



2019 Pavement Management Plan



Overview

- Purpose and Need
- Principles
- Process
- Maintenance Types
- Condition Ranges
- Type/Condition
- Methodology
- Recommendations
- Funding



Purpose & Need

- To preserve and extend the useful life of paved surfaces throughout the City and optimize the available funds to meet the roadway network condition needs.
 - Maximize performance and safety standards of City roadways
 - Minimize overall long-term costs of managing the network roadway system.



Principles

- Repairing streets when still in fair condition ultimately costs less over their lifetime than waiting they have fallen into poor condition.

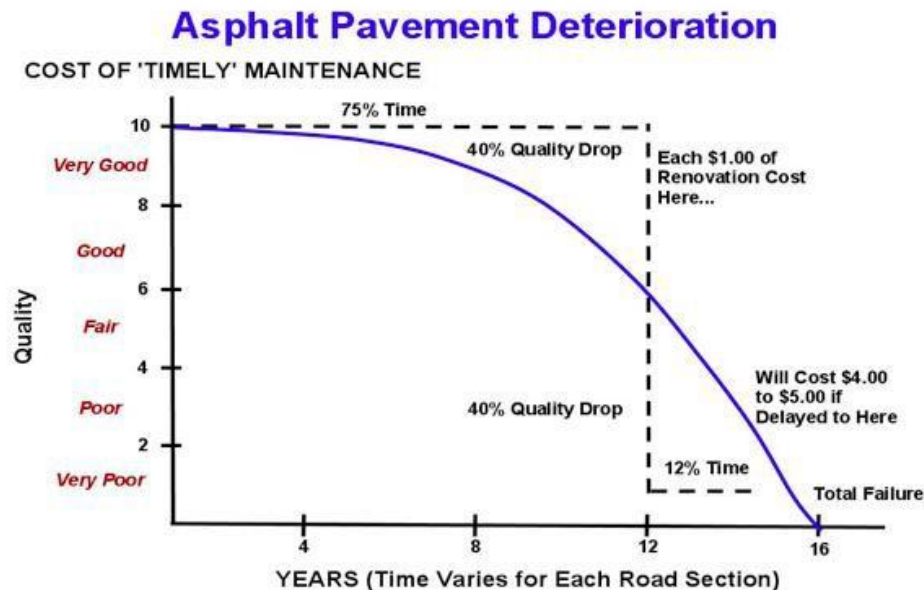


Figure 1-1 - Pavement Life Cycle Curve

- Delaying until a road is in “Fair” condition or worse, the cost of rehabilitation becomes 4 to 5 times more expensive than for those roads in “Good” condition.

Process

The Pavement Management Process



Figure 1-2 - The Pavement Management Process

- System Configuration – Identify all roadways, their physical characteristics (length, width, etc.), pavement type, and road classification - link to a GIS map.
- Data Collection/Field Surveys – Condition is assessed based on surface distress (such as cracking, potholes, raveling, etc.) as well as severity, its severity (Low, Moderate, High) is attached to the appropriate road segment and its count (e.g. number of potholes), square footage (area covered by cracking), and linear feet (length of a specific crack) are added.
- Analysis and Reporting - Provide a quantitative performance score (Pavement Condition Index (PCI)) representing the surface condition of the pavement on a scale of 0 to 100 – the higher the score the better the condition of the roadway.

Maintenance Types

Routine:

- Planned; cyclical
- Reactive to problems; performed after a deficiency occurs in the pavement
- Does not extend service life

Examples:

- Crack sealing/filling
- Full depth crack repair with mastic material
- Joint sealing (concrete)
- Pothole patching
- Leveling low spots



Maintenance Types

Preventive:

- Performed to protect the existing pavement through surface treatments
- Extends the service life
- Does not add any structural strength
- Proactive/applied to pavements in good condition

Examples:

- Slurry Seal
- Chip Seal
- Microsurfacing

Maintenance Types

Corrective:

- Reactive
- Extends the service life through structural enhancements
- Performed when deficiencies are so significant that preventive maintenance is no longer effective
- More extensive and more expensive

Examples:

- Mill and Overlay (Resurfacing)
- Full Depth Reclamation
- Hot Mix Overlay (with or without leveling course)

Typical PCI Condition Ranges

PCI Range	Work Type	Rehabilitation Options
86-100 Good	Rejuvenation	Little or no maintenance E.g. Crack Seal, Reclimite, fog seal
71-85 Satisfactory	Global	Routine Maintenance E.g. Seals such as slurry seal
56-70 Fair	Critical	Non-structural overlay, cape seal
41-55 Poor	Conventional	Structural overlay Overlay, Mill and overlay
26-40 Very Poor	Conventional	Structural Overlay Overlay, Mill and overlay
11-25 Serious	Reconstruction	Reconstruction, rebuild, full depth reclamation
0-10 Failed	Reconstruction	Reconstruction, rebuild, full depth reclamation



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Type/Condition

- Commerce City has 260.89 miles of paved roads.

