



CUTLER

Repaving, Inc.

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HOT IN-PLACE RECYCLING

***A PAVEMENT
PRESERVATION
STRATEGY***



HISTORY

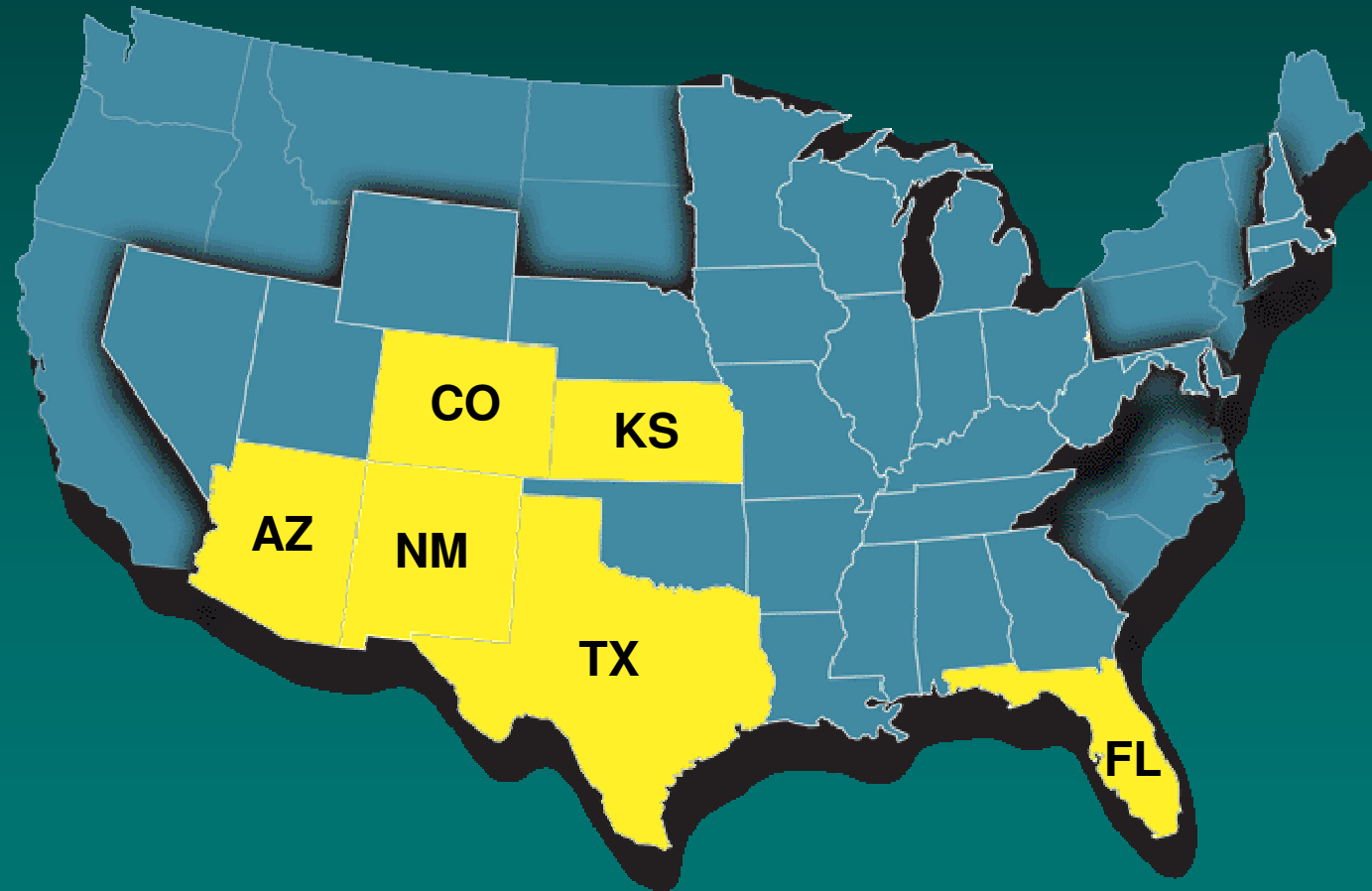
History

- 1965 – Founded by Earl Cutler
- 1968 – Relocated to Lawrence, Kansas
- 1989 – Acquired by new ownership
- Ten Contract Repaving Spreads in U.S.



History

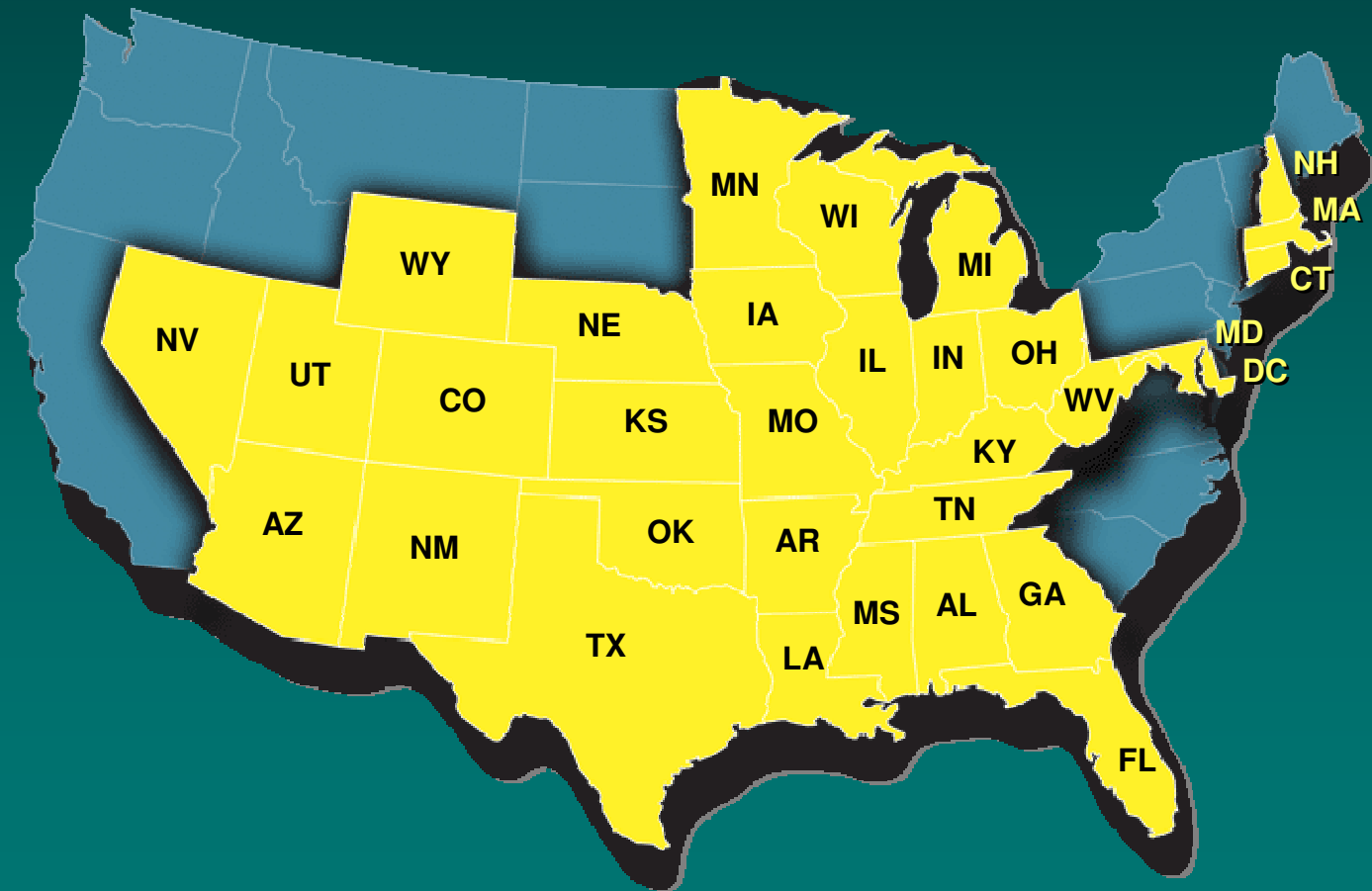
Current United States Contracting Market



History

United States

Over 150 million square yards completed



History



Pavement Preservation

The “right” treatment

On the “right” road

At the “right” time



Pavement Preservation Economics

What Tools Do We Have In The Toolbox?

- Hot In-place Recycling
- Single Machine Repaving



Surface Repaving

Heating, reworking and
rejuvenating the top one inch of
an existing asphalt pavement and
simultaneously applying an overlay
while the temperature of the
recycled layer is 200°F.



Pavement Preservation Economics

The Surface Is The Critical Area

- **Surface Defects**
 - Ruts, Shoves and Bumps
 - Patches and Utility Cuts
 - Reflective and Shrinkage Cracks
 - Weathering, Bleeding and Raveling
 - Pavement Geometry



HIR – A Better Surface

**Aged, Cracked
and Deformed
Pavement**

1" New Hot Mix

Hot Welded Bond

1" of Hot RAP

**“...1” overlay over the 1” of recycled
material out-performs 2.5” of new
overlay over the original surface...”**

*Techniques for Pavement Rehabilitation
National Highway Institute*

Base


Base

**Existing
Pavement**

**After Single
Machine Asphalt
Recycling**

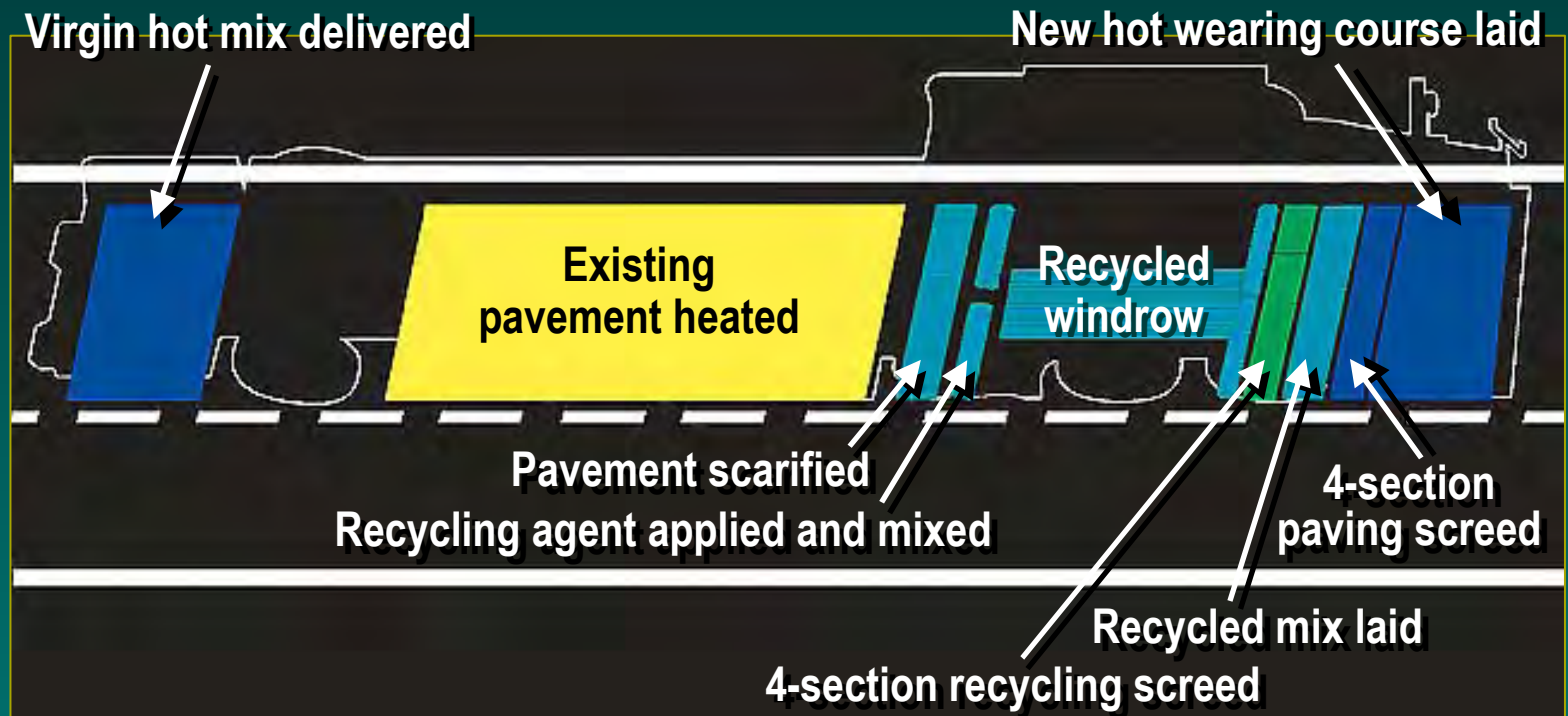


Pavement Preservation Economics



CUTLER'S SINGLE MACHINE PROCESS

A Six Step Process



Cutler's Single Machine Process

Cutler Single Machine Repaver



First Step: Heat the Pavement



FIRST STEP:

