

# Micro SURFACING

Micro surfacing is aligned with federal, provincial and transportation policies for innovation, lower life-cycle cost and more environmentally friendly technologies



**WESTERN ASPHALT**  
products

# WHAT IS MICRO SURFACING?

Micro surfacing is a surface treatment consisting of manufactured aggregate, portland cement, and polymer-modified asphalt emulsion. Micro surfacing is versatile and may be used for increasing skid resistance, color contrast, rut filling up to 50mm wheel ruts, longitudinal and transverse crack repair, leveling for proper surface drainage, segregation, raveling, flushing, oxidized surfaces and filling small potholes.

Micro surfacing is versatile and can be used on various types of roads. For example, it is used on main highways such as Hwy 2 in Alberta where traffic can reach over 20,000 + annual average daily traffic (AADT) counts. It is used on secondary roads with less than 100 AADT. It is also used annually

in residential areas with less than 50 AADT, industrial areas, and on arterial roads in the largest cities in Western Canada.

A micro surfaced road can last 7 - 10+ years. Micro surfacing has successfully been used on the Hwy 1 Trans Canada in Manitoba for over 10 years and is still performing well. The earlier micro surfacing is applied on the life-cycle curve of a roadway, the higher quality the roadway will remain.

Micro surfacing is proven to improve roadway safety, lower greenhouse gas emissions and be more economical than waiting until rehabilitation is required (e.g. 50mm mill and inlay).

## ADVANTAGES:

### VERSATILE:

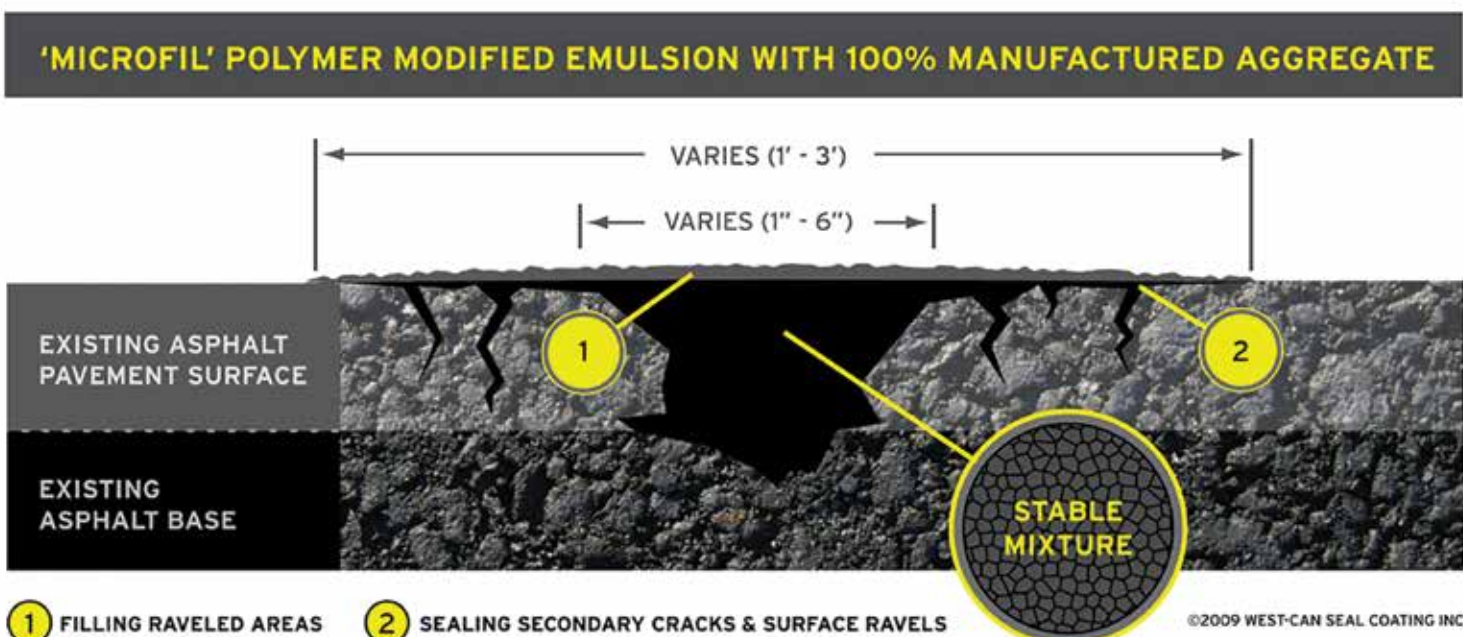
- ✔ Micro surfacing can be used on any asphalt surface to extend the life of the roadway before the road deteriorates to the point of rehabilitation.
- ✔ Micro surfacing improves the physical pavement condition.

### SAFER ROADS:

- ✔ Reduces or eliminates hydroplaning by filling wheel ruts up to 50mm in depth and corrects cross fall issues.
- ✔ Restores texture and improves skid resistance. Higher than 50% improvement recorded.  
(Thin Surfacing- Effective Way of Improving Road Safety within Scarce Road Maintenance Budgets. 2005. Transportation Association of Canada Conference)
- ✔ Micro surfacing is often used to restore a skid-resistant surface to slick bridge decking with minimum added dead weight. No milling required!  
(Disciplines FAQ. International Slurry Seal Association)
- ✔ Short construction process with minimal traffic distribution. Highway production 10+ lane km per day. Public traffic on Micro surfacing within two hours.

