City of Dallas Pavement Management Program

- Background & Description
- Process & Procedures
- Program Statistics
- Next Steps

Background

- A pavement management program is the process of planning the maintenance and repair of our City streets in order to optimize pavement condition and expenditure of taxpayer funds.
- The City has utilized the computerized “Street-Saver” pavement management program, developed by the Metropolitan Transportation Commission, since 2000.

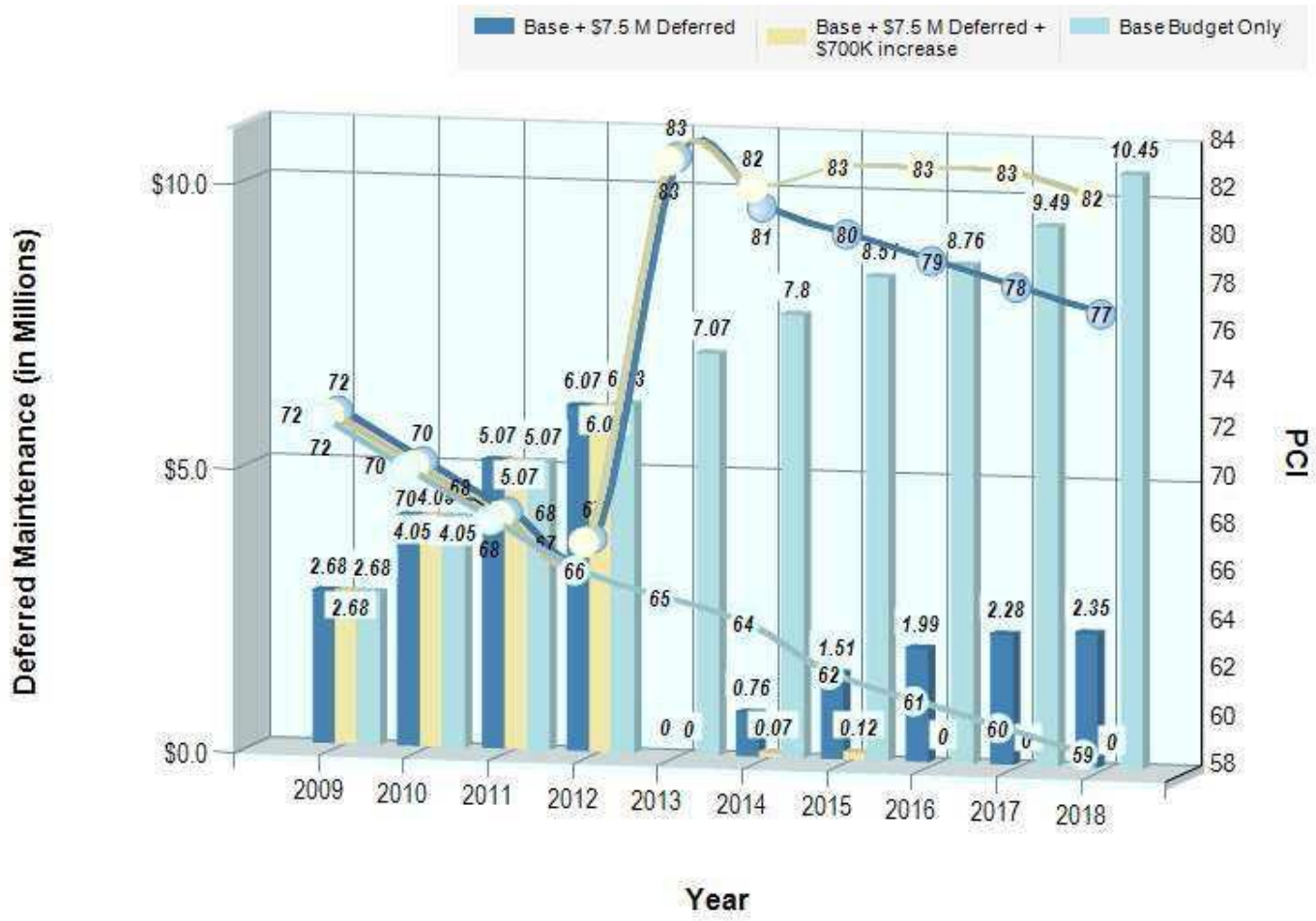
Background

- Typical tasks performed by pavement management systems include:
  - Inventory pavement conditions, identifying good, fair and poor pavements. Inventory inspections are typically made each 4 to 5 years.
  - Assign importance ratings for road segments, based on traffic volumes, road functional class, and community demand.
  - Estimate repair costs based upon current unit prices for construction.
  - Schedule maintenance of good roads to keep them in good condition.
  - Schedule repairs of poor and fair pavements as remaining available funding allows.

Background

- The condition of City Streets has been deteriorating significantly during the last 20 years.
  - 2002 PCI = 78
  - 2009 PCI = 72
  - 2014 PCI = ???

Background


Base + $7.5 M Deferred
Base + $7.5 M Deferred + $700K increase
Base Budget Only
Deferred Maintenance (in Millions)
$10.0
$5.0
$0.0
PCI
84
82
80
78
76
74
72
70
68
66
64
62
60
58
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year

Background

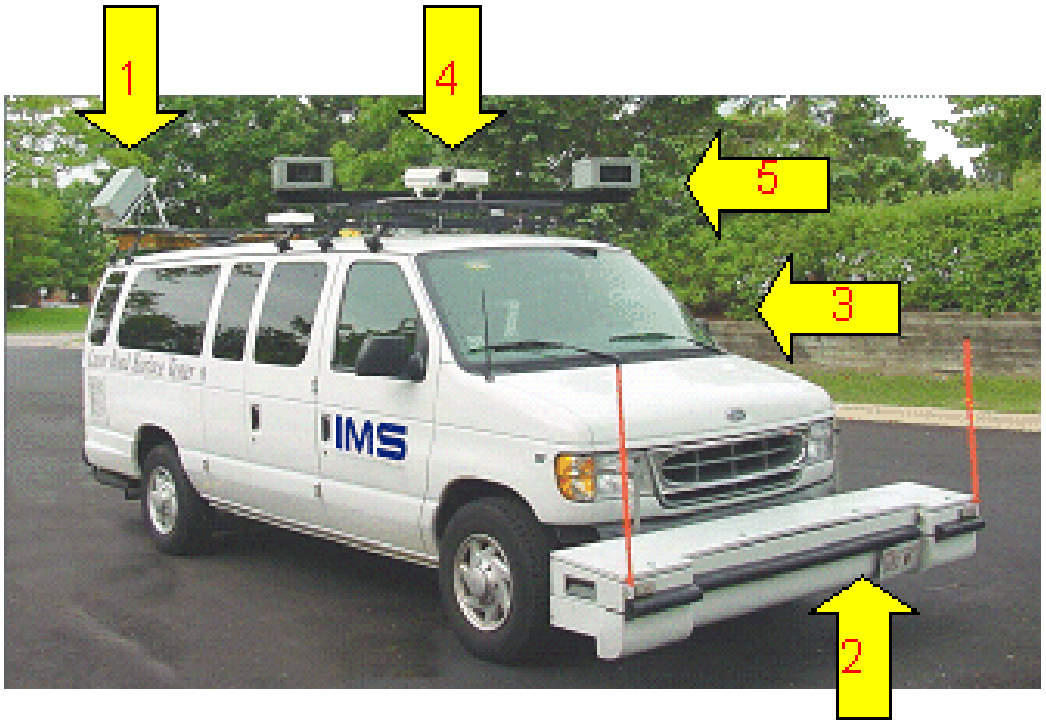
- City Council considered and adopted a Transportation Utility Fee in 2008/09.
- Fee was referred to voters and overturned in May 2010.
- Citizen's Advisory Committee formed in 2011.
- Committee Recommendations made in 2013.
- Pavement Management System (PMS) Inspections Outdated (last inspected-2008).
- Request for Proposal's Issued for Update of Inspections for PMS (January 2014).
- Infrastructure Management Systems (IMS) Awarded the Contract based upon the competitive process outlined within the RFP.
- IMS Contract Completed in June 2014.