Heat the Pavement

Cutler R-2000 Pre-heater



First Step: Heat the Pavement

Main Heating Unit of Repaver



First Step: Heat the Pavement

Underside of Heating Hood



First Step: Heat the Pavement

Heating Edge Insures Joint Density



First Step: Heat the Pavement



First Step: Heat the Pavement



First Step: Heat the Pavement



First Step: Heat the Pavement



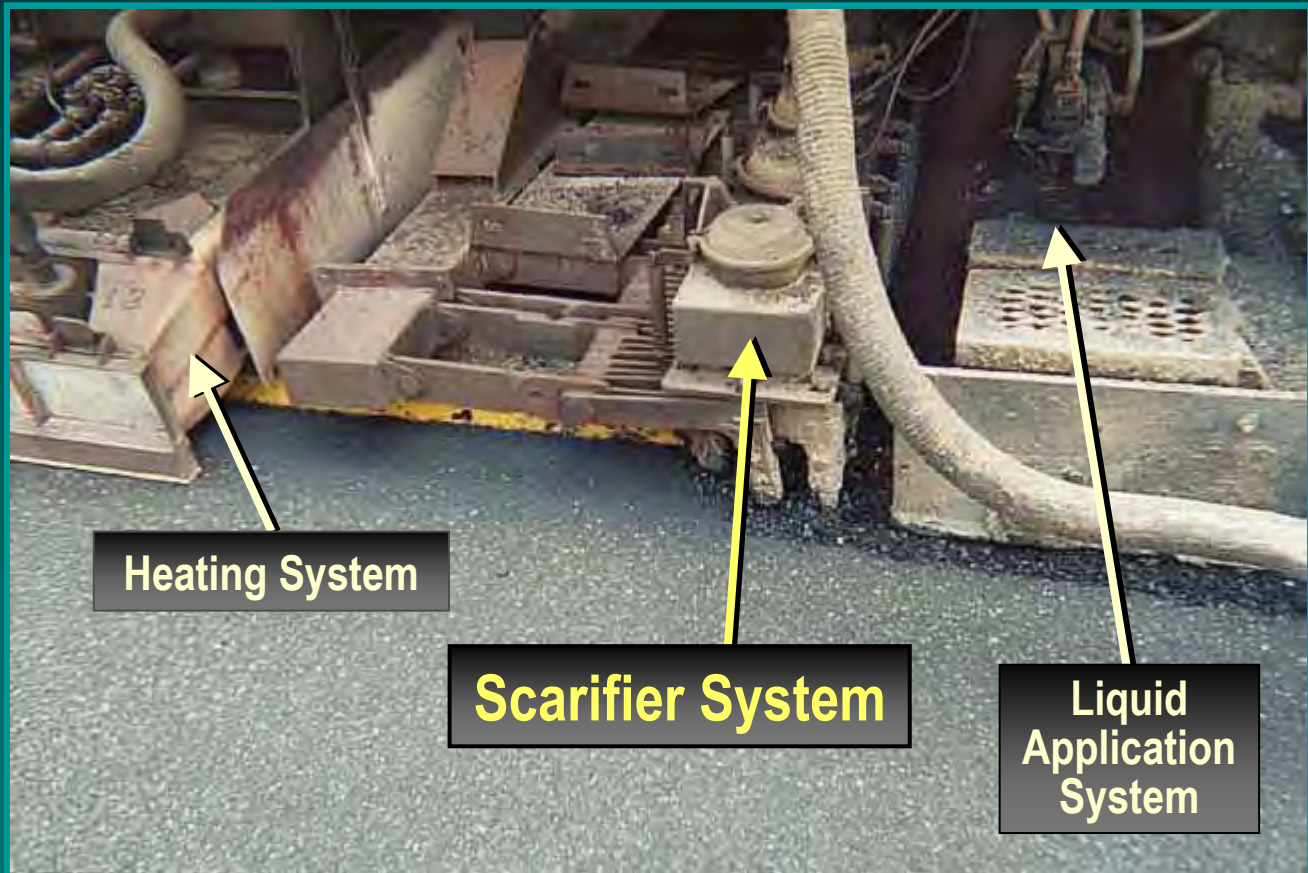
First Step: Heat the Pavement



SECOND STEP:

Scarify the Pavement

Scarifier System



Second Step: Scarify the Pavement

Carbide Tipped Scarifier Teeth



Second Step: Scarify the Pavement



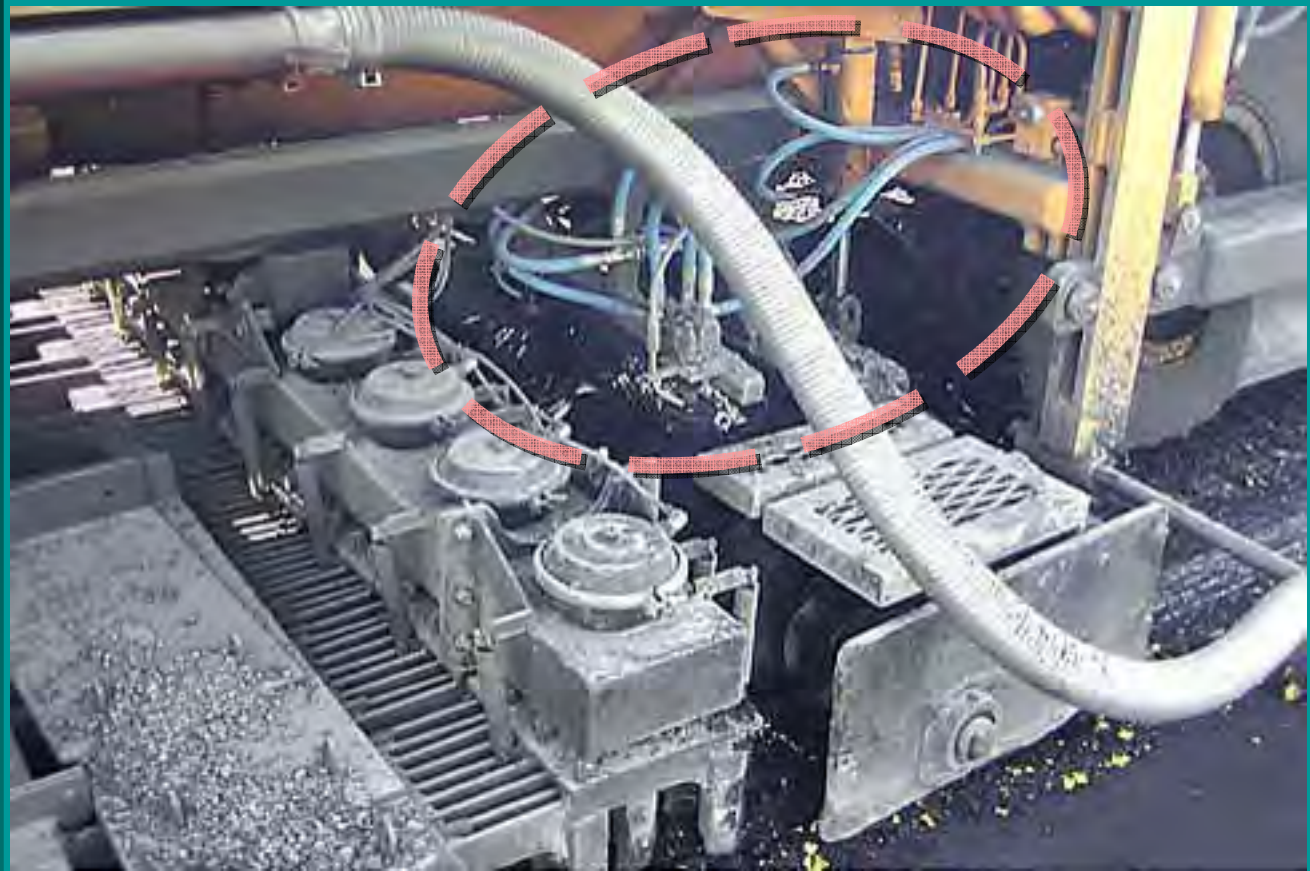
Second Step: Scarify the Pavement



THIRD STEP:

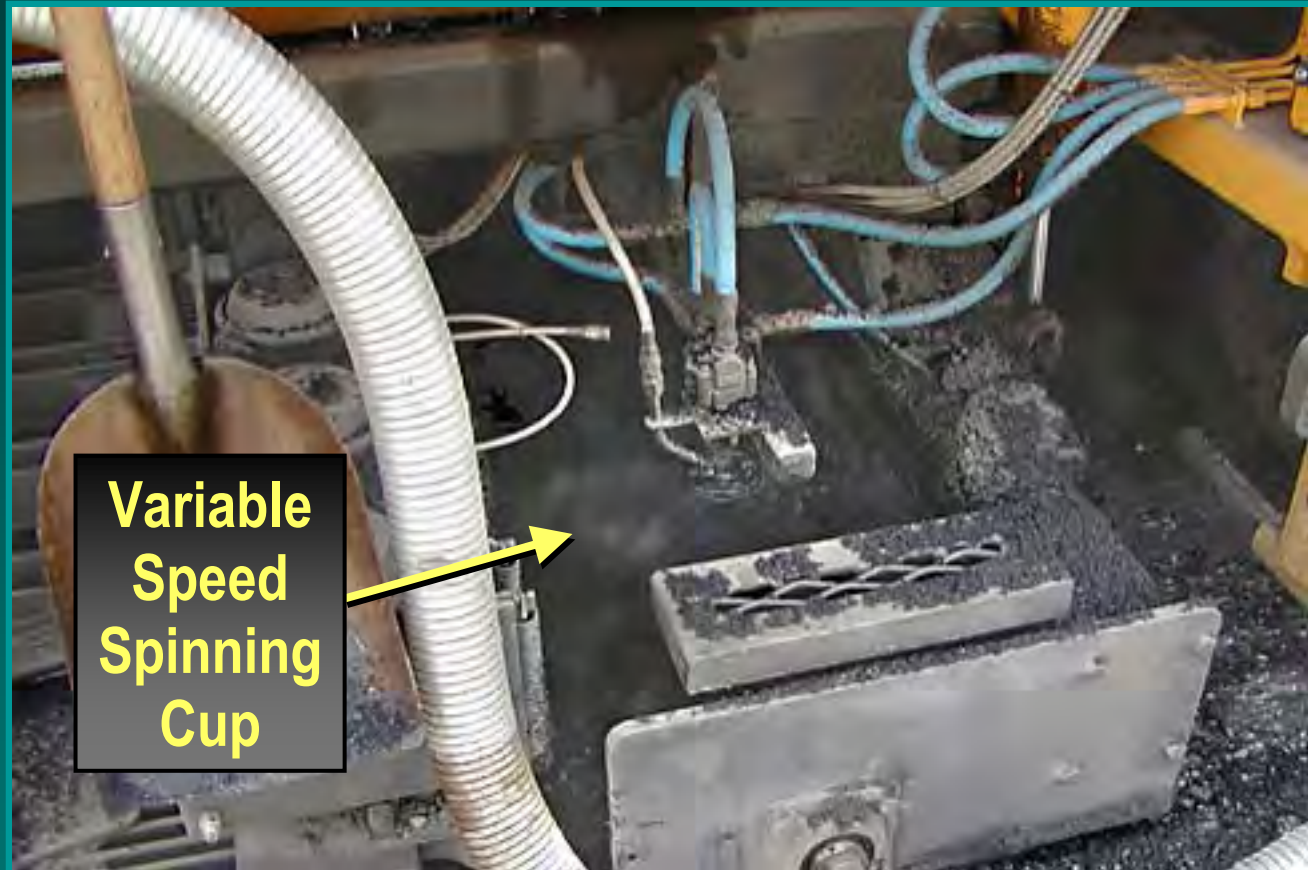
***Apply & Mix Emulsified
Recycling Agent***

