



## WESTMINSTER

### Staff Report

TO: The Mayor and Members of the City Council

DATE: March 28, 2012

SUBJECT: Study Session Agenda for April 2, 2012

PREPARED BY: J. Brent McFall, City Manager

**Please Note: Study Sessions and Post City Council meetings are open to the public, and individuals are welcome to attend and observe. However, these meetings are not intended to be interactive with the audience, as this time is set aside for City Council to receive information, make inquiries, and provide Staff with policy direction.**

Looking ahead to next Monday night's Study Session, the following schedule has been prepared:

*A light dinner will be served in the Council Family Room*

6:00 P.M.

#### CITY COUNCIL REPORTS

1. Discussion on Boards & Commissions Appointments
2. Report from Mayor (5 minutes)
3. Reports from City Councillors (10 minutes)

#### PRESENTATIONS

6:30 P.M.

1. Pavement Management Presentation
2. City Council Retreat Discussion Items

#### EXECUTIVE SESSION

1. Obtain Direction from City Council re proposed Amendment to the Economic Development Incentive Agreement with Synchroness, Inc. pursuant to WMC 1-11-3(C)(4), WMC 1-11-3 (C)(7) and CRS 24-6-402(4)(e)
2. Obtain Direction from City Council re proposed Economic Development Incentive Agreement with System United Federal Credit Union (SunCorp) pursuant to WMC 1-11-3(C)(4), WMC 1-11-3 (C)(7) and CRS 24-6-402(4)(e)

#### INFORMATION ONLY ITEMS

None at this time.

Additional items may come up between now and Monday night. City Council will be apprised of any changes to the Study Session meeting schedule.

Respectfully submitted,

J. Brent McFall  
City Manager



# WESTMINSTER

## Staff Report

Information Only Staff Report  
April 2, 2012



SUBJECT: Pavement Management Presentation

PREPARED BY: Kurt Muehlemeyer, Pavement Management Coordinator  
Dave Cantu, Street Operations Manager

### Summary Statement

This report is for City Council information only and requires no action by City Council.

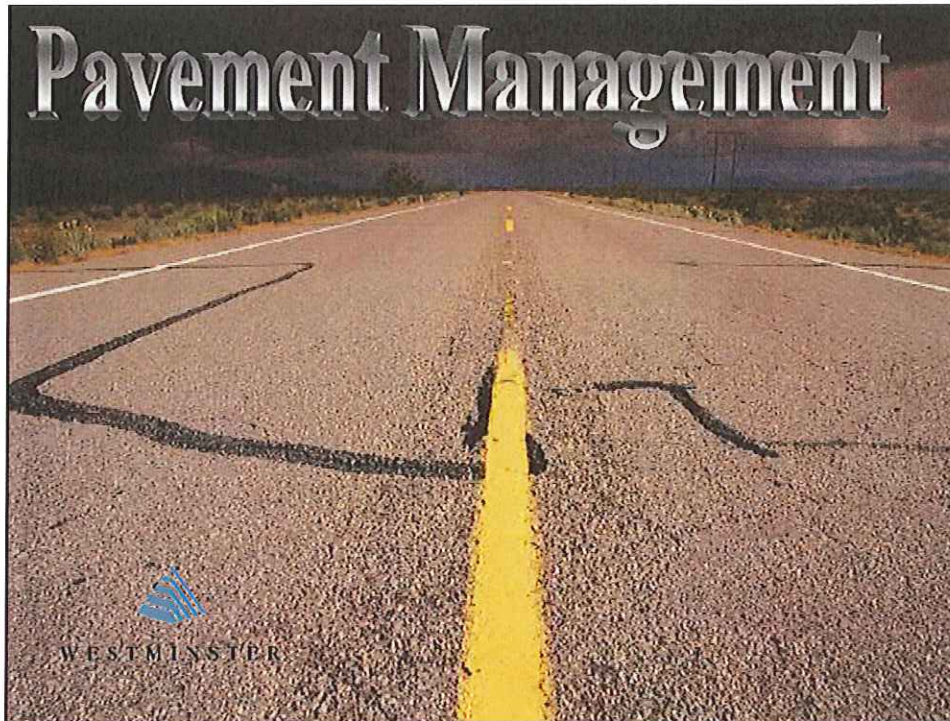
### Background Information

- The Department of Public Works and Utilities staff will make a PowerPoint presentation regarding the condition of the City's street network.
- Key Points of the presentation are:
  - Summary of Pavement Management Program and how it works.
  - The overall condition of the street network.
  - The techniques used to maintain City streets.
  - How increased oil costs and inflation have impacted street maintenance since 2005.
  - Staff's pavement management projections over the next 5 years (2012-2017) based on funding levels that are status quo or with an annual increase for inflation.
  - Attached is a hard copy of this presentation for reference and review.

Respectfully submitted,

J. Brent McFall  
City Manager

Attachment: Presentation Slides



## Pavement Management 101

"A set of **tools** or methods that assist decision-makers in finding optimum strategies for providing, evaluating and maintaining pavements in a serviceable condition over a period of time"

(AASHTO)