### ECONOMICAL:

- ✔ Financially responsible treatment strategy that preserves past investments in existing asphalt surfaces.
- ✔ Micro surfacing has a 53% reduction in initial construction costs compared to 50mm mill and inlay.  
(Quantifying the Sustainable Benefits of Preserving Ontario's Flexible Pavement Assets. 2013. Canadian Technical Asphalt Association Proceedings.)
- ✔ Our experience in Western Canada has shown micro surfacing is between 50-70% less expensive initially compared to mill and inlay construction costs.
- ✔ Studies show after factoring in annualized unit cost, micro surfacing is between 28-34% more economical than waiting until rehabilitation of the roadway using 50mm mill and inlay.  
(Quantifying the Sustainable Benefits of Preserving Ontario's Flexible Pavement Assets. 2013. Canadian Technical Asphalt Association Proceedings.)  
(BASF Corporation. Micro Surfacing Eca-Efficiency Analysis Final Report 2010. ISO Certified)
- ✔ Purchasing agencies can surface more kilometers of road ways with fewer tax dollars.
- ✔ There is no loss of curb reveal. Asphalt milling is not required to match existing utilities or curbs.
- ✔ During times of economic downturn when purchasing agencies are running deficits and do not have capital to rehabilitate poor roads, micro surfacing is the best holding strategy to maintain the value of the roadway asset until money is available.



## ASK YOURSELF:

- Would you run the same engine oil in a vehicle for its entire life until the engine blows? Or would you do regular maintenance and change the oil to get a longer life span out of the engine?
- Would you fix a small leak in the roof of your house? Or let the entire roof deteriorate to the point of replacing the complete roof at a higher cost?

**WE ALL PERFORM REGULAR MAINTENANCE ON OUR CARS AND HOUSES TO PREVENT LARGER PROBLEMS IN THE FUTURE. THE SAME PRINCIPLE SHOULD APPLY TO OUR ROADS!**

# APPEARANCE

- ✔ Black surface; the general public will not know difference between micro surfacing and hot mix asphalt.
- ✔ Fills cracks and minor potholes while providing a uniform surface.

## AGGREGATE:

### TYPE 1 RESIDENTIAL

A very fine aggregate that generates maximum crack penetration while sealing residential traffic areas.



### TYPE 2 RESIDENTIAL, ARTERIAL

The most commonly used aggregate utilized in urban areas, arterial roadways, airports, and for "micro crack box".



### TYPE 3 HIGHWAY

A coarse aggregate that is primarily used in highways resurfacing and "rut fill" applications. This aggregate provides the best skid resistance and reduces hydroplaning and wheel rutting.



# MICRO CRACK BOX

"Micro crack box" is used to correct longitudinal and transverse cracks. Typically the custom spreader box is set to 0.6 meters or 2 feet in width, allowing the micro surfacing mixture to fill the entire cracked area. This process has been widely used on the Trans Canada Highway.

The average price over the past five years for transverse crack repair using mill and fill was \$49 per linear meter for Alberta Transportation projects. The average price for "micro crack box" is between \$10- 12 per linear meter. The savings if "micro crack box" could have been used instead would have been \$772,000 over the past five years. This would have been a 78% reduction in price.



Longitudinal Joint Repair Before



Longitudinal Joint Repair After

# MICRO RUT FILL

Micro surfacing rut fill makes roads safer for the traveling public by reducing or eliminating hydroplaning. Ruts up to 50mm in depth can easily be filled to correct drainage and pooling on the roadway. We do not recommend rut fill without a full width topcoat of micro surfacing. The full width placement of micro surfacing provides the proper leveling course for proper drainage and it is also more aesthetically pleasing.





## ENVIRONMENTAL

By preserving roadways with micro surfacing before the point of rehabilitation, there are proven environmental benefits compared to 50mm mill and inlay:

- ✔ On average, the micro surfacing process emits 83% less carbon dioxide, 86% fewer nitrogen oxides, and 84% fewer sulfur oxides.  
*Quantifying the Sustainable Benefits of Preserving Ontario's Flexible Pavement Assets. 2013. Canadian Technical Asphalt Association Proceedings.*
- ✔ Even considering the use of RAP in hot mix inlay, the micro surfacing technology uses over 50% fewer resources by mass (asphalt, aggregate, energy, etc.).  
*BASF Corporation. Micro Surfacing Eco-Efficiency Analysis Final Report 2010. ISO Certified*
- ✔ Micro surfacing projects have the lowest energy requirements because of the overall consumption of asphalt binder, lower manufacturing and application temperatures, and reduced logistical impacts due to shipping less material to and from job sites.  
*BASF Corporation. Micro Surfacing Eco-Efficiency Analysis Final Report 2010. ISO Certified*
- ✔ No blue smoke emissions.
- ✔ 100% recyclable.
- ✔ Reduced use of virgin materials.
- ✔ Environmentally friendly cold process.