Liquid Application System



Third Step: Apply & Mix Emulsified Recycling Agent

Liquid Application System



Third Step: Apply & Mix Emulsified Recycling Agent

Recycling Agent Applied



**Variable
Speed
Spinning
Cup**



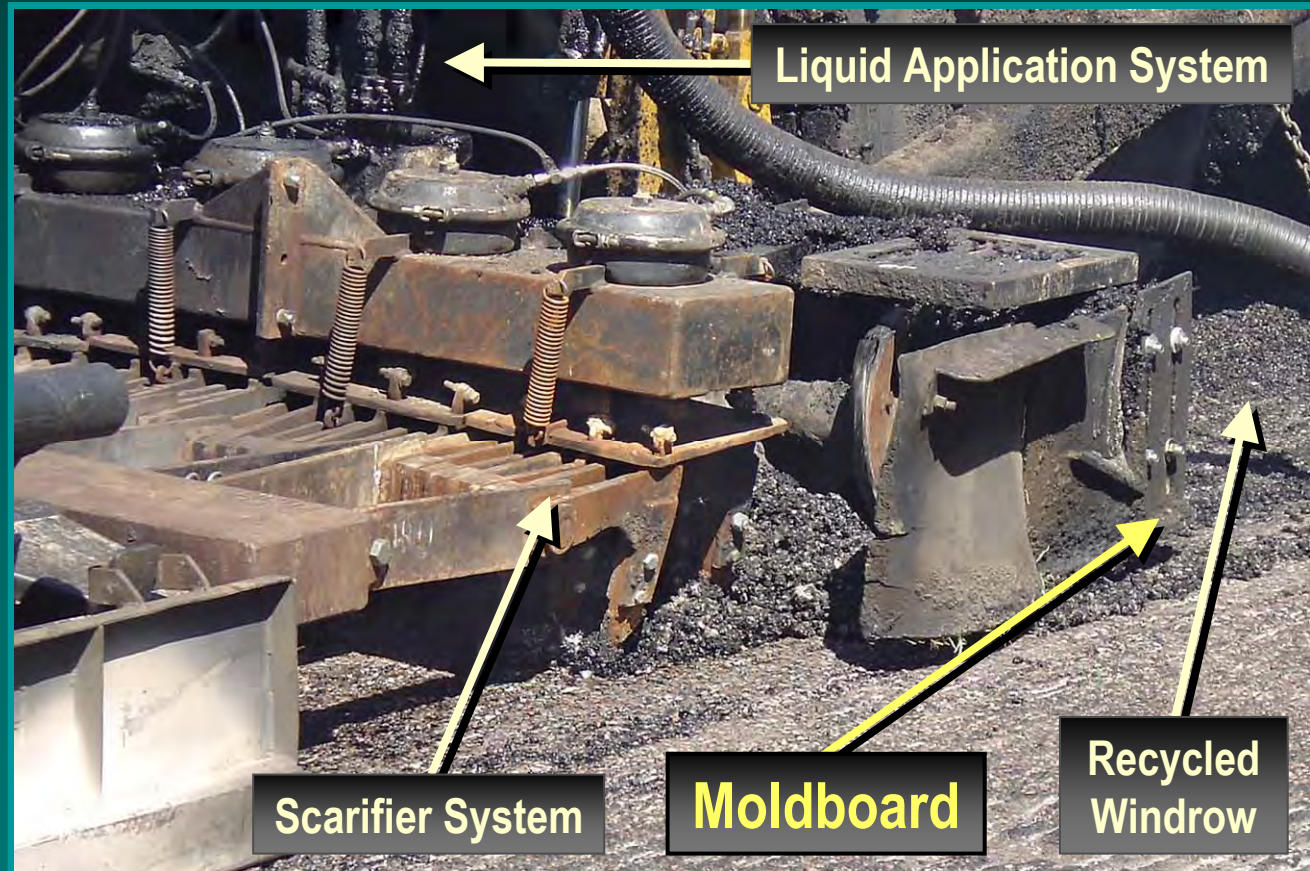
Third Step: Apply & Mix Emulsified Recycling Agent

Recycling Agent Applied



Third Step: Apply & Mix Emulsified Recycling Agent

Moldboard Gathers Recycled Material Into Recycled Windrow



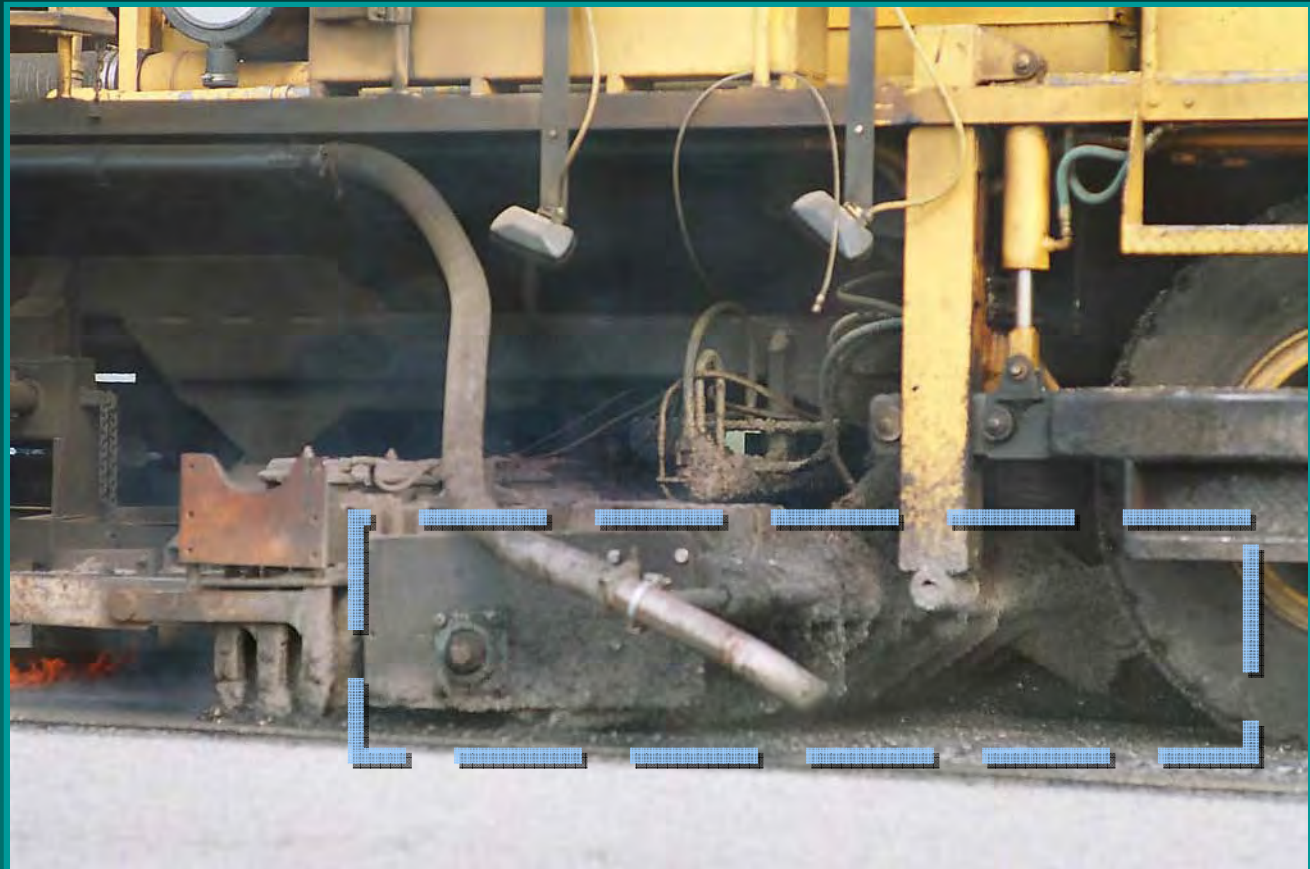
Third Step: Apply & Mix Emulsified Recycling Agent

Moldboard



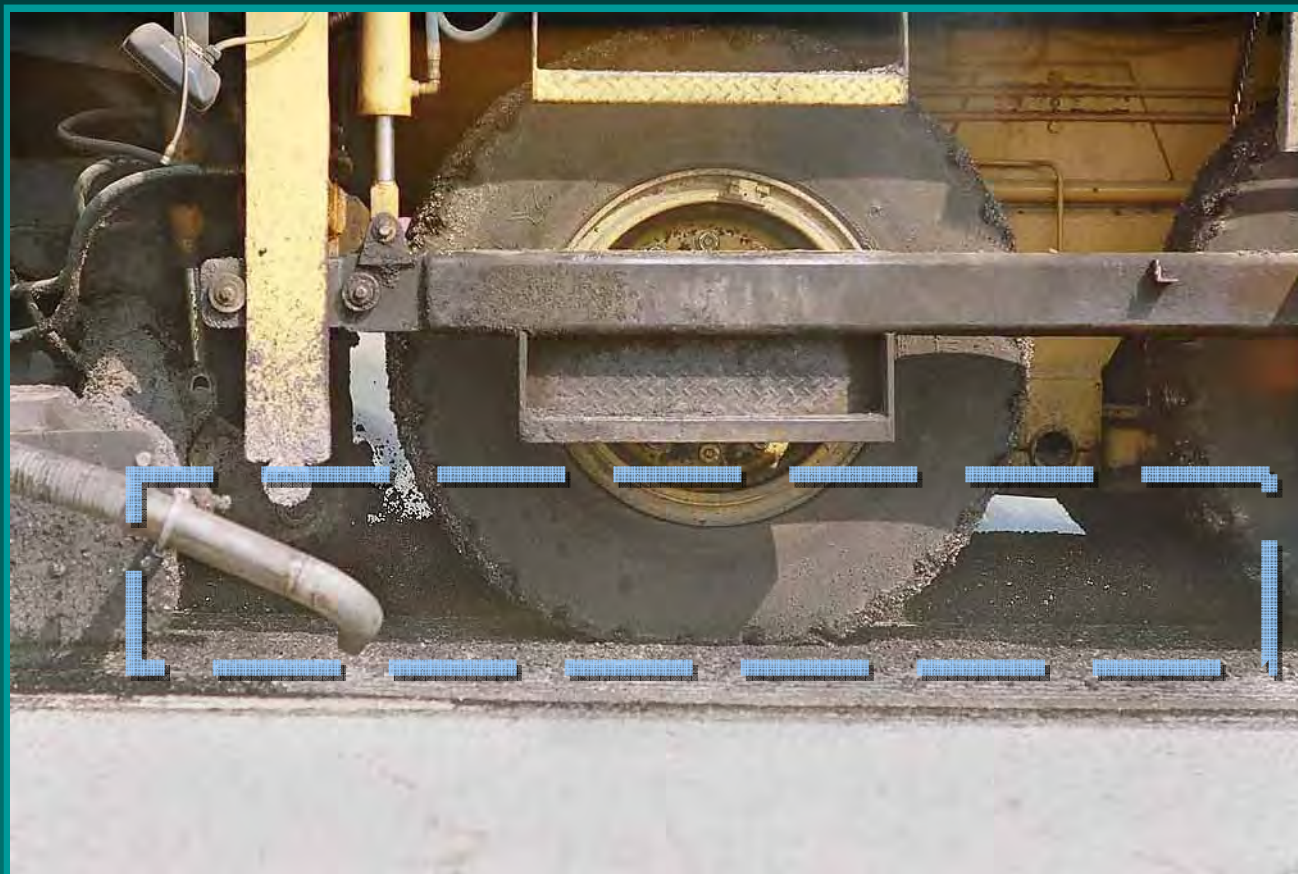
Third Step: Apply & Mix Emulsified Recycling Agent

