

PAVEMENT MANAGEMENT PHILOSOPHY

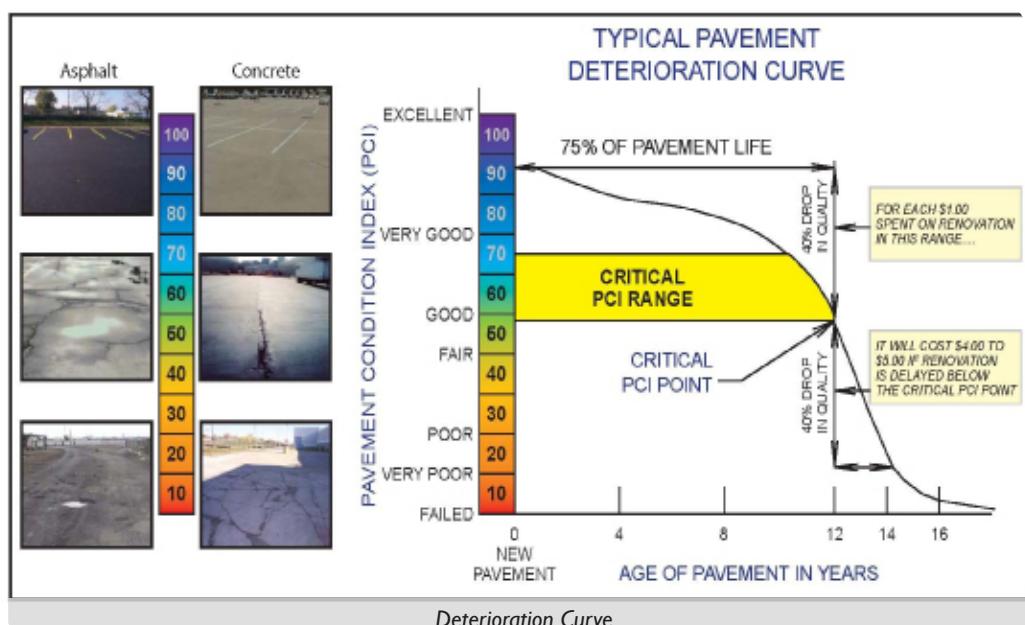
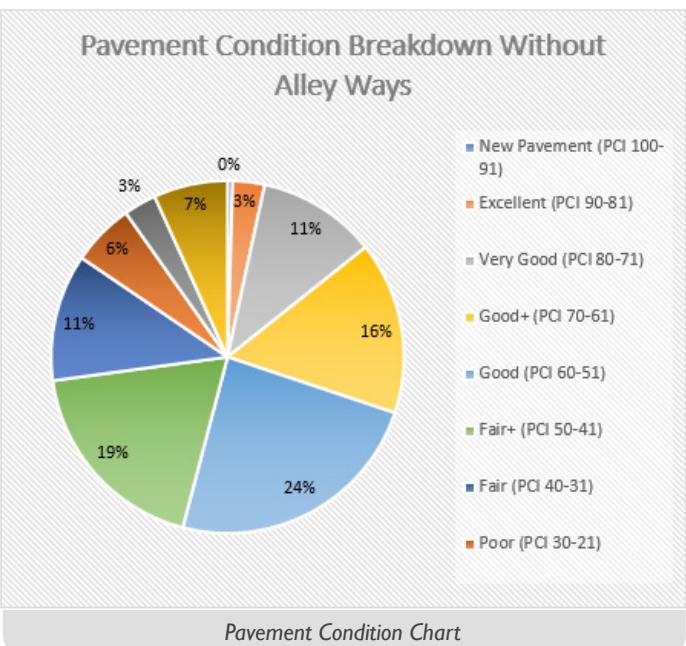
The basic philosophy of pavement management is to apply preventive maintenance treatments at appropriate times to slow the rate of pavement deterioration. Both preventative maintenance and rehabilitation techniques should be applied at times when they are cost-effective instead of letting the pavement deteriorate to failure, which requires more expensive reconstruction.

DETERIORATION RATES

Deterioration rates are dependent upon several factors including, but not limited to: original section design, quality of original construction, subgrade condition, traffic loadings, climate, and the quality and extent of the maintenance program in place.

