4.	Full depth pulverize and pave 40mm HL-4	\$200/m
5.	Full depth pulverize, widen, and pave Widen to 8.5 m, curb and gutter and 40 mm HL-4	\$380/m
6.	Urban Paving (40 mm HL-4)	\$140/m
7.	Edge cut, curb & gutter, top lift of asphalt	\$370/m

<b>Specific Maintenance</b>	
1. Surface Treatment	\$25/m
2. Gravel resurfacing, 50 mm	\$12/m
3. Ditching Improvements (Full Length)	\$5/m
4. Raise Road Grade, 150 mm with gravel	\$34/m
5. Edge Widening 1 m, each side	\$120/m
6. Clearing along sides of ROW, (3 to 4 m swath)	\$160/m
7. Install subdrain full length, both sides	\$12/m
<b>Spot Maintenance</b>	
1. Culvert Crossing up to 750 mm dia., excluding asphalt	\$4,200
2. Ditching Spot Location up to 200 m	\$1,500
3. Raise Grade Line – Gravel 150 mm (<100 m)	\$4,000
4. Asphalt patch up to 60 m, full road width	\$10,000
5. Patch Road with Gravel Surface up to 60 m	\$9,000
6. Paved Surface up to 60 m	\$15,000
7. Shoulder and Slope Repair (100 m)	\$3,000
8. Storm and sewer cress, 1 CB & Subdrain or similar	\$10,000
9. Guiderail (<50 m one side)	\$5,000
10. Subdrain both sides up to 500 m	\$10,000
<b>Miscellaneous</b>	
1. - 4. Sidewalk (each side), 1.5 m wide, including restoration	
- concrete	\$130/m
- gravel	\$30/m
- asphalt	\$80/m
- unit pavers	\$150/m
5. Storm sewers – 375 mm dia., incl. CBs and MHs	\$480/m
6. Minor storm sewer improvements, subdrains, in-line catchbasins, surface restoration	\$200/m

## 8. RECOMMENDED IMPROVEMENT PROGRAM AND EXPENDITURE FORECAST

It is generally not possible for Municipalities to complete all the identified road section needs within the theoretical year of need. Typically the theoretical needs fluctuate from one year to the next and to stay within the Municipality's budget it is necessary to shift projects from year to year. Also, it is sometimes cost effective and preferred to group adjacent projects together. As funding availability and priorities change, it is expected that it may be necessary to revise the schedule accordingly. If the improvement is significantly delayed beyond the recommended year of need, it may be necessary to change the type of improvement. The proposed year was chosen based on the theoretical year of need, the priority score calculated, attempts to achieve economies of scale by grouping needs by geographic proximity, and to schedule timely improvements to cost effectively extend the life of the roads. The proposed year of need is also adjusted based on consultation with the Municipality.

The proposal improvement program includes sealing several HCB road sections with flexible surface treatment in 2018. It will provide a hard driving surface at a lower cost and maintain good traffic flow until the roads can be more permanently resurfaced. Each of these road sections needs more costly structural and in some areas drainage improvements before a hotmix asphalt surface some be applied.

The tables in Appendix D-1 list the road sections with needs sorted by their proposed year of work and the priority score. Table 7 indicates the expenditure forecast for capital improvements assuming the road work is completed in the proposed year of work is also shown in Appendix E (map). The theoretical years of need resulted in a total of \$10.8 million dollars in needs over the next ten years, of which \$1.2 million is theoretically due in 2014. The proposed schedule assumes that all of the anticipated capital improvement needs will be addressed within the next ten years.

The suggested type of improvement for each road section is listed on the tables provided in the appendix. However, these may be subject to change if other improvements are also required or if this section of road deteriorates at a quicker than expected rate. As more historical information on road sections is accumulated, it should be easier to determine the appropriate type of improvement.

**Table 7**  
**Summary of Capital Improvement Costs by Proposed Year of Need**

Year	Capital Improvements by Current Surface				Total Cost (\$,000)
	Earth/Other (km)	Gravel (km)	LCB (km)	HCB (km)	
2014	0	0	0	1.2	\$1,151
2015	0	0	0.7	1.3	\$1,077
2016	0	0	1.9	1.4	\$1,033
2017	0	0	10.1	1.4	\$1,027
2018	0	0	1.8	16.0	\$1,070
2019	0	0	0.8	6.1	\$1,122
2020	0	0	0	2.9	\$775
2021	0	0	0	4.2	\$714
2022	0	0	0	7.5	\$1,409
2023	0	2.5	0	7.1	\$1,433
Total	0	2.5	15.3	49.2	\$10,811
Average	0.0 km/yr	0.03 km/yr	1.5 km/yr	4.9 km/yr	\$1,081/yr

In Table 4, the theoretical rehabilitation rates calculated based on the assumed life expectancies were 2.4 km/year for gravel, 2.6 km/year for LCB surfaces, and 5.9 km/year for HCB surfaces. Based on the needs identified, the average lengths per year of required road rehabilitation work shown in Table 7 are lower for gravel, LCB and HCB compared to the theoretical rates. These lower rates are the result of introducing a surface treatment program to extend the service life of some HCB roads until the cost of the more permanent surface can be supported. The rates are also lower because of our recommendations to complete localized spot maintenance repairs rather than complete reconstruction work on several gravel road sections. There are 42 km (4.2 km/year) of gravel sections with recommended maintenance work, as presented in Appendix D-2. This work is not included above as a specific year to complete those improvements have not been specified for this work. However, gravel roads with higher traffic volumes and frequent maintenance needs should be reconstructed as the capital budget permits, in order to keep future maintenance costs at manageable levels.

As suggested in the earlier referenced Ministry of Transportation guidelines, capital improvements would generally not be scheduled for roads with traffic volumes less than 50 AADT even if they were identified as a need. It is assumed that additional maintenance work will be performed on low volume roads, as required, within the maintenance budget or when other work is required in the area.

The term “improvements” can be misleading. Often the improvements are actually repairs or reconstruction work on road surfaces. Gravel roads are assumed to maintain their condition rating with the application of normal loose top maintenance work that is not included in the improvement costs. Hot mix and surface treated roads deteriorate with time and usage. The forecast budget only allows for resurfacing existing pavement as it deteriorates to a condition rating of 5 or less. The program does not include any new pavement on gravel roads since this is not a “need” determined by the road appraisal. Some municipalities choose to pave roads with lower traffic volumes because they believe it helps to minimize maintenance costs. However, it is generally only recommended that gravel roads be paved once the traffic volumes exceed 400 vehicles per day because it is usually found to be more costly, over the long term, to construct and maintain paved roads.

When preparing budget costs for the improvements, it was necessary to make some assumptions to simplify this process. Improvements as indicated may not uniformly apply along an entire road section as assumed. For example, it is possible that a road recommended for resurfacing will have spot locations that will require rebuilding of the road base. Prior to road improvements being undertaken a more detailed examination of the road section to be improved should be performed in order to identify possible deviations from the plan.

The Table in Appendix D-1 presents the improvement needs sorted by proposed year of work and the priority score. The total value of anticipated road needs over the next 10 years is \$10.8 million.

A summary of probable annual costs based on the proposed year and scope of work is presented in Table 8.

The total of \$0.58 million in road specific and targeted maintenance needs, as presented in Appendix D-2, when spread evenly over the 10 year expenditure forecast is \$58,400/year. As these improvements are beyond the scope of typical maintenance work, the cost for this work has been included in the construction budget.

The total suggested budget to address all the road improvements costs for each of the next 10 years is presented in Table 8. The total is for road improvements and does not include the annual maintenance type expenditures or snow removal costs

**Table 8**  
**Total Suggested 10 Year Expenditure Forecast for Road Improvements**

Category	2014	2015	2016	2017	2018
Specific Maintenance Needs	\$58,400	\$58,400	\$58,400	\$58,400	\$58,400
Road Improvements	\$1,151,000	\$1,076,800	\$1,033,400	\$1,026,900	\$1,070,000
Suggested Annual Budget	\$1,209,400	\$1,135,200	\$1,091,800	\$1,314,000	\$1,128,400

Category	2019	2020	2021	2022	2023
Specific Maintenance Needs	\$58,400	\$58,400	\$58,400	\$58,400	\$58,400
Road Improvements	\$1,121,700	\$775,100	\$714,100	\$1,408,700	\$1,433,500
Suggested Annual Budget	\$1,180,100	\$833,500	\$772,500	\$1,467,100	\$1,491,900

Note: The above table does not include the costs for any bridge improvements. Any needed bridge improvements should be scheduled in conjunction with the road improvements to minimize the need for duplication of work and to accommodate the costs within the Municipal budget.

Unit costs used in Table 8 are based upon relatively small or individual contracts for each road section. Economies of scale are expected to arise when road sections are grouped into a single contract. The above figures generally assume the rural roads are pulverized and two lifts of asphalt are applied. The near term costs could be reduced if placement of the second lift is delayed 5 years.

## 9. UPDATING THE PLAN

As outlined in the M.T.O. Manual, road management is an ongoing process requiring an annual review of the Municipality's accomplishments, which is a measure of road improvements and the identification of any new needs not originally determined.

After each year of the study, the Municipality should compare the completed road program to that recommended in this report and make the appropriate adjustments. Changes would result because of a deviation from the original plan, where some work was not done because of other critical work or where additional work was accomplished. Furthermore, the condition rating forecast may be adjusted for some roads that did not perform as expected. These conditions will be noticed by the manager or work crews during the year, while carrying out their normal work activities.

It is recommended that every fifth year, the total road system should again be reviewed to establish updated condition ratings and prepare a current needs assessment report. It is also recommended that a list of all improvements be maintained by annually updating the road inventory sheets. Data containing updated information will be useful when determining the most appropriate method of road rehabilitation in the future.

All of the above is respectfully submitted.

B. M. ROSS AND ASSOCIATES LIMITED

Per \_\_\_\_\_  
Ken D. Logtenberg, P. Eng.

Per \_\_\_\_\_  
Bruce Grant, B.E.S, Project Manager

:hv

**APPENDIX A-1**

**INVENTORY SUMMARY SHEET SORTED  
BY ROAD SECTION NUMBER**

DRAFT



**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
1	Line 12	WR 14	Side Rd 3	1786	Rural	LCB - 2 lifts	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
2	Line 12	Side Rd 7	WR 16	1842	Rural	LCB - 2 lifts	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
3	Line 12	Side Rd 3	Side Rd 7	1854	Rural	LCB - 2 lifts	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
4	Line 12	WR 16	Side Rd 13	1846	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
5	Line 12	Side Rd 13	E/W Luther Townline	3601	Rural	Gravel	7.5	5.8	50-199	Trucks/Farm Equipment	8.0
6	Line 10	Side Rd 3	WR 16	3690	Rural	HCB - 2 lifts	8.0	6.5	0-49	Trucks/Farm Equipment	6.0
7	Line 10	WR 14	Side Rd 3	1789	Rural	HCB - 2 lifts	7.5	6.5	0-49	Trucks/Farm Equipment	6.0
8	Line 8	WR 14	Side Rd 3	1790	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	10.0
9	Line 8	Side Rd 3	Side Rd 7	1843	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	10.0
10	Line 8	Side Rd 7	WR 16	1858	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	10.0
11	Line 8	WR 16	Side Rd 13	1843	Rural	LCB - 2 lifts	7.5	6.0	50-199	Trucks/Farm Equipment	8.0
13	Line 6	WR 16	Side Rd 13	1837	Rural	HCB - 2 lifts	7.0	6.0	50-199	Trucks/Farm Equipment	6.5
14	Line 6	Side Rd 7	WR 16	1862	Rural	HCB - 2 lifts	8.0	6.7	200-499	Trucks/Farm Equipment	7.5
15	Line 6	Side Rd 3	Side Rd 7	1845	Rural	HCB - 2 lifts	8.0	6.7	200-499	Trucks/Farm Equipment	10.0
16	Line 6	WR 14	Side Rd 3	1796	Rural	HCB - 2 lifts	8.0	6.7	200-499	Trucks/Farm Equipment	10.0
17	Line 4	WR 14	Side Rd 3	1793	Rural	HCB - 1 lift	8.0	6.5	200-499	Trucks/Farm Equipment	6.5
18	Line 4	Side Rd 3	Side Rd 7	1856	Rural	HCB - 1 lift	8.0	6.5	200-499	Trucks/Farm Equipment	6.5
19	Line 4	Side Rd 7	WR 16	1855	Rural	HCB - 1 lift	8.0	6.5	200-499	Trucks/Farm Equipment	6.5
20	Line 4	WR 16	Side Rd 13	1840	Rural	LCB - 2 lifts	7.0	6.0	200-499	Trucks/Farm Equipment	9.0
21	Line 4	Side Rd 13	Side Rd 15	1865	Rural	LCB - 2 lifts	6.5	5.5	200-499	Trucks/Farm Equipment	8.0
22	Line 4	West of CA Access Road	E/W Luther Townline	1015	Rural	Gravel	5.8	5.8	200-499	Trucks/Farm Equipment	7.0
23	Line 2	Side Rd 15	E/W Luther Townline	1851	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	8.0
24	Line 2	Side Rd 13	Side Rd 15	1854	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	8.0
25	Line 2	WR 16	Side Rd 13	1854	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	8.0
26	Line 2	Side Rd 7	WR 16	1856	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	10.0
27	Line 2	Side Rd 3	Side Rd 7	1862	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	10.0
28	Line 2	WR 14	Side Rd 3	1799	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	10.0
29	Sideroad 3	Line 2	Line 4	2731	Rural	Gravel	7.5	6.0	0		6.5
30	Sideroad 3	Line 4	Line 6	2742	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	6.5
31	Sideroad 3	Line 6	Line 8	2748	Rural	Gravel	5.0	4.0	0-49	Local Traffic	5.0
32	Sideroad 3	Line 8	Line 10	2726	Rural	Gravel	5.0	4.0	0-49	Trucks/Farm Equipment	6.0
33	Sideroad 3	Line 10	Line 12	2728	Rural	Gravel	7.0	5.5	0-49	Trucks/Farm Equipment	8.0
34	Sideroad 3	Line 12	Hwy 89	2726	Rural	Gravel	8.5	7.5	0-49		9.0

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
35	Sideroad 7	Line 12	Hwy 89	2735	Rural	Gravel	8.5	7.5	0-49	Trucks/Farm Equipment	9.0
36	Sideroad 7	Line 6	Line 8	2733	Rural	Gravel	6.0	5.0	0-49	Trucks/Farm Equipment	6.0
37	Sideroad 7	Line 4	Line 6	2744	Rural	Gravel	5.0	4.0	0-49	Local Traffic	5.0
38	Sideroad 7	Line 2	Line 4	2723	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	7.0
39	Sideroad 7	WR 109	Line 2	2751	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	8.0
40	Sideroad 13	Line 12	Hwy 89	2738	Rural	Gravel	7.5	5.5	0-49	Trucks/Farm Equipment	8.0
41	Sideroad 15	Hwy 89	End	815	Rural	Gravel	0.0		0-49	Local Traffic	7.5
42	East-West Luther TL	Hwy 89	Line 12	2741	Rural	Gravel	8.0	7.0	0-49	Local Traffic	9.0
43	East-West Luther TL	Line 12	WR 15	2744	Rural	Gravel	5.0	4.0	0-49	Local Traffic	5.0
44	Sideroad 13	Line 6	Line 8	2714	Rural	Gravel	7.0	5.8	0-49	Trucks/Farm Equipment	7.0
45	Sideroad 13	Line 4	Line 6	2745	Rural	Gravel	7.0	5.5	0-49	Local Traffic	6.5
46	Sideroad 13	Line 2	Line 4	2715	Rural	Gravel	7.5	6.0	50-199	Local Traffic	7.0
47	Sideroad 13	WR 109	Line 2	2753	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	7.0
48	Sideroad 15	Line 2	WR 109	2754	Rural	Gravel	8.5	6.8	0-49	Trucks/Farm Equipment	7.5
49	Sideroad 15	Line 2	Line 4	2717	Rural	Gravel	8.5	6.8	0-49	Trucks/Farm Equipment	8.0
50	East-West Luther TL	Line 4	Line 2	2713	Rural	Gravel	7.5	5.8	50-199	Trucks/Farm Equipment	7.5
51	East-West Luther TL	Line 2	WR 109	2756	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
52	Sideroad 10 East	Hwy 6	WR 14	3647	Rural	Gravel	8.0	6.7	50-199	Trucks/Farm Equipment	9.0
53	Sideroad 10 West	Conc 4 S	Hwy 6	2480	Rural	Gravel	8.0	6.7	50-199	Trucks/Farm Equipment	6.5
54	Sideroad 10 West	Conc 6 S	Conc 4 S	1366	Rural	Gravel	5.0	3.5	0-49	Local Traffic	5.5
55	Sideroad 10 West	End	Conc 6 S	235	Rural	Gravel	5.0	3.5	0-49	Local Traffic	5.5
56	Sideroad 9 West	End	Conc 9	445	Rural	Gravel	5.0	3.5	0-49	Local Traffic	5.0
57	Sideroad 9 West	Conc 9	Conc 7	2705	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	6.5
58	Sideroad 9 West	Conc 7	Conc 6 S	1357	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	6.5
59	Sideroad 9 West	Conc 6 S	Hwy 6	2839	Rural	Gravel	8.0	6.8	0-49	Trucks/Farm Equipment	6.5
60	Sideroad 9 East	Hwy 6	Conc 2	1988	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	9.0
61	Sideroad 9 East	Conc 2	WR 14	2738	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	9.0
62	Sideroad 8 East	Conc 2	WR 14	2734	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
63	Sideroad 8 East	Hwy 6	Conc 2	2825	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
64	Sideroad 8 West	Conc 6 S	Hwy 6	1938	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
65	Sideroad 8 West	Conc 7	Conc 6 S	1357	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	6.0
66	Sideroad 8 West	Conc 9	Conc 7	2709	Rural	Gravel	7.5	6.5	50-199	Trucks/Farm Equipment	7.5
67	Sideroad 7 West	WR 6	Conc 11	2766	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	7.0

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**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
68	Sideroad 7 West	Conc 11	Conc 9	2730	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	6.0
69	Sideroad 7 West	Conc 9	Conc 7	2719	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	9.0
70	Sideroad 7 West	Conc 7	Hwy 6	1859	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	10.0
71	Sideroad 7 East	Hwy 6	Conc 4 N	1669	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
72	Sideroad 7 East	Conc 4 N	Conc 2	2732	Rural	LCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
73	Sideroad 7 East	Conc 2	WR 14	2740	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	7.0
74	Sideroad 6 East	Conc 2	End	249	Rural	Gravel	5.5	4.0	0-49	Local Traffic	8.5
75	Sideroad 6 East	Conc 4 N	Conc 2	2732	Rural	Gravel	7.0	5.6	50-199	Trucks/Farm Equipment	7.0
76	Sideroad 6 East	Hwy 6	Conc 4 N	2920	Rural	Gravel	7.5	6.5	50-199	Local Traffic	7.5
77	Sideroad 6 West	Conc 9	Hwy 6	3175	Rural	Gravel	6.5	6.0	0-49	Trucks/Farm Equipment	6.5
78	Sideroad 5 West	WR 6	Conc 11	2768	Rural	Gravel	7.0	6.5	50-199	Trucks/Farm Equipment	6.5
79	Sideroad 5 West	Conc 11	Conc 9	2727	Rural	Gravel	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
80	Sideroad 5 West	Conc 9	Hwy 6	1892	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
81	Sideroad 5 East	Hwy 6	Conc 6 N	1733	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	9.5
82	Sideroad 5 East	Conc 6 N	Conc 4 N	1497	Rural	HCB - 1 lift	8.0	6.8	200-499	Local Traffic	6.5
83	Sideroad 5 East	Conc 6 N	Conc 4 N	1236	Rural	Gravel	7.5	6.5	200-499	Local Traffic	7.0
84	Sideroad 5 East	Conc 4	Conc 2	2734	Rural	Gravel	8.0	7.0	50-199	Local Traffic	9.0
85	Sideroad 5 East	Conc 2	WR 14	2756	Rural	Gravel	8.0	6.8	50-199	Local Traffic	9.0
86	Sideroad 3 East	Conc 2	WR 14	2751	Rural	Gravel	6.5	5.6	50-199	Trucks/Farm Equipment	8.0
87	Sideroad 3 East	Conc 4 N	Conc 2	2728	Rural	Gravel	7.0	6.0	50-199	Trucks/Farm Equipment	8.0
88	Sideroad 3 East	Conc 6 N	Conc 4 N	2733	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
89	Sideroad 3 East	Conc 8	Conc 6 N	2734	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
90	Sideroad 3 East	Hwy 6	Conc 8	1576	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
91	Sideroad 3 West	Conc 11	Hwy 6	1144	Rural	HCB - 1 lift	8.2	6.7	0		8.0
92	Sideroad 3 West	Sally Street	Conc 11	1372	Semi-Urban	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	7.5
93	Sideroad 3 West	WR 6	Sally St	1414	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
94	Sideroad 2 West	Sally St	Hwy 6	2048	Rural	Gravel	7.5	6.2	50-199	Trucks/Farm Equipment	7.5
95	Sideroad 2 East	Hwy 6	Conc 8	2043	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	7.5
96	Sideroad 2 East	Conc 8	Conc 6 North	2735	Rural	Gravel	7.8	6.8	50-199	Trucks/Farm Equipment	6.5
97	Sideroad 2 East	Conc 6 North	Conc 4 North	2737	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
98	Sideroad 2 East	Conc 4 North	Conc 2	2728	Rural	Gravel	6.8	5.8	50-199	Local Traffic	6.5
99	Sideroad 2 East	Conc 2	WR 14	2772	Rural	Gravel	4.5	3.0	0-49	Local Traffic	5.5
100	6th Line	WR 109	Side Rd 25	1840	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	9.0

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**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
101	5th Line	WR 109	Side Rd 25	2757	Rural	Gravel	7.0	5.8	0-49	Local Traffic	7.5
102	3rd Line	Side Rd 30	Side Rd 25	3069	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	6.5
103	3rd Line	WR 109	Side Rd 30	1407	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	6.5
104	2nd Line	WR 109	Side Rd 30	2257	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	6.5
105	2nd Line	Side Rd 30	Side Rd 25	3069	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	6.5
106	1st Line	Side Rd 30	Side Rd 25	3071	Rural	Gravel	7.5	6.5	0	Trucks/Farm Equipment	6.0
107	1st Line	WR 109	Side Rd 30	3132	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	8.5
108	BaseLine Jones	Hwy 6	300m south of Hwy 6	466	Rural	HCB - 1 lift	8.0	6.7	50-199	Trucks/Farm Equipment	9.5
109	Sideroad 18	Hwy 6	Side Rd 25	1972	Rural	Gravel	6.5	5.5	50-199	Trucks/Farm Equipment	7.0
110	Sideroad 25	Side Rd 18	1st Line	1104	Rural	Gravel	7.5	6.5	50-199	Trucks/Farm Equipment	6.0
111	Sideroad 25	1st Line	2nd Line	1293	Rural	Gravel	8.5	7.0	50-199	Trucks/Farm Equipment	7.0
112	Sideroad 25	2nd Line	3rd Line	1301	Rural	Gravel	8.5	7.0	50-199	Trucks/Farm Equipment	7.0
113	Sideroad 25	3rd Line	WR 16	1289	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
114	Sideroad 25	WR 16	5th Line	1388	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
115	Sideroad 25	5th Line	6th Line	1425	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
116	Sideroad 25	6th Line	7th Line	1389	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
117	Sideroad 25	7th Line	WR 109	1366	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
118	Sideroad 30	3rd Line	WR 16	1286	Rural	Gravel	5.0	4.0	0-49	Local Traffic	4.5
119	Sideroad 30	2nd Line	3rd Line	1321	Rural	Gravel	0.0		0-49	Trucks/Farm Equipment	6.5
120	Sideroad 30	1st Line	2nd Line	1271	Rural	Gravel	7.0	5.5	0-49	Local Traffic	6.0
121	Concession 2	Side Rd 8 E	Side Rd 9 E	1853	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	9.0
122	Concession 2	Side Rd 7 E	Side Rd 8 E	1863	Rural	Gravel	7.5	6.5	50-199	Trucks/Farm Equipment	9.0
123	Concession 2	Side Rd 6 E	Side Rd 7 E	1836	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
124	Concession 2	Side Rd 5 E	Side Rd 6 E	1863	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
125	Concession 2	Side Rd 3 E	Side Rd 5 E	1808	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
126	Concession 2	Side Rd 2 E	Side Rd 3 E	1890	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
127	Concession 2	Hwy 89	Side Rd 2 E	1802	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
128	Concession 4 North	Hwy 89	Side Rd 2 E	1840	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
129	Concession 4 North	Side Rd 2 E	Side Rd 3 E	1841	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
130	Concession 4 North	Side Rd 3 E	Side Rd 5 E	1861	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
131	Concession 4 North	Side Rd 5 E	Side Rd 6 E	1848	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
132	Concession 4 North	Side Rd 6 E	Side Rd 7 E	1915	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	6.5
133	Concession 4 South	Hwy 9	Side Rd 10 W	1618	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	6.5

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
134	Concession 6 South	Side Rd 10 W	WR 109	660	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
135	Concession 6 South	Side Rd 9 W	Side Rd 10 W	1853	Rural	Gravel	8.0	76.8	50-199	Trucks/Farm Equipment	8.5
136	Concession 6 South	Side Rd 8 W	Side Rd 9 W	1857	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	8.5
137	Concession 6 North	Side Rd 3 E	Side Rd 5 E	1853	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.0
138	Concession 6 North	Side Rd 2 E	Side Rd 3 E	1854	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.5
139	Concession 6 North	Side Rd 2 E	Hwy 89	1845	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.5
140	Concession 7	Side Rd 7 W	Side Rd 8 W	1851	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	9.0
141	Concession 7	Side Rd 8 W	Side Rd 9 W	1850	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	9.0
142	Concession 7	Side Rd 9 W	Hwy 9	2131	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	9.0
143	Concession 9	Side Rd 9 W	Hwy 9	1397	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.0
144	Concession 9	Side Rd 8 W	Side Rd 9 W	1851	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
145	Concession 9	Side Rd 7 W	Side Rd 8 W	1849	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
146	Concession 9	Side Rd 6 W	Side Rd 7 W	1852	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
147	Concession 9	Side Rd 5 W	Side Rd 6 W	1851	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
148	Concession 8	Hwy 89	Side Rd 2 E	1847	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
149	Concession 8	Side Rd 2 E	Side Rd 3 E	1852	Rural	Gravel	7.8	6.5	50-199	Trucks/Farm Equipment	8.5
150	Sally Street	Side Rd 2 W	Side Rd 3	1845	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	7.0
151	Concession 11	Side Rd 3 W	Side Rd 4	1854	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	9.0
152	Concession 11	Side Rd 4	Side Rd 5 W	1843	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
153	Concession 11	Side Rd 5 W	Side Rd 7 W	3696	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	10.0
154	Concession 11	Side Rd 7 W	Hwy 9	4377	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	6.5
155	Oak Street	Hwy 89	Centre St	81	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
156	Oak Street	Centre St	Wood St	72	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
157	Wood Street	Maple St	Oak St	99	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
158	Wood Street	WR 14	Maple St	121	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
159	Centre Street	WR 14	Maple St	121	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
160	Centre Street	Maple St	Oak St	100	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
161	Maple Street	Centre St	Wood St	75	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.0
162	Maple Street	Hwy 89	Centre St	77	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.0
163	Maas Park Drive	Hwy 6	Hwy 6	800	Rural	HCB - 2 lifts	8.3	6.8	0-49	Local Traffic	8.0
164	Sideroad 4	WR 6	Conc 11	2773	Rural	Gravel	5.5	3.7	0-49	Local Traffic	5.0
165	Sideroad 4	Conc 11	Hwy 6	2833	Rural	Gravel	7.0	5.2	0-49	Local Traffic	6.5
166	Sideroad 13	Line 8	End	227	Rural	Gravel	6.5	5.0	0-49	Trucks/Farm Equipment	6.5

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**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
167	Maas Park Drive Stub	Hwy 6	End	326	Rural	HCB - 2 lifts	8.3	6.8	0-49	Local Traffic	8.5
168	Line 4	Side Rd 15	West of CA Access Road	833	Rural	LCB - 2 lifts	5.8	5.5	200-499	Local Traffic	8.0
169	Sideroad 3	WR 109	End	420	Rural	Gravel	5.0	4.0	0-49	Local Traffic	7.5
170	BaseLine Jones	300m south of Hwy 6	End	1208	Rural	Gravel	5.0	4.0	50-199	Trucks/Farm Equipment	7.0
300	Smith Street	Preston St	Wells St	481	Urban	HCB - 2 lifts	12.7	11.5	>1000	Trucks/Farm Equipment	9.5
301	Smith Street	Conestoga St	Preston St	430	Urban	HCB - 2 lifts	12.7	11.5	>1000	Trucks/Farm Equipment	8.5
302	Smith Street	Clarke St	Conestoga St	260	Urban	HCB - 2 lifts	12.7	11.5	>1000	Trucks/Farm Equipment	8.0
303	Smith Street	Frederick St	Clarke St	171	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	8.0
304	George Street	Charles St	Fredrick St	258	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	8.0
305	George Street	Charles St	Frederick St	206	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	7.5
306	George Street	Francis St	WR 109	247	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	8.0
307	George Street	Francis St	John St	42	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	7.0
308	Edward Street	Frederick St	Charles St	254	Semi-Urban	HCB - 2 lifts	7.0	7.0	50-199	Local Traffic	10.0
309	Georgina Street	Charles St	Frederick St	258	Semi-Urban	HCB - 2 lifts	6.9	6.9	50-199	Local Traffic	7.0
310	Georgina Street	Isabella St	Charles St	65	Semi-Urban	HCB - 2 lifts	7.0	7.0	50-199	Local Traffic	7.5
311	John Street	George St	Eliza St	25	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	8.0
312	Isabella Street East	Georgina St	John St	184	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.5
313	Isabella Street East	Georgina St	Leonard St	83	Semi-Urban	HCB - 2 lifts	7.5	7.4	50-199	Local Traffic	7.5
314	Isabella Street East	Leonard St	Frederick St	329	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	6.5
315	Isabella Street West	Tucker St	Frederick St	186	Semi-Urban	HCB - 2 lifts	7.0	7.0	0-49	Local Traffic	8.0
316	Eliza Street	Eliza St	Eastview Dr	420	Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	7.0
317	Eliza Street	Eastview Dr	Leonard St	41	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	6.5
318	Eliza Street	Leonard St	Bellefield Cres	95	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	10.0
319	Eliza Street	Bellefield Cres	Carroll St	141	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	6.5
320	Eliza Street	Carroll St	Farrell Ln	82	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	6.0
321	Eliza Street	Farrell Ln	Frederick St	71	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	7.0
326	Wells Street East	Smith St	Domville St	393	Rural	HCB - 2 lifts	9.5	7.6	>1000	Trucks/Farm Equipment	9.0
327	Wells Street West	Hwy 6	End	811	Rural	HCB - 2 lifts	9.5	7.5	500-999	Trucks/Farm Equipment	9.5
328	Domville Street	Wells St	Preston St	256	Rural	HCB - 2 lifts	9.4	7.4	>1000	Trucks/Farm Equipment	8.0
329	Domville Street	Preston St	Andrew St	288	Semi-Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	8.0
330	Domville Street	Andrew St	Conestoga St	141	Semi-Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	7.5
331	Domville Street	Conestoga St	Mccord St	145	Urban	HCB - 2 lifts	10.1	8.9	200-499	Local Traffic	7.5
332	Domville Street	Mccord St	Clarke St	115	Urban	HCB - 2 lifts	10.1	8.9	200-499	Local Traffic	8.0

