

TOWNSHIP OF PUSLINCH

Planning Considerations for Hard-Surfacing Township Roads



Background

- Puslinch has 193 kilometers of road
 - 55 km of unpaved road
- Road work is significant to Capital Budget
- There is a desire to hard surface unpaved roads
 - Using an appropriate prioritization method

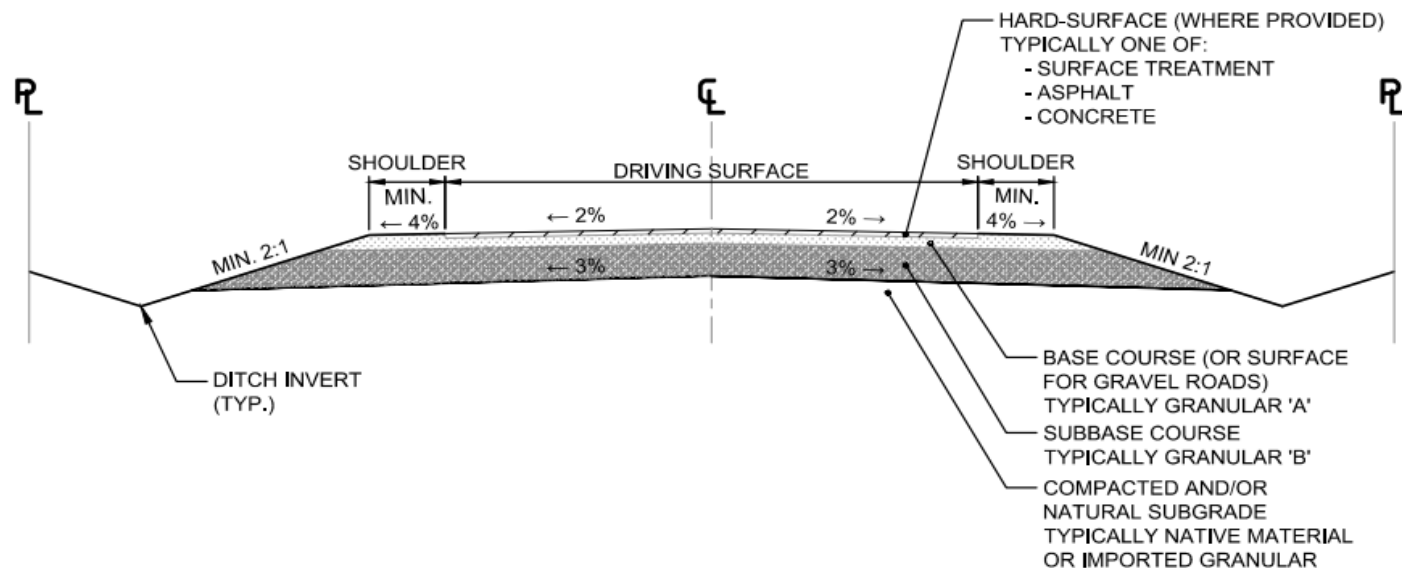
Scope of Report

- Method of extending the life of paved roads
- Criteria to prioritize the hard-surfacing of gravel roads
- Effective pavements to be used for hard-surfacing roads
- Listing and schedule for the hard-surfacing of unpaved roads



Elements of a Road Cross Section

- Wearing Surface (e.g., asphalt)
- Base (e.g., fine graded gravel)
- Subbase (e.g., free-draining gravel)
- Subgrade (e.g., native material)



Road Base Products for Poor Subgrade

Biaxial Geogrid

- Geotextile that distributes traffic loading
- Placed on subgrade to reduce pressure in any area



Cellular Confinement

- Honeycomb structure that is filled with granular
- Reduces horizontal movement of material and therefore pressure on subgrade



Critical Elements of Road Maintenance:

1. DRAINAGE

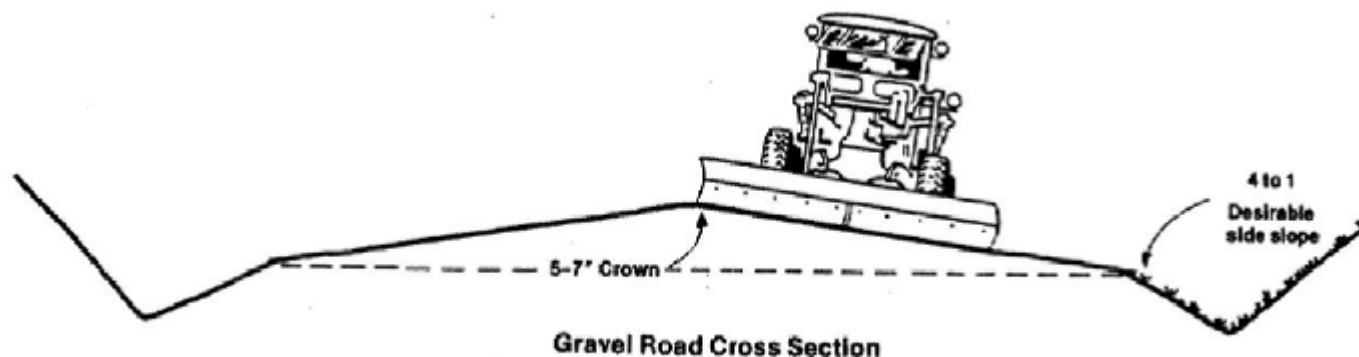
- Get Water Off the Road

2. DRAINAGE

- Get Water Out of the Road

3. DRAINAGE

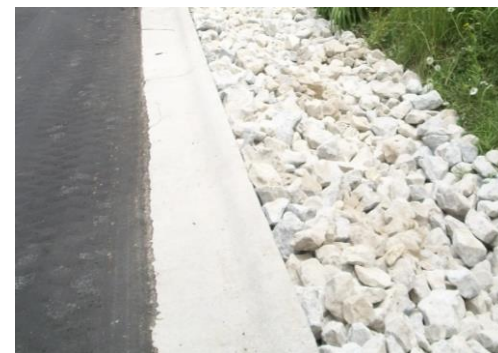
- Get Water Away from the Road



Blade road to maintain smooth riding surface and good drainage

Drainage Systems

- Shoulder Regrading
- Ditches
- Culverts
- Subdrains
- Storm Sewers
 - Curb
 - Gutter



Extending Life of Paved Roads

Crack Treatments

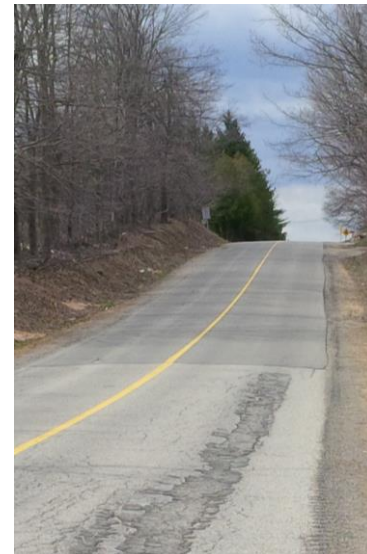
- Crack Sealing
- Crack Filling

Surface Maintenance

- Asphalt Recycling
- Leveling Course
- Slurry Seal
- Preservation Seal
- Surface Treatment

Advanced Evaluation

- Geotechnical Investigations
- Performance Modeling
- Falling Weight Deflectometer