Program Description

1

Distress data for:

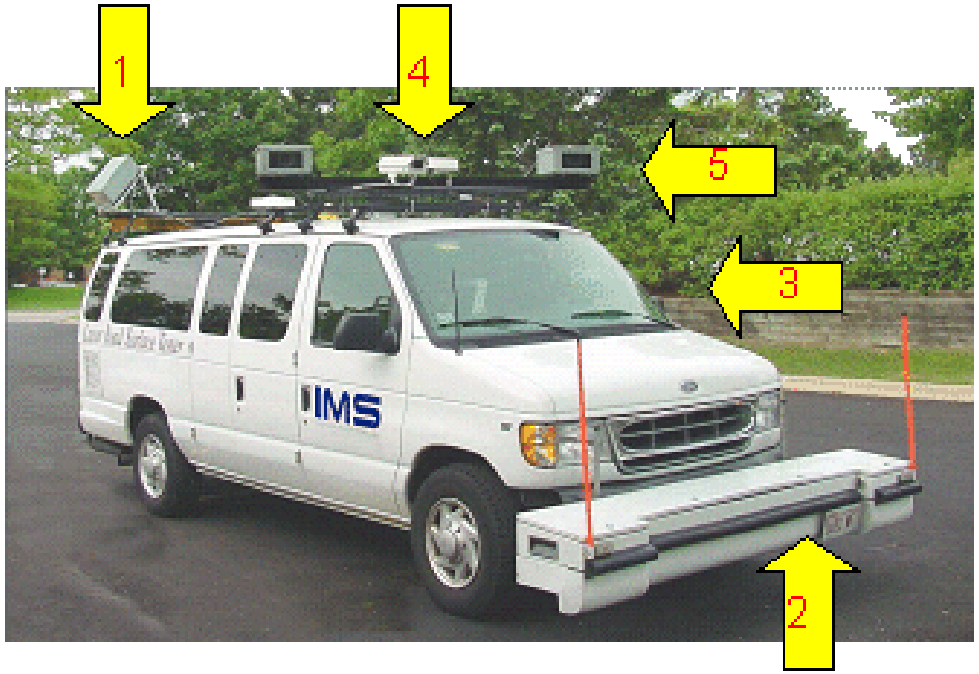
- Rear or pavement view images
- Data QA
- Right-of-way asset inventory & Condition rating
- Surface distress data extraction using specialized processing software



The Laser Road Surface Tester (RST):

Objective Pavement Distress data for:

- Roughness
- Rutting
- Transverse cracking
- Texture
- Alligator cracking
- Block cracking
- Geometrics, crossfall, excessive crown, grade, and radius of curvature

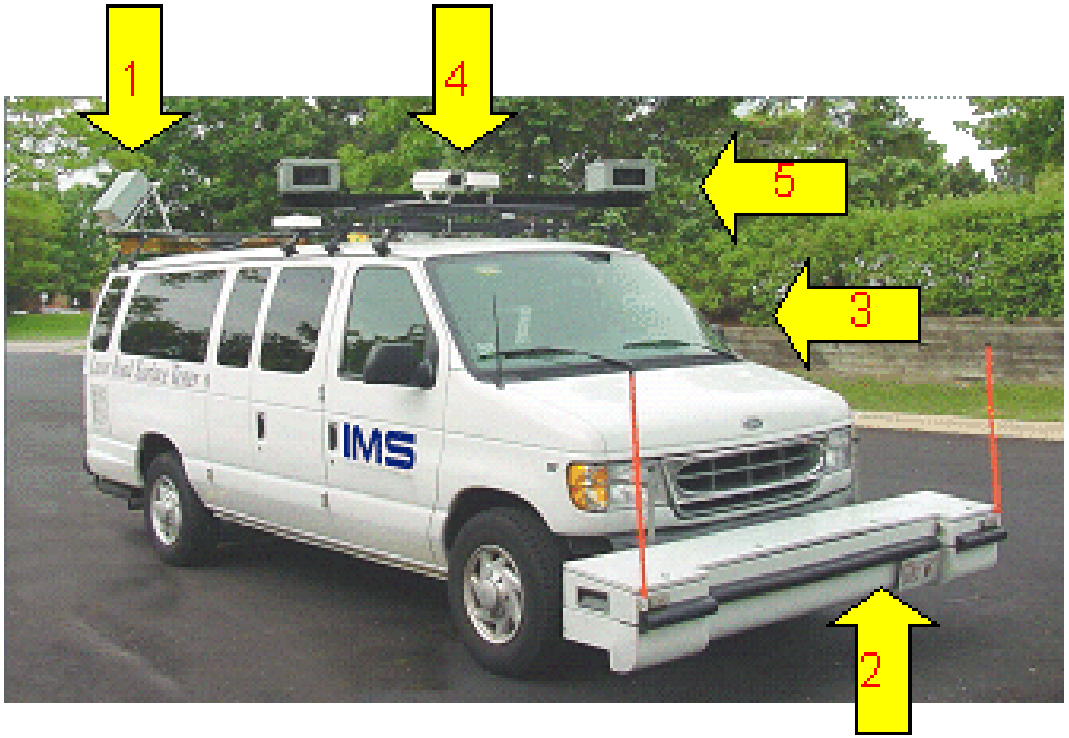


The Laser Road Surface Tester (RST):

3

Data for:

- RST control
- Timecode
- Roadway inventory
- Pave type
- Lane count
- Full suite of surface distresses
- Environmental inputs
- Roadway attributes