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
333	Domville Street	Clarke St	Tucker St	176	Urban	HCB - 2 lifts	10.1	8.9	200-499	Local Traffic	8.0
334	Domville Street	Tucker St	Eliza St	265	Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	10.0
335	Gordon Street	Eliza St	End	251	Rural	Gravel	6.0	5.0	0-49	Local Traffic	7.0
336	Farrell Lane	Eliza St	End	124	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.5
337	Carroll Street	Eliza St	End	242	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
338	Bellefield Crescent	Eliza St	Lynwood Pl	156	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	7.0
339	Bellefield Crescent	Lynwood Pl	Eastview Dr	200	Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.0
340	Eastview Drive	Bellefield Cres	End	31	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
341	Eastview Drive	Bellefield St	Lynwood Pl	211	Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	6.5
342	Eastview Drive	Lynwood Pl	Eliza St	79	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	8.0
343	Lynwood Place	Bellefield Cres	Eastview Dr	201	Semi-Urban	HCB - 2 lifts	7.5	7.5	0-49	Local Traffic	7.5
344	Leonard Street	Isabella St	Eliza St	152	Semi-Urban	HCB - 2 lifts	8.6	8.6	50-199	Local Traffic	7.0
345	Charles Street East	Isabella St	Georgina St	49	Semi-Urban	HCB - 2 lifts	7.0	7.0	200-499	Local Traffic	7.5
346	Charles Street East	Georgina St	George St	151	Semi-Urban	HCB - 2 lifts	7.2	7.2	500-999	Local Traffic	5.5
350	Francis Street East	George St	Charles St	313	Semi-Urban	HCB - 2 lifts	7.0	7.0	50-199	Local Traffic	6.5
351	Francis Street West	Charles St	Frederick St	310	Urban	HCB - 2 lifts	9.5	8.6	50-199	Local Traffic	9.5
352	Frederick Street West	Francis St	Edward St	223	Semi-Urban	HCB - 2 lifts	8.5	8.5	50-199	Local Traffic	9.5
353	Frederick Street West	Edward	George St	147	Urban	HCB - 2 lifts	9.6	8.5	200-499	Local Traffic	10.0
359	Tucker Street	Domville St	Eliza St	585	Urban	HCB - 2 lifts	9.6	8.5	200-499	Local Traffic	8.0
360	Tucker Street	Adelaide St	Domville St	99	Semi-Urban	HCB - 2 lifts	8.5	8.5	200-499	Local Traffic	8.0
361	Tucker Street	Adelaide St	Isabella St	45	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	10.0
362	Tucker Street	Walton St	Isabella St	64	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	10.0
363	Tucker Street	Walton St	Fredrick St	254	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	10.0
364	Clarke Street	Smith St	Walton St	279	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	7.5
365	Clarke Street	Walton St	Adelaide St	109	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.0
366	Clarke Street	Adelaide St	Domville St	99	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.0
367	McCord Street	Domville St	End	259	Urban	HCB - 2 lifts	9.5	8.3	50-199	Local Traffic	10.0
368	Conestoga Street North	End	Domville St	244	Urban	HCB - 2 lifts	8.7	7.5	50-199	Local Traffic	9.5
369	Conestoga Street North	Domville St	Adelaide St	95	Semi-Urban	HCB - 2 lifts	8.0	7.5	50-199	Local Traffic	9.0
370	Conestoga Street North	Adelaide St	Walton St	107	Semi-Urban	HCB - 2 lifts	8.0	7.5	200-499	Local Traffic	9.0
371	Conestoga Street North	Walton St	Smith St	281	Urban	HCB - 2 lifts	8.5	9.7	200-499	Local Traffic	8.0
372	Conestoga Street South	Smith St	End	72	Semi-Urban	Gravel	7.5	7.5	0-49	Local Traffic	8.5
373	Walton Street	Clarke St	Conestoga St	257	Urban	HCB - 2 lifts	8.7	7.5	200-499	Local Traffic	8.5

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
374	Walton Street	Tucker St	Clarke St	176	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.5
375	Adelaide Street	Clarke St	Tucker St	178	Semi-Urban	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	6.5
376	Adelaide Street	Conestoga St	Clarke St	261	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	8.0
377	Andrew Street	Domville St	End	242	Urban	HCB - 2 lifts	7.5	8.7	50-199	Local Traffic	8.5
378	Preston Street North	Domville St	Smith St	483	Rural	Gravel	8.7	7.0	200-499	Local Traffic	8.5
379	Preston Street South	Smith St	Duke St	111	Urban	HCB - 2 lifts	8.7	7.5	50-199	Local Traffic	8.5
380	Preston Street South	Duke St	End	220	Semi-Urban	HCB - 2 lifts	9.5	7.5	0-49	Local Traffic	9.0
381	Duke Street	Preston St	End	178	Urban	HCB - 2 lifts	9.7	8.5	0-49	Local Traffic	9.5
382	Schmidt Street	Carroll Street	End	153	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
383	Schmidt Street	Carroll Street	Eastview Drive	212	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
384	Schmidt Street	Eastview Drive	End	173	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
385	Carroll Street	Carroll Street	Schmidt Street	112	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
386	Eastview Drive	Eastview Drive	Schmidt Street	55	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
387	Eastview Drive	Schmidt Street	End	52	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
500	Bentley Street	Hwy 6	Silver St	1077	Rural	Gravel	8.5	7.0	50-199	Local Traffic	9.0
501	Silver Street	Mill St	Bentley St	124	Rural	Gravel	6.5	6.0	0-49	Local Traffic	7.5
502	Page Street	Dublins St	End	79	Semi-Urban	Gravel	6.0	5.0	0-49	Local Traffic	6.5
503	South Water Street	Hwy 6	150m west of Hwy 6	149	Urban	HCB - 2 lifts	8.5	7.8	0-49	Local Traffic	10.0
505	South Water Street	150m west of Hwy 6	End	533	Semi-Urban	Gravel	8.5	8.0	0-49	Local Traffic	9.0
506	Murphy Street	Murphy St	Hwy 6	601	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	8.0
507	Glasgow Street	Clyde St	Murphy St	220	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	8.0
508	Clyde Street	Ayrshire St	Queen St	266	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	7.5
509	Oxford Street	Ayrshire St	End	217	Rural	Gravel	6.5	5.5	0-49	Local Traffic	8.0
510	Ayrshire Street	Clyde St	Oxford St	213	Rural	Gravel	7.0	5.5	0-49	Local Traffic	7.5
511	Ayrshire Street	Queen St E	Clyde St	180	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	8.5
512	Queen Street East	Ayrshire St	York St	574	Rural	HCB - 2 lifts	8.7	7.5	>1000	Trucks/Farm Equipment	10.0
513	Queen Street East	Egremont St S	York St	71	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	8.0
514	Queen Street East	Peel St	Egremont St S	59	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	7.5
515	Queen Street East	Albert St	Peel St	25	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	8.5
516	Queen Street East	Fergus St S	Albert St	107	Urban	HCB - 2 lifts	10.6	9.7	>1000	Trucks/Farm Equipment	8.5
517	Queen Street East	Main	Fergus St S	203	Urban	HCB - 2 lifts	10.6	9.7	>1000	Trucks/Farm Equipment	7.5
518	Queen Street West	Main St S	John St	48	Urban	HCB - 2 lifts	11.5	10.6	>1000	Trucks/Farm Equipment	8.5
519	Queen Street West	John St	James St	131	Urban	HCB - 2 lifts	11.5	10.6	>1000	Trucks/Farm Equipment	8.0

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**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
520	Queen Street West	James St	King St W	124	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
521	Queen Street West	King St W	William St	9	Urban	HCB - 2 lifts	8.7	7.8	500-999	Trucks/Farm Equipment	8.5
522	Queen Street West	William St	Normanby St S	104	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
523	Queen Street West	Normanby St S	Arthur St	34	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
524	Queen Street West	Arthur St	Dublin St	135	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
525	Queen Street West	Wellington St W	Homewood Ave	115	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
526	Queen Street West	Birmingham St W	Homewood Ave	225	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.5
527	Queen Street West	Birmingham	Cork St	134	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.5
528	Queen Street West	Durham St W	Cork St	217	Semi-Urban	HCB - 2 lifts	12.0	7.5	500-999	Trucks/Farm Equipment	8.5
529	Queen Street West	Sligo Rd W	Durham St W	530	Semi-Urban	HCB - 2 lifts	12.0	7.5	>1000	Trucks/Farm Equipment	8.0
530	Lovers Lane	Queen St W	Mid	1417	Rural	HCB - 1 lift	7.8	6.8	200-499	Local Traffic	6.0
531	Lovers Lane	Mid	WR 6	1563	Rural	Gravel	7.0	6.0	200-499	Trucks/Farm Equipment	7.0
532	Cork Street	Queen St W	Waterloo St	201	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
533	Cork Street	Waterloo St	Princess St	199	Semi-Urban	HCB - 2 lifts	8.5	8.0	200-499	Local Traffic	7.0
534	Cork Street	Princess St	Melissa Cres	165	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.0
535	Cork Street	Melissa Cres	Martin St	256	Rural	HCB - 1 lift	9.0	7.5	200-499	Local Traffic	8.0
536	Industrial Drive	Hwy 6	End	478	Urban	HCB - 2 lifts	10.6	9.7	50-199	Trucks/Farm Equipment	10.0
537	Dublin Street	Princess St	Princess Anne St	43	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.5
538	Dublin Street	Prince Charles St	Princess Anne St	78	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.5
539	Dublin Street	Prince Charles St	Waterloo St	84	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	9.0
540	Dublin Street	Waterloo St	Queen St W	201	Semi-Urban	HCB - 2 lifts	7.2	7.2	50-199	Local Traffic	9.0
541	Arthur Street	Queen St W	Waterloo St	199	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.0
542	Arthur Street	Waterloo St	Prince Charles St	88	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.5
543	Arthur Street	Prince Charles St	Princess Anne St	74	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
544	Arthur Street	Princess Anne St	North Water St	126	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.5
545	William Street	North Water St	Waterloo St	209	Semi-Urban	HCB - 2 lifts	7.0	6.5	50-199	Local Traffic	7.5
546	William Street	Waterloo St	Queen St W	197	Semi-Urban	HCB - 2 lifts	8.0	7.0	50-199	Local Traffic	7.0
547	James Street	Queen St W	Waterloo St	200	Semi-Urban	LCB - 2 lifts	7.0	6.5	0-49	Local Traffic	5.5
548	James Street	Waterloo St	North Water St	188	Semi-Urban	LCB - 2 lifts	7.0	6.5	50-199	Local Traffic	7.5
549	John Street	Miller St	North Water St	86	Semi-Urban	HCB - 1 lift	8.0	8.0	50-199	Local Traffic	5.5
550	John Street	Waterloo St	Miller St	76	Semi-Urban	HCB - 1 lift	8.0	7.5	50-199	Local Traffic	6.0
551	John Street	Queen St W	Waterloo St	200	Semi-Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	9.5
552	York Street	Peel St	Queen St E	287	Semi-Urban	LCB - 1 lift	8.0	6.7	50-199	Local Traffic	6.0

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
553	York Street	Parkside Dr	Peel St	132	Semi-Urban	HCB - 2 lifts	8.0	6.7	50-199	Local Traffic	7.0
554	Parkside Street	Queen St E	Grant St	89	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
555	Parkside Street	Grant St	York St	80	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
556	Parkside Street	York St	Main St S	113	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
557	Miller Street	John St	Main St S	238	Semi-Urban	HCB - 1 lift	8.5	7.5	50-199	Local Traffic	6.5
558	Waterloo Street	James St	John St	136	Urban	HCB - 2 lifts	9.6	9.1	50-199	Local Traffic	10.0
559	Waterloo Street	William St	James St	130	Urban	HCB - 2 lifts	9.6	9.1	50-199	Local Traffic	10.0
560	Waterloo Street	Arthur St	William St	138	Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.0
561	Waterloo Street	Dublin St	William St	134	Urban	HCB - 2 lifts	9.6	9.1	50-199	Local Traffic	9.5
562	Waterloo Street	Homewood Ave	Dublin St	116	Urban	HCB - 2 lifts	9.4	8.5	0-49		10.0
563	Waterloo Street	Cork St	Homewood Ave	353	Urban	HCB - 2 lifts	9.4	8.5	50-199		10.0
564	Homewood Avenue	Queen St W	Waterloo St	201	Semi-Urban	HCB - 2 lifts	8.0	6.8	50-199	Local Traffic	9.5
565	Prince Charles Street	Dublin St	Arthur St	132	Semi-Urban	HCB - 2 lifts	6.0	6.0	0-49	Local Traffic	7.0
566	Princess Anne Street	Dublin St	Arthur St	130	Semi-Urban	HCB - 2 lifts	8.0	8.0	0-49	Local Traffic	7.0
567	Princess Street	Jeremys Cres	Dublin St	179	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	7.5
568	Princess Street	Jeremys Cres	Melissa Cres	103	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.5
569	Princess Street	Melissa Cres	Jeremys Cres	25	Urban	HCB - 2 lifts	9.4	8.5	50-199		8.5
570	Princess Street	Cork St	Jeremys Cres	164	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.0
571	Princess Street	Cork St	End	237	Urban	HCB - 2 lifts	10.6	9.7	50-199	Local Traffic	10.0
572	Jeremys Crescent	Princess St	Princess St	300	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.0
573	Melissa Crescent	Princess St	Justins Pl	252	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.5
574	Melissa Crescent	Justins Pl	Cork St	99	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.0
575	Justins Place	Melissa Cres	End	49	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	8.5
576	Martin Street	Cork St	Mill St	48	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
577	Martin Street	Cork St	Dublin St	432	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
578	North Water Street West	Dublin St	Arthur St	172	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
579	North Water Street West	Arthur St	William St	153	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
580	North Water Street West	William St	James St	131	Semi-Urban	HCB - 2 lifts	9.0	7.5	200-499	Local Traffic	6.5
581	North Water Street West	James St	John St	139	Semi-Urban	HCB - 2 lifts	9.0	7.5	200-499	Local Traffic	6.5
582	North Water Street West	John St	Main St S	263	Semi-Urban	HCB - 1 lift	9.0	7.5	200-499	Local Traffic	6.5
583	North Water Street East	Peel St	Hwy 6	256	Semi-Urban	HCB - 1 lift	7.2	6.0	0-49	Local Traffic	6.5
584	Peel Street	York St	Queen St E	168	Semi-Urban	HCB - 1 lift	8.0	7.0	50-199	Local Traffic	7.5
585	Grant Street	Main St S	Parkside Dr	141	Semi-Urban	HCB - 2 lifts	10.0	6.7	200-499	Trucks/Farm Equipment	7.0

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**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
596	SR 41 Southgate	London Rd N	Bend	252	Semi-Urban	HCB - 1 lift	7.0	6.7	0-49	Local Traffic	8.5
597	Wellington Street East	Newfound land St	200m east of Newfoundland	199	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.0
598	Wellington Street East	Church St N	Newfoundland St	89	Semi-Urban	HCB - 2 lifts	11.5	8.5	200-499	Local Traffic	8.5
599	Wellington Street East	Egremont St N	Church St N	231	Urban	HCB - 2 lifts	11.5	8.5	200-499	Local Traffic	9.5
600	Wellington Street East	Fergus St N	Egremont St N	163	Urban	HCB - 2 lifts	10.0	8.5	200-499	Local Traffic	7.0
601	Wellington Street East	Main St N	Fergus St N	163	Urban	HCB - 2 lifts	9.2	9.2	200-499	Local Traffic	9.0
602	Wellington Street West	Main St N	Elgin St N	164	Urban	HCB - 2 lifts	12.0	12.0	200-499	Local Traffic	10.0
603	Wellington Street West	Normanby St N	Elgin St N	166	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
604	Wellington Street West	Colcleugh Ave	Normanby St N	128	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
605	Wellington Street West	Colcleugh Ave	Queen St W	27	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
606	King Street West	Queen St W	Elgin St S	82	Semi-Urban	HCB - 2 lifts	8.8	8.8	200-499	Local Traffic	9.0
607	King Street West	Elgin St S	Main St S	168	Urban	HCB - 2 lifts	11.0	11.0	200-499	Local Traffic	9.0
608	King Street East	Main St S	Fergus St S	163	Urban	HCB - 2 lifts	0.0		200-499	Local Traffic	7.0
609	King Street East	Fergus St S	Egremont St S	162	Semi-Urban	HCB - 2 lifts	8.0	6.5	200-499	Local Traffic	6.5
610	King Street East	Egremont St S	End	88	Urban	HCB - 2 lifts	13.7	13.7	50-199	Local Traffic	10.0
611	Albert Street	Queen St E	Egremont St S	74	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
612	Albert Street	Egremont St S	Church St S	233	Semi-Urban	HCB - 2 lifts	8.3	6.7	200-499	Local Traffic	10.0
613	Albert Street	Church St S	Church Cres	81	Semi-Urban	HCB - 2 lifts	8.3	6.7	200-499	Local Traffic	10.0
614	Albert Street	Church Cres	Forest Glen Cres	13	Semi-Urban	HCB - 2 lifts	8.5	6.7	200-499	Local Traffic	10.0
615	Albert Street	Forest Glen Cres	Oakview Cres	74	Semi-Urban	HCB - 2 lifts	8.5	6.7	200-499	Local Traffic	10.0
616	Albert Street	Oakview Cres	Oakview Cres	82	Semi-Urban	HCB - 2 lifts	8.5	6.7	200-499	Local Traffic	10.0
617	Albert Street	Oakview Cres	London Rd S	228	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
618	Oakview Crescent	Albert St	Albert St	341	Semi-Urban	HCB - 1 lift	7.2	6.3	0-49	Local Traffic	6.0
619	Forest Glen Crescent	Church St S	Albert St	232	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.5
620	Forest Glen Drive	End	Church St S	104	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	6.0
621	Church Street South	End	Forest Glen Cres	45	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.5
622	Church Street South	Forest Glen Cres	Albert St	136	Semi-Urban	HCB - 1 lift	7.7	6.5	50-199	Local Traffic	6.0
623	Church Street South	Church Cres	Albert St	129	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.0
624	Church Street South	Church Cres	End	36	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.0
625	Church Crescent	Albert St	Church St S	199	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.0
626	London Road S	Albert St	End	302	Rural	Gravel	7.5	6.2	0-49	Local Traffic	8.0
627	London Road S	Sarah Rd	Albert St	91	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
628	London Road S	Sarah Rd	Owen Rd	89	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
629	London Road S	Owen Rd	Connery Rd	92	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
630	Connery Road	London Rd S	Kenzie St	235	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
631	Owen Road	London Rd S	Kenzie Rd	148	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
632	Kenzie Road	Sarah Rd	Owen Rd	93	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
633	Sarah Road	End	Kenzie Rd	41	Urban	HCB - 2 lifts	9.2	8.3	0-49	Local Traffic	10.0
634	Sarah Road	London Rd S	Kenzie Rd	145	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	9.5
635	London Road S	King St E	Connery Rd	89	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
636	London Road S	Wellington St E	King St E	197	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
637	London Road North	Durham St E	Birmingham St.	197	Rural	Gravel	8.5	8.0	200-499	Local Traffic	9.0
638	London Road North	Sligo Rd W	Durham St E	313	Rural	Gravel	8.5	8.0	200-499	Local Traffic	9.0
639	Wendys Lane	Sligo Rd E	Cheryl Lynn St	211	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
640	Cheryl Lynn Street	End	Wendys Ln	180	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.5
641	Cheryl Lynn Street	Church St N	Wendys Ln	105	Urban	HCB - 2 lifts	9.5	8.6	50-199	Local Traffic	9.0
642	Erwin Lytle Drive	Sligo Rd E	End	186	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
643	Church Street North	Sligo Rd E	Cheryl Lynn St	214	Urban	HCB - 2 lifts	9.4	8.5	50-199	Trucks/Farm Equipment	6.5
644	Church Street North	Cheryl Lynn St	Durham St E	101	Urban	HCB - 2 lifts	9.5	8.6	200-499	Trucks/Farm Equipment	7.5
645	Church Street North	Durham St E	Birmingham St E	195	Semi-Urban	HCB - 1 lift	9.0	7.0	200-499	Local Traffic	7.5
646	Church Street North	Birmingham St E	Wellington St E	189	Semi-Urban	HCB - 1 lift	8.0	6.3	200-499	Local Traffic	8.0
647	Newfoundland Street	Wellington St E	King St E	186	Semi-Urban	HCB - 1 lift	7.5	6.7	0-49	Local Traffic	8.0
648	King Street East	London Rd S	Newfound land	389	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
649	Egremont Street South	Albert St	Queen St E	64	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
650	Egremont Street South	King St E	Albert St	359	Urban	HCB - 2 lifts	89.4	8.5	50-199	Local Traffic	10.0
651	Egremont Street South	Wellington St E	King St E	192	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
652	Egremont Street North	Birmingham St E	Wellington St E	193	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
653	Egremont Street North	Birmingham St E	Durham St E	193	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
654	Egremont Street North	Durham St E	Byeland Dr	147	Semi-Urban	HCB - 1 lift	7.0	6.0	50-199	Local Traffic	7.0
655	Byeland Drive	Egremont St N	Egremont St N	164	Semi-Urban	HCB - 1 lift	7.0	6.0	50-199	Local Traffic	4.5
656	Byeland Drive	Egremont St N	Egremont St N	240	Semi-Urban	HCB - 1 lift	7.0	6.0	50-199	Local Traffic	6.0
657	Egremont Street North	Sligo Rd E	Byeland Dr	87	Semi-Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
658	Fergus Street North	Sligo Rd E	Durham St E	316	Semi-Urban	HCB - 1 lift	9.0	6.7	50-199	Local Traffic	6.5
659	Fergus Street North	Birmingham St E	Durham St E	191	Semi-Urban	HCB - 2 lifts	10.0	6.7	200-499	Local Traffic	10.0
660	Fergus Street North	Birmingham St E	Wellington St E	193	Semi-Urban	HCB - 2 lifts	10.0	6.7	200-499	Local Traffic	9.5
661	Fergus Street South	Wellington St E	King St E	196	Semi-Urban	HCB - 1 lift	10.0	6.7	200-499	Local Traffic	7.0

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**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
662	Fergus Street South	King St E	Queen St E	310	Urban	HCB - 2 lifts	8.9	8.0	200-499	Local Traffic	10.0
663	Main Street South	North Water St	South Water St	187	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	9.0
664	Main Street South	Parkside Dr	North Water St	80	Urban	HCB - 2 lifts	8.9	8.0	>1000	Trucks/Farm Equipment	8.5
665	Main Street South	Grant St	Parkside Dr	231	Urban	HCB - 2 lifts	9.4	8.5	>1000	Trucks/Farm Equipment	7.0
666	Main Street South	Queen St W	Grant St	110	Urban	HCB - 2 lifts	9.4	8.5	>1000	Trucks/Farm Equipment	7.0
667	Main Street South	King St W	Queen St W	194	Urban	HCB - 2 lifts	13.1	12.2	>1000	Trucks/Farm Equipment	10.0
668	Main Street South	Wellington St W	King St W	193	Urban	HCB - 2 lifts	13.1	12.2	>1000		10.0
669	Main Street North	Birmingham St W	Wellington St W	191	Urban	HCB - 2 lifts	13.1	12.2	>1000	Trucks/Farm Equipment	9.5
670	Main Street North	Birmingham St W	Durham St W	194	Urban	HCB - 2 lifts	10.9	10.0	>1000	Trucks/Farm Equipment	10.0
671	Main Street North	Sligo Rd W	Durham St W	313	Urban	HCB - 2 lifts	11.9	11.0	>1000	Trucks/Farm Equipment	10.0
672	Main Street North	Mount Forest Dr	Sligo Rd W	223	Urban	HCB - 2 lifts	11.9	11.0	>1000	Trucks/Farm Equipment	10.0
673	Mount Forest Drive	Hwy 6	End	357	Rural	HCB - 1 lift	9.0	7.5	50-199	Trucks/Farm Equipment	7.0
674	Foster Street	Sligo Rd W	Durham St W	317	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
675	Elgin Street North	Birmingham St W	Durham St W	192	Urban	HCB - 2 lifts	11.0	6.7	50-199	Local Traffic	8.5
676	Elgin Street North	Birmingham St W	Wellington St W	194	Semi-Urban	HCB - 2 lifts	11.0	6.7	50-199	Local Traffic	9.0
677	Elgin Street South	Wellington St W	King St W	192	Urban	HCB - 2 lifts	11.0	8.0	50-199	Local Traffic	7.0
678	Normandy Street South	Wellington St W	Queen St W	136	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
679	Normanby Street North	Birmingham St W	Wellington St W	192	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
680	Normanby Street North	Birmingham St W	Durham St W	194	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
681	Silverbirch Street	Durham S W	End	144	Urban	HCB - 1 lift	8.2	7.0	50-199	Local Traffic	6.5
682	Weber Street	Birmingham St W	Durham St W	193	Semi-Urban	HCB - 1 lift	7.0	6.5	50-199	Local Traffic	6.0
683	Colcleugh Avenue	Birmingham St W	Wellington St W	212	Semi-Urban	HCB - 2 lifts	7.5	6.5	0-49	Local Traffic	9.0
684	Birmingham Street	Weber St	Queen St	172	Semi-Urban	HCB - 2 lifts	9.0	6.7	50-199	Local Traffic	9.0
685	Birmingham Street	Colcleugh Ave	Weber St	107	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	9.0
686	Birmingham Street	Normandy St N	Colcleugh Ave	145	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	9.0
687	Birmingham Street	Elgin St N	Normanby St N	163	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	10.0
688	Birmingham Street	Main St N	Elgin St N	165	Semi-Urban	HCB - 2 lifts	11.0	6.7	50-199	Local Traffic	9.0
689	Birmingham Street	Fergus St N	Main St N	168	Semi-Urban	HCB - 1 lift	10.0	6.7	200-499	Local Traffic	6.5
690	Birmingham Street	Egremont St N	Fergus St N	158	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
691	Birmingham Street	Church St N	Egremont St N	233	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.0
692	Birmingham Street	End	Church St N	93	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
693	London Road North	Birmingham St..	Wellington St E	186	Rural	Gravel	8.5	8.0	200-499	Local Traffic	9.0
694	Durham Street East	Church St N	Egremont St N	233	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	8.5

**Appendix A1 - Inventory Summary Sheet  
Sorted by Road Section Number**

**Township of Wellington North  
Road Management Study**

Section Number	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
695	Durham Street East	Egremont St N	Fergus St N	164	Semi-Urban	HCB - 1 lift	8.8	6.7	50-199	Local Traffic	6.5
696	Durham Street East	Fergus St N	Main St N	166	Semi-Urban	HCB - 1 lift	8.2	6.5	50-199	Local Traffic	6.0
697	Durham Street West	Elgin St N	Main St N	162	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
698	Durham Street West	Foster St	Elgin St N	80	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
699	Durham Street West	Normandy St N	Foster St	83	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
700	Durham Street West	Silverbirch Ave	Normandy St N	252	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
701	Durham Street West	Perth St	Silverbirch Ave	248	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
702	Durham Street West	Henry St	Perth St	97	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
703	Durham Street West	Queen St W	Henry St	104	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
704	Durham Street West	Henry St	Queen St	153	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
705	Perth Street	Sligo Rd W	Durham St W	316	Semi-Urban	HCB - 1 lift	7.0	6.5	50-199	Local Traffic	6.0
706	Perth Street	End	Sligo Rd W	390	Semi-Urban	HCB - 1 lift	7.0	6.7	50-199	Trucks/Farm Equipment	8.0
707	Victoria Street	End	Sligo Rd W	139	Rural	Gravel	12.0	10.8	50-199	Trucks/Farm Equipment	8.5
708	Ruby's Crescent	Albert St.	Albert St.	401	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
709	SR 41 Southgate	Bend	Sligo Rd E	970	Rural	Gravel	7.0	6.0	0-49	Local Traffic	7.5
710	Wellington Street East	200m east of Newfoundland	London Rd N	193	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
711	Durham Street East	London Rd N	150m east of London Rd	154	Urban	HCB - 2 lifts	8.9	8.0	50-199	Local Traffic	8.5
712	Durham Street East	150m east of London Rd	200m west of Church St N	135	Urban	HCB - 2 lifts	8.9	8.0	50-199	Local Traffic	7.0
713	Durham Street East	200m west of Church St N	Church St N	191	Semi-Urban	Gravel	8.0	8.0	50-199	Local Traffic	8.0

**APPENDIX A-2**

**INVENTORY SUMMARY SHEET  
SORTED BY ROAD NAME**

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**Appendix A2 - Inventory Summary Sheet**  
Sorted by Road Name

**Township of Wellington North**  
**Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
107	1st Line	WR 109	Side Rd 30	3132	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	8.5
106	1st Line	Side Rd 30	Side Rd 25	3071	Rural	Gravel	7.5	6.5	0	Trucks/Farm Equipment	6.0
104	2nd Line	WR 109	Side Rd 30	2257	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	6.5
105	2nd Line	Side Rd 30	Side Rd 25	3069	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	6.5
102	3rd Line	Side Rd 30	Side Rd 25	3069	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	6.5
103	3rd Line	WR 109	Side Rd 30	1407	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	6.5
101	5th Line	WR 109	Side Rd 25	2757	Rural	Gravel	7.0	5.8	0-49	Local Traffic	7.5
100	6th Line	WR 109	Side Rd 25	1840	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	9.0
376	Adelaide Street	Conestoga St	Clarke St	261	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	8.0
375	Adelaide Street	Clarke St	Tucker St	178	Semi-Urban	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	6.5
617	Albert Street	Oakview Cres	London Rd S	228	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
611	Albert Street	Queen St E	Egremont St S	74	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
614	Albert Street	Church Cres	Forest Glen Cres	13	Semi-Urban	HCB - 2 lifts	8.5	6.7	200-499	Local Traffic	10.0
613	Albert Street	Church St S	Church Cres	81	Semi-Urban	HCB - 2 lifts	8.3	6.7	200-499	Local Traffic	10.0
615	Albert Street	Forest Glen Cres	Oakview Cres	74	Semi-Urban	HCB - 2 lifts	8.5	6.7	200-499	Local Traffic	10.0
616	Albert Street	Oakview Cres	Oakview Cres	82	Semi-Urban	HCB - 2 lifts	8.5	6.7	200-499	Local Traffic	10.0
612	Albert Street	Egremont St S	Church St S	233	Semi-Urban	HCB - 2 lifts	8.3	6.7	200-499	Local Traffic	10.0
377	Andrew Street	Domville St	End	242	Urban	HCB - 2 lifts	7.5	8.7	50-199	Local Traffic	8.5
544	Arthur Street	Princess Anne St	North Water St	126	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.5
543	Arthur Street	Prince Charles St	Princess Anne St	74	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
542	Arthur Street	Waterloo St	Prince Charles St	88	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.5
541	Arthur Street	Queen St W	Waterloo St	199	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.0
511	Ayrshire Street	Queen St E	Clyde St	180	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	8.5
510	Ayrshire Street	Clyde St	Oxford St	213	Rural	Gravel	7.0	5.5	0-49	Local Traffic	7.5
170	BaseLine Jones	300m south of Hwy 6	End	1208	Rural	Gravel	5.0	4.0	50-199	Trucks/Farm Equipment	7.0
108	BaseLine Jones	Hwy 6	300m south of Hwy 6	466	Rural	HCB - 1 lift	8.0	6.7	50-199	Trucks/Farm Equipment	9.5
338	Bellefield Crescent	Eliza St	Lynwood Pl	156	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	7.0
339	Bellefield Crescent	Lynwood Pl	Eastview Dr	200	Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.0
500	Bentley Street	Hwy 6	Silver St	1077	Rural	Gravel	8.5	7.0	50-199	Local Traffic	9.0
684	Birmingham Street	Weber St	Queen St	172	Semi-Urban	HCB - 2 lifts	9.0	6.7	50-199	Local Traffic	9.0
687	Birmingham Street	Elgin St N	Normanby St N	163	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	10.0
689	Birmingham Street	Fergus St N	Main St N	168	Semi-Urban	HCB - 1 lift	10.0	6.7	200-499	Local Traffic	6.5
691	Birmingham Street	Church St N	Egremont St N	233	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.0



