



PAVEMENT MANAGEMENT POLICY

Adopted October 7, 2010, by Blaine City Council

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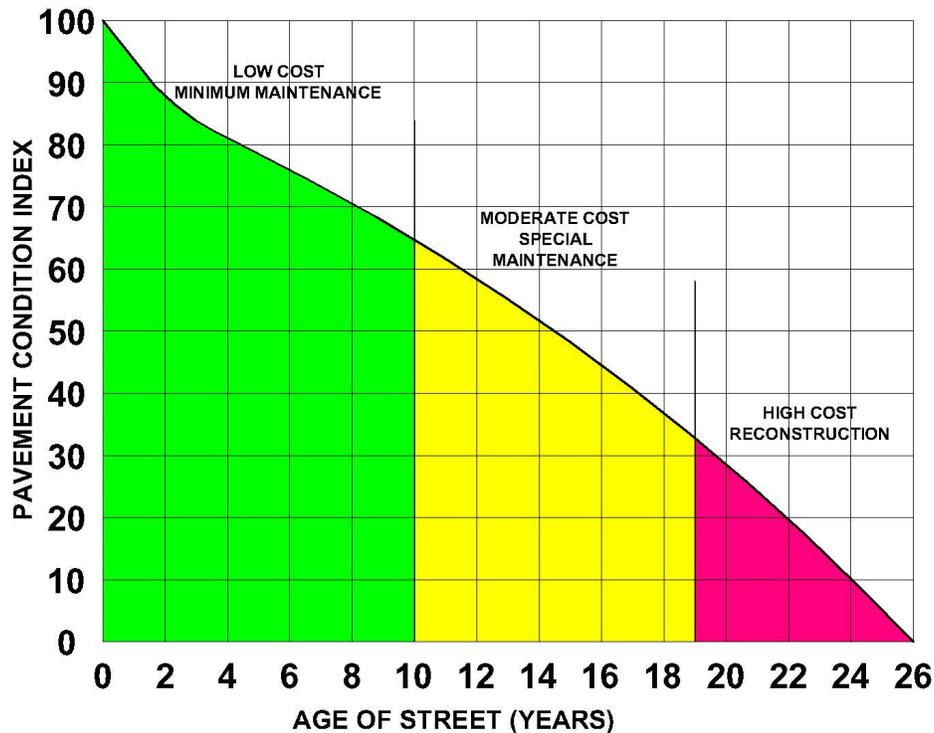
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I. PURPOSE

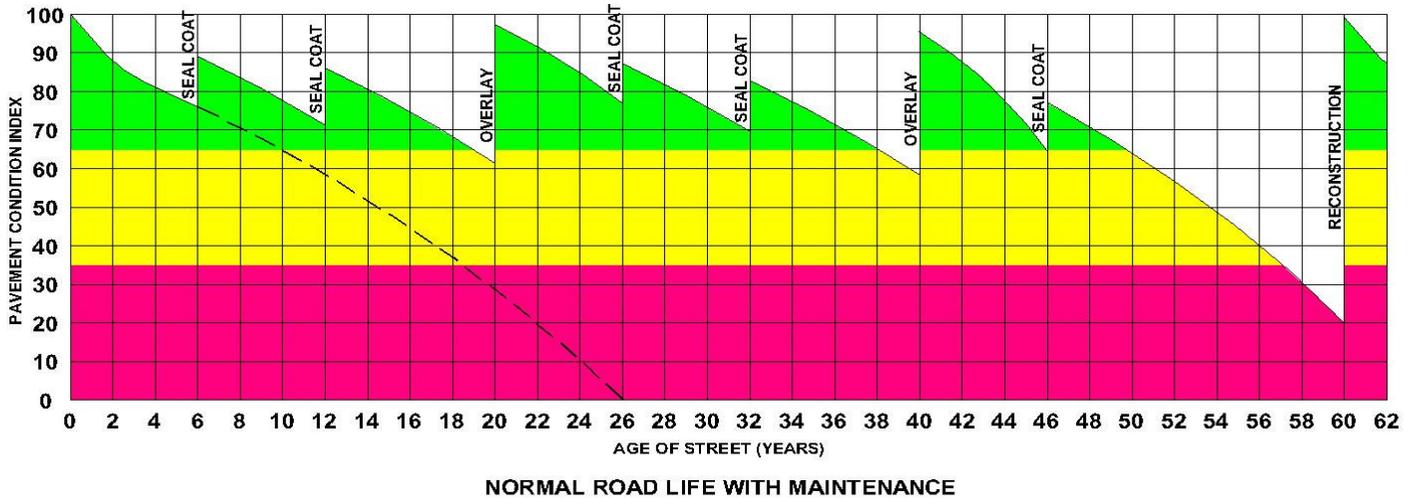
The City of Blaine has a commitment to its residents and the traveling public to maintain the over 230 miles of City streets in a condition that provides for functional, safe and efficient travel in a cost efficient manner.