Moldboard and Recycled Windrow



Third Step: Apply & Mix Emulsified Recycling Agent

Recycled Windrow



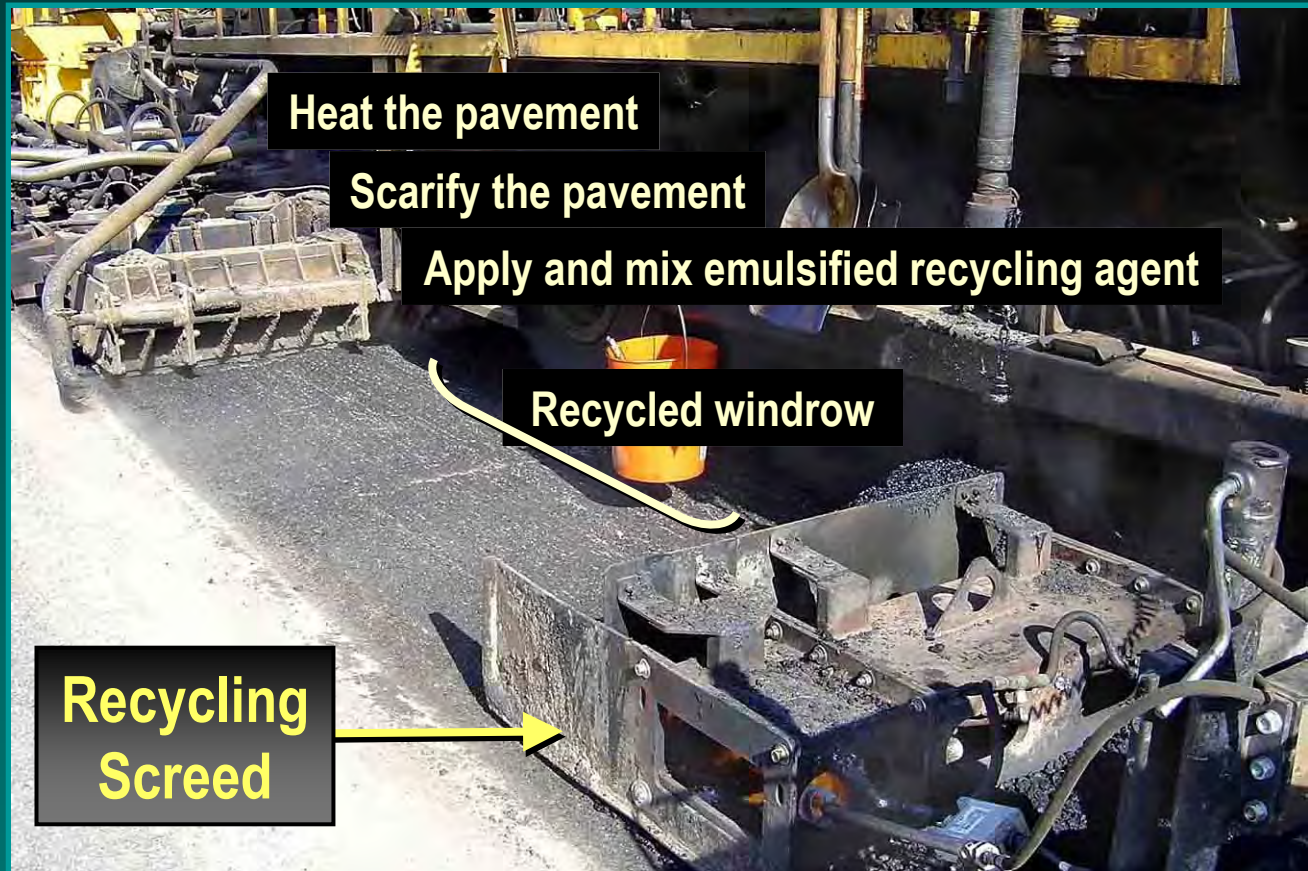
Third Step: Apply & Mix Emulsified Recycling Agent



FOURTH STEP:

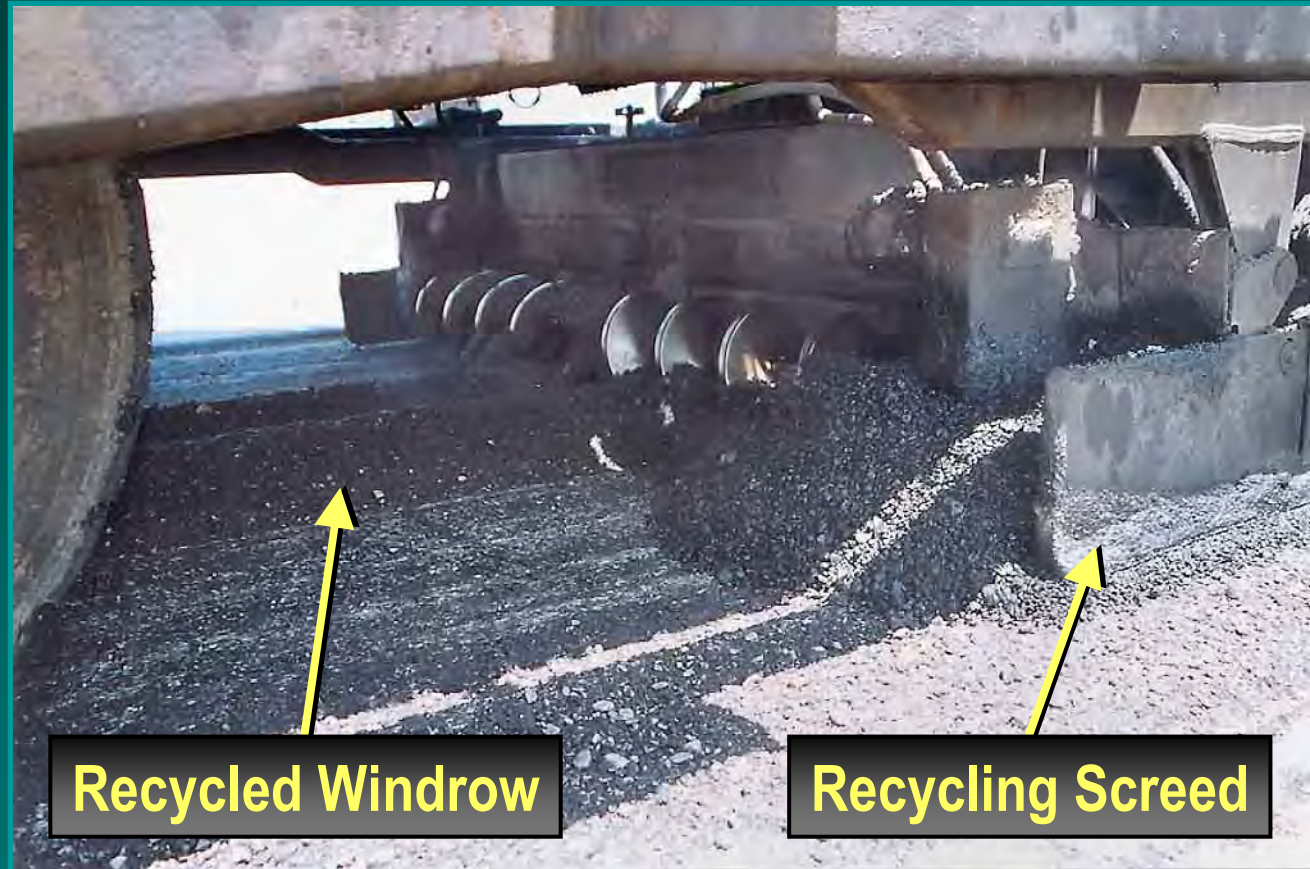
***Lay Recycled
Material With
Recycling Screed***