Pavement deterioration follows a curve with a critical pavement condition index (PCI) range that is generally considered to be between a modified PASER PCI rating of 75 and 57 on the curve. The "critical point" of 57 on the curve is considered the threshold where preventative maintenance measures become less cost-effective.

Approximately 11,155,149 square feet of city-maintained pavement was assessed in the City of Huntington network using the PASER method. The weighted average PCI for the city-maintained roads within the pavement network is 41.40. Showing that now is the time for the City to become proactive and begin rehabilitating and maintaining their streets.



PAVEMENT REPAIR ACTIVITIES

Pavement repair activities were chosen based on the condition of the pavement as identified in the field. Each of these repair activities were given an estimated cost per square foot as shown in the image below.

Table 1: Concrete Repair Activities

Remediation Type	PCI Range	Pavement Surface Type	Typical Repairs	**Average Cost (per SF)
Preventative Maintenance	89 to 80	Concrete	*Crack sealing (up to 50% of area)	\$0.10
	79 to 70	Concrete	*Crack sealing	\$0.20
	69 to 60	Concrete	*Crack sealing and joint cleaning/sealing	\$0.50
Light Rehabilitation	59 to 51	Concrete	*Crack sealing and joint cleaning/sealing *Full depth joint repair	\$1.00
	50 to 41	Concrete	*Full depth joint repair *Chipping and patching spalled joints *Removal of isolated slabs	\$1.78
	40 to 31	Concrete	*Full depth joint repair *Chipping and patching spalled joints *Removal of isolated slabs *Asphalt overlay *Re-stripe	\$5.00
	30 to 21	Concrete	*Subgrade undercutting and backfill *Joint and slab preparation *Full surface overlay	\$8.40
Rehabilitation	20 to 11	Concrete	*Subgrade undercutting and backfill *Joint and slab preparation *Full surface overlay	\$12.00
	10 to 1	Concrete	*Full-depth concrete and base reconstruction required *Re-stripe	\$15.75
	0	Concrete	*Full-depth concrete and base reconstruction required with undercutting to strengthen sub-grade *Re-stripe	\$20.10

PRIORITIES

Priorities of the repairs were then given based on the following factors: condition, width (or lanes) on the roadway, and roadway classification (or traffic volume). Condition of the pavement was given the most weight in the equation, and then the pavements were assigned a value which prioritizes each roadway segment.

Table 2: Priority Level Summary for Streets

Priority Level	Priority Value
Very High	115<
High	96-115
Medium - High	86-95
Medium	71-85
Low - Medium	51-70
Low	0-50

Table 3: Priority Level Summary for Sidewalks

Priority Level	Priority Value
Very High	28<
High	25-28
Medium - High	21-25
Medium	16-20
Low - Medium	8-15
Low	0-7





K Y O V A

City of Huntington
Pavement Management Study

BUDGET AND COST

Based on the value of each priority and the costs identified, Kimley-Horn recommends an optimal budget breakdown for the City's annual budget. This breakdown should be 5% preventative maintenance, 20% light rehabilitation, 50% rehabilitation, and 25% reconstruction.

Table 4: Optimal Budget Breakdown

Pavement Repair Type	Percentage
Preventative Maintenance	5%
Light Rehabilitation	20%
Rehabilitation	50%
Reconstruction	25%

Table 5: Summary of Cost per Pavement Repair Type for street segments

Pavement Repair Type	Total Estimated Cost
Preventative Maintenance	\$ 1,796,900.00
Light Rehabilitation	\$ 9,367,500.00
Rehabilitation	\$ 6,529,000.00
Reconstruction	\$ 4,622,000.00
Total Estimated Cost	\$ 22,315,400.00

Table 6: Summary of Cost per Pavement Repair Type for sidewalk segments

Sidewalk Repair Type	Total Estimated Cost
Preventative Maintenance (10% Slab Removal)	\$ 514,000.00
Light Rehabilitation (40% Slab Removal)	\$ 3,776,500.00
Rehabilitation (80% Slab Removal)	\$ 1,375,300.00
Reconstruction (100% Slab Removal)	\$ 240,900.00
Total Estimated Cost	\$ 5,906,700.00

CONCLUSION

This Pavement Management Plan is the first step for KYOVA and the City of Huntington to take inventory of their roadways and condition. Through many of the discussions with the City and KYOVA, a recurring theme was that many of the existing pavement management techniques were governed either by political pursuits, or the frustration of residents. This pavement management program removes any bias, and provides third-party expertise.