**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
692	Birmingham Street	End	Church St N	93	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
685	Birmingham Street	Colcleugh Ave	Weber St	107	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	9.0
686	Birmingham Street	Normandy St N	Colcleugh Ave	145	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	9.0
690	Birmingham Street	Egremont St N	Fergus St N	158	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
688	Birmingham Street	Main St N	Elgin St N	165	Semi-Urban	HCB - 2 lifts	11.0	6.7	50-199	Local Traffic	9.0
655	Byeland Drive	Egremont St N	Egremont St N	164	Semi-Urban	HCB - 1 lift	7.0	6.0	50-199	Local Traffic	4.5
656	Byeland Drive	Egremont St N	Egremont St N	240	Semi-Urban	HCB - 1 lift	7.0	6.0	50-199	Local Traffic	6.0
337	Carroll Street	Eliza St	End	242	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
385	Carroll Street	Carroll Street	Schmidt Street	112	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
160	Centre Street	Maple St	Oak St	100	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
159	Centre Street	WR 14	Maple St	121	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
346	Charles Street East	Georgina St	George St	151	Semi-Urban	HCB - 2 lifts	7.2	7.2	500-999	Local Traffic	5.5
345	Charles Street East	Isabella St	Georgina St	49	Semi-Urban	HCB - 2 lifts	7.0	7.0	200-499	Local Traffic	7.5
641	Cheryl Lynn Street	Church St N	Wendys Ln	105	Urban	HCB - 2 lifts	9.5	8.6	50-199	Local Traffic	9.0
640	Cheryl Lynn Street	End	Wendys Ln	180	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.5
625	Church Crescent	Albert St	Church St S	199	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.0
643	Church Street North	Sligo Rd E	Cheryl Lynn St	214	Urban	HCB - 2 lifts	9.4	8.5	50-199	Trucks/Farm Equipment	6.5
646	Church Street North	Birmingham St E	Wellington St E	189	Semi-Urban	HCB - 1 lift	8.0	6.3	200-499	Local Traffic	8.0
644	Church Street North	Cheryl Lynn St	Durham St E	101	Urban	HCB - 2 lifts	9.5	8.6	200-499	Trucks/Farm Equipment	7.5
645	Church Street North	Durham St E	Birmingham St E	195	Semi-Urban	HCB - 1 lift	9.0	7.0	200-499	Local Traffic	7.5
621	Church Street South	End	Forest Glen Cres	45	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.5
622	Church Street South	Forest Glen Cres	Albert St	136	Semi-Urban	HCB - 1 lift	7.7	6.5	50-199	Local Traffic	6.0
624	Church Street South	Church Cres	End	36	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.0
623	Church Street South	Church Cres	Albert St	129	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.0
364	Clarke Street	Smith St	Walton St	279	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	7.5
366	Clarke Street	Adelaide St	Domville St	99	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.0
365	Clarke Street	Walton St	Adelaide St	109	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.0
508	Clyde Street	Ayrshire St	Queen St	266	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	7.5
683	Coldeugh Avenue	Birmingham St W	Wellington St W	212	Semi-Urban	HCB - 2 lifts	7.5	6.5	0-49	Local Traffic	9.0
152	Concession 11	Side Rd 4	Side Rd 5 W	1843	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
153	Concession 11	Side Rd 5 W	Side Rd 7 W	3696	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	10.0
154	Concession 11	Side Rd 7 W	Hwy 9	4377	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	6.5
151	Concession 11	Side Rd 3 W	Side Rd 4	1854	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	9.0

**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
123	Concession 2	Side Rd 6 E	Side Rd 7 E	1836	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
122	Concession 2	Side Rd 7 E	Side Rd 8 E	1863	Rural	Gravel	7.5	6.5	50-199	Trucks/Farm Equipment	9.0
126	Concession 2	Side Rd 2 E	Side Rd 3 E	1890	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
125	Concession 2	Side Rd 3 E	Side Rd 5 E	1808	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
121	Concession 2	Side Rd 8 E	Side Rd 9 E	1853	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	9.0
127	Concession 2	Hwy 89	Side Rd 2 E	1802	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
124	Concession 2	Side Rd 5 E	Side Rd 6 E	1863	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
129	Concession 4 North	Side Rd 2 E	Side Rd 3 E	1841	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
131	Concession 4 North	Side Rd 5 E	Side Rd 6 E	1848	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
132	Concession 4 North	Side Rd 6 E	Side Rd 7 E	1915	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	6.5
130	Concession 4 North	Side Rd 3 E	Side Rd 5 E	1861	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
128	Concession 4 North	Hwy 89	Side Rd 2 E	1840	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
133	Concession 4 South	Hwy 9	Side Rd 10 W	1618	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	6.5
137	Concession 6 North	Side Rd 3 E	Side Rd 5 E	1853	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.0
138	Concession 6 North	Side Rd 2 E	Side Rd 3 E	1854	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.5
139	Concession 6 North	Side Rd 2 E	Hwy 89	1845	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.5
134	Concession 6 South	Side Rd 10 W	WR 109	660	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
136	Concession 6 South	Side Rd 8 W	Side Rd 9 W	1857	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	8.5
135	Concession 6 South	Side Rd 9 W	Side Rd 10 W	1853	Rural	Gravel	8.0	76.8	50-199	Trucks/Farm Equipment	8.5
140	Concession 7	Side Rd 7 W	Side Rd 8 W	1851	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	9.0
141	Concession 7	Side Rd 8 W	Side Rd 9 W	1850	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	9.0
142	Concession 7	Side Rd 9 W	Hwy 9	2131	Rural	Gravel	9.0	8.0	50-199	Trucks/Farm Equipment	9.0
149	Concession 8	Side Rd 2 E	Side Rd 3 E	1852	Rural	Gravel	7.8	6.5	50-199	Trucks/Farm Equipment	8.5
148	Concession 8	Hwy 89	Side Rd 2 E	1847	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	8.5
143	Concession 9	Side Rd 9 W	Hwy 9	1397	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	8.0
147	Concession 9	Side Rd 5 W	Side Rd 6 W	1851	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
145	Concession 9	Side Rd 7 W	Side Rd 8 W	1849	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
144	Concession 9	Side Rd 8 W	Side Rd 9 W	1851	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
146	Concession 9	Side Rd 6 W	Side Rd 7 W	1852	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
368	Conestoga Street North	End	Domville St	244	Urban	HCB - 2 lifts	8.7	7.5	50-199	Local Traffic	9.5
369	Conestoga Street North	Domville St	Adelaide St	95	Semi-Urban	HCB - 2 lifts	8.0	7.5	50-199	Local Traffic	9.0
370	Conestoga Street North	Adelaide St	Walton St	107	Semi-Urban	HCB - 2 lifts	8.0	7.5	200-499	Local Traffic	9.0
371	Conestoga Street North	Walton St	Smith St	281	Urban	HCB - 2 lifts	8.5	9.7	200-499	Local Traffic	8.0

**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
372	Conestoga Street South	Smith St	End	72	Semi-Urban	Gravel	7.5	7.5	0-49	Local Traffic	8.5
630	Connery Road	London Rd S	Kenzie St	235	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
535	Cork Street	Melissa Cres	Martin St	256	Rural	HCB - 1 lift	9.0	7.5	200-499	Local Traffic	8.0
534	Cork Street	Princess St	Melissa Cres	165	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.0
533	Cork Street	Waterloo St	Princess St	199	Semi-Urban	HCB - 2 lifts	8.5	8.0	200-499	Local Traffic	7.0
532	Cork Street	Queen St W	Waterloo St	201	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
333	Domville Street	Clarke St	Tucker St	176	Urban	HCB - 2 lifts	10.1	8.9	200-499	Local Traffic	8.0
332	Domville Street	Mccord St	Clarke St	115	Urban	HCB - 2 lifts	10.1	8.9	200-499	Local Traffic	8.0
330	Domville Street	Andrew St	Conestoga St	141	Semi-Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	7.5
331	Domville Street	Conestoga St	Mccord St	145	Urban	HCB - 2 lifts	10.1	8.9	200-499	Local Traffic	7.5
328	Domville Street	Wells St	Preston St	256	Rural	HCB - 2 lifts	9.4	7.4	>1000	Trucks/Farm Equipment	8.0
334	Domville Street	Tucker St	Eliza St	265	Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	10.0
329	Domville Street	Preston St	Andrew St	288	Semi-Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	8.0
539	Dublin Street	Prince Charles St	Waterloo St	84	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	9.0
538	Dublin Street	Prince Charles St	Princess Anne St	78	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.5
537	Dublin Street	Princess St	Princess Anne St	43	Semi-Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	8.5
540	Dublin Street	Waterloo St	Queen St W	201	Semi-Urban	HCB - 2 lifts	7.2	7.2	50-199	Local Traffic	9.0
381	Duke Street	Preston St	End	178	Urban	HCB - 2 lifts	9.7	8.5	0-49	Local Traffic	9.5
694	Durham Street East	Church St N	Egremont St N	233	Semi-Urban	HCB - 2 lifts	9.2	6.7	50-199	Local Traffic	8.5
711	Durham Street East	London Rd N	150m east of London Rd	154	Urban	HCB - 2 lifts	8.9	8.0	50-199	Local Traffic	8.5
713	Durham Street East	200m west of Church St N	Church St N	191	Semi-Urban	Gravel	8.0	8.0	50-199	Local Traffic	8.0
695	Durham Street East	Egremont St N	Fergus St N	164	Semi-Urban	HCB - 1 lift	8.8	6.7	50-199	Local Traffic	6.5
712	Durham Street East	150m east of London Rd	200m west of Church St N	135	Urban	HCB - 2 lifts	8.9	8.0	50-199	Local Traffic	7.0
696	Durham Street East	Fergus St N	Main St N	166	Semi-Urban	HCB - 1 lift	8.2	6.5	50-199	Local Traffic	6.0
697	Durham Street West	Elgin St N	Main St N	162	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
702	Durham Street West	Henry St	Perth St	97	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
699	Durham Street West	Normandy St N	Foster St	83	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
704	Durham Street West	Henry St	Queen St	153	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
700	Durham Street West	Silverbirch Ave	Normandy St N	252	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
703	Durham Street West	Queen St W	Henry St	104	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
698	Durham Street West	Foster St	Elgin St N	80	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
701	Durham Street West	Perth St	Silverbirch Ave	248	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
386	Eastview Drive	Eastview Drive	Schmidt Street	55	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0

**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
341	Eastview Drive	Bellefield St	Lynwood Pl	211	Urban	HCB - 2 lifts	8.0	8.0	50-199	Local Traffic	6.5
342	Eastview Drive	Lynwood Pl	Eliza St	79	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	8.0
340	Eastview Drive	Bellefield Cres	End	31	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
387	Eastview Drive	Schmidt Street	End	52	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
42	East-West Luther TL	Hwy 89	Line 12	2741	Rural	Gravel	8.0	7.0	0-49	Local Traffic	9.0
50	East-West Luther TL	Line 4	Line 2	2713	Rural	Gravel	7.5	5.8	50-199	Trucks/Farm Equipment	7.5
43	East-West Luther TL	Line 12	WR 15	2744	Rural	Gravel	5.0	4.0	0-49	Local Traffic	5.0
51	East-West Luther TL	Line 2	WR 109	2756	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
308	Edward Street	Frederick St	Charles St	254	Semi-Urban	HCB - 2 lifts	7.0	7.0	50-199	Local Traffic	10.0
654	Egremont Street North	Durham St E	Byeland Dr	147	Semi-Urban	HCB - 1 lift	7.0	6.0	50-199	Local Traffic	7.0
653	Egremont Street North	Birmingham St E	Durham St E	193	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
657	Egremont Street North	Sligo Rd E	Byeland Dr	87	Semi-Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
652	Egremont Street North	Birmingham St E	Wellington St E	193	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
651	Egremont Street South	Wellington St E	King St E	192	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
650	Egremont Street South	King St E	Albert St	359	Urban	HCB - 2 lifts	89.4	8.5	50-199	Local Traffic	10.0
649	Egremont Street South	Albert St	Queen St E	64	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
675	Elgin Street North	Birmingham St W	Durham St W	192	Urban	HCB - 2 lifts	11.0	6.7	50-199	Local Traffic	8.5
676	Elgin Street North	Birmingham St W	Wellington St W	194	Semi-Urban	HCB - 2 lifts	11.0	6.7	50-199	Local Traffic	9.0
677	Elgin Street South	Wellington St W	King St W	192	Urban	HCB - 2 lifts	11.0	8.0	50-199	Local Traffic	7.0
316	Eliza Street	Eliza St	Eastview Dr	420	Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	7.0
321	Eliza Street	Farrell Ln	Frederick St	71	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	7.0
318	Eliza Street	Leonard St	Bellefield Cres	95	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	10.0
317	Eliza Street	Eastview Dr	Leonard St	41	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	6.5
320	Eliza Street	Carroll St	Farrell Ln	82	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	6.0
319	Eliza Street	Bellefield Cres	Carroll St	141	Urban	HCB - 2 lifts	9.1	7.9	200-499	Local Traffic	6.5
642	Erwin Lytle Drive	Sligo Rd E	End	186	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
336	Farrell Lane	Eliza St	End	124	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.5
658	Fergus Street North	Sligo Rd E	Durham St E	316	Semi-Urban	HCB - 1 lift	9.0	6.7	50-199	Local Traffic	6.5
659	Fergus Street North	Birmingham St E	Durham St E	191	Semi-Urban	HCB - 2 lifts	10.0	6.7	200-499	Local Traffic	10.0
660	Fergus Street North	Birmingham St E	Wellington St E	193	Semi-Urban	HCB - 2 lifts	10.0	6.7	200-499	Local Traffic	9.5
662	Fergus Street South	King St E	Queen St E	310	Urban	HCB - 2 lifts	8.9	8.0	200-499	Local Traffic	10.0
661	Fergus Street South	Wellington St E	King St E	196	Semi-Urban	HCB - 1 lift	10.0	6.7	200-499	Local Traffic	7.0
619	Forest Glen Crescent	Church St S	Albert St	232	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	5.5

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**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
620	Forest Glen Drive	End	Church St S	104	Semi-Urban	HCB - 1 lift	7.7	6.5	0-49	Local Traffic	6.0
674	Foster Street	Sligo Rd W	Durham St W	317	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
350	Francis Street East	George St	Charles St	313	Semi-Urban	HCB - 2 lifts	7.0	7.0	50-199	Local Traffic	6.5
351	Francis Street West	Charles St	Frederick St	310	Urban	HCB - 2 lifts	9.5	8.6	50-199	Local Traffic	9.5
353	Frederick Street West	Edward	George St	147	Urban	HCB - 2 lifts	9.6	8.5	200-499	Local Traffic	10.0
352	Frederick Street West	Francis St	Edward St	223	Semi-Urban	HCB - 2 lifts	8.5	8.5	50-199	Local Traffic	9.5
307	George Street	Francis St	John St	42	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	7.0
304	George Street	Charles St	Fredrick St	258	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	8.0
305	George Street	Charles St	Frederick St	206	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	7.5
306	George Street	Francis St	WR 109	247	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	8.0
310	Georgina Street	Isabella St	Charles St	65	Semi-Urban	HCB - 2 lifts	7.0	7.0	50-199	Local Traffic	7.5
309	Georgina Street	Charles St	Frederick St	258	Semi-Urban	HCB - 2 lifts	6.9	6.9	50-199	Local Traffic	7.0
507	Glasgow Street	Clyde St	Murphy St	220	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	8.0
335	Gordon Street	Eliza St	End	251	Rural	Gravel	6.0	5.0	0-49	Local Traffic	7.0
585	Grant Street	Main St S	Parkside Dr	141	Semi-Urban	HCB - 2 lifts	10.0	6.7	200-499	Trucks/Farm Equipment	7.0
564	Homewood Avenue	Queen St W	Waterloo St	201	Semi-Urban	HCB - 2 lifts	8.0	6.8	50-199	Local Traffic	9.5
536	Industrial Drive	Hwy 6	End	478	Urban	HCB - 2 lifts	10.6	9.7	50-199	Trucks/Farm Equipment	10.0
313	Isabella Street East	Georgina St	Leonard St	83	Semi-Urban	HCB - 2 lifts	7.5	7.4	50-199	Local Traffic	7.5
314	Isabella Street East	Leonard St	Frederick St	329	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	6.5
312	Isabella Street East	Georgina St	John St	184	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.5
315	Isabella Street West	Tucker St	Frederick St	186	Semi-Urban	HCB - 2 lifts	7.0	7.0	0-49	Local Traffic	8.0
547	James Street	Queen St W	Waterloo St	200	Semi-Urban	LCB - 2 lifts	7.0	6.5	0-49	Local Traffic	5.5
548	James Street	Waterloo St	North Water St	188	Semi-Urban	LCB - 2 lifts	7.0	6.5	50-199	Local Traffic	7.5
572	Jeremys Crescent	Princess St	Princess St	300	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.0
311	John Street	George St	Eliza St	25	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	8.0
550	John Street	Waterloo St	Miller St	76	Semi-Urban	HCB - 1 lift	8.0	7.5	50-199	Local Traffic	6.0
551	John Street	Queen St W	Waterloo St	200	Semi-Urban	HCB - 2 lifts	8.0	8.0	200-499	Local Traffic	9.5
549	John Street	Miller St	North Water St	86	Semi-Urban	HCB - 1 lift	8.0	8.0	50-199	Local Traffic	5.5
575	Justins Place	Melissa Cres	End	49	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	8.5
632	Kenzie Road	Sarah Rd	Owen Rd	93	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
609	King Street East	Fergus St S	Egremont St S	162	Semi-Urban	HCB - 2 lifts	8.0	6.5	200-499	Local Traffic	6.5
610	King Street East	Egremont St S	End	88	Urban	HCB - 2 lifts	13.7	13.7	50-199	Local Traffic	10.0
648	King Street East	London Rd S	Newfound land	389	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0

**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
608	King Street East	Main St S	Fergus St S	163	Urban	HCB - 2 lifts	0.0		200-499	Local Traffic	7.0
607	King Street West	Elgin St S	Main St S	168	Urban	HCB - 2 lifts	11.0	11.0	200-499	Local Traffic	9.0
606	King Street West	Queen St W	Elgin St S	82	Semi-Urban	HCB - 2 lifts	8.8	8.8	200-499	Local Traffic	9.0
344	Leonard Street	Isabella St	Eliza St	152	Semi-Urban	HCB - 2 lifts	8.6	8.6	50-199	Local Traffic	7.0
7	Line 10	WR 14	Side Rd 3	1789	Rural	HCB - 2 lifts	7.5	6.5	0-49	Trucks/Farm Equipment	6.0
6	Line 10	Side Rd 3	WR 16	3690	Rural	HCB - 2 lifts	8.0	6.5	0-49	Trucks/Farm Equipment	6.0
2	Line 12	Side Rd 7	WR 16	1842	Rural	LCB - 2 lifts	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
3	Line 12	Side Rd 3	Side Rd 7	1854	Rural	LCB - 2 lifts	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
5	Line 12	Side Rd 13	E/W Luther Townline	3601	Rural	Gravel	7.5	5.8	50-199	Trucks/Farm Equipment	8.0
4	Line 12	WR 16	Side Rd 13	1846	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
1	Line 12	WR 14	Side Rd 3	1786	Rural	LCB - 2 lifts	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
24	Line 2	Side Rd 13	Side Rd 15	1854	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	8.0
26	Line 2	Side Rd 7	WR 16	1856	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	10.0
23	Line 2	Side Rd 15	E/W Luther Townline	1851	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	8.0
25	Line 2	WR 16	Side Rd 13	1854	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	8.0
28	Line 2	WR 14	Side Rd 3	1799	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	10.0
27	Line 2	Side Rd 3	Side Rd 7	1862	Rural	HCB - 2 lifts	7.5	6.0	500-999	Trucks/Farm Equipment	10.0
18	Line 4	Side Rd 3	Side Rd 7	1856	Rural	HCB - 1 lift	8.0	6.5	200-499	Trucks/Farm Equipment	6.5
19	Line 4	Side Rd 7	WR 16	1855	Rural	HCB - 1 lift	8.0	6.5	200-499	Trucks/Farm Equipment	6.5
21	Line 4	Side Rd 13	Side Rd 15	1865	Rural	LCB - 2 lifts	6.5	5.5	200-499	Trucks/Farm Equipment	8.0
168	Line 4	Side Rd 15	West of CA Access Road	833	Rural	LCB - 2 lifts	5.8	5.5	200-499	Local Traffic	8.0
17	Line 4	WR 14	Side Rd 3	1793	Rural	HCB - 1 lift	8.0	6.5	200-499	Trucks/Farm Equipment	6.5
20	Line 4	WR 16	Side Rd 13	1840	Rural	LCB - 2 lifts	7.0	6.0	200-499	Trucks/Farm Equipment	9.0
22	Line 4	West of CA Access Road	E/W Luther Townline	1015	Rural	Gravel	5.8	5.8	200-499	Trucks/Farm Equipment	7.0
13	Line 6	WR 16	Side Rd 13	1837	Rural	HCB - 2 lifts	7.0	6.0	50-199	Trucks/Farm Equipment	6.5
16	Line 6	WR 14	Side Rd 3	1796	Rural	HCB - 2 lifts	8.0	6.7	200-499	Trucks/Farm Equipment	10.0
14	Line 6	Side Rd 7	WR 16	1862	Rural	HCB - 2 lifts	8.0	6.7	200-499	Trucks/Farm Equipment	7.5
15	Line 6	Side Rd 3	Side Rd 7	1845	Rural	HCB - 2 lifts	8.0	6.7	200-499	Trucks/Farm Equipment	10.0
11	Line 8	WR 16	Side Rd 13	1843	Rural	LCB - 2 lifts	7.5	6.0	50-199	Trucks/Farm Equipment	8.0
8	Line 8	WR 14	Side Rd 3	1790	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	10.0
10	Line 8	Side Rd 7	WR 16	1858	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	10.0
9	Line 8	Side Rd 3	Side Rd 7	1843	Rural	HCB - 1 lift	8.2	6.7	50-199	Trucks/Farm Equipment	10.0
638	London Road North	Sligo Rd W	Durham St E	313	Rural	Gravel	8.5	8.0	200-499	Local Traffic	9.0

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**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
637	London Road North	Durham St E	Birmingham St.	197	Rural	Gravel	8.5	8.0	200-499	Local Traffic	9.0
693	London Road North	Birmingham St..	Wellington St E	186	Rural	Gravel	8.5	8.0	200-499	Local Traffic	9.0
626	London Road S	Albert St	End	302	Rural	Gravel	7.5	6.2	0-49	Local Traffic	8.0
628	London Road S	Sarah Rd	Owen Rd	89	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
636	London Road S	Wellington St E	King St E	197	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
627	London Road S	Sarah Rd	Albert St	91	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
629	London Road S	Owen Rd	Connery Rd	92	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
635	London Road S	King St E	Connery Rd	89	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
531	Lovers Lane	Mid	WR 6	1563	Rural	Gravel	7.0	6.0	200-499	Trucks/Farm Equipment	7.0
530	Lovers Lane	Queen St W	Mid	1417	Rural	HCB - 1 lift	7.8	6.8	200-499	Local Traffic	6.0
343	Lynwood Place	Bellefield Cres	Eastview Dr	201	Semi-Urban	HCB - 2 lifts	7.5	7.5	0-49	Local Traffic	7.5
163	Maas Park Drive	Hwy 6	Hwy 6	800	Rural	HCB - 2 lifts	8.3	6.8	0-49	Local Traffic	8.0
167	Maas Park Drive Stub	Hwy 6	End	326	Rural	HCB - 2 lifts	8.3	6.8	0-49	Local Traffic	8.5
670	Main Street North	Birmingham St W	Durham St W	194	Urban	HCB - 2 lifts	10.9	10.0	>1000	Trucks/Farm Equipment	10.0
672	Main Street North	Mount Forest Dr	Sligo Rd W	223	Urban	HCB - 2 lifts	11.9	11.0	>1000	Trucks/Farm Equipment	10.0
669	Main Street North	Birmingham St W	Wellington St W	191	Urban	HCB - 2 lifts	13.1	12.2	>1000	Trucks/Farm Equipment	9.5
671	Main Street North	Sligo Rd W	Durham St W	313	Urban	HCB - 2 lifts	11.9	11.0	>1000	Trucks/Farm Equipment	10.0
666	Main Street South	Queen St W	Grant St	110	Urban	HCB - 2 lifts	9.4	8.5	>1000	Trucks/Farm Equipment	7.0
665	Main Street South	Grant St	Parkside Dr	231	Urban	HCB - 2 lifts	9.4	8.5	>1000	Trucks/Farm Equipment	7.0
667	Main Street South	King St W	Queen St W	194	Urban	HCB - 2 lifts	13.1	12.2	>1000	Trucks/Farm Equipment	10.0
668	Main Street South	Wellington St W	King St W	193	Urban	HCB - 2 lifts	13.1	12.2	>1000		10.0
663	Main Street South	North Water St	South Water St	187	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	9.0
664	Main Street South	Parkside Dr	North Water St	80	Urban	HCB - 2 lifts	8.9	8.0	>1000	Trucks/Farm Equipment	8.5
161	Maple Street	Centre St	Wood St	75	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.0
162	Maple Street	Hwy 89	Centre St	77	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.0
576	Martin Street	Cork St	Mill St	48	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
577	Martin Street	Cork St	Dublin St	432	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
367	McCord Street	Domville St	End	259	Urban	HCB - 2 lifts	9.5	8.3	50-199	Local Traffic	10.0
574	Melissa Crescent	Justins Pl	Cork St	99	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.0
573	Melissa Crescent	Princess St	Justins Pl	252	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.5
557	Miller Street	John St	Main St S	238	Semi-Urban	HCB - 1 lift	8.5	7.5	50-199	Local Traffic	6.5
673	Mount Forest Drive	Hwy 6	End	357	Rural	HCB - 1 lift	9.0	7.5	50-199	Trucks/Farm Equipment	7.0
506	Murphy Street	Murphy St	Hwy 6	601	Rural	HCB - 2 lifts	7.0	6.0	50-199	Local Traffic	8.0



**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
647	Newfoundland Street	Wellington St E	King St E	186	Semi-Urban	HCB - 1 lift	7.5	6.7	0-49	Local Traffic	8.0
679	Normanby Street North	Birmingham St W	Wellington St W	192	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
680	Normanby Street North	Birmingham St W	Durham St W	194	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
678	Normandy Street South	Wellington St W	Queen St W	136	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	10.0
583	North Water Street East	Peel St	Hwy 6	256	Semi-Urban	HCB - 1 lift	7.2	6.0	0-49	Local Traffic	6.5
582	North Water Street West	John St	Main St S	263	Semi-Urban	HCB - 1 lift	9.0	7.5	200-499	Local Traffic	6.5
580	North Water Street West	William St	James St	131	Semi-Urban	HCB - 2 lifts	9.0	7.5	200-499	Local Traffic	6.5
579	North Water Street West	Arthur St	William St	153	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
581	North Water Street West	James St	John St	139	Semi-Urban	HCB - 2 lifts	9.0	7.5	200-499	Local Traffic	6.5
578	North Water Street West	Dublin St	Arthur St	172	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
155	Oak Street	Hwy 89	Centre St	81	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
156	Oak Street	Centre St	Wood St	72	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
618	Oakview Crescent	Albert St	Albert St	341	Semi-Urban	HCB - 1 lift	7.2	6.3	0-49	Local Traffic	6.0
631	Owen Road	London Rd S	Kenzie Rd	148	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
509	Oxford Street	Aryshire St	End	217	Rural	Gravel	6.5	5.5	0-49	Local Traffic	8.0
502	Page Street	Dublins St	End	79	Semi-Urban	Gravel	6.0	5.0	0-49	Local Traffic	6.5
556	Parkside Street	York St	Main St S	113	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
554	Parkside Street	Queen St E	Grant St	89	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
555	Parkside Street	Grant St	York St	80	Urban	HCB - 2 lifts	9.4	8.5	200-499	Trucks/Farm Equipment	10.0
584	Peel Street	York St	Queen St E	168	Semi-Urban	HCB - 1 lift	8.0	7.0	50-199	Local Traffic	7.5
706	Perth Street	End	Sligo Rd W	390	Semi-Urban	HCB - 1 lift	7.0	6.7	50-199	Trucks/Farm Equipment	8.0
705	Perth Street	Sligo Rd W	Durham St W	316	Semi-Urban	HCB - 1 lift	7.0	6.5	50-199	Local Traffic	6.0
378	Preston Street North	Domville St	Smith St	483	Rural	Gravel	8.7	7.0	200-499	Local Traffic	8.5
380	Preston Street South	Duke St	End	220	Semi-Urban	HCB - 2 lifts	9.5	7.5	0-49	Local Traffic	9.0
379	Preston Street South	Smith St	Duke St	111	Urban	HCB - 2 lifts	8.7	7.5	50-199	Local Traffic	8.5
565	Prince Charles Street	Dublin St	Arthur St	132	Semi-Urban	HCB - 2 lifts	6.0	6.0	0-49	Local Traffic	7.0
566	Princess Anne Street	Dublin St	Arthur St	130	Semi-Urban	HCB - 2 lifts	8.0	8.0	0-49	Local Traffic	7.0
570	Princess Street	Cork St	Jeremys Cres	164	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	9.0
569	Princess Street	Melissa Cres	Jeremys Cres	25	Urban	HCB - 2 lifts	9.4	8.5	50-199		8.5
571	Princess Street	Cork St	End	237	Urban	HCB - 2 lifts	10.6	9.7	50-199	Local Traffic	10.0
568	Princess Street	Jeremys Cres	Melissa Cres	103	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	8.5
567	Princess Street	Jeremys Cres	Dublin St	179	Urban	HCB - 2 lifts	9.4	8.5	50-199	Local Traffic	7.5
514	Queen Street East	Peel St	Egremont St S	59	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	7.5