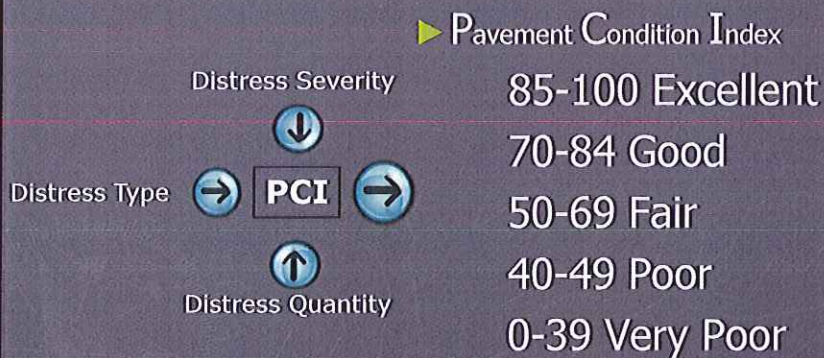
## What Pavement Management Does

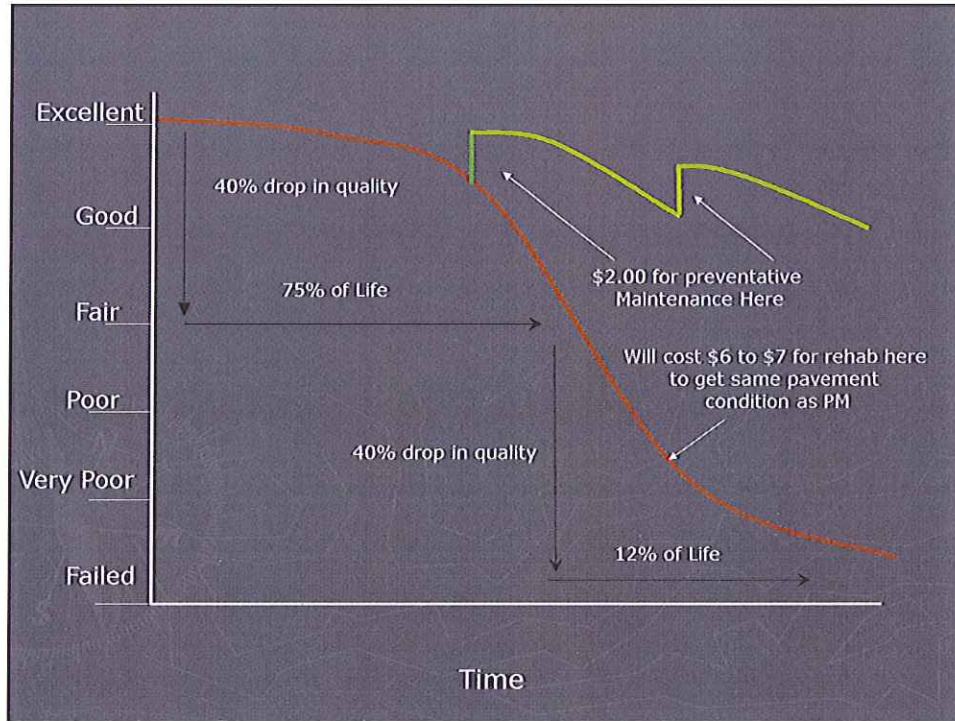
### ► Network Level Analysis

A computerized system that looks at the entire street network, provides condition assessment, projection of future deterioration and develops priorities for rehabilitation (Not Worst First)

System is predicated on criteria established by FHWA, U.S. Army Corps of Engineers, AASHTO, The Asphalt Institute and ASTM

## Pavement Condition Index





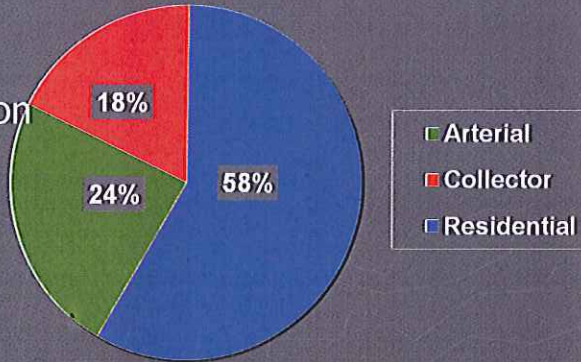
## Street Classification

- ▶ Arterial > 10,000 Average Daily Traffic
- ▶ Collector >1,000 & <10,000 Average Daily Traffic
- ▶ Residential <1,000 Average Daily Traffic

Speed Limit and intended use also help in determining classification

# Street Classifications

- Arterial-1.9 million square yards  
(263 lane miles)
- Collector-1.4 million square yards  
(199 lane miles)
- Residential- 4.5 million square yards  
(638 lane miles)



# Infralogix & GIS

**Info LOGIX**

- Hide Menu
- Inventory**
- Refresh View
- Search Filter
- Edit
- Change to Segment
- Add
- Enter Condition Ratings
- Reports**
- Create Inventory Report
- Refresh Report
- Budget**
- Define Budget
- Select Budget
- Administration**
- Maintain Value Lists
- Schedules Tasks
- List of Users
- Repair Unit Costs
- My Profile
- Logout

Record 3405 of 8856

Find ID: [input type="text"]

Dead End:	Simms Str	Block #:	14	Development:	
From:	Westmoor Dr	ROW Length:	0.0 (ft)	ROW Width:	155.0 (ft)
Address Direction:	North	Beginning:	11200	Ending:	11250
Maintained By:	Westminster	Maintenance Area:	A4	Rating Schedule:	Yearly
ID:	21600	Out Dated:	<input type="checkbox"/>		
Remarks:					

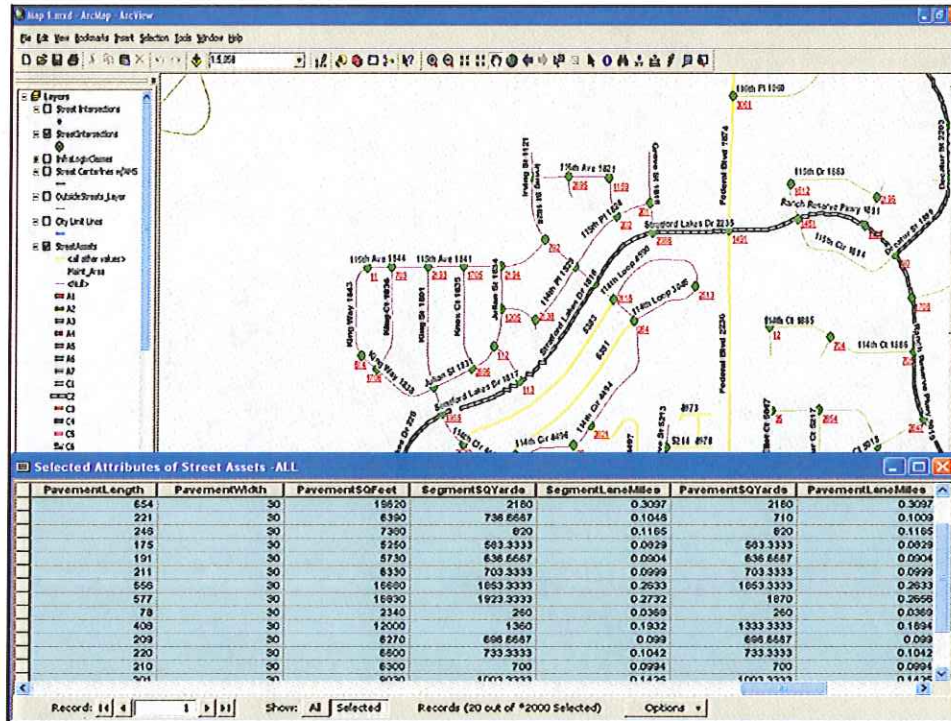
(ID: 2042-) Simms Str & W Westmoor Dr

Cross Section

Shoulder

Lane 1

Shoulder



# Windshield Inspections

Arterials- 100% annually  
 Collectors- 50% annually  
 Residentials- 33% annually

Use specific guidelines to identify quantity and severity of FHWA established distresses

Year	Condition	Rating	Recommendation
2011	Excellent	100	No Maintenance Asphalt

0 Alligator Cracking : [ ] [ ] [ ] [ ]  
 0 Cracking : [ ] [ ] [ ] [ ] [ ] High Edge [ ] [ ]  
 0 Patching : [ ] [ ] [ ] [ ] [ ] Low Edge [ ] [ ]  
 0 Raveling : [ ] [ ] [ ] [ ] [ ] [ ] Spalled Edge : [ ] [ ]  
 0 Rubbing : [ ] [ ] [ ] [ ] [ ] [ ]  
 0 Settling : [ ] [ ] [ ] [ ] [ ]  
 0 Skidding : [ ] [ ] [ ] [ ] [ ]

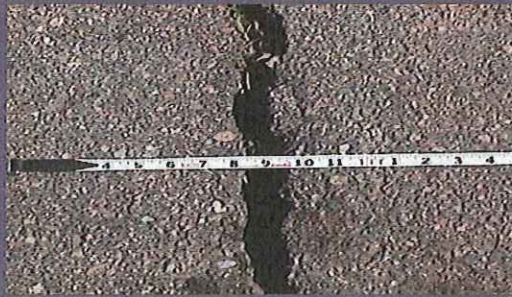
Remarks: [ ]