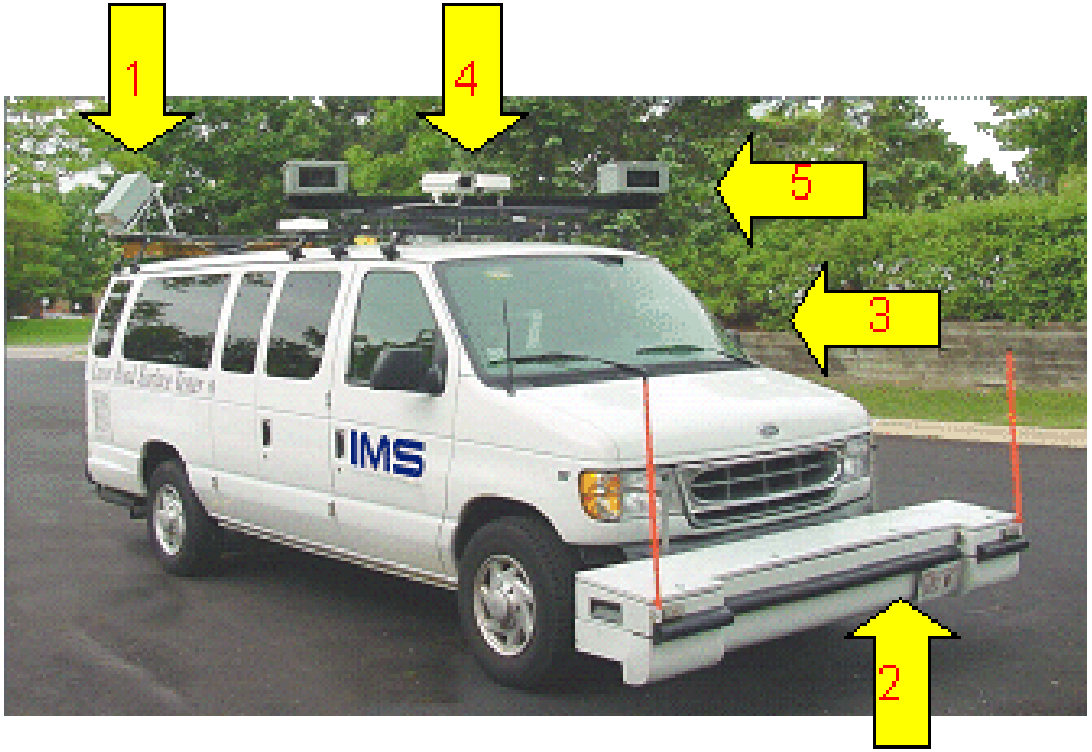


The Laser Road Surface Tester (RST):

4

Data for:

- GPS coordinates
- Data location verification
- Production review

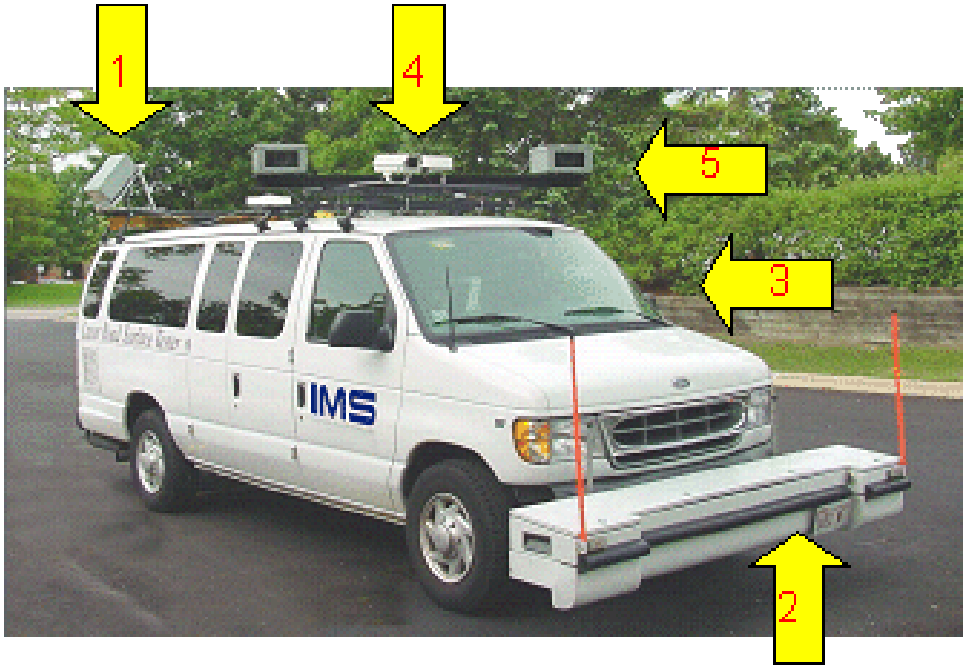


The Laser Road Surface Tester (RST):

