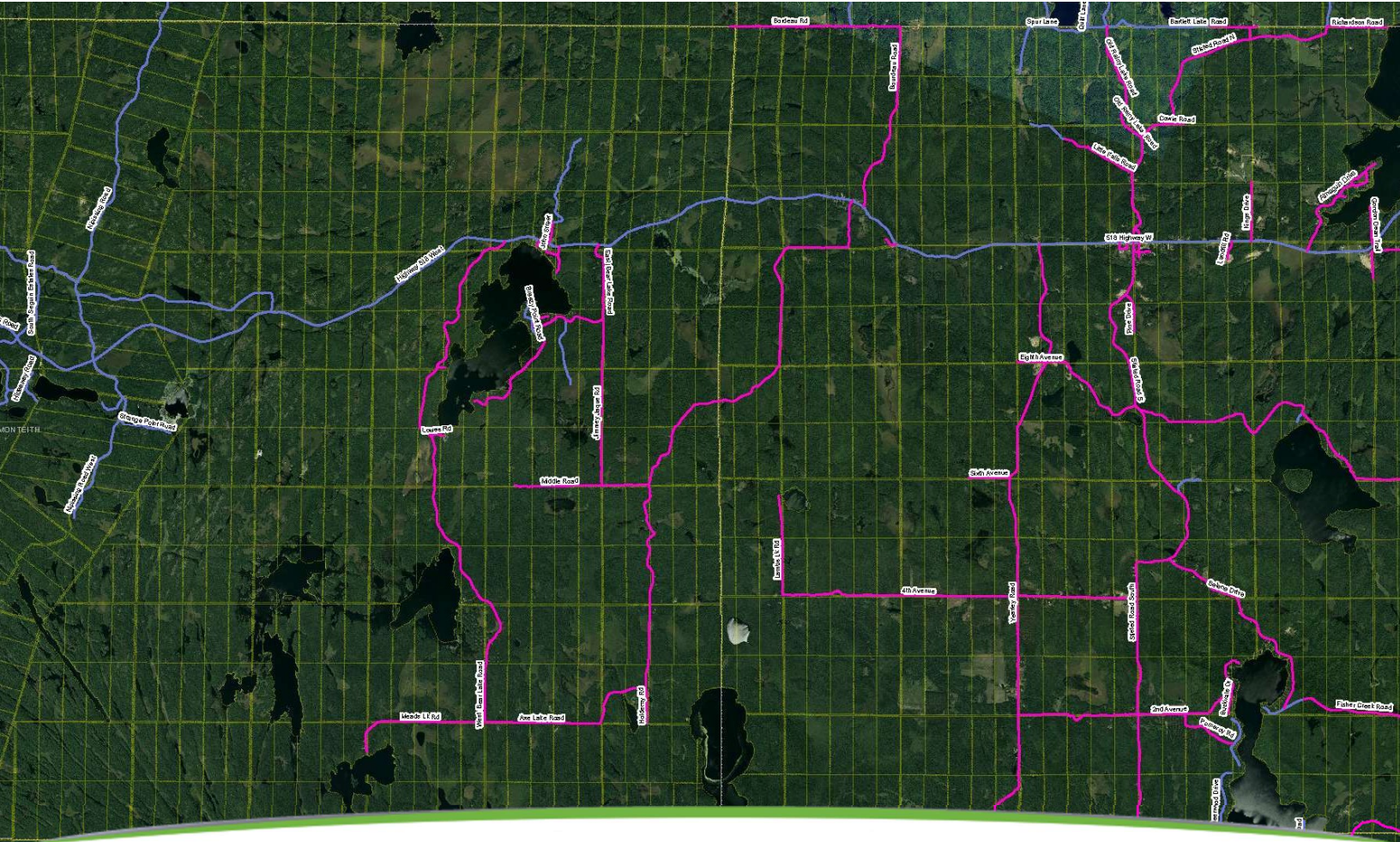




## 2025 Road Needs Study

### RFP 2025-01



Township of McMurrich / Monteith



Sprucedale, Ontario



November 28, 2025



Planners | Surveyors | Biologists | Engineers

**Township of McMurrich / Monteith**

2025 Road Needs Study  
**Sprucedale, Ontario**

**TULLOCH Document No. / Rev. 25-1125 / Rev. B**  
November 2025

|            |      |                  |              |            |             |
|------------|------|------------------|--------------|------------|-------------|
|            |      |                  |              |            |             |
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| 2025-11-28 | B    | REVISED<br>FINAL | Sean Wetmore | Ted Maurer | Ted Maurer  |
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211202 Moneith RNS Inventory.xlsx, Excel Format Digital Database  
 McMurrich Monteith 2025 RNS.kmz, Google Earth Format Geospatial Index  
 ESRI ArcGIS Shapefiles, (various) \*.shp

## **1. PURPOSE, BACKGROUND AND STUDY METHOD**

### **1.1. Purpose**

The 2025 Road Needs Study documents the Township of McMurrich / Monteith's road network and evaluates its condition. Using a road inventory provided by the Township, TULLOCH conducted field inspections in July 2025 to compile a complete listing of roads within the Township and assign condition ratings, priority ratings, and recommended improvements based on network needs. This study follows methodologies and data standards outlined in the Ministry of Transportation's Inventory Manual for Municipal Roads (the "MTO Guide"), which establishes consistent procedures and criteria for identifying improvement requirements.

The in-field information collected and derived from the MTO Guide this study are intended to:

- Provide the Township with an up-to-date review of road conditions;
- assess existing conditions compared to minimum road standards;
- propose a prioritization schedule of road improvements;
- provide a signage inventory for the subject road sections;
- assist the Township in developing and executing a planned road maintenance and improvement program budget; and

as a data collection exercise outside the scope of the MTO Guide:

- identify deficient signage for maintenance and repair.

### **1.2. Background**

The Township of McMurrich / Monteith is in the Almaguin Highlands region of the Parry Sound District and has a permanent population of 907, according to the 2021 Census (Statistics Canada). Highway 11 runs along the township's eastern boundary and serves as its main highway connection. The village of Sprucedale, located in the northeastern part of the township, lies entirely within its boundaries and functions as the municipal centre.

In this study, traffic densities and road usage are classified as rural, defined as "areas with sparse development" (MTO Guide, Item 32). Outside of Sprucedale, most dwellings are scattered along access roads and around several lakes, including Doe Lake, Buck Lake, and Axe Lake. These access roads make up the majority of those maintained by the Township. Population and traffic volumes increase significantly during the summer months due to an influx of seasonal residents.

In 2023 an *Asset Management Plan* was prepared by the Township which included an inventory of Township maintained roads. This 2025 Road Needs Study utilizes and builds from the road

asset information that was documented in the 2023 Asset Management Plan (AMP) to establish road usage density. Specific Average Annual Daily Traffic data (AADT) was unavailable at the time of this study, so the *AADT Range Class* provided in the 2025 AMP was utilized. Municipal By-Law 27-2013 was provided by the Township to further refine and unify the classification of roads with Township records and specify a reasonable estimate of AADT per road section.

### 1.3. Study Objectives

Based on the Request for Proposal and discussion with Township staff, the following study objectives were identified:

- Provide an inventory of Township's roads, assess their conditions and needs, and develop a priority listing for construction needs and improvements with costing;
- provide a prioritized list of capital road projects for the Township in compliance with the latest Ministry of Transportation (MTO) guidelines using the Inventory Manual for Municipal Roads; and,
- provide a road sign inventory for the subject roads including sign condition and repair or replacement needs.

### 1.4. Study Methodology

The procedure utilized to complete this study is in accordance with the Ministry of Transportation's Inventory Manual for Municipal Roads (February 1991). During the field study the following road characteristics were reviewed and documented to assess the current adequacy of the road:

- Platform width (overall width of road);
- surface width (width of pavement surface);
- shoulder width;
- surface type (i.e. gravel, low class bituminous, or high class bituminous);
- drainage type (i.e. open ditches vs. storm sewers, etc.);
- surface condition (1 – 10, per MTO Guide);
- structural adequacy (1 – 20, per MTO Guide);
- drainage adequacy (1 – 15, per MTO Guide);
- maintenance demand (1-10, per MTO Guide);
- roadside environment (i.e. rural, urban, etc.);
- horizontal and vertical grades and sightlines.

### 1.5. Critical Deficiencies

Critical deficiencies represent road characteristics that result in increased maintenance costs or lead to an inadequate level of service. Road sections may be assessed as critically deficient if any one of the following characteristics falls below the minimum tolerable standards defined in the Township standards or MTO Inventory Manual where absent:

1. Surface type: insufficient surface type for traffic volumes.
2. Surface width: insufficient width of road driving surface, excluding shoulders.
3. Capacity: insufficient capacity at peak traffic volumes.
4. Structural Adequacy: insufficient road base.
5. Drainage: increased flooding and/or excess maintenance needs.

### 1.5.1. Surface Type

The following parameters were used to assess the adequacy of the road surface type. Roads with traffic volumes (AADT) in excess of the values recommended below for various surface types were noted as critically deficient triggering a "Now" need.

**Table 1 - Surface Type by Annual Average Daily Traffic (AADT)**

| AADT    | Surface Type Recommended   |
|---------|----------------------------|
| 0-199   | Gravel (G)                 |
| 200-399 | Low Cost Bituminous (LCB)  |
| >400    | High Cost Bituminous (HCB) |

Note that these ranges are guidelines and not necessarily meant to be rigidly applied. If a Low Class Bituminous (LCB) road has a higher than recommended AADT (Annual Average Daily Traffic), but is performing at a desirable level, it may not need to be upgraded to High Class Bituminous (HCB). Similarly, if a section of gravel road requires excessive maintenance (for example, on steep grades); LCB may be justified at lower traffic levels.

### 1.5.2. Surface Width

Surface widths that fall below minimum tolerable standards detailed in the MTO Inventory Manual Appendix F Table F-1 were noted as critically deficient triggering a "Now" need. Where the road section AADT fell below the road standards provided in the MTO Guide, Township standards were used. It should be noted that the majority of road sections in this study are within the 0-49 AADT Range class and therefore depend upon Township standards.

### 1.5.3. Capacity

An in-depth traffic capacity analysis was not completed as part of the scope of this Road Needs Study. Decisions with respect to expansion of roads should be made within the context of a Transportation Master Plan or Official Plan for the Township.

From a general perspective, a two-lane road can typically provide adequate service up to an AADT of approximately 12,000 vehicles. The functionality of a road from a capacity standpoint is dependent upon compound factors in combination with volume. Adjacent land uses, number of access points also have a significant impact on road function (i.e. entrances and side roads, intersection types, etc.).

A rural road with limited entrances and side roads will have a much greater capacity versus an urban street with many entrances and side road intersections. The AADT of 12,000 can be used to trigger further analysis on the road capacity and operation. For the purposes of this study, all roads were assigned to be adequate from a capacity perspective.

#### 1.5.4. Structural Adequacy

In cases where road base or structure is rated 7 or lower, or showing distress over more than 20% of the length of the road section, a "Now" need is assessed.

#### 1.5.5. Drainage

A road section is assessed as a "Now" need for drainage generally when a road becomes impassible due to water one or more times a year. This information is not readily accessible from inspection. Characteristics such as ditching, water ponding on or around the road, and evidence of past washouts were used to assess road drainage. As such, any roads which received a drainage rating of 7 or lower out of 20 was given a "Now" need for drainage.

## 2. ROAD SYSTEM

All subject road sections in the Township 2023 Asset Management Plan were inventoried according to the methods outlined in the Inventory Manual for Municipal Roads. The inventory procedure requires that each road in the system be studied as a separate unit. Initially, the road system was divided into sections so that each conformed, as close as possible, to the following requirements:

- Existing road sections defined by the Township;
- Uniform traffic volume;
- uniform terrain;
- uniform physical conditions; and
- uniform adjacent land.

Depending on location with respect to developed areas, roads were classified in a manner generally descriptive of the type of development serviced as follows:

- |            |                                                                                                                                      |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Urban      | - Roads with curb and gutter and storm sewer drainage.                                                                               |
| Semi-Urban | - Roads in built up areas (development exceeds 50% of the frontage) without curb and gutter or curb and gutter on one (1) side only. |
| Rural      | - Roads with development on less than 50% of the frontage.                                                                           |

Rural roads were further evaluated based on estimated traffic volumes (e.g. 0-49 vehicles per day, 50-199, 200-399, etc.). For the purpose of this study, traffic volumes were adopted or

estimated from previous estimates provided by the Township in their 2025 Asset Management Plan at the upper threshold of their respective classifications.

**Table 2** summarizes the total road lengths of the road system in kilometres, by surface type, and road environment as of August 2023. The existing road system consists of 130 km of roadway, 3 km of earthen roads, 107 km of gravel roads, and 20 km of surface treated roads (LCB). All calculations are approximate and rounded to the nearest kilometre.

All roads in the Township are considered *rural*.

Several road sections within the Township inventory which were previously listed as surface treated had a gravel surface at the time of inspection due to road improvements.

**Table 2 - Road System in Kilometers.**

| Township of McMurrich / Monteith<br>Road System in Kilometers<br>(as of July 2025) |                         |                |
|------------------------------------------------------------------------------------|-------------------------|----------------|
| <b>A. Surface Type</b>                                                             |                         | <b>Totals*</b> |
| Earth                                                                              |                         | 3              |
| Gravel (loose Top Gravel)                                                          |                         | 105            |
| Surface Treatment (LCB & ICB)                                                      |                         | 22             |
| Hot Mix Asphalt (HCB)                                                              |                         | 0              |
|                                                                                    | <b>Total A</b>          | <b>130</b>     |
| <b>B. Roadside Environment</b>                                                     |                         |                |
| <b>(i) Rural</b>                                                                   |                         |                |
| Earth                                                                              |                         | 3              |
| Gravel (loose Top Gravel)                                                          |                         | 105            |
| Surface Treatment (LCB & ICB)                                                      |                         | 22             |
| Hot Mix Asphalt (HCB)                                                              |                         | 0              |
|                                                                                    | <b>Total Rural</b>      | <b>130</b>     |
| <b>(ii) Semi-Urban</b>                                                             |                         |                |
| Gravel (loose Top Gravel)                                                          |                         | 0              |
| Surface Treatment (LCB & ICB)                                                      |                         | 0              |
| Hot Mix Asphalt (HCB)                                                              |                         | 0              |
|                                                                                    | <b>Total Semi-Urban</b> | <b>0</b>       |
| <b>(iii) Urban</b>                                                                 |                         |                |
| Gravel (loose Top Gravel)                                                          |                         | 0              |
| Surface Treatment (LCB & ICB)                                                      |                         | 0              |
| Hot Mix Asphalt (HCB)                                                              |                         | 0              |
|                                                                                    | <b>Total Urban</b>      | <b>0</b>       |
|                                                                                    | <b>Total B</b>          | <b>130</b>     |

*\*Estimated to the nearest kilometer.*

### 3. SIGN INVENTORY

An inventory of roadside signage was prepared in this study with the primary objective of providing the Township with a complete inventory for the purposes of maintenance, management, and record keeping. It should be noted that inspection of roadside signage in this study is independent of any official signage study report requirements that may be required by the MTO. Inspection of signage in this study included the general condition at the time of inspection by the following criteria:

#### *Adequate*

Roadside signage that was assigned a condition of *adequate* was in generally good condition and visible to motorists. Signs in this condition have no recommended maintenance action associated with them.

#### *Repair*

The sign has maintenance needs or requires corrective effort to make the sign effective at warning motorist or pedestrians. Signs with the *repair* condition assigned typically require Township forces to restore roadside visibility and may include:

- Removal of surrounding brush to restore visibility;
- re-posting the tee-bar of the sign so that it stands upright; and
- replacement of damaged or corroded sign plaques.

#### *Replace*

The sign is damaged, fallen over, or otherwise requires total replacement.

Where road information is presented on Township signs (e.g. speed limit), the specifics of the sign were recorded remarks field. Recommended repair rationale is also presented in the remarks field for signage requiring repair and maintenance. A complete inventory of inspected signs may be found in **Appendix E**.

