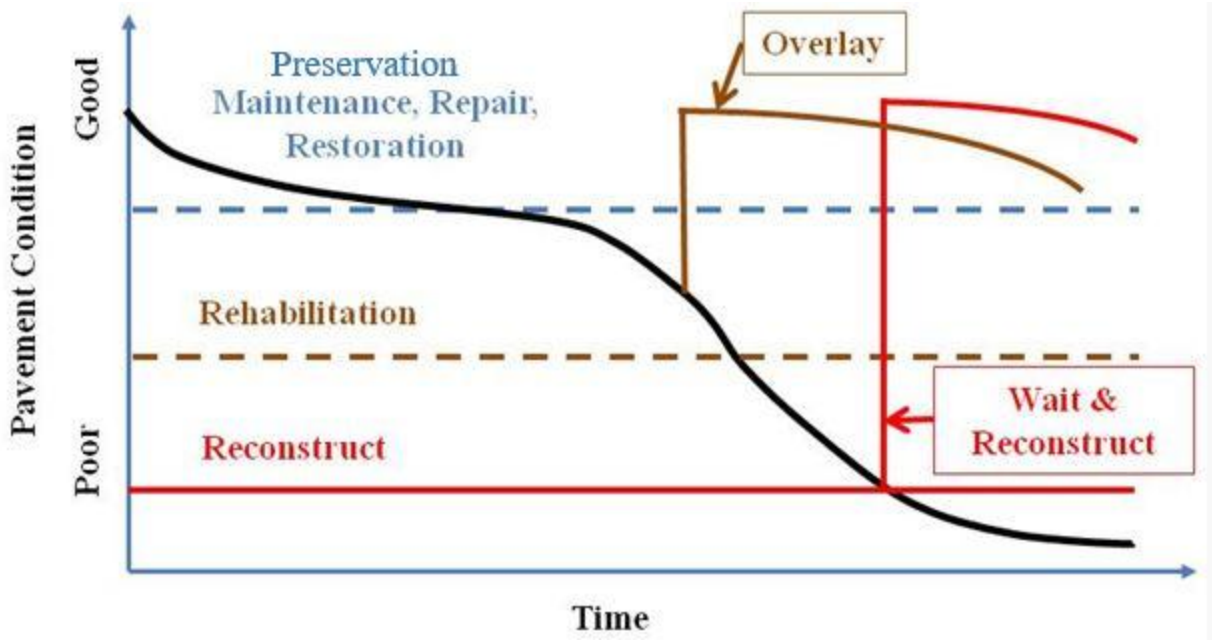
Pavement Preservation

Pavement preservation is the proactive maintenance of roads to prevent them from getting to a condition where major rehabilitation or reconstruction is necessary. Preventative maintenance costs are much less than the ultimate repair cost. As depicted in the figure below, as pavement ages, the pavement condition declines to a poor condition after it has aged approximately 75% of its life (typically 20 years). As shown on the curve as the pavement condition worsens the treatment changes resulting in higher treatment costs.

By proactively maintaining the roads the pavement life is extended maximizing the value of each dollar spent on the roads. Another important benefit of utilizing the pavement preservation approach is that because the treatment costs to preserve the good roads is substantially less it enables the City to preserve more streets than if the was focused on fixing the bad roads first.



Slurry Seals

What? A slurry seal is the application of a mixture of water, asphalt emulsion, aggregate (very small crushed rock), and additives to an existing asphalt pavement surface. A slurry seal is similar to a fog seal except the slurry seal has aggregates as part of the mixture. This combined mixture of the emulsion and aggregates represents "slurry." Polymer is commonly added to the asphalt emulsion to provide better mixture properties. The placement of this mixture on existing pavement is the "seal" as it is intended to seal the pavement surface. Slurry seals are generally used on residential streets.

Why? Slurry seal is applied in order to help preserve and protect the underlying pavement structure and provide a new driving surface. Roads chosen for slurry seal applications generally have low to moderate distress and narrow crack width. Slurry seal applications serve to seal the cracks, restore lost flexibility to the pavement surface, provide a deep, rich black pavement surface color, and help preserve the underlying pavement structure.