Distribution of Roads by Pavement Type

Pavement Type	# of Sections	# of Miles	# of Square Yards	% by # of Square Yards	Weighted Average PCI
Asphalt	2,861	250.73	4,818,180	93%	79
Concrete	54	10.16	381,047	7%	95
Total	2,915	260.89	5,199,228	100%	80

Distribution of Asphalt Roads by Functional Class

Functional Class/ Paver Designation	# of Sections	# of Miles	# of Square Yards	% by # of Square Yards	Weighted Average PCI
Arterial & Collector/ B & C	759	94.17	2,121,064	44%	78
Local/ E	2,102	156.57	2,697,116	56%	79
Total	2861	250.74	4,818,180	100%	79

Methodology

- Asphalt roadways were divided into 2,861 section and then evaluated based on Average PCI, as well as;
 - Current Traffic Volumes
 - Roadway Classification
 - Snow routes
 - Proximity to schools, transit, parks, and commercial businesses
 - Economic development potential
- Several sections eliminated from this program because more extensive work (reconstruction) is needed



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Recommendations

- Focus on roadways with PCI less than 70
 - Majority of those streets south of 76th Avenue
- Most work would be mill and overlay
- Recommend slurry sealing of streets
 - Villages at Buffalo Run West
 - Fonterra
 - River Run
- Crack sealing is completed continuously



Recommendations

Maintenance Type	Area	Average PCI	Estimated Cost	Fund
Corrective (Mill & Overlay)	*Dahlia to Magnolia, 56 th to 60 th	55.8	\$827,030.00	Pave Mgt.
Corrective (Mill & Overlay)	*Kearney to Quebec, 56 th to I-270	51.8	\$698,396.00	Pave Mgt.
Corrective (Mill & Overlay)	*Glencoe to Holly, 64 th to 66 th	60.6	\$276,103.00	Core City
Corrective (Mill & Overlay)	*Colorado, 72 nd to 74 th	33.5	\$134,298.00	Pave Mgt.
Corrective (Mill & Overlay)	*Highway 6 to Kearney, 60 th to 64 th	60.0	\$679,361.00	Core City
Corrective (Mill & Overlay)	**Irondale	39.6	\$266,820.00	Irondale
Hot-in-Place Recycling	#112 th Ave, Havana to Oakland	52.7	\$307,177.00	Pave Mgt.
Slurry Seal	#Villages at Buffalo Run West	81.8	\$102,303.00	Pave Mgt.
Slurry Seal	#Fronterra	82.7	\$42,636.00	Pave Mgt.
Slurry Seal	#River Run	80.8	\$315,109.00	Pave Mgt.
	Total Budget		\$3,649,233.00	

Note: *Core City **Irondale #Northern Range

Funding

Fund	Amount (\$)
Pavement Management	\$2,426,949.00
Core City Infrastructure	\$955,464.00
Irondale	\$266,820.00
Total	\$3,649,233.00

- Pavement management Budget - \$2,500,000.
- Core City Infrastructure Improvements Budget - \$1,500,000
- Irondale Quick Items Budget - \$620,000.

NOTE: Public Works will be identifying other projects for the Core City and Irondale and will bring those to City Council for review at the 22 April Study Session.

Additional Recommendations

- Focus on areas for street rebuilding or mill and overlay in specific areas to minimize disruption over time and reduce mobilization costs
- Use newer technological methods, such as Hot-In-Place Recycled Asphalt Paving, to complete traditional milling and overlay work at a lower cost
- Adopt a contract resurfacing approach of entering into competitive contract with a renewal clause to expedite future resurfacing program timeframes.
- Update the pavement management analysis/plan every 3 to 5 years to validate and ensure the appropriate strategies are being employed to maintain/improve the overall condition of City streets.



Questions & Discussion

Local Street Schedule

AREA	CORRECTIVE	ROUTINE	PREVENTIVE
F	2018	2022	2023
E	2019	2023	2024
G	2020	2024	2018
A	2021	2018	2019
C	2022	2019	2020
D	2023	2020	2021
B	2024	2021	2022

2019