# Point Deducting Pavement Distress

1. Alligator Cracking



2. Cracking



3. Patching



4. Raveling



5. Rutting

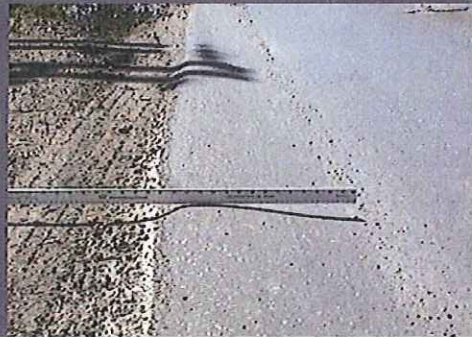




## 6. Settling



## 7. Shoving



## 8. Ride

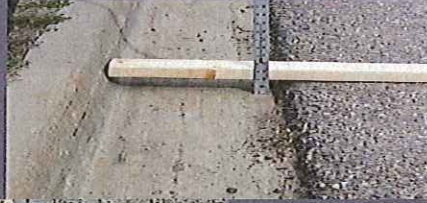
The ride of the pavement is the degree of riding comfort that the pavement provides the user. The inspectors will drive over the pavement segment at the speed classifying the pavement's ride comfort according to descriptions given below. The extreme right travel lane shall be driven in both directions on multilane segments. This rating should not be influenced by the appearance.

Severity	
Excellent	
Good	Smooth drive at the speed limit with one or two areas of isolated roughness.
Fair	Some roughness and bumps when driving the posted speed limit.
Poor	Inspector experiences roughness and bumps while driving the segment at the posted speed limit. Some situations may occur to cause the driver to operate the vehicle at a speed lower than the speed limit.
Critical	Difficult or impossible to safely handle the vehicle when adhering to the posted speed limit.



## Non-Point Deducting Pavement Conditions

9. High Edge



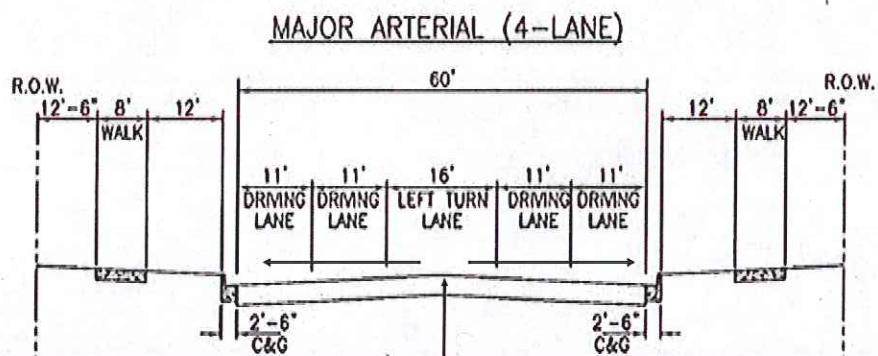
10. Low Edge



11. Separated Edge



12. Crown



Minimum 0.5% grade from center of road to gutter  
Preferably around 2%

Year	Condition	Rating	Recommendation
2011	Excellent	100	No Maintenance Asphalt
Alligator Cracking :	1% to 5%		Ride :
Cracking :		High	High Edge :
Patching :		Moderate	Low Edge :
Ravelling :		Low	Separated Edge :
Rutting :			Crown :
Settling :			
Shoving :			
Remarks :			

Year	Condition	Rating	Recommendation
2011	Excellent	90	Patching Asphalt
Alligator Cracking :	1% to 5%	Moderate	Ride :
Cracking :			High Edge :
Patching :			Low Edge :
Ravelling :			Separated Edge :
Rutting :			Crown :
Settling :			
Shoving :			
Remarks :			

**[.] Condition Ratings**


Year	Condition	Rating	Recommendation
2011	Fair	69	Sealcoat Asphalt
Alligator Cracking :	1% to 5%	Low	Ride : Good
Cracking :	1% to 20%	Moderate	High Edge :
Patching :			Low Edge :
Ravelling :	Over 10%	Moderate	Separated Edge :
Rutting :	1% to 20%	Low	Crown : Acceptable
Settling :	1 to 3 occur	Low	
Shoving :			

Remarks :

**Cost Recommended Repair \$ 43914.75**

Crack/Joint Sealing (9732.000 Linear Foot)	\$ 3211.50
Out Patching (436.917 Square Yards)	\$ 12172.92
Leveling (264.761 Tonnage by Depth)	\$ 6519.02
Sealcoat (9739.333 Square Yards)	\$ 24111.25

Last Updated: gisUpdate 03/29/2011 03:04:47.623 MST



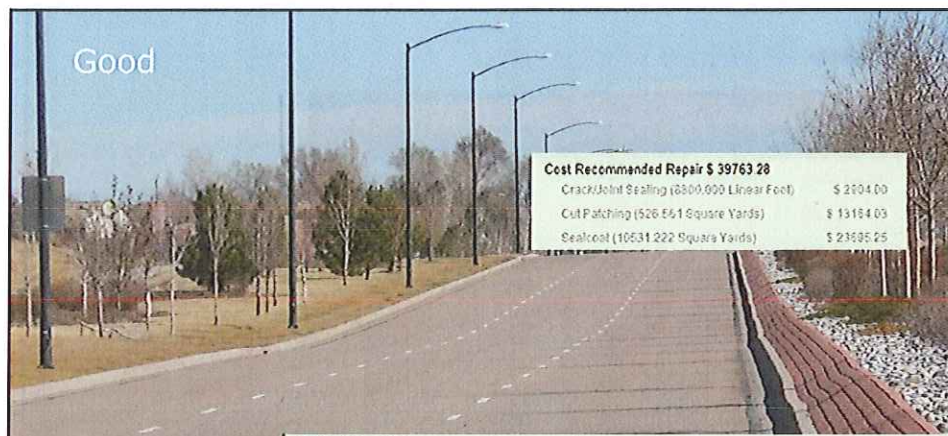
**Fair**

**Cost Recommended Repair \$ 43914.75**

Crack/Joint Sealing (9732.000 Linear Feet)	\$ 3211.50
Cut Patching (486.917 Square Yards)	\$ 12172.92
Leveling (264.761 Tonnage by Depth)	\$ 6619.02
Sealcoat (9729.333 Square Yards)	\$ 21311.25

**[ ] Condition Ratings**

Year	Condition	Rating	Recommendation	
2011	Fair	69	Sealcoat	Asphalt
Alligator Cracking :	1% to 5%	Low	Ride :	Good
Cracking :	1% to 20%	Moderate	High Edge :	
Patching :			Low Edge :	
Ravelling :	Over 10%	Moderate	Separated Edge :	
Rutting :	1% to 20%	Low	Crown :	Acceptable
Settling :	1 to 3 occur	Low		
Shoving :				
Remarks :				