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**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
516	Queen Street East	Fergus St S	Albert St	107	Urban	HCB - 2 lifts	10.6	9.7	>1000	Trucks/Farm Equipment	8.5
515	Queen Street East	Albert St	Peel St	25	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	8.5
513	Queen Street East	Egremont St S	York St	71	Urban	HCB - 2 lifts	8.4	7.5	>1000	Trucks/Farm Equipment	8.0
517	Queen Street East	Main	Fergus St S	203	Urban	HCB - 2 lifts	10.6	9.7	>1000	Trucks/Farm Equipment	7.5
512	Queen Street East	Ayrshire St	York St	574	Rural	HCB - 2 lifts	8.7	7.5	>1000	Trucks/Farm Equipment	10.0
523	Queen Street West	Normanby St S	Arthur St	34	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
519	Queen Street West	John St	James St	131	Urban	HCB - 2 lifts	11.5	10.6	>1000	Trucks/Farm Equipment	8.0
522	Queen Street West	William St	Normanby St S	104	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
529	Queen Street West	Sligo Rd W	Durham St W	530	Semi-Urban	HCB - 2 lifts	12.0	7.5	>1000	Trucks/Farm Equipment	8.0
518	Queen Street West	Main St S	John St	48	Urban	HCB - 2 lifts	11.5	10.6	>1000	Trucks/Farm Equipment	8.5
521	Queen Street West	King St W	William St	9	Urban	HCB - 2 lifts	8.7	7.8	500-999	Trucks/Farm Equipment	8.5
528	Queen Street West	Durham St W	Cork St	217	Semi-Urban	HCB - 2 lifts	12.0	7.5	500-999	Trucks/Farm Equipment	8.5
520	Queen Street West	James St	King St W	124	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
527	Queen Street West	Birmingham	Cork St	134	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.5
524	Queen Street West	Arthur St	Dublin St	135	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
525	Queen Street West	Wellington St W	Homewood Ave	115	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.0
526	Queen Street West	Birmingham St W	Homewood Ave	225	Urban	HCB - 2 lifts	8.7	7.8	>1000	Trucks/Farm Equipment	8.5
708	Ruby's Crescent	Albert St.	Albert St.	401	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
150	Sally Street	Side Rd 2 W	Side Rd 3	1845	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	7.0
633	Sarah Road	End	Kenzie Rd	41	Urban	HCB - 2 lifts	9.2	8.3	0-49	Local Traffic	10.0
634	Sarah Road	London Rd S	Kenzie Rd	145	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	9.5
384	Schmidt Street	Eastview Drive	End	173	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
382	Schmidt Street	Carroll Street	End	153	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
383	Schmidt Street	Carroll Street	Eastview Drive	212	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
52	Sideroad 10 East	Hwy 6	WR 14	3647	Rural	Gravel	8.0	6.7	50-199	Trucks/Farm Equipment	9.0
54	Sideroad 10 West	Conc 6 S	Conc 4 S	1366	Rural	Gravel	5.0	3.5	0-49	Local Traffic	5.5
55	Sideroad 10 West	End	Conc 6 S	235	Rural	Gravel	5.0	3.5	0-49	Local Traffic	5.5
53	Sideroad 10 West	Conc 4 S	Hwy 6	2480	Rural	Gravel	8.0	6.7	50-199	Trucks/Farm Equipment	6.5
46	Sideroad 13	Line 2	Line 4	2715	Rural	Gravel	7.5	6.0	50-199	Local Traffic	7.0
44	Sideroad 13	Line 6	Line 8	2714	Rural	Gravel	7.0	5.8	0-49	Trucks/Farm Equipment	7.0
166	Sideroad 13	Line 8	End	227	Rural	Gravel	6.5	5.0	0-49	Trucks/Farm Equipment	6.5
47	Sideroad 13	WR 109	Line 2	2753	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	7.0
45	Sideroad 13	Line 4	Line 6	2745	Rural	Gravel	7.0	5.5	0-49	Local Traffic	6.5

**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
40	Sideroad 13	Line 12	Hwy 89	2738	Rural	Gravel	7.5	5.5	0-49	Trucks/Farm Equipment	8.0
49	Sideroad 15	Line 2	Line 4	2717	Rural	Gravel	8.5	6.8	0-49	Trucks/Farm Equipment	8.0
48	Sideroad 15	Line 2	WR 109	2754	Rural	Gravel	8.5	6.8	0-49	Trucks/Farm Equipment	7.5
41	Sideroad 15	Hwy 89	End	815	Rural	Gravel	0.0		0-49	Local Traffic	7.5
109	Sideroad 18	Hwy 6	Side Rd 25	1972	Rural	Gravel	6.5	5.5	50-199	Trucks/Farm Equipment	7.0
96	Sideroad 2 East	Conc 8	Conc 6 North	2735	Rural	Gravel	7.8	6.8	50-199	Trucks/Farm Equipment	6.5
97	Sideroad 2 East	Conc 6 North	Conc 4 North	2737	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
95	Sideroad 2 East	Hwy 6	Conc 8	2043	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	7.5
98	Sideroad 2 East	Conc 4 North	Conc 2	2728	Rural	Gravel	6.8	5.8	50-199	Local Traffic	6.5
99	Sideroad 2 East	Conc 2	WR 14	2772	Rural	Gravel	4.5	3.0	0-49	Local Traffic	5.5
94	Sideroad 2 West	Sally St	Hwy 6	2048	Rural	Gravel	7.5	6.2	50-199	Trucks/Farm Equipment	7.5
116	Sideroad 25	6th Line	7th Line	1389	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
114	Sideroad 25	WR 16	5th Line	1388	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
117	Sideroad 25	7th Line	WR 109	1366	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
113	Sideroad 25	3rd Line	WR 16	1289	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	7.5
112	Sideroad 25	2nd Line	3rd Line	1301	Rural	Gravel	8.5	7.0	50-199	Trucks/Farm Equipment	7.0
111	Sideroad 25	1st Line	2nd Line	1293	Rural	Gravel	8.5	7.0	50-199	Trucks/Farm Equipment	7.0
110	Sideroad 25	Side Rd 18	1st Line	1104	Rural	Gravel	7.5	6.5	50-199	Trucks/Farm Equipment	6.0
115	Sideroad 25	5th Line	6th Line	1425	Rural	Gravel	8.0	6.5	50-199	Local Traffic	7.0
33	Sideroad 3	Line 10	Line 12	2728	Rural	Gravel	7.0	5.5	0-49	Trucks/Farm Equipment	8.0
34	Sideroad 3	Line 12	Hwy 89	2726	Rural	Gravel	8.5	7.5	0-49		9.0
29	Sideroad 3	Line 2	Line 4	2731	Rural	Gravel	7.5	6.0	0		6.5
30	Sideroad 3	Line 4	Line 6	2742	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	6.5
169	Sideroad 3	WR 109	End	420	Rural	Gravel	5.0	4.0	0-49	Local Traffic	7.5
32	Sideroad 3	Line 8	Line 10	2726	Rural	Gravel	5.0	4.0	0-49	Trucks/Farm Equipment	6.0
31	Sideroad 3	Line 6	Line 8	2748	Rural	Gravel	5.0	4.0	0-49	Local Traffic	5.0
89	Sideroad 3 East	Conc 8	Conc 6 N	2734	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
88	Sideroad 3 East	Conc 6 N	Conc 4 N	2733	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
87	Sideroad 3 East	Conc 4 N	Conc 2	2728	Rural	Gravel	7.0	6.0	50-199	Trucks/Farm Equipment	8.0
86	Sideroad 3 East	Conc 2	WR 14	2751	Rural	Gravel	6.5	5.6	50-199	Trucks/Farm Equipment	8.0
90	Sideroad 3 East	Hwy 6	Conc 8	1576	Rural	Gravel	7.5	6.0	50-199	Trucks/Farm Equipment	8.5
93	Sideroad 3 West	WR 6	Sally St	1414	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
91	Sideroad 3 West	Conc 11	Hwy 6	1144	Rural	HCB - 1 lift	8.2	6.7	0		8.0

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**Appendix A2 - Inventory Summary Sheet**  
Sorted by Road Name

**Township of Wellington North**  
**Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
92	Sideroad 3 West	Sally Street	Conc 11	1372	Semi-Urban	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	7.5
120	Sideroad 30	1st Line	2nd Line	1271	Rural	Gravel	7.0	5.5	0-49	Local Traffic	6.0
118	Sideroad 30	3rd Line	WR 16	1286	Rural	Gravel	5.0	4.0	0-49	Local Traffic	4.5
119	Sideroad 30	2nd Line	3rd Line	1321	Rural	Gravel	0.0		0-49	Trucks/Farm Equipment	6.5
164	Sideroad 4	WR 6	Conc 11	2773	Rural	Gravel	5.5	3.7	0-49	Local Traffic	5.0
165	Sideroad 4	Conc 11	Hwy 6	2833	Rural	Gravel	7.0	5.2	0-49	Local Traffic	6.5
84	Sideroad 5 East	Conc 4	Conc 2	2734	Rural	Gravel	8.0	7.0	50-199	Local Traffic	9.0
81	Sideroad 5 East	Hwy 6	Conc 6 N	1733	Rural	HCB - 2 lifts	8.2	6.7	500-999	Trucks/Farm Equipment	9.5
83	Sideroad 5 East	Conc 6 N	Conc 4 N	1236	Rural	Gravel	7.5	6.5	200-499	Local Traffic	7.0
82	Sideroad 5 East	Conc 6 N	Conc 4 N	1497	Rural	HCB - 1 lift	8.0	6.8	200-499	Local Traffic	6.5
85	Sideroad 5 East	Conc 2	WR 14	2756	Rural	Gravel	8.0	6.8	50-199	Local Traffic	9.0
79	Sideroad 5 West	Conc 11	Conc 9	2727	Rural	Gravel	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
80	Sideroad 5 West	Conc 9	Hwy 6	1892	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.5
78	Sideroad 5 West	WR 6	Conc 11	2768	Rural	Gravel	7.0	6.5	50-199	Trucks/Farm Equipment	6.5
74	Sideroad 6 East	Conc 2	End	249	Rural	Gravel	5.5	4.0	0-49	Local Traffic	8.5
75	Sideroad 6 East	Conc 4 N	Conc 2	2732	Rural	Gravel	7.0	5.6	50-199	Trucks/Farm Equipment	7.0
76	Sideroad 6 East	Hwy 6	Conc 4 N	2920	Rural	Gravel	7.5	6.5	50-199	Local Traffic	7.5
77	Sideroad 6 West	Conc 9	Hwy 6	3175	Rural	Gravel	6.5	6.0	0-49	Trucks/Farm Equipment	6.5
38	Sideroad 7	Line 2	Line 4	2723	Rural	Gravel	8.0	6.5	50-199	Trucks/Farm Equipment	7.0
36	Sideroad 7	Line 6	Line 8	2733	Rural	Gravel	6.0	5.0	0-49	Trucks/Farm Equipment	6.0
39	Sideroad 7	WR 109	Line 2	2751	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	8.0
37	Sideroad 7	Line 4	Line 6	2744	Rural	Gravel	5.0	4.0	0-49	Local Traffic	5.0
35	Sideroad 7	Line 12	Hwy 89	2735	Rural	Gravel	8.5	7.5	0-49	Trucks/Farm Equipment	9.0
71	Sideroad 7 East	Hwy 6	Conc 4 N	1669	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
72	Sideroad 7 East	Conc 4 N	Conc 2	2732	Rural	LCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	8.0
73	Sideroad 7 East	Conc 2	WR 14	2740	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	7.0
67	Sideroad 7 West	WR 6	Conc 11	2766	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	7.0
68	Sideroad 7 West	Conc 11	Conc 9	2730	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	6.0
69	Sideroad 7 West	Conc 9	Conc 7	2719	Rural	HCB - 2 lifts	8.2	6.7	200-499	Trucks/Farm Equipment	9.0
70	Sideroad 7 West	Conc 7	Hwy 6	1859	Rural	HCB - 1 lift	8.2	6.7	200-499	Trucks/Farm Equipment	10.0
62	Sideroad 8 East	Conc 2	WR 14	2734	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
63	Sideroad 8 East	Hwy 6	Conc 2	2825	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0
64	Sideroad 8 West	Conc 6 S	Hwy 6	1938	Rural	Gravel	8.0	7.0	50-199	Trucks/Farm Equipment	9.0

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**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
65	Sideroad 8 West	Conc 7	Conc 6 S	1357	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	6.0
66	Sideroad 8 West	Conc 9	Conc 7	2709	Rural	Gravel	7.5	6.5	50-199	Trucks/Farm Equipment	7.5
61	Sideroad 9 East	Conc 2	WR 14	2738	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	9.0
60	Sideroad 9 East	Hwy 6	Conc 2	1988	Rural	Gravel	8.0	6.8	50-199	Trucks/Farm Equipment	9.0
56	Sideroad 9 West	End	Conc 9	445	Rural	Gravel	5.0	3.5	0-49	Local Traffic	5.0
59	Sideroad 9 West	Conc 6 S	Hwy 6	2839	Rural	Gravel	8.0	6.8	0-49	Trucks/Farm Equipment	6.5
58	Sideroad 9 West	Conc 7	Conc 6 S	1357	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	6.5
57	Sideroad 9 West	Conc 9	Conc 7	2705	Rural	Gravel	7.5	6.0	0-49	Trucks/Farm Equipment	6.5
501	Silver Street	Mill St	Bentley St	124	Rural	Gravel	6.5	6.0	0-49	Local Traffic	7.5
681	Silverbirch Street	Durham S W	End	144	Urban	HCB - 1 lift	8.2	7.0	50-199	Local Traffic	6.5
302	Smith Street	Clarke St	Conestoga St	260	Urban	HCB - 2 lifts	12.7	11.5	>1000	Trucks/Farm Equipment	8.0
300	Smith Street	Preston St	Wells St	481	Urban	HCB - 2 lifts	12.7	11.5	>1000	Trucks/Farm Equipment	9.5
301	Smith Street	Conestoga St	Preston St	430	Urban	HCB - 2 lifts	12.7	11.5	>1000	Trucks/Farm Equipment	8.5
303	Smith Street	Frederick St	Clarke St	171	Urban	HCB - 2 lifts	15.2	14.0	>1000	Trucks/Farm Equipment	8.0
505	South Water Street	150m west of Hwy 6	End	533	Semi-Urban	Gravel	8.5	8.0	0-49	Local Traffic	9.0
503	South Water Street	Hwy 6	150m west of Hwy 6	149	Urban	HCB - 2 lifts	8.5	7.8	0-49	Local Traffic	10.0
709	SR 41 Southgate	Bend	Sligo Rd E	970	Rural	Gravel	7.0	6.0	0-49	Local Traffic	7.5
596	SR 41 Southgate	London Rd N	Bend	252	Semi-Urban	HCB - 1 lift	7.0	6.7	0-49	Local Traffic	8.5
362	Tucker Street	Walton St	Isabella St	64	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	10.0
360	Tucker Street	Adelaide St	Domville St	99	Semi-Urban	HCB - 2 lifts	8.5	8.5	200-499	Local Traffic	8.0
359	Tucker Street	Domville St	Eliza St	585	Urban	HCB - 2 lifts	9.6	8.5	200-499	Local Traffic	8.0
363	Tucker Street	Walton St	Fredrick St	254	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	10.0
361	Tucker Street	Adelaide St	Isabella St	45	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	10.0
707	Victoria Street	End	Sligo Rd W	139	Rural	Gravel	12.0	10.8	50-199	Trucks/Farm Equipment	8.5
373	Walton Street	Clarke St	Conestoga St	257	Urban	HCB - 2 lifts	8.7	7.5	200-499	Local Traffic	8.5
374	Walton Street	Tucker St	Clarke St	176	Semi-Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.5
559	Waterloo Street	William St	James St	130	Urban	HCB - 2 lifts	9.6	9.1	50-199	Local Traffic	10.0
558	Waterloo Street	James St	John St	136	Urban	HCB - 2 lifts	9.6	9.1	50-199	Local Traffic	10.0
561	Waterloo Street	Dublin St	William St	134	Urban	HCB - 2 lifts	9.6	9.1	50-199	Local Traffic	9.5
562	Waterloo Street	Homewood Ave	Dublin St	116	Urban	HCB - 2 lifts	9.4	8.5	0-49		10.0
563	Waterloo Street	Cork St	Homewood Ave	353	Urban	HCB - 2 lifts	9.4	8.5	50-199		10.0
560	Waterloo Street	Arthur St	William St	138	Urban	HCB - 2 lifts	7.5	7.5	50-199	Local Traffic	7.0
682	Weber Street	Birmingham St W	Durham St W	193	Semi-Urban	HCB - 1 lift	7.0	6.5	50-199	Local Traffic	6.0

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**Appendix A2 - Inventory Summary Sheet  
Sorted by Road Name**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Roadside Environment	Surface Type	Platform Width (m)	Surface Width (m)	Traffic Range (vpd)	Commercial Traffic	Street Condition Rating
599	Wellington Street East	Egremont St N	Church St N	231	Urban	HCB - 2 lifts	11.5	8.5	200-499	Local Traffic	9.5
598	Wellington Street East	Church St N	Newfoundland St	89	Semi-Urban	HCB - 2 lifts	11.5	8.5	200-499	Local Traffic	8.5
597	Wellington Street East	Newfound land St	200m east of Newfoundland	199	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.0
600	Wellington Street East	Fergus St N	Egremont St N	163	Urban	HCB - 2 lifts	10.0	8.5	200-499	Local Traffic	7.0
710	Wellington Street East	200m east of Newfoundland	London Rd N	193	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
601	Wellington Street East	Main St N	Fergus St N	163	Urban	HCB - 2 lifts	9.2	9.2	200-499	Local Traffic	9.0
602	Wellington Street West	Main St N	Elgin St N	164	Urban	HCB - 2 lifts	12.0	12.0	200-499	Local Traffic	10.0
604	Wellington Street West	Colcleugh Ave	Normanby St N	128	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	9.5
605	Wellington Street West	Colcleugh Ave	Queen St W	27	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
603	Wellington Street West	Normanby St N	Elgin St N	166	Urban	HCB - 2 lifts	9.4	8.5	200-499	Local Traffic	10.0
326	Wells Street East	Smith St	Domville St	393	Rural	HCB - 2 lifts	9.5	7.6	>1000	Trucks/Farm Equipment	9.0
327	Wells Street West	Hwy 6	End	811	Rural	HCB - 2 lifts	9.5	7.5	500-999	Trucks/Farm Equipment	9.5
639	Wendys Lane	Sligo Rd E	Cheryl Lynn St	211	Urban	HCB - 2 lifts	9.4	8.5	0-49	Local Traffic	10.0
545	William Street	North Water St	Waterloo St	209	Semi-Urban	HCB - 2 lifts	7.0	6.5	50-199	Local Traffic	7.5
546	William Street	Waterloo St	Queen St W	197	Semi-Urban	HCB - 2 lifts	8.0	7.0	50-199	Local Traffic	7.0
158	Wood Street	WR 14	Maple St	121	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
157	Wood Street	Maple St	Oak St	99	Semi-Urban	HCB - 1 lift	4.0	3.5	0-49	Local Traffic	6.5
552	York Street	Peel St	Queen St E	287	Semi-Urban	LCB - 1 lift	8.0	6.7	50-199	Local Traffic	6.0
553	York Street	Parkside Dr	Peel St	132	Semi-Urban	HCB - 2 lifts	8.0	6.7	50-199	Local Traffic	7.0

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**APPENDIX B-1**

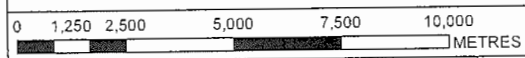
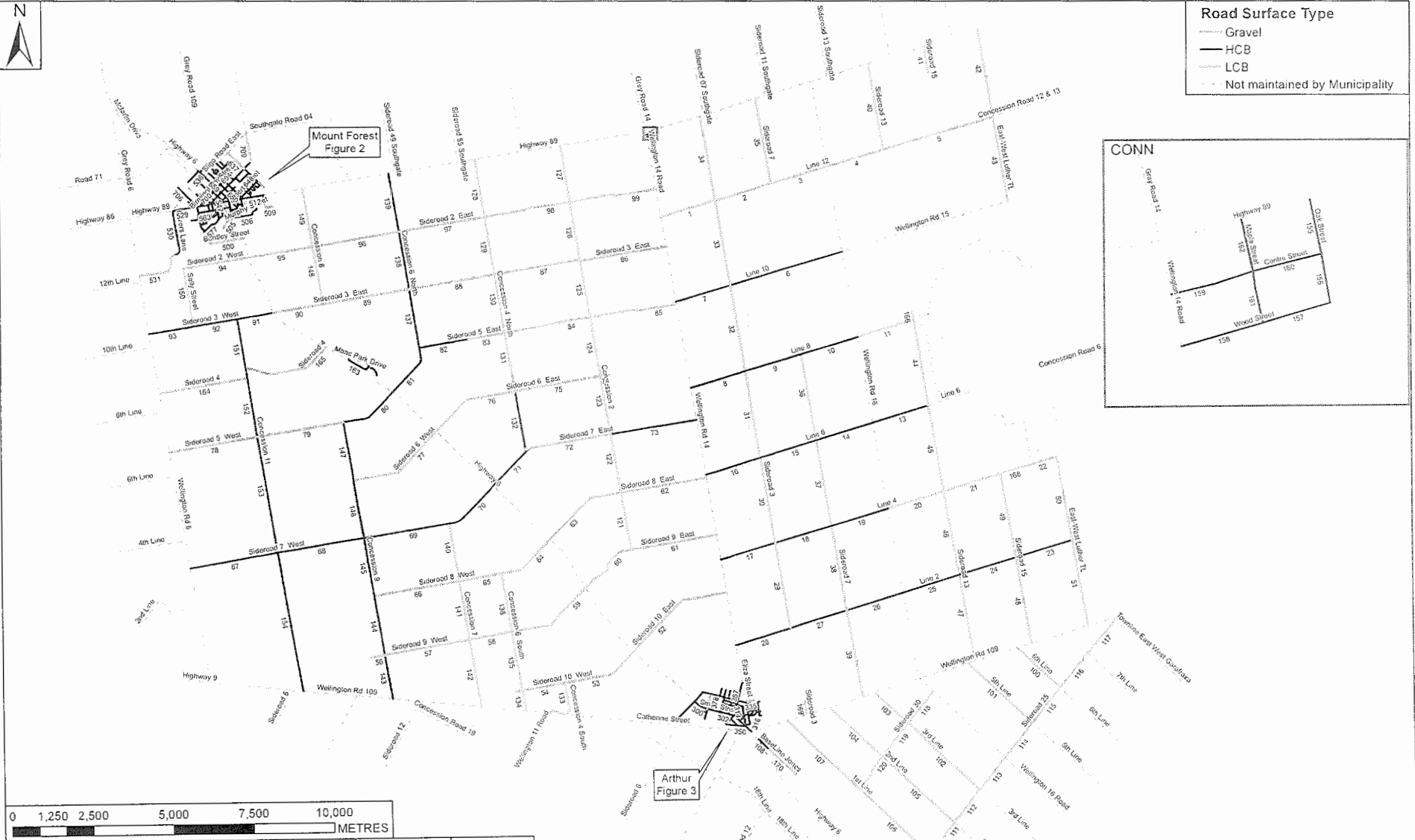
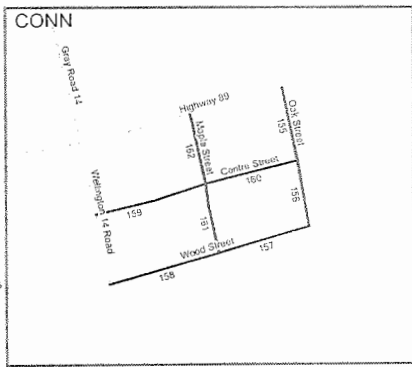
**MAPS – SURFACE TYPE**

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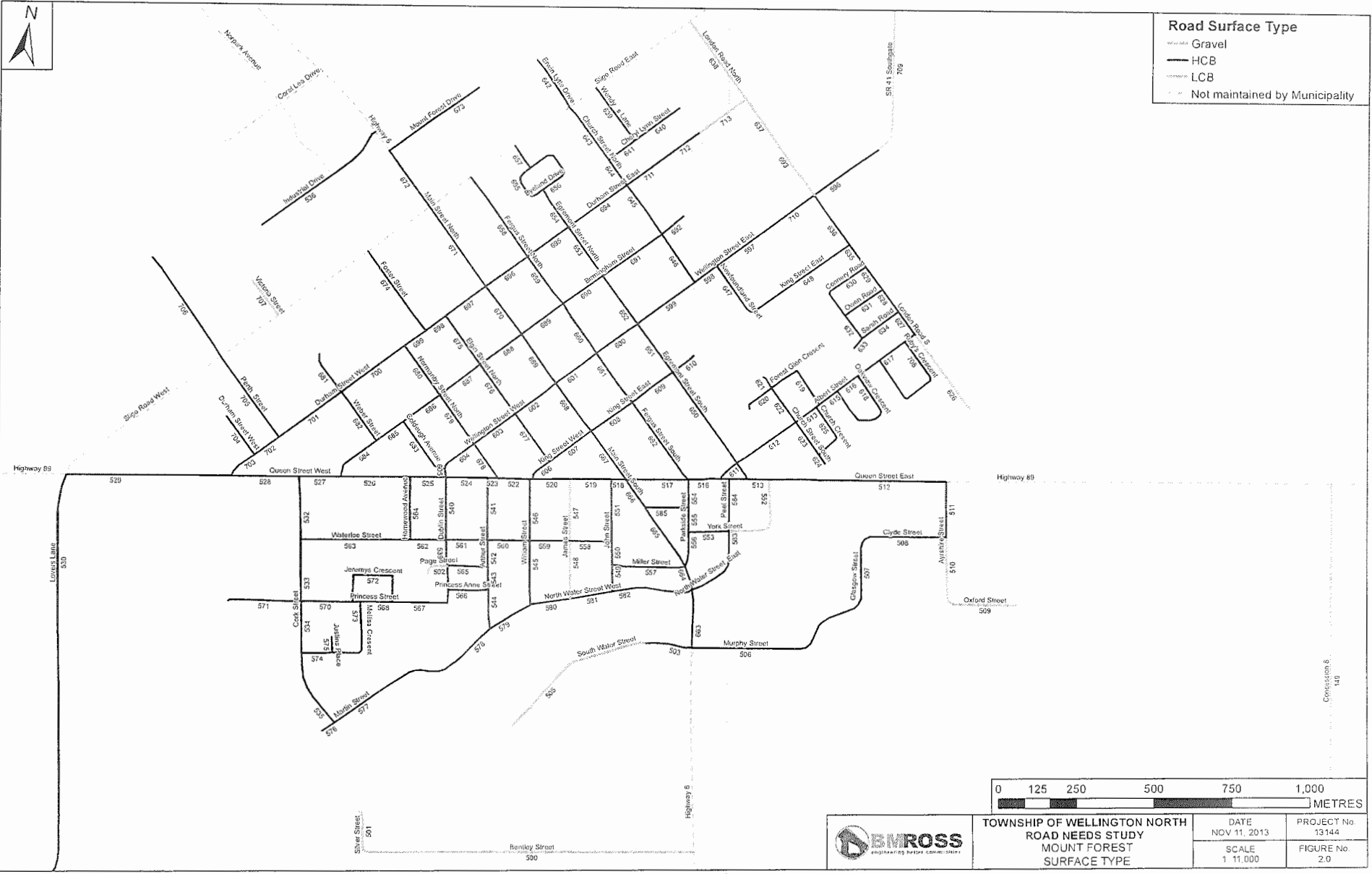


**Road Surface Type**

- Gravel
- HCB
- LCB
- Not maintained by Municipality




	TOWNSHIP OF WELLINGTON NORTH ROAD NEEDS STUDY SURFACE TYPE	DATE NOV 11, 2013	PROJECT No. 13144
		SCALE 1: 110,000	FIGURE No. 1.0