Lay Recycled Material



Fourth Step: Lay Recycled Material With Recycling Screed

Recycled Material Distributed



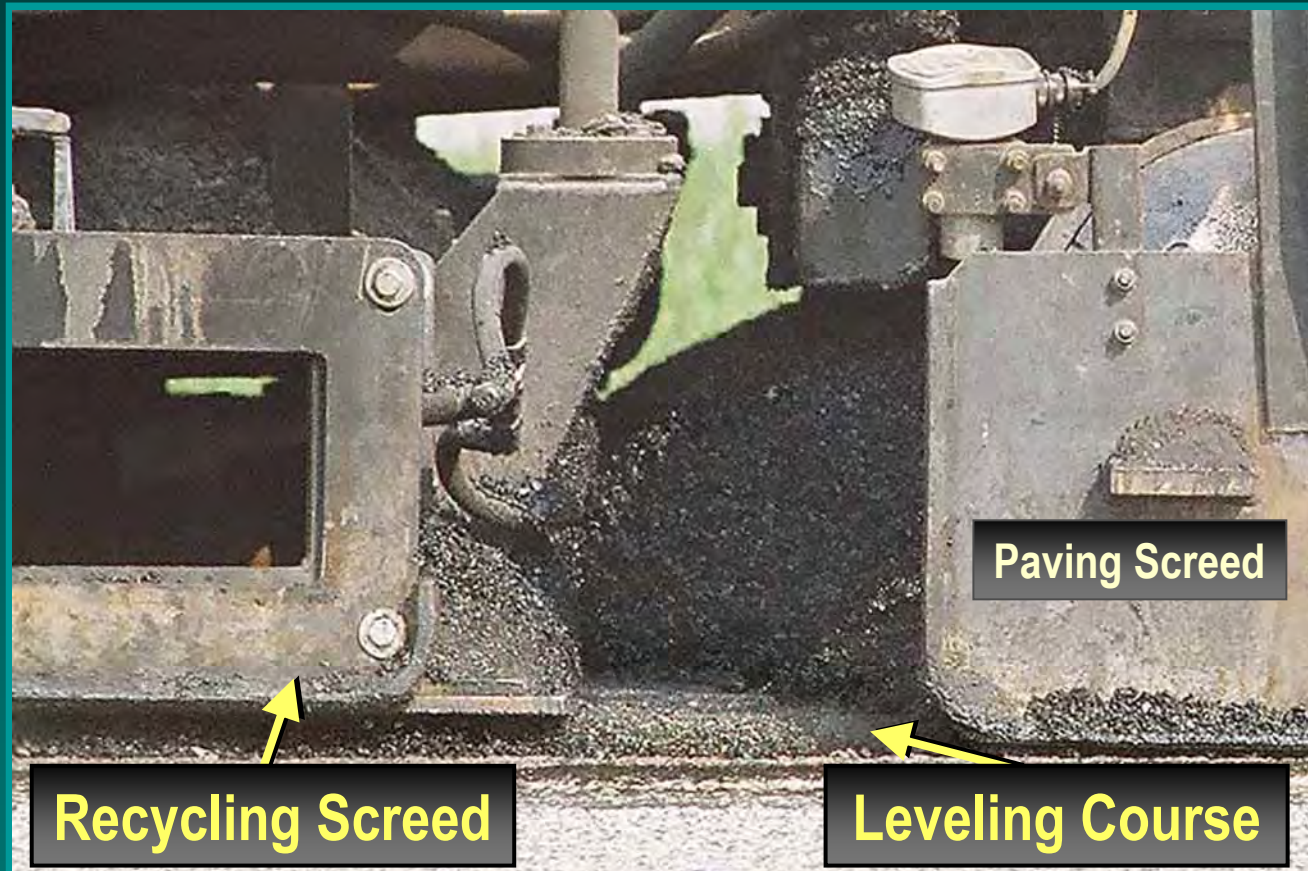
Recycled Windrow

Recycling Screed



Fourth Step: Lay Recycled Material With Recycling Screed

Recycled Material Laid



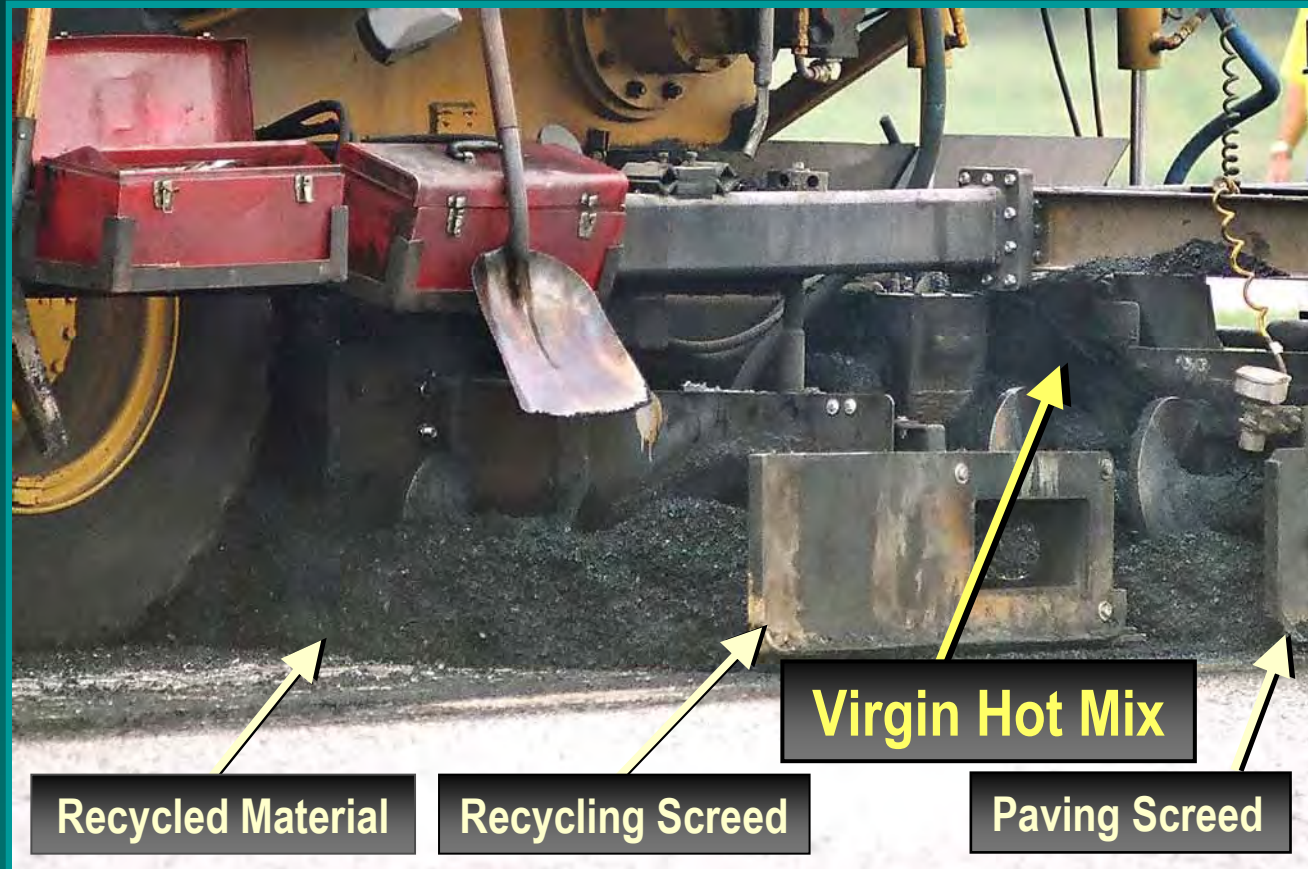
Fourth Step: Lay Recycled Material With Recycling Screed



FIFTH STEP:

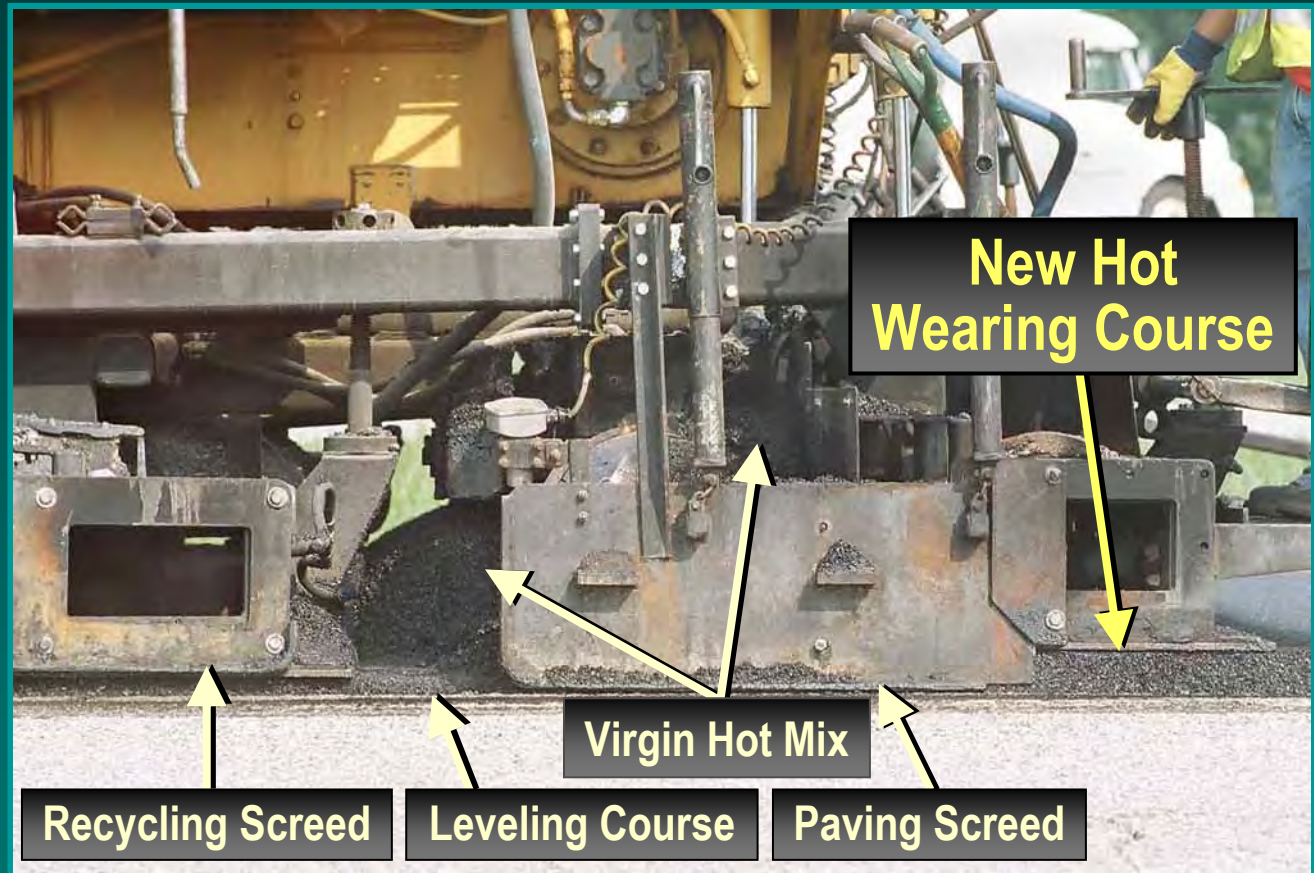
***Lay Virgin Hot Mix
Over Recycled
Material***

Laying Virgin Hot Mix



Fifth Step: Lay Virgin Hot Mix Over Recycled Material

New Hot Wearing Course Laid



Fifth Step: Lay Virgin Hot Mix Over Recycled Material



Fifth Step: Lay Virgin Hot Mix Over Recycled Material



SIXTH STEP:

Final Compaction

Final Compaction



Sixth Step: Final Compaction



ADVANTAGES AND BENEFITS

Surface Repaving Advantages

- **Treats surface to a depth of 1"**
- **A hot process**
- **Adds additional binder/modifier**
- **Adds additional hot mix asphalt**
- **Increases structural coefficient**



Advantages and Benefits

Surface Repaving Benefits

- Repairs distress
- Extends life
- Improves ride quality
- Improves friction coefficient
- Improves appearance
- Improved bonding
- Work completed in a single pass



Advantages and Benefits

Florida Experience from 1987

Customer	No. of Projects	Square Yards
Orange Co.	12	6,240,339
City of Plantation	3	324,516
City of Orlando	7	595,928
City of St. Petersburg	10	1,256,710
Escambia County	4	451,408
City of Tallahassee	3	344,946
Total	39	9,213,847