**Good**

**Cost Recommended Repair \$ 39763.28**

Crack/Joint Sealing (6800.000 Linear Feet)	\$ 2004.00
Cut Patching (526.661 Square Yards)	\$ 13164.03
Sealcoat (10631.222 Square Yards)	\$ 23595.25

**[ ] Condition Ratings**

Year	Condition	Rating	Recommendation	
2011	Good	81	Sealcoat	Asphalt
Alligator Cracking :			Ride :	Good
Cracking :	1% to 20%	Moderate	High Edge :	
Patching :	1% to 10%	Moderate	Low Edge :	
Ravelling :	Over 10%	Low	Separated Edge :	
Rutting :			Crown :	
Settling :				
Shoving :				
Remarks :				



# 2011 Pavement Rating Results

## Pavement Condition Index

85-100 Excellent	39%	3,039,000 Sq yards
70-84 Good	46%	3,503,500 Sq yards
50-69 Fair	12%	934,200 Sq yards
40-49 Poor	2%	155,800 Sq yards
0-39 Very Poor	1%	76,000 Sq yards

Citywide Average PCI: 79

## Past and Present

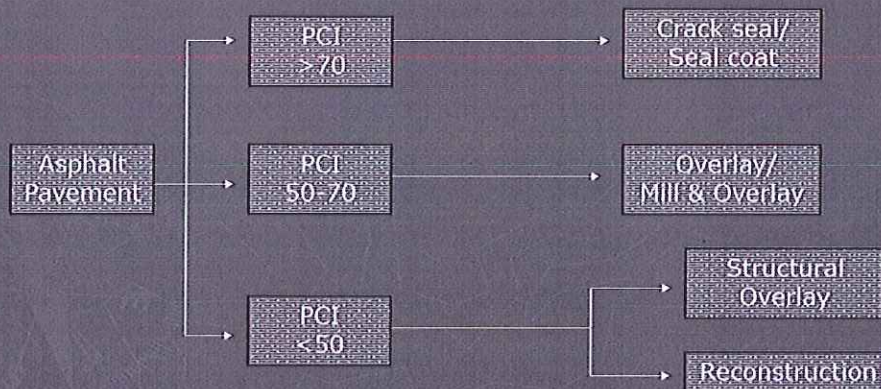
Year	Citywide Average Pavement Condition Rank	Target Citywide Average Pavement Condition Rank
1994	65	70
1994	68	70
2004	70	70
2005-2009	75	75
2011	79	75

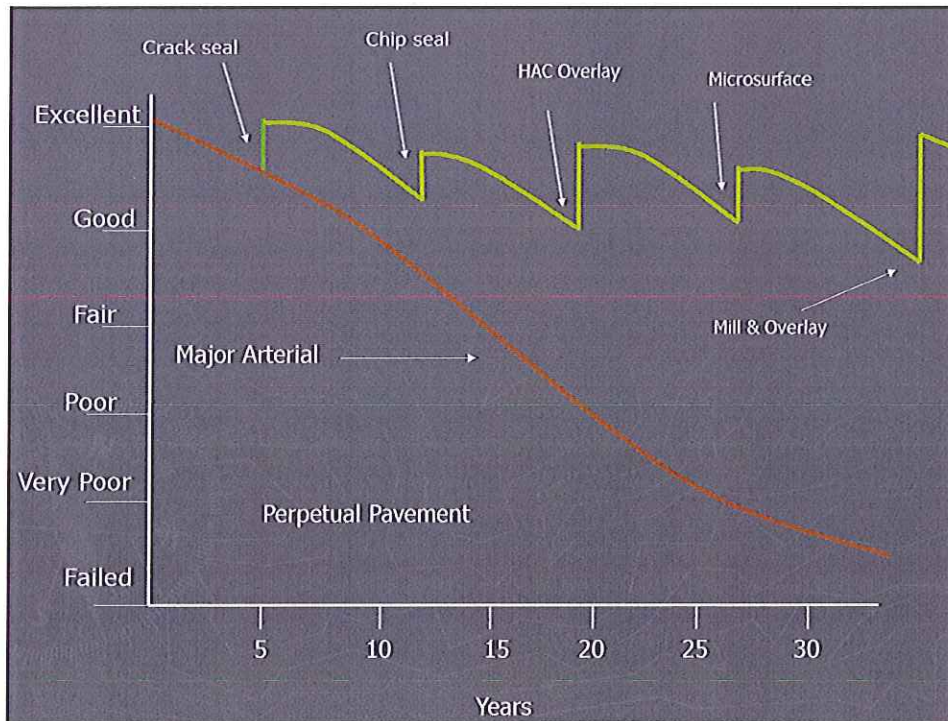
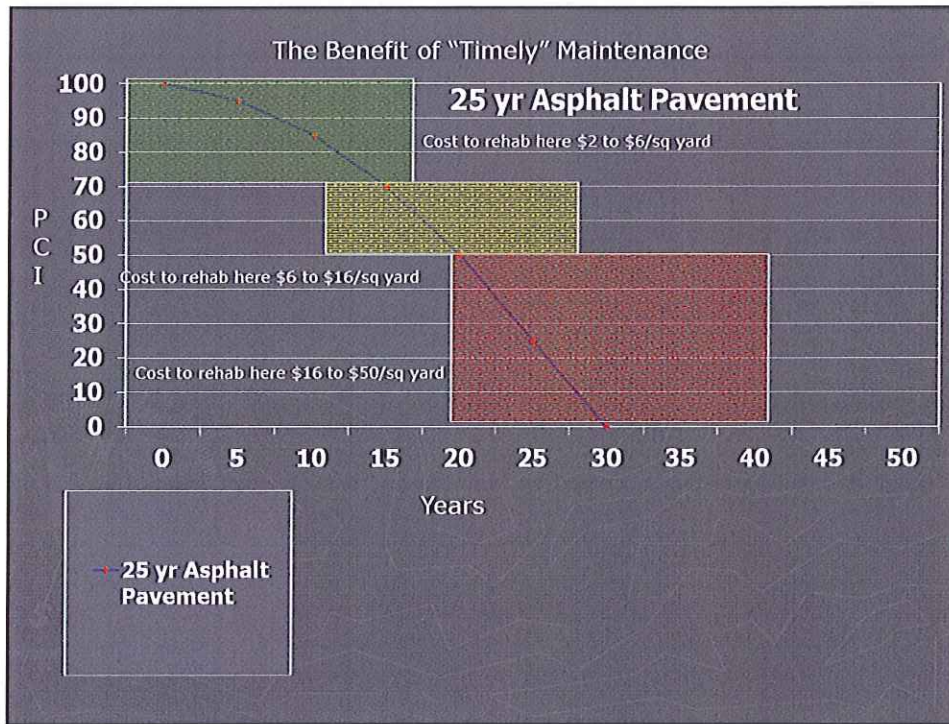
## Past and Present Benchmarks

- ✓ Perform Pavement Rehabilitation to every arterial, collector and industrial roadway every 6 years.
  - Increase in costs have reduced this to: Arterials every 8 Years and Collectors every 10 years.
    - Arterial- 238,000 Sq yards/year
    - Collector- 140,300 Sq yards/year
  - ✓ Perform Pavement Rehabilitation to every residential roadway every 12 years.
  - Current Funding allows us to rehabilitate residential roadways every 10 to 12 years
    - Residential- 408,450 Sq yards/year
- Total- 786,750 Sq Yards/year