### 4. ROAD NEEDS

Road deficiencies and improvement needs were calculated according to the MTO Guide based on field observations of critical deficiencies summarized in Section 1.5. The assessments were based on a rating point system of the road's *surface condition*, *structural adequacy*, *drainage*, and *maintenance needs* described in Section 4.1. In conjunction with the road's AADT class, a condition rating and priority index is presented in this study which identifies and prioritizes deficient road sections described in Section 4.2.

#### 4.1. Condition Rating of Roads

The inventory of the road system revealed that certain road sections are now deficient or will become deficient during the study period. As noted previously, critical deficiencies include road characteristics which result in increased maintenance costs, and which inevitably lead to an inadequate level of service. A road section is critically deficient if any one of the following characteristics fall below the minimum tolerable standards defined in the MTO Guide.

1. Surface type: incorrect surface type to suit traffic volumes on the roadway. Four (4) roads inspected had an incorrect surface type (earthen).
2. Surface width: insufficient width of the road surface excluding the shoulders. Of all roads inspected, 14 had insufficient road surface width to a sum length of 5.6 km.
3. Capacity: inability of the road to accommodate traffic volumes at peak periods. Of all roads inspected, none had insufficient capacity.
4. Structural adequacy: inability of the road base to support vehicular traffic. Of all roads inspected 9 had structural inadequacy to a sum length of 11.4 km.
5. Drainage: increased frequency of flooding or excessive maintenance effort required to prevent flooding. Of all roads inspected, 35 roads had poor drainage to a sum length of 48 km.

Of the 130 km of roads inventoried, a total of 60 km was found to be critically deficient in one or more areas. Of the 60 km, approximately 33 km represent roads with AADT of less than 50 vehicles. Regardless of condition, roads with AADT of fifty (50) or less are typically assigned as "Adequate" for the purpose of the system adequacy calculation (as per the Ministry protocol).

The overall system adequacy for the Township 's road network, which is based upon the total road kilometres less the identified critically deficient ("NOW" needs) roads, is as follows:

$$\text{2025 System Adequacy} = \frac{130 - (60 - 33)}{130} = 79\%$$

The average surface condition rating of all roads is **8.07** while the average structural adequacy rating is **14.4**. A complete listing of *Road Needs by AADT & Condition Rating* may be found in **Appendix B** of this report.

#### 4.2. Priority Rating of Roads

A mathematical empirical formula was used to calculate the priority rating for each road section. The priority rating is a weighted calculation which factors existing traffic volume and overall condition rating of the road.

This priority analysis is an impartial procedure to place the deficiencies in order of relative need. The formula takes confounding factors into account including the current traffic volume and the condition rating (CR) of the road. **A higher Priority Rating number indicates a relatively greater need for improvement.** The formula is as follows:

$$\text{Priority Rating} = 0.2 \times (100 - CR) \times (AADT + 40)^{0.25}$$

Where:

AADT is the average annual daily traffic count; and

CR Is the condition rating of the road (0-100, based on a point rating system).

It is important to emphasize that the priority rating calculation considers only condition rating and traffic volumes. It is intended to serve as an impartial guide to the prioritization of road repair and maintenance efforts. A complete listing of a *General Road Listing by Priority Rating* may be found in **Appendix D** of this report.

## 5. ROADS BEST MANAGEMENT PRACTICES

The timing of road maintenance and rehabilitation activities is essential to efficient road network management. The quantification of this timing is based on the predictable degradation of specific road surface types over time. Pavement surfaces on roads generally provide a constant, acceptable condition for the first part of its service life and then begins to deteriorate rapidly. This tendency towards this logistic curve of condition over service life often results in maintenance and rehabilitation efforts not being taken until structural failure or noticeable changes in ride quality become apparent, often referred to as a “*fix it once it is already broken*” approach.

The consequence of this approach is that maintenance and rehabilitation become exponentially more expensive over the life of the pavement surface, as condition is often overlooked until it reaches a critical state of distress. There is opportunity in substantial cost savings when intervention is made *before* the pavement becomes severely compromised. This is often referred to as the “*fix it before it breaks*” preservation management approach.

### 5.1. Preservation Management Approach

#### 5.1.1. Gravel Roads

Gravel roads are the least expensive to maintain per kilometer, but they require the most effort from the Township crews to maintain. Road base issues are generally easy to spot and correct with additional road material. The Township currently maintains approximately 107 km of gravel roads, making them the most common road surface type. Because of this, careful planning and management of maintenance activities are essential. Gravel road maintenance is often prioritized based on Township observations rather than formal report metrics. The recommended preservation strategies and typical maintenance timelines for gravel roads are provided in Table 3 and Table 4.

**Table 3 - Preservation Management Approach, Gravel Surface**

| Action                                                                           | Frequency                                                                                                                      |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Regrade surfaces to maintain smooth / safe driving surface and proper crossfall. | As needed, generally 2-3 times per year for higher volume gravel, or more frequently as necessary; 1-2 for lower volume roads. |

|                                                                               |                                                                               |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Add calcium to tighten road surface, retain aggregate and reduce dust.        | Each spring on all roads of higher volume and as needed during summer months. |
| Ditching and brushing of right-of-way to improve roadbed drainage and safety. | Complete road network, every 10 years.                                        |

**Table 4 - Capital Activities, Gravel Roads**

| Action                                                  | Frequency                                    |
|---------------------------------------------------------|----------------------------------------------|
| Add layer (75 mm) of granular material to road surface. | Every 3-5 years for gravel roads.            |
| Base and sub-base improvements.                         | As needed or as dictated by traffic volumes. |
| Reconstruct / convert to hard top.                      | As dictated by traffic volumes.              |

### 5.1.2. Surface Treated Roads

Surface-treated roads differ from gravel surfaced roads in that they have a hard-wearing surface that requires proper preservation techniques to remain effective. Because these roads represent a greater investment by the Township, they must be managed carefully to maximize their service life. The township currently maintains approximately 20 km of surface-treated roads. Recommended preservation strategies and typical maintenance timelines for these roads are outlined in Table 5.

**Table 5 - Preservation Management Approach, Surface Treated Roads**

| Activity                 | Age (Years) | Ride Condition Rating | Estimated Service Life (Years) |
|--------------------------|-------------|-----------------------|--------------------------------|
| Slurry Seal              | 3           | 8                     | 4                              |
| Slurry Seal              | 6           | 7                     | 3                              |
| Double Surface Treatment | 10          | 6                     | 5                              |
| Pulverize and DST        | 14          | <4                    | 8                              |

In addition to the above noted preservation approach in Table 5, the following best management practices may be employed to preserve the surface, extend the service life and reduce life cycle costs of surface treated roads:

Surface treatment shall be applied to the entire road platform, from "grass to grass", including any shoulders. This will eliminate grading on surface treated roads, which has a tendency to damage the edge of the surface treatment and cause premature failure of the surface. Where extending the surface treatment surface to the edge of shoulder within the right-of-way surface widening may be confined to the radius of turns of 180 m or less and all entrances. Edge raveling of surface treated roadways occurs where the wheel track of vehicles crosses over the edge of the paved surface at the shoulder which is common at turns and entrances.

The drainage and culvert needs should be reviewed prior to any significant renewal or rehabilitation strategy and complete any improvements concurrently. This will eliminate the need to cut or excavate a relatively new surface to replace a culvert.

The ability of a road sub-base material to shed water is dependant on functional ditching. Roadways with ditches that are too shallow, flooded, or have otherwise reduced capacity have significant impact on the longevity of surface-sealed roads. Clearing (brushing) of the road right-of-way (ROW) ditching to improve roadbed drainage and safety should be included with any maintenance effort or where indicated by drainage characteristics.

## 6. ROAD NEEDS STUDY SUMMARY TABLES

### 6.1. Types of Improvements

All roads were examined to appraise the extent and type of improvement necessary. "Order of Magnitude" construction costs were developed for each of the below options on a per kilometre basis.

***The below alternative rehabilitation strategies are considered preliminary in nature and are intended to assist in providing an order of magnitude cost estimate to rehabilitate the road. Further field investigations and engineering design is required to confirm and develop the rehabilitation strategies for each road.***

#### 6.1.1. Asphalt (HCB) & Surface Treatment (LCB) Roads

High Class Bituminous roads (HCB) or hot mix asphalt roads have rehabilitation alternatives ranging from a simple overlay to complete reconstruction. The following is a listing of standard road rehabilitation techniques that were considered for HCB or hot mix asphalt roads. No roads within the Township's road network are currently considered HCB roads.

Surface treated roads are generally able to be rehabilitated with either a single or double Low Class Bituminous (LCB) overlay treatment. They may also be upgraded to HCB pavement or downgraded to gravel. In some cases, previous resurfacing of LCB roads has occurred or the LCB surface or road structure has deteriorated to a state where a simple overlay surface treatment is not feasible. In these cases, consideration can be given to removal or pulverizing of the existing surface treatment and placement of a new application. In some cases, where it is necessary to improve the overall roadbed structure, the addition of Granular A to build up the road and the reapplication of a surface treatment is recommended. The following is a listing of standard road rehabilitation techniques that were considered for LCB (surface treated) roads.

Generally, roads identified for improvement as classified according to the following criteria:

|               |                                             |
|---------------|---------------------------------------------|
| <b>REC</b>    | Reconstruction                              |
| <b>R1</b>     | Resurfacing, Single-Lift Overlay.           |
| <b>R2</b>     | Resurfacing, Double-Lift Overlay.           |
| <b>PR</b>     | Resurfacing, Mill/Pulverize and Pave.       |
| <b>W / WR</b> | Widening, Widening & Resurfacing.           |
| <b>BS</b>     | Base and Surface (Rural or Semi-Urban Only) |

## RNS Route and Seal (Preventative Maintenance)

### 6.1.2. Gravel

Gravel roads can likewise be upgraded with the reapplication of Gravel (G) or surface treatments (LCB).

### 6.1.3. Preventative Measures

Where the condition rating of roads provides an indication of the overall need for improvement, the condition rating of some roads is adversely affected by deficiencies which may apply to only small portions of a road section over its entire length. For example, a severe heave effecting speed and avoidance which reduces the overall surface condition point rating. In roads with such a deficiency, preventative maintenance strategies are proposed instead of more costly improvement strategies such as those listed in Section 6.1.1. Roads selected for this type of improvement are on a case-by-case basis, typically by in field notation and below average *Surface Condition* or *Drainage Condition* point ratings. The preventative maintenance strategies chosen for consideration are as follows:

- SR** Spot Road Repair (improvement to *Surface Condition*)  
**SD** Spot Drainage (improvement to *Drainage Condition*)

## 6.2. Benchmark Construction Costs

To estimate repair costs for roadways, itemized unit prices and road geometry parameters were used to produce an estimate of road improvement costs. Unit price parameters are found in **Appendix J** and are based on average prices for the local area. For the Township of McMurrich / Monteith, the following design standards, Table 6, was utilized for development of the benchmark cost estimate for reconstruction. It should be noted that these are suggested standards and therefore should not necessarily be used as standards for detail design of roadway improvements.

All roads within this study are considered *Local* and *Rural* roads, as defined in the MTO Guide as:

*Rural Section – Areas with sparse development or where development is less than 50% of frontage, including developed areas extending less than 300 metres on one side or 200 metres on both sides and no curbs and gutters.*

**Table 6 - Design Standards for Construction Cost Estimates**

| Functional Classification     | Surface Width | Shoulder Width (m) | Granular A Depth (mm) | Granular B Depth (mm) | Surface Type |
|-------------------------------|---------------|--------------------|-----------------------|-----------------------|--------------|
| Rural R50<br>(0 – 49 vpd)     | 6.0           | 0.5                | 150                   | 450                   | Gravel       |
| Rural R200<br>(50 – 199 vpd)  | 6.0           | 0.5                | 150                   | 450                   | Gravel       |
| Rural R400<br>(200 – 399 vpd) | 6.0           | 0.5                | 150                   | 450                   | LCB          |

*Note: Prime and double surface treatment is based on 16 mm of HMA.*

### 6.3. Inclusion of Recreational Trails in Road Sections

The Township has included nine (9) road sections within this study which are either seasonal, unmaintained, or intended for use by recreational vehicles (ATVs, etc.). These roads are earthen trails with a veneer of gravel to produce a drivable surface, often with single lane passing access, no posted speed limit, and limited use by passenger vehicles.

These roads do not meet the standards set by the MTO Manual as part of a Road Needs Study. However, they may still be identified for improvements as if they were intended for passenger vehicle use. It is recommended that the Township review the study's recommendations for these roads individually on a case-by-case basis. The roads included in this study are listed in Table 6.

**Table 7 - Road Sections Identified as Recreational Trails.**

| Section No. | Road Name            | Length (km) | Condition Rating | Priority Rating |
|-------------|----------------------|-------------|------------------|-----------------|
| MM-RD-020   | Dailey Rd.           | 0.23        | 35.3             | 39.7            |
| MM-RD-035   | Little Falls Rd.     | 0.23        | 61.7             | 23.5            |
| MM-RD-067   | Boundary Rd          | 2.70        | 50.9             | 30.2            |
| MM-RD-073   | Jimney Jaque Rd.     | 1.99        | 23.0             | 47.3            |
| MM-RD-074   | Lambs Lake Rd.       | 1.75        | 40.3             | 36.7            |
| MM-RD-079   | Little Falls Rd.     | 1.12        | 45.2             | 33.7            |
| MM-RD-080   | Pioneer Cemetery Rd. | 0.60        | 30.3             | 42.8            |
| MM-RD-082   | Sanborn Dr.          | 0.32        | 48.0             | 31.9            |
| MM-RD-084   | Sixth Ave.           | 0.71        | 50.0             | 30.7            |

## 7. IMPROVEMENT PLAN

### 7.1. Road Needs

Road Needs by AADT & Condition Rating ordered by timing is included in **Appendix B**, citing the recommended capital Construction Plan in terms of priorities throughout the Township. All costs are based on 2025 dollars and should be adjusted for inflation based on program year for budgeting purposes. The capital improvements are listed based on need (NOW, 1-5 years, 6-10 years, surface upgrades and widening) and in descending priority based on Condition Rating and AADT Class, as described previously.

Roads appearing as *Surface Type Needs Only* in **Appendix B** were not assigned as deficient by the metrics of the MTO Guide but were selected as roads surpassing 200 AADT with a surface type of gravel or less. These roads have traffic volumes which may justify application of an asphalt-type surface and have therefore been assigned a road improvement type of 'WR' (Widen & Resurface), to produce an estimate of road improvement costs of these roads only.

Roads appearing under the heading *Surface Width Needs Only* were selected as roads surpassing 50 AADT for which a deficient surface width and assigned an improvement recommendation of 'W' (Widening) to produce a cost for widening only. Other elements of these roadways may produce an associated improvement type by the metrics of the MTO Inventory Manual for Municipal Roads which is more extensive.

The Township owns maintains several seasonal recreational trails noted in Section 6.3 which are included with its road network and were captured by this study but which may not necessarily warrant the application of this improvement strategy. These roads are earthen and narrow, without sightline or alignment considerations, and are intended to be used by all-terrain vehicles or driven at extremely low speeds. When reviewing a road section for improvement all deficient elements should be considered on a case-by-case basis. Road sections under this heading consider a road widening improvement, only.

## 7.2. Annual Resurfacing Program

A theoretical program based on complete resurfacing of Township roads based on typical degradation rates noted in Table 5 and detailed in Section 5.1.2 is presented in this section. Surface treated (LCB) roads are assumed to be single layer slurry seal type with an estimated service life of three years. A six-year surface replacement program for LCB roads has also been presented.

Gravel roads are expected to have 75 millimetres of additional granular material every 3-5 years at minimum over its entire section length. A time period of 4.5 years has been selected to represent a timeline of full 'replacement' of all gravel road surfaces.