Hillsborough County
1,087,790 Squares Since 1977
14 Projects

FOCUS ON

BROADWAY AVE, ARMENIA AVE, WESTSHORE

COLUMBUS DRIVE

CIP NO. 61940

BID ITEMS: HEAT & REWORK EXISTING ASPHALT \$1.40/SY

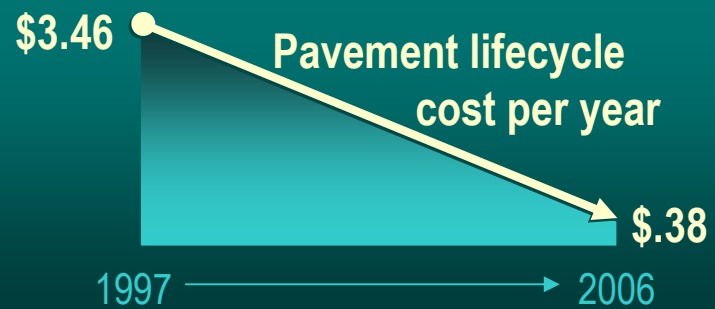
S – III SURFACE COURSE \$ 37.50/ TON

HEAT & REWORK 1 INCH \$1.40/SY

110#/SQUARES S III SURFACE COURSE \$2.06/SY

TOTAL SQUARE PRICE \$ 3.46/SY





PAVEMENT LIFE CYCLE COST PER YEAR \$.38

BROADWAY AVENUE EAST COMPLETED FY - 1997



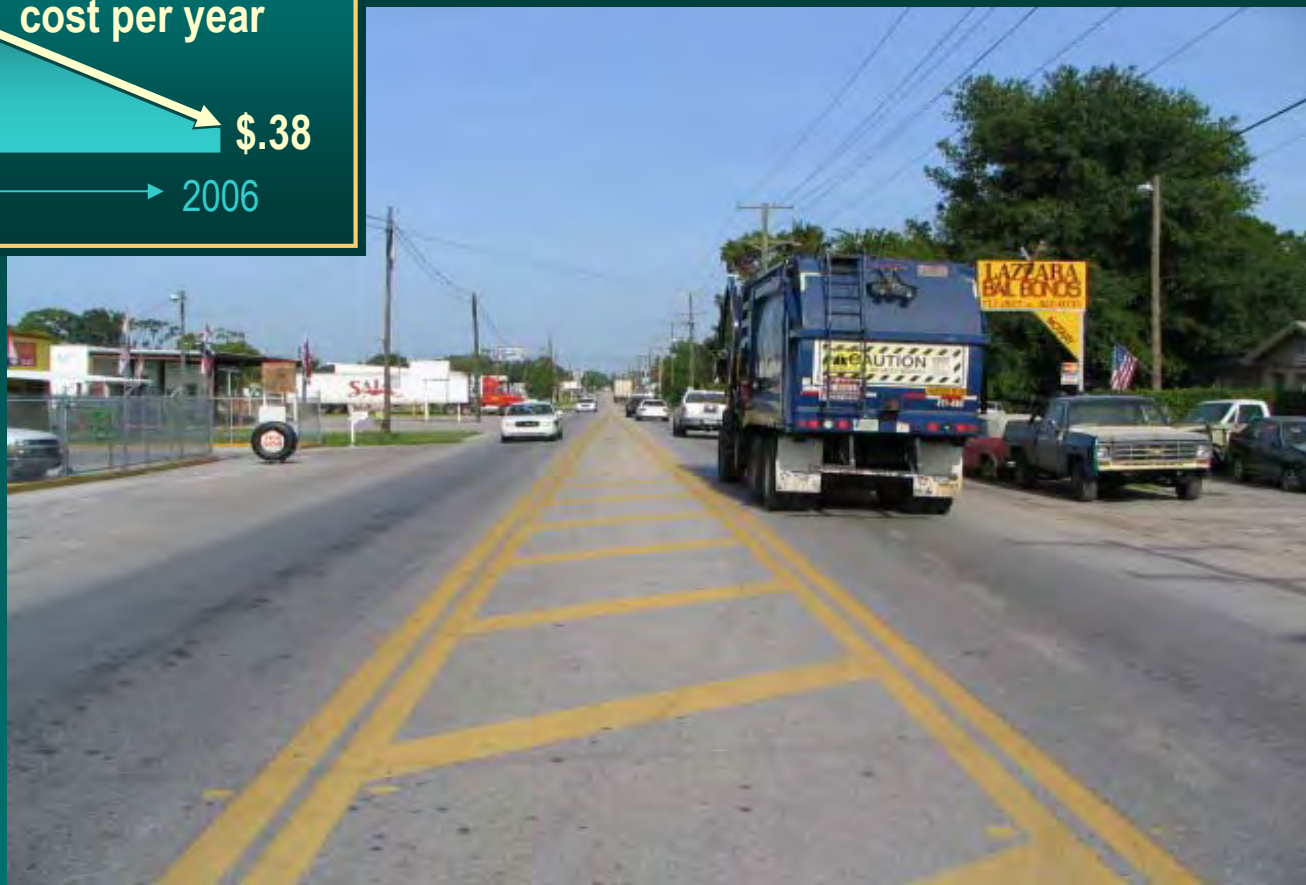
\$3.46

Pavement lifecycle
cost per year

\$0.38

1997

2006



BROADWAY AVENUE EAST COMPLETED FY 1997

