IN-PLACE PAVEMENT RECYCLING –

KEY TO MEETING LOCAL ROAD/STREET NEEDS

Doyt Bolling, Utah LTAP Center

UTAH ROAD SYSTEMS

- STATE SYSTEM – 13.35 %
- COUNTY SYSTEM – 53.9%
- CITY SYSTEM – 22.7%
- FEDERAL ROADS – 10%

Historical Comparison of Surface Type Combined Totals on State, City and County Roads

Figure 3.3

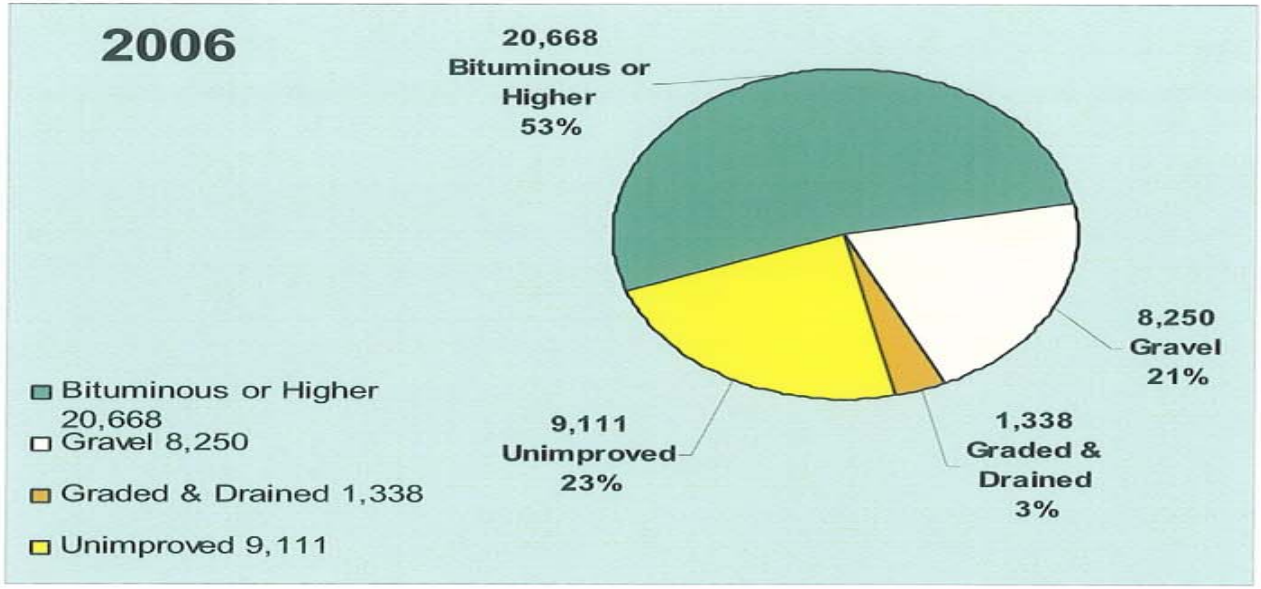
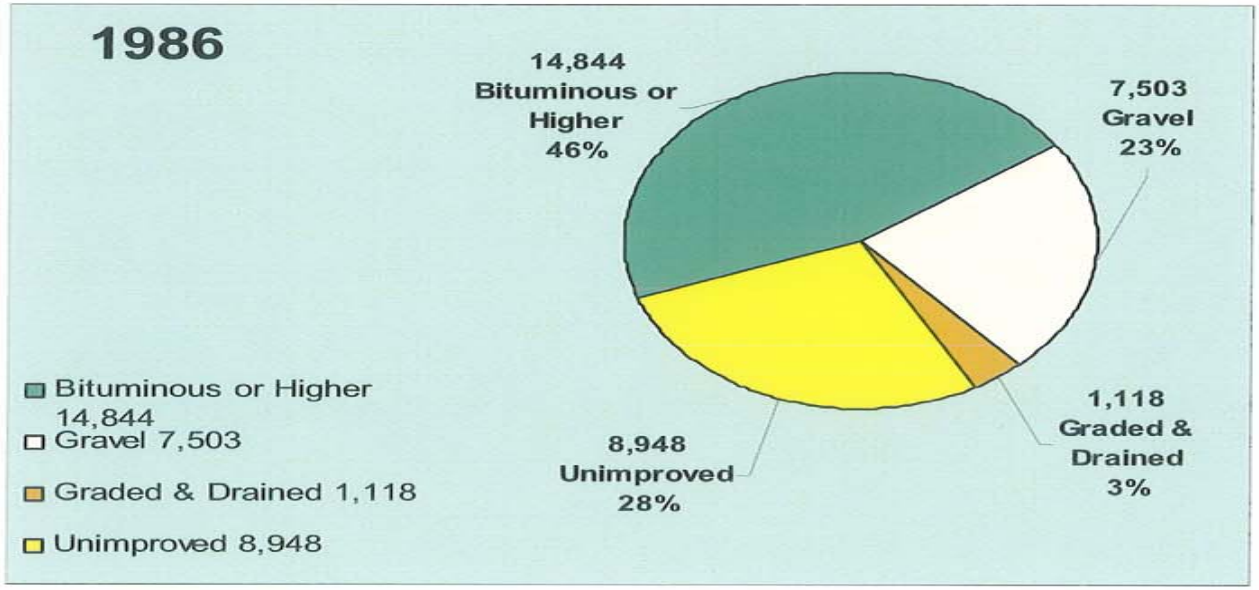
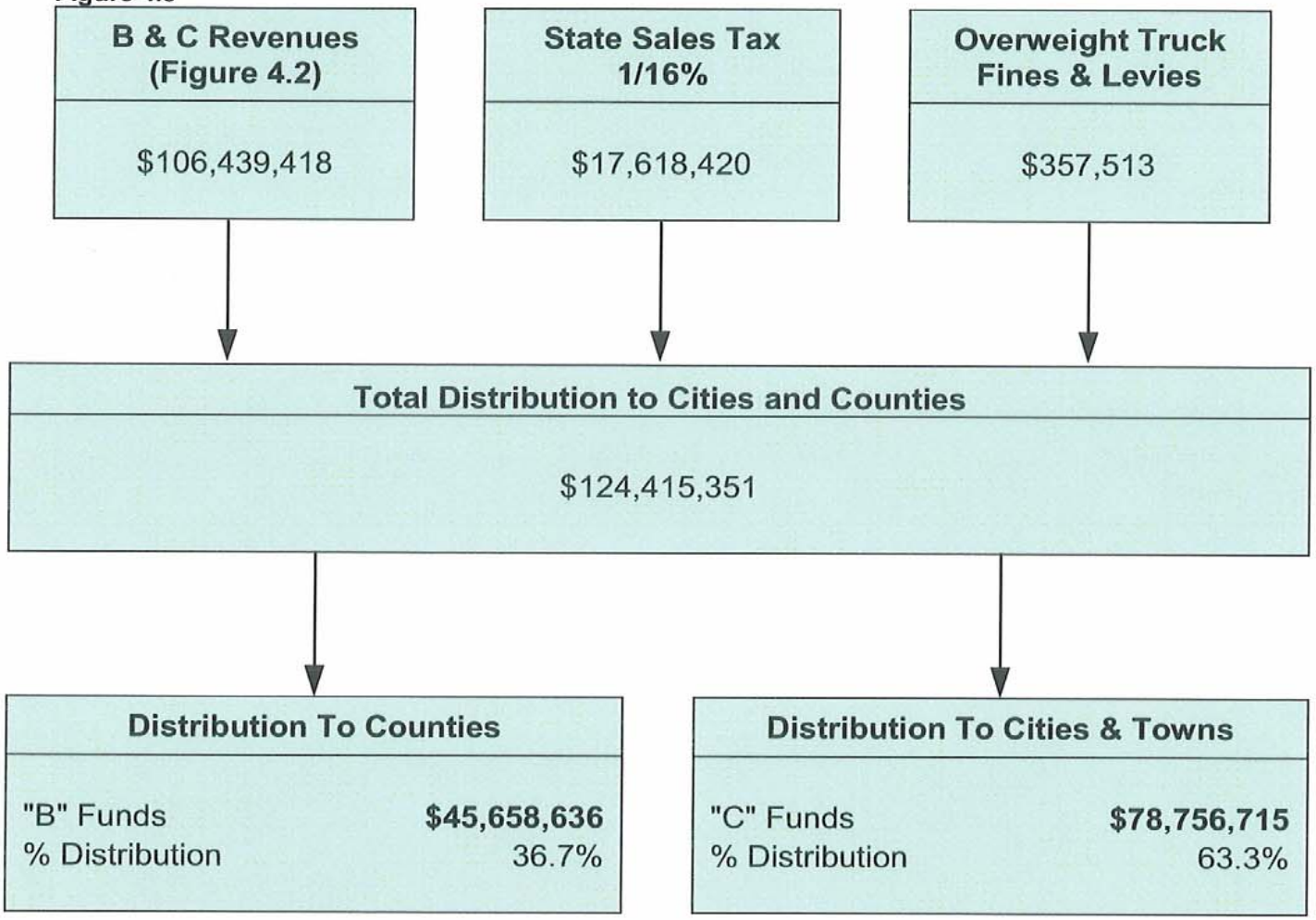