Many of the roadways identified in the City fall within the range of the “critical PCI”, meaning that the time to proactively maintain and extend the lives of the pavements is now. The tools developed in this program identify which streets are at that critical point, through easily filterable and sortable tools, and visual maps that outline a clear path for the City to develop projects and budgets in the future.

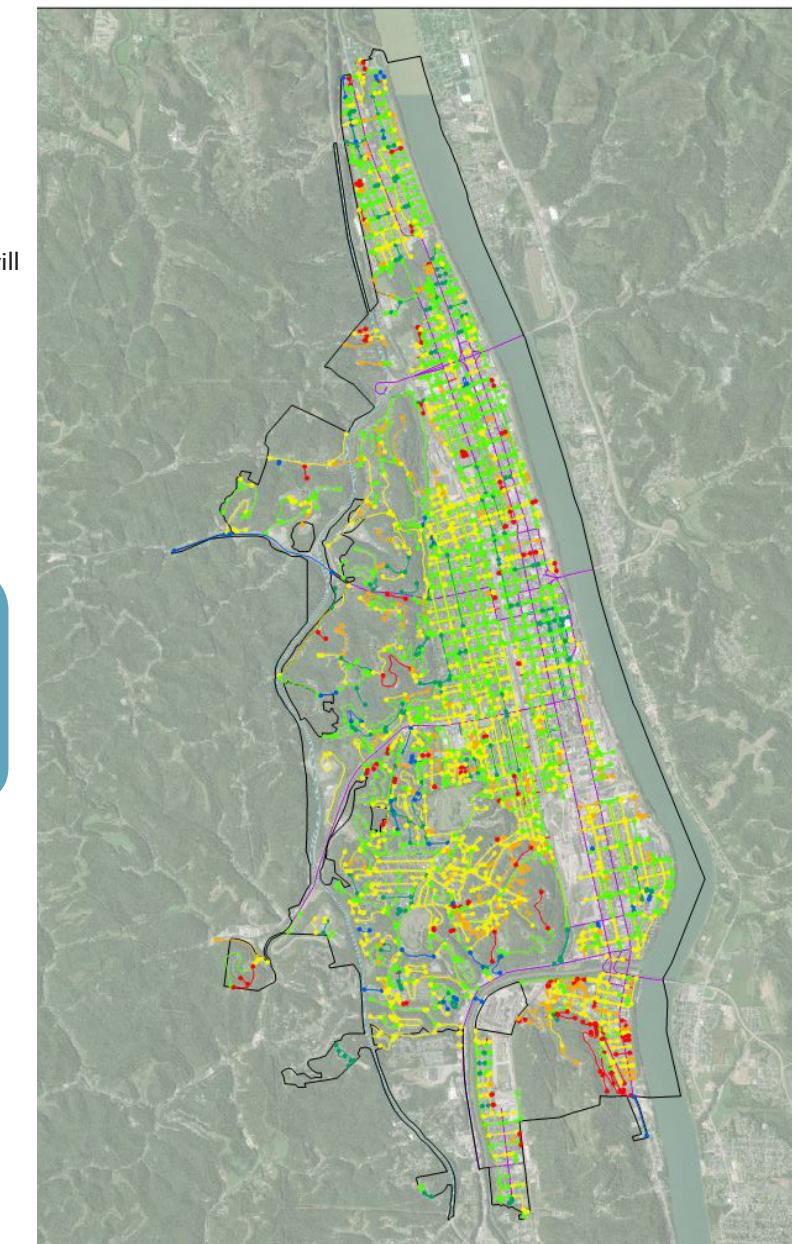
AT A GLANCE

The City of Huntington requested a pavement management program to assist their Public Works department in identifying roadway priorities for optimum pavement maintenance and repair strategies.

The program is a long-term strategic effort that will allow the City to utilize programs developed in Microsoft Excel and GIS to preserve and upgrade the overall condition of their transportation network over time.

The program will allow the City and KYOVA to generate reports that can be used for budgeting, presentations, and to identify and request annual funding levels to maintain roadway infrastructure.

The pavement management program prioritizes and provides estimated costs for the repairs and maintenance of the City's 200 miles of roadways and 57 miles of sidewalks.



Pavement Condition Plan