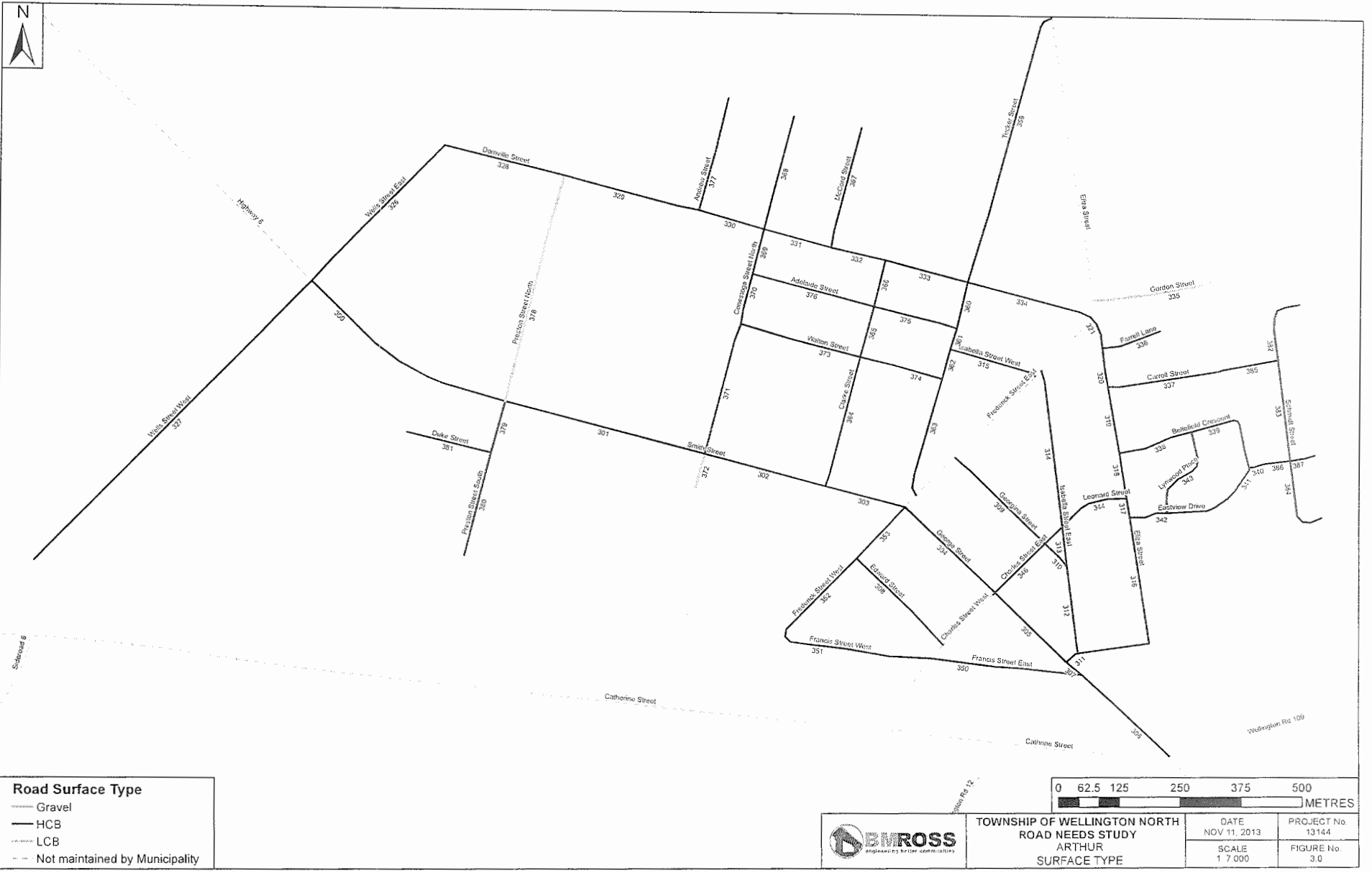
**Road Surface Type**

- Gravel
- HCB
- ..... LCB
- · - · - Not maintained by Municipality



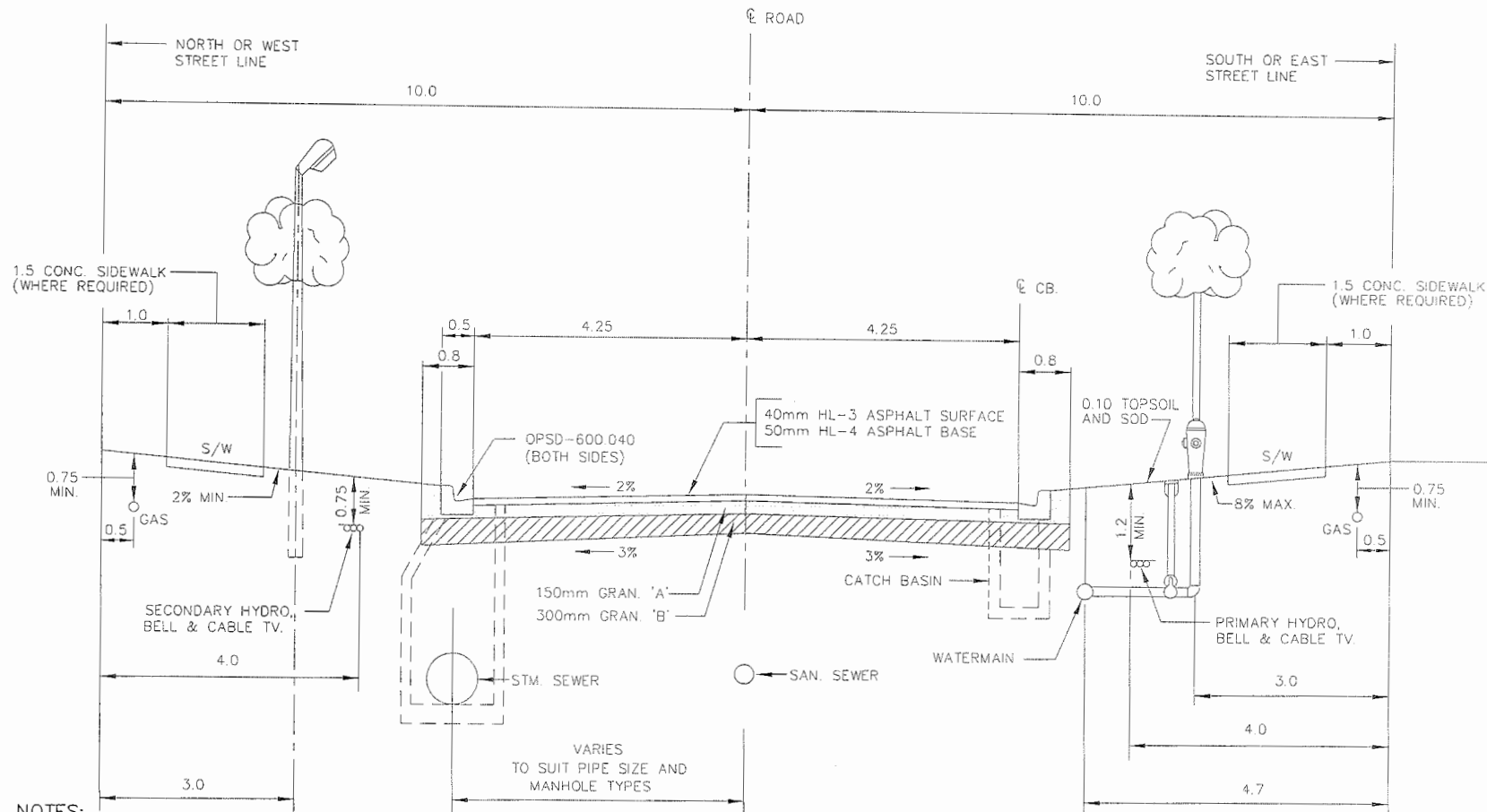
 <b>EMROSS</b> <small>engineering better communities</small>	<b>TOWNSHIP OF WELLINGTON NORTH</b>	
	<b>ROAD NEEDS STUDY</b>	
<b>MOUNT FOREST</b>		DATE NOV 11, 2013
<b>SURFACE TYPE</b>		PROJECT No. 13144
		SCALE 1 : 11,000
		FIGURE No. 2.0





**APPENDIX B-2**  
**TYPICAL ROAD SECTIONS**

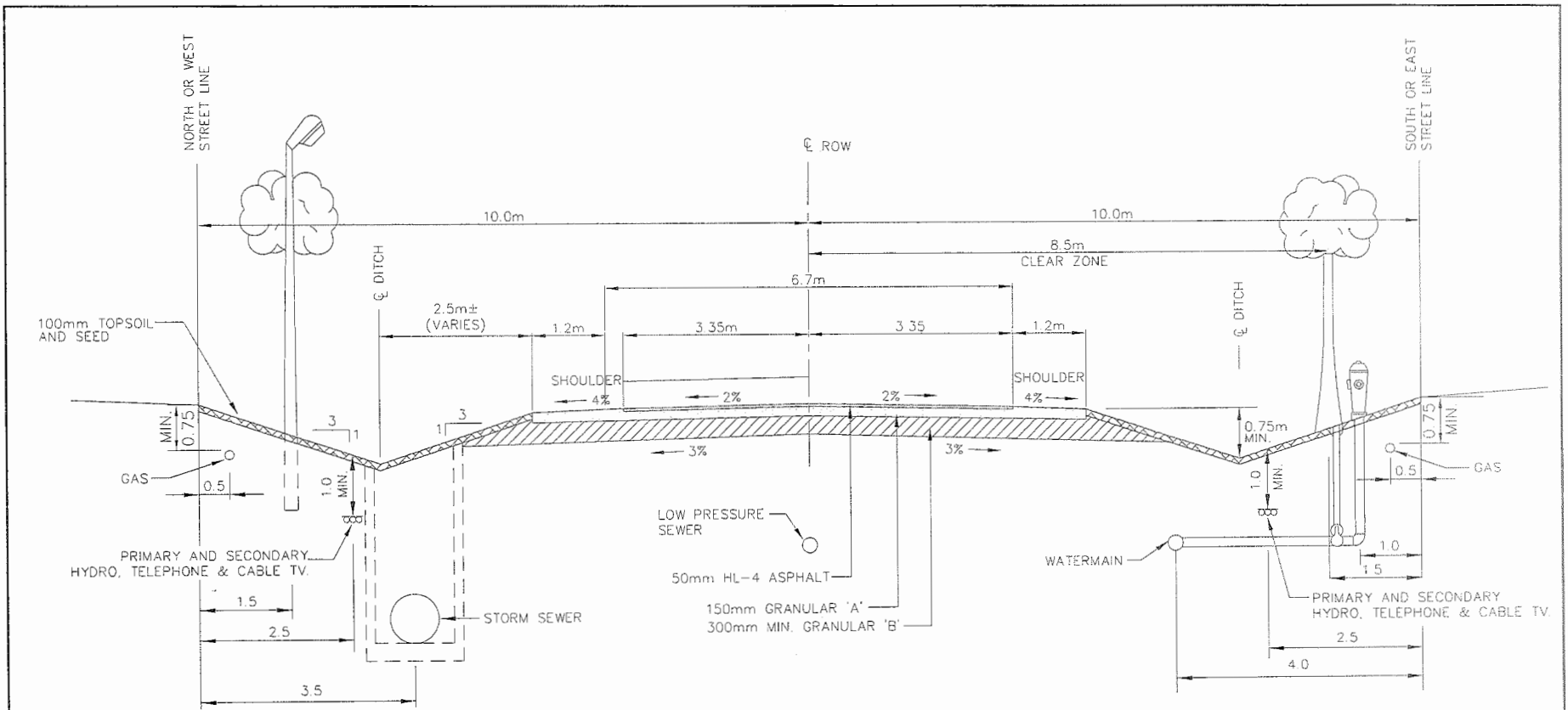
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**NOTES:**

1. TOPSOIL TO REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD BETWEEN CURBS.
2. BOULEVARD TO BE FULLY SODDED AS SPECIFIED.
3. ROAD CROSSINGS DEPTHS FOR UTILITIES - HYDRO 1.2 MIN.  
 - BELL TELEPHONE, UNION GAS, CABLE TV 1.0 MIN.  
 - WATER 1.5 MIN.
4. ALL WATER SERVICE BOXES TO BE SET AT PROPERTY LINE.

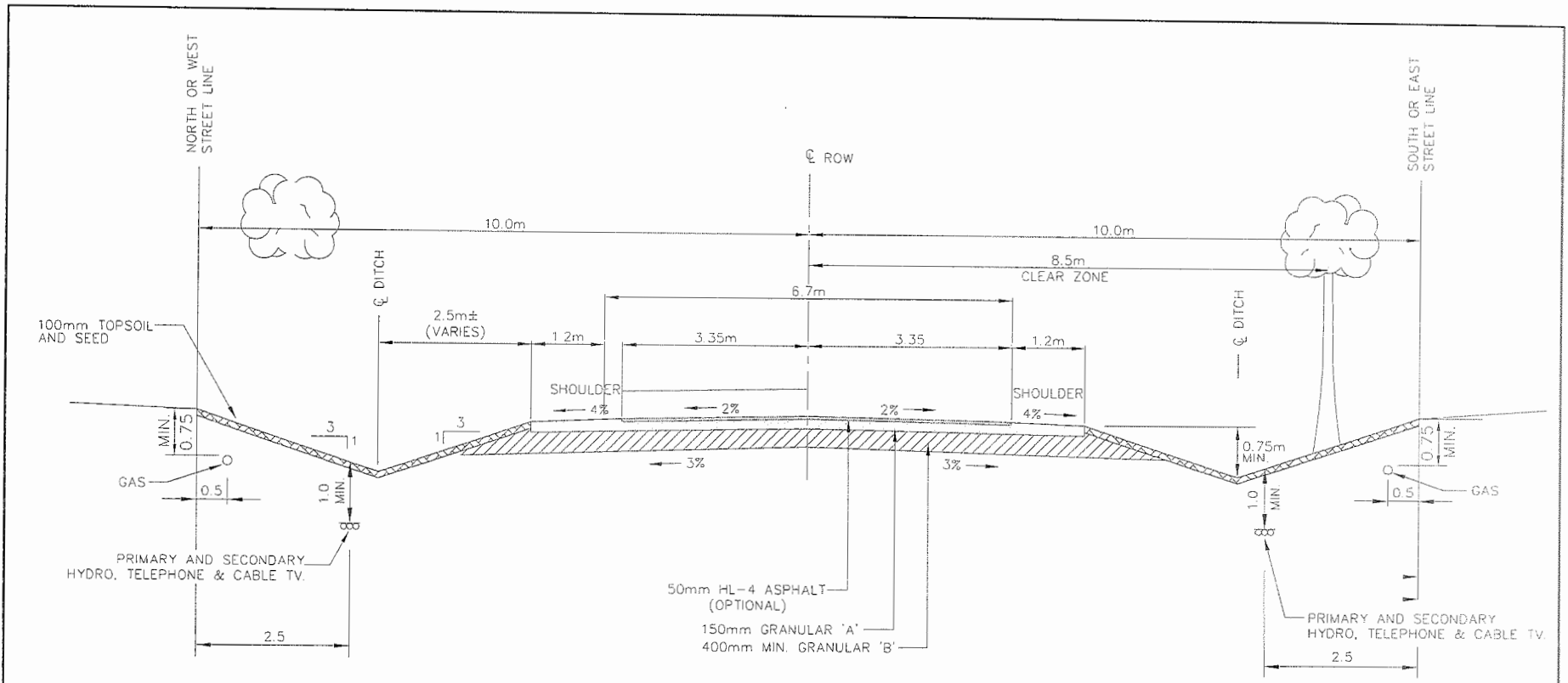
	<b>Township of Wellington North</b>	DATE OF REVISION - Nov. 9, 2013
	<b>Assumed Typical 20 meter Urban Subdivision Section and Service Location Local Residential Streets</b>	FILE NO: 13144      FIG 1



**NOTES:**

1. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD BETWEEN TOPS OF DITCH BACKSLOPES
2. BOULEVARD TO BE FULLY SEEDED.
3. ROAD RECONSTRUCTION DESIGN TO BE CONFIRMED BY GEOTECHNICAL DESIGN

	<b>Township of Wellington North</b>	DATE OF REVISION - Nov. 9, 2013
	<b>Assumed Semi-Urban Development Cross Section Local Residential Streets</b>	FILE NO: 13144      FIG 2



**NOTES:**

1. TOPSOIL TO BE REMOVED TO ITS FULL DEPTH ALONG ENTIRE WIDTH OF ROAD BETWEEN TOPS OF DITCH BACKSLOPES
2. BOULEVARD TO BE FULLY SEEDED.
3. ROAD RECONSTRUCTION DESIGN TO BE CONFIRMED BY GEOTECHNICAL DESIGN
4. ROAD SURFACE AND SHOULDER WIDTH MAY BE ADJUSTED BY MUNICIPALITY BASED ON TRAFFIC VOLUMES ON THE ROAD SECTION
5. ASPHALT SURFACE IS OPTIONAL DEPENDING ON TRAFFIC VOLUMES ON THE ROAD SECTION

	<b>Township of Wellington North</b>	DATE OF REVISION - Nov. 9, 2013
	<b>Assumed Rural Cross Section</b>	FILE NO: 13144      FIG 3

**APPENDIX C**  
**DETAILED BENCHMARK COST BREAKDOWNS**

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### Detailed Benchmark Cost Breakdown Assumed Construction Improvement Costs

Ref. No.	Description	Qty./Unit	Price	Amount	Cost
<b>1</b>	<b>Rural Full Reconstruction - Gravel Surface (6.6m Road and 0.6m Shoulders)</b>				
	Excavation	3630 cu. m	10	36,300.00	
	150mm Gran. A	3088.8 t	12	37,065.60	
	350mm Gran B	7877.1 t	9	70,893.90	
	Ditching	2000 m	2	4,000.00	
	Topsoil	8500 sq. m	4.5	38,250.00	
	Seed	8500 sq. m	0.75	6,375.00	
	Calcium	4.95 t	800	3,960.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		9,842.23	
	Contingencies	15.0%		31,003.01	
	Engineering/Administration	15.0%		35,653.46	
	<b>Total</b>			<b>273,343.19</b>	<b>\$270 /m</b>
<b>2</b>	<b>Rural Full Reconstruction - Base Course Asphalt</b>				
	Excavation	3630 cu. m	10	36,300.00	
	150mm Gran. A	3088.8 t	12	37,065.60	
	350mm Gran B	7615.3 t	9	68,537.70	
	Ditching	2000 m	2	4,000.00	
	Topsoil	8500 sq. m	4.5	38,250.00	
	Seed	8500 sq. m	0.5	4,250.00	
	HL-4 (50mm)	932.91 sq. m	85	79,297.35	
	Bond/Insur/Traffic/Lump Sum	5.0%		13,385.03	
	Contingencies	15.0%		42,162.85	
	Engineering/Administration	15.0%		48,487.28	
	<b>Total</b>			<b>371,735.82</b>	<b>\$370 /m</b>
<b>3</b>	<b>Surface Treatment - Single surface</b>				
	Single lift surface treatment	7260 sq. m	2.6	18,876.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		943.80	
	Contingencies	20.0%		3,963.96	
	Engineering/Administration	10.0%		2,378.38	
	<b>Total</b>			<b>26,162.14</b>	<b>\$25 /m</b>
<b>4</b>	<b>Surface Treatment - Double surface</b>				
	Double lift surface treatment	7260 sq. m	5.25	38,115.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		1,905.75	
	Contingencies	10.0%		4,002.08	
	Engineering/Administration	10.0%		4,402.28	
	<b>Total</b>			<b>48,425.11</b>	<b>\$50 /m</b>
<b>5</b>	<b>Rural Hot Mix Resurfacing (32mm HL-2, incl tack coat)</b>				
	HL-2	597.06 t	85	50,749.93	
	padding	59.71 t	85	5,075.35	
	Tack Coat	6600	1	6,600.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		3,121.26	
	Contingencies	10.0%		6,554.65	
	Engineering/Administration	10.0%		7,210.12	
	<b>Total</b>			<b>79,311.32</b>	<b>\$80 /m</b>
<b>6</b>	<b>Rural Paving (50mm HL-4)</b>				
	HL-4	944.475 t	80	75,558.00	
	padding	100 t	80	8,000.00	
	Tack Coat	8500	0	0.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		4,177.90	
	Contingencies	10.0%		8,773.59	
	Engineering/Administration	10.0%		9,650.95	
	<b>Total</b>			<b>106,160.44</b>	<b>\$110 /m</b>
<b>7</b>	<b>Rural Full depth pulverize and pave (50mm HL-4)</b>				
	Pulverize	7260 sq. m	0.8	5,808.00	
	Granular A (50mm)	884.4 t	12	10,612.80	
	Shoulder Gravel	288 t	14	4,032.00	
	Fine grade	7260 sq. m	1	7,260.00	
	HL-3 (40mm)	0 t	85	0.00	

	HL-4 (50mm)	944,475 t	85	80,280.38	
	Bond/Insur/Traffic/Lump Sum	5.0%		5,399.66	
	Contingencies	10.0%		11,339.28	
	Engineering/Administration	10.0%		12,473.21	
	<b>Total</b>			<b>137,205.34</b>	<b>\$140 /m</b>
<b>8</b>	<b>Rural Pulverize Surface Treatment, Two lifts surface treatment</b>				
	Pulverize surface treatment	6600 sq. m	0.8	5,280.00	
	Granular A	871.2 t	11	9,583.20	
	Shoulder Gravel	144 t	13	1,872.00	
	Fine grade	6600 sq. m	1	6,600.00	
	Double lift surface treatment	6200 sq. m	5	31,000.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		2,716.76	
	Contingencies	10.0%		5,705.20	
	Engineering/Administration	10.0%		6,275.72	
	<b>Total</b>			<b>69,032.87</b>	<b>\$70 /m</b>
<b>9</b>	<b>Semi-Urban Full Reconstruction - Base Course of Asphalt</b>				
	Excavation	3580.5 cu. m	9	32,224.50	
	150mm Gran. A	2970 t	12	35,640.00	
	300mm Gran B	5692.5 t	9	51,232.50	
	HL-3 (40mm)	701.10 t	0	0.00	
	HL-4 (40mm)	836.54 t	95	79,470.83	
	Topsoil	7000 sq. m	5	35,000.00	
	Seed	7000 sq. m	0.5	3,500.00	
	Calcium	5.625 t	800	4,500.00	
	Water	445.5 cu. m	5	2,227.50	
	Bond/Insur/Traffic/Lump Sum	5.0%		12,189.77	
	Contingencies	10.0%		25,598.51	
	Engineering/Administration	15.0%		42,237.54	
	<b>Total</b>			<b>323,821.15</b>	<b>\$320 /m</b>
<b>10</b>	<b>Semi-Urban Hot Mix Resurfacing</b>				
	HL-2 (32mm)	669,228 t	90	60,230.52	
	Tack Coat	6200	1	6,200.00	
	Adjust MHs & CBs	4 Ea	300	1,200.00	
	Adjust MHs & CBs incl Rest.	4 Ea	600	2,400.00	
	Repair C & G	0 m	100	0.00	
	Supply and install Frame & Grates	5 Ea	250	1,250.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		3,564.03	
	Contingencies	10.0%		7,484.45	
	Engineering/Administration	15.0%		12,349.35	
	<b>Total</b>			<b>94,678.35</b>	<b>\$95 /m</b>
<b>11</b>	<b>Semi-Urban Full depth pulverize and pave</b>				
	Pulverize	7370 sq. m	1.5	11,055.00	
	Granular A	804 t	12	9,648.00	
	Shoulder Gravel	144 t	14	2,016.00	
	Fine grade	7370 sq. m	1.5	11,055.00	
	HL-4 (40mm)	757.64 t	90	68,187.24	
	Bond/Insur/Traffic/Lump Sum	5.0%		5,098.06	
	Contingencies	10.0%		10,705.93	
	Engineering/Administration	15.0%		17,664.78	
	<b>Total</b>			<b>135,430.02</b>	<b>\$140 /m</b>
<b>12</b>	<b>Urban Full Reconstruction - Base Course of Asphalt</b>				
	Excavation	6943.75 cu. m	8	55,550.00	
	150mm Gran. A	4181.4 t	12	50,176.80	
	300mm Gran B	7665.9 t	9	68,993.10	
	HL-3 (40mm)	961.18 t	95	91,312.10	
	HL-4 (40mm)	1048.56 t	90	94,370.40	
	Hot Mix Misc	90 sq. m	21.5	1,935.00	
	Adjust MHs & CBs	6 Ea.	300	1,800.00	
	Remove some C&G	50 m	15	750.00	
	Curb & Gutter	2000 m	45	90,000.00	
	Reconnect ex. storm	50 m	100	5,000.00	
	Remove conc. Sidewalk	0 sq. m	11.5	0.00	
	Place conc. Sidewalk	0 sq. m	50	0.00	
	Topsoil	6000 sq. m	6	36,000.00	



	Seed	6000 sq. m	0.75	4,500.00	
	Calcium	6.375 t	800	5,100.00	
	Water	609.03 cu. m	5	3,045.15	
	Bond/Insur/Traffic/Lump Sum	5.0%		25,426.63	
	Contingencies	10.0%		53,395.92	
	Engineering/Administration	15.0%		88,103.26	
	<b>Total</b>			675,458.36	<b>\$680 /m</b>
<b>13</b>	<b>Urban Full depth removal and pave - 8.5m</b>				
	Asphalt removal / excavation	850 cu. m	15	12,750.00	
	Calcium	0.64 t	800	510.00	
	Water	76.5 cu. m	5	382.50	
	Granular A	1530 t	14	21,420.00	
	Fine grade	8500 sq. m	2	17,000.00	
	HL-3 (40mm)	961.18 t	95	91,312.10	
	HL-4 (40mm)	961.18 t	90	86,506.20	
	Repair C & G	50 m	175	8,750.00	
	Adjust MHs & CBs	4 Ea	300	1,200.00	
	Adjust MHs & CBs incl Rest.	4 Ea	600	2,400.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		12,111.54	
	Contingencies	10.0%		25,434.23	
	Engineering/Administration	15.0%		41,966.49	
	<b>Total</b>			321,743.06	<b>\$320 /m</b>
<b>14</b>	<b>Urban Partial depth cold planing and resurfacing</b>				
	Partial depth asphalt removal	9350 sq. m	4.2	39,270.00	
	Crack Repair	500 m	30	15,000.00	
	HL-3 (40mm)	961.18 t	100	96,118.00	
	Adjust MHs & CBs	4 Ea	300	1,200.00	
	Adjust MHs & CBs incl Rest.	4 Ea	600	2,400.00	
	Minor C&G repairs	25 m	175	4,375.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		7,918.15	
	Contingencies	10.0%		16,628.12	
	Engineering/Administration	15.0%		27,436.39	
	<b>Total</b>			210,345.65	<b>\$210 /m</b>
<b>15</b>	<b>Urban Full depth pulverize and pave (40mm HL-4)</b>				
	Pulverize	9350 sq. m	1.5	14,025.00	
	Fine grade	9350 sq. m	2	18,700.00	
	Granular A	1020 t	14	14,280.00	
	HL-4 (40mm)	961.18 t	100	96,118.00	
	Adjust MHs & CBs	4 Ea	300	1,200.00	
	Adjust MHs & CBs incl Rest.	4 Ea	600	2,400.00	
	Minor C&G repairs	25 m	175	4,375.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		7,156.15	
	Contingencies	12.0%		18,990.50	
	Engineering/Administration	15.0%		26,586.70	
	<b>Total</b>			203,831.35	<b>\$200 /m</b>
<b>16</b>	<b>Urban Full depth pulverize, widen and pave</b>				
	Pulverize	6820 sq. m	1.5	10,230.00	
	Excavation	2400 cu. m	8	19,200.00	
	Fine grade	6820 sq. m	2	13,640.00	
	Granular A	744 t	14	10,416.00	
	Granular A	1584 t	12	19,008.00	
	Granular B	3139.5 t	9	28,255.50	
	Curb & Gutter	2000 m	45	90,000.00	
	HL-4 (40mm)	961.18 t	100	96,118.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		14,343.38	
	Contingencies	10.0%		30,121.09	
	Engineering/Administration	15.0%		49,699.79	
	<b>Total</b>			381,031.76	<b>\$380 /m</b>
<b>17</b>	<b>Urban Paving (40mm HL-4)</b>				
	HL-4	961.18 t	100	96,118.00	
	padding	48.06 t	100	4,805.90	
	Tack Coat	8500	1	8,500.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		5,471.20	

	Contingencies	10.0%		11,489.51	
	Engineering/Administration	11.0%		13,902.31	
	<b>Total</b>			<b>140,286.91</b>	<b>\$140 /m</b>
<b>18</b>	<b>Edge Cut, Curb &amp; Gutter, Top lift of Asphalt</b>				
	Excavation	1100 cu. m	8	8,800.00	
	150mm Gran. A	662.4 t	12	7,948.80	
	300mm Gran B	1214.4 t	8	9,715.20	
	HL-3 (40mm)	961.18 t	95	91,312.10	
	HL-4 (40mm)	197.376 t	90	17,763.84	
	Hot Mix Misc	90 sq. m	21.5	1,935.00	
	Adjust MHs & CBs	6 Ea.	300	1,800.00	
	Curb & Gutter	2000 m	45	90,000.00	
	Reconnect ex. storm	m	100	0.00	
	Remove conc. Sidewalk	50 sq. m	11.5	575.00	
	Place conc. Sidewalk	50 sq. m	50	2,500.00	
	Topsoil	6000 sq. m	6	36,000.00	
	Seed	6000 sq. m	0.75	4,500.00	
	Calcium	6.375 t	800	5,100.00	
	Water	96.48 cu. m	5	482.40	
	Bond/Insur/Traffic/Lump Sum	5.0%		13,921.62	
	Contingencies	10.0%		29,235.40	
	Engineering/Administration	15.0%		48,238.40	
	<b>Total</b>			<b>369,827.76</b>	<b>\$370 /m</b>

**Detailed Benchmark Cost Breakdown  
Specific Maintenance**

<b>1</b>	<b>Surface Treatment - Single surface</b>				
	Single lift surface treatment	7260 sq. m	2.6	18,876.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		943.80	
	Contingencies	20.0%		3,963.96	
	Engineering/Administration	10.0%		2,378.38	
	<b>Total</b>			<b>26,162.14</b>	<b>\$25 /m</b>
<b>2</b>	<b>Gravel resurfacing, 50mm</b>				
	Grader	8 hrs	95	760.00	
	Operator	8 hrs	50	400.00	
	Granular 'A'	990 t	9	8,910.00	
	Calcium	0.6375 t	800	510.00	
	Bond/Insur/Traffic/Lump Sum	3.0%		282.60	
	Contingencies	5.0%		485.13	
	Engineering/Administration	5.0%		509.39	
	<b>Total</b>			<b>11,857.12</b>	<b>\$12 /m</b>
<b>3</b>	<b>Ditching Improvements, (Full Length) , Both Sides</b>				
	Grader (127 rate)	10 hrs	95	950.00	
	Operator	10 hrs	50	500.00	
	Dump Truck (Tandem, 127 rate), assume 2	18 hrs	81	1,458.00	
	Operator	18 hrs	50	900.00	
	Foreman	8 hrs	65	520.00	
	Bond/Insur/Traffic/Lump Sum	3.0%		129.84	
	Contingencies	10.0%		445.78	
	Engineering/Administration	5.0%		245.18	
				5,148.81	
				5.15	<b>\$5 /m</b>
<b>4</b>	<b>Gravel road grade raise, 150mm</b>				
	Grader	12 hrs	95	1,140.00	
	Operator	12 hrs	50	600.00	
	Granular 'A'	2970 t	9	26,730.00	
	Calcium	0.64 t	800	510.00	
	Bond/Insur/Traffic/Lump Sum	3.0%		817.20	
	Contingencies	10.0%		2,805.72	
	Engineering/Administration	5.0%		1,543.15	
	<b>Total</b>			<b>34,146.07</b>	<b>\$34 /m</b>

<b>5</b>	<b>Edge Widening, 1m +/- each side</b>					
	Excavation, side slope and ditch	550	cu m	12.00	6,600.00	
	150mm Gran A	1600	t	15.00	24,000.00	
	300mm Gran B	2400	t	12.00	28,800.00	
	Subdrain, along each side	2000	m	4.00	8,000.00	
	Restoration	4000	sq. m	5.00	20,000.00	
	Bond/Insur/Traffic	5.0%			4,370.00	
	Contingencies	20.0%			18,354.00	
	Engineering	10.0%			11,012.40	
	<b>Cost per 1000m</b>				<u>121,136.40</u>	<b>\$120 /m</b>
<b>6</b>	<b>Tree clearing (4m wide swath)</b>					
	Clearing, \$40/m2	4 m, ave		40	160	<b>\$160 /m</b>
<b>7</b>	<b>Install subdrain full length both sides</b>					
	Sub-drain installation cost by plow	2000 m		5	10000	
	Contingencies	10.0%			1,000.00	
	Engineering / Administration	10.0%			1,000.00	
					<u>12,160.00</u>	<b>\$12 /m</b>

**Detailed Benchmark Cost Breakdown  
Spot Maintenance**

<b>1</b>	<b>Culvert Crossing upto 750mm Dia., excluding asphalt</b>					
	700mm Storm	15 m		200	3,000.00	
	Granular 'A'	10 t		15	150.00	
	Restoration	10 m		20	200.00	
	Bond/Insur/Traffic/Lump Sum	3.0%			100.50	
	Contingencies	10.0%			345.05	
	Engineering/Administration	10.0%			379.56	
	<b>Lump sum Total Costs</b>				<u>4,175.11</u>	<b>\$4,200</b>
<b>2</b>	<b>Ditching Spot Location upto 200m</b>					
	Grad-all	4 hrs		95	380.00	
	Operator	4 hrs		50	200.00	
	Dump Truck (Tandem, 127 rate)	4 hrs		81	324.00	
	Operator	4 hrs		50	200.00	
	Foreman	3 hrs		65	195.00	
	Contingencies	15.0%			194.85	
					<u>1,493.85</u>	
	<b>Lump sum Total Costs</b>				<u>1,493.85</u>	<b>\$1,500</b>
<b>3</b>	<b>Raise Grade, gravel road, 150mm (&lt;100m)</b>					
	Grader	12 hrs		95	1,140.00	
	Operator	12 hrs		50	600.00	
	Granular 'A'	2970 t		9	26,730.00	
	Calcium	0.64 t		800	510.00	
	Bond/Insur/Traffic/Lump Sum	3.0%			817.20	
	Contingencies	10.0%			2,805.72	
	Engineering/Administration	5.0%			1,543.15	
	<b>Total</b>				<u>34,146.07</u>	<b>\$34 /m</b>
	<b>Lump Sum Total Road Grade increase for 100m</b>				<u>4,092.00</u>	<b>\$4,000</b>
<b>4</b>	<b>Paving Patch, full width (&lt;60m)</b>					
	Asphalt removal	420 sq. m		6	2,520.00	
	50mm Gran. A	60 t		12	720.00	
	HL-4 (40mm)	50 t		90	4,500.00	
	Calcium	0.3825 t		800	306.00	
	Water	0 cu. m		5	0.00	
	Bond/Insur/Traffic/Lump Sum	5.0%			402.30	
	Contingencies	10.0%			844.83	
	Engineering/Administration	10.0%			929.31	
	<b>Lump sum Total Costs</b>				<u>10,222.44</u>	<b>\$10,000</b>