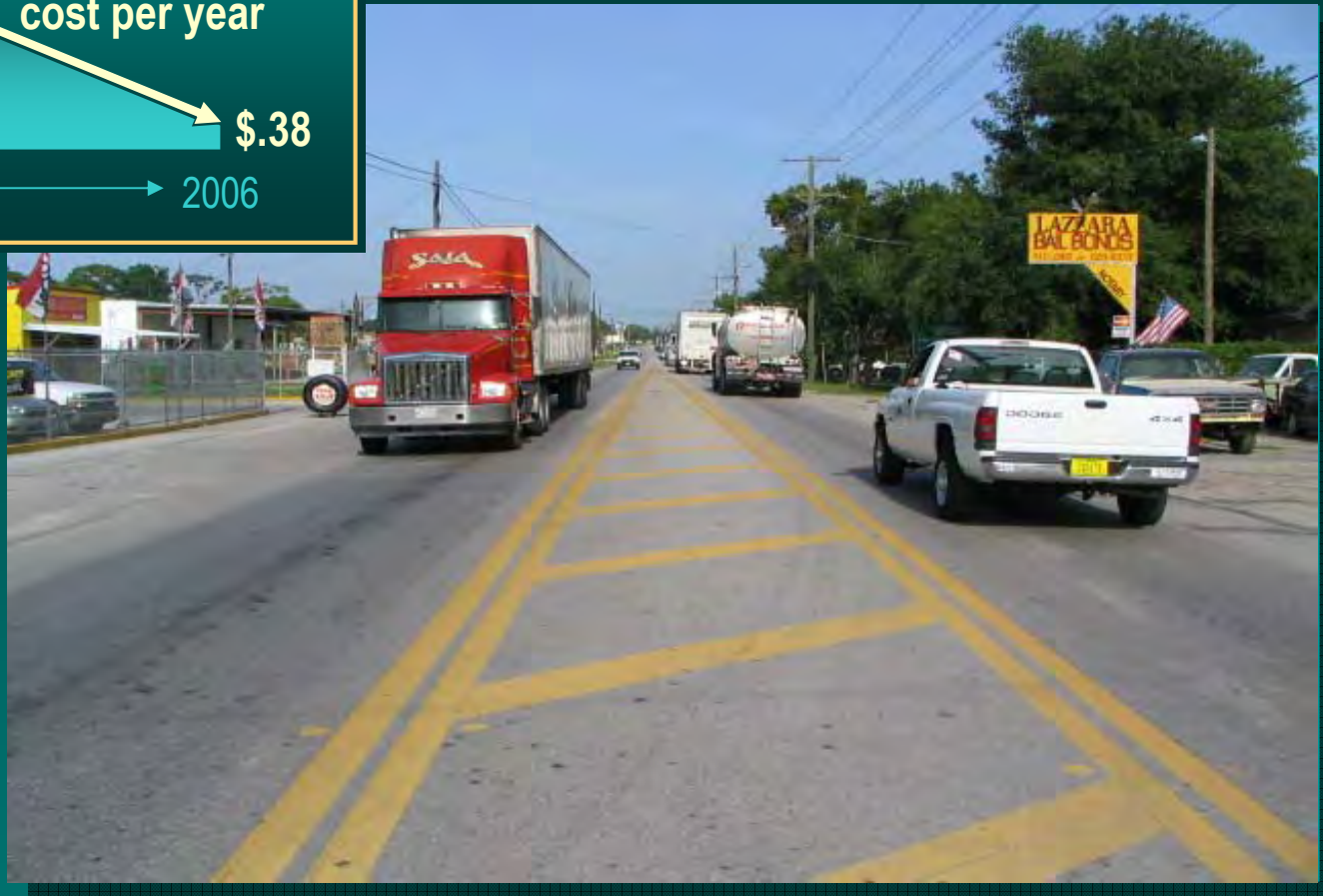
\$3.46

Pavement lifecycle
cost per year

\$.38

1997

2006



BROADWAY AVENUE EAST COMPLETED FY - 1997

\$3.46

Pavement lifecycle
cost per year

\$0.38

1997

2006



ARMENIA AVENUE COMPLETED FY - 1997

\$3.46

Pavement lifecycle
cost per year

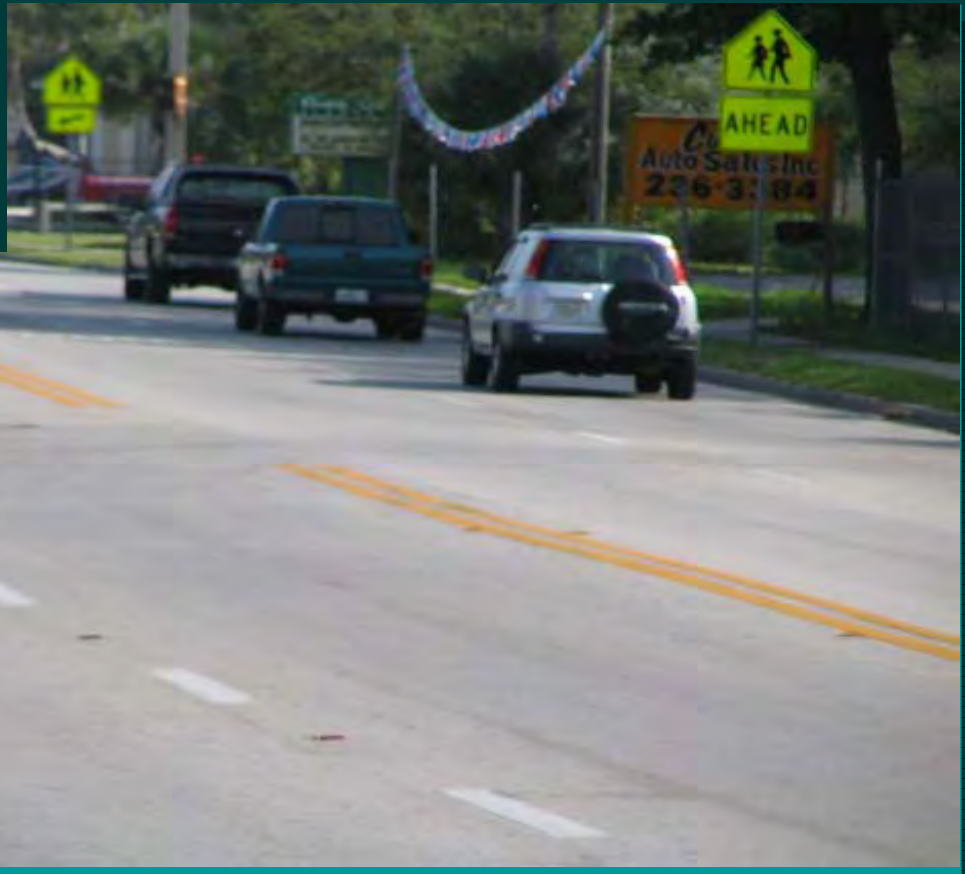
\$0.38

1997

2006



ARMENIA AVENUE COMPLETED FY - 1997



ARMENIA AVENUE COMPLETED FY - 1997

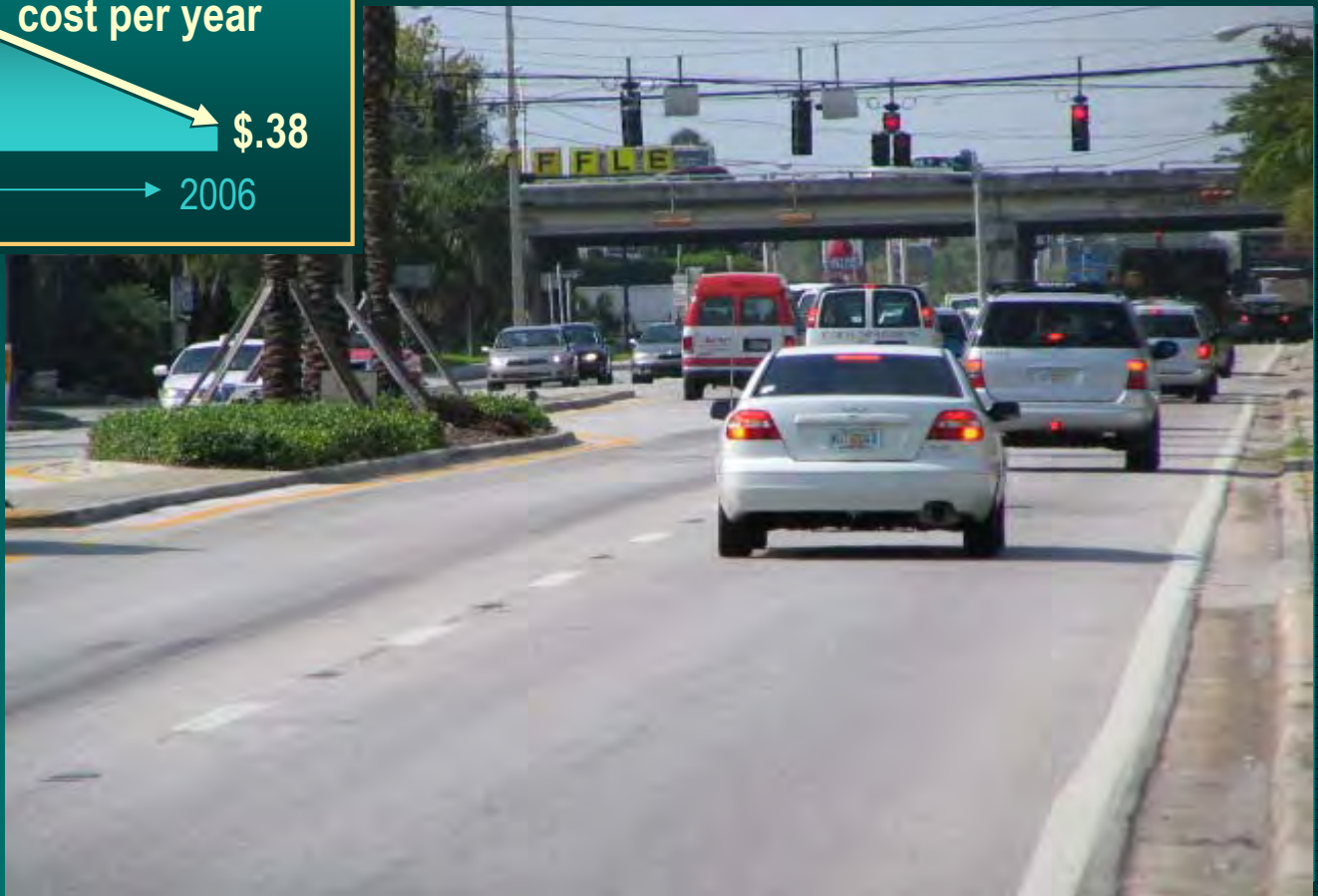
\$3.46

Pavement lifecycle
cost per year

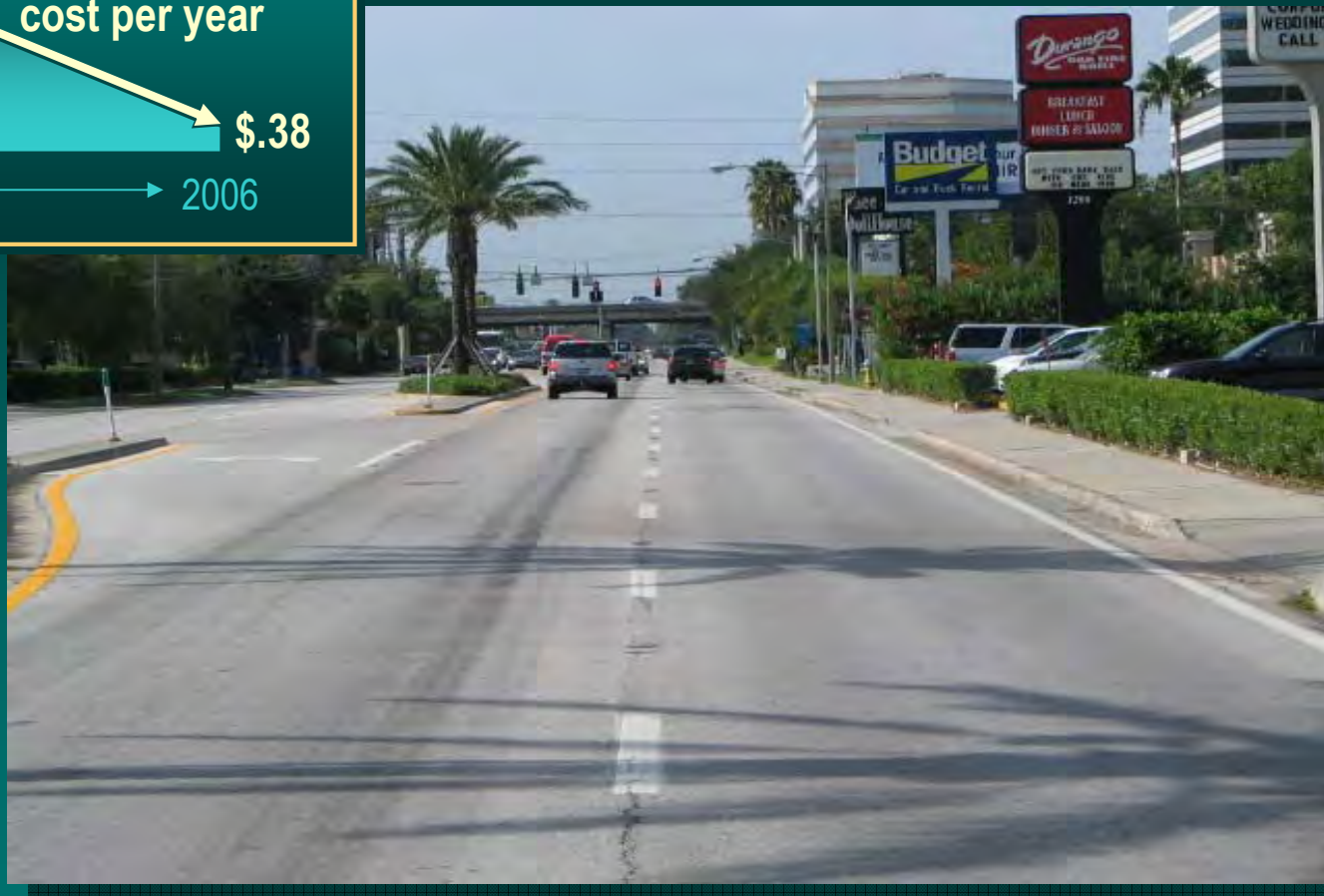
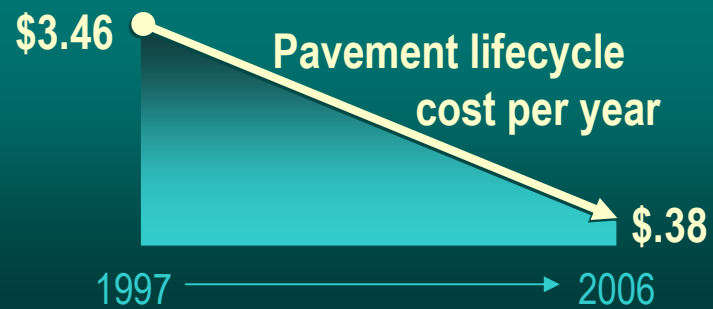
\$0.38

