

TOWN OF CHESHIRE

Pavement Management Program

Introduction

The Town of Cheshire's Department of Public Works & Engineering maintains approximately 153 miles of roadways and averages 10 to 12 miles of paving each year, which includes maintenance and resurfacing practices.

The overall goal of our pavement management program is to use funding as efficiently as possible while being fair to all residents and to distribute improvements in a balanced manner throughout the Town using standard practices and engineering analysis.

During the spring of 2013, the Public Works Department conducted a study to measure the quality of the pavements in the Town with the assistance of Vanasse Hangen Brustlin, Inc. (VHB). Part of this study was to prepare an update to the database of pavement conditions, originally created in 2008, that is used today as a tool to help develop the Town's annual road paving program.

The Town follows a Pavement Management approach for the maintenance and improvements of its streets. Pavement Management is a systematic approach for maintaining a network of roads at a pre-determined quality level, and involves the process of planning, maintaining and repairing the roads in the network.

Keeping our roads (and sidewalks) in good condition requires an ongoing investment of time and money. The total capital investment in road paving is approved annually and goes toward improving and maintaining the roadway infrastructure.

Pavement Condition

Pavement Management Programs are typically based on assigning a Pavement Condition Index (PCI) value. The PCI value is a numerical value between 0 and 100 that is used to indicate the general condition of pavement, with 100 being a pavement in perfect condition. Once a PCI is established, basic determination can be made for the level of work or maintenance required for that road. The Pavement Condition ratings are updated annually, upon completion of each paving season.

Pavements deteriorate gradually from an initial PCI of 100, until reaching a critical point at which routine of preventive maintenance must be performed to prevent the pavement from

deteriorating further, such that a more expensive treatment, such as an overlay or base rehabilitation is necessary.

Paving Selection

The annual paving locations and pavement techniques are determined by the Cheshire Public Works & Engineering Department.

The paving list is determined by a variety of factors, including severity of road condition (also referred to as the PCI), proximity to community assets such as schools and parks, traffic volume, utility company coordination, timing of planned developments, fuel prices, and the road pavement evaluation prepared by VHB.

The Town utilizes a specialized software application which allows staff to analyze the roadways, plan future repair and rehabilitation strategies, and prioritize work to make the best of our resources.

Staff then conducts a budget analysis of the preliminary roads identified. Visual field inspections are later conducted of the roadways identified to verify conditions. Specific pavement techniques are then determined on the selected streets in an economically efficient manner.

Pavement Techniques

Pavement techniques include, but are not limited to, Crack Sealing, Fog Sealing, Chip Sealing, Mill and Overlay, and Reclaiming. Replacement of structures (i.e. catch basin and manhole tops), street sweeping, police details, and re-striping of traffic markings are also associated with repaving activities.

Crack Seal

Crack sealing helps preserve the pavement as a first defense against deterioration and is the most applied preventative asphalt maintenance treatment.

Crack Sealing is used to fill cracks greater than 1/8" encountered on the asphalt wearing and base courses. Cracks are inevitable, and neglect leads to accelerated cracking, which if left untreated can result in potholes and deeper base erosion. Untreated cracks allow debris, rain, and moisture to erode roads to a condition beyond cost-effective treatments to more extensive and costly repairs.

Sealing of cracks is a critical step in extending the life of the Town's streets. Crack sealing slows the deterioration process of cracks and extends the life of the road from 2-4 years on average. This additional life span combined with the low cost of the treatment makes crack sealing an extremely valuable preventative maintenance technique and an effective use of the Town's limited road funding when compared with other treatment options.

Chip Seal

This is the surface application of an asphalt emulsion followed by the placement of small graded aggregate. This process creates a wear-resistant coating that protects pavements from oxidation and the effects of moisture.

The Town has also expanded the traditional chip seal treatments into more neighborhood roads by using a double chip system that provides a much smoother surface than the traditional chip seal. The system is an application of course chip followed by a finer course, and then coated with a fog seal. This double chip system leaves a much less coarse texture and “drives” very well. It is much smoother and quieter than a traditional chip seal. The fog seal locks the chip together from the top and minimizes dust.

Chip sealing is a proven treatment that many communities have used successfully to keep the good roads in good shape for as long as possible. This strategy extends the life of our road network and thereby minimizes paving costs.

Since liquid asphalt material and loose crushed stone are used during the chip seal process, we advise all residents to use caution when traveling on the newly treated surface and reduce travel speeds to prevent kicking up the stones and dust from the road surface and to reduce the likelihood of personal property damage.

Fog Seal

Fog seals are a pavement preservation technique using a light application of diluted asphalt emulsion that helps to seal the existing pavement before signs of distress emerge. Fog seals restore the wearing surface and provide resistance to deterioration due to the weather and sun. When applied early in the lifecycle of pavement, the low cost of the treatment and life extension benefits make fog seals a highly economical preventative maintenance treatment. This treatment requires minimal pre-work and causes minimal impact.

Mill and Overlay (Resurfacing)

Pavement or asphalt milling is the process of removing at least part of the surface of a paved area, which is distressed or cracked. Milling removes anywhere from just enough thickness to level and smooth the surface to a full depth removal. A hot mix asphalt overlay is used after the milling process. An overlay is the paving of a second layer of asphalt over existing asphalt. This is a great alternative to reconstruction because it is considerably less expensive and more convenient than full reconstruction of a road surface.

Reclaiming (Rehabilitation)

This process is used when a complete reconstruction is unnecessary, but the road surface is in need of more improvement than a mill and overlay can provide. In this process, a reclaim machine removes the entire full-depth road surface and grinds the asphalt to a specific gradation that can be reused as a base for a new full-depth road surface. It also involves complete curb and gutter removal and replacement. All yards and driveways that are disrupted during construction are restored to a comparable state upon completion of the street reconstruction.