Figure 3.4



Distribution of Funds to Local Governments
Class B&C Roads
FY 2007

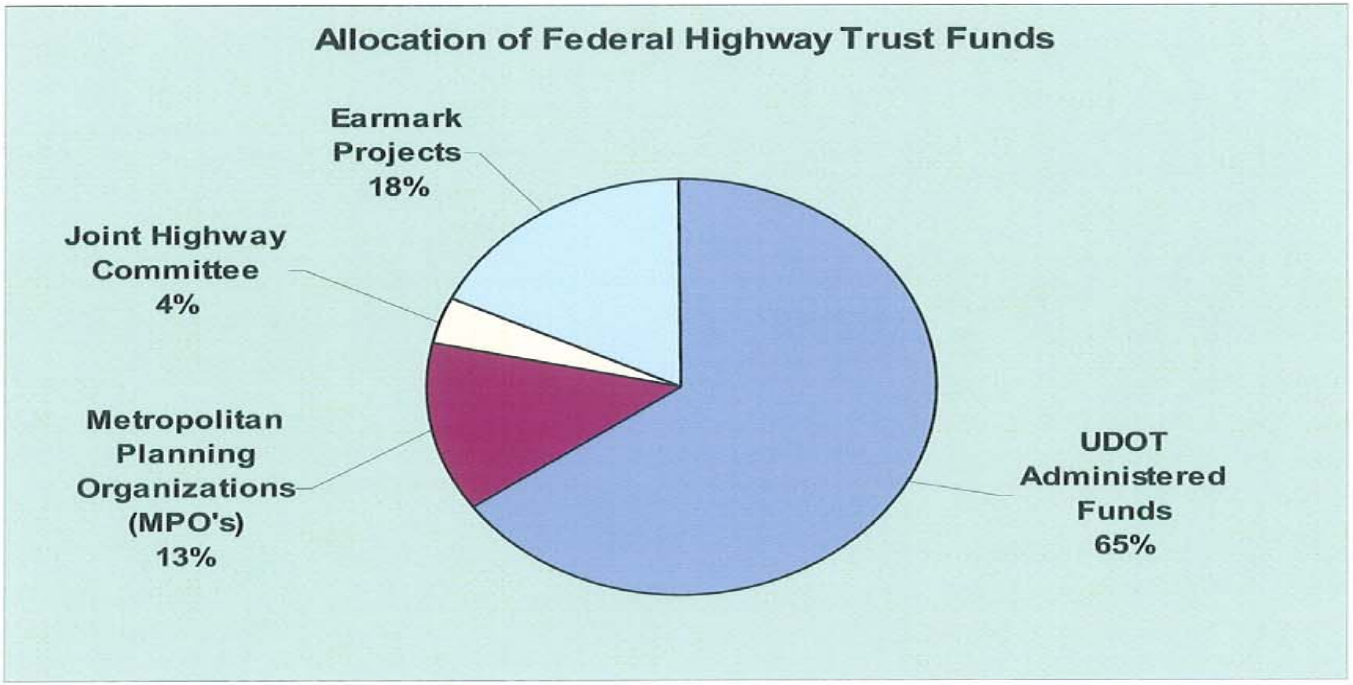
Figure 4.3



Allocation of Federal Highway Trust Funds
FY 2007

Figure 4.6

Disbursements	Amount
UDOT Administered Funds	$201,080,500
Metropolitan Planning Organizations (MPO's)	40,534,000
Joint Highway Committee	11,241,100
Earmark Projects	$56,128,500
Total Disbursements	**$308,984,100**



Construction Costs

- Asphalt Oil Doubled in one year
- Concrete Cement Doubled in one year.
- Fuel Prices are near $4/gallon.