When? Slurry seal is typically applied on either an intermittent or cyclical basis. Location, weather, traffic loading, and pavement conditions are factors used to determine if a slurry seal application is appropriate. Roadways selected for slurry seal treatment are commonly those which have slight to moderate distress, no rutting, and generally narrow crack widths, and where a slurry seal treatment would help extend the pavement life until resurfacing becomes necessary.

Roadways chosen for cyclical slurry seal applications would typically be treated every five to seven years.

How? The asphalt emulsion and the aggregates are mixed in, and applied using, a purposely built truck, ılly referred to as a "slurry truck."

Slurry trucks contain various compartments, which hold the aggregate (fine crushed rock), water, polymer modified emulsion, and other additives, which are mixed in the on-board mixer. The slurry mixture flows out of the rear of the truck and onto the pavement within the confines of a box attached to the rear of the truck. The box serves to distribute the slurry mixture over the pavement. Workers with squeegees follow behind and assist in spreading the mixture, correcting areas not properly covered, and keeping the mixture off concrete improvements such as gutters.

A piece of burlap is often dragged behind the slurry truck with the goal of producing a smooth texture while spreading the slurry seal. The texture of a slurry seal is different from that of asphalt pavement. The texture may have faint lines and be somewhat coarse. In addition, when the slurry is first placed the surface is tender and can be marked up by sudden turning movements. These impressions on the pavement are temporary as seasonal weather and traffic smooth out these imperfections over time.

Once placed slurry seals need 4 to 6 hours to set or harden before the road is open for traffic.

Prep-work

What? Preparation work is the work that needs to be performed prior to the application of any treatment. It is important that areas of severe damage are isolated and repaired before any preventative or rehabilitative treatments are applied. Preparation work may also entail the removal of thermal plastic striping, street sweeping, or grinding.

Why? If isolated areas are not addressed before the application of a preventative maintenance, such as a slurry seal, the benefits of the preventative maintenance treatment may not be maximized. The unrepaired section will deteriorate sooner than other areas. In addition, if the pavement is not properly cleaned and swept, the new treatment may not bond properly.

When? When there are isolated areas of failure, prep work is necessary in order to maximize the benefits of any maintenance or rehabilitation treatment.

Rehabilitation

As pavement ages, it will inevitably begin to deteriorate due to weathering and traffic loading. The condition of the pavement may not be so severe as to warrant complete reconstruction. At this point in the pavement's life is when rehabilitation techniques can be performed.

Rehabilitation is carried out on pavements that exhibit distresses beyond the effectiveness of maintenanc

Asphalt Overlay

What? Asphalt overlay is applies a new layer of asphalt over the current one. First, any potholes, alligatored asphalt, and depressions need to be repaired prior to installation of the new surface. Also, since the road will be slightly higher with an overlay, maintenance hole covers, water valves, monuments and other utility markers need to be adjusted to the new grade The existing asphalt is then cleaned of all debris and then a tack coat (thin coating of tar or asphalt) is applied to the old pavement to help with binding of the new pavement. Then the asphalt can be placed.

Why? Rather than tearing up an old asphalt surface entirely, an asphalt overlay project will use the existing layers as a base for the new asphalt pavement.

When? The existing pavement needs to be in stable condition with no repairs or replacement needed.

Mill and Fill

What? Mill and Fill is a structural pavement treatment that involves the removal of the existing surface layer and in some cases the entire asphalt pavement thickness - with a milling machine and the replacement of the milled location with new asphalt.

Why? Mill & Fill restores and strengthens a road's surface layer by restoring the pavement to a "like new" ondition. This process is used when a surface has deteriorated to poor condition and surrounding grades (i.e. curbs, driveways) must be met. This is advantageous to an asphalt overlay when asphalt surfaces have severe damage like rutting, potholes, large cracks, and expansions.

When? When a road has deteriorated to poor condition, pavement preservation treatments no longer provide long-term improvements and structural reconstruction is required.