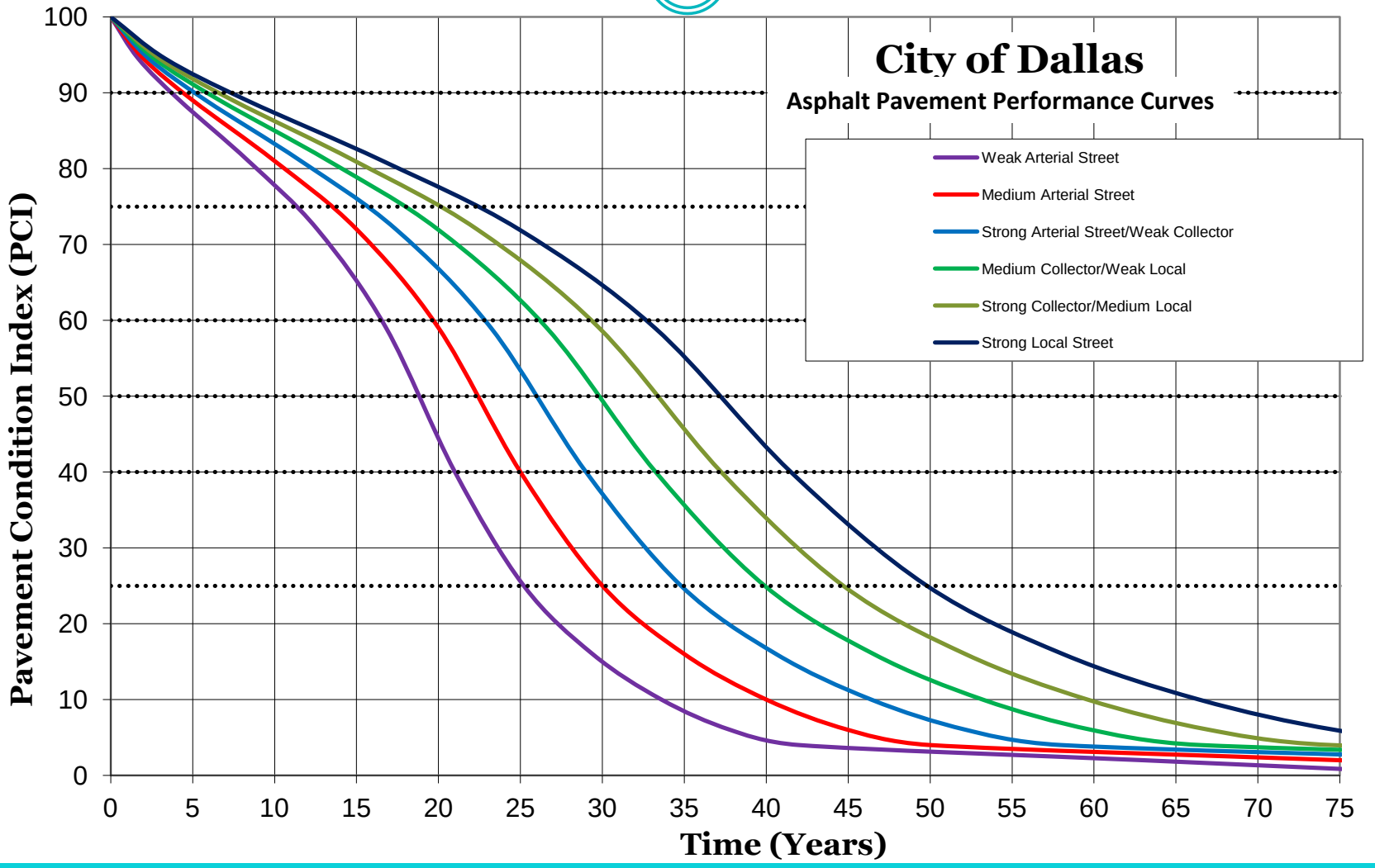
5

Data for:

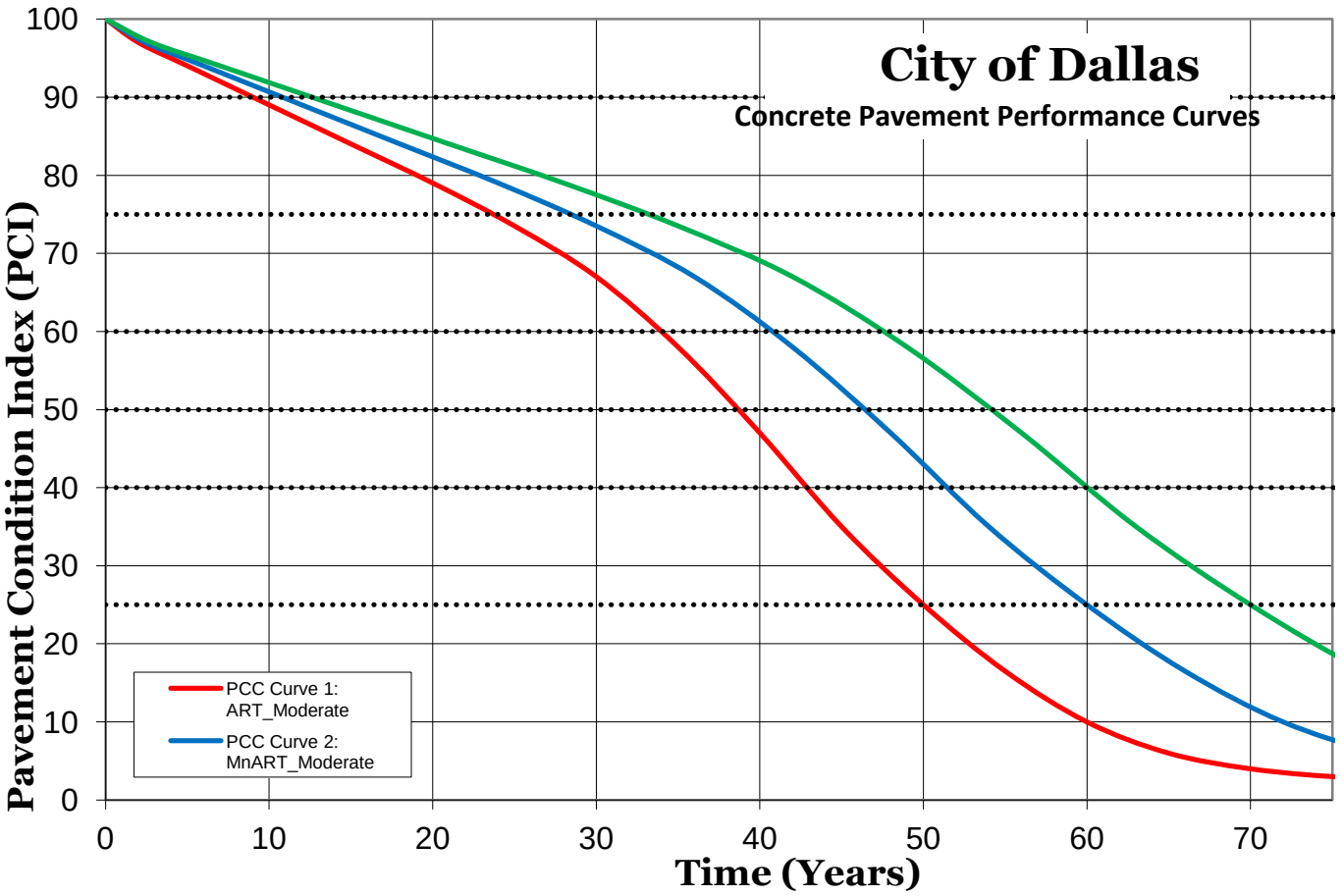
- Forward view images
- Data QA
- Right-of-way asset inventory & condition rating



Program Process & Procedures



Program Process & Procedures



Program Process & Procedures

Rehabilitation Strategies and Unit Rates

Rehab Activity	Min PCI	Max PCI	Priority	Arterial Rate ($/yd2)	Collector Rate ($/yd2)	Local Rate ($/yd2)
Slurry Seal	80	90	15	2.00	1.85	1.80
Surface Treatment	75	80	8	2.80	2.60	2.50
Surface Treatment + Reconstruction <10%	75	80	7	3.30	3.10	3.00
Surface Treatment + Reconstruction <20%	60	75	6	3.30	3.10	3.00
Thin Overlay (1.5 - 2.0)	60	75	14	12.00	10.50	10.00
Thin Overlay + Reconstruction <10% (RR1)	60	75	13	12.75	11.25	10.75
Thin Overlay + Reconstruction <20% (RR2)	50	60	12	13.00	11.50	11.00
Moderate Overlay (2.0 - 3.0)	50	60	11	16.25	14.00	13.50
Moderate Overlay + RR1	50	60	10	17.25	15.00	14.50
Moderate Overlay + RR2	40	50	9	17.50	15.25	14.75
Thick Overlay (> 3.0)	40	50	3	19.75	17.00	16.25
Thick Overlay + RR1	40	50	2	21.00	18.25	17.50
Thick Overlay + RR2	25	40	1	21.25	18.50	17.75
Partial Reconstruction	25	40	4	62.00	49.50	47.00
Full Reconstruction	0	25	5	76.00	60.50	57.00

