CONCRETE PAVEMENT PRESERVATION IN GEORGIA

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Pavement Preservation

Pavement preservation is a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life, improve safety and meet motorist expectations.

Pavement Preservation

The sum of all activities undertaken to provide and maintain serviceable roadways. This includes preventive maintenance and some forms of reactive maintenance, as well as minor rehabilitation projects. It excludes new or reconstructed pavements and pavements requiring major rehabilitation or reconstruction

Concrete Pavement Preservation

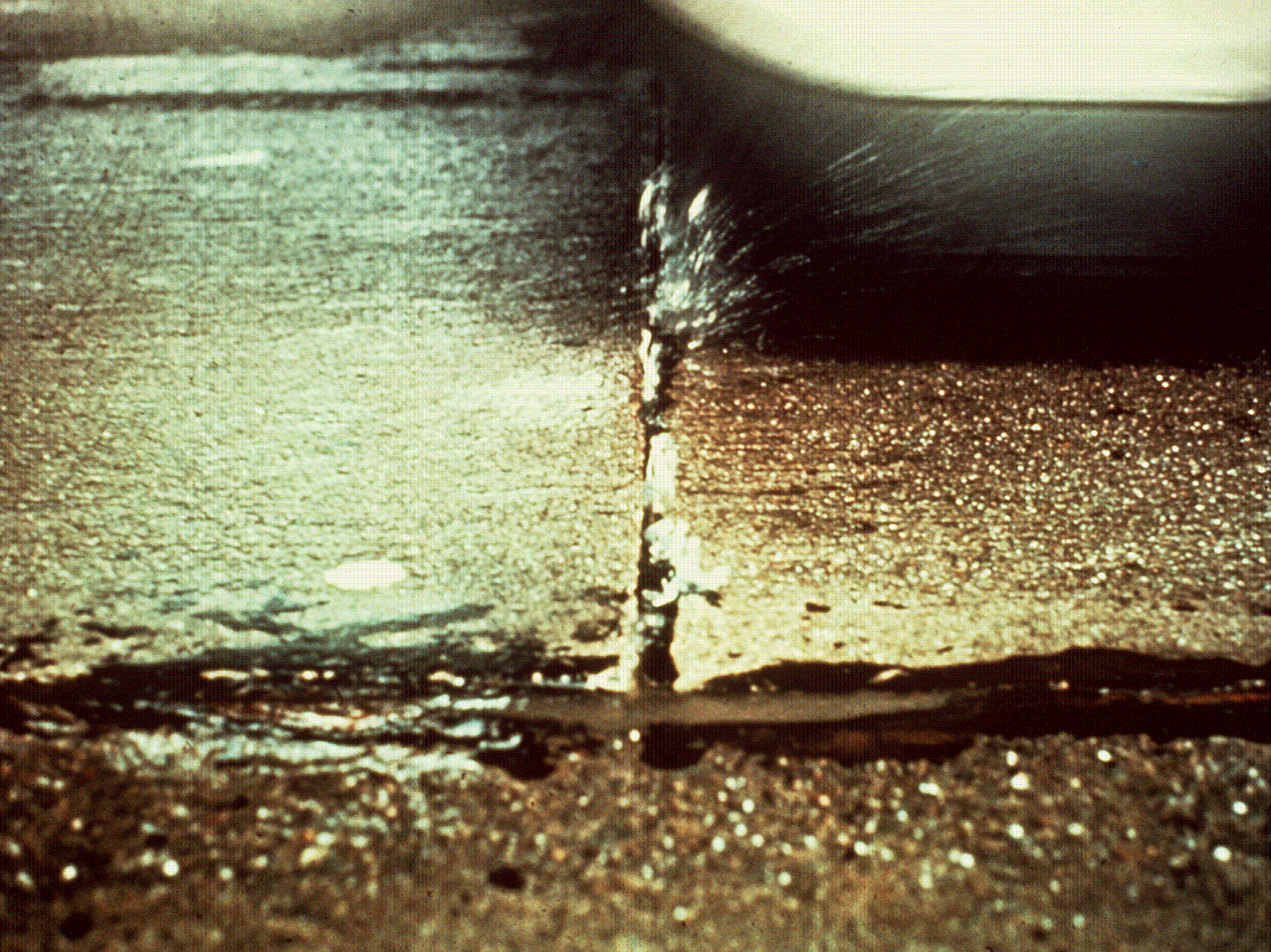
Manage the rate of deterioration

HISTORICAL TIMELINE

- 1971 First Comprehensive Interstate Condition Survey
- 1974 Research on CPR Procedures
- 1976 CPR Workshop in Augusta
- 1976 Started Letting CPR Contracts