## ASSET MANAGEMENT

The federal and provincial governments are working on implementing asset management plans that each purchasing agency will need to implement in the near future. The Canadian Infrastructure Report Card 2016 states:

*"Increasing reinvestment rates will save money in the long-term. Without an increase in current reinvestment rates, the condition of Canada's core municipal infrastructure will gradually decline, costing more money and risking service disruption."*

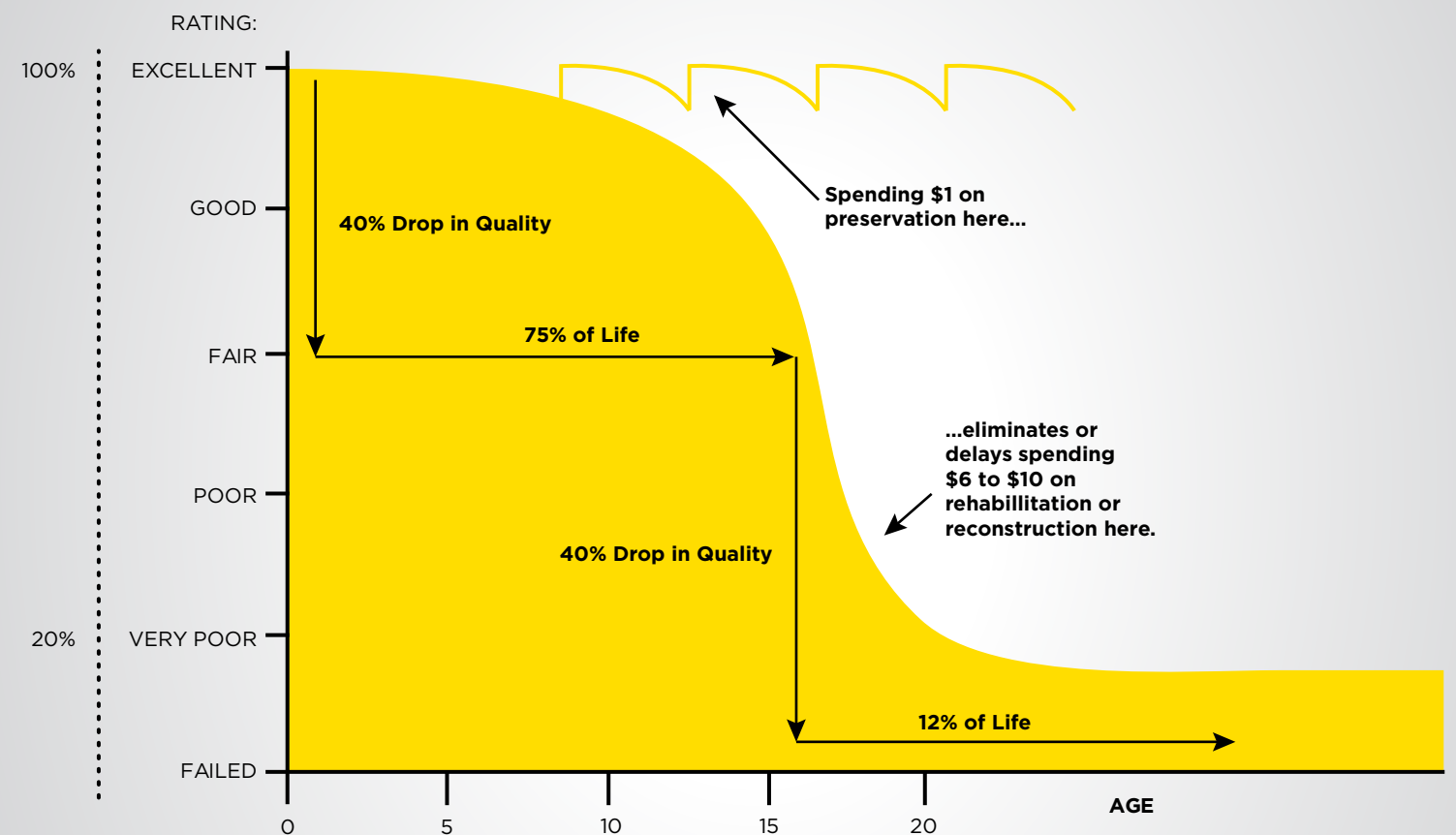


Figure 1. Example of asset deterioration curve (Canadian Infrastructure Report Card. 2016)

Figure 1 demonstrates that when roads, as is typical for many assets, are allowed to deteriorate below a "Fair" condition rating, the rate of deterioration and reinvestment costs both increase substantially. Investing in preventive maintenance and regular repair program will prolong the asset service life, avoiding premature and costly reconstruction and service disruption.

*Building for today's communities and tomorrow's Canada requires long-term planning. Survey results demonstrate that, if our current rates of reinvestment do not change, the condition of Canada's existing municipal infrastructure will decline. A long-term plan is needed to ensure Canadians can continue to rely upon essential public services without disruption."*



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**The data is proven:  
Micro surfacing is the answer  
purchasing agencies are looking for!**