### Surface Treated Roads:

#### *3-Year, Single Surface Treatment Lifespan Full Replacement*

There is a total of 20 kilometres of paved, low-cost bituminous surfaced roads within the Township with an average width of 6.4 metres wide. With a recommended improvement type of single layer surface treatment, the cost of resurfacing LCB roads per kilometre is as follows:

$$LCB \text{ Cost } \$ \text{ Per km} = (\mu \text{ Rd. Width [6.4m]}) \times (1,000\text{m/km}) \times (\$5.65/\text{m}^2) = \$36,160/\text{km}$$

The recommended annual budget to replace all existing LCB roads over the theoretical surface lifetime of 3 years is calculated as follows:

$$\text{Annual Cost} = \left( \frac{20\text{km}}{3 \text{ years}} \right) \times \left( \frac{\$36,160}{\text{km}} \right) = \$241,000/\text{yr}$$

#### *6-Year, Double Surface Treatment (DST) Lifespan Full Replacement*

If all 20 kilometres of paved, low-cost bituminous surfaced roads within the Township were considered *double surface treatment* the general lifespan of the roadways increase to 6 years. With a recommended double surface treatment surface type, the cost of resurfacing LCB roads per kilometre is as follows:

$$DST\ Cost, \$\ Per\ km = (\mu Rd.\ Width\ [6.4m]) \times (1,000m/km) \times (\$12.00/m^2) = \$76,800/km$$

The recommended annual budget to replace all existing LCB roads over the theoretical surface lifetime of 6 years (double surface treatment) the calculated annual budget is as follows:

$$Annual\ Cost = \frac{\$76,800}{km} \times \frac{3.3km}{yr} = \$256,000/yr$$

### Gravel Roads:

There are 107 kilometers of gravel roads owned and maintained by the Township. As detailed in Section 5.1.1 gravel roads should be resurfaced on a 3-to-5-year cycle. Resurfacing includes regular grading and the application of 75 mm of new gravel. The average width of gravel roads within the Township is 6.4 metres (excluding single-lane roads). With a recommended improvement type of *regrading* with 75 mm of gravel the cost of maintaining gravel roads per kilometer is as follows:

$$\begin{aligned} Gravel\ Cost, \$\ Per\ km &= (\mu Rd.\ Width\ [6.4m]) \times (1,000m/km) \times (Rd.\ Depth\ [0.075m]) \\ &\times (Gran.\ A\ SPDD\ \left[\frac{2.2t}{m^3}\right]) \times (\$35/t) = \$36,960/km \end{aligned}$$

If all 107 kilometres of gravel roads within the Township are fully resurfaced over the expected average surface lifetime of 4.5 years, the calculated annal budget is as follows:

$$Annual\ Cost = \frac{\$36,960}{km} \times \frac{23.8km}{yr} = \$879,700/yr$$

## 7.3. Road Maintenance

Preventative road and roadside maintenance is critical to prolonging the useful service life of a road and maximizing the capital investment. A continuous road and roadside maintenance program is recommended to reduce the road degradation rates. Ditch cleanout and clearing of vegetation from the right-of-way should be carried out on a regular basis. This can either be accomplished through dedicated internal Township forces or sub-contracting to private contractors. Consideration may be given to a dedicated capital program of ditch cleanout and clearing, to ensure resources are dedicated to these important activities.

## 8. REPLACEMENT COST

In conjunction with this Road Needs Study Report, a replacement cost for the road asset was calculated based on existing road elements, removal cost, roadbed materials i.e. sub-base, base

and surface type. Road design standards noted in Table 7 in conjunction with existing geometrics were used to determine road sections in need of improvement and their associated cost.

The total improvement cost for the Township's road infrastructure by those improvements recommended by the MTO Manual for Municipal Roads is approximately \$3.3M.

## 9. SUMMARY

Tulloch undertook a review of the Township of McMurrich / Monteith's existing road network to assess its physical condition and confirm various road attributes. Data collected as a result of the field review was used to develop a prioritized listing of the road network needs based primarily on condition and traffic volumes.

Tulloch undertook the field study in July of 2025. A visual assessment of each road within the Township was undertaken to assess surface and structural distress. A Condition Rating (CR) was calculated based on the identified deficiencies. An overall road system adequacy has been calculated, consistent with the MTO Inventory Manual for Municipal Roads (February 1991), based on a number of road characteristics including:

- Capacity;
- geometries;
- surface condition;
- shoulder and road widths;
- structural adequacy;
- drainage;
- maintenance demand.

**The overall system adequacy for the 2025 Road Needs Assessment is 79%.**

An inventory of road signage was collected during the road assessment and included the condition, location, and type of signage observed. Of the 260 signs inventoried 233 were found to be in adequate condition (90%), 21 were found to require maintenance needs by Township forces (8%), and 3 were in poor condition requiring replacement (3%).

### **Capital Improvements**

Prioritization and recommendations for planned capital improvements have been developed based on the road condition and traffic demands on each road. Priority is given to roads with higher volumes and poorer condition ratings.

A total of 9 roads to a total length of approximately 14.3 km were identified as having Surface Type or Structural Needs in the "NOW," 1-5, and 6-10 year periods. The estimated cost to Improve these roads is approximately \$2.2 M. An additional 14 roads to a total length of approximately 5.6 km of road is identified as having inadequate surface widths only. Generally, provided no operational or safety concerns are identified, roads with surface width deficiencies are typically addressed / considered at the next full reconstruction cycle.

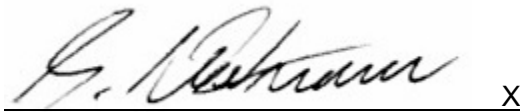
## Resurfacing

The total resurfacing program, (surface treatment and gravel) is estimated at \$880,000 per year employing single surface treatment replacement for all LCB roads, or \$1,135,000 per year for employing double surface treatment for all LCB roads.

Implementation / continuation of a road and roadside preventative maintenance program are strongly recommended. Preservation Management activities will help to decrease or slow the typical degradation rates of the roads and to maintain system adequacy. A concerted effort and funding for regular road maintenance can reduce the annual resurfacing / reconstruction requirements by prolonging the useful service life of a road.

The time of inspection plays a significant role in assessing a road's condition. Certain deficiencies, particularly for gravel roads, are only obvious during the "spring break-up" period. By midsummer, any evidence to suggest these deficiencies may have disappeared due to regular grading and grooming activities and general drying of the roadbed. The field work for this study was carried out in July 2025, by which time the municipality had already begun spring grading. Recently graded roads may be rated higher than their actual structural adequacy.

We trust the above and attached information will be of benefit to the Township and appreciate the opportunity to assist the Township in developing its road improvement plan.  
Respectfully submitted,

A handwritten signature in black ink, appearing to read 'S. Wetmore', followed by a horizontal line and the letter 'X'.

Sean Wetmore  
Engineering Technologist

## **10. References**

Ministry of Transportation Ontario. (1991). Inventory Manual for Municipal Roads.

Statistics Canada. (2021). 2021 Census of Population. Canada.

## **APPENDIX A**

### **GENERAL ROAD LISTING BY SECTION NUMBER**

| General Roads Listing by Section No. |                                    |                         |                               |             |      |              |              |                |                   |                 |               |                  |                 |
|--------------------------------------|------------------------------------|-------------------------|-------------------------------|-------------|------|--------------|--------------|----------------|-------------------|-----------------|---------------|------------------|-----------------|
| Section No.                          | Road Name                          | From                    | To                            | Length (km) | AADT | Improve-ment | Cost (x1000) | Surface Rating | Structural Rating | Drainage Rating | Maint. Rating | Condition Rating | Priority Rating |
| MM-RD-000                            | Almaguin Dr                        | HWY 518                 | North End, Including the Loop | 2.41        | 125  |              |              | 8              | 20                | 13              | 8             | 79.3             | 14.9            |
| MM-RD-001                            | East Bear Lake Rd                  | HWY 518                 | 606 East Bear Lake Road       | 3.24        | 125  |              |              | 9              | 17                | 12              | 4             | 76.9             | 16.6            |
| MM-RD-002                            | George St                          | HWY 518                 | South End                     | 0.27        | 25   |              |              | 10             | 15                | 11              | 8             | 77.1             | 13.0            |
| MM-RD-003                            | Henry St                           | Stisted Road            | George Street                 | 0.10        | 25   |              |              | 10             | 20                | 14              | 9             | 95.8             | 2.4             |
| MM-RD-004                            | Stisted Rd S                       | HWY 518                 | Eighth                        | 3.12        | 300  | R1           | \$474        | 8              | 13                | 14              | 8             | 76.1             | 20.5            |
| MM-RD-005                            | Stisted Rd S                       | Eighth                  | Selena                        | 3.12        | 300  | R1           | \$440        | 8              | 13                | 14              | 8             | 78.4             | 18.6            |
| MM-RD-006                            | Stisted Rd S                       | Selena Drive            | 4th                           | 1.19        | 300  | R1           | \$178        | 8              | 13                | 14              | 8             | 79.0             | 18.0            |
| MM-RD-007                            | Stisted Rd S                       | 4th                     | Second Avenue                 | 2.02        | 300  | R1           | \$302        | 8              | 13                | 14              | 8             | 79.0             | 18.0            |
| MM-RD-008                            | Stisted Rd S                       | Second Avenue           | Ravenscliff                   | 2.03        | 300  | R1           | \$313        | 8              | 13                | 13              | 8             | 87.0             | 11.2            |
| MM-RD-009                            | Stisted Rd N                       | HWY 518                 | Little Falls                  | 1.31        | 300  |              |              | 8              | 18                | 13              | 8             | 86.0             | 12.1            |
| MM-RD-010                            | Stisted Rd N                       | Little Falls            | Cowie                         | 1.22        | 300  |              |              | 8              | 18                | 14              | 9             | 89.5             | 9.0             |
| MM-RD-011                            | Stisted Rd N                       | Cowie                   | Richardson                    | 3.82        | 300  |              |              | 8              | 18                | 13              | 8             | 90.7             | 8.0             |
| MM-RD-012                            | Axe Lake Rd                        | West Bear Lake Road     | Holderney Road                | 3.18        | 25   |              |              | 14             | 12                | 8               | 7             | 77.0             | 13.1            |
| MM-RD-014                            | 1/2 Bartlett Lake Rd               | Stisted Road North      | 0.9 km West                   | 0.90        | 125  |              |              | 5              | 16                | 6               | 3             | 70.6             | 21.1            |
| MM-RD-015                            | Bayside Dr                         | Lakeview Road           | East End                      | 0.31        | 25   |              |              | 19             | 19                | 14              | 7             | 104.0            | -2.3            |
| MM-RD-016                            | Beach St                           | HWY 518                 | South End                     | 0.11        | 25   |              |              | 19             | 15                | 14              | 3             | 89.3             | 6.1             |
| MM-RD-017                            | Birch Crt                          | Almagin Dr              | East End                      | 0.12        | 25   |              |              | 8              | 18                | 14              | 6             | 86.9             | 7.4             |
| MM-RD-018                            | Bordeau Rd                         | HWY 518                 | Harrison Lake Road            | 4.17        | 25   |              |              | 7              | 15                | 12              | 3             | 70.8             | 16.6            |
| MM-RD-019                            | Buckvale Dr                        | Second Avenue East      | Second AvenueWest             | 1.16        | 125  |              |              | 10             | 20                | 15              | 5             | 95.0             | 3.6             |
| MM-RD-020                            | Dailey Rd (Recreational Trail)     | HWY 518                 | 0.1 km West                   | 0.23        | 25   | REC          | \$65         | 2              | 2                 | 2               | 5             | 35.3             | 36.7            |
| MM-RD-021                            | East Bear Lake Rd                  | 606 East Bear Lake Road | Cul-De-Sac                    | 1.55        | 25   |              |              | 4              | 12                | 4               | 3             | 57.5             | 24.1            |
| MM-RD-022                            | Eighth Ave                         | Yearly Road             | Stisted Road                  | 2.02        | 25   |              |              | 7              | 15                | 3               | 2             | 53.9             | 26.2            |
| MM-RD-023                            | Eighth Ave                         | Yearly Road             | 2.4 km West                   | 0.52        | 25   |              |              | 5              | 13                | 13              | 4             | 60.5             | 22.4            |
| MM-RD-024                            | Farrell Crt                        | Almagin Dr              | North End                     | 0.23        | 25   |              |              | 5              | 16                | 6               | 3             | 39.7             | 34.2            |
| MM-RD-025                            | Fern Glen Rd                       | Stisted Rd South        | 2136 Fern Glen Road           | 5.28        | 125  |              |              | 7              | 15                | 10              | 7             | 73.1             | 19.3            |
| MM-RD-026                            | Fourth Ave                         | Turn Around             | Yearley Road                  | 2.06        | 25   |              |              | 10             | 19                | 13              | 7             | 91.6             | 4.8             |
| MM-RD-027                            | Fourth Ave                         | Lambs Lake Road         | Easterly to Turn Around       | 4.09        | 25   |              |              | 9              | 19                | 8               | 5             | 77.0             | 13.1            |
| MM-RD-028                            | Gordon Deans Trail                 | HWY 518                 | North End                     | 0.67        | 25   |              |              | 3              | 13                | 6               | 2             | 52.9             | 26.7            |
| MM-RD-029                            | Henry St                           | George Rd               | East End                      | 0.20        | 25   |              |              | 10             | 20                | 14              | 9             | 89.0             | 6.2             |
| MM-RD-030                            | Jimmey Jaque Rd                    | Middle Road             | 181 Jimmey Jaque Road         | 0.90        | 25   |              |              | 8              | 15                | 12              | 5             | 69.3             | 17.4            |
| MM-RD-031                            | John St                            | HWY 518                 | 0.4 km North                  | 0.38        | 25   |              |              | 19             | 18                | 15              | 7             | 99.5             | 0.3             |
| MM-RD-032                            | Kings Dr                           | HWY 518                 | 1.0 km North turnaround       | 1.02        | 25   |              |              | 10             | 20                | 14              | 8             | 94.1             | 3.4             |
| MM-RD-033                            | Lakeview Dr                        | East Bear Lake Road     | North End                     | 0.11        | 25   |              |              | 8              | 17                | 8               | 6             | 66.3             | 19.2            |
| MM-RD-034                            | Landfill Rd                        | HWY 518                 | South End                     | 0.34        | 125  |              |              | 10             | 20                | 15              | 7             | 97.0             | 2.2             |
| MM-RD-035                            | Little Falls Rd (Recreation Trail) | Stisted Road North      | Turnaround                    | 0.23        | 125  |              |              | 8              | 8                 | 10              | 2             | 61.7             | 27.5            |
| MM-RD-036                            | Lowes Rd                           | West Bear Lake Road     | East End                      | 0.22        | 25   |              |              | 20             | 18                | 10              | 7             | 94.2             | 3.3             |
| MM-RD-037                            | Maki Rd                            | Bartlett Lake Road      | East End                      | 0.12        | 125  | WR           | \$31         | 9              | 20                | 8               | 8             | 71.5             | 20.4            |
| MM-RD-038                            | McAughey St                        | HWY 518                 | William Street                | 0.11        | 25   |              |              | 10             | 20                | 15              | 8             | 98.0             | 1.1             |
| MM-RD-039                            | McKenzie St                        | Stisted Road North      | Watson Street                 | 0.16        | 25   | WR           | \$41         | 3              | 10                | 4               | 5             | 50.8             | 28.0            |
| MM-RD-040                            | Middle Rd                          | Axe Lake Road           | 1.3 km West                   | 0.82        | 25   |              |              | 10             | 17                | 15              | 3             | 70.2             | 16.9            |
| MM-RD-041                            | Old Rainy Lake Rd                  | Stisted Road North      | 0.6 km North                  | 0.60        | 125  |              |              | 6              | 17                | 14              | 8             | 86.7             | 9.6             |
| MM-RD-042                            | Pine Dr                            | Stisted Road South      | 0.5km South                   | 0.67        | 25   |              |              | 8              | 18                | 13              | 5             | 69.3             | 17.4            |
| MM-RD-043                            | Pomeroy Rd                         | Second Avenue           | Patricia Avenue               | 1.10        | 25   |              |              | 8              | 18                | 13              | 7             | 87.4             | 7.2             |
| MM-RD-044                            | Reddam Dr                          | Sanborn Drive           | 0.1 km West                   | 0.22        | 25   | WR           | \$51         | 7              | 12                | 7               | 4             | 58.8             | 23.4            |
| MM-RD-045                            | Richardson Rd (Boundary)           | Stisted Road North      | Doe Lake                      | 1.04        | 25   |              |              | 3              | 10                | 5               | 2             | 46.9             | 30.2            |
| MM-RD-046                            | Sanborn Dr                         | HWY 518                 | 0.1 km South                  | 0.15        | 25   |              |              | 8              | 19                | 15              | 7             | 76.1             | 13.6            |
| MM-RD-047                            | Second Ave                         | Yearley Road            | Buckvale Dr                   | 3.25        | 125  |              |              | 8              | 18                | 5               | 6             | 71.2             | 20.7            |
| MM-RD-048                            | Selena Dr                          | Stisted Road            | 866 Selena Road               | 3.83        | 125  |              |              | 9              | 16                | 14              | 7             | 88.6             | 8.1             |
| MM-RD-049                            | Star Lake Rd                       | Compass Lk Rd           | Perry Township Boundary       | 2.00        | 125  |              |              | 7              | 18                | 8               | 4             | 68.8             | 22.4            |
| MM-RD-050                            | Star Lake Rd                       | HWY 518                 | 0.2km                         | 0.20        | 125  |              |              | 10             | 20                | 15              | 7             | 97.0             | 2.2             |
| MM-RD-051                            | Taylor Rd                          | East Bear Lake Road     | South End                     | 0.14        | 25   | WR           | \$20         | 18             | 15                | 15              | 5             | 75.0             | 14.2            |
| MM-RD-052                            | Watson St                          | Stisted Road North      | McKenzie Street               | 0.09        | 25   | WR           | \$23         | 3              | 10                | 4               | 5             | 50.8             | 28.0            |
| MM-RD-053                            | West Bear Lake Rd                  | HWY 518                 | Taylor                        | 2.84        | 125  |              |              | 18             | 8                 | 14              | 4             | 87.2             | 9.1             |