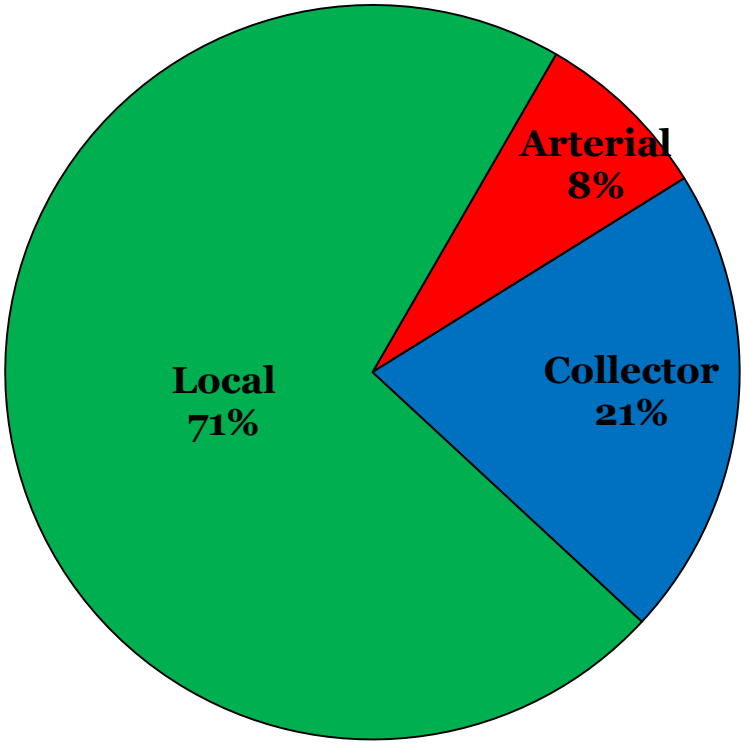
Program Statistics

- Roadway System
- Overall Condition Assessment
- Deferred Maintenance

Roadway System Summary

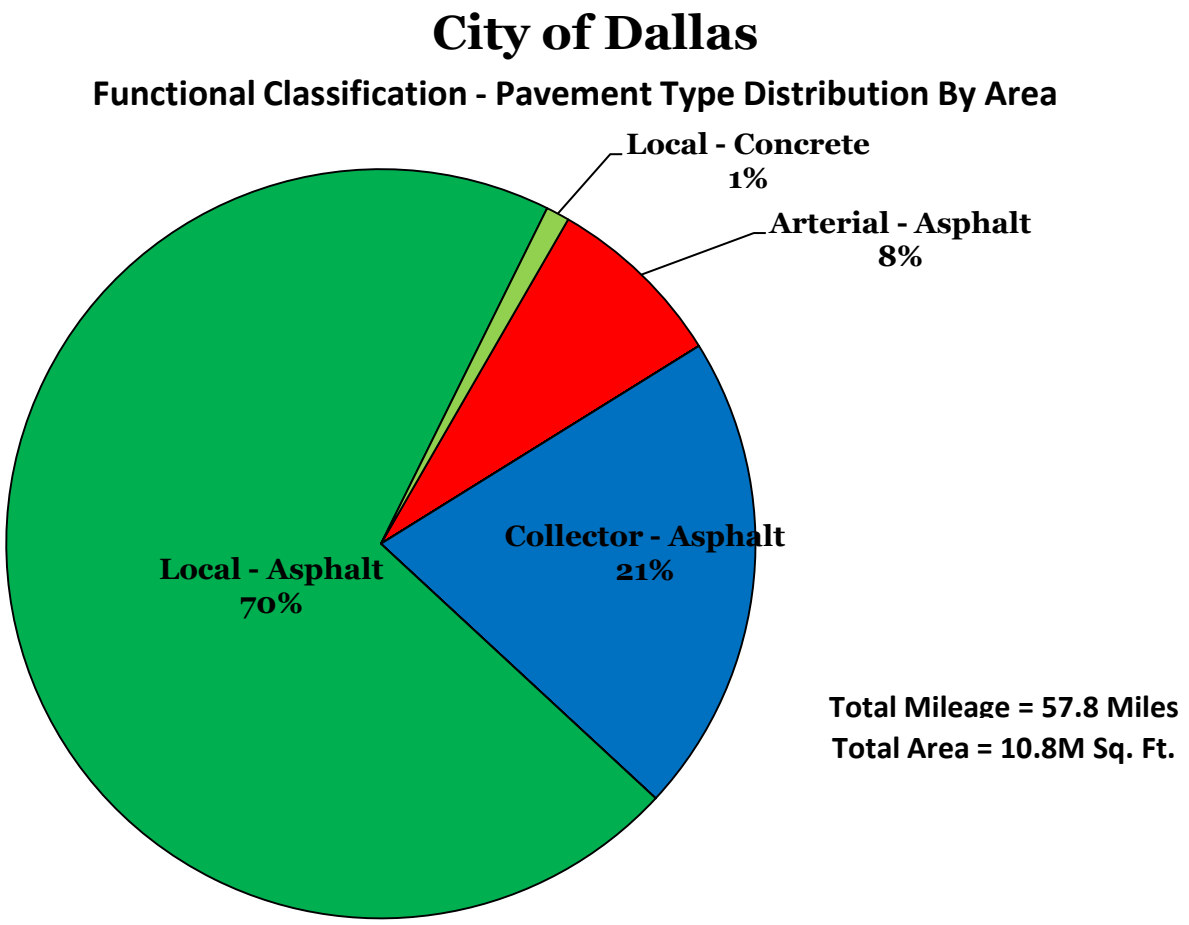
City of Dallas

Functional Classification Distribution By Area

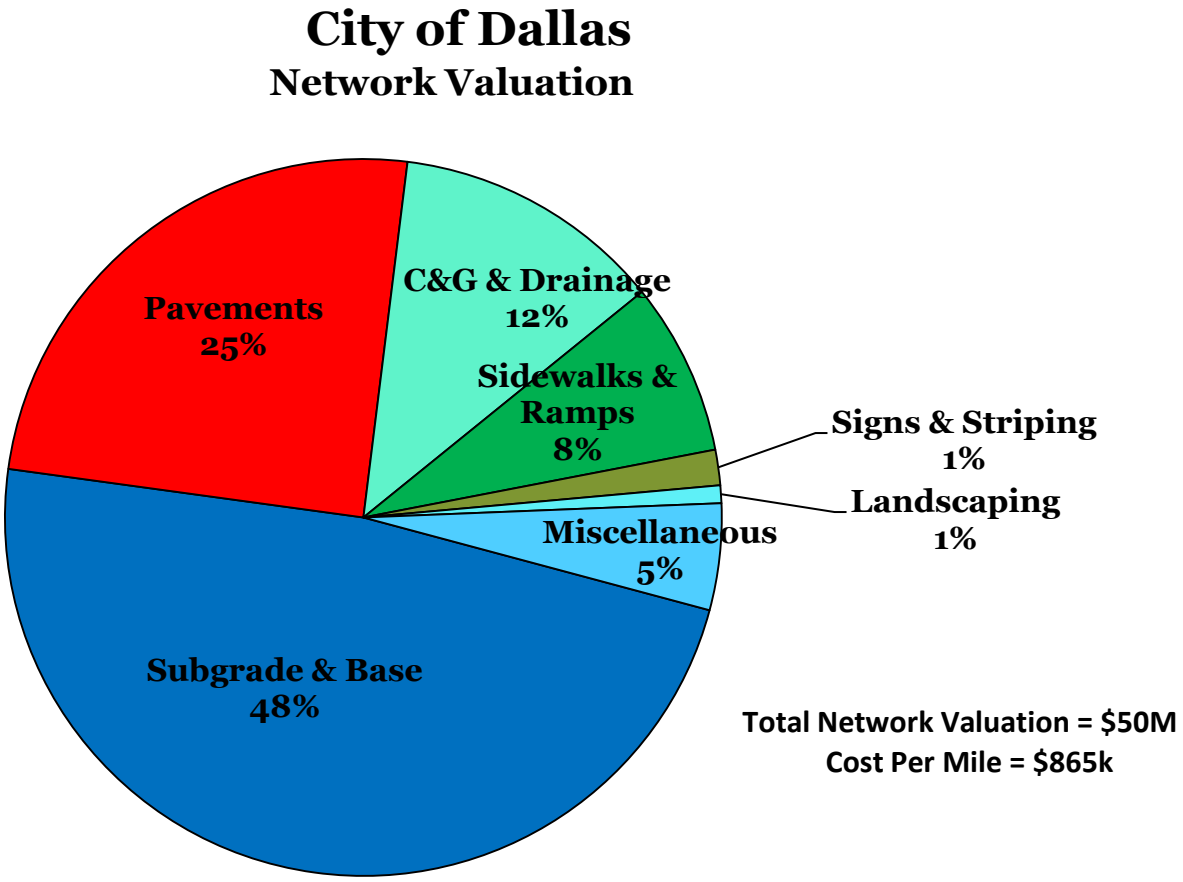


Total Mileage = 57.8 Miles
Total Area = 10.8M Sq. Ft.