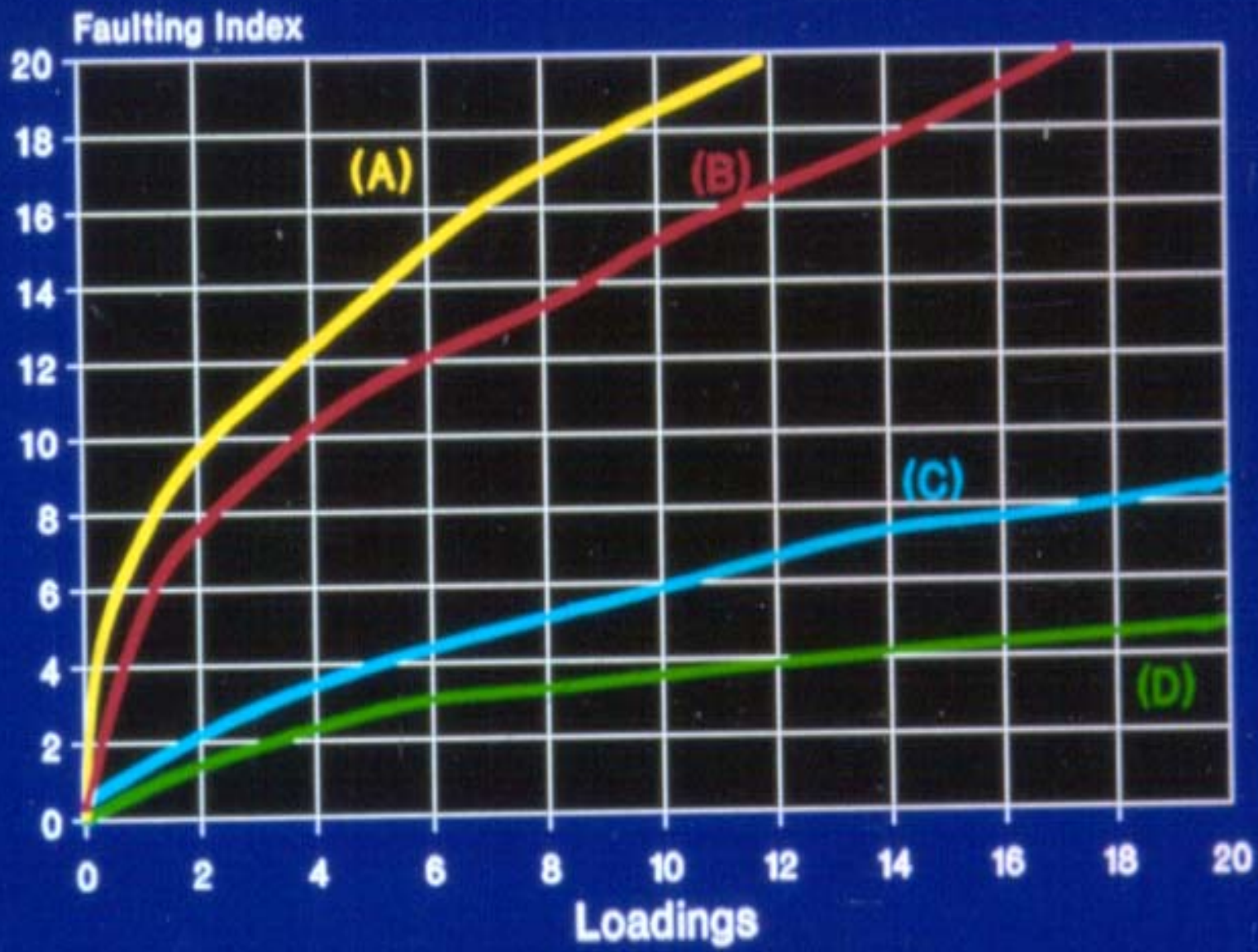
PCC CONDITION SURVEYS

- STARTED IN 1971
- FAULTING 12.5 % SAMPLE
- BROKEN SLABS
- REPLACED SLABS
- JOINT SEAL CONDITION
- SMOOTHNES
- FRICTION



PROBLEMS WITH PCC PAVEMENTS

- Erodible Bases
- Undoweled Joints
- Poor Joint Seal Performance
- Asphalt Shoulders
- Heavy Truck Traffic


Faulting Index
20
18
16
14
12
10
8