1997

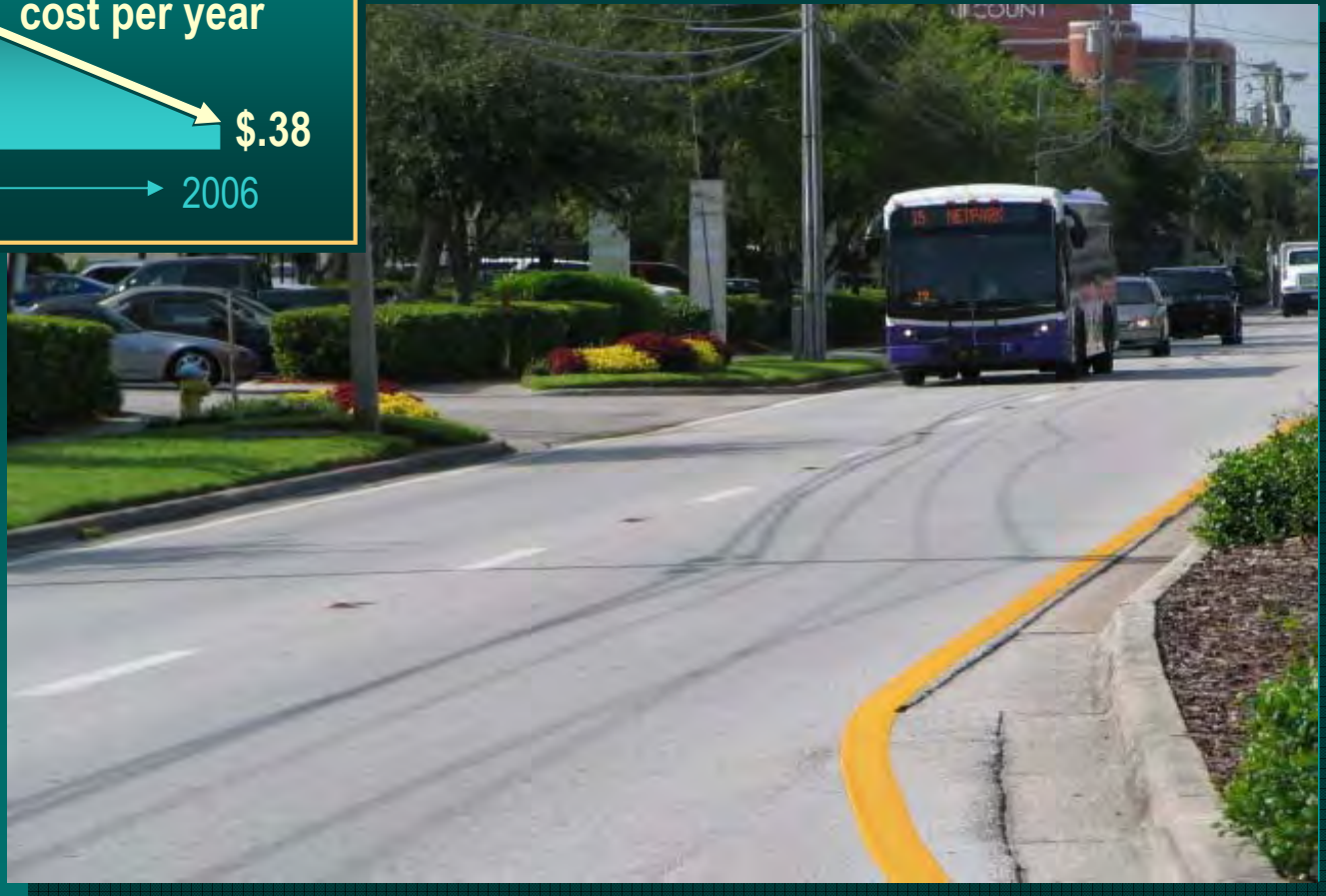
2006



WESTSHORE BOULEVARD COMPLETED FY - 1997



WESTSHORE BOULEVARD COMPLETED FY - 1997



WESTSHORE BOULEVARD COMPLETED FY - 1997

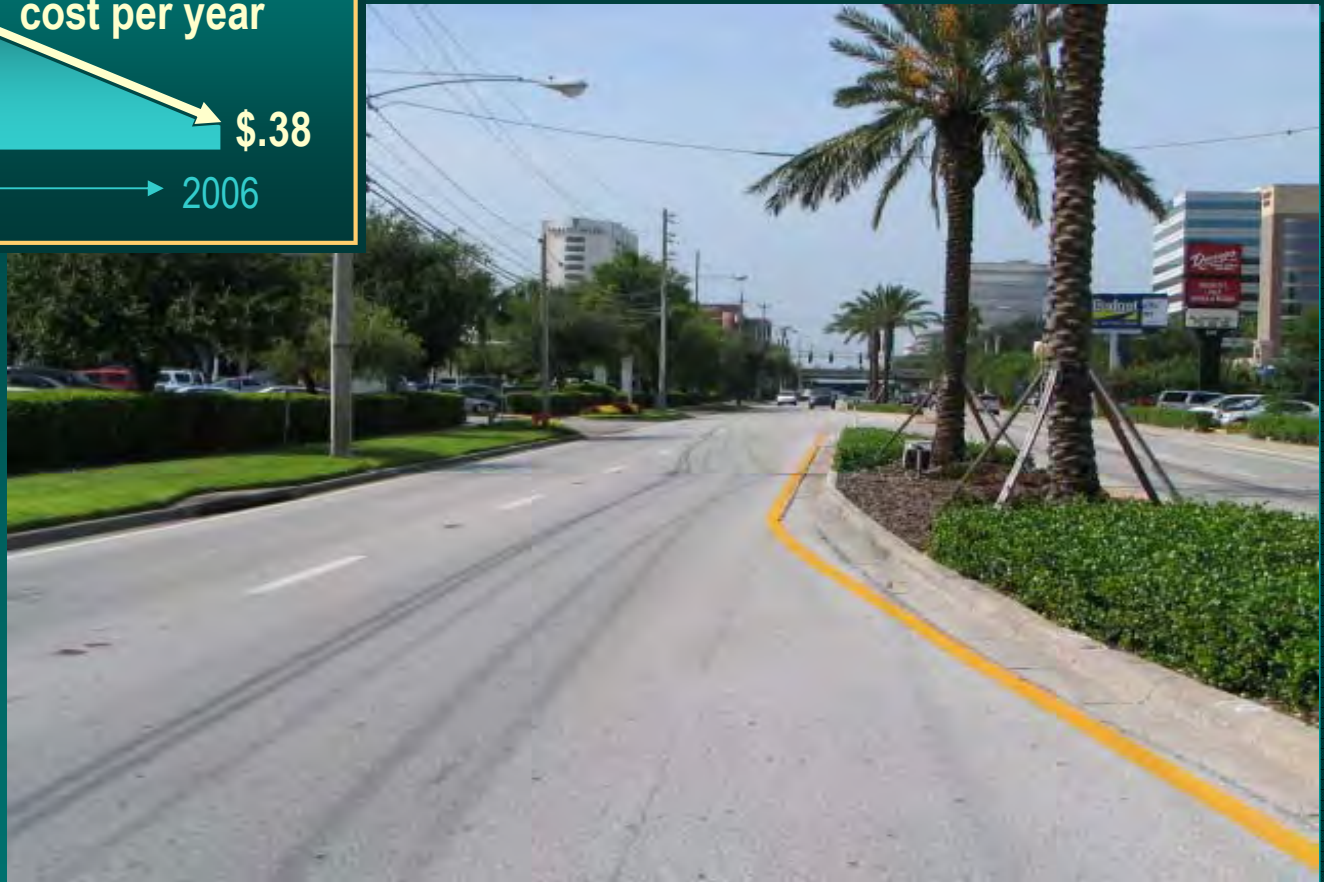
\$3.46

Pavement lifecycle
cost per year

\$0.38

1997

2006



WESTSHORE BOULEVARD COMPLETED FY - 1997

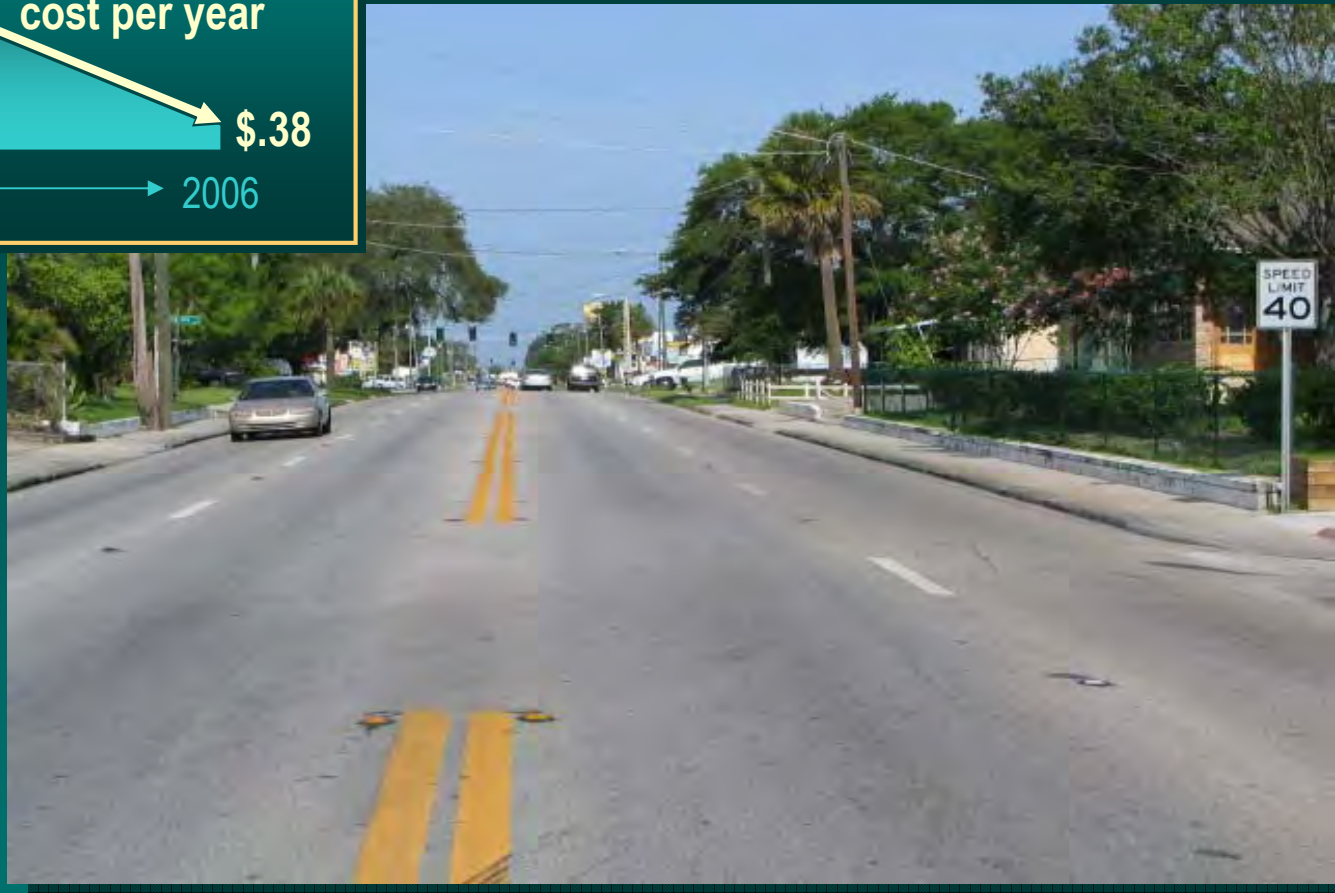
\$3.46

Pavement lifecycle
cost per year

\$0.38

1998

2006



COLUMBUS DRIVE COMPLETED FY - 1998

\$3.46

Pavement lifecycle
cost per year

\$.38

1998

2006



COLUMBUS DRIVE COMPLETED FY - 1998

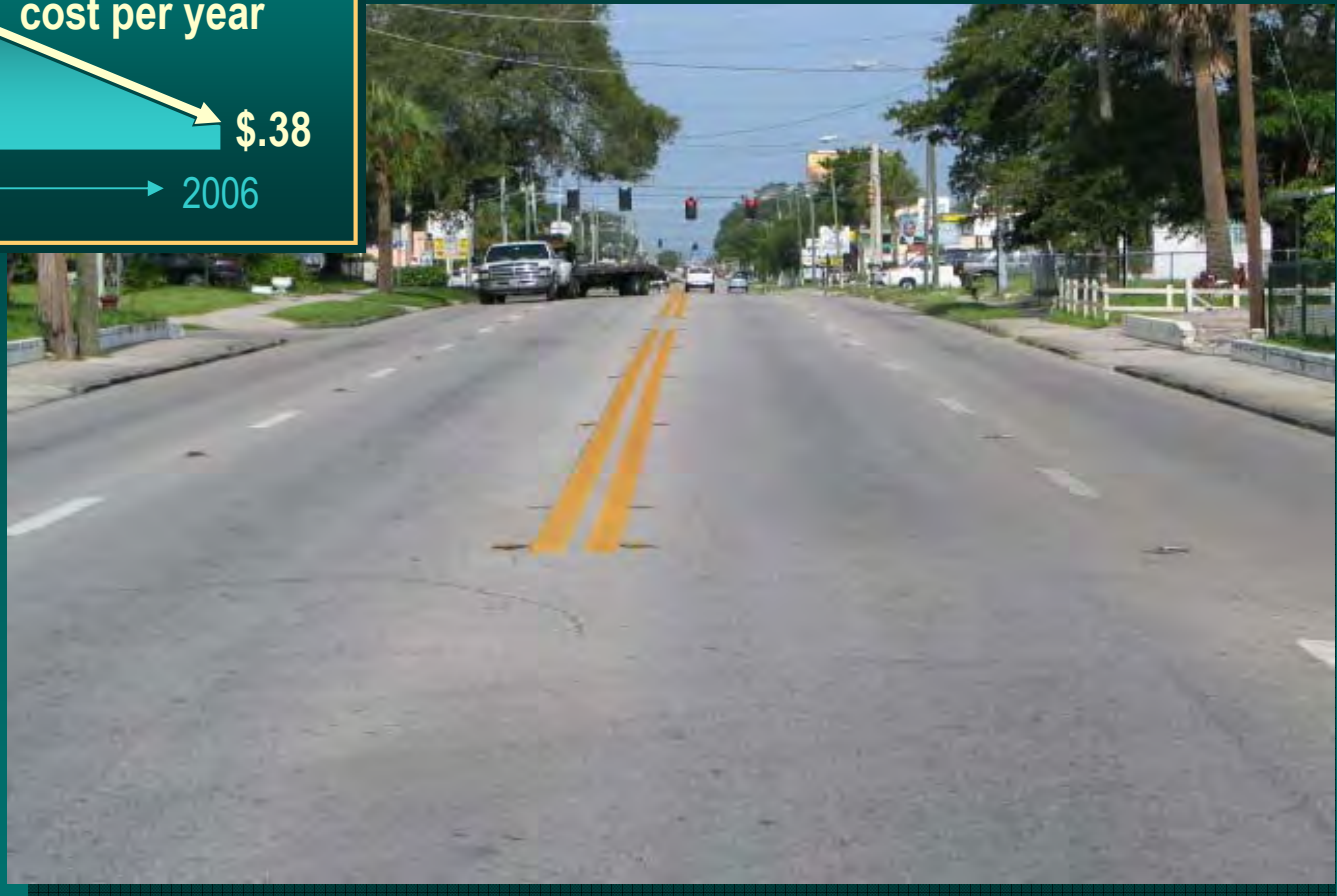
\$3.46

Pavement lifecycle
cost per year

\$0.38

1998

2006




COLUMBUS DRIVE COMPLETED FY - 1998



Hot In-Place Recycling

A Pavement Preservation Strategy

Questions & Answers



Thank You!



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