All streets have a limited life span which can be lengthened by proper care and maintenance. Routine street maintenance activities such as crack sealing and pothole patching are the most visible and common activities. Streets also require more intensive periodic pavement maintenance throughout their life cycles in an effort to extend the overall expected life span of the street.

A street with little or no maintenance will typically last less than 25 years before it needs to be completely reconstructed. Many variables such as underlying soil conditions, street construction, traffic loads and storm water drainage can have dramatic effects on the overall life. By performing periodic pavement maintenance such as seal coats and bituminous overlays at the proper time a street's lifespan can be greatly increased. This periodic pavement maintenance is less costly to the residents and the City when compared to neglecting periodic pavement maintenance and simply reconstructing the street once it degrades to an unacceptable condition. Below are two charts which show life of a typical street with and without pavement maintenance.



NORMAL ROAD LIFE WITHOUT MAINTENANCE



The City of Blaine created a Pavement Management Program for the purpose of maintaining and rehabilitating the City streets to maximize the lifespan in a cost efficient manner. The program tracks street conditions, plans a schedule of pavement maintenance and rehabilitation and identifies funding sources. Funding for the Pavement Management Program is typically some combination of City funds, Municipal State Aid funds and assessments to benefitting properties as defined in the Public Improvement Special Assessment Policy.

This Pavement Management Policy is the blueprint for how the City will utilize the proper methods and techniques to address the periodic pavement maintenance needs in the most economical and efficient manner within the overall framework of the Pavement Management Program.

II. RATING AND RANKING OF STREETS

The City of Blaine Engineering Department monitors and evaluates the conditions of City streets yearly for defects such as fatigue, raveling or cracking of the pavement, potholes, soft spots, curb failure and storm water drainage issues. This monitoring is then coupled with the age of the streets, pavement thickness, traffic volume and previous maintenance history for use in developing a pavement condition rating system for the streets.

This rating system is used to determine when and what type of structural maintenance strategy would be most effective in extending a particular street's life expectancy while maximizing the City's return on the required capital investment.

III. PAVEMENT MAINTENANCE METHODS

1. Seal Coat

Seal coating is a preventative maintenance activity which involves spraying bituminous adhesive on the surface of existing pavement followed by the application of a cover of finely crushed aggregate. Seal coats do not provide any structural support to existing pavement surfaces, nor will they repair pavement that has reached a point of structural failure.

The primary reason to sealcoat a pavement is to protect the pavement from the deteriorating effects of sun and water. When an asphalt pavement is exposed to sun, wind and water, the asphalt hardens, or oxidizes. This causes the pavement to become more brittle. As a result, the pavement will crack easier when exposed to traffic and temperature changes. Cracking allows water to migrate below the pavement and into the gravel base which in turn can form potholes or soft spots in the road, further deteriorating the pavement.

A seal coat combats this situation by providing a waterproof membrane which not only slows down the oxidation process but also helps the pavement to shed water. A secondary benefit to seal coating is the increase in surface friction it provides. This is accomplished by the additional texture the cover of aggregate adds to the pavement.

Seal coats are paid for with City funds and are not assessed.

2. Bituminous Overlay

A bituminous overlay is a cost effective method to renew the structural integrity and extend the life a street by grinding off a portion of the existing pavement surface and constructing a new top layer of pavement. This method can be utilized on roadways where the existing bituminous surface is still generally structurally sound and no major deterioration of the gravel base under the bituminous has occurred.

If a roadway has been allowed to deteriorate to a point where the structural integrity of the existing bituminous surface is no longer viable or the gravel base has become degraded and compromised, a bituminous overlay will quickly fail. In these cases, more costly measures such as bituminous replacement or reconstruction are needed.

A bituminous overlay consists of:

- Milling of existing bituminous surface – a thin layer (1 to 1-1/2 inch) of the existing bituminous surface is ground off to create an even surface to ensure proper drainage and a smooth ride once new bituminous pavement is installed.
- Localized minor pothole and base layer repair – there may be some small areas where pavement and the underlying gravel base has failed and needs to be removed and replaced.
- Minor curb and gutter repair/replacement – localized areas where small sections of unacceptable curb and gutter have been damaged or failed and need to be removed and replaced.

- Installation of new bituminous surface – a new 1-1/2 to 2 inch mat of bituminous is paved across the entire roadway.

Bituminous overlays are paid for with a combination of City funds and assessments to benefitting properties as defined in the Special Assessment Policy.