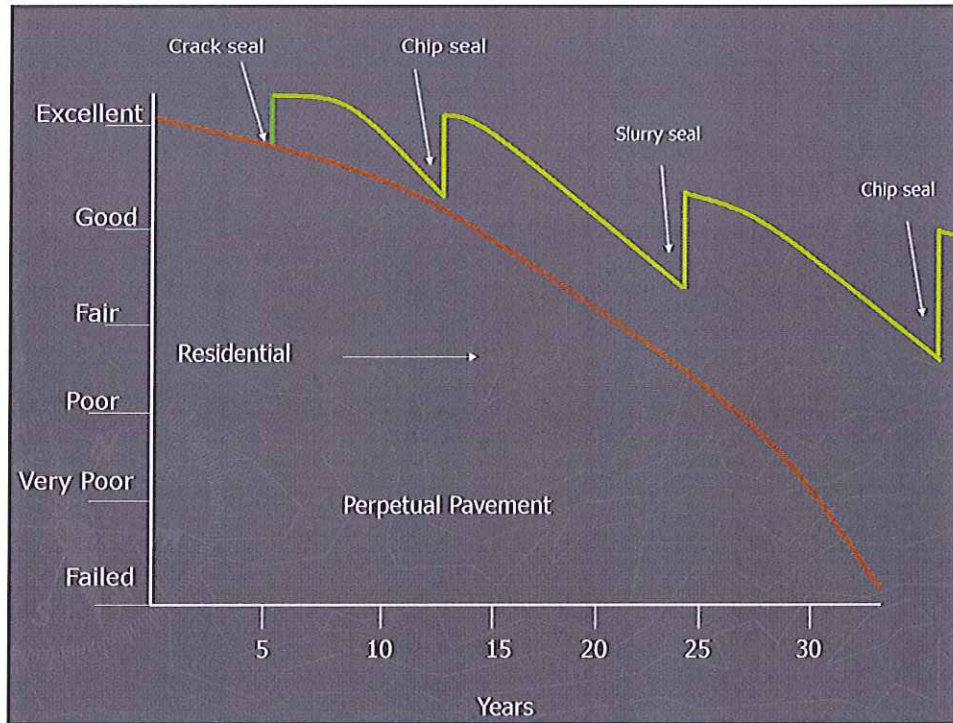


## Preventative Maintenance & Rehab Decision Tree

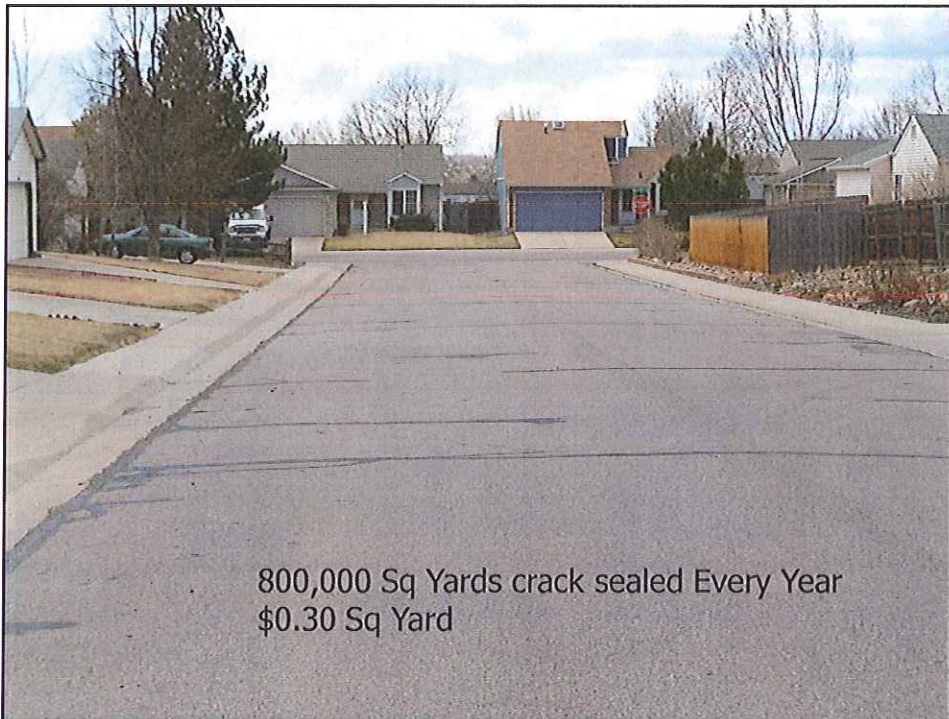








## Crack Seal



800,000 Sq Yards crack sealed Every Year  
\$0.30 Sq Yard

# Patching



## Patching Quantities & Types

- ▶ An average of 15,225 tons of hot mix asphalt is used annually to patch distressed pavement areas and utility excavations. (contracted & City Crews)
- ▶ Patching types include: Various depth cut patching, skin patching and leveling.  
Cost- \$15-\$30/square yard

## Seal Coat



## Slurry Seal



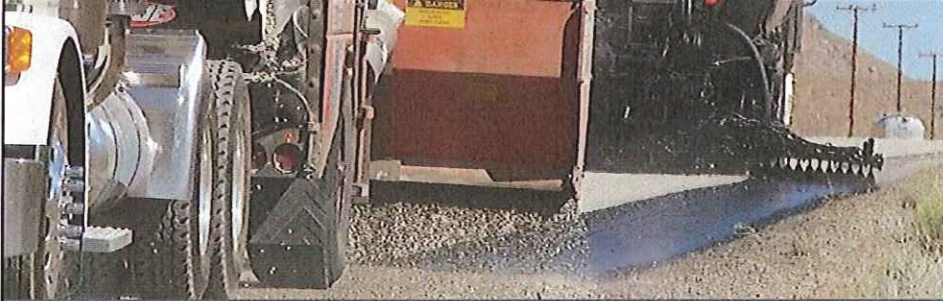
Slurry seal is: A mixture of fine aggregate, asphalt emulsion, water & mineral filler.