<b>5</b>	<b>Gravel Road Spot Repair (&lt;60m)</b>				
	Excavation	225 cu. m	8	1,800.00	
	150mm Gran. A	200 t	12	2,400.00	
	300mm Gran B	320 t	9	2,880.00	
	Calcium	0.3825 t	800	306.00	
	Water	0 cu. m	5	0.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		369.30	
	Contingencies	10.0%		775.53	
	Engineering/Administration	10.0%		853.08	
	<b>Lump sum Total Costs</b>			<b>9,383.91</b>	<b>\$9,000</b>
<b>6</b>	<b>Paved Road Spot Repair (&lt;60)</b>				
	Excavation	225 cu. m	8	1,800.00	
	150mm Gran. A	180 t	12	2,160.00	
	300mm Gran B	320 t	9	2,880.00	
	HL-3 (40mm), assuming only one lift.	0 t	95	0.00	
	HL-4 (40mm)	50 t	90	4,500.00	
	Calcium	0.3825 t	800	306.00	
	Water	0 cu. m	5	0.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		582.30	
	Contingencies	10.0%		1,222.83	
	Engineering/Administration	10.0%		1,345.11	
	<b>Lump sum Total Costs</b>			<b>14,796.24</b>	<b>\$15,000</b>
<b>7</b>	<b>Shoulder and Slope Repair (&lt;100m)</b>				
	Excavation, side slope and ditch	40 cu m	12.00	480.00	
	150mm Gran A	40 t	15.00	600.00	
	300mm Gran B	40 t	12.00	480.00	
	Restoration	150 sq. m	5.00	750.00	
	Bond/Ins/Traffic	5.0%		115.50	
	Contingencies	20.0%		485.10	
	Engineering	10.0%		291.06	
	<b>Cost per 100m</b>			<b>3,201.66</b>	<b>\$3,000</b>
<b>8</b>	<b>Minor Storm Sewer Improvements</b>				
	300mm Storm	25 m	140	3,500.00	
	Inline CB	1 Ea	600	600.00	
	150mm SubDrain	30 m	25	750.00	
	Granular 'A'	14.4	15	216.00	
	Restoration	50 m	20	1,000.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		303.30	
	Contingencies	20.0%		1,273.86	
	Engineering/Administration	15.0%		1,146.47	
	Certificate of Approval			1,100.00	
	<b>Total</b>			<b>9,889.63</b>	<b>\$10,000</b>
<b>9</b>	<b>Guiderails (&lt;100m one side)</b>				
	Steel Beam guide rails	50 m	90	4,500.00	
	End Treatments, flare only	2 ea.	250	500	
				5,000.00	<b>\$5,000</b>
<b>10</b>	<b>Install subdrain both sides upto 500m</b>				
	Sub-drain installation cost by plow	1000 m	7.5	7500	
	Contingencies	20.0%		1,500.00	
	Engineering / Administration	10.0%		750.00	
					<b>\$10,000</b>

### Detailed Benchmark Cost Breakdown Miscellaneous Improvements

<b>1</b>	<b>Concrete Sidewalk (Ea. Side) - Incl Topsoil &amp; Seed Restoration</b>			
	Excavation	540 cu. m	10	5,400.00
	150mm Gran. A	712.8 t	20	14,256.00
	Conc. Sidewalk	1500 sq. m	50	75,000.00
	Hot Mix Misc	75 sq. m	30	2,250.00
	Topsoil	600 sq. m	6	3,600.00

	Seed	600 sq. m	1	600.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		5,055.30	
	Contingencies	10.0%		10,616.13	
	Engineering	10.0%		11,677.74	
	<b>Total</b>			<b>128,455.17</b>	<b>\$130 /m</b>
<b>2</b>	<b>Gravel Sidewalk (Ea. Side) - Incl Topsoil &amp; Seed Restoration</b>				
	Excavation	360 cu. m	10	3,600.00	
	150mm Gran. A	712.8 t	20	14,256.00	
	Conc. Sidewalk	0 sq. m	50	0.00	
	Hot Mix Misc	75	30	2,250.00	
	Topsoil	750 sq. m	6	4,500.00	
	Seed	750 sq. m	1	750.00	
	Bond/Insur/Traffic/Lump Sum	0.0%		0.00	
	Contingencies	10.0%		2,535.60	
	Engineering	10.0%		2,789.16	
	<b>Total</b>			<b>30,680.76</b>	<b>\$30 /m</b>
<b>3</b>	<b>Asphalt Sidewalk (Ea. Side) - Incl Topsoil &amp; Seed Restoration</b>				
	Excavation	360 cu. m	10	3,600.00	
	150mm Gran. A	712.8 t	20	14,256.00	
	Asphalt	1500 sq. m	25	37,500.00	
	Hot Mix Misc	75	30	2,250.00	
	Topsoil	750 sq. m	6	4,500.00	
	Seed	750 sq. m	1	750.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		3,142.80	
	Contingencies	10.0%		6,599.88	
	Engineering	10.0%		7,259.87	
	<b>Total</b>			<b>79,858.55</b>	<b>\$80 /m</b>
<b>4</b>	<b>Unit Paver Sidewalk (Ea. Side) - Incl Topsoil &amp; Seed Restoration</b>				
	Excavation	360 cu. m	10	3,600.00	
	150mm Gran. A	712.8 t	20	14,256.00	
	Unit Pavers	1500 sq. m	65	97,500.00	
	Topsoil	750 sq. m	6	4,500.00	
	Seed	750 sq. m	1	750.00	
	Bond/Insur/Traffic/Lump Sum	3.0%		3,618.18	
	Contingencies	10.0%		12,422.42	
	Engineering	10.0%		13,664.66	
	<b>Total</b>			<b>150,311.26</b>	<b>\$150 /m</b>
<b>5</b>	<b>Minor Storm Sewer Improvements</b>				
	300mm Storm	25 m	120	3,000.00	
	Inline CB	2 Ea	600	1,200.00	
	150mm SubDrain	200 m	25	5,000.00	
	Granular 'A'	144	12	1,728.00	
	Restoration	100 m	20	2,000.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		646.40	
	Contingencies	15.0%		2,036.16	
	Engineering	20.0%		3,122.11	
	Certificate of Approval			1,100.00	
	<b>Total, 100m</b>			<b>19,832.67</b>	<b>\$200 /m</b>
<b>6</b>	<b>Storm Sewers</b>				
	375mm Storm	100 m	170	17,000.00	
	300mm Storm	20 m	120	2,400.00	
	.6x.6 CB	4 Ea	1500	6,000.00	
	1200mm MH	2	2500	5,000.00	
	Remove MHs	2 Ea.	500	1,000.00	
	Remove Cbs	4 Ea.	250	1,000.00	
	Reconnect Ex. Sewers	10 m	100	1,000.00	
	Bond/Insur/Traffic/Lump Sum	5.0%		1,670.00	
	Contingencies	15.0%		5,260.50	
	Engineering/Administration	15.0%		6,049.58	
	Certificate of Approval			1,100.00	
	<b>Total</b>			<b>47,480.08</b>	<b>\$480 /m</b>

**Note:** Above costs are prepare based on numerous assumptions not listed hear and are only suitable for preliminary budgetting purposes.

**APPENDIX D-1**

**ROAD CONSTRUCTION NEEDS SORTED  
BY PROPOSED YEAR OF WORK AND PRIORITY SCORE**

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**Appendix D1 - Road Construction Needs**  
Sorted by Proposed Year of Need and Priority Score

**Township of Wellington North**  
**Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Surface Type	Traffic Range (vpd)	Road Construction Needs	Theo. Year of Need	Proposed Year of Work	Priority	Probable Costs (\$,000)
625	Church Crescent	Albert St	Church St S	199	HCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2014	2014	14	256.1
623	Church Street South	Church Cres	Albert St	129	HCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2014	2014	14	166.0
624	Church Street South	Church Cres	End	36	HCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2014	2014	14	41.8
622	Church Street South	Forest Glen Cres	Albert St	136	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2017	2014	13	175.1
620	Forest Glen Drive	End	Church St S	104	HCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2017	2014	12	121.1
619	Forest Glen Crescent	Church St S	Albert St	232	HCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2016	2014	12	299.3
621	Church Street South	End	Forest Glen Cres	45	HCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2016	2014	12	52.2
673	Mount Forest Drive	Hwy 6	End	357	HCB - 1 lift	50-199	Rural Paving (50mm HL-4)	2019	2014	7	39.3
549	John Street	Miller St	North Water St	86	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2015	2015	13	58.8
552	York Street	Peel St	Queen St E	287	LCB - 1 lift	50-199	Semi-Urban Hot Mix Resurfacing	2015	2015	12	27.3
550	John Street	Waterloo St	Miller St	76	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2017	2015	12	52.0
582	North Water Street West	John St	Main St S	263	HCB - 1 lift	200-499	Urban Full Reconstruction - Base Course of Asphalt	2018	2015	11	178.7
547	James Street	Queen St W	Waterloo St	200	LCB - 2 lifts	0-49	Urban Full Reconstruction - Base Course of Asphalt	2015	2015	11	135.8
581	North Water Street West	James St	John St	139	HCB - 2 lifts	200-499	Urban Full Reconstruction - Base Course of Asphalt	2021	2015	11	94.6
580	North Water Street West	William St	James St	131	HCB - 2 lifts	200-499	Urban Full Reconstruction - Base Course of Asphalt	2021	2015	11	89.2
557	Miller Street	John St	Main St S	238	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2018	2015	11	275.5
618	Oakview Crescent	Albert St	Albert St	341	HCB - 1 lift	0-49	Urban Full depth removal and pave - 8.5m	2017	2015	11	109.3
548	James Street	Waterloo St	North Water St	188	LCB - 2 lifts	50-199	Semi-Urban Hot Mix Resurfacing	2017	2015	8	55.5
346	Charles Street East	Georgina St	George St	151	HCB - 2 lifts	500-999	Urban Full Reconstruction - Base Course of Asphalt	2016	2016	16	214.9
655	Byeland Drive	Egremont St N	Egremont St N	164	HCB - 1 lift	50-199	Semi-Urban Full Reconstruction - Base Course of Asphalt	2014	2016	14	131.3
682	Weber Street	Birmingham St W	Durham St W	193	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2017	2016	13	131.3
696	Durham Street East	Fergus St N	Main St N	166	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2017	2016	13	113.0
656	Byeland Drive	Egremont St N	Egremont St N	240	HCB - 1 lift	50-199	Semi-Urban Full Reconstruction - Base Course of Asphalt	2017	2016	12	124.6
689	Birmingham Street	Fergus St N	Main St N	168	HCB - 1 lift	200-499	Urban Full Reconstruction - Base Course of Asphalt	2018	2016	11	114.0
695	Durham Street East	Egremont St N	Fergus St N	164	HCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2018	2016	10	111.6
681	Silverbirch Street	Durham S W	End	144	HCB - 1 lift	50-199	Urban Full depth removal and pave - 8.5m	2018	2016	9	46.1
21	Line 4	Side Rd 13	Side Rd 15	1865	LCB - 2 lifts	200-499	Surface Treatment - Single surface	2017	2016	9	46.6
530	Lovers Lane	Queen St W	Mid	1417	HCB - 1 lift	200-499	Rural Full depth pulverize and pave	2017	2017	13	198.4
3	Line 12	Side Rd 3	Side Rd 7	1854	LCB - 2 lifts	50-199	Rural Full depth pulverize and pave	2017	2017	8	259.5
1	Line 12	WR 14	Side Rd 3	1786	LCB - 2 lifts	50-199	Rural Full depth pulverize and pave	2017	2017	8	250.0

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**Appendix D1 - Road Construction Needs  
Sorted by Proposed Year of Need and Priority Score**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Surface Type	Traffic Range (vpd)	Road Construction Needs	Theo. Year of Need	Proposed Year of Work	Priority	Probable Costs (\$,000)
2	Line 12	Side Rd 7	WR 16	1842	LCB - 2 lifts	50-199	Rural Full depth pulverize and pave	2017	2017	8	257.9
72	Sideroad 7 East	Conc 4 N	Conc 2	2732	LCB - 2 lifts	200-499		2017	2017	6	15.0
11	Line 8	WR 16	Side Rd 13	1843	LCB - 2 lifts	50-199	Surface Treatment - Single surface	2017	2017	5	46.1
68	Sideroad 7 West	Conc 11	Conc 9	2730	LCB - 2 lifts	200-499	Rural Full depth pulverize and pave	2018	2018	13	427.3
17	Line 4	WR 14	Side Rd 3	1793	LCB - 1 lift	200-499	Surface Treatment - Single surface	2018	2018	12	64.8
82	Sideroad 5 East	Conc 6 N	Conc 4 N	1497	LCB - 1 lift	200-499	Surface Treatment - Single surface	2018	2018	12	52.4
19	Line 4	Side Rd 7	WR 16	1855	LCB - 1 lift	200-499	Surface Treatment - Single surface	2018	2018	12	66.4
18	Line 4	Side Rd 3	Side Rd 7	1856	LCB - 1 lift	200-499	Surface Treatment - Single surface	2018	2018	12	66.4
154	Concession 11	Side Rd 7 W	Hwy 9	4377	LCB - 1 lift	200-499	Surface Treatment - Double surface	2018	2018	11	278.9
132	Concession 4 North	Side Rd 6 E	Side Rd 7 E	1915	LCB - 1 lift	50-199	Surface Treatment - Single surface	2018	2018	10	67.9
20	Line 4	WR 16	Side Rd 13	1840	LCB - 2 lifts	200-499	Surface Treatment - Single surface	2018	2018	8	46.0
320	Eliza Street	Carroll St	Farrell Ln	82	LCB - 2 lifts	200-499	Urban Partial depth cold planing and resurfacing	2019	2019	11	17.2
6	Line 10	Side Rd 3	WR 16	3690	LCB - 2 lifts	0-49	Rural Full depth pulverize and pave	2019	2019	11	516.6
7	Line 10	WR 14	Side Rd 3	1789	LCB - 2 lifts	0-49	Rural Full depth pulverize and pave	2019	2019	11	259.4
661	Fergus Street South	Wellington St E	King St E	196	LCB - 1 lift	200-499	Urban Full Reconstruction - Base Course of Asphalt	2019	2019	9	133.3
168	Line 4	Side Rd 15	West of CA Access Road	833	LCB - 2 lifts	200-499	Surface Treatment - Single surface	2017	2019	9	20.8
583	North Water Street East	Peel St	Hwy 6	256	LCB - 1 lift	0-49	Urban Full Reconstruction - Base Course of Asphalt	2019	2019	9	174.3
161	Maple Street	Centre St	Wood St	75	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2017	2020	14	10.6
162	Maple Street	Hwy 89	Centre St	77	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2017	2020	14	10.8
158	Wood Street	WR 14	Maple St	121	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2019	2020	12	16.9
155	Oak Street	Hwy 89	Centre St	81	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2019	2020	12	11.3
159	Centre Street	WR 14	Maple St	121	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2019	2020	12	16.9
157	Wood Street	Maple St	Oak St	99	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2019	2020	12	13.9
705	Perth Street	Sligo Rd W	Durham St W	316	LCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2017	2020	12	215.0
160	Centre Street	Maple St	Oak St	100	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2019	2020	12	14.0
156	Oak Street	Centre St	Wood St	72	LCB - 1 lift	0-49	Rural Full depth pulverize and pave	2019	2020	12	10.1
658	Fergus Street North	Sligo Rd E	Durham St E	316	LCB - 1 lift	50-199	Urban Full Reconstruction - Base Course of Asphalt	2018	2020	10	214.6
92	Sideroad 3 West	Sally Street	Conc 11	1372	LCB - 1 lift	200-499	Rural Full depth pulverize and pave	2020	2020	9	207.1
654	Egremont Street North	Durham St E	Byeland Dr	147	LCB - 1 lift	50-199		2020	2020	8	34.0
609	King Street East	Fergus St S	Egremont St S	162	LCB - 2 lifts	200-499	Urban Full Reconstruction - Base Course of Asphalt	2021	2021	12	110.2

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**Appendix D1 - Road Construction Needs  
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**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Section Length (m)	Surface Type	Traffic Range (vpd)	Road Construction Needs	Theo. Year of Need	Proposed Year of Work	Priority	Probable Costs (\$,000)
317	Eliza Street	Eastview Dr	Leonard St	41	HCB - 2 lifts	200-499	Urban Partial depth cold planing and resurfacing	2021	2021	11	8.5
319	Eliza Street	Bellefield Cres	Carroll St	141	HCB - 2 lifts	200-499	Urban Partial depth cold planing and resurfacing	2021	2021	10	29.6
307	George Street	Francis St	John St	42	HCB - 2 lifts	>1000	Urban Partial depth cold planing and resurfacing	2021	2021	10	8.8
13	Line 6	WR 16	Side Rd 13	1837	HCB - 2 lifts	50-199	Rural Full depth pulverize and pave	2021	2021	10	257.2
643	Church Street North	Sligo Rd E	Cheryl Lynn St	214	HCB - 2 lifts	50-199	Urban Partial depth cold planing and resurfacing	2021	2021	9	44.9
645	Church Street North	Durham St E	Birmingham St E	195	HCB - 1 lift	200-499	Semi-Urban Hot Mix Resurfacing	2021	2021	9	18.5
584	Peel Street	York St	Queen St E	168	HCB - 1 lift	50-199	Semi-Urban Full depth pulverize and pave	2021	2021	8	23.5
93	Sideroad 3 West	WR 6	Sally St	1414	HCB - 1 lift	200-499	Rural Full depth pulverize and pave	2021	2021	7	212.9
375	Adelaide Street	Clarke St	Tucker St	178	HCB - 2 lifts	50-199	Urban Full Reconstruction - Base Course of Asphalt	2022	2022	11	206.1
350	Francis Street East	George St	Charles St	313	HCB - 2 lifts	50-199	Urban Full Reconstruction - Base Course of Asphalt	2022	2022	11	213.1
314	Isabella Street East	Leonard St	Frederick St	329	HCB - 2 lifts	50-199	Semi-Urban Hot Mix Resurfacing	2022	2022	10	31.3
585	Grant Street	Main St S	Parkside Dr	141	HCB - 2 lifts	200-499	Semi-Urban Hot Mix Resurfacing	2022	2022	9	13.4
73	Sideroad 7 East	Conc 2	WR 14	2740	HCB - 2 lifts	200-499	Rural Full depth pulverize and pave	2022	2022	9	413.6
341	Eastview Drive	Bellefield St	Lynwood Pl	211	HCB - 2 lifts	50-199	Urban Partial depth cold planing and resurfacing	2022	2022	9	44.3
67	Sideroad 7 West	WR 6	Conc 11	2766	HCB - 2 lifts	200-499	Rural Full depth pulverize and pave	2022	2022	9	417.3
535	Cork Street	Melissa Cres	Martin St	256	HCB - 1 lift	200-499	Rural Hot Mix Resurfacing (40mm HL-3, incl tack coat)	2022	2022	7	20.5
646	Church Street North	Birmingham St E	Wellington St E	189	HCB - 1 lift	200-499	Semi-Urban Hot Mix Resurfacing	2022	2022	6	17.9
706	Perth Street	End	Sligo Rd W	390	HCB - 1 lift	50-199	Rural Hot Mix Resurfacing (40mm HL-3, incl tack coat)	2022	2022	5	31.2
110	Sideroad 25	Side Rd 18	1st Line	1104	Gravel	50-199	Rural Full Reconstruction - Gravel Surface	2023	2023	13	298.1
65	Sideroad 8 West	Conc 7	Conc 6 S	1357	Gravel	50-199	Rural Full Reconstruction - Gravel Surface	2023	2023	13	366.3
305	George Street	Charles St	Frederick St	206	HCB - 2 lifts	>1000	Urban Partial depth cold planing and resurfacing	2023	2023	10	43.3
146	Concession 9	Side Rd 6 W	Side Rd 7 W	1852	HCB - 1 lift	200-499	Rural Hot Mix Resurfacing (40mm HL-3, incl tack coat)	2023	2023	7	148.1
152	Concession 11	Side Rd 4	Side Rd 5 W	1843	HCB - 1 lift	200-499	Rural Hot Mix Resurfacing (40mm HL-3, incl tack coat)	2023	2023	7	193.5
147	Concession 9	Side Rd 5 W	Side Rd 6 W	1851	HCB - 1 lift	200-499	Rural Hot Mix Resurfacing (40mm HL-3, incl tack coat)	2023	2023	7	194.3
647	Newfoundland Street	Wellington St E	King St E	186	HCB - 1 lift	0-49	Semi-Urban Hot Mix Resurfacing	2023	2023	5	17.7
91	Sideroad 3 West	Conc 11	Hwy 6	1144	HCB - 1 lift	0	Rural Full depth pulverize and pave	2023	2023	4	172.1

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**APPENDIX D-2**

**RECOMMENDED ROAD MAINTENANCE NEEDS  
SORTED BY TRAFFIC RANGE  
AND SECTION NUMBER**

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**Appendix D2 - Recommended Road Maintenance Needs  
Sorted by Traffic Range and Section Number**

**Township of Wellington North  
Road Management Study**

Section ID	Road Name	From	To	Surface Type	Traffic Range (vpd)	Recommended Spot Road and Drainage	Recommended Specific Maintenance	Total Maintenance Cost (\$,000)
79	Sideroad 5 West	Conc 11	Conc 9	Gravel	200-499	Gravel Road Spot Repair (<60 m)		9.0
38	Sideroad 7	Line 2	Line 4	Gravel	50-199	Gravel Road Spot Repair (<60 m)		9.0
60	Sideroad 9 East	Hwy 6	Conc 2	Gravel	50-199	Gravel Road Spot Repair (<60 m)		9.0
76	Sideroad 6 East	Hwy 6	Conc 4 N	Gravel	50-199	Ditching Improvements (<200 m)		10.5
88	Sideroad 3 East	Conc 6 N	Conc 4 N	Gravel	50-199	Gravel Road Spot Repair (<60 m)		9.0
95	Sideroad 2 East	Hwy 6	Conc 8	Gravel	50-199		Raise Road	69.5
107	1st Line	WR 109	Side Rd 30	Gravel	50-199	Gravel Road Spot Repair (<60 m)		9.0
111	Sideroad 25	1st Line	2nd Line	Gravel	50-199		Raise Road	44.0
112	Sideroad 25	2nd Line	3rd Line	Gravel	50-199		Ditching Improvements (Full Length)	6.5
128	Concession 4 North	Hwy 89	Side Rd 2 E	Gravel	50-199	Gravel Road Spot Repair (<60 m)		9.0
134	Concession 6 South	Side Rd 10 W	WR 109	Gravel	50-199	Gravel Road Spot Repair (<60 m)		10.5
135	Concession 6 South	Side Rd 9 W	Side Rd 10 W	Gravel	50-199	Gravel Road Spot Repair (<60 m)		9.0
32	Sideroad 3	Line 8	Line 10	Gravel	0-49		Raise Road	92.7
44	Sideroad 13	Line 6	Line 8	Gravel	0-49	Gravel Road Spot Repair (<60 m)		9.0
45	Sideroad 13	Line 4	Line 6	Gravel	0-49		Raise Road	93.3
47	Sideroad 13	WR 109	Line 2	Gravel	0-49		Raise Road	93.6
48	Sideroad 15	Line 2	WR 109	Gravel	0-49	Gravel Road Spot Repair (<60 m)		9.0
54	Sideroad 10 West	Conc 6 S	Conc 4 S	Gravel	0-49		Install subdrain full length, both sides	62.9
55	Sideroad 10 West	End	Conc 6 S	Gravel	0-49	Raise Grade Line - Gravel 150mm		4.0
119	Sideroad 30	2nd Line	3rd Line	Gravel	0-49	Gravel Road Spot Repair (<60 m)	Ditching Improvements (Full Length)	15.6
<b>Total:</b>								<b>584.0</b>

**APPENDIX E**  
**MAPS – PROPOSED YEAR OF WORK**

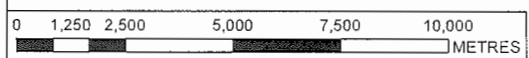
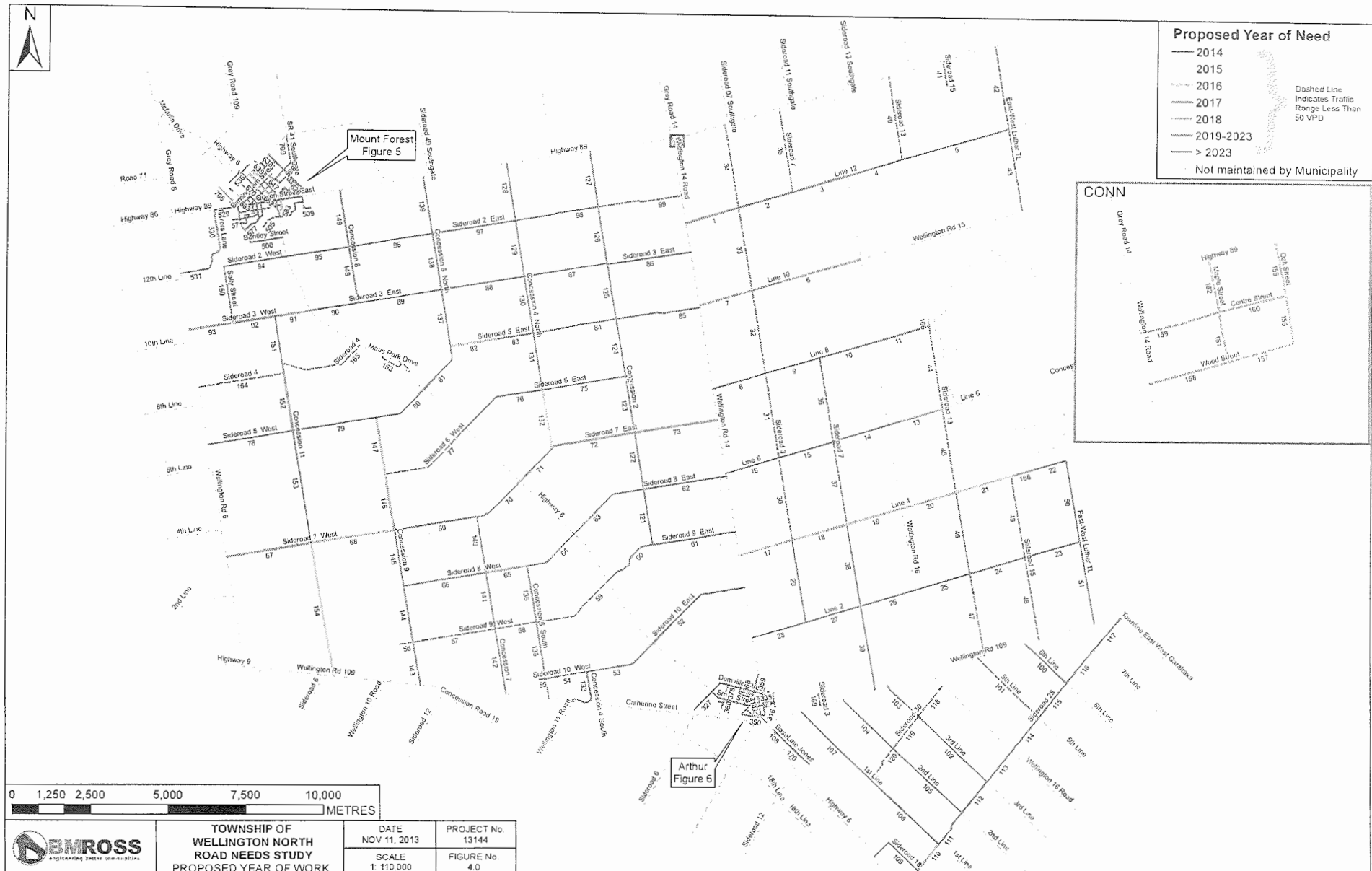
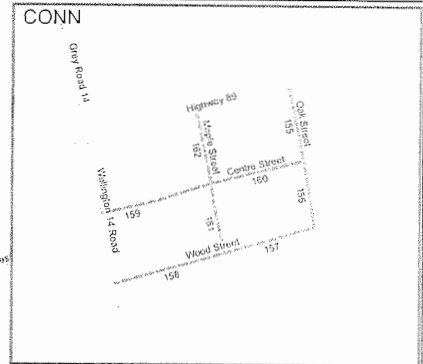
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**Proposed Year of Need**

- 2014
- 2015
- 2016
- 2017
- 2018
- 2019-2023
- > 2023
- Not maintained by Municipality

Dashed Line Indicates Traffic Range Less Than 50 VPD



	<b>TOWNSHIP OF WELLINGTON NORTH ROAD NEEDS STUDY PROPOSED YEAR OF WORK</b>	
	DATE NOV 11, 2013	PROJECT No. 13144
	SCALE 1: 110,000	FIGURE No. 4.0