AVERAGE LIFE SPAN OF ROADS

LOCALS = 25 YEARS

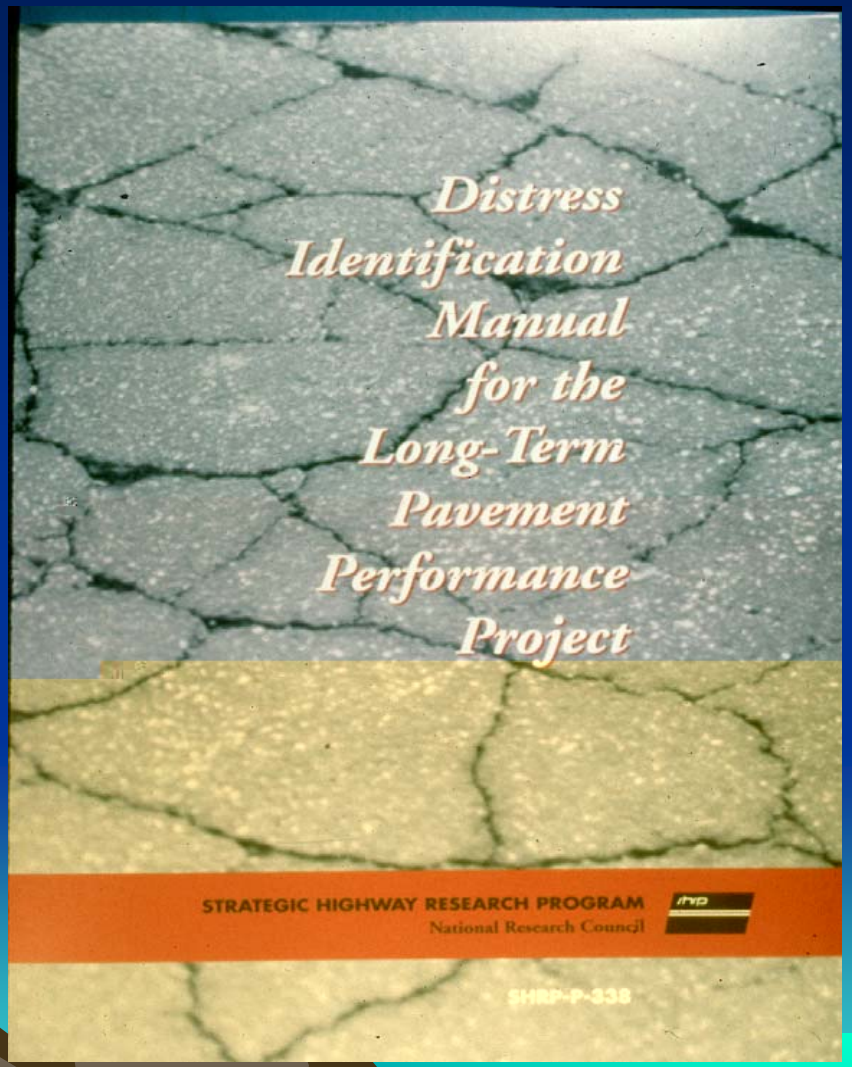
COLLECTORS = 20 YEARS

ARTERIALS = 15 YEARS

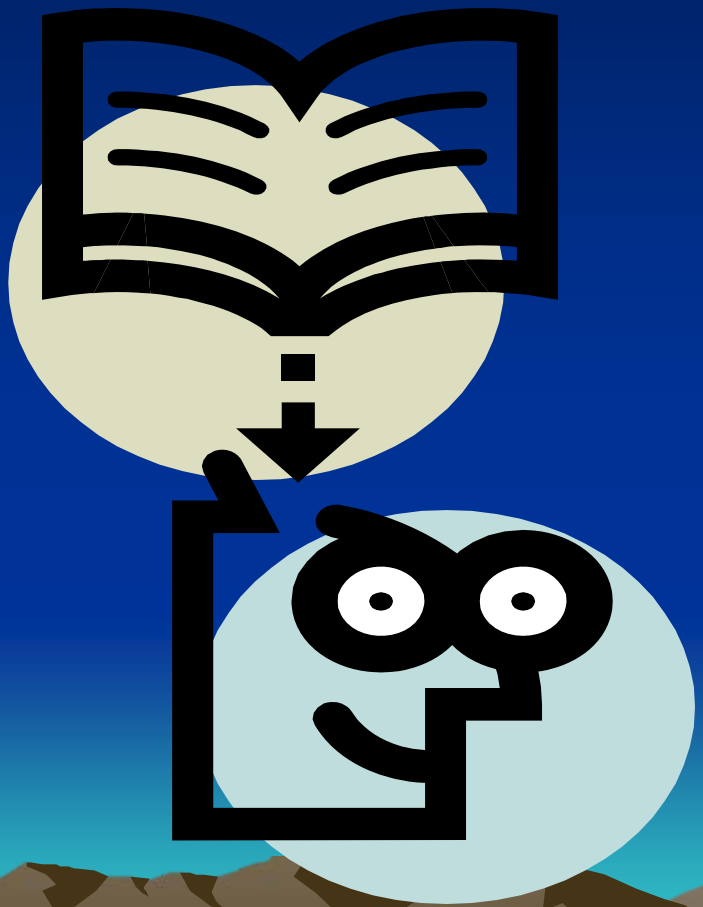
LOCAL GOV'TS NEED TO DO MORE WITH LESS

VISUAL CONDITION SURVEYS

- TYPES OF DISTRESS
  - * SEVERITY
  - * EXTENT
- DRAINAGE
- SHOULDER CONDITION
- SAFETY HAZARDS



Remaining Service Life (RSL) Approach



- **PSALMS 90:10 –**

“THE DAYS OF OUR LIFE ARE THREE SCORE AND TEN …

AND IF BY STRENGTH THEY BE THEY BE FOUR SCORE YEARS..”