|           |                                                  |                                   |                                    |      |     |     |       |    |    |    |    |       |      |
|-----------|--------------------------------------------------|-----------------------------------|------------------------------------|------|-----|-----|-------|----|----|----|----|-------|------|
| MM-RD-054 | West Bear Lake Rd                                | Taylor                            | Lowes                              | 1.39 | 125 |     |       | 18 | 13 | 14 | 7  | 95.6  | 3.2  |
| MM-RD-055 | West Bear Lake Rd                                | Lowes Road                        | Axe Lake Road                      | 5.46 | 125 |     |       | 16 | 13 | 13 | 3  | 89.5  | 7.6  |
| MM-RD-056 | William St                                       | HWY 518                           | 0                                  | 0.23 | 25  |     |       | 10 | 20 | 15 | 10 | 100.0 | 0.0  |
| MM-RD-057 | Yearley Rd                                       | HWY 518                           | Second                             | 8.45 | 125 |     |       | 8  | 17 | 14 | 7  | 90.2  | 7.0  |
| MM-RD-058 | Yearley Rd                                       | Second                            | Rome                               | 3.31 | 125 |     |       | 6  | 14 | 13 | 7  | 83.2  | 12.1 |
| MM-RD-059 | Axe Lake Rd                                      | Holderney Road                    | Jimmey Jaque Road                  | 3.71 | 125 |     |       | 10 | 19 | 7  | 3  | 80.5  | 14.0 |
| MM-RD-060 | Axe Lake Rd                                      | Jimmey Jaque Road                 | McMurrich/Monteith Boundary        | 2.10 | 125 |     |       | 9  | 18 | 18 | 5  | 85.3  | 10.6 |
| MM-RD-061 | Axe Lake Rd                                      | McMurrich/Monteith Boundary       | HWY 518                            | 5.31 | 125 |     |       | 8  | 18 | 12 | 5  | 83.7  | 11.7 |
| MM-RD-062 | Fern Glen Rd                                     | 2136 Fern Glen Road               | Appleyard Road                     | 2.09 | 125 |     |       | 5  | 13 | 12 | 3  | 62.8  | 26.7 |
| MM-RD-064 | Old Rainy Lake Rd                                | 0.6km North of Stisted Road North | 2.1 km North of Stisted Road North | 1.60 | 125 |     |       | 8  | 17 | 14 | 5  | 83.2  | 12.0 |
| MM-RD-065 | 1/2 Appleyard Rd                                 | Fern Glen Road                    | 2.8 km South and West              | 2.46 | 25  |     |       | 6  | 13 | 11 | 5  | 56.0  | 25.0 |
| MM-RD-066 | Bordeau Rd                                       | Harrison Lake Road                | West End                           | 2.11 | 25  |     |       | 7  | 15 | 12 | 3  | 64.8  | 20.0 |
| MM-RD-067 | Boundary Rd (Old Novar Rd)<br>(Recreation Trail) | Fisher Creek Road                 | 2.0 km West                        | 2.70 | 25  |     |       | 5  | 8  | 7  | 3  | 50.9  | 27.9 |
| MM-RD-068 | Compas Lake Rd                                   | Star Lake Road                    | 0.1 km South                       | 0.10 | 25  |     |       | 8  | 10 | 15 | 7  | 76.0  | 13.6 |
| MM-RD-069 | Cowie Rd                                         | Stisted Road North                | East End                           | 0.27 | 25  | WR  | \$41  | 5  | 20 | 13 | 5  | 74.0  | 14.8 |
| MM-RD-070 | Fisher Creek Rd                                  | Selena Drive                      | Old Novar Road                     | 4.54 | 25  |     |       | 2  | 5  | 5  | 9  | 49.4  | 28.7 |
| MM-RD-071 | Holderny Rd                                      | Axe Lake Road                     | South End                          | 0.59 | 25  | WR  | \$148 | 5  | 10 | 5  | 3  | 49.5  | 28.7 |
| MM-RD-072 | Hunter's Lane                                    | Stisted Road South                | 10 turnaround                      | 0.20 | 25  |     |       | 5  | 12 | 9  | 2  | 67.2  | 18.6 |
| MM-RD-073 | Jimmey Jaque Rd (Recreation Trail)               | 181 Jimmy Jaque Road              | North End                          | 1.99 | 25  | WR  | \$578 | 2  | 2  | 5  | 5  | 23.0  | 43.7 |
| MM-RD-074 | Lambs Lake Rd (Recreation Trail)                 | Fourth Avenue                     | 1.8 km North                       | 1.75 | 25  | REC | \$482 | 2  | 6  | 3  | 5  | 40.3  | 33.9 |
| MM-RD-075 | Meads Lake Rd (Meads Lane)                       | Axe Lake Road                     | Meadow Lk boat launch              | 2.44 | 25  |     |       | 9  | 14 | 14 | 2  | 73.2  | 15.2 |
| MM-RD-076 | Middle Rd Partial                                | 1.3 km West of Axe Lake Road      | 2.3 km West of Axe Lake Road       | 1.50 | 25  |     |       | 7  | 15 | 13 | 4  | 66.2  | 19.2 |
| MM-RD-077 | Monteith Side Rd (Fifth Side Rd)                 | HWY 518                           | 0.1km north                        | 0.10 | 25  | WR  | \$25  | 7  | 15 | 10 | 6  | 69.0  | 17.6 |
| MM-RD-078 | Oline St                                         | HWY 518                           | South End                          | 0.12 | 25  | WR  | \$20  | 4  | 5  | 15 | 4  | 59.0  | 23.3 |
| MM-RD-079 | Little Falls Rd (Recreation Trail)               | Turnaround                        | bridge                             | 1.12 | 25  |     |       | 4  | 5  | 7  | 2  | 45.2  | 31.1 |
| MM-RD-080 | Pioneer Cemetery Rd (Recreation Trail)           | Stisted Road North                | East End                           | 0.60 | 25  | WR  | \$159 | 2  | 3  | 8  | 2  | 30.3  | 39.6 |
| MM-RD-081 | Rome Rd                                          | Yearley Road                      | Cemetery                           | 0.15 | 25  | WR  | \$28  | 5  | 16 | 13 | 6  | 62.0  | 21.6 |
| MM-RD-082 | Sanborn Dr (Recreation Trail)                    | 0.1 km South of HWY 518           | 0.4 km South of HWY 518            | 0.32 | 25  | WR  | \$92  | 3  | 4  | 4  | 6  | 48.0  | 29.5 |
| MM-RD-083 | Second Ave                                       | Yearley Road                      | 0.8 km West                        | 0.80 | 25  |     |       | 7  | 15 | 5  | 6  | 65.8  | 19.4 |
| MM-RD-084 | Sixth Ave(Recreation Trail)                      | Yearley Road                      | West End                           | 0.71 | 25  | WR  | \$216 | 5  | 10 | 8  | 5  | 50.0  | 28.4 |
| MM-RD-086 | Compas Lake Rd                                   | 0.1 km South of Star Lake Road    | 0.6 km South of Star Lake Road     | 0.51 | 25  |     |       | 7  | 16 | 10 | 6  | 69.5  | 17.3 |

**Notes:**

1. Recommended improvement type is calculated based on greatest overall road needs.
2. Rehabilitation cost is calculated based on road elements specific to individual road sections (width, existing infrastructure, improvement type, etc.).
3. Rehabilitation strategy to be confirmed by geotechnical investigation at detail design.
3. All roads listed by Road Section No.

## **APPENDIX B**

### **ROAD NEEDS BY AADT & CONDITION RATING**

| Structural & Surface Road Needs by AADT & Condition Rating |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
|------------------------------------------------------------|----------------------------------------|-------------------------|-------------------------|-------------|------|----------------------------|--------------|---------------------|--------------------------|---------|------------------|
| Section No.                                                | Road Name                              | From                    | To                      | Length (km) | AADT | Improvement Recommendation | Cost (x1000) | Surface Rating (10) | Structural Adequacy (20) | AADT    | Condition Rating |
| Structural NOW Needs                                       |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
| MM-RD-020                                                  | Dailey Rd (Recreational Trail)         | HWY 518                 | 0.1 km West             | 0.23        | 25   | REC                        | \$65         | 2                   | 2                        | 0-49    | 35.3             |
| MM-RD-074                                                  | Lambs Lake Rd (Recreation Trail)       | Fourth Avenue           | 1.8 km North            | 1.75        | 25   | REC                        | \$482        | 2                   | 6                        | 0-49    | 40.3             |
| MM-RD-078                                                  | Oline St                               | HWY 518                 | South End               | 0.12        | 25   | REC                        | \$20         | 4                   | 5                        | 0-49    | 59.0             |
| MM-RD-084                                                  | Sixth Ave(Recreation Trail)            | Yearley Road            | West End                | 0.71        | 25   | REC                        | \$216        | 5                   | 10                       | 0-49    | 50.0             |
| Structural 1-5 Year Needs                                  |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
| *none                                                      |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
| Structural 6-10 Year Needs                                 |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
| MM-RD-004                                                  | Stisted Rd S                           | HWY 518                 | Eighth                  | 3.12        | 300  | R1                         | \$474        | 8                   | 13                       | 200-399 | 76.1             |
| MM-RD-005                                                  | Stisted Rd S                           | Eighth                  | Selena                  | 3.12        | 300  | R1                         | \$440        | 8                   | 13                       | 200-399 | 78.4             |
| MM-RD-006                                                  | Stisted Rd S                           | Selena Drive            | 4th                     | 1.19        | 300  | R1                         | \$178        | 8                   | 13                       | 200-399 | 79.0             |
| MM-RD-007                                                  | Stisted Rd S                           | 4th                     | Second Avenue           | 2.02        | 300  | R1                         | \$302        | 8                   | 13                       | 200-399 | 79.0             |
| MM-RD-008                                                  | Stisted Rd S                           | Second Avenue           | Ravenscliff             | 2.03        | 300  | R1                         | \$313        | 8                   | 13                       | 200-399 | 87.0             |
| Surface Type Needs Only                                    |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
| MM-RD-020                                                  | Dailey Rd (Recreational Trail)         | HWY 518                 | 0.1 km West             | 0.23        | 25   | REC                        | \$65         | 2                   | 2                        | 0-49    | 35.3             |
| MM-RD-074                                                  | Lambs Lake Rd (Recreation Trail)       | Fourth Avenue           | 1.8 km North            | 1.75        | 25   | REC                        | \$482        | 2                   | 6                        | 0-49    | 40.3             |
| MM-RD-078                                                  | Oline St                               | HWY 518                 | South End               | 0.12        | 25   | REC                        | \$20         | 4                   | 5                        | 0-49    | 59.0             |
| MM-RD-084                                                  | Sixth Ave(Recreation Trail)            | Yearley Road            | West End                | 0.71        | 25   | REC                        | \$216        | 5                   | 10                       | 0-49    | 50.0             |
| Surface Width Needs Only                                   |                                        |                         |                         |             |      |                            |              |                     |                          |         |                  |
| MM-RD-037                                                  | Maki Rd                                | Bartlett Lake Road      | East End                | 0.12        | 125  | W (WR)                     | \$31         | 9                   | 20                       | 50-199  | 71.5             |
| MM-RD-039                                                  | McKenzie St                            | Stisted Road North      | Watson Street           | 0.16        | 25   | W (WR)                     | \$41         | 3                   | 10                       | 0-49    | 50.8             |
| MM-RD-044                                                  | Reddam Dr                              | Sanborn Drive           | 0.1 km West             | 0.22        | 25   | W (WR)                     | \$51         | 7                   | 12                       | 0-49    | 58.8             |
| MM-RD-051                                                  | Taylor Rd                              | East Bear Lake Road     | South End               | 0.14        | 25   | W (WR)                     | \$20         | 18                  | 15                       | 0-49    | 75.0             |
| MM-RD-052                                                  | Watson St                              | Stisted Road North      | McKenzie Street         | 0.09        | 25   | W (WR)                     | \$23         | 3                   | 10                       | 0-49    | 50.8             |
| MM-RD-069                                                  | Cowie Rd                               | Stisted Road North      | East End                | 0.27        | 25   | W (WR)                     | \$41         | 5                   | 20                       | 0-49    | 74.0             |
| MM-RD-071                                                  | Holderny Rd                            | Axe Lake Road           | South End               | 0.59        | 25   | W (WR)                     | \$148        | 5                   | 10                       | 0-49    | 49.5             |
| MM-RD-073                                                  | Jimney Jaque Rd (Recreation Trail)     | 181 Jimmy Jaque Road    | North End               | 1.99        | 25   | W (WR)                     | \$578        | 2                   | 2                        | 0-49    | 23.0             |
| MM-RD-078                                                  | Oline St                               | HWY 518                 | South End               | 0.12        | 25   | W (WR)                     | \$20         | 4                   | 5                        | 0-49    | 59.0             |
| MM-RD-080                                                  | Pioneer Cemetery Rd (Recreation Trail) | Stisted Road North      | East End                | 0.60        | 25   | W (WR)                     | \$159        | 2                   | 3                        | 0-49    | 30.3             |
| MM-RD-081                                                  | Rome Rd                                | Yearley Road            | Cemetery                | 0.15        | 25   | W (WR)                     | \$28         | 5                   | 16                       | 0-49    | 62.0             |
| MM-RD-082                                                  | Sanborn Dr (Recreation Trail)          | 0.1 km South of HWY 518 | 0.4 km South of HWY 518 | 0.32        | 25   | W (WR)                     | \$92         | 3                   | 4                        | 0-49    | 48.0             |
| MM-RD-084                                                  | Sixth Ave(Recreation Trail)            | Yearley Road            | West End                | 0.71        | 25   | W (WR)                     | \$216        | 5                   | 10                       | 0-49    | 50.0             |
| MM-RD-077                                                  | Monteith Side Rd (Fifth Side Rd)       | HWY 518                 | 0.1km north             | 0.10        | 25   | W (WR)                     | \$25         | 7                   | 15                       | 0-49    | 69.0             |

**Notes:**

1. Rehabilitation strategy to be confirmed by geotechnical investigations at detail design.
2. Timing of storm sewer/culvert work should be considered in conjunction with road reconstruction and vice versa, where applicable.
3. Costing is zero for roads within the network but maintained by others (i.e. boundary roads).
3. Italicized road improvement recommendation types insidcate a forced recommendation supercedeing that calculated by MTO metrics.

