CITY OF DURANGO PAVING PROGRAM

City of Durango Paving Program Overview

The City of Durango Street Department’s mission is to provide clean, safe streets that allow for efficient and safe travel for all user groups.

The City of Durango is providing the information contained in the Paving Program to help residents and businesses understand the need for street maintenance as well as a step-by-step guide of the selection and paving process.

Pavement management is about the right treatment at the right time to extend the life of pavement and provides citizens with the best value. Asphalt streets have an average life of about 20 years. However, with the proper care and maintenance, that average street life can be extended to 30 years or more. The City of Durango’s crews and contractors strive to keep the public informed and provide updates during the maintenance and construction process in order to minimize any inconvenience to our residents, businesses and visitors.

The City’s street network in Durango consists of 165 lane miles of paved streets. The City of Durango maintains a database with the paving history of each street block as well as records of inspections and road conditions. Best management practices prescribe the completion of a pavement condition assessment every four to five years. The City of Durango completed assessments in 2013 and 2018. The pavement condition assessment is used to generate a Pavement Condition Index (PCI), or numeric score for each city block as well as a total average PCI score for the entire street network. The Street Department repairs and maintains city streets by using the PCI to determine right treatment at the right time to extend the life of pavement.

The PCI is a score range from 100 (a new street in excellent condition) to 0 (a street that has failed and must be reconstructed). Street conditions and the severity of specific distresses are evaluated using a number of vehicle-mounted sensors, cameras, and human input. These inputs are used to generate the PCI score for each road based on the severity level (low, medium, high) of each distress (like cracking and rutting).
In 2018 the PCI average for the City of Durango street system was a 67. Due to funding challenges, no street construction and limited maintenance was performed in 2018 and 2019. During this period the system-wide average PCI score dropped to 64. It is estimated that one PCI point costs the City of Durango 1.5 to 3 million dollars. The City of Durango goal for system wide PCI is to maintain a score of 70 or better, and to reconstruct streets when they reach a PCI score of 40 or lower.
There are numerous factors that affect the life cycle of a city street. Traffic, especially heavy trucks, and weather have the largest impact and deteriorate the condition of a street. Extreme weather conditions have the most detrimental impact on the life cycle of a street section. Moisture is a street’s worst enemy. Without proper maintenance, the negative effects of traffic and weather accelerate street deterioration, and the street will deteriorate to a point at which it will need to be completely reconstructed. The Pavement Management Program uses several preventative maintenance techniques to address streets that are in reasonably good condition by applying inexpensive surface treatments to preserve the road surface and extend the road’s life. Each year, as part of the streets Capital Improvements Plan (CIP), the program also selects streets that are in need of more extensive rehabilitation efforts.

The City of Durango maintains a 5-year Capital Improvement Project (CIP). A list of paving projects is generated annually and refined during the winter months in preparation for street construction activities that begin in the spring and continue through the fall of each year. Streets that exhibit certain signs of roadway failure, damage or deterioration will generally receive the most consideration for maintenance, repair and resurfacing. ADA ramp improvements, surface treatments, mill and overlays, and street reconstruction activities are competitively bid in the spring and awarded to the lowest responsible bidder.

The Street Department coordinates with the City of Durango Utilities Department and other utilities to compare the proposed paving program against their planned utility capital improvement programs. Regular meetings are scheduled with the Street Department and local utilities to discuss their programs and coordinate efforts. Due to many changing variables, changes to street CIP Projects and locations may occur up until a contract has been signed with successful contractor.

A good street maintenance and paving program uses a mix of different techniques to prolong the life of the asphalt. The work to repair and improve streets in the City of Durango ranges from; crack sealing, pothole patching, surface treatments, mill and overlays and street reconstruction. The charts below illustrate how a successful maintenance program using a variety of preventative maintenance techniques can extend the life of a city street.
Preventative Maintenance Technique

Crack sealing, pothole patching and surface treatments are known as preventative maintenance techniques that repair and seal the road surface and prolong the life of street.

Cracks become potholes, and potholes become streets in poor condition.

Crack sealing is the least expensive and most effective preventive maintenance treatment. Crack sealing fills pavement cracks, preventing further deterioration of the street. Studies indicate that crack sealing programs are the most cost-effective treatments for extending the life of pavement. Crack sealing is also often placed in advance of surface treatments to improve long-term performance. City of Durango street crews crack seal nearly 75,000 feet of cracks each year.

City of Durango Street Crews crack sealing streets
**Pothole patching** is the process of filling potholes or excavated areas in the asphalt surface. Timely repair of potholes helps control further deterioration and more expensive repair of the pavement. Without timely patching, water can enter the subgrade and cause larger and more serious pavement failures. City of Durango Street crews patch about 1,000 potholes each year.

City of Durango Street Crews patching potholes

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**Surface Treatments**

There are several different surface treatments in use throughout the country. The two most common used by the City of Durango are chip sealing and High-Density Mineral Bond sealcoat.