Condition Assessment

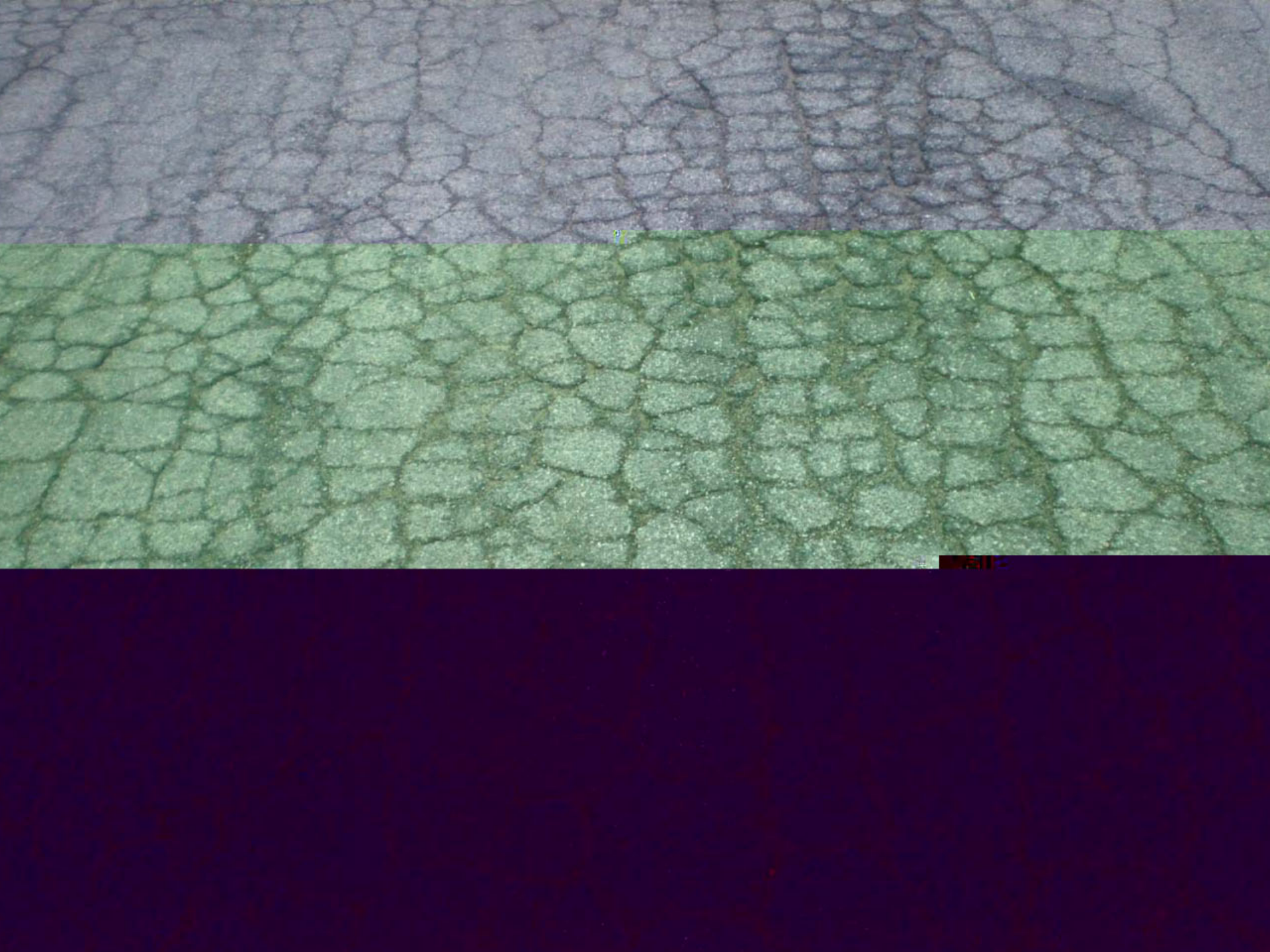
- Pavement Distress
- SHRP Distress Manual
- Severity & Extent
- Remaining Service Life