## **APPENDIX C**

### **RESURFACING NEEDS BY PRIORITY RATING**

| Resurfacing Needs by Priority Rating |              |               |               |             |      |                                             |              |                     |                 |
|--------------------------------------|--------------|---------------|---------------|-------------|------|---------------------------------------------|--------------|---------------------|-----------------|
| Section No.                          | Road Name    | From          | To            | Length (km) | AADT | Preliminary Improvement Type Recommendation | Cost (x1000) | Surface Rating (10) | Priority Rating |
| MM-RD-004                            | Stisted Rd S | HWY 518       | Eighth        | 3.12        | 300  | PR - Pulverize, Double Surface Treatment    | \$474        | 8                   | 20.5            |
| MM-RD-005                            | Stisted Rd S | Eighth        | Selena        | 3.12        | 300  | Double Surface Treatment                    | \$333        | 8                   | 18.6            |
| MM-RD-006                            | Stisted Rd S | Selena Drive  | 4th           | 1.19        | 300  | Double Surface Treatment                    | \$135        | 8                   | 18.0            |
| MM-RD-007                            | Stisted Rd S | 4th           | Second Avenue | 2.02        | 300  | Double Surface Treatment                    | \$229        | 8                   | 18.0            |
| MM-RD-008                            | Stisted Rd S | Second Avenue | Ravenscliff   | 2.03        | 300  | Double Surface Treatment                    | \$237        | 8                   | 11.2            |

**Notes:**

1. Priorities in descending order. The higher the priority rating, the greater the need.
2. Rehabilitation strategy to be confirmed by geotechnical investigation at detail design.
3. Costing is zero for roads within the network recommended for maintenance.

## **APPENDIX D**

### **GENERAL ROAD LISTING BY PRIORITY RATING**

| General Roads Listing by Condition Rating & Priority Rating |                                               |                              |                              |             |      |              |              |                |                   |                 |               |                  |                 |
|-------------------------------------------------------------|-----------------------------------------------|------------------------------|------------------------------|-------------|------|--------------|--------------|----------------|-------------------|-----------------|---------------|------------------|-----------------|
| Section No.                                                 | Road Name                                     | From                         | To                           | Length (km) | AADT | Improve-ment | Cost (x1000) | Surface Rating | Structural Rating | Drainage Rating | Maint. Rating | Condition Rating | Priority Rating |
| MM-RD-073                                                   | Jimmey Jaque Rd (Recreation Trail)            | 181 Jimmy Jaque Road         | North End                    | 1.99        | 25   | WR           | \$364        | 2              | 2                 | 5               | 5             | 23.0             | 43.7            |
| MM-RD-080                                                   | Pioneer Cemetery Rd (Recreation Trail)        | Stisted Road North           | East End                     | 0.60        | 25   | WR           | \$110        | 2              | 3                 | 8               | 2             | 30.3             | 39.6            |
| MM-RD-020                                                   | Dailey Rd (Recreational Trail)                | HWY 518                      | 0.1 km West                  | 0.23        | 25   | REC          | \$42         | 2              | 2                 | 2               | 5             | 35.3             | 36.7            |
| MM-RD-024                                                   | Farrell Crt                                   | Almagin Dr                   | North End                    | 0.23        | 25   |              |              | 5              | 16                | 6               | 3             | 39.7             | 34.2            |
| MM-RD-074                                                   | Lambs Lake Rd (Recreation Trail)              | Fourth Avenue                | 1.8 km North                 | 1.75        | 25   | REC          | \$319        | 2              | 6                 | 3               | 5             | 40.3             | 33.9            |
| MM-RD-079                                                   | Little Falls Rd (Recreation Trail)            | Turnaround                   | bridge                       | 1.12        | 25   |              |              | 4              | 5                 | 7               | 2             | 45.2             | 31.1            |
| MM-RD-045                                                   | Richardson Rd (Boundary)                      | Stisted Road North           | Doe Lake                     | 1.04        | 25   |              |              | 3              | 10                | 5               | 2             | 46.9             | 30.2            |
| MM-RD-082                                                   | Sanborn Dr (Recreation Trail)                 | 0.1 km South of HWY 518      | 0.4 km South of HWY 518      | 0.32        | 25   | WR           | \$59         | 3              | 4                 | 4               | 6             | 48.0             | 29.5            |
| MM-RD-070                                                   | Fisher Creek Rd                               | Selena Drive                 | Old Novar Road               | 4.54        | 25   |              |              | 2              | 5                 | 5               | 9             | 49.4             | 28.7            |
| MM-RD-071                                                   | Holderny Rd                                   | Axe Lake Road                | South End                    | 0.59        | 25   | WR           | \$107        | 5              | 10                | 5               | 3             | 49.5             | 28.7            |
| MM-RD-084                                                   | Sixth Ave(Recreation Trail)                   | Yearley Road                 | West End                     | 0.71        | 25   | WR           | \$129        | 5              | 10                | 8               | 5             | 50.0             | 28.4            |
| MM-RD-039                                                   | McKenzie St                                   | Stisted Road North           | Watson Street                | 0.16        | 25   | WR           | \$30         | 3              | 10                | 4               | 5             | 50.8             | 28.0            |
| MM-RD-052                                                   | Watson St                                     | Stisted Road North           | McKenzie Street              | 0.09        | 25   | WR           | \$16         | 3              | 10                | 4               | 5             | 50.8             | 28.0            |
| MM-RD-067                                                   | Boundary Rd (Old Novar Rd) (Recreation Trail) | Fisher Creek Road            | 2.0 km West                  | 2.70        | 25   |              |              | 5              | 8                 | 7               | 3             | 50.9             | 27.9            |
| MM-RD-028                                                   | Gordon Deans Trail                            | HWY 518                      | North End                    | 0.67        | 25   |              |              | 3              | 13                | 6               | 2             | 52.9             | 26.7            |
| MM-RD-022                                                   | Eighth Ave                                    | Yearly Road                  | Stisted Road                 | 2.02        | 25   |              |              | 7              | 15                | 3               | 2             | 53.9             | 26.2            |
| MM-RD-065                                                   | 1/2 Appleyard Rd                              | Fern Glen Road               | 2.8 km South and West        | 2.46        | 25   |              |              | 6              | 13                | 11              | 5             | 56.0             | 25.0            |
| MM-RD-021                                                   | East Bear Lake Rd                             | 606 East Bear Lake Road      | Cul-De-Sac                   | 1.55        | 25   |              |              | 4              | 12                | 4               | 3             | 57.5             | 24.1            |
| MM-RD-044                                                   | Reddam Dr                                     | Sanborn Drive                | 0.1 km West                  | 0.22        | 25   | WR           | \$40         | 7              | 12                | 7               | 4             | 58.8             | 23.4            |
| MM-RD-078                                                   | Oline St                                      | HWY 518                      | South End                    | 0.12        | 25   | WR           | \$21         | 4              | 5                 | 15              | 4             | 59.0             | 23.3            |
| MM-RD-023                                                   | Eighth Ave                                    | Yearly Road                  | 2.4 km West                  | 0.52        | 25   |              |              | 5              | 13                | 13              | 4             | 60.5             | 22.4            |
| MM-RD-035                                                   | Little Falls Rd (Recreation Trail)            | Stisted Road North           | Turnaround                   | 0.23        | 125  |              |              | 8              | 8                 | 10              | 2             | 61.7             | 27.5            |
| MM-RD-081                                                   | Rome Rd                                       | Yearley Road                 | Cemetery                     | 0.15        | 25   | WR           | \$27         | 5              | 16                | 13              | 6             | 62.0             | 21.6            |
| MM-RD-062                                                   | Fern Glen Rd                                  | 2136 Fern Glen Road          | Appleyard Road               | 2.09        | 125  |              |              | 5              | 13                | 12              | 3             | 62.8             | 26.7            |
| MM-RD-066                                                   | Bordeau Rd                                    | Harrison Lake Road           | West End                     | 2.11        | 25   |              |              | 7              | 15                | 12              | 3             | 64.8             | 20.0            |
| MM-RD-083                                                   | Second Ave                                    | Yearley Road                 | 0.8 km West                  | 0.80        | 25   |              |              | 7              | 15                | 5               | 6             | 65.8             | 19.4            |
| MM-RD-076                                                   | Middle Rd Partial                             | 1.3 km West of Axe Lake Road | 2.3 km West of Axe Lake Road | 1.50        | 25   |              |              | 7              | 15                | 13              | 4             | 66.2             | 19.2            |
| MM-RD-033                                                   | Lakeview Dr                                   | East Bear Lake Road          | North End                    | 0.11        | 25   |              |              | 8              | 17                | 8               | 6             | 66.3             | 19.2            |
| MM-RD-072                                                   | Hunter's Lane                                 | Stisted Road South           | 10 turnaround                | 0.20        | 25   |              |              | 5              | 12                | 9               | 2             | 67.2             | 18.6            |
| MM-RD-049                                                   | Star Lake Rd                                  | Compass Lk Rd                | Perry Township Boundary      | 2.00        | 125  |              |              | 7              | 18                | 8               | 4             | 68.8             | 22.4            |
| MM-RD-077                                                   | Monteith Side Rd (Fifth Side Rd)              | HWY 518                      | 0.1km north                  | 0.10        | 25   | WR           | \$18         | 7              | 15                | 10              | 6             | 69.0             | 17.6            |
| MM-RD-030                                                   | Jimmey Jaque Rd                               | Middle Road                  | 181 Jimmy Jaque Road         | 0.90        | 25   |              |              | 8              | 15                | 12              | 5             | 69.3             | 17.4            |
| MM-RD-042                                                   | Pine Dr                                       | Stisted Road South           | 0.5km South                  | 0.67        | 25   |              |              | 8              | 18                | 13              | 5             | 69.3             | 17.4            |

|           |                            |                                   |                                    |      |     |    |         |    |    |    |   |      |      |
|-----------|----------------------------|-----------------------------------|------------------------------------|------|-----|----|---------|----|----|----|---|------|------|
| MM-RD-086 | Compas Lake Rd             | 0.1 km South of Star Lake Road    | 0.6 km South of Star Lake Road     | 0.51 | 25  |    |         | 7  | 16 | 10 | 6 | 69.5 | 17.3 |
| MM-RD-040 | Middle Rd                  | Axe Lake Road                     | 1.3 km West                        | 0.82 | 25  |    |         | 10 | 17 | 15 | 3 | 70.2 | 16.9 |
| MM-RD-014 | 1/2 Bartlett Lake Rd       | Stisted Road North                | 0.9 km West                        | 0.90 | 125 |    |         | 5  | 16 | 6  | 3 | 70.6 | 21.1 |
| MM-RD-018 | Bordeau Rd                 | HWY 518                           | Harrison Lake Road                 | 4.17 | 25  |    |         | 7  | 15 | 12 | 3 | 70.8 | 16.6 |
| MM-RD-047 | Second Ave                 | Yearley Road                      | Buckvale Dr                        | 3.25 | 125 |    |         | 8  | 18 | 5  | 6 | 71.2 | 20.7 |
| MM-RD-037 | Maki Rd                    | Bartlett Lake Road                | East End                           | 0.12 | 125 | WR | \$79    | 9  | 20 | 8  | 8 | 71.5 | 20.4 |
| MM-RD-025 | Fern Glen Rd               | Stisted Rd South                  | 2136 Fern Glen Road                | 5.28 | 125 |    |         | 7  | 15 | 10 | 7 | 73.1 | 19.3 |
| MM-RD-075 | Meads Lake Rd (Meads Lane) | Axe Lake Road                     | Meadow Lk boat launch              | 2.44 | 25  |    |         | 9  | 14 | 14 | 2 | 73.2 | 15.2 |
| MM-RD-069 | Cowie Rd                   | Stisted Road North                | East End                           | 0.27 | 25  | WR | \$49    | 5  | 20 | 13 | 5 | 74.0 | 14.8 |
| MM-RD-051 | Taylor Rd                  | East Bear Lake Road               | South End                          | 0.14 | 25  | WR | \$25    | 18 | 15 | 15 | 5 | 75.0 | 14.2 |
| MM-RD-068 | Compas Lake Rd             | Star Lake Road                    | 0.1 km South                       | 0.10 | 25  |    |         | 8  | 10 | 15 | 7 | 76.0 | 13.6 |
| MM-RD-046 | Sanborn Dr                 | HWY 518                           | 0.1 km South                       | 0.15 | 25  |    |         | 8  | 19 | 15 | 7 | 76.1 | 13.6 |
| MM-RD-004 | Stisted Rd S               | HWY 518                           | Eighth                             | 3.12 | 300 | R1 | \$4,275 | 8  | 13 | 14 | 8 | 76.1 | 20.5 |
| MM-RD-001 | East Bear Lake Rd          | HWY 518                           | 606 East Bear Lake Road            | 3.24 | 125 |    |         | 9  | 17 | 12 | 4 | 76.9 | 16.6 |
| MM-RD-027 | Fourth Ave                 | Lambs Lake Road                   | Easterly to Turn Around            | 4.09 | 25  |    |         | 9  | 19 | 8  | 5 | 77.0 | 13.1 |
| MM-RD-012 | Axe Lake Rd                | West Bear Lake Road               | Holderney Road                     | 3.18 | 25  |    |         | 14 | 12 | 8  | 7 | 77.0 | 13.1 |
| MM-RD-002 | George St                  | HWY 518                           | South End                          | 0.27 | 25  |    |         | 10 | 15 | 11 | 8 | 77.1 | 13.0 |
| MM-RD-005 | Stisted Rd S               | Eighth                            | Selena                             | 3.12 | 300 | R1 | \$4,265 | 8  | 13 | 14 | 8 | 78.4 | 18.6 |
| MM-RD-006 | Stisted Rd S               | Selena Drive                      | 4th                                | 1.19 | 300 | R1 | \$1,627 | 8  | 13 | 14 | 8 | 79.0 | 18.0 |
| MM-RD-007 | Stisted Rd S               | 4th                               | Second Avenue                      | 2.02 | 300 | R1 | \$2,764 | 8  | 13 | 14 | 8 | 79.0 | 18.0 |
| MM-RD-000 | Almaguin Dr                | HWY 518                           | North End, Including the Loop      | 2.41 | 125 |    |         | 8  | 20 | 13 | 8 | 79.3 | 14.9 |
| MM-RD-059 | Axe Lake Rd                | Holderney Road                    | Jimmey Jaque Road                  | 3.71 | 125 |    |         | 10 | 19 | 7  | 3 | 80.5 | 14.0 |
| MM-RD-058 | Yearley Rd                 | Second                            | Rome                               | 3.31 | 125 |    |         | 6  | 14 | 13 | 7 | 83.2 | 12.1 |
| MM-RD-064 | Old Rainy Lake Rd          | 0.6km North of Stisted Road North | 2.1 km North of Stisted Road North | 1.60 | 125 |    |         | 8  | 17 | 14 | 5 | 83.2 | 12.0 |
| MM-RD-061 | Axe Lake Rd                | McMurrich/Monteith Boundary       | HWY 518                            | 5.31 | 125 |    |         | 8  | 18 | 12 | 5 | 83.7 | 11.7 |
| MM-RD-060 | Axe Lake Rd                | Jimmey Jaque Road                 | McMurrich/Monteith Boundary        | 2.10 | 125 |    |         | 9  | 18 | 18 | 5 | 85.3 | 10.6 |
| MM-RD-009 | Stisted Rd N               | HWY 518                           | Little Falls                       | 1.31 | 300 |    |         | 8  | 18 | 13 | 8 | 86.0 | 12.1 |
| MM-RD-041 | Old Rainy Lake Rd          | Stisted Road North                | 0.6 km North                       | 0.60 | 125 |    |         | 6  | 17 | 14 | 8 | 86.7 | 9.6  |
| MM-RD-017 | Birch Crt                  | Almaguin Dr                       | East End                           | 0.12 | 25  |    |         | 8  | 18 | 14 | 6 | 86.9 | 7.4  |
| MM-RD-008 | Stisted Rd S               | Second Avenue                     | Ravenscliff                        | 2.03 | 300 | R1 | \$2,781 | 8  | 13 | 13 | 8 | 87.0 | 11.2 |
| MM-RD-053 | West Bear Lake Rd          | HWY 518                           | Taylor                             | 2.84 | 125 |    |         | 18 | 8  | 14 | 4 | 87.2 | 9.1  |
| MM-RD-043 | Pomeroy Rd                 | Second Avenue                     | Patricia Avenue                    | 1.10 | 25  |    |         | 8  | 18 | 13 | 7 | 87.4 | 7.2  |
| MM-RD-048 | Selena Dr                  | Stisted Road                      | 866 Selena Road                    | 3.83 | 125 |    |         | 9  | 16 | 14 | 7 | 88.6 | 8.1  |
| MM-RD-029 | Henry St                   | George Rd                         | East End                           | 0.20 | 25  |    |         | 10 | 20 | 14 | 9 | 89.0 | 6.2  |
| MM-RD-016 | Beach St                   | HWY 518                           | South End                          | 0.11 | 25  |    |         | 19 | 15 | 14 | 3 | 89.3 | 6.1  |
| MM-RD-055 | West Bear Lake Rd          | Lowes Road                        | Axe Lake Road                      | 5.46 | 125 |    |         | 16 | 13 | 13 | 3 | 89.5 | 7.6  |
| MM-RD-010 | Stisted Rd N               | Little Falls                      | Cowie                              | 1.22 | 300 |    |         | 8  | 18 | 14 | 9 | 89.5 | 9.0  |
| MM-RD-057 | Yearley Rd                 | HWY 518                           | Second                             | 8.45 | 125 |    |         | 8  | 17 | 14 | 7 | 90.2 | 7.0  |
| MM-RD-011 | Stisted Rd N               | Cowie                             | Richardson                         | 3.82 | 300 |    |         | 8  | 18 | 13 | 8 | 90.7 | 8.0  |
| MM-RD-026 | Fourth Ave                 | Turn Around                       | Yearley Road                       | 2.06 | 25  |    |         | 10 | 19 | 13 | 7 | 91.6 | 4.8  |
| MM-RD-032 | Kings Dr                   | HWY 518                           | 1.0 km North turnaround            | 1.02 | 25  |    |         | 10 | 20 | 14 | 8 | 94.1 | 3.4  |
| MM-RD-036 | Lowes Rd                   | West Bear Lake Road               | East End                           | 0.22 | 25  |    |         | 20 | 18 | 10 | 7 | 94.2 | 3.3  |
| MM-RD-019 | Buckvale Dr                | Second Avenue East                | Second Avenue West                 | 1.16 | 125 |    |         | 10 | 20 | 15 | 5 | 95.0 | 3.6  |