3. Bituminous Replacement

A bituminous replacement involves the removal of the entire bituminous pavement surface. This method is typically used when the existing pavement has exceeded its lifespan and has become too damaged for a bituminous overlay but the gravel base, majority of curb and gutter and drainage systems are still in good to excellent condition.

A bituminous replacement consists of:

- Removal of existing bituminous pavement – the pavement is either removed or ground up and recycled for use as a gravel base for the new layer of bituminous pavement.
- Minor base layer repair - there may be some areas where the underlying gravel base has failed and needs to be removed and replaced.
- Replacement of curb and gutter – all unacceptable curb and gutter will be removed and replaced.
- Minor storm sewer system repair – minor repairs to catch basins or storm sewer manholes.

Bituminous replacements are paid for with a combination of City funds and assessments to benefitting properties as defined in the Special Assessment Policy.

4. Partial Reconstruction

A partial reconstruction involves significant reconstruction of an existing road. This method is typically used when the existing pavement has failed and the gravel base has damage or structural deficiencies which makes it unsuitable for a bituminous replacement. Partial reconstructions also typically occur when significant storm sewer system repairs and/or significant curb replacement is required.

A partial reconstruction consists of:

- Removal of existing bituminous pavement – the pavement is either removed or ground up for use as a gravel base for the new layer of bituminous pavement.
- Base layer repair – repair or replace gravel base where necessary, also includes minor subgrade correction if needed.
- Replacement of unacceptable curb and gutter – all unacceptable curb and gutter will be removed and replaced.
- Minor storm sewer system repair – minor repairs or replacements to catch basins or storm sewer manholes and storm sewer pipe.

Partial reconstructions are paid for with a combination of City funds and assessments to benefitting properties as defined in the Special Assessment Policy.

5. Complete Reconstruction

A complete reconstruction involves full reconstruction of an existing road. This method is typically used when the existing pavement has failed and the gravel base has significant damage or structural deficiencies and, if present, the existing storm sewer system and/or curb and gutter has failed or is in poor condition. This method is also used when significant changes to the existing road type, profile or width are required. For example, the reconstruction of a rural section road with no curb and gutter or storm sewer into an urban section road with curb and gutter and storm sewer.

A complete reconstruction consists of:

- Removal of existing bituminous pavement – the pavement is either removed or ground up and recycled for use as a gravel base for the new layer of bituminous pavement.
- Base and subgrade – grade changes, repair and replacement of subgrade and base layer.
- Installation of curb and gutter – installation of new curb and gutter on entire road.
- Storm sewer – Upgrade or replace existing storm sewer system as required or installation of new storm sewer system if none present.

Complete reconstructions are paid for with a combination of City funds and assessments to benefitting properties as defined in the Special Assessment Policy.

IV. PROCEDURES AND TIMELINE FOR STREET PROJECTS

As a part of the Street Improvement Program, the Engineering Department determines which streets will be a part of that year's street improvement project and what maintenance methods will be utilized on each street. Some factors which are considered in determining candidates for the yearly street improvement project are, but not limited to, the following:

- Pavement structural condition and rating
- Yearly routine maintenance costs (such as pothole patching and crack sealing)
- Traffic volumes
- Condition/effectiveness of existing storm water drainage system
- Elimination of hazardous conditions or potential for adding safety improvements
- Available funding sources and efficient use of said funds

The physical condition of the pavement on a street is not always the determining factor as to when it will be included in a yearly street improvement project. For example, it may be a better use of limited funds and resources to select a road that is in need of a bituminous overlay over

one that needs a partial reconstruction. A street needing a bituminous overlay can quickly degrade over one or two winters to a point where it requires a much more expensive partial reconstruction whereas waiting an additional year or two to reconstruct a street needing a partial reconstruction will not increase costs to a significant degree.

The condition and age or lack of the underground utilities such as sanitary sewer and water main that lie below the street is also taken into account when determining when or what course of action to take with a particular street.

Below is an outline of the typical pavement management project timeline:

- June - July
 - Engineering Dept. selects streets for following year's street project.
 - Hold open house meeting to present proposed project to affected property owners.
 - City Council initiates preparation of a Feasibility Report.
- August - September
 - Preparation of Feasibility Report and street survey work (if needed).
 - Present Feasibility Report to City Council for acceptance.
 - City Council accepts Feasibility Report, holds Improvement Hearing and orders the improvements.
- October - February
 - Engineering Dept. prepares plans and specifications and presents to City Council.
 - City Council authorizes project for bidding.
- February – March
 - Project bidding and award of project.
- Spring to Fall (construction season is weather dependent but typically runs late April to end of October)
 - Construct street improvement project.