Flexible Pavement

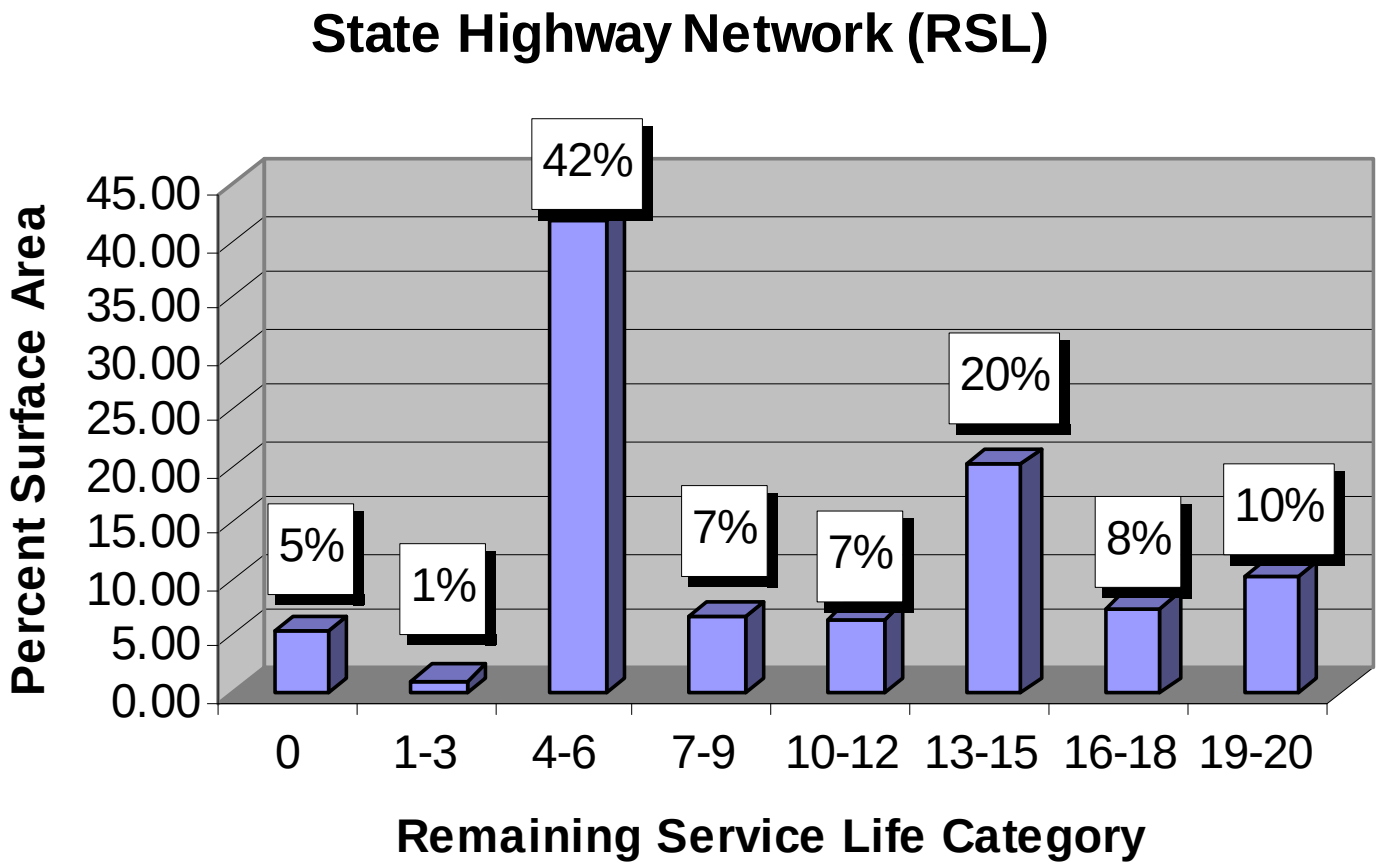
Low Volume Asphalt Fatigue Cracking

		Extent (Percent of Wheel Path)		
	0	Low	Med	High
	RSL (20)	0-10%	10-30%	>30%
Severity	**Low**	1	2	3
	Longitudinal crack in wheel path with no or only a few connecting cracks, no spalling or pumping	RSL (10)	RSL (8)	RSL (6)
	Med	4	5	6
	Interconnected crack pattern in wheel path, slightly spalled, no pumping	RSL (8)	RSL (6)	RSL (4)
	High	7	8	9
	Moderately to severely spalled pattern of interconnected cracks in wheel path, pumping may be noticeable	RSL (6)	RSL (2)	RSL (0)

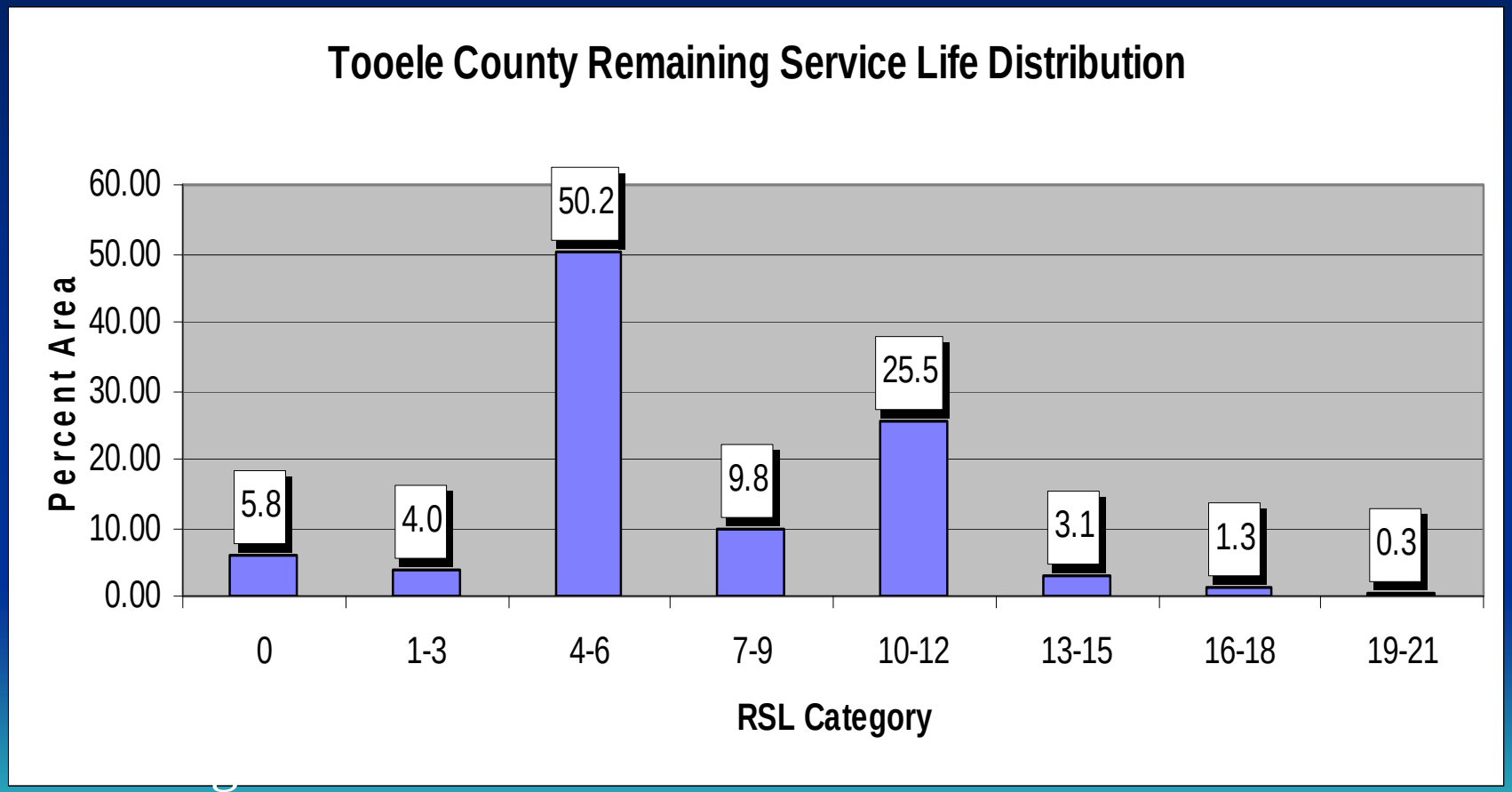
Reference: SHRP Distress Manual pages 8-9