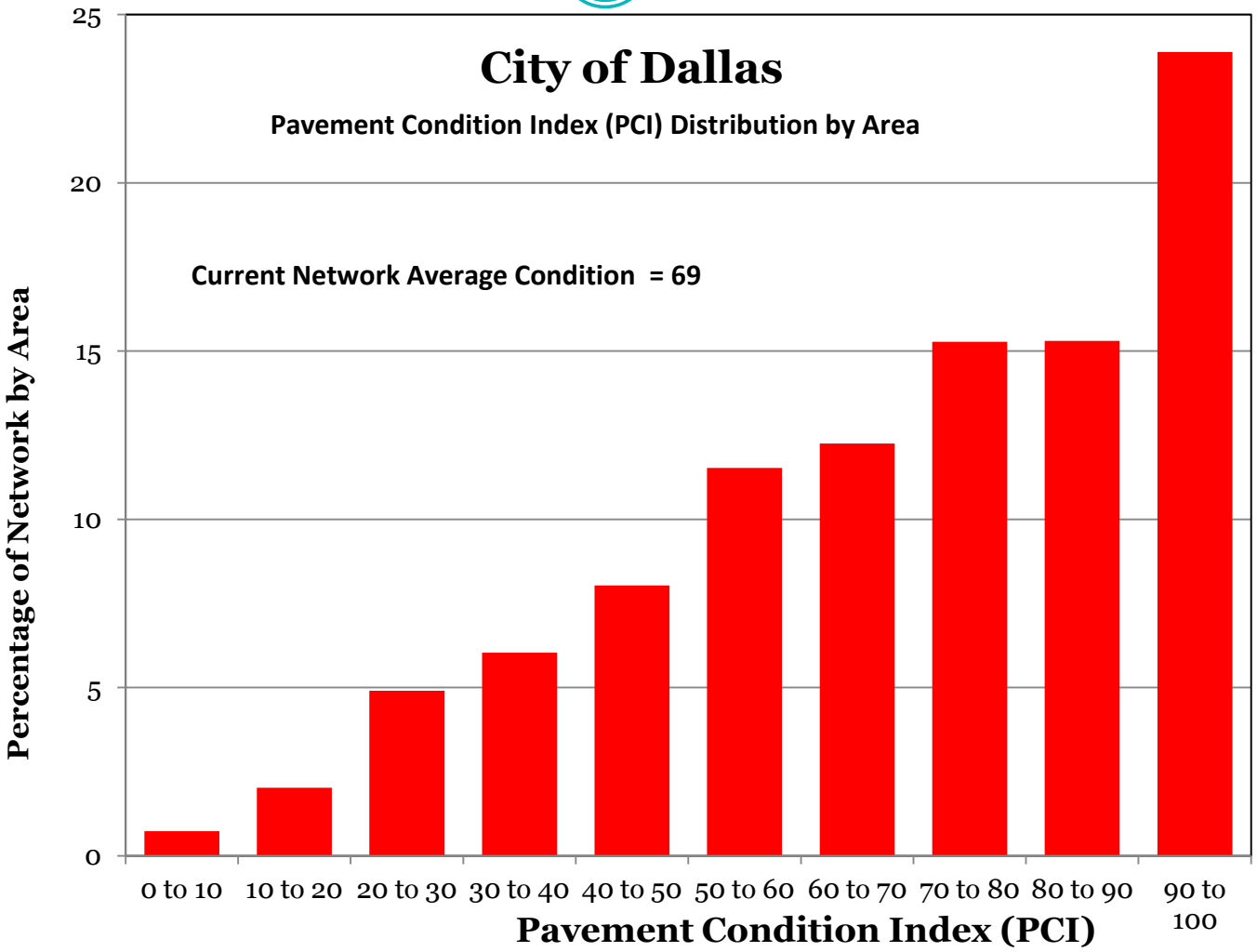
Roadway System Summary



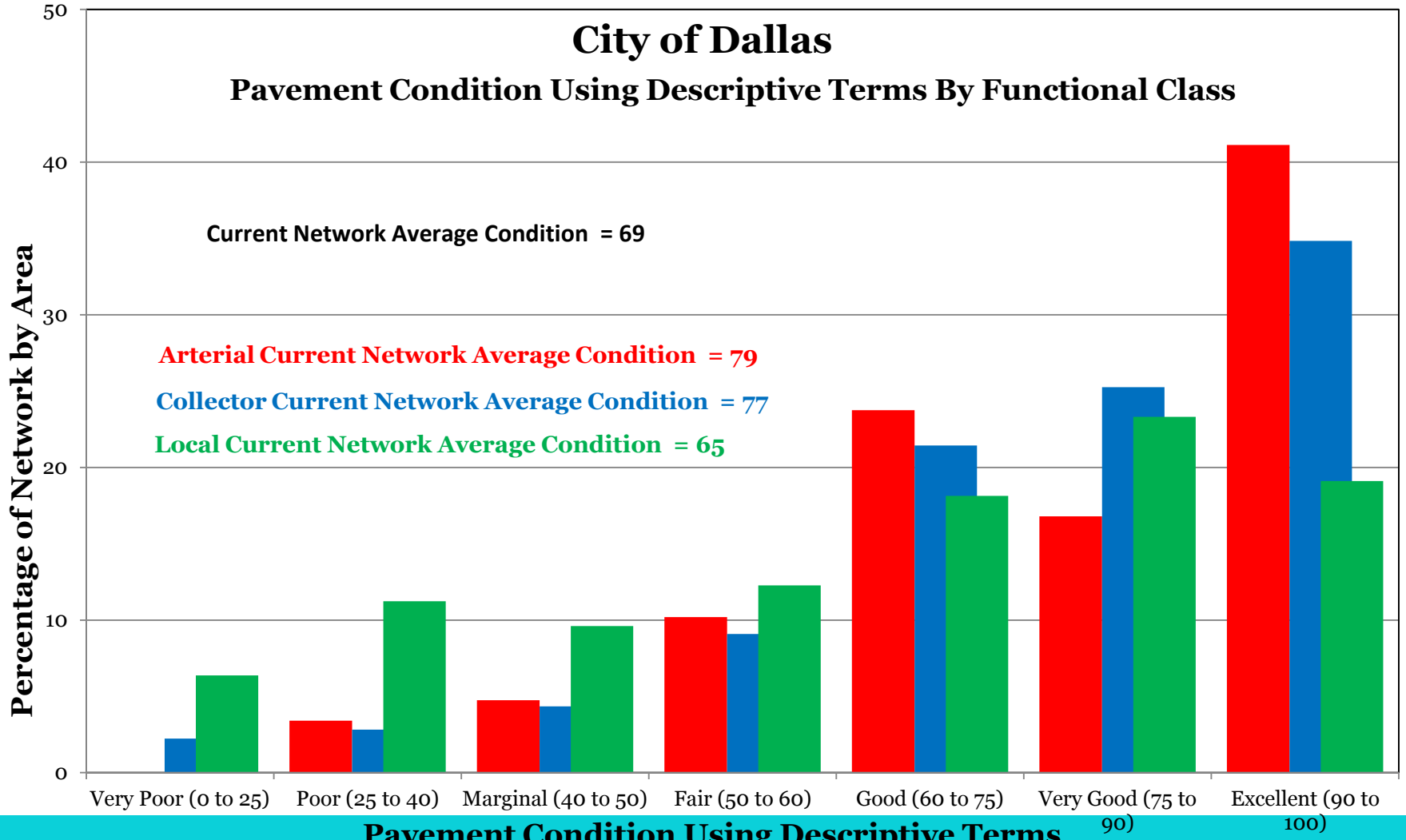
Roadway System Summary



Roadway Condition Summary



Roadway Condition Summary



Deferred Maintenance Summary

Estimate #1. - Based on Estimated Total Network Deficiency and Life Cycle Cost

Asphalt Deficiency	Total Cost ($)	% of Total	ART	COL	LOC	Life Cycle (years)	Life Cycle Cost ($)
Full Reconstruction	3,395,400	22.9	0	334,800	3,060,600	50	68,000
Partial Reconstruction	4,995,700	33.7	197,500	347,100	4,451,100	30	167,000
Thick Overlay	1,586,800	10.7	87,700	183,800	1,315,300	25	63,000
Moderate Overlay	1,866,900	12.6	154,800	315,700	1,396,400	20	93,000
Thin Overlay	2,354,400	15.9	266,700	558,800	1,528,900	15	157,000
Surface Treatment	232,200	1.6	6,200	50,900	175,100	10	23,000
Slurry Seal	329,600	2.2	26,900	74,600	228,100	5	66,000
Routine Maintenance	71,600	0.5	9,600	22,200	39,800	2	36,000
Total Asphalt Network:	**14,832,600**	**100**	**749,400**	**1,887,900**	**12,195,300**		**673,000**

Concrete Deficiency	Total Cost ($)	% of Total	ART	COL	LOC	Life Cycle (years)	Life Cycle Cost ($)
Moderate Pnl Rplcmnt	31,100	27.6	0	0	31,100	20	2,000
Slight Pnl Rplcmnt	81,600	72.4	0	0	81,600	20	4,000
Total Concrete Network:	**112,700**	**100**	**0**	**0**	**112,700**		**6,000**
Total Network :	**14,945,300**		**749,400**	**1,887,900**	**12,308,000**		**679,000**

Deferred Maintenance Summary

Estimate #2. - Based on Network Value Life Cycle Analysis

Pavement Type	Pavement Value ($)	Ultimate Life Span (yrs)	Life Cycle Annual Cost ($/yr)
Asphalt Network	49,107,000	75	650,000
Concrete Network	795,000	100	10,000
All Streets	**49,902,000**		**660,000**

- Average Expenditure During Last 15 years = $200,000/yr.