6
4
2
0
(A)
(B)
(C)
(D)
0
2
4
6
8
10
12
14
16
18
20
Loadings

Concrete Pavement Restoration

- Two things are required for restoration to be cost effective & have desired performance:
  - A feasible repair method that addresses the distress
  - Applied at the appropriate time.

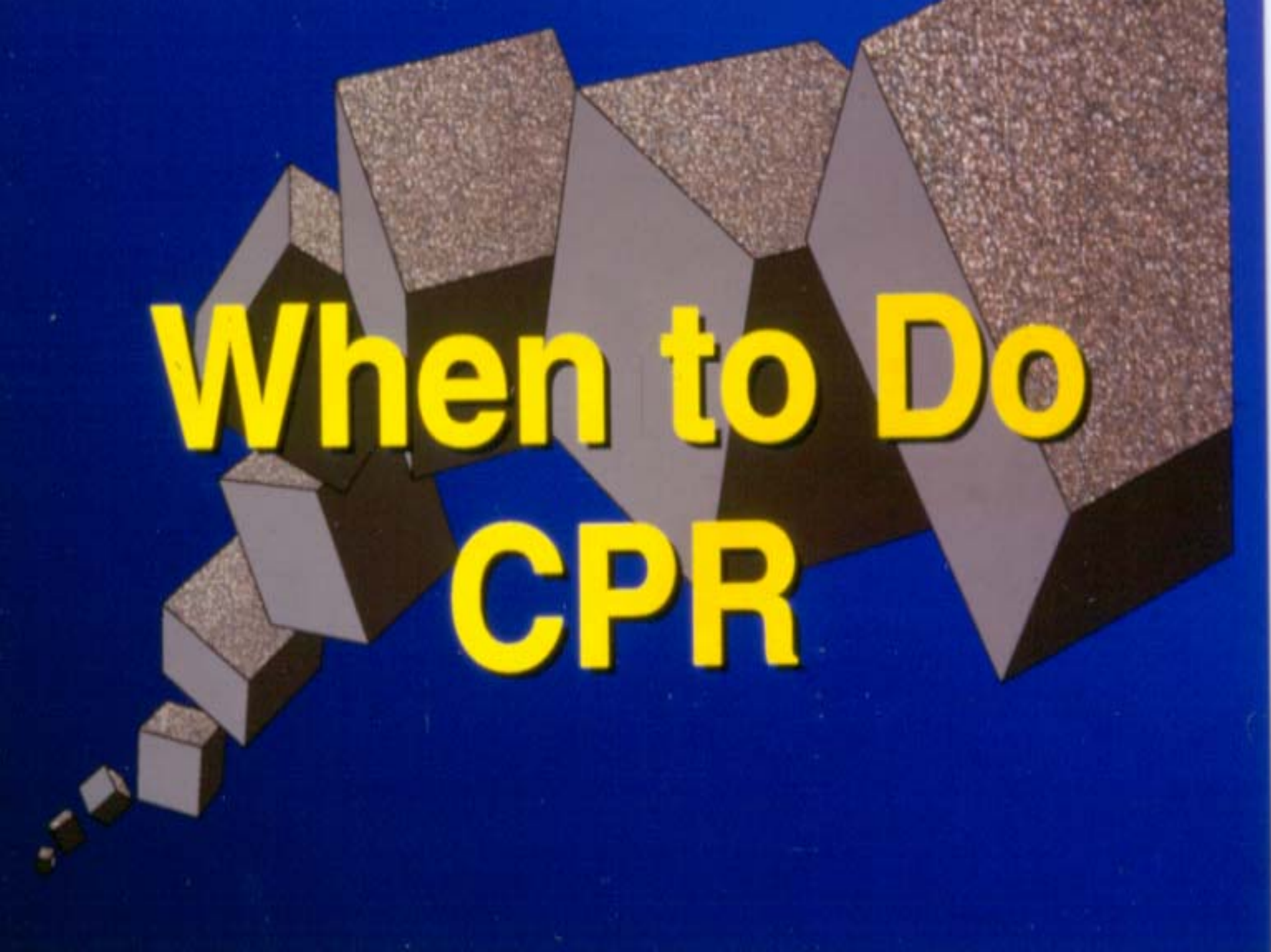
Concrete Pavement Preservation Strategies