**Chip sealing** is a preventive maintenance treatment that rejuvenates old asphalt and creates a new riding surface. Chip seal reduces pavement deterioration and extends the life of the street.

Chip sealing is the application of crushed aggregate or gravel (chips) over a thick emulsified asphalt oil. The oil seals the street from water penetration while the chips provide a wearing surface for traffic.

Chip Seals are the least preferred treatment because of the loose chips and dust. The finished product is the same color of the old pavement and does not look as ascetically pleasing as a new blacktop pavement. Chip seals are a low-cost preventive maintenance treatment for extending pavement life. The City of Durango currently only uses chip seals on very low volume streets with little traffic.
High Density Mineral Bond (HA5) is a preventive maintenance treatment that rejuvenates the asphalt surface, reduces oxidation and seals the asphalt surface prolonging the life of the street. Ha5 is a low-cost preventive maintenance treatment for extending pavement life. Ha5 is used in residential areas with low to medium traffic volumes.
Street Paving

(OGFC) Open Grade Friction Course is a thin overlay pavement treatment. This procedure seals and rejuvenates old asphalt, creates a new riding surface, reduces road noise, eliminates wheel ruts, covers and seals utility trench or other asphalt defects. OGFC's also have an aesthetically pleasing finish and improves ride quality.

Resurfacing/Milling and Overlays typically includes removal (milling) of the top 1” layer of asphalt to provide a smooth uniform surface and placement of a new 2” layer of asphalt. This is also known as a “mill and fill”. New curb and sidewalks are not included in all overlay projects. Every overlay project is different and varies in scope, cost, and time to complete.

Overlays provide a new street surface that seals and protects underlying road structure and improves the ride quality. Prior to resurfacing streets, a tar-like tack coat material is applied. This tar-like material seals the cracks of the underlying pavement and helps bond the new surface course to the existing asphalt. Street paving typically occurs within a few weeks of the milling.
Paving is done in the following steps:

   a. Mill 1” of the existing asphalt surface
   b. Patch any potholes
   c. Sweep and clean the street surface
   d. Application of the tack coat
   e. A new 2” layer of asphalt is laid down with paving machines
   f. Asphalt rollers follow the paving equipment to smooth and compact the new asphalt surface

Reconstruction is the most expensive treatment and used as a last resort. When a roadway has reached the end of its service life a total reconstruction of the street is required. Reconstruction involves the removal of all existing pavement, repair of the sub-grade and a new 4” asphalt surface. This process is the most expensive method of paving. The goal of the Pavement Management Program is to delay reconstructions by extending a street’s service life through preventative maintenance. New curbs and sidewalks are not included with all reconstruction projects. Every reconstruction project is different and varies in scope, cost, and time to complete.

Reconstruction is done in the following steps:

   a. The existing street surface is pulverized by a large tilling machine and recycled for use as road base.
   b. New base or structural material may be added if needed.
   c. The base surface is regraded, shaped and compacted to provide a smooth consistent paving surface.
   d. Application of a tack coat.
   e. A new 4” layer of asphalt is laid down with paving machines.
   f. Asphalt rollers follow the paving equipment to smooth and compact the new asphalt surface.
Americans with Disabilities Act (ADA) Facility Improvements

As part of the paving program, the City of Durango constructs or upgrades adjacent ADA corner ramps to meet the current ADA standards. These ramps provide unobstructed access to sidewalks as well as providing tactile warning of a street crossing for visually impaired individuals. Federal regulations require ADA ramps to be brought up to current standards any time a municipality performs a thin overlay, overlay, or street reconstruction. The City of Durango upgrades 40-80 ADA ramps each year in conjunction with their paving program.
Commonly asked questions:

Basic Information

In the spring, the City of Durango Streets Department posts the streets identified for surface treatments and repaving. Typically, two weeks before work begins, City of Durango Staff provide door hangers with project information and staff contact numbers. Each phase of the paving and sealcoating process requires contractors to post temporary “No Parking” signs on each block 24 hours in advance of the work. If vehicles are still parked on the street at the time of construction, the vehicle will be towed. Local police are provided with a list of the vehicle locations. Residents will have limited access to the street and their driveways during construction activities.

How long does it take a street to be paved?

The entire paving operation is completed over a period of three-to-five weeks from the time work begins. The anticipated time to complete work on each street segment varies and is dependent on the length and width of the street. Each step takes place in separate activities over the course of several days.

Can the timeline for completed paving operations be altered?

The timeline for paving operations may change depending upon weather conditions and special events. Emergency utility work can also alter the paving schedule. Once a street surface has been opened, problems may be discovered that must be repaired before repaving. We understand paving operations can be disruptive.

Will sidewalks be replaced during paving operations?

New curbs and sidewalks are not typically included in paving operations. However badly damaged or missing curb is replaced when necessary prior to the repaving process.