

**TOWN OF BROOKFIELD  
Public Works Department**

**PAVEMENT MANAGEMENT PLAN**

**Updated October 27, 2022**

Maintaining the public roads and drainage system is a major concern of any town government. Roads are a vital resource. They provide a basic and essential service to citizens and the commercial community. It is a misconception that postponing or neglecting maintenance is a way to save money. Deteriorated roads can not simply be closed or discarded. They must be repaired or completely reconstructed if they are unrepairable. The reconstruction cost can be substantial and it may prove very inconvenient to commuters.

There are hidden costs directly related to deteriorated roads such as: excessive fuel use, excessive vehicle maintenance and excessive tire wear and accelerated deterioration during the winter salting and plowing season. Studies indicate that, the cost of fuel alone saved by keeping a road in good condition offsets the total cost of maintenance. Rather than waiting until after the roadway deteriorates beyond the point where resurfacing ceases to be a viable and cost effective option. It would be far less expensive on a per mile per year cost basis to accomplish the work prior to the 75% life cycle point.

The total improved (Bituminous Concrete surface) Brookfield road mileage was approximately 101 miles at the end of 2022. The Department of Public Works took the task in hand to do a systematic and consistent evaluation of pavement conditions to generate a priority listing and determine proper maintenance practices. The town roads are inspected, evaluated and rated once per year.

In developing a Pavement Management Program, it is important to understand the components of such a system so that all maintenance decisions are based on sound engineered judgment. The plan development is composed of a system inventory and field condition rating. The roads selection process will be based on several criteria including current road ratings, traffic volume, system importance and budget.

The pavement condition rating form has a 0 to 100 rating system.

Six components that effect or determine pavement service-ability are rated. Those components are:

1. Surface Condition: Degree of cracking is the indicator for this component.
2. Sub-Base Condition: Obvious breakdown of failure of foundation structure of Improper sub-base material.
3. Drainage: Removal and containment of sub-surface and surface water from pavement area, (poor maintenance of drainage structure does not indicate a poor rating).
4. Deterioration: The degree of surface texture loss.
5. Distortion: The deformation of pavement cross-section from its original section.

6. Riding Quality: The roughness and smoothness of ride at normal speed as noted in an average passenger vehicle.

Each component is weighed according to its effect on overall pavement condition and then rated on a 0 to 10 scale. The sum of the weighted average determines the final rating.

### **PAVEMENT RATING DESCRIPTION**

<u>Scale</u>	<u>Description</u>	<u>Definition/Maintenance</u>
80-100	Very Good	Good roads
60-80	Good	Various minor maintenance to upgrade and prolong life span
40-60	Fair	A moderate amount of routine pavement maintenance to extend life span
20-40	Poor	Extensive maintenance work (overlay or surface treatment) to prolong life span
0-20	Very Poor	Partial or complete reconstruction is necessary to provide adequate serviceability and prolong life

## **PLAN OF ACTION**

In April 2010, the Town of Brookfield began a five year road paving and restoration program to bring our streets up to an acceptable level. At the beginning of the program the overall system PCI rating is 39 out of 100. Through the approval of a Town Referendum the Department of Public Works has available \$10 million to be spent in no more than five (5) years for the purpose of road restoration and reconstruction. In the initial years we are trying to concentrate most of the funding on more heavily used main arteries and collector roads. In the latter years we will turn our attention to residential roads. This does not mean we will fix every road in town over the next few years, but we should be able to fix a large percentage.

The Town is using a variety of restoration and reconstruction methods. Some of these include crack sealing, fog sealing, micro-surfacing, fiber mats, milling and paving, cold in place recycling with hot asphalt overlays and reclamation and paving. To make the program work the correct restoration or reconstruction method must be selected that best matches the current condition of the road being addressed. Each road will be re-evaluated on a yearly basis. The goal of this phase of the program was to raise our system PCI rating to an acceptable level of 65. After this phase the town will continue to maintain and reconstruct roads as part of it capital investment program in order to maintain an acceptable PCI.

The Town completed its first phase of this plan in 2014. In 2015 we started the second phase which is to maintain the new standard of a system PCI of 65 or above. That will continue in 2016 and into the foreseeable future.

As of 2020 we continue to fund our program investing enough money and using a variety of methods to add 100 road mile years to our 100 mile road network in order to maintain the status quo. As of January 2022 our system PCI is over 82 indicating our road network as a whole is in very good condition

It is important to note that it is much less expensive to restore a road before it is completely deteriorated and has to be rebuilt and then paved. Therefore we do not adhere to a strict "worst roads first" policy. Approximately 24-40% of the dedicated paving funds may be assigned to restoration projects any given budget year. By using this approach over the long haul tax dollars will be spent in the most economical way possible and the overall system road rating will be maintained at a much lower cost.

Below are some of the methods that Brookfield has used over the years with the average road-mile benefit.

#### **I. Reclaim and Pave (17-20 road-mile years)**

1. Mechanically grind existing pavement and sub-base to a depth of 6 to 8-inches to be used as the new sub-base material
2. Grade and compact the new sub-base
3. Install 1-1/2 inches of hot asphalt as the base layer
4. Install 1-1/2 inches of hot asphalt as the top course
5. Install curbing and driveway aprons as necessary

#### **II. 1.5 to 2 inch Mill and Fill (8-10 road-mile years)**

1. Mechanically grind the top course 1-1/2 inches of asphalt and haul it off site
2. Install 1-1/2 inches of hot asphalt as the new top course

#### **III. Micro-surface (6-8 road-mile years)**

The micro surface goes down as liquid slurry. It must set for 15-20 minutes prior to driving on.

1. Crack seal (usually done the year prior)
2. Install micro base course
3. Install micro top course

#### **IV. Cold in Place Recycle with an Overlay (12-15 road-mile years)**

1. Mechanically grind emulsify and re-use the top 3 –inches of asphalt as the base
2. Install 1-1/2 inches of hot asphalt as the top course
3. Install curbs and driveway aprons as necessary