- Determine type and extent of distress
- Review historical performance data
- Look at more than one technique
- Address the causes of existing deterioration
- Provide a reasonable improvement over existing pavement

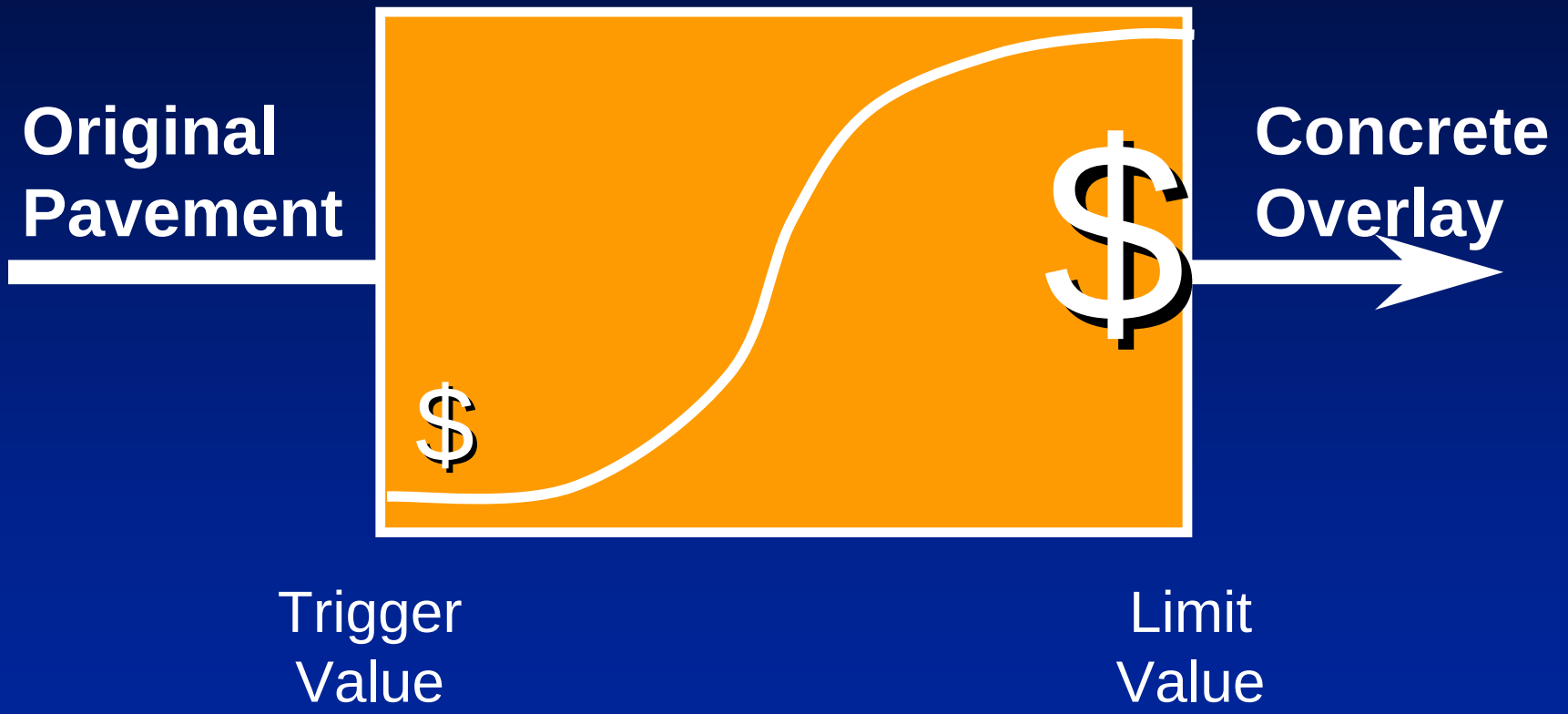
Restoration Techniques

Concrete Pavements

- Full-depth repair
- Partial-depth repair
- Diamond grinding
- Joint & crack resealing
- Slab stabilization
- Retrofitting dowels
- Retrofitting concrete shoulders
- Cross-stitching long. cracks/joints
- Retrofit Edge Drains


When to Do
CPR

CPR "Window of Opportunity"



Windows of Opportunities

Structural Trigger and Limit Values for JPCP

Traffic Volumes	Trigger / Limit Values		
	High ADT>10,000	Medium 3000<ADT<10,000	Low ADT<3000
Low - High Severity Fatigue Cracking (% slabs)	1.5 / 5.0	2.0 / 10.0	2.5 / 15.0