Expected life-7 to 10 years

### ► Benefits

1. Cost \$1.65/Sq yard
2. Aesthetics
3. Stops oxidation/Seals Pavement Surface
4. Good Skid resistance

## Chip Seal



- ▶ Process
- 1. Application of asphalt emulsion
- 2. Layer of 1/4" or 3/8" aggregate
- 3. Sweep up loose aggregate
- 4. Fog coat
- 5. Final sweeping of loose aggregate

## Chip Seal

Expected life-8 to 12 years

- ▶ Benefits
- 1. Cost \$2.20/Sq Yard
- 2. Stops oxidation/Seals Pavement Surface
- 3. Resists cracking
- 4. Excellent skid resistance
- 5. Cure time is minimal



## Microsurfacing



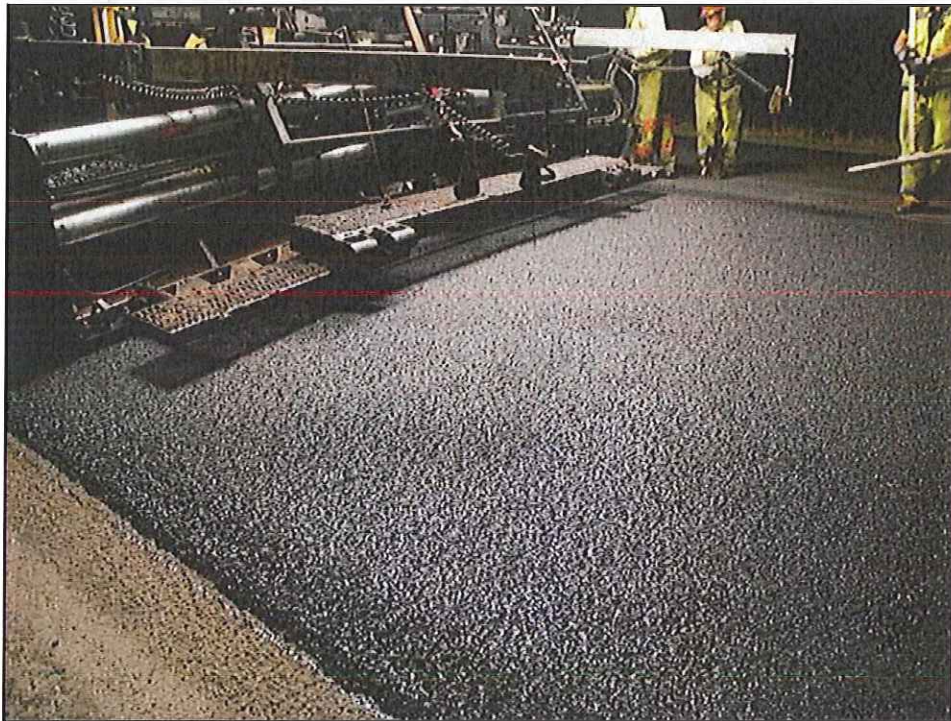
- Similar to slurry seal
- More polymers to increase rut resistance
- Used on Collector & Arterial roadways

Expected life-8 to 10 years

### ► Benefits

1. 1-2 hour cure time
2. Resists rutting
3. Stops oxidation/Seals Pavement Surface
4. Good skid resistance
5. Cost \$3.98/Sq yard

## Hot Applied Chip Overlay





- Applied on top of a chip seal
- Application similar to an HMA overlay
- Very Thin < 1" (not structural)
- Open graded course aggregate

Expected life-8 to 12 years

► Benefits

1. Improves Ride ability
2. Looks like a new road
3. Quiet
4. Stops oxidation/ Seals Pavement Surface
5. Good skid resistance
6. Repairs Minor Rutting
7. Cost \$5.48/Sq yard

## Hot Mix Asphalt Overlay



### HMA Overlay Types

1. Thin - 1" (not recommended)
2. Standard- 2" (edge milling required)
3. Structural – 3" (edge or full width milling required)

Expected life- 10 to 25 years

#### Benefits

- Adds structural Strength
- Completely new riding surface
- Looks like a new road

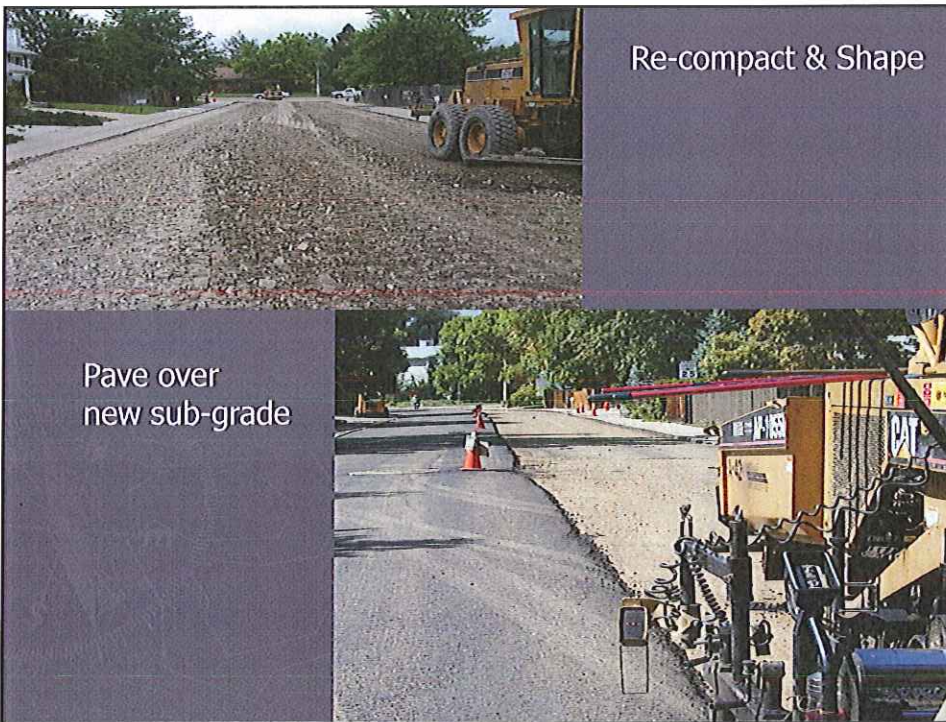
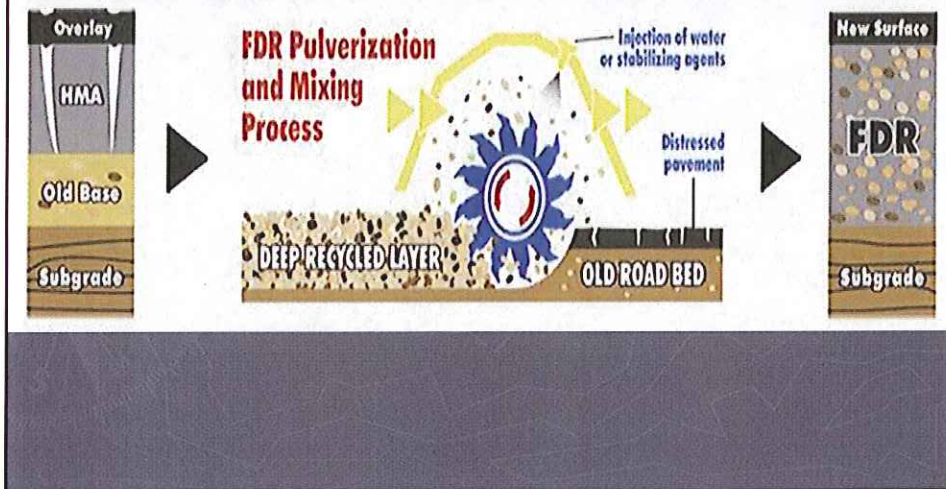
#### Costs

- Arterial/Collector- \$7.00 to \$16.00 per Sq. Yard
- Residential- \$4.00 to \$10.00 per Sq. Yard

## Reconstruction



# Full Depth Reclamation



### Reconstruction By Road Classification

1. Residential - 5"
2. Collector- 7-10" (Depending on Traffic Loads)
3. Arterial- >10" (Depending on Traffic Loads)

Expected life- 15 to 25 years

#### Benefits

- Solidify Sub Grade
- Completely new riding surface

#### Costs

- Arterial/Collector- \$20 to \$60 per Sq. Yard
- Residential- \$15 to \$30 per Sq. Yard

Soil stabilization, using fly ash, Portland cement or hydrated lime may be required if conditions are extremely poor. Can double recon costs.