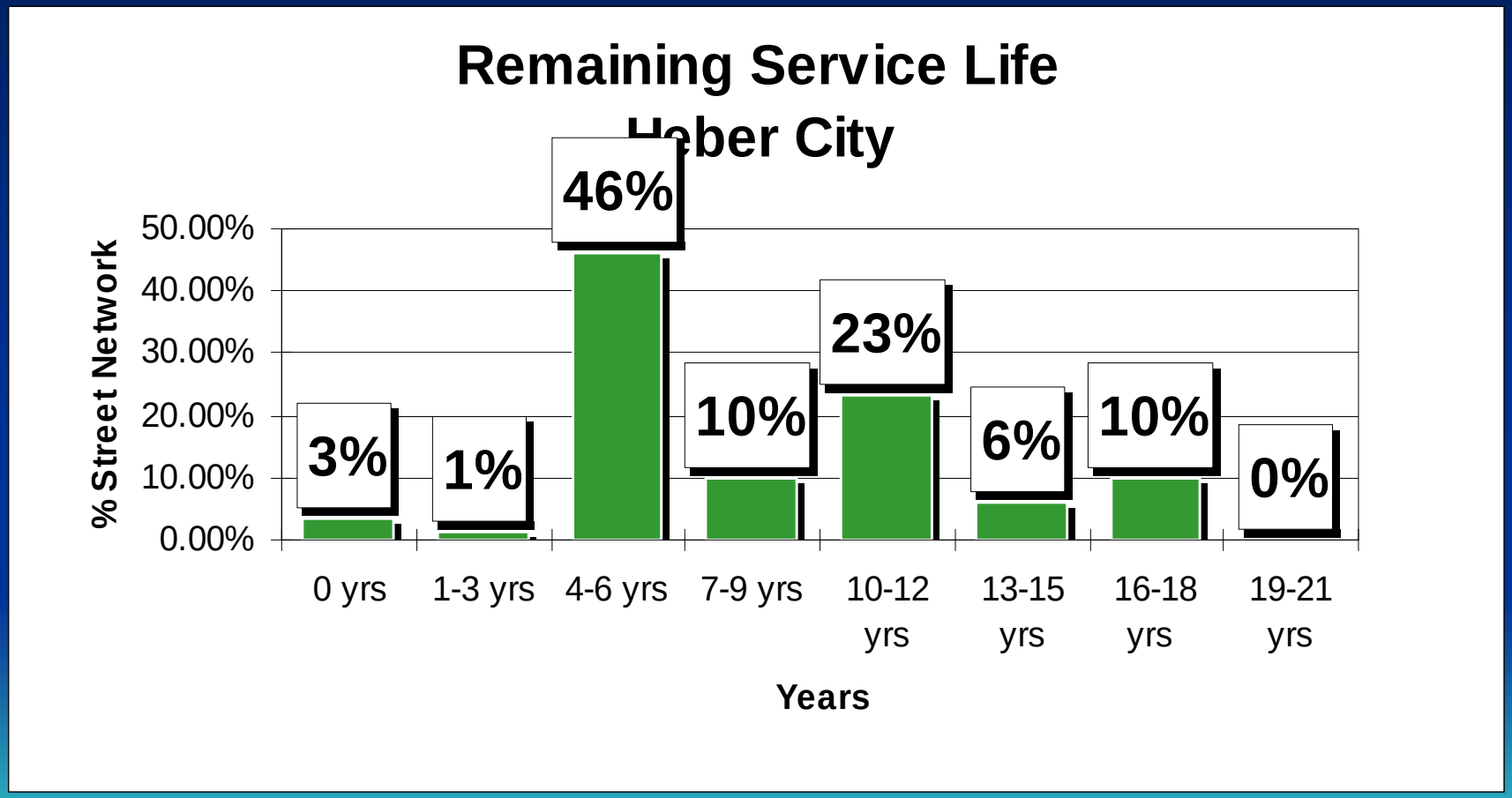
Remaining Service Life Distribution State



Remaining Service Life Distribution County



Remaining Service Life Distribution City



IN-PLACE RECYCLING-CANDIDATES

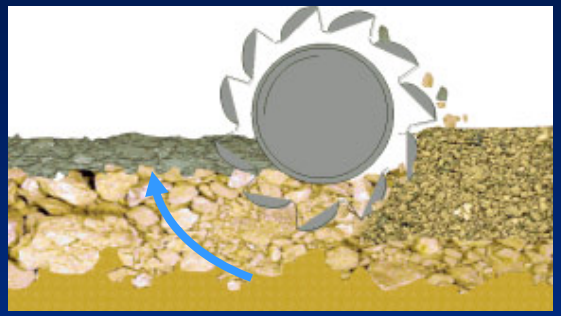
Source: PASER Manuals, Transportation Information Center, University of Wisconsin-Madison