|           |                   |               |                |      |     |  |  |    |    |    |    |       |      |
|-----------|-------------------|---------------|----------------|------|-----|--|--|----|----|----|----|-------|------|
| MM-RD-054 | West Bear Lake Rd | Taylor        | Lowes          | 1.39 | 125 |  |  | 18 | 13 | 14 | 7  | 95.6  | 3.2  |
| MM-RD-003 | Henry St          | Stisted Road  | George Street  | 0.10 | 25  |  |  | 10 | 20 | 14 | 9  | 95.8  | 2.4  |
| MM-RD-034 | Landfill Rd       | HWY 518       | South End      | 0.34 | 125 |  |  | 10 | 20 | 15 | 7  | 97.0  | 2.2  |
| MM-RD-050 | Star Lake Rd      | HWY 518       | 0.2km          | 0.20 | 125 |  |  | 10 | 20 | 15 | 7  | 97.0  | 2.2  |
| MM-RD-038 | McAughey St       | HWY 518       | William Street | 0.11 | 25  |  |  | 10 | 20 | 15 | 8  | 98.0  | 1.1  |
| MM-RD-031 | John St           | HWY 518       | 0.4 km North   | 0.38 | 25  |  |  | 19 | 18 | 15 | 7  | 99.5  | 0.3  |
| MM-RD-056 | William St        | HWY 518       | 0              | 0.23 | 25  |  |  | 10 | 20 | 15 | 10 | 100.0 | 0.0  |
| MM-RD-015 | Bayside Dr        | Lakeview Road | East End       | 0.31 | 25  |  |  | 19 | 19 | 14 | 7  | 104.0 | -2.3 |

**Notes:**

1. *Recommened improvement type is calculated based on greatest overall road needs.*
2. *Rehabilitation cost is calculated based on road elements specific to individual road sections (width, existing infrastructure, improvement type, etc.).*
3. *Rehabilitation strategy to be confirmed by geotechnical investigation at detail design.*
3. *All roads listed by overall improvement priority with condition rating (descending), then priority rating (ascending).*

## **APPENDIX E**

### **SIGN INVENTORY LISTING BY CONDITION**

| General Sign Listing by Roads Section No. |              |                        |             |              |           |                     |
|-------------------------------------------|--------------|------------------------|-------------|--------------|-----------|---------------------|
| ID. No.                                   | Road Name    | Sign Type              | Easting (x) | Northing (y) | Condition | Remarks             |
| 5                                         | Stisted Rd S | Stop                   | 5038498.869 | 620089.6829  | Good      | None.               |
| 6                                         | Stisted Rd S | No Parking             | 5038494.024 | 620092.0974  | Good      | None.               |
| 7                                         | Stisted Rd S | Street Name            | 5038507.971 | 620090.4571  | Good      | None.               |
| 8                                         | Stisted Rd N | Stop                   | 5038521.225 | 620065.6977  | Good      | None.               |
| 9                                         | Stisted Rd S | Speed Limit, 50 kph    | 5038438.415 | 620100.7888  | Good      | 50                  |
| 10                                        | Stisted Rd S | Pedestrian, Warning    | 5038429.093 | 620104.5551  | Good      | None.               |
| 11                                        | Henry St     | Street Name            | 5038358.455 | 620147.6077  | Good      | None.               |
| 12                                        | Stisted Rd S | Speed Limit, 50 kph    | 5038113.484 | 620235.0082  | Good      | 50                  |
| 13                                        | Stisted Rd S | Speed Limit, 50 kph    | 5038118.661 | 620248.6687  | Good      | 50                  |
| 14                                        | Stisted Rd S | Truck Turning, Warning | 5037808.435 | 620312.7119  | Good      | None.               |
| 15                                        | Pine Dr      | Stop                   | 5037632.78  | 620311.0279  | Replace   | OBSTRUCTED, VEG     |
| 16                                        | Stisted Rd S | Speed End, 50 kph      | 5037093.714 | 620275.1131  | Good      | 50                  |
| 17                                        | Stisted Rd S | Speed Limit, 60 kph    | 5037097.755 | 620278.617   | Good      | 60                  |
| 18                                        | Stisted Rd S | Speed Limit, 50 kph    | 5036964.034 | 620358.4785  | Good      | None.               |
| 19                                        | Stisted Rd S | Speed, Warning         | 5036964.877 | 620369.324   | Good      | None.               |
| 20                                        | Stisted Rd S | Surface Transition     | 5036258.943 | 620969.829   | Good      | None.               |
| 21                                        | Stisted Rd S | Surface Transition     | 5035991.922 | 621132.122   | Good      | None.               |
| 22                                        | Stisted Rd S | Street Name            | 5035923.932 | 621150.8708  | Good      | None.               |
| 23                                        | Stisted Rd S | Street Name            | 5035863.167 | 621281.5767  | Good      | None.               |
| 24                                        | Stisted Rd S | Turn, Warning          | 5033470.753 | 622293.981   | Good      | None.               |
| 25                                        | Stisted Rd S | Turn, Warning          | 5033420.596 | 622196.6764  | Good      | None.               |
| 26                                        | Stisted Rd S | Turn, Warning          | 5033372.346 | 622201.3194  | Good      | None.               |
| 27                                        | Stisted Rd S | Turn, Warning          | 5033454.563 | 622244.0205  | Good      | None.               |
| 28                                        | Stisted Rd S | Pedestrian, Warning    | 5033238.498 | 622287.6561  | Good      | None.               |
| 29                                        | Fourth Ave   | Stop                   | 5032828.55  | 622425.1572  | Good      | None.               |
| 30                                        | Stisted Rd S | Street Name            | 5032838.716 | 622449.4719  | Good      | None.               |
| 31                                        | Stisted Rd S | Yield / Other          | 5032817.042 | 622439.0524  | Good      | END OF ASSUMED ROAD |
| 32                                        | Second Ave   | Stop                   | 5030978.188 | 623190.4159  | Good      | None.               |
| 33                                        | Second Ave   | Speed Limit, 40 kph    | 5031000.628 | 623243.1308  | Good      | 40                  |
| 34                                        | Stisted Rd S | Yield / Other          | 5029129.456 | 623974.6206  | Good      | SEASONAL HALF LOADS |
| 35                                        | Stisted Rd N | Street Name            | 5038518.279 | 620068.4479  | Good      | None.               |
| 36                                        | Stisted Rd N | No Parking             | 5038525.85  | 620064.0194  | Good      | None.               |
| 37                                        | Stisted Rd N | Yield / Other          | 5038538.491 | 620071.0114  | Good      | SEASONAL HALF LOADS |
| 38                                        | Stisted Rd N | Stop                   | 5038542.943 | 620046.9545  | Good      | None.               |
| 39                                        | Stisted Rd N | Speed Limit, 50 kph    | 5038562.331 | 620062.8062  | Good      | 50                  |
| 40                                        | Stisted Rd N | Street Name            | 5038617.204 | 620025.2263  | Good      | None.               |
| 41                                        | Watson St    | Stop                   | 5038629.717 | 620041.716   | Good      | None.               |
| 42                                        | Stisted Rd N | Hidden Entrance        | 5038678.239 | 620014.5496  | Good      | HIDDEN INTERSECTION |
| 43                                        | Stisted Rd N | Street Name            | 5038729.778 | 620000.1472  | Good      | None.               |
| 44                                        | McKenzie St  | Street Name            | 5038737.629 | 620018.52    | Good      | None.               |
| 45                                        | Stisted Rd N | Speed Limit, 50 kph    | 5038744.114 | 620018.3256  | Good      | None.               |
| 46                                        | Stisted Rd N | Pedestrian, Warning    | 5038750.521 | 620016.8785  | Good      | None.               |

|    |                                        |                        |             |             |        |                        |
|----|----------------------------------------|------------------------|-------------|-------------|--------|------------------------|
| 47 | Stisted Rd N                           | Speed Limit, 50 kph    | 5038793.814 | 620012.0855 | Good   | 50                     |
| 48 | Stisted Rd N                           | Speed Limit, 50 kph    | 5039207.854 | 619793.6085 | Good   | 50                     |
| 49 | Stisted Rd N                           | Speed Limit, 50 kph    | 5039214.486 | 619773.5788 | Good   | 50                     |
| 50 | Stisted Rd N                           | Street Name            | 5039294.203 | 619741.057  | Good   | None.                  |
| 51 | Pioneer Cemetery Rd (Recreation Trail) | Stop                   | 5039299.179 | 619759.0222 | Good   | None.                  |
| 52 | Pioneer Cemetery Rd (Recreation Trail) | Street Name            | 5039302.172 | 619757.9555 | Good   | None.                  |
| 53 | Stisted Rd N                           | Speed Limit, 50 kph    | 5039521.094 | 619647.6502 | Good   | 50                     |
| 54 | Stisted Rd N                           | Street Name            | 5039605.795 | 619623.9304 | Good   | None.                  |
| 55 | Little Falls Rd (Recreation Trail)     | Street Name            | 5039636.07  | 619603.9367 | Good   | None.                  |
| 56 | Little Falls Rd (Recreation Trail)     | Speed Limit, 40 kph    | 5039635.897 | 619588.2543 | Good   | 40                     |
| 57 | Little Falls Rd (Recreation Trail)     | Stop                   | 5039625.49  | 619602.0474 | Good   | None.                  |
| 58 | Stisted Rd N                           | Pedestrian, Warning    | 5039676.367 | 619617.7899 | Good   | None.                  |
| 59 | Stisted Rd N                           | Speed Limit, 50 kph    | 5039827.194 | 619647.9831 | Good   | 50                     |
| 60 | Stisted Rd N                           | Speed Limit, 50 kph    | 5039826.494 | 619661.5068 | Good   | 50                     |
| 61 | Stisted Rd N                           | Speed Limit, 60 kph    | 5039910.772 | 619666.6285 | Good   | 60                     |
| 62 | Stisted Rd N                           | Speed, Warning, 50 kph | 5039965.949 | 619644.4211 | Good   | 50                     |
| 63 | Stisted Rd N                           | Street Name            | 5040239.148 | 619558.8684 | Good   | None.                  |
| 64 | Old Rainy Lake Rd                      | Street Name            | 5040217.24  | 619532.1918 | Good   | None.                  |
| 65 | Old Rainy Lake Rd                      | Stop                   | 5040217.24  | 619532.1918 | Good   | None.                  |
| 66 | William St                             | Stop                   | 5038469.726 | 619992.3562 | Good   | None.                  |
| 67 | William St                             | Speed Limit            | 5038471.808 | 619997.5079 | Good   | None.                  |
| 68 | William St                             | Stop                   | 5038324.275 | 619898.9096 | Good   | None.                  |
| 69 | William St                             | Street Name            | 5038325.17  | 619901.9724 | Good   | None.                  |
| 70 | Star Lake Rd                           | Stop                   | 5040034.479 | 623953.4631 | Good   | None.                  |
| 71 | #N/A                                   | Half Loads (2-pcs)     | 5040010.137 | 623980.9799 | Repair | LEANING OVER           |
| 72 | Star Lake Rd                           | Tow Zone               | 5040865.514 | 625735.6385 | Repair | VEGETATION OBSTRUCTION |
| 73 | Star Lake Rd                           | Street Name            | 5040001.016 | 624018.4677 | Good   | None.                  |
| 74 | Compas Lake Rd                         | Stop                   | 5039992.549 | 624049.6886 | Good   | None.                  |
| 75 | Compas Lake Rd                         | No Parking             | 5039922.514 | 623953.6927 | Good   | LEANING, ADEQUATE      |
| 76 | Compas Lake Rd                         | Road Unassumed         | 5039512.455 | 624129.0469 | Good   | None.                  |
| 77 | Gordon Deans Trail                     | Stop                   | 5040020.347 | 623919.5719 | Good   | LEANING                |
| 78 | Gordon Deans Trail                     | Speed Limit, 40 kph    | 5040059.249 | 623901.1594 | Repair | 40; COVERED BY VEG     |
| 79 | Almaguin Dr                            | No Exit                | 5039522.253 | 622921.4823 | Good   | LEANING                |
| 80 | Almaguin Dr                            | Half Loads (2-pcs)     | 5039522.253 | 622921.4823 | Good   | LEANING                |
| 81 | Almaguin Dr                            | Speed Limit, 40 kph    | 5039544.478 | 622919.101  | Good   | 40                     |
| 82 | Almaguin Dr                            | Stop                   | 5039505.32  | 622906.1364 | Good   | None.                  |
| 83 | Almaguin Dr                            | No Parking             | 5040229.961 | 622813.4552 | Good   | None.                  |
| 84 | Almaguin Dr                            | Hidden Entrance        | 5040438.926 | 623024.101  | Good   | None.                  |
| 85 | Almaguin Dr                            | Street Name            | 5040579.591 | 623062.7115 | Good   | None.                  |
| 86 | Almaguin Dr                            | Speed Limit, 40 kph    | 5041118.222 | 623324.1865 | Good   | 40                     |
| 87 | Almaguin Dr                            | Stop                   | 5040843.405 | 623189.1323 | Good   | None.                  |
| 88 | Farrell Crt                            | Stop                   | 5041148.451 | 623319.876  | Good   | None.                  |
| 89 | Farrell Crt                            | Street Name            | 5041148.451 | 623319.876  | Good   | None.                  |
| 90 | Farrell Crt                            | No Exit                | 5041153.478 | 623339.4552 | Repair | OBSTRUCTED BY VEG      |