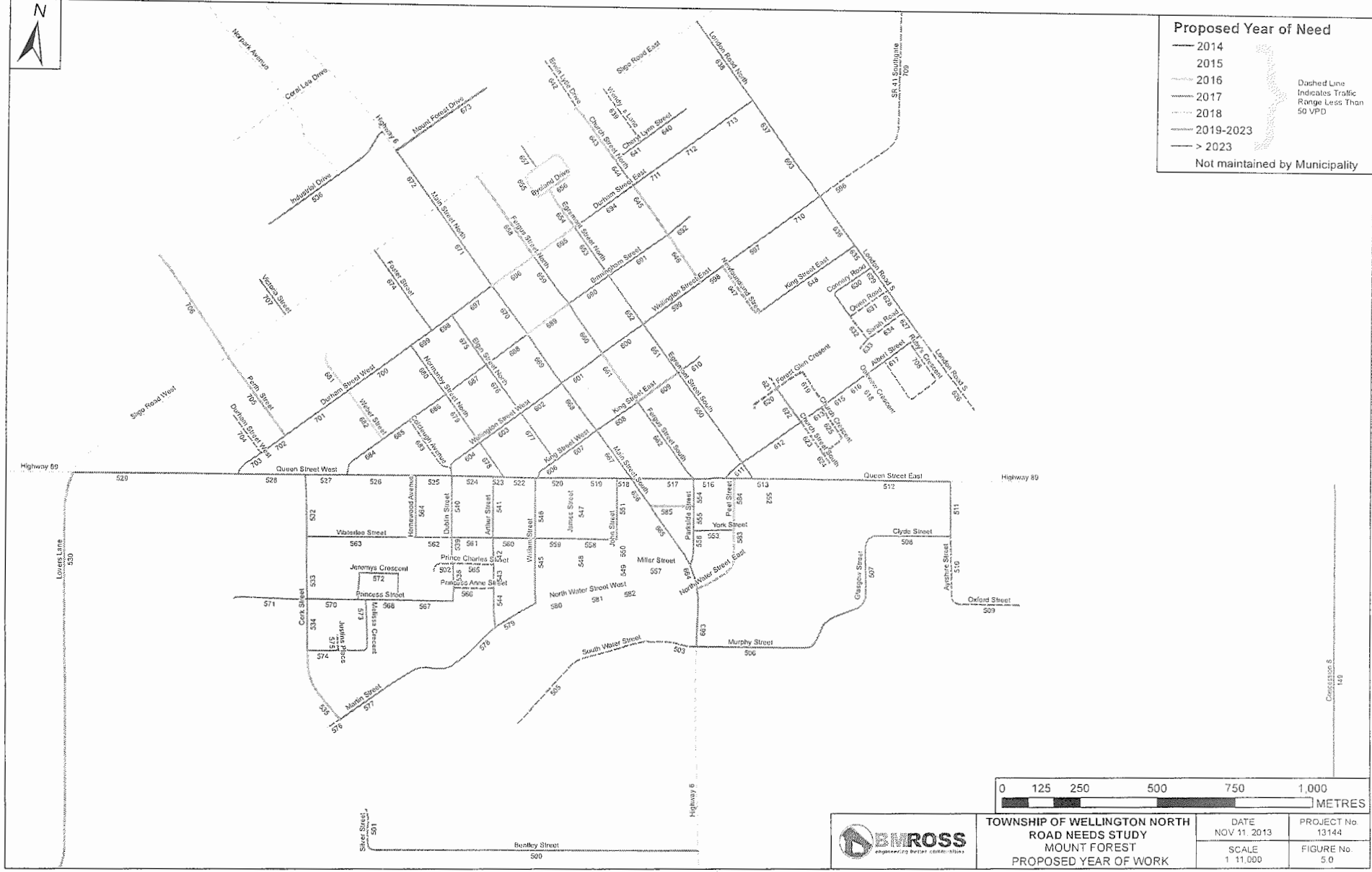


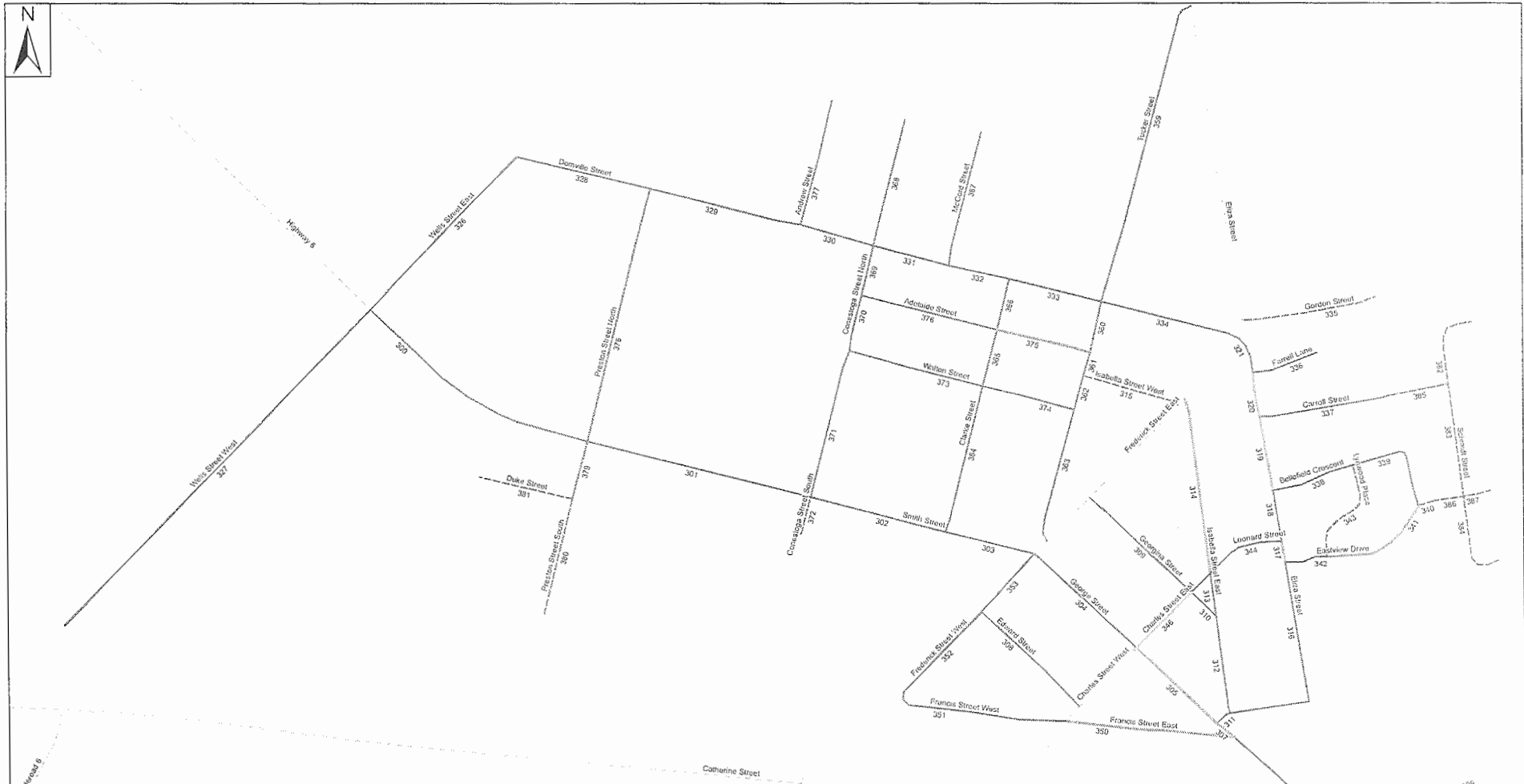
**Proposed Year of Need**

- 2014
- 2015
- 2016
- 2017
- 2018
- 2019-2023
- > 2023

Dashed Line Indicates Traffic Range Less Than 50 VPD

Not maintained by Municipality

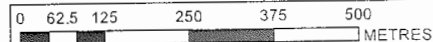




**Proposed Year of Need**

- 2014
- 2015
- - - 2016
- 2017
- 2018
- 2019-2023
- > 2023
- Not maintained by Municipality

Dashed Line  
Indicates Traffic  
Range Less Than  
50 VPD



**TOWNSHIP OF WELLINGTON NORTH  
ROAD NEEDS STUDY  
ARTHUR  
PROPOSED YEAR OF WORK**

DATE NOV 11, 2013	PROJECT No. 13144
SCALE 1:7,000	FIGURE No. 6.0

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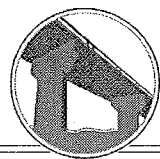
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**TOWNSHIP OF WELLINGTON NORTH**

**BRIDGE INSPECTION REPORT**

**2013**

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**BMROSS**  
engineering better communities

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**TOWNSHIP OF WELLINGTON NORTH**  
**BRIDGE INSPECTION REPORT**  
**2013**

November 6, 2013

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File No. 13144

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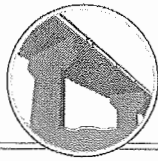
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Appendix C	Map



## 2013 BRIDGE NEEDS ASSESSMENT

### 1.0 INTRODUCTION

Bridges are an important and sometimes expensive component within a road network system. The purpose of a bridge needs assessment is to not only identify safety concerns and structural deficiencies but to help prioritize improvements in an effort to minimize the costs to maintain the bridges. BMROSS completed inspections of 101 bridges in the Township of Wellington North. This report includes a summary of our observations, some general recommendations and a suggested priority list of the needs to help maintain the bridges within your Township.

The Township supplied a map showing the locations of the bridges and a copy of the previous inspection reports prepared by K. Smart and Associates Ltd. Appendices A and B lists an inventory of the structures reviewed while Appendix C contains a map showing locations of the structures. The new inspection reports were prepared as per the Ontario Structural Inspection Manual (OSIM) and a copy of the reports has been provided in a separately bound booklet. While completing the review, we found one additional structure with a span just under 3m that was in very poor condition. To illustrate the problem with this structure and ensure it was included in the list of needs, we decided to also inspect and prepare an OSIM report for that structure.

### 2.0 SCOPE OF THE WORK

This study is to help the Township prioritize the structural improvements, address identified safety concerns in a cost effective way and help predict future costs. It is understood that some of this information will be incorporated into an overall asset management plan by the Township.

In general, the assessment process is divided into the following major components:

1. Prepare an inventory of the bridges using information supplied by the Township or obtained from previous inspections.
2. The inspections are completed in general accordance with the Ontario Structural Inspection Manual (OSIM) procedures. This includes a review the bridges looking for safety or structural deficiencies, taking measurements and assigning condition ratings of the key bridge elements to develop a Bridge Condition Index (BCI) as per the OSIM. Photographs were taken of all sites and of some defects to better illustrate the condition of the bridges.

3. Develop a probable cost estimate to address the recommended maintenance tasks and structural rehabilitation recommendations identified for each structure. These are divided into tasks required in the short term, within less than 5 years and anticipated within the next 6 to 10 year periods. These costs are included on the OSIM forms.
4. Identify a list of recommended additional investigation work, if warranted, to further evaluate the condition of the structures.
5. Incorporate the information gathered into a needs report that provides general comments about the condition of the structures, provides a priority list of the recommended needs and maintenance work with probable cost estimates.

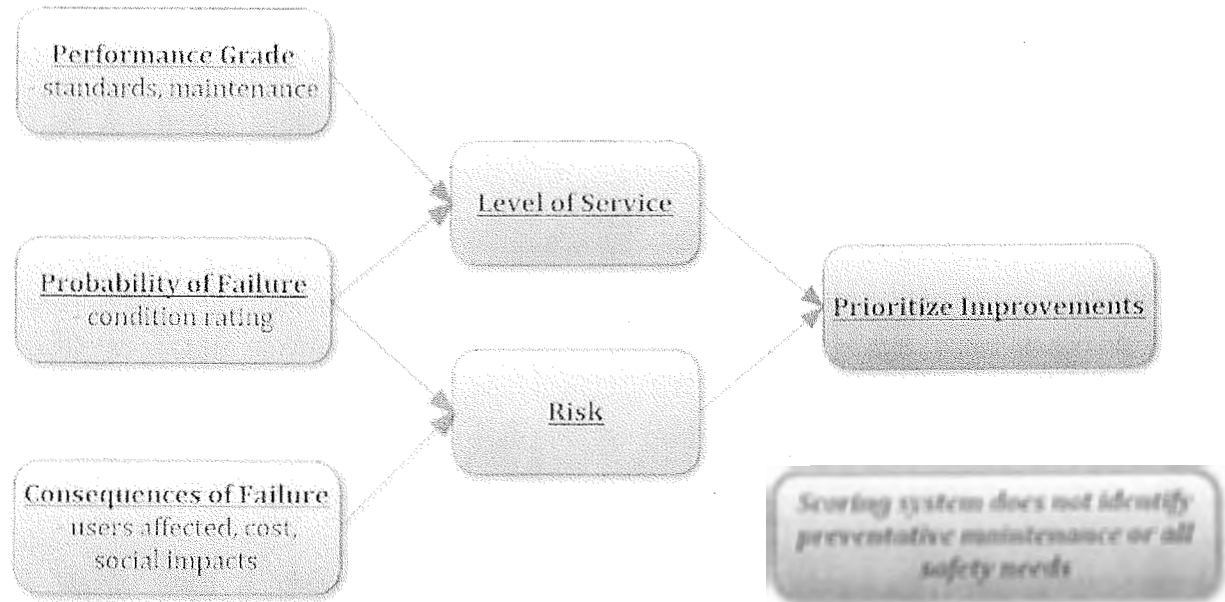
Note, although a projection of future needs upto 10 years in the future is provided, the Township is still required to have bi-annual inspections completed by a Professional Engineer as other safety concerns may develop overtime or the integrity of the structures may deteriorate quicker than anticipated.

The site inspections were done between August 10th, 2013 and September 9th, 2013. The majority of the structures were reviewed by Ken Logtenberg, P. Eng. with the help of an assistant. The two bridges in Mount Forest were reviewed by Andrew Ross, P. Eng. as he is familiar with the history of these structures. The report, load limit recommendations and recommended priority list were reviewed by Andrew Ross, P. Eng.

### 3.0 METHODOLOGY TO PRIORITIZE IMPROVEMENTS

When prioritizing the recommended capital improvements for a Bridge Needs Assessment or Asset Management Plan, we believe there are generally three key factors that should be taken into consideration; the probability of failure, the consequence of failure and the performance grade. While these factors can include many components, the **probability of failure** factor is generally represented by the condition rating or age of an asset. The **consequence of failure** is a score based on the number of users affected if the asset cannot be used safely or other social impacts and the cost of the asset. The **performance grade** should incorporate the relative maintenance requirements of the asset and a comparison of how the asset was built versus the appropriate design standard for that particular asset. In a simplified way these components were used as illustrated in Figure 1 to develop a theoretical priority score for the improvements.

**Figure 1**  
**Relationship between Data Collected and Calculated Priority Scores**



BMROSS has experimented with a scoring system to help prioritize the improvement needs as per the relationship shown in Figure 1 and as a starting point have implemented a suggested scoring and weighing system. For this study, the width of the bridge or culvert and the presence or lack of a load limit was used to calculate a performance grade for each road section. If the Township desires, in the future, other characteristics could be used to further refine this scoring system. If the width of the structure was in our opinion appropriate for a two lane road a score of 1 was applied. If the width was somewhat narrow to accommodate two lanes of traffic, a score of 3 was applied and if the bridge was only suitable for a single lane of traffic, a score of 5 was applied. Similarly the good score of 1 was assigned if the structure does not have a load limit and a score of 5 was assigned if there is a current or pending load limit. The average of the structure width and load limit score was used in the evaluation.

The BCI value calculated as per the OSIM format was used to determine the probability of failure score. Structures with BCI scores below 40 were assigned a score of 5 and structures with a BCI scores above 85 were assigned scores of 1. Between those values the score changes by one unit as the BCI score increases by 15 points. Meanwhile, the consequence of failure value has been calculated based on the assumed or supplied traffic volumes on each road section. A score of 1 means it has an average annual daily traffic value of less than 50 and a road with greater than a 1000 vehicles per day would have a score of 5. A table showing how the scores were assigned is provided in Appendix D.

The scores assigned for the three key factors were added together as illustrated in the figure to determine the theoretical level of service score, risk score and priority for improvement score for each asset. Although these are just relative numbers, Municipalities may choose to define a targeted average level of service or risk value for their bridges system using these values. They can also monitor and track these average scores over time for future comparison purposes. The theoretical priority score for each asset is the combined score of the level of service factor and the risk factor. Defining the desired level of service or acceptable levels of risk are beyond the scope of this study so only the priority score has been presented and used.

The theoretical priority scoring system has been used as a guide to help prioritize improvement work on the assets however there are other factors that should be taken in account when prioritizing the road improvements. Factors including preventative maintenance activities, scheduling tasks to coincide with integrated assets within the same area, addressing specific safety concerns, financial and timing restraints and other activities taking place within the vicinity must be considered by Township staff. It is impossible to take into account all of these other factors in a simplified scoring system. For this reason, the theoretical score of highest priorities established on an individual asset basis is only used as a guide and the priority list provided in this report, is in the opinion of the inspecting engineer the best sequence to incorporate the identified preventative maintenance and the specific safety concerns. Note, as the condition of the structures may deteriorate different than anticipated overtime and we are not aware of the other activities taking place in your Township or other financial obligations of the Township, adjustments to the sequence of the improvements may need to be made overtime by the Township.

#### **4.0 GENERAL COMMENTS**

##### **4.1 Guiderail**

Recommendations to replace bridge railings or guiderails on the approaches to bridges has only been included for a few structures in the list of improvements but may also be warranted at other locations not included in the list. Provincial regulations dictate that guiderail is to be installed where warranted in conformance with the *Roadside Safety Manual* of the Ministry of Transportation. The warrants include the need for steel beam guiderail on the approaches to all bridges that have railings. It will also include the need for cable guiderail for most culverts with fill as all of these represent roadside hazards.

Most municipalities find that the guiderail needs are overwhelming in cost and the addition of guiderail to existing structures is usually left until the structure is replaced or rehabilitated. Regardless, the regulations apply to all roadside hazards for all public roads. Consideration should especially be given to structures on roads that are now paved where most of their service life has been as a gravel road. The change to hard surface tends to increase the volume and the velocity of traffic, which increases the probability and consequence of an errant vehicle at any bridge site. Generally, an additional \$30,000 + HST should be budgeted for new steel beam guiderail, channel, and end treatments.

Consideration should also be given to sites of poor horizontal alignment or steep fills. The budget figures given do not include the cost of approach guiderail except where listed.

## 4.2 Single Lane Bridges

Bridges that have widths less than 6.0 m between curbs or railings should be posted as single lane crossings. The deficient width means that repairs to these structures should be given a lower priority with a view to replacing the bridges at the end of their service life rather than extending their service life.

Structures 34, 38, 2002, 2058, 2020, 2028 and 41 have a deck or road surface width over the structure less than 6m and by definition in the Bridge Code are single lane bridges. These structure should be posted accordingly.

## 4.3 Waterproofing

In the 1970s, the MTO had a policy of leaving concrete bridge decks exposed so that the deterioration could be monitored. Experience has shown that this visibility has not been worth the deterioration caused by de-icing salts. The MTO now recommends that all concrete decks on paved roads be protected with waterproofing and paving. The service life of the waterproofing is about 20 years. At the time of rehabilitation, the deck can be inspected and repaired, if necessary. Some bridges may not be able to accommodate the extra weight of the pavement and an engineer should be consulted before adding new pavement on a bridge deck.

## 4.4 Routine Maintenance

Bridges require periodic maintenance by staff or contractors. Beam bridges and trusses require bearing seats to be cleaned about once every 2 to 5 years, depending on the site. Expansion joint seals should be cleaned by pressure washer annually; usually in the spring or early summer.

Open footing culverts should be reviewed for erosion of the footings and rip rap should be placed to prevent failure by undermining. Brush and logs should be cleared from under structures or at entrances. Debris jams can cause failure of the entire structure by wash-out during flood events.

Where obvious maintenance needs were identified they were included in the list of maintenance needs table.

## 5.0 SUMMARY BRIDGE DATA COLLECTED

### 5.1 Age of Bridges

The Ontario Ministry of Transportation's *Structural Financial Manual* from 1993 suggests that the average service life of a bridge in Ontario is about 50 years. Other references and the new Bridge Code suggest bridges should provide a service life of 75 years. It is our opinion that rural bridges in this part of Ontario can be expected to provide a service life of about 80 years if properly maintained and repaired. The Township has 100 structures. On average, the Township should be replacing six structures in any five year period to avoid a concentrated replacement program in the future. Figure No. 2 shows an age distribution of the bridges in the Township using the assumed year built information provided or when not it was not provided the year built estimated by BMROSS was used.

When reviewing the assumed year built for the structures, it appears that only 21 new structures have been built in the last 33 years. Nineteen structures were identified as requiring replacement in the next ten years; however, if the Township cannot afford to replace them all at this time it may be necessary to consider closures or completion of some repairs to temporarily extend the life of the bridges.

**Figure No. 2**  
**Age Distribution of Bridges**

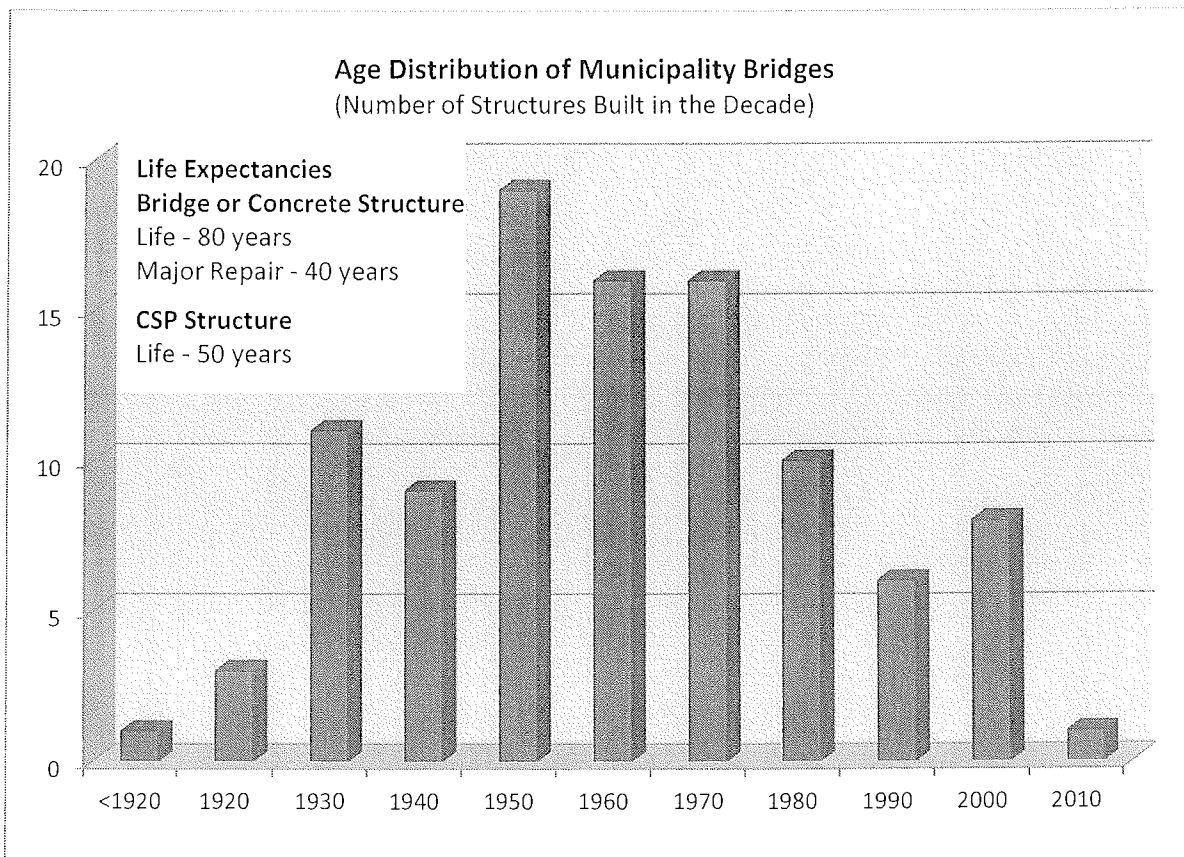
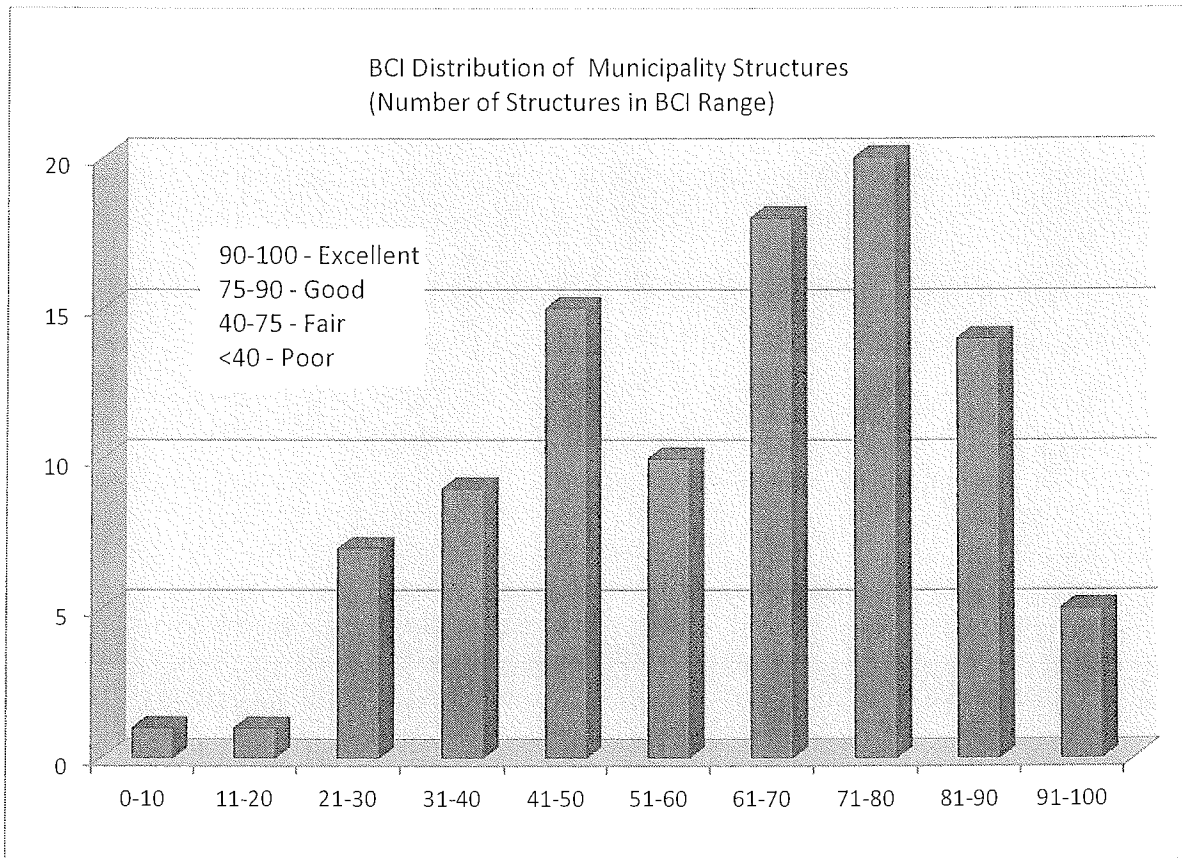


Figure 3 provides a breakdown of the Bridge Condition Index (BCI) range for the Township's bridges. The Ontario Ministry of Transportation's Bridge Condition Index information from 2009 indicates that the BCI is a measure of the overall structural condition of the bridge. The score is developed with a weighted average of the condition ratings for the individual components assessed. Generally speaking a structure with a BCI greater than 90 is in excellent condition, 75 to 90 good condition, 40 to 75 is in fair condition and below 40 the structure is in poor condition. 82 of the Township's 100 bridges have a rating of 40 or higher.



Figure No. 3  
BCI Distribution of Bridges



## 6.0 LOAD LIMIT POSTINGS

At the time of the inspections, 2 structures were posted with load limits: Structure 11 on Concession 11 at 15 tonnes and Structure 33 on East-West Luther Townline at 12 tonnes. Meanwhile it is recommended that 12 tonne load limits be assigned to the following Structures 2051 on Concession 8, 2058 and 2028 on Concession 13 and 2025 on Concession 6 South. It is also recommended that load limit evaluation be performed on Structure 21 on Sideroad 8, unless the Township previously had one completed for this structure or there are design drawings saying a load limit is not required.

Given the poor condition of the structures with 12 tonne load limits or recommended 12 tonne load limits and the fact that most of these structures are suspected to be more than 80 years old age, we have recommended they be replaced. The integrity of these structures and the others should be re-assessed each time the bi-annual bridge inspections are completed to determine if the load limits still appear appropriate.

## 7.0 GENERAL COMMENTS

The list of recommended repairs and structure replacement type improvements has been assembled in Table 1 and 2. Table 1 includes the higher priority tasks recommended for completion within the next 5 years and Table 2 has tasks recommended for completion in the 6 to 10 year period. The needs have been prioritized using the method explained in section 3 and the opinion of the Engineer. Remember that the structure with a higher calculated theoretical priority score should generally be repaired or rehabilitated sooner. This priority list is only a recommendations sequence and the ultimate decision on the order of repairs or replacement should be made by the Township.

**Table 1**  
**Suggested Priority List of Repair and Replacement Needs**  
**1 to 5 Year Period**

Site Number	Road Name	Recommended Improvement	BCI	Priority Score	Probable Cost
2051	Concession 8	Replace structure within a year	21	16	115,000
33	East-West Luther Townline	Replace with new concrete culvert	24	14	272,000
496	Main Street South	Re-coat structural steel, re-place deteriorated members, replace curbs, railings and misc work.	60	12	1,163,600
2057	First Line	Concrete strut between footings or rip rap in-front and misc. repairs	29	15	35,000
2056	Concession 2	Concrete strut between footings or rip rap in-front	38	13	25,000
2042	Line 2	Concrete strut between footings or rip rap in-front	42	13	35,000
2039	Line 6	Concrete strut between footings or rip rap in-front	52	12	35,000
2040	Sideroad 13	Concrete strut between footings or rip rap in-front	50	11	35,000
2025	Concession 6 South	Replace the structure	24	15	190,000
2028	Sideroad 13	Replace structure	24	16	193,500
2058	Sideroad 13	Replace structure	38	16	93,000
2026	Concession 6 South	Repair deck beams, soffit and surface or replace center of deck	42	13	97,000
27	Sideroad 9 East	Rehabilitate structure with new railings, curbs, abutment repairs, etc.	40	11	115,000
2027	Sideroad 10 West	Remove structure and block access to right-of-way	0		5,000
				Total	2,409,100

**Table 2**  
**Suggested Priority List of Repair and Replacement Needs**  
**6 to 10 Year Period**

Site Number	Road Name	Recommended Improvement	BCI	Priority	Probable Cost
11	Concession 11	Replace structure	41	14	326,000
40	Line 6	Place rip rap in front of abutments and misc. repairs	59	11	55,000
2013	Concession 9	Concrete repairs, curbs and railings	31	15	81,000
2036	Line 8	Replace structure	36	15	119,500
30	Sideroad 10 West	Concrete repairs at ends of culvert	39	12	54,000
42	2nd Line	Deck patch, waterproof and pave	75	7	43,000
2030	Line 12	Replace structure	30	15	160,000
22	Concession 2	Replace structure	21	14	210,000
38	Sideroad 3	Concrete repairs to soffit edges, deck and abutments	40	12	90,500
2020	Sideroad 8 East	Replace structure	20	15	120,000
20	Sideroad 7 West	Misc. concrete repairs, abutments	45	12	28,000
23	Concession 9	Misc. repairs to abutment, deck edges and railings	61	10	56,000
2022	Sideroad 9 West	Concrete repairs at ends of culvert	62	8	36,000
2038	Sideroad 7	Concrete repairs along edge of culvert	50	11	30,000
2004	Sideroad 3 East	Concrete repairs at ends of culvert	35	15	44,000
2012	Sideroad 6 East	Concrete repairs at ends of culvert	50	11	35,000
6	Concession 6 North	Replace structure	45	13	351,000
41	Sideroad 7	Re-attached railings to edge of deck and misc. repairs	61	11	35,000
				Total	1,874,000

Please note that the probable cost of repairs has been calculated based on 2013 construction costs. Appropriate inflation factors should be applied for other years. The costs in Table 1 and 2 include engineering, design, administration, and a 10% contingency. It is becoming increasingly difficult to provide a budget price for projects as the industry demand fluctuates. It is recommended that an updated estimate be obtained when the preliminary designs are prepared. As mentioned previously, efficiency can be gained by grouping like projects together to keep costs down.

To complete all the work recommended within the next 5 years would cost on average about \$500,000 per year and within the 6 to 10 year period would be about \$375,000. If this amount is more than available within the Township budget, it may be possible to address some of the short fall with money from grants, addressing the safety concerns with temporary repairs instead of replacements or by delaying the work. If the work is delayed, it is possible additional load limits or lower load limits will be recommended in the future or bridge closures may become necessary.

The first two projects listed in Table 1 are considered safety concerns that should be addressed within one year, and structure 496 is a high priority because completion of the work in the near future will prevent further deterioration of the structural steel members and prevent the costs to complete the work from escalating.

There are 5 smaller structures listed in Table 1 with erosion taking place within the stream along the front face of the footings or abutments. With some structures, the footings have already shifted inward. To extend the life of these structures, we are recommending that concrete struts and some rip rap be installed inside the culvert. We have found conservation authorities are hesitant to accept lining the entire culvert bottom with concrete but they are more willing to accept the installation of some concrete struts and rip rap as proposed. If these repairs are tendered as one project, it should help to minimize and possibly reduce the cost for this work.