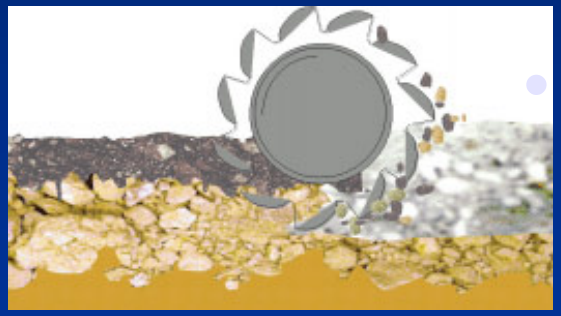

?
$
RSL of 0

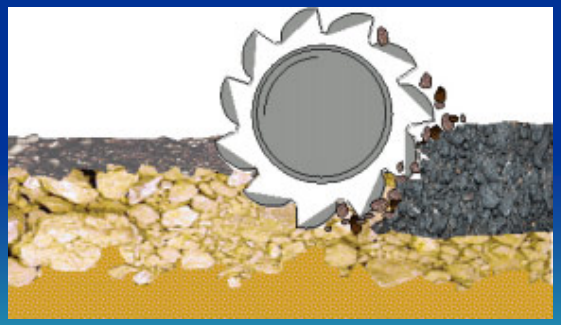
IN-PLACE PAVEMENT RECYCLING

- Full Depth Pulverization & Reclamation
- Granular Base Stabilization Techniques

Construction Processes







Mechanical stabilization - 1st step in reclamation; also used to describe FDR without addition of binder (Pulverization)

Chemical stabilization - FDR with chemical additive (Calcium or Magnesium Chloride, Lime, Fly Ash, Kiln Dust, Portland Cement, etc.)

Bituminous stabilization - FDR with asphalt emulsion, emulsified recycling agent, or foamed / expanded asphalt additive

Old Way/New Way


ROADTEC
RX-900

Emulsion FDR and GBS - Key Components

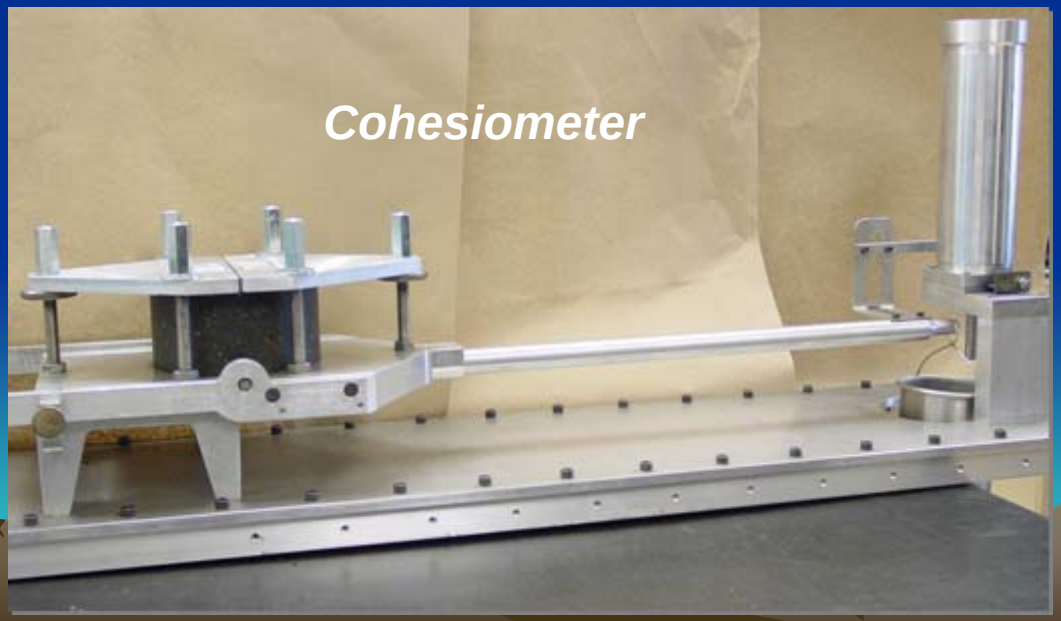
1. Project selection, pavement & material assessment
2. Engineered mix design
3. Performance-related specifications
4. Innovative emulsion technology
5. Construction Guidelines & QC specs

Engineered Mix Designs

Superpave Gyratory Compactor

Lab Mixer

Cohesiometer




PIONEER PARKWAY – ST.GEORGE
EXISTING CONDITION


CONSTRUCTION PROCESS


FINISHED SURFACE

Summary- In-Place Recycling Benefits

- FDR and GBS can address major pavement issues and be cost effective.
- Stabilization additives offers the following:
  - Early Strength and return to traffic
  - Cured Strength and Structural Adequacy
  - Cracking Resistance
  - Moisture Resistance (durability)
  - Cap can be surface treatment or thin HMA

LOCAL AGENCY EXAMPLES

- LOCAL AGENCIES USING ASPHALT ZIPPER
- SUMMIT COUNTY PROJECT
- Other Projects