|     |                  |                     |             |             |         |                                          |
|-----|------------------|---------------------|-------------|-------------|---------|------------------------------------------|
| 91  | Birch Crt        | Stop                | 5040593.159 | 623068.0469 | Good    | None.                                    |
| 92  | Almaguin Dr      | Street Name         | 5040587.868 | 623054.0239 | Repair  | OBSTRUCTED BY VEG                        |
| 93  | Birch Crt        | Speed Limit, 40 kph | 5040595.751 | 623127.1677 | Repair  | 40; OBSTRUCTED                           |
| 94  | Birch Crt        | Speed Limit, 40 kph | 5040617.047 | 623172.7552 | Good    | 40                                       |
| 95  | Almaguin Dr      | Stop, Warning       | 5039735.502 | 622904.8562 | Good    | None.                                    |
| 96  | Kings Dr         | Half Loads (2-pcs)  | 5039326.918 | 621944.5851 | Repair  | LEANING                                  |
| 97  | Kings Dr         | No Exit             | 5039326.918 | 621944.5851 | Repair  | LEANING                                  |
| 98  | Kings Dr         | Speed Limit, 40 kph | 5039347.979 | 621936.6476 | Good    | 40                                       |
| 99  | Kings Dr         | Stop                | 5039312.207 | 621935.5893 | Good    | None.                                    |
| 100 | George St        | Stop                | 5038544.775 | 620175.2171 | Good    | None.                                    |
| 101 | George St        | Pedestrian, Warning | 5038480.127 | 620193.0896 | Good    | SLOW DOWN SIGN, MIGHT BE PRIVATE         |
| 102 | George St        | Street Name         | 5038407.913 | 620221.819  | Good    | LEANING                                  |
| 103 | George St        | Street Name         | 5038396.356 | 620239.8034 | Good    | None.                                    |
| 104 | Henry St         | Pedestrian, Warning | 5038402.97  | 620246.7487 | Good    | SLOW DOWN, MIGHT BE PRIVATE              |
| 105 | Henry St         | Stop                | 5038416.199 | 620242.1185 | Repair  | OBSTRUCTED, VEG                          |
| 106 | Henry St         | Street Name         | 5038416.199 | 620242.1185 | Repair  | OBSTRUCTED, VEG                          |
| 107 | Henry St         | Stop                | 5038373.22  | 620150.3997 | Replace | REPOSITION, BLOCKED BY TREE              |
| 108 | Henry St         | Stop                | 5038389.095 | 620226.4675 | Good    | None.                                    |
| 109 | Henry St         | Street Name         | 5038389.095 | 620226.4675 | Good    | None.                                    |
| 110 | McAughey St      | No Parking          | 5038318.236 | 619890.2747 | Good    | None.                                    |
| 111 | McAughey St      | No Parking          | 5038260.358 | 619918.7175 | Good    | None.                                    |
| 112 | McAughey St      | No Parking          | 5038288.47  | 619903.8347 | Good    | None.                                    |
| 113 | McAughey St      | Stop                | 5038407.599 | 619866.3431 | Good    | None.                                    |
| 114 | Eighth Ave       | Stop                | 5036060.925 | 619485.9047 | Good    | None.                                    |
| 115 | Eighth Ave       | Street Name         | 5036060.925 | 619485.9047 | Good    | None.                                    |
| 116 | Eighth Ave       | No Exit             | 5036038.262 | 619434.2297 | Good    | None.                                    |
| 117 | Eighth Ave       | Seasonal Road       | 5036038.262 | 619434.2297 | Good    | None.                                    |
| 118 | Fern Glen Rd     | Stop                | 5035880.293 | 621284.0378 | Good    | None.                                    |
| 119 | Fern Glen Rd     | Street Name         | 5035880.293 | 621284.0378 | Good    | None.                                    |
| 120 | Fern Glen Rd     | Speed Limit, 40 kph | 5036820.986 | 624008.9495 | Good    | 40                                       |
| 121 | Fern Glen Rd     | Parking             | 5036803.634 | 624060.3969 | Good    | None.                                    |
| 122 | Fern Glen Rd     | Parking             | 5036813.689 | 624073.0969 | Good    | None.                                    |
| 123 | Fern Glen Rd     | No Parking          | 5036789.074 | 624101.3385 | Good    | None.                                    |
| 124 | Fern Glen Rd     | Tow Zone            | 5036789.074 | 624101.3385 | Good    | None.                                    |
| 125 | Fern Glen Rd     | Speed Limit, 40 kph | 5036460.245 | 624637.5797 | Good    | 40                                       |
| 126 | Fern Glen Rd     | Pedestrian, Warning | 5036460.245 | 624637.5797 | Good    | MIGHT BE PRIVATE, ATTACHED TO SPEED SIGN |
| 127 | Fern Glen Rd     | Street Name         | 5037028.467 | 627320.8299 | Good    | None.                                    |
| 128 | Fern Glen Rd     | Stop                | 5037041.435 | 627337.7638 | Repair  | LEANING                                  |
| 129 | Fern Glen Rd     | Street Name         | 5037041.435 | 627337.7638 | Repair  | LEANING                                  |
| 130 | Fern Glen Rd     | No Exit             | 5037031.593 | 627341.8913 | Good    | None.                                    |
| 131 | 1/2 Appleyard Rd | School, Warning     | 5036102.053 | 627707.1954 | Replace | WRONG TYPE REPL SCHOOL W PEDESTRIAN SIGN |
| 132 | Fern Glen Rd     | Speed Limit, 40 kph | 5036250.841 | 625385.4437 | Repair  | 40; OBSTRUCTED BY VEG                    |
| 133 | Fern Glen Rd     | Speed Limit, 40 kph | 5036414.841 | 624829.2321 | Good    | 40                                       |
| 134 | Selena Dr        | Speed Limit, 40 kph | 5033664.582 | 622724.5346 | Repair  | 40; OBSTRUCTED BY VEG                    |

|     |                                               |                     |             |             |        |                                   |
|-----|-----------------------------------------------|---------------------|-------------|-------------|--------|-----------------------------------|
| 135 | Selena Dr                                     | Pedestrian, Warning | 5033047.646 | 624656.3388 | Good   | None.                             |
| 136 | Selena Dr                                     | Seasonal Road       | 5032040.228 | 625503.4371 | Good   | None.                             |
| 137 | Fisher Creek Rd                               | Street Name         | 5032037.688 | 625498.1454 | NA     | None.                             |
| 139 | Fisher Creek Rd                               | Stop                | 5031212.463 | 629100.0657 | Good   | None.                             |
| 140 | Boundary Rd (Old Novar Rd) (Recreation Trail) | Stop                | 5030814.475 | 627753.9963 | Good   | FOR REC TRAIL, MIGHT BE PRIVATE   |
| 141 | Boundary Rd (Old Novar Rd) (Recreation Trail) | Pedestrian, Warning | 5030814.475 | 627753.9963 | Good   | FOR REC TRAIL, MIGHT BE PRIVATE   |
| 142 | Boundary Rd (Old Novar Rd) (Recreation Trail) | Stop                | 5029895.588 | 627151.6463 | Good   | None.                             |
| 143 | Stisted Rd S                                  | Speed Limit, 60 kph | 5029197.089 | 623936.287  | Good   | 60                                |
| 144 | Stisted Rd S                                  | Speed Limit, 60 kph | 5029189.549 | 623951.7859 | Good   | 60                                |
| 145 | Stisted Rd S                                  | Surface Transition  | 5029215.113 | 623931.1713 | Good   | CONSTRUCTION SIGN PRESENT AT TIME |
| 146 | Second Ave                                    | Street Name         | 5030988.382 | 623216.9224 | Good   | None.                             |
| 148 | Second Ave                                    | No Exit             | 5031006.638 | 623253.3027 | Repair | OBSTRUCTED, VEG                   |
| 149 | Second Ave                                    | Speed Limit, 40 kph | 5031116.681 | 623483.6578 | Good   | 40                                |
| 150 | Second Ave                                    | Speed Limit, 40 kph | 5031584.931 | 624353.0978 | Good   | 40                                |
| 151 | Second Ave                                    | Stop                | 5032096.628 | 624492.9549 | Good   | None.                             |
| 152 | Second Ave                                    | Street Name         | 5032096.628 | 624492.9549 | Good   | None.                             |
| 153 | Buckvale Dr                                   | Seasonal Road       | 5031604.294 | 624629.2031 | Repair | OBSTRUCTED, VEG                   |
| 154 | Buckvale Dr                                   | Speed Limit         | 5031668.609 | 624625.0108 | Repair | OBSTRUCTED, VEG                   |
| 155 | Second Ave                                    | Speed Limit         | 5031329.318 | 623994.8508 | Good   | LEANING                           |
| 156 | Pomeroy Rd                                    | Stop                | 5031124.763 | 624912.1909 | Good   | None.                             |
| 157 | Pomeroy Rd                                    | Street Name         | 5031124.763 | 624912.1909 | Good   | None.                             |
| 158 | Old Rainy Lake Rd                             | Speed Limit, 60 kph | 5040253.266 | 619502.7192 | Good   | 60                                |
| 159 | Old Rainy Lake Rd                             | Stop                | 5041778.353 | 618280.5658 | Good   | None.                             |
| 160 | Old Rainy Lake Rd                             | Street Name         | 5041778.353 | 618280.5658 | Good   | None.                             |
| 161 | Old Rainy Lake Rd                             | Half Loads (2-pcs)  | 5041747.873 | 618277.6025 | Good   | None.                             |
| 162 | Old Rainy Lake Rd                             | Tow Zone            | 5041756.339 | 618286.4925 | Good   | None.                             |
| 163 | Old Rainy Lake Rd                             | Speed Limit         | 5041737.501 | 618281.8358 | Repair | OBSTRUCTED, VEG                   |
| 164 | Old Rainy Lake Rd                             | Stop, Warning       | 5040250.558 | 619423.7754 | Good   | None.                             |
| 165 | Cowie Rd                                      | Stop                | 5040649.844 | 619894.6615 | Good   | LEANING                           |
| 166 | Richardson Rd (Boundary)                      | No Parking          | 5043591.158 | 622755.0206 | Good   | TOWNSHIP TURN AROUND NO PARK      |
| 167 | Richardson Rd (Boundary)                      | Yield / Other       | 5043596.714 | 622752.5378 | Good   | YELLOW HAZARD DIAMOND             |
| 168 | 1/2 Bartlett Lake Rd                          | Turn, Warning       | 5042535.896 | 620617.1139 | Good   | TEE, VEER LEFT                    |
| 169 | 1/2 Bartlett Lake Rd                          | Street Name         | 5042711.532 | 620549.9343 | Good   | None.                             |
| 170 | 1/2 Bartlett Lake Rd                          | Speed Limit, 60 kph | 5042454.591 | 619931.9971 | Good   | 60                                |
| 171 | Yearley Rd                                    | Stop                | 5037873.182 | 618599.9531 | Good   | None.                             |
| 172 | Yearley Rd                                    | Tow Zone            | 5037857.691 | 618594.344  | Good   | None.                             |
| 173 | Yearley Rd                                    | Half Loads (2-pcs)  | 5037857.691 | 618594.344  | Good   | None.                             |
| 174 | Yearley Rd                                    | Speed Limit, 60 kph | 5037840.943 | 618601.4877 | Good   | 60                                |
| 175 | Sixth Ave(Recreation Trail)                   | Stop                | 5033935.842 | 619624.3946 | Good   | None.                             |
| 176 | Sixth Ave(Recreation Trail)                   | No Exit             | 5033939.183 | 619604.3082 | Good   | None.                             |
| 177 | Sixth Ave(Recreation Trail)                   | Seasonal Road       | 5033939.183 | 619604.3082 | Good   | None.                             |
| 178 | Yearley Rd                                    | Street Name         | 5033946.194 | 619635      | Good   | None.                             |
| 179 | Fourth Ave                                    | No Exit             | 5032103.241 | 620490.3734 | Good   | None.                             |
| 180 | Fourth Ave                                    | Tow Zone            | 5032103.241 | 620490.3734 | Good   | None.                             |

|     |                                    |                     |             |             |        |                                |
|-----|------------------------------------|---------------------|-------------|-------------|--------|--------------------------------|
| 181 | Fourth Ave                         | Stop                | 5032093.716 | 620503.3381 | Good   | None.                          |
| 182 | Fourth Ave                         | Street Name         | 5032093.716 | 620503.3381 | Good   | None.                          |
| 183 | Fourth Ave                         | Speed Limit, 60 kph | 5032096.362 | 620471.8526 | Repair | 60; LEANING, OBSTRUCTED BY VEG |
| 184 | Fourth Ave                         | Seasonal Road       | 5031169.945 | 618141.8213 | Repair | OBSTRUCTED, VEG                |
| 185 | Fourth Ave                         | Stop                | 5032120.934 | 620522.3859 | Good   | None.                          |
| 186 | Fourth Ave                         | Street Name         | 5032120.934 | 620522.3859 | Good   | None.                          |
| 187 | Second Ave                         | Stop                | 5030225.096 | 621304.6213 | Good   | None.                          |
| 188 | Second Ave                         | Street Name         | 5030225.096 | 621304.6213 | Good   | None.                          |
| 189 | Yearley Rd                         | Turn, Warning       | 5028243.175 | 621683.8671 | Good   | RIGHT                          |
| 190 | Dailey Rd (Recreational Trail)     | Stop                | 5036945.852 | 616296.8589 | Good   | None.                          |
| 191 | Dailey Rd (Recreational Trail)     | Street Name         | 5036955.641 | 616295.4037 | Good   | None.                          |
| 192 | Bordeau Rd                         | Stop                | 5037350.195 | 615522.2182 | Good   | None.                          |
| 193 | Bordeau Rd                         | Street Name         | 5037335.114 | 615522.8797 | Good   | None.                          |
| 194 | Bordeau Rd                         | Speed Limit, 60 kph | 5037377.977 | 615533.8599 | Good   | 60                             |
| 195 | Bordeau Rd                         | Half Loads (2-pcs)  | 5037364.351 | 615533.3307 | Good   | None.                          |
| 196 | Bordeau Rd                         | Tow Zone            | 5037364.351 | 615533.3307 | Good   | None.                          |
| 197 | Axe Lake Rd                        | Speed Limit, 60 kph | 5037340.549 | 615312.7276 | Good   | 60                             |
| 198 | Axe Lake Rd                        | Half Loads (2-pcs)  | 5037347.031 | 615313.1245 | Good   | None.                          |
| 199 | Axe Lake Rd                        | Tow Zone            | 5037347.031 | 615313.1245 | Good   | None.                          |
| 200 | Axe Lake Rd                        | Stop                | 5037353.381 | 615321.8557 | Good   | None.                          |
| 201 | Axe Lake Rd                        | Turn, Warning       | 5036657.203 | 615527.783  | NA     | RIGHT                          |
| 202 | Middle Rd                          | No Exit             | 5031497.257 | 613872.5246 | Good   | None.                          |
| 203 | Middle Rd                          | Stop                | 5031491.304 | 613896.2048 | Good   | None.                          |
| 204 | Axe Lake Rd                        | Street Name         | 5031505.856 | 613908.2434 | Good   | None.                          |
| 205 | Jimney Jaque Rd                    | Stop                | 5031188.129 | 613141.8911 | Good   | None.                          |
| 206 | Middle Rd                          | Street Name         | 5031179.662 | 613150.3578 | Good   | None.                          |
| 207 | Jimney Jaque Rd                    | Seasonal Road       | 5032001.354 | 612822.9375 | Good   | REC TRAIL AHEAD                |
| 208 | Middle Rd Partial                  | Seasonal Road       | 5031005.018 | 612698.4341 | Good   | None.                          |
| 209 | Axe Lake Rd                        | Turn, Warning       | 5028355.925 | 615131.5995 | Good   | None.                          |
| 210 | Holderny Rd                        | Seasonal Road       | 5028213.935 | 615171.2682 | Good   | None.                          |
| 211 | East Bear Lake Rd                  | Stop                | 5035016.138 | 611558.7187 | Good   | None.                          |
| 212 | East Bear Lake Rd                  | Street Name         | 5035037.728 | 611554.062  | Good   | None.                          |
| 213 | East Bear Lake Rd                  | Speed Limit         | 5034997.974 | 611542.5658 | Good   | None.                          |
| 214 | East Bear Lake Rd                  | No Exit             | 5034993.953 | 611540.8725 | Good   | None.                          |
| 215 | East Bear Lake Rd                  | Hidden Entrance     | 5034990.778 | 611540.555  | Good   | None.                          |
| 216 | East Bear Lake Rd                  | Turn, Warning       | 5034829.565 | 611630.45   | NA     | RIGHT                          |
| 218 | East Bear Lake Rd                  | Turn, Warning       | 5034806.387 | 611727.1819 | Good   | LEFT                           |
| 219 | Jimney Jaque Rd (Recreation Trail) | Stop                | 5033860.234 | 612095.1703 | Good   | None.                          |
| 220 | Jimney Jaque Rd (Recreation Trail) | Seasonal Road       | 5033848.275 | 612089.5611 | Good   | None.                          |
| 221 | East Bear Lake Rd                  | Street Name         | 5033864.044 | 612075.009  | Good   | None.                          |
| 222 | East Bear Lake Rd                  | Speed Limit, 40 kph | 5033282.186 | 611103.8942 | Good   | 40                             |
| 223 | East Bear Lake Rd                  | Speed Limit, 40 kph | 5032665.683 | 611178.2592 | Good   | 40                             |
| 224 | East Bear Lake Rd                  | Seasonal Road       | 5031862.303 | 610773.2477 | Good   | None.                          |
| 225 | East Bear Lake Rd                  | Speed Limit, 40 kph | 5031914.969 | 610872.3121 | Good   | 40; ATYPICAL LOCATION          |