To aid in long-term budgeting we have included repairs and replacements which have been identified for the 6 to 10 year period in Table 2. Probable costs for these structures are based on 2013 prices and 2013 quantities, it is expected that quantities for repairs will increase over time, and the extent of deterioration should be re-evaluated with future bridge inspections and when the preliminary designs are prepared. It may be determined then that the condition of the structure has deteriorated more or less than anticipated and the recommended method of repair will have to be changed.

While reviewing the structures within your Township we found there were numerous culverts and smaller span bridges within the Township that are in poor condition. Some of these had extensions put on the ends of them that are in reasonable condition but the original section of the center of the culvert is very old and in poor condition. It has been recommended that some of these be replaced within the next few years. Load limits restrictions have been recommended until the structures are replaced.

It was also identified that there are numerous bridges in the Township that should receive some maintenance work to avoid implementation of further load limits or more costly repairs or replacement in the near future.

Table 3 includes a list of the tasks we have described as maintenance needs. The maintenance needs have not been prioritized and are generally tasks that the Township staff can address themselves. The only additional investigation work identified during our review was a structure evaluations to determine if a load limit should be applied to Structure 21.

**Table 3  
List of Maintenance Needs**

Site Number	Road Name	Recommended Improvement	BCI	Priority	Probable Cost
5	Concession 2	Remove gravel over deck drains	79	7	500
16	Sideroad 6 East	Remove tree restricting flow at inlet	80	7	500
2007	Sideroad 5 East	Fill eroded pocket under pipe at the inlet and place rip rap	64	10	7,000
2009	Sideroad 5 East	Construct retaining wall to prevent further erosion at SW corner.	76	9	5,000
2018	Concession 9	Rip rap along face of south abutment	52	12	1,000
2019	Sideroad 7 West	Install hazard markers at ends of culvert	72	8	500
2024	Concession 11	Rip rap along face of east wing walls	46	12	1,000
2029	Sideroad 13	Repair damaged and deteriorated guide rail posts	82	6	1,000
2032	Line 12	Place rip rap to prevent erosion at each end	79	7	1,000
2035	Line 8	Place rip rap along front of footings or install struts between footings	61	9	1,000
2044	Sideroad 15	Waterproof or alternatively seal exposed deck joint	50	10	3,000
2055	Sideroad 5 West	Install hazard markers at ends of culvert	72	9	500
				Total	\$22,000

## 8.0 FURTHER INSPECTIONS

Provincial regulations require all bridges with spans greater than 3 m to be reviewed every two years under the supervision of a Professional Engineer. As a minimum, it is proposed that all structures be reviewed in 2015 and 2017 with letters outlining any new safety concerns. In 2019, a more detailed review and an updated assessment of the replacement and rehabilitation needs should be completed to replace this report.

All of which is respectfully submitted.

B. M. ROSS AND ASSOCIATES LIMITED

Per \_\_\_\_\_  
K.D. Logtenberg, P. Eng.

Per \_\_\_\_\_  
A. I. Ross, P. Eng.

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APPENDIX A

Bridge Inventory Summary by Structure Number

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## Bridge Inventory Summary by Site Number

Site Number	Structure Type	Structure Name	Road Name	Structure Location	Span Length (m)	Year Built	BCI	Priority Score	Probable Cost
1	Rigid Frame, Vertical Legs		Concession 4 North	Concession 4 & 5, Lot 1	12.2	1961	74	7	\$0
2	Rectangular Culvert		Concession 6 North	Concession 6 & 7, Lot 2	6.1	2013	100	7	\$0
3	Rectangular Culvert		Sideroad 2 East	Concession 7, Lot 3 & 4	6.2	1976	88	5	\$0
4	Rectangular Culvert		Sideroad 2 East	Concession 5, Lot 3 & 4	6	1980±	88	5	\$0
5	Rigid Frame, Vertical Legs		Concession 2	Concession 2 & 3, Lot 3	8.2	1965±	79	7	\$500
6	T-Beam		Concession 6 North	Concession 6 & 7, Lot 5	8.2	1930	45	13	\$351,000
7	Rectangular Culvert	Reidy Bridge	Concession 4 North	Concession 4 & 5, Lot 5	6	1976	88	5	\$0
8	Rigid Frame, Vertical Legs		Sideroad 3 West	Concession 12, Lot 6 & 7	13.6	1996±	91	6	\$0
9	Rectangular Culvert		Sideroad 3 East	Concession, Lot 6 & 7	6.1	1961±	64	9	\$0
10	Rectangular Culvert		Concession 6 North	Concession 6 & 7, Lot 7	6.2	1958±	76	9	\$0
11	T-Beam		Concession 11	Concession 10 & 11	7.6	1950±	41	14	\$326,000
12	Arch Culvert		Concession 11	Concession 10 & 11, Lot 9	9	1956±	70	8	\$0
13	Rectangular Culvert		Concession 11	Concession 10 & 11, Lot 11	7.8	1961±	76	8	\$0
14	Rectangular Culvert		Sideroad 6 East	Sideroad 6 East, Lot 16 & 17	6.1	1980	88	5	\$0
15	Rectangular Culvert		Concession 11	Concession 10 & 11, Lot 14	7.8	1961±	80	8	\$0
16	Arch Culvert		Sideroad 6 East	Sideroad 6 East, Lot 16 & 17	7.5	1977	80	7	\$500
17	Rectangular Culvert	Cook's Bridge East	Concession 11	Concession 10 & 11, Lot 17	6.1	1961±	64	10	\$0
18	I-beam or Girders		Concession 2	Concession 2 & 3, Lot 17	11.4	2006	68	9	\$0
19	Rectangular Culvert		Sideroad 7 West	Concession 10, Lot 18 & 19	5	2002	77	9	\$0
20	T-Beam		Sideroad 7 West	Concession 7 & 8, Lot 18 & 19	9.2	1946±	45	12	\$28,000
21	I-beam or Girders	Four Mile Creek	Sideroad 8 East	Concession 3, Lot 18 & 19	16.5	1980	63	10	\$0
22	Rectangular Culvert		Concession 2	Concession 2 & 3, Lot 18	6	1956	21	14	\$210,000
23	Box Beams of Girders	McDougall's Bridge	Concession 9	Concession 8 & 9, Lot 20	9.1	1956±	61	10	\$56,000
24	Rigid Frame, Vertical Legs	Kerry Bridge	Concession 9	Concession 8 & 9, Lot 20	10.7	1977	82	8	\$0
25	I-beam or Girders		Sideroad 8 West	Concession 8, Lot 21 & 22	14.8	2008	97	5	\$0
26	I-beam or Girders	Conestoga Bridge	Concession 9	Concession 8 & 9, Lot 22	15.6	2005	96	6	\$0
27	T-Beam		Sideroad 9 East	Sideroad 9 East, Lot 27 & 28	15.2	1941	40	11	\$115,000
28	T-Beam	Conestogo River Bridge	Concession 11	Concession 10 & 11, Lot 24	15.3	1955	55	10	\$0
29	Rectangular Culvert		Sideroad 10 East	Sideroad 10 East, Lot 31 & 32	6.1	1956±	79	7	\$0
30	Rectangular Culvert	Four Mile Creek	Sideroad 10 West	Concession 5, Lot 27 & 28	6.1	1961±	39	12	\$54,000
31	I-beam or Girders	Mitchell's Bridge	Sideroad 10 West	Concession 4, Lot 27 & 28	19	1985	83	7	\$0
32	Rectangular Culvert		Sideroad 10 West	Concession 31 & 32, West of Owen Sound Road	7.7	1978	88	5	\$0
33	T-Beam		East-West Luther Townline	Concession 13, Lot 18	6.5	1930±	24	16	\$272,000
35	Rectangular Culvert		Sideroad 13	Concession 12 & 13, Lot 13	6.1	1962	79	6	\$0
37	T-Beam	Lennox's Bridge	Line 8	Concession 8 & 9, Lot 3	6.25	1940	55	10	\$0
38	Solid Slab	Boyd's Bridge	Sideroad 3	Concession 7, Lot 3 & 4	13.6	1920	40	12	\$90,500
39	T-Beam	Cook's Bridge West	Line 6	Concession 6 & 7, Lot 4	12.2	1950	68	11	\$0
40	T-Beam	Cook's Bridge East	Line 6	Concession 6 & 7, Lot 4	9.1	1950	59	11	\$55,000
41	T-Beam	McDougall's Bridge	Sideroad 7	Concession 1, Lot 6 & 7	9.2	1945±	61	11	\$35,000
42	Rigid Frame, Vertical Legs	Conestogo River Bridge	2nd Line	Concession 2 & 3, Lot 34	10.65	1977	75	7	\$43,000
496	Deck Truss	Hopkins Bridge	Main Street South	0.6 km South of Highway 89	74.5	1960	60	12	\$1,163,600
516	Box Beams of Girders	White Bridge	Queen Street East	0.8 km East of Highway 6	39.6	1969	76	10	\$0
2001	Arch Culvert		Concession 2	0.5km South of Highway 89	3.6	1975±	64	9	\$0
2002	Arch Culvert	White Bridge	Sideroad 2 East	0.8km East of Concession 2	3.6	1980±	64	10	\$0
2003	Ellipse Culvert		Concession 8	0.6km South of Sideroad 2 East	3.2	2000±	82	7	\$0
2004	Rectangular Culvert		Sideroad 3 East	0.8km West of Concession 8	4.3	1945±	35	15	\$44,000
2005	Rectangular Culvert		Sideroad 3 East	1.4km East of Concession 2	4.2	1970±	83	6	\$0
2006	Arch Culvert		Sideroad 5 East	0.15km West of Concession 4 North	3.4	1990±	80	8	\$0
2007	Arch Culvert		Sideroad 5 East	0.25km West of Concession 2	2.9	1980±	64	10	\$7,000
2008	Arch Culvert		Sideroad 5 East	0.8km West of Wellington Road 14	5	1970±	50	11	\$0
2009	Rectangular Culvert		Sideroad 5 East	1km Northeast of Highway 6	3.6	1970±	76	9	\$5,000



## Bridge Inventory Summary by Site Number

Site Number	Structure Type	Structure Name	Road Name	Structure Location	Span Length (m)	Year Built	BCI	Priority Score	Probable Cost
2010	Rectangular Culvert		Sideroad 5 West	1.2km West of Concession 11	5.8	1980±	88	5	\$0
2011	Ellipse Culvert		Sideroad 5 West	1km West of Concession 11	3.85	1970±	64	9	\$0
2012	Rectangular Culvert		Sideroad 6 East	1km East of Concession 4 North	3.7	1965±	50	11	\$35,000
2013	Rectangular Culvert		Concession 9	0.8km South of Sideroad 5 West	4.8	1930±	31	15	\$81,000
2014	Rectangular Culvert		Sideroad 7 East	0.6km East of Concession 4 North	4.2	1930±	54	14	\$0
2015	Round Culvert		Sideroad 7 East	0.8km West of Concession 2	3.6	1990±	90	6	\$0
2016	Round Culvert		Sideroad 7 East	1km East of Concession 2	1.8	2005±	100	6	\$0
2017	Rectangular Culvert		Sideroad 7 East	1km West of Wellington Road 14	3	1955±	58	10	\$0
2018	Rectangular Culvert	Kerry Bridge	Concession 9	1km North of Sideroad 7 West	3	1920±	52	12	\$1,000
2019	Rectangular Culvert		Sideroad 7 West	1km East of Concession 11	3	1930±	72	8	\$500
2020	Rectangular Culvert		Sideroad 8 East	1.2km East of Concession 2	3	1930±	20	15	\$120,000
2021	Arch Culvert		Sideroad 9 East	0.2km West of Concession 2	3.6	2000±	75	7	\$0
2022	Rectangular Culvert		Sideroad 9 West	0.15 km East of Concession 6 South	4.3	1945±	62	8	\$36,000
2023	Arch Culvert		Sideroad 10 East	0.15km West of Wellington Road 14	3.8	1975±	68	9	\$0
2024	Rectangular Culvert	Conestoga Bridge	Concession 11	0.15km North of Wellington Road 109	3.6	1950±	46	12	\$1,000
2025	Rectangular Culvert		Concession 6 South	0.5km South of Sideroad 9 West	4.2	1961±	24	15	\$190,000
2026	Rectangular Culvert		Concession 6 South	0.5km North of Sideroad 10 West	6.1	1940±	42	13	\$97,000
2027	Rectangular Culvert		Sideroad 10 West	0.3km West of Concession 6 South	3	1920±	0	15	\$5,000
2028	Rectangular Culvert		Sideroad 13	0.1km South of Highway 89	4.8	~1930	24	16	\$193,500
2029	Rectangular Culvert		Sideroad 13	1km North of Line 12	4.7	1993	82	6	\$1,000
2030	Rectangular Culvert		Line 12	0.5km East of Sideroad 7	3.6	~1950	30	15	\$160,000
2031	Rectangular Culvert		Line 12	0.15km West of Wellington Road 16	4.05	~1965	60	9	\$0
2032	Ellipse Culvert		Line 12	0.1km East of Sideroad 13	3.3	2000±	79	7	\$1,000
2033	Rectangular Culvert		Line 12	0.6km West of Sideroad 13	1.2	~1960	66	10	\$0
2035	Rectangular Culvert		Line 8	0.9km East of Sideroad 3	3.1	1955±	61	9	\$1,000
2036	Rectangular Culvert	Reidy Bridge	Line 8	0.1km West of Sideroad 7	3.1	1930±	36	15	\$119,500
2037	Rectangular Culvert		Line 8	0.5km West of Wellington Road 16	4.15	~1970	79	7	\$0
2038	Solid Slab		Sideroad 7	0.8km South of Line 8	5.5	1945±	50	11	\$30,000
2039	Rectangular Culvert		Line 6	0.3km West of Wellington Road 16	4.2	1958±	52	12	\$35,000
2040	Rectangular Culvert		Sideroad 13	0.5km North of Line 2	3.2	1955±	50	11	\$35,000
2041	Rectangular Culvert		Line 2	0.3km West of Wellington Road 16	3.6	~1975	72	9	\$0
2042	Rectangular Culvert		Line 2	0.5km East of Sideroad 13	3.1	1945±	42	13	\$35,000
2043	Arch Culvert		Sideroad 15	1km South of Line 2	3.9	1970±	64	8	\$0
2044	Rectangular Culvert		Sideroad 15	0.01km North of Wellington Road 109	3.6	1955±	50	10	\$3,000
2045	Rectangular Culvert		Third Line	0.05 km South of Wellington Road 109	3.1	1985±	73	7	\$0
2046	Rectangular Culvert	Boyd's Bridge	Jones Baseline	0.5km Southeast of Highway 6	4.8	1958±	50	11	\$0
2047	Rectangular Culvert		Second Line	0.3km Northwest of Sideroad 30	3.66	1955±	60	10	\$0
2048	Rectangular Culvert		First Line	0.15km Southeast of Sideroad 30	3.8	1980±	83	7	\$0
2049	Rectangular Culvert		First Line	0.5km Southeast of Sideroad 30	5.2	1990±	90	5	\$0
2050	Arch Culvert	Lennox's Bridge	Sideroad 25	0.2 km Northeast of Third Line	2.4	1975±	41	11	\$0
2051	Rectangular Culvert		Concession 8	0.7km North of Sideroad 3 East	3	1910±	21	16	\$115,000
2052	Rectangular Culvert		Sideroad 3 East	0.15km West of Concession 4 North	3.05	1960±	49	12	\$0
2053	Arch Culvert		Sideroad 3 East	1.4km East of Concession 4 North	3.3	1985±	45	12	\$0
2054	Rectangular Culvert		Sideroad 3 East	0.3km West of Wellington Road 14	3	1930±	63	9	\$0
2055	Ellipse Culvert		Sideroad 5 West	0.7km West of Concession 9	3.1	1990±	72	9	\$500
2056	Rectangular Culvert		Concession 2	0.5km North of Sideroad 9 East	1.85	1960±	38	13	\$25,000
2057	Rectangular Culvert		First Line	1.2km Northwest of Sideroad 25	2.45	1955±	29	15	\$35,000
2058	Rectangular Culvert		Sideroad 13	0.5 km South of Highway 89	2.4	1930±	38	16	\$93,000

Note: Sites with the Year Built cells highlighted were estimated by BM Ross.

Appendix B  
Bridge Inventory Summary by BCI Number

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Bridge Inventory Summary by BCI Number

Site Number	Structure Type	Structure Name	Road Name	Bridge Condition Summary	Span Length (m)	Year Built	BCI	Overall Condition	Probable Cost
2027	Rectangular Culvert		Sideroad 10 West	Repairs recommended	3	1920±	0	Poor	\$5,000
2020	Rectangular Culvert		Sideroad 8 East	6-10 year repair/replacement recommended	3	1930±	20		\$120,000
2051	Rectangular Culvert		Concession 8	Replacement recommended and load posting	3	1910±	21		\$115,000
22	Rectangular Culvert		Concession 2	6-10 year repair/replacement recommended	6	1956	21		\$210,000
2025	Rectangular Culvert		Concession 6 South	Replacement recommended and load posting	4.2	1961±	24		\$190,000
2028	Rectangular Culvert		Sideroad 13	Replacement recommended and load posting	4.8	~1930	24		\$193,500
33	T-Beam		East-West Luther Townline	Replacement recommended and load posting	6.5	1930±	24		\$272,000
2057	Rectangular Culvert		First Line	Repairs recommended	2.45	1955±	29		\$35,000
2030	Rectangular Culvert		Line 12	6-10 year repair/replacement recommended	3.6	~1950	30		\$160,000
2013	Rectangular Culvert		Concession 9	6-10 year repair/replacement recommended	4.8	1930±	31		\$81,000
2004	Rectangular Culvert		Sideroad 3 East	6-10 year repair/replacement recommended	4.3	1945±	35		\$44,000
2036	Rectangular Culvert	Reidy Bridge	Line 8	6-10 year repair/replacement recommended	3.1	1930±	36		\$119,500
2056	Rectangular Culvert		Concession 2	Repairs recommended	1.85	1960±	38		\$25,000
2058	Rectangular Culvert		Sideroad 13	Replacement recommended and load posting	2.4	1930±	38		\$93,000
30	Rectangular Culvert	Four Mile Creek	Sideroad 10 West	6-10 year repair/replacement recommended	6.1	1961±	39		\$54,000
27	T-Beam		Sideroad 9 East	Repairs recommended	15.2	1941	40		\$115,000
38	Solid Slab	Boyd's Bridge	Sideroad 3	6-10 year repair/replacement recommended	13.6	1920	40		\$90,500
11	T-Beam		Concession 11	6-10 yr repair/replacement recmd. and load posting	7.6	1950±	41		\$326,000
2050	Arch Culvert	Lennox's Bridge	Sideroad 25	No work identified	2.4	1975±	41		\$0
2026	Rectangular Culvert		Concession 6 South	Repairs recommended	6.1	1940±	42		\$97,000
2042	Rectangular Culvert		Line 2	Repairs recommended	3.1	1945±	42		\$35,000
20	T-Beam		Sideroad 7 West	6-10 year repair/replacement recommended	9.2	1946±	45		\$28,000
2053	Arch Culvert		Sideroad 3 East	No work identified	3.3	1985±	45		\$0
6	T-Beam		Concession 6 North	6-10 year repair/replacement recommended	8.2	1930	45		\$351,000
2024	Rectangular Culvert	Conestoga Bridge	Concession 11	Maintenance recommended	3.6	1950±	46		\$1,000
2052	Rectangular Culvert		Sideroad 3 East	No work identified	3.05	1960±	49		\$0
2008	Arch Culvert		Sideroad 5 East	No work identified	5	1970±	50		\$0
2012	Rectangular Culvert		Sideroad 6 East	6-10 year repair/replacement recommended	3.7	1965±	50		\$35,000
2038	Solid Slab		Sideroad 7	6-10 year repair/replacement recommended	5.5	1945±	50		\$30,000
2040	Rectangular Culvert		Sideroad 13	Repairs recommended	3.2	1955±	50		\$35,000
2044	Rectangular Culvert		Sideroad 15	Maintenance recommended	3.6	1955±	50		\$3,000
2046	Rectangular Culvert	Boyd's Bridge	Jones Baseline	No work identified	4.8	1958±	50		\$0
2018	Rectangular Culvert	Kerry Bridge	Concession 9	Maintenance recommended	3	1920±	52		\$1,000
2039	Rectangular Culvert		Line 6	Repairs recommended	4.2	1958±	52	\$35,000	
2014	Rectangular Culvert		Sideroad 7 East	No work identified	4.2	1930±	54	\$0	
28	T-Beam	Conestoga River Bridge	Concession 11	No work identified	15.3	1955	55	\$0	
37	T-Beam	Lennox's Bridge	Line 8	No work identified	6.25	1940	55	\$0	
2017	Rectangular Culvert		Sideroad 7 East	No work identified	3	1955±	58	\$0	
40	T-Beam	Cook's Bridge East	Line 6	6-10 year repair/replacement recommended	9.1	1950	59	\$55,000	
2031	Rectangular Culvert		Line 12	No work identified	4.05	~1965	60	\$0	
2047	Rectangular Culvert		Second Line	No work identified	3.66	1955±	60	\$0	
496	Deck Truss	Hopkins Bridge	Main Street South	Repairs recommended	74.5	1960	60	\$1,163,600	
2035	Rectangular Culvert		Line 8	Maintenance recommended	3.1	1955±	61	\$1,000	
23	Box Beams of Girders	McDougall's Bridge	Concession 9	6-10 year repair/replacement recommended	9.1	1956±	61	\$56,000	
41	T-Beam	McDougall's Bridge	Sideroad 7	6-10 year repair/replacement recommended	9.2	1945±	61	\$35,000	
2022	Rectangular Culvert		Sideroad 9 West	6-10 year repair/replacement recommended	4.3	1945±	62	\$36,000	
2054	Rectangular Culvert		Sideroad 3 East	No work identified	3	1930±	63	\$0	
21	I-beam or Girders	Four Mile Creek	Sideroad 8 East	No work identified	16.5	1980	63	\$0	
17	Rectangular Culvert	Cook's Bridge East	Concession 11	No work identified	6.1	1961±	64	\$0	
2001	Arch Culvert		Concession 2	No work identified	3.6	1975±	64	\$0	
2002	Arch Culvert	White Bridge	Sideroad 2 East	No work identified	3.6	1980±	64	\$0	

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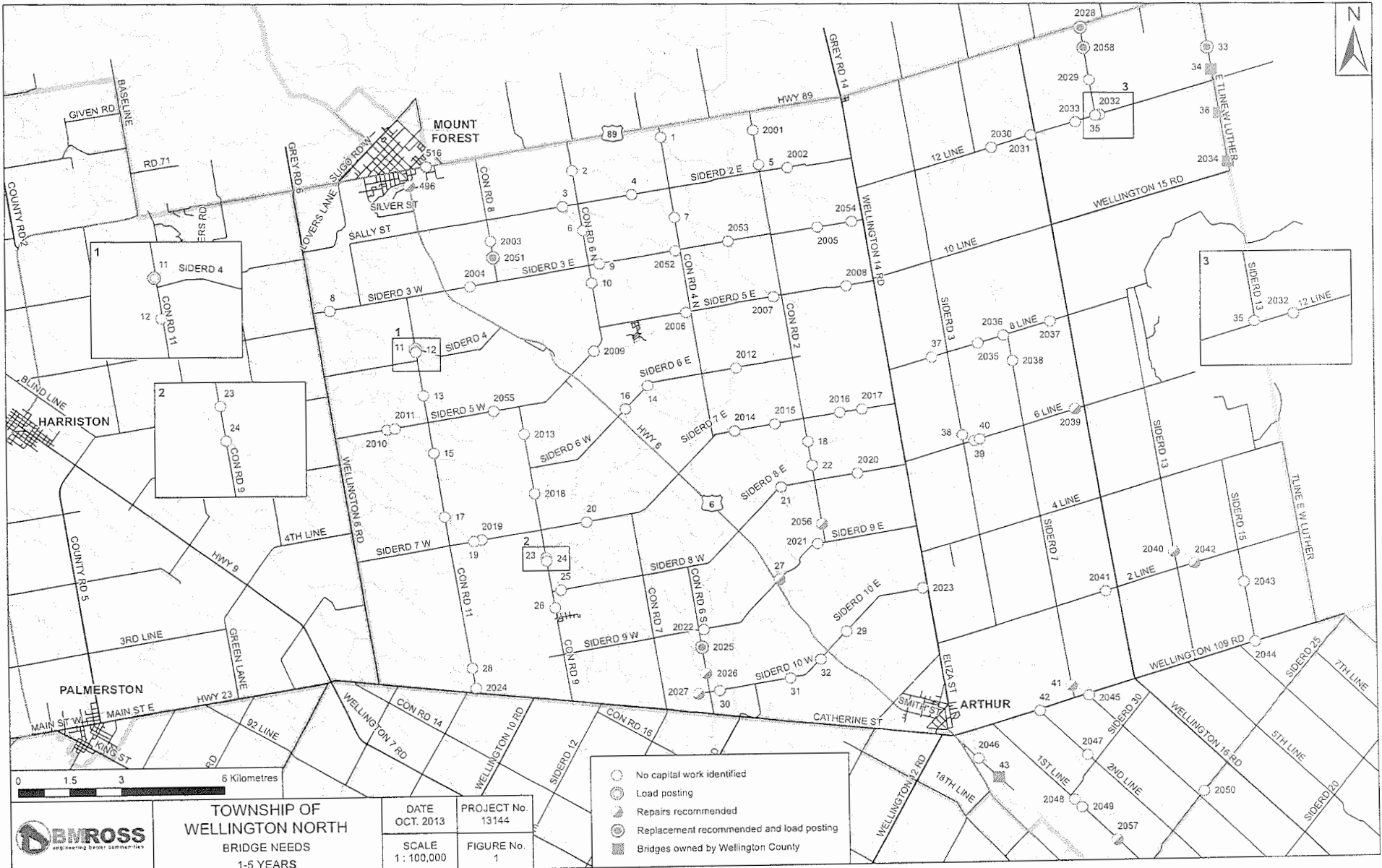
## Bridge Inventory Summary by BCI Number

Site Number	Structure Type	Structure Name	Road Name	Bridge Condition Summary	Span Length (m)	Year Built	BCI	Overall Condition	Probable Cost
2007	Arch Culvert		Sideroad 5 East	Maintenance recommended	2.9	1980±	64	Fair	\$7,000
2011	Ellipse Culvert		Sideroad 5 West	No work identified	3.85	1970±	64		\$0
2043	Arch Culvert		Sideroad 15	No work identified	3.9	1970±	64		\$0
9	Rectangular Culvert		Sideroad 3 East	No work identified	6.1	1961±	64		\$0
2033	Rectangular Culvert		Line 12	No work identified	1.2	~1960	66		\$0
18	I-beam or Girders		Concession 2	No work identified	11.4	2006	68		\$0
2023	Arch Culvert		Sideroad 10 East	No work identified	3.8	1975±	68		\$0
39	T-Beam	Cook's Bridge West	Line 6	No work identified	12.2	1950	68		\$0
12	Arch Culvert		Concession 11	No work identified	9	1956±	70		\$0
2019	Rectangular Culvert		Sideroad 7 West	Maintenance recommended	3	1930±	72		\$500
2041	Rectangular Culvert		Line 2	No work identified	3.6	~1975	72		\$0
2055	Ellipse Culvert		Sideroad 5 West	Maintenance recommended	3.1	1990±	72		\$500
2045	Rectangular Culvert		Third Line	No work identified	3.1	1985±	73		\$0
1	Rigid Frame, Vertical Legs		Concession 4 North	No work identified	12.2	1961	74		\$0
2021	Arch Culvert		Sideroad 9 East	No work identified	3.6	2000±	75		\$0
42	Rigid Frame, Vertical Legs	Conestogo River Bridge	2nd Line	6-10 year repair/replacement recommended	10.65	1977	75	\$43,000	
10	Rectangular Culvert		Concession 6 North	No work identified	6.2	1958±	76	\$0	
13	Rectangular Culvert		Concession 11	No work identified	7.8	1961±	76	\$0	
2009	Rectangular Culvert		Sideroad 5 East	Maintenance recommended	3.6	1970±	76	\$5,000	
516	Box Beams of Girders	White Bridge	Queen Street East	No work identified	39.6	1969	76	\$0	
19	Rectangular Culvert		Sideroad 7 West	No work identified	5	2002	77	\$0	
2032	Ellipse Culvert		Line 12	Maintenance recommended	3.3	2000±	79	\$1,000	
2037	Rectangular Culvert		Line 8	No work identified	4.15	~1970	79	\$0	
29	Rectangular Culvert		Sideroad 10 East	No work identified	6.1	1956±	79	\$0	
35	Rectangular Culvert		Sideroad 13	No work identified	6.1	1962	79	\$0	
5	Rigid Frame, Vertical Legs		Concession 2	Maintenance recommended	8.2	1965±	79	\$500	
15	Rectangular Culvert		Concession 11	No work identified	7.8	1961±	80	\$0	
16	Arch Culvert		Sideroad 6 East	Maintenance recommended	7.5	1977	80	\$500	
2006	Arch Culvert		Sideroad 5 East	No work identified	3.4	1990±	80	\$0	
2003	Ellipse Culvert		Concession 8	No work identified	3.2	2000±	82	\$0	
2029	Rectangular Culvert		Sideroad 13	Maintenance recommended	4.7	1993	82	\$1,000	
24	Rigid Frame, Vertical Legs	Kerry Bridge	Concession 9	No work identified	10.7	1977	82	\$0	
2005	Rectangular Culvert		Sideroad 3 East	No work identified	4.2	1970±	83	\$0	
2048	Rectangular Culvert		First Line	No work identified	3.8	1980±	83	\$0	
31	I-beam or Girders	Mitchell's Bridge	Sideroad 10 West	No work identified	19	1985	83	\$0	
14	Rectangular Culvert		Sideroad 6 East	No work identified	6.1	1980	88	\$0	
2010	Rectangular Culvert		Sideroad 5 West	No work identified	5.8	1980±	88	\$0	
3	Rectangular Culvert		Sideroad 2 East	No work identified	6.2	1976	88	\$0	
32	Rectangular Culvert		Sideroad 10 West	No work identified	7.7	1978	88	\$0	
4	Rectangular Culvert		Sideroad 2 East	No work identified	6	1980±	88	\$0	
7	Rectangular Culvert	Reidy Bridge	Concession 4 North	No work identified	6	1976	88	\$0	
2015	Round Culvert		Sideroad 7 East	No work identified	3.6	1990±	90	\$0	
2049	Rectangular Culvert		First Line	No work identified	5.2	1990±	90	\$0	
8	Rigid Frame, Vertical Legs		Sideroad 3 West	No work identified	13.6	1996±	91	\$0	
26	I-beam or Girders	Conestoga Bridge	Concession 9	No work identified	15.6	2005	96	\$0	
25	I-beam or Girders		Sideroad 8 West	No work identified	14.8	2008	97	\$0	
2	Rectangular Culvert		Concession 6 North	No work identified	6.1	2013	100	\$0	
2016	Round Culvert		Sideroad 7 East	No work identified	1.8	2005±	100	\$0	

Note: Sites with the Year Built cells highlighted were estimated by BM Ross.

## Appendix C

### Map



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