AMP Criteria

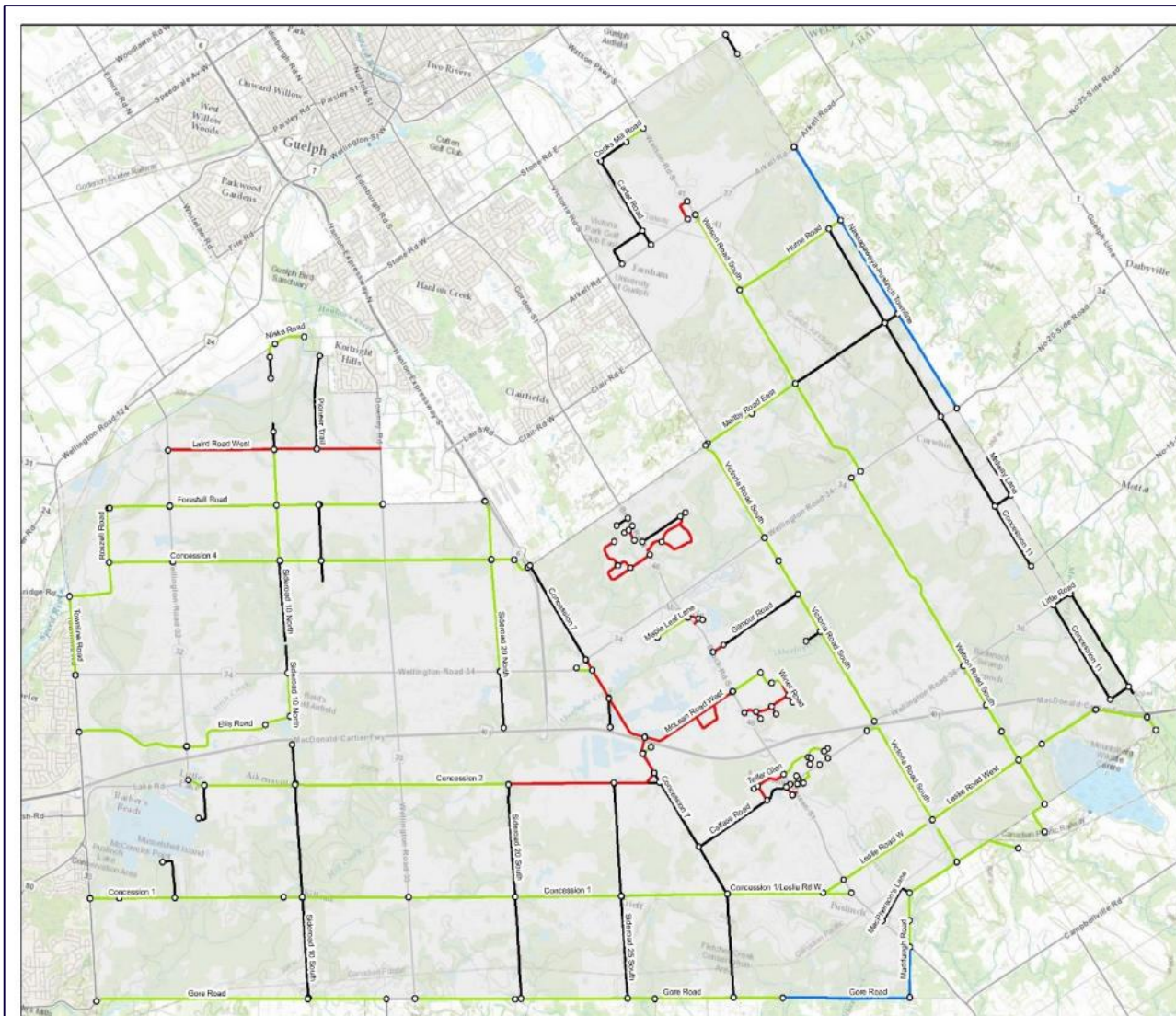
- Regraded more than **6** times two years in a row over two consecutive non-winter periods
- Base inspected by an engineer to confirm that the road base is adequate
- Traffic volume greater than **400** cars per day
- Township has approved funding

Additional Considerations

- Drainage
- Platform width
- Sightlines
- Alignment
- Type of Traffic
- Maintenance Cost
- Risk Management
- Continuity
- Infrastructure
- Future Development



Puslinch Roads



The Township of Puslinch

Road Surface Types

This document has been created through consultation with Puslinch Staff for the 2019 Asset Management Plan.

The road surface types in the Township of Puslinch are as follows:

Asphalt Road 1 Lift

Asphalt Road 2 Lift

Surface Treated

Gravel

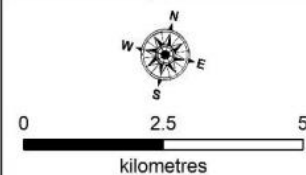
Asphalt Road 1 Lift

Asphalt Road 2 Lift

Asphalt Road
Surface Treated

Gravel Road

○
Road Segment
Start - End



Options for Surfacing Roads

Gravel

- Requires regrading, gravel addition and dust control regularly
- Have unlimited service life as gravel is replenished every 2-3 years



Asphalt

- Can have single or multiple asphalt lifts
- Typically requires maintenance after 10 years of service
- Service life of 15-25 years
- Asphalt adds strength to the road base, but is greatly effected by base quality



Surface Treatment

- Thin layer/layers of specialized asphalt
- Can be applied with 1-3 courses
- Typically requires maintenance after 2-5 years of service
- Service life of 5-10 years
- Provides no strength to the road and requires a good base



Concrete

- Rigid pavement that is less reliant on road base
- Expensive capital cost



1) Desktop Evaluation

- Identify roads that were regraded more than six times annually over two consecutive non-winter periods
- Review traffic counts
- Consider alternative criteria, as necessary

2) Field Review

- Review existing road structure and performance with Township staff
- Assess the drainage, platform width, sightlines and any potential risks
- Investigate road alignment and bridges/culverts

3) Preliminary Design Evaluation

- Prepare preliminary design and cost estimate
- Determine if upgrade cost is within the Township's budget
- Completed detailed design, approvals and construction

Moving Forward:

- Obtain and refine cost estimates for construction and maintenance activities for gravel and hard-surfaced roads
- Complete lifecycle cost comparison based on input from Township
- Obtain relevant data from Township to support criteria for evaluating hard-surfacing of gravel roads

Questions?