|     |                            |                     |             |             |        |                                 |
|-----|----------------------------|---------------------|-------------|-------------|--------|---------------------------------|
| 226 | Lakeview Dr                | Stop                | 5033306.315 | 611107.4547 | Good   | None.                           |
| 227 | East Bear Lake Rd          | Street Name         | 5033306.778 | 611113.0771 | Good   | None.                           |
| 228 | Bayside Dr                 | Stop                | 5033326.103 | 611038.4378 | Good   | None.                           |
| 229 | Lakeview Dr                | Street Name         | 5033319.554 | 611041.0175 | Good   | None.                           |
| 230 | Bayside Dr                 | No Parking          | 5033548.983 | 611206.0372 | Good   | None.                           |
| 231 | Bayside Dr                 | Road Unassumed      | 5033549.975 | 611207.4263 | Good   | None.                           |
| 232 | John St                    | Speed Limit, 40 kph | 5034743.636 | 610735.6548 | Good   | 40                              |
| 233 | John St                    | Tow Zone            | 5034747.228 | 610735.6879 | Good   | None.                           |
| 234 | John St                    | Yield / Other       | 5034747.228 | 610735.6879 | Good   | DRIVE SLOW, CUSTOM DIAMOND SIGN |
| 235 | John St                    | Stop                | 5034725.532 | 610727.0096 | Good   | None.                           |
| 236 | John St                    | Street Name         | 5034716.219 | 610732.4071 | Good   | None.                           |
| 237 | John St                    | Pedestrian, Warning | 5034886.195 | 610717.8196 | Good   | None.                           |
| 238 | Sanborn Dr                 | Speed Limit, 40 kph | 5034721.381 | 610932.2537 | Good   | 40                              |
| 239 | Sanborn Dr                 | No Exit             | 5034716.619 | 610932.5712 | Good   | None.                           |
| 240 | Sanborn Dr                 | Stop                | 5034740.22  | 610935.1113 | Good   | None.                           |
| 241 | Sanborn Dr                 | Street Name         | 5034747.946 | 610930.1371 | Good   | None.                           |
| 242 | Reddam Dr                  | Seasonal Road       | 5034602.177 | 610955.0366 | Good   | None.                           |
| 244 | Reddam Dr                  | Stop                | 5034595.113 | 610958.5821 | Good   | None.                           |
| 245 | Oline St                   | No Exit             | 5034699.665 | 610686.3464 | Repair | LEANING OVER                    |
| 246 | Oline St                   | Stop                | 5034708.132 | 610692.8287 | Good   | None.                           |
| 247 | Oline St                   | Street Name         | 5034715.408 | 610689.1245 | Good   | None.                           |
| 248 | West Bear Lake Rd          | Half Loads (2-pcs)  | 5034448.268 | 610020.6849 | Good   | None.                           |
| 249 | West Bear Lake Rd          | Tow Zone            | 5034448.268 | 610020.6849 | Good   | None.                           |
| 250 | West Bear Lake Rd          | Stop                | 5034461.762 | 610030.0776 | Good   | None.                           |
| 251 | West Bear Lake Rd          | Street Name         | 5034474.727 | 610015.7901 | Good   | None.                           |
| 252 | West Bear Lake Rd          | Stop, Warning       | 5034284.233 | 609909.9733 | Good   | None.                           |
| 253 | West Bear Lake Rd          | Yield / Other       | 5032567.165 | 609717.5508 | Good   | SOFT SHOULDERS                  |
| 254 | Taylor Rd                  | Stop                | 5032029.568 | 609756.9596 | Good   | None.                           |
| 255 | West Bear Lake Rd          | Street Name         | 5032023.138 | 609747.0377 | Good   | None.                           |
| 256 | Taylor Rd                  | No Parking          | 5032055.897 | 609848.5816 | Good   | None.                           |
| 257 | Lowes Rd                   | No Exit             | 5030877.206 | 610126.0638 | Good   | None.                           |
| 258 | Lowes Rd                   | Stop                | 5030872.655 | 610116.0096 | Good   | None.                           |
| 259 | West Bear Lake Rd          | Street Name         | 5030861.543 | 610114.8454 | Good   | None.                           |
| 260 | West Bear Lake Rd          | Yield / Other       | 5030195.841 | 610437.8196 | Good   | SOFT SHOULDERS                  |
| 261 | West Bear Lake Rd          | Yield / Other       | 5029462.571 | 610830.7354 | Good   | SOFT SHOUDLERS                  |
| 262 | West Bear Lake Rd          | Yield / Other       | 5027397.228 | 612509.4871 | Good   | SOFT SHOULDERS                  |
| 263 | West Bear Lake Rd          | Stop, Warning       | 5026796.375 | 612748.1259 | Good   | None.                           |
| 264 | West Bear Lake Rd          | Stop                | 5026664.466 | 612796.0427 | Good   | None.                           |
| 265 | West Bear Lake Rd          | Street Name         | 5026641.924 | 612812.8702 | Good   | None.                           |
| 266 | Meads Lake Rd (Meads Lane) | No Exit             | 5026642.153 | 612772.8016 | Good   | None.                           |
| 267 | Meads Lake Rd (Meads Lane) | Bridge Narrows      | 5026526.206 | 612481.0752 | Good   | None.                           |
| 268 | Meads Lake Rd (Meads Lane) | Bridge Narrows      | 5026469.161 | 612374.8183 | Good   | None.                           |

## **APPENDIX F**

**TOWNSHIP MAP; ROADS BY CONDITION RATING (0 – 100)**

# Township of McMurrich / Monteith 2025 Road Needs Study

## Roads by Condition Rating (0-100)



**Legend**

**Study Roads**

66-79

79-92

92-104

Other Roads

Lots

Township Boundaries

0-51

51-66



## **APPENDIX G**

**TOWNSHIP MAP; ROADS BY PRIORITY RATING (0 – 100)**

# Township of McMurrich / Monteith 2025 Road Needs Study

Roads by Priority Rating (0-100)



**Legend**

**Study Roads**

- 13-20
- 20-29
- Other Roads
- Lots

**Priority Rating**

- 0-5
- 5-13
- 29-48
- Township Boundaries



## **APPENDIX H**

### **TOWNSHIP MAP; SIGNS BY TYPE**

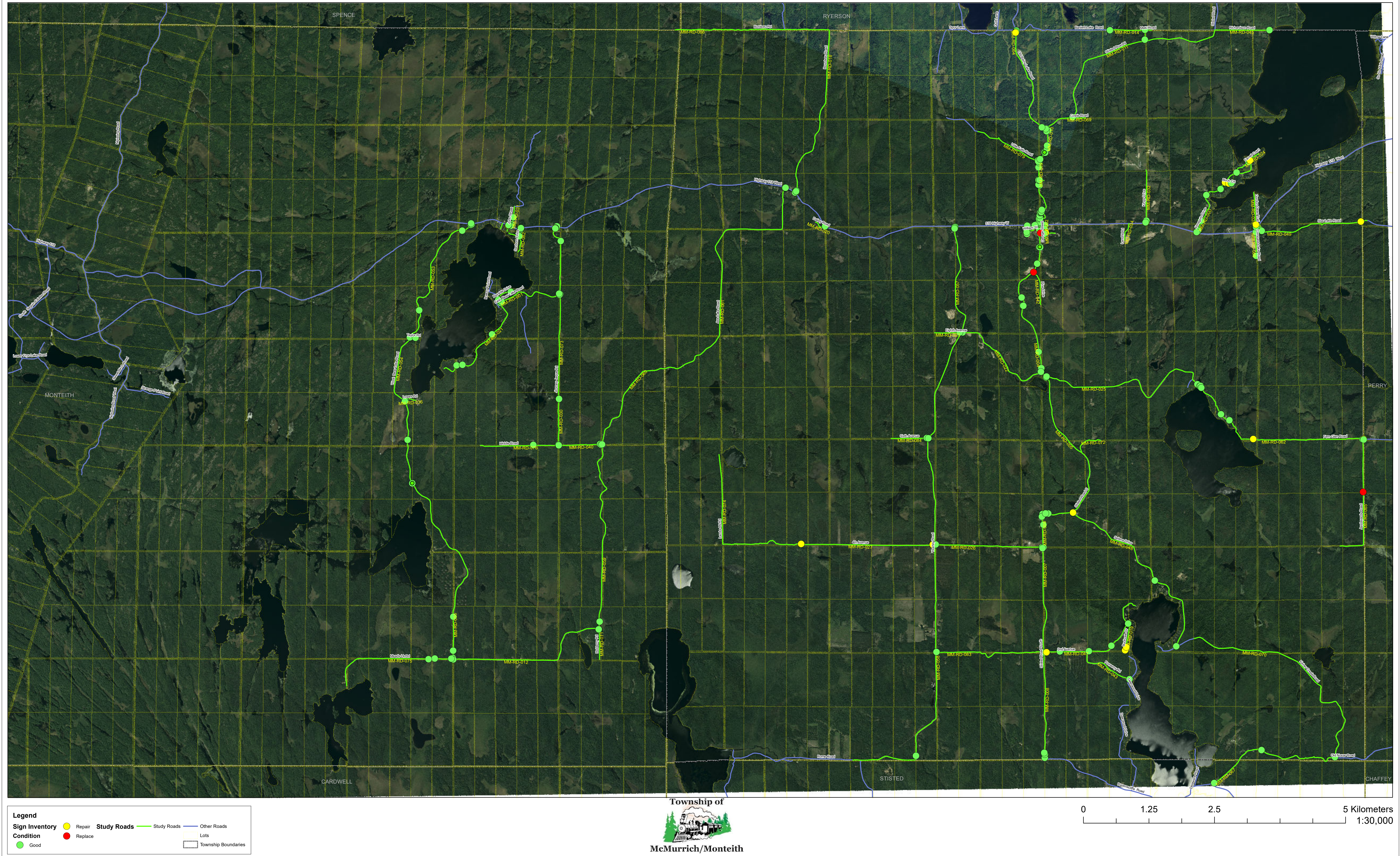
## Signs by Type



## **APPENDIX I**

### **TOWNSHIP MAP; SIGNS BY CONDITION**

## Signs by Condition



## **APPENDIX J**

**UNIT COSTS TABLE, ROAD CALCULATION STANDARDS TABLE, AND MTO  
GUIDE FACTORS**

| ROAD CLASS DESIGN STANDARDS: RURAL ROADS |  |  |  |  |  |  |  |  |  |  | MIN TOLERABLE |  |  |
|------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|--|--|
|------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|--|--|

| Road Class |   | Surface Type    | Lanes | Lane Width<br>m | Surface Width<br>m | Shoulder Width<br>m | Surface Depth<br>mm | Granular A Depth<br>mm | Granular B Depth<br>mm | MTO Class | Road Capacity<br>vphpl | Surface Width<br>m | Shoulder Width<br>m |
|------------|---|-----------------|-------|-----------------|--------------------|---------------------|---------------------|------------------------|------------------------|-----------|------------------------|--------------------|---------------------|
| ARTERIAL   | A | ASPHALT         | 2     | 3.05            | 6.0                | 0.5                 | 50                  | 150                    | 450                    | 800+      | 800                    | 5.9                | 0.3                 |
| COLLECTOR  | C | SURFACE TREATED | 2     | 3.05            | 6.0                | 0.5                 | DOUBLE ST           | 150                    | 450                    | 400-700   | 600                    | 5.9                | 0.3                 |
| LOCAL      | L | GRAVEL          | 2     | 3.00            | 6.0                | 0.5                 | 0                   | 150                    | 450                    | 100-300   | 400                    | 3.6                | 0.3                 |

| ROAD CLASS DESIGN STANDARDS: SEMI-URBAN ROADS |  |  |  |  |  |  |  |  |  |  | MIN TOLERABLE |  |  |
|-----------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|--|--|
|-----------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|--|--|

| Road Class |   | Surface Type    | Lanes | Lane Width<br>m | Surface Width<br>m | Shoulder Width<br>m | Surface Depth<br>mm | Granular A Depth<br>mm | Granular B Depth<br>mm | MTO Class | Road Capacity<br>vphpl | Surface Width<br>m | Shoulder Width<br>m |
|------------|---|-----------------|-------|-----------------|--------------------|---------------------|---------------------|------------------------|------------------------|-----------|------------------------|--------------------|---------------------|
| ARTERIAL   | A | ASPHALT         | 2     | 3.35            | 6.7                | 1.2                 | 80                  | 150                    | 450                    |           | 800                    | 6.0                | 0.75                |
| COLLECTOR  | C | SURFACE TREATED | 2     | 3.35            | 6.7                | 1.2                 | 80                  | 150                    | 450                    |           | 600                    | 5.5                | 0.75                |
| LOCAL      | L | SURFACE TREATED | 2     | 3.35            | 6.7                | 1.2                 | 80                  | 150                    | 450                    |           | 400                    | 5.0                | 0.75                |

| ROAD CLASS DESIGN STANDARDS: URBAN ROADS |  |  |  |  |  |  |  |  |  |  | MIN TOLERABLE |  |  |
|------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|--|--|
|------------------------------------------|--|--|--|--|--|--|--|--|--|--|---------------|--|--|

| Road Class |   | Surface Type | Lanes | Lane Width<br>m | Surface Width<br>m | Shoulder Width<br>m | Surface Depth<br>mm | Granular A Depth<br>mm | Granular B Depth<br>mm | MTO Class | Road Capacity<br>vphpl | Surface Width<br>m | Shoulder Width<br>m |
|------------|---|--------------|-------|-----------------|--------------------|---------------------|---------------------|------------------------|------------------------|-----------|------------------------|--------------------|---------------------|
| ARTERIAL   | A | ASPHALT      | 2     | 4.25            | 8.5                | 0.0                 | 80                  | 150                    | 450                    |           | 800                    | 8.5                | 0.0                 |
| COLLECTOR  | C | ASPHALT      | 2     | 4.25            | 8.5                | 0.0                 | 80                  | 150                    | 450                    |           | 600                    | 8.0                | 0.0                 |
| LOCAL      | L | ASPHALT      | 2     | 3.35            | 6.7                | 0.0                 | 80                  | 150                    | 450                    |           | 400                    | 6.5                | 0.0                 |

ROAD CLASS DESIGN STANDARDS: INDUSTRIAL ROADS

MIN TOLERABLE

| Road Class |   | Surface Type | Lanes | Lane Width<br>m | Surface Width<br>m | Shoulder Width<br>m | Surface Depth<br>mm | Granular A Depth<br>mm | Granular B Depth<br>mm | MTO Class | Road Capacity<br>vphpl | Surface Width<br>m | Shoulder Width<br>m |
|------------|---|--------------|-------|-----------------|--------------------|---------------------|---------------------|------------------------|------------------------|-----------|------------------------|--------------------|---------------------|
| ARTERIAL   | A | ASPHALT      | 2     | 4.25            | 8.5                | 2.0                 | 90                  | 150                    | 750                    |           | 800                    | 7.5                | 1.0                 |
| COLLECTOR  | C | ASPHALT      | 2     | 4.25            | 8.5                | 2.0                 | 90                  | 150                    | 600                    |           | 600                    | 7.5                | 1.0                 |
| LOCAL      | L | ASPHALT      | 2     | 4.25            | 8.5                | 2.0                 | 90                  | 150                    | 450                    |           | 400                    | 7.5                | 1.0                 |