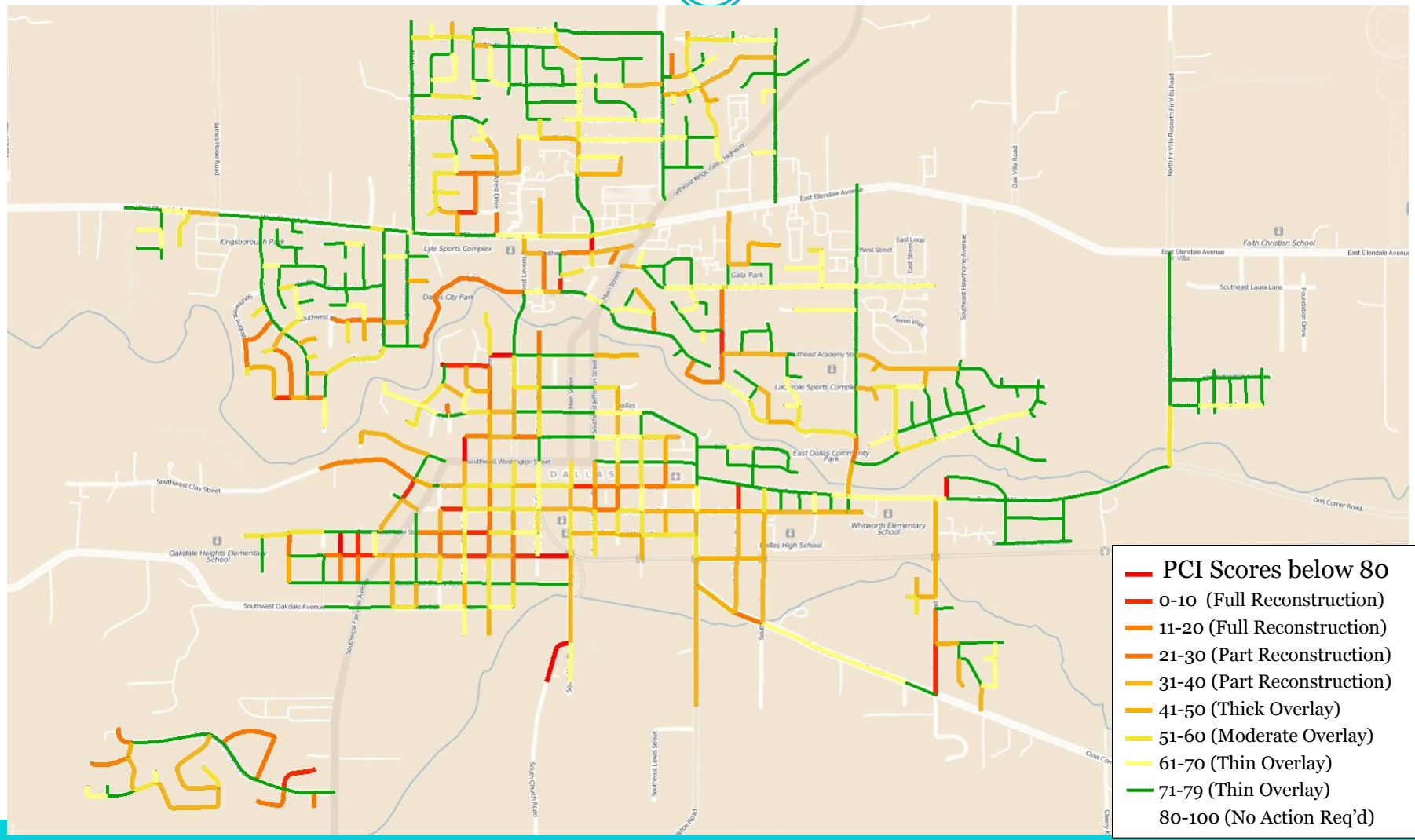
Worst Roadways List

On Street	From Street	To Street	Agency Functional Class	Model Functional Class	Pavement Type	Pavement Condition Index (PCI)	Condition Rating
10TH ST	CHERRY ST	BIRCH ST	Local	LOC	ACP	24	Very Poor
BRENTWOOD ST	SUNNY DR	HILLCREST DR	Local	LOC	ACP	24	Very Poor
MAPLE ST	BROWN ST	STUMP ST	Local	LOC	ACP	24	Very Poor
JEFFERSON ST	ASH ST	CLAY ST	Local	LOC	ACP	23	Very Poor
CLAY ST	WEST END	OREGON AVE	Collector	COL	ACP	23	Very Poor
HARDER AVE	SW END	RAINBOW AVE	Local	LOC	ACP	23	Very Poor
WALNUT AVE	WALNUT CR	UGLOW ST	Collector	COL	ACP	23	Very Poor
HAYTER ST	CRIDER ST	ALLGOOD ST	Local	LOC	ACP	22	Very Poor
LEWIS ST	CLAY ST	WASHINGTON ST	Local	LOC	ACP	22	Very Poor
HAYTER ST	ASH ST	CLAY ST	Local	LOC	ACP	22	Very Poor
NEEDHAM ST	WALNUT AVE	BIRCHWOOD DR	Local	LOC	ACP	22	Very Poor
LEVENS ST	BIRCH ST	MAPLE ST	Local	LOC	ACP	22	Very Poor
RAINBOW AVE	VIEW ST	JASPER ST	Local	LOC	ACP	22	Very Poor
COURT ST	ELLIS ST	HAYTER ST	Local	LOC	ACP	21	Very Poor
WOODRIDGE CT	WEST END	OAKWOOD DR	Local	LOC	ACP	21	Very Poor
GODSEY RD	MONMOUTH CUTO	ANA AVE	Local	LOC	ACP	20	Very Poor
ALAMEDA ST	ROBERT ST	SUNNY DR	Local	LOC	ACP	20	Very Poor

Worst Roadways List

On Street	From Street	To Street	Agency Functional Class	Model Functional Class	Pavement Type	(PCI)	Condition Rating
9TH ST	BIRCH ST	MAPLE ST	Local	LOC	ACP	19	Very Poor
BIRCH ST	10TH ST	9TH ST	Local	LOC	ACP	19	Very Poor
OREGON AVE	ASH ST	CLAY ST	Local	LOC	ACP	19	Very Poor
BIRCH ST	LEVENS ST	CHURCH ST	Local	LOC	ACP	19	Very Poor
CLAY ST	MAIN ST	JEFFERSON ST	Local	LOC	ACP	19	Very Poor
UGLOW ST	ACADEMY ST	IRONWOOD AVE	Local	LOC	ACP	18	Very Poor
HOWE ST	ASH ST	MILLER AVE	Local	LOC	ACP	18	Very Poor
VIEW ST	WALNUT AVE	NORTH END	Local	LOC	ACP	18	Very Poor
BIRCH ST	9TH ST	8TH ST	Local	LOC	ACP	17	Very Poor
BIRCH ST	ELLIS ST	HAYTER ST	Local	LOC	ACP	16	Very Poor
ASH ST	STUMP ST	ELLIS ST	Local	LOC	ACP	15	Very Poor
MARIETTA LN	NATALIE ST	SHEILA ST	Local	LOC	ACP	14	Very Poor
MAPLE ST	ELLIS ST	HAYTER ST	Local	LOC	ACP	13	Very Poor
ALLGOOD ST	CRIDER ST	HAYTER ST	Local	LOC	ACP	13	Very Poor
CRESTWOOD CT	CRESTWOOD PL	NE END	Local	LOC	ACP	12	Very Poor
ALLGOOD ST	ROBINHOOD DR	CRIDER ST	Local	LOC	ACP	11	Very Poor
CAMELLIA DR	MILLER AVE	WILLOW LN	Local	LOC	ACP	10	Very Poor
ELLIS ST	WASHINGTON ST	COURT ST	Local	LOC	ACP	10	Very Poor
10TH ST	BIRCH ST	MAPLE ST	Local	LOC	ACP	9	Very Poor
BIRCH ST	CHURCH ST	MAIN ST	Local	LOC	ACP	8	Very Poor
ALLGOOD ST	WEST END	ROBINHOOD DR	Local	LOC	ACP	7	Very Poor
ACADEMY ST	HAYTER ST	LEVENS ST	Local	LOC	ACP	6	Very Poor
JASPER ST	RAINBOW AVE	ELLENDALE AVE	Local	LOC	ACP	4	Very Poor
CHURCH ST	SW END	MAIN ST	Local	LOC	ACP	1	Very Poor

Roadway Condition Map



Next Steps

- Development of Capital Improvement Program.
- Public Education & Awareness.
- Consider Recommendations from CAC.
- Other Funding Options…

Questions