## Rehab Costs



### ► Major Arterial

Sheridan Blvd, U.S. 36 to 96<sup>th</sup> Ave

45,042 sq Yards

<u>2" Mill and O.L.</u>	<u>3" Mill and O.L.</u>	<u>12" Reconstruction</u>	<u>Microsurface</u>
\$500,806	\$748,493	\$1,959,327	\$204,309
\$11.11/sq Yard	\$16.62/sq Yard	\$43.50/sq Yard	\$4.50/sq Yard

Internal Goal: Rehabilitate Arterial Roads every 8 years.

1,900,000 sq Yards of Arterial Pavement = 238,000 sq Yards every Year

► **Collector**

90<sup>th</sup> Ave Wadsworth Pkwy to Field St & Field St 90<sup>th</sup> Ave to 88<sup>th</sup> Ave

28,887 sq Yards



<u>2" Mill &amp; O.L.</u>	<u>7" Reconstruction</u>	<u>HAC Overlay</u>
\$223,134	\$713,350	\$167,545
\$7.72/sq Yard	\$24.70/sq Yard	\$5.80/sq yard

Internal Goal: Rehabilitate Collector Roads every 10 years.

1,403,000 sq Yards of Collector Pavement = 140,300 sq Yards every Year

► **Residential**

2,000 sq Yards (Average Residential Street)



<u>Chip Seal</u>	<u>2" O.L.</u>	<u>Reconstruction</u>
\$5,000	\$12,640	\$35,960
\$2.50/sq Yard	\$6.32/sq Yard	\$17.98/sq Yard

An average subdivision with 50 streets this size would = 100,000 sq Yards

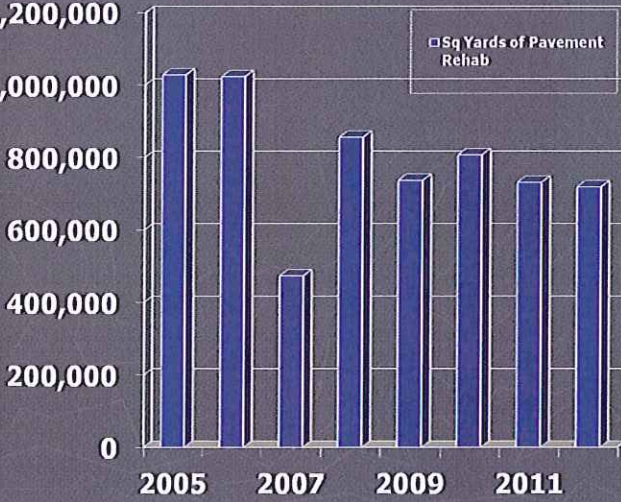
Internal Goal: Rehabilitate Residential Roads every 10 to 12 years.

4,493,000 sq Yards of Residential Pavement = 408,450 sq Yards every Year

# Budget and Rehab Totals

Street Contractual  
Maintenance Budget

- ▶ 2005- \$3.3 million **1,200,000**
- ▶ 2006- \$3.5 million
- ▶ 2007- \$3.4 million
- ▶ 2008- \$3.5 million
- ▶ 2009- \$3.6 million
- ▶ 2010- \$3.7 million
- ▶ 2011- \$3.5 million
- ▶ 2012- \$3.6 million



# Inflation

UNITED STATES DEPARTMENT OF LABOR  
 BUREAU OF LABOR STATISTICS  
**CPI Inflation Calculator**

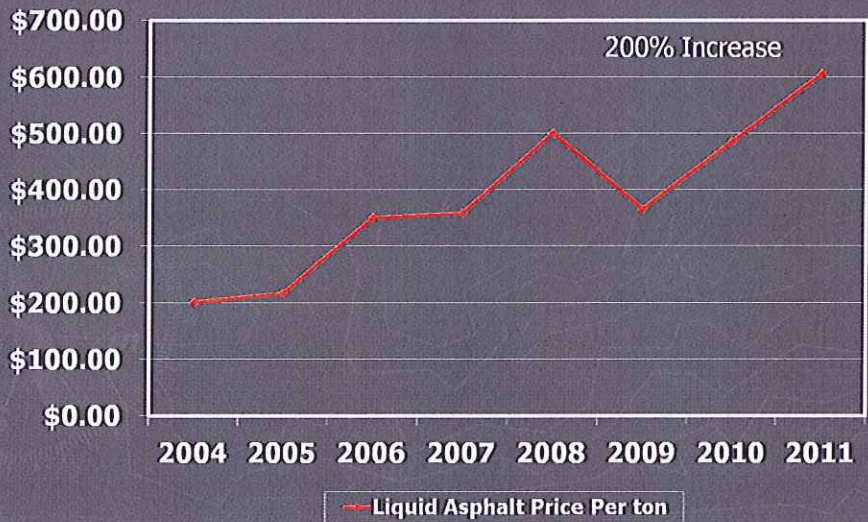
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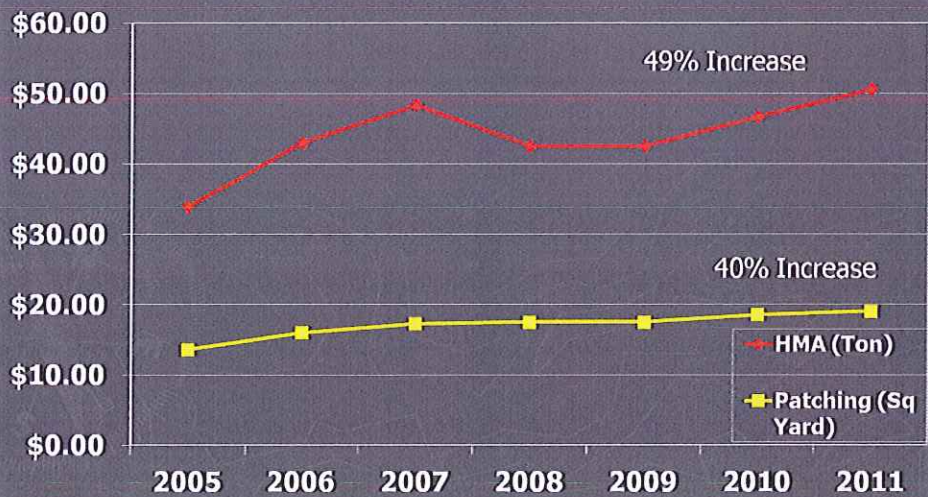
Has the same buying power as:

in

## 7 Year Cost Analysis of Liquid Asphalt



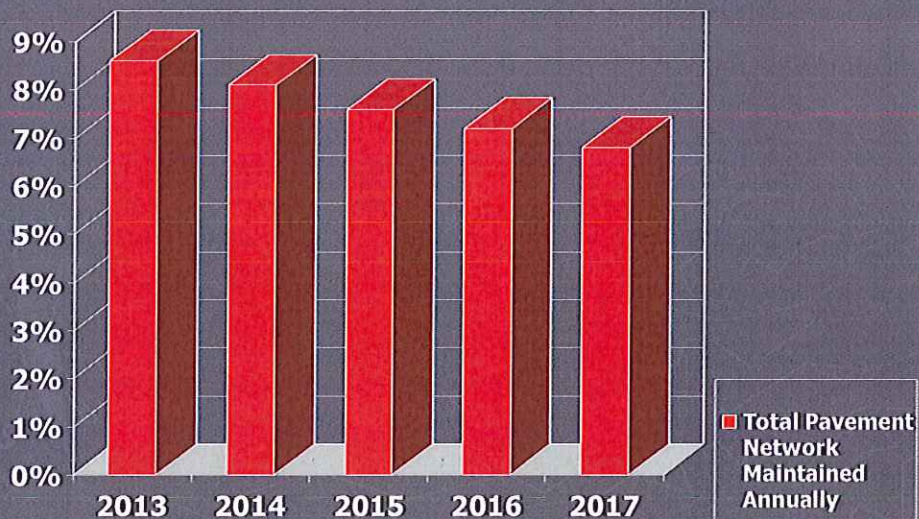
## Asphalt Prices



## Chip Seal Prices



## Projected Percent of Street Network Maintained at Current Funding Levels





# Rule of Thumb

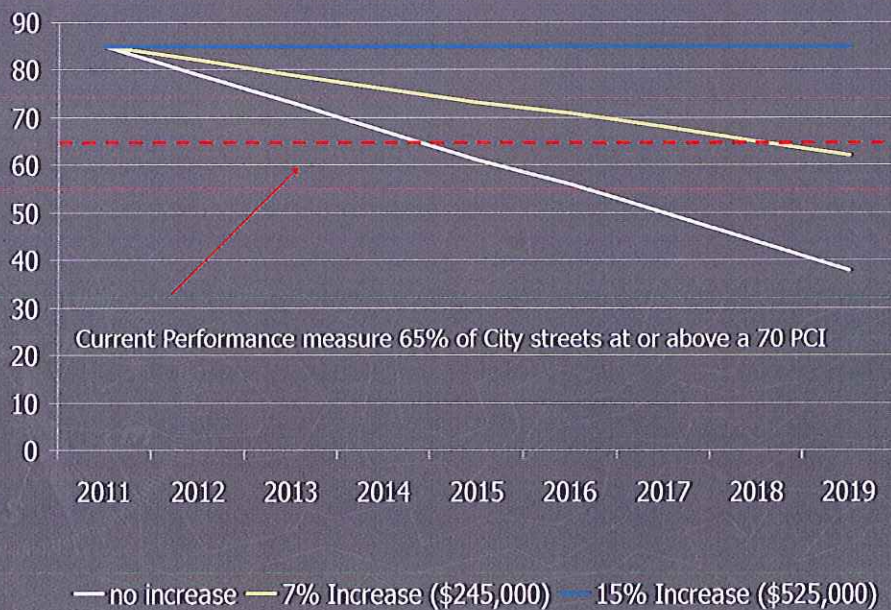


"An average section of asphalt pavement will lose 3 points, on a PCI scale, every 12 months without maintenance or rehabilitation."

(Asphalt Institute)

Based on this information the following will occur in 2012  
17% excellent to good (1,324,000 sq Yards)  
6.4% good to fair (500,000 sq Yards)  
6.4% fair to poor (500,000 sq Yards)  
1% poor to very poor (78,000 sq Yards)

## Percent of Pavement At or Above 70 PCI



# Where Do We Go From Here?

Increase Funding Or.....

## Prioritize

1. Arterials 8 Years (24% of our total network would use 60% of budget)
2. Collectors 10 Years (18% of our total network would use 20% of budget)
3. Residentials 12, 14, 20 Years?? (58% of our total network whatever is left)

## And Then.....

### Re-examine Performance Measures

- a. 65% of all roads at or above 70 PCI achievable?
- b. What is acceptable and feasible
- c. Can we continue with a 10 Year Maintenance Cycle?
  - 7% - 14 year cycle
  - 6% - 17 year cycle
  - 5% - 20 year cycle
- d. What are the long term costs of deferred maintenance?

## Westminster vs. Other Cities

### Street Rehab Dollars Per Center Line Mile of Pavement

Agency	Center Line Miles	Street Rehab Budget	Dollars Per Mile of pavement
Westminster	342	\$3.5 million	\$10,234
Arvada	413	\$4.0 Million	\$9,685
Thornton	389	\$3.5 million	\$9,097
Broomfield	240	\$3.5 million	\$14,583
Ft. Collins	540	\$7.4 million(2010) \$13.5 million(2011)	\$13,700 \$24,000

## Other Considerations

- ▶ Beginning in 2018 Sealcoats on Major Arterials Will No Longer be an Option. Mill and Overlay Will Be Required.

92<sup>nd</sup> Avenue from Ingalls Street to Wadsworth Parkway-  
48,317 Sq Yards

2011 Mill & 2" Overlay Cost- \$468,675

2018 Mill & 2" Overlay Cost- \$665,615 (with 6% annual increases)





Questions?



**WESTMINSTER**

## Staff Report

City Council Study Session Meeting  
April 2, 2012



**SUBJECT:** Discussion Items for City Council Strategic Planning Retreat

**PREPARED BY:** J. Brent McFall

### Recommended City Council Action

Discuss issues and items that Councillors wish to have considered at the Council's Strategic Planning Retreat.

### Summary Statement

- Every April the City Council meets in a Strategic Planning Retreat where the vision, goals and priorities of the City are established.
- Councillors have expressed frustration that the format for the Retreat has not previously allowed time for floating ideas among Councillors prior to the Retreat itself.
- Time is being set aside during the April 2, Study Session to give Councillors an opportunity to present their ideas for others to consider prior to the Retreat scheduled for April 27 and 28.

**Expenditure Required:** \$ 0

**Source of Funds:** N/A

**Policy Issue**

Should the City Council share their ideas regarding issues and action items prior to the scheduled City Council Strategic Planning Retreat?

**Alternative**

Do not discuss items prior to the scheduled Strategic Planning Retreat and discuss these items at the Retreat.

**Background Information**

Since 2002 the City Council has annually met in a weekend Strategic Planning Retreat to formulate the vision, goals and priorities for the City.

Previously, items for discussion among Councillors at the Retreat have typically not been shared until the Retreat itself. Councillors have expressed some frustration at not having an opportunity to hear in advance what their Council colleagues are thinking as to items for consideration at the Retreat. Therefore, this Study Session has been set aside as a time for Councillors to share their thoughts about Retreat discussion items prior to the Retreat scheduled for April 27 and 28.

Councillors should come to the Study Session prepared to present items that they are thinking about bringing up for Retreat discussion so that others on Council will have an opportunity to think about these items prior to prioritizing them at the Retreat.

Respectfully submitted,

J. Brent McFall  
City Manager