Deteriorated Joints (% joints)	1.5 / 15.0	2.0 / 17.5	2.5 / 20.0
Corner Breaks (% joints)	1.0 / 8.0	1.5 / 10.0	2.0 / 12.0
Faulting (avg. - mm)	2.0 / 12.0	2.0 / 15.0	2.0 / 18.0
D-Cracking (severity)	Medium-High		
Joint Seal Damage (% joints)	> 25 / ---		
Load Transfer (%)	<50 / ---		
Skid Resistance	Minimum Local Acceptable Level / ---		

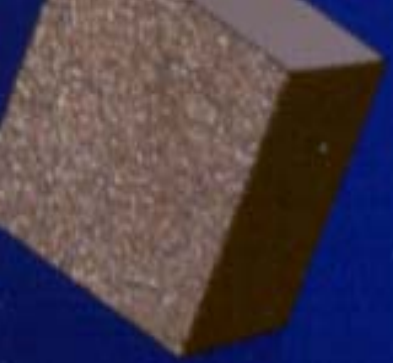
Windows of Opportunities

Functional Trigger and Limit Values for JPCP

Traffic Volumes	Trigger / Limit Values		
	High ADT>10,000	Medium 3000<ADT<10,000	Low ADT≤3000
IRI (m/km)	1.0 / 2.5	1.2 / 3.0	1.4 / 3.5
PSR	3.8 / 3.0	3.6 / 2.5	3.4 / 2.0
California Profilograph	12 / 60	15 / 80	18 / 100

CPR GUIDELINES GEORGIA

- FAULTING: 3/32” TO 1/8 “
- RIDE
  - GROUND: SI 1400 (IRI 106 in/mi)
  - ORIGINAL: SI 1650 (IRI 125 in/mi)
- CRACKED SLABS
  - NO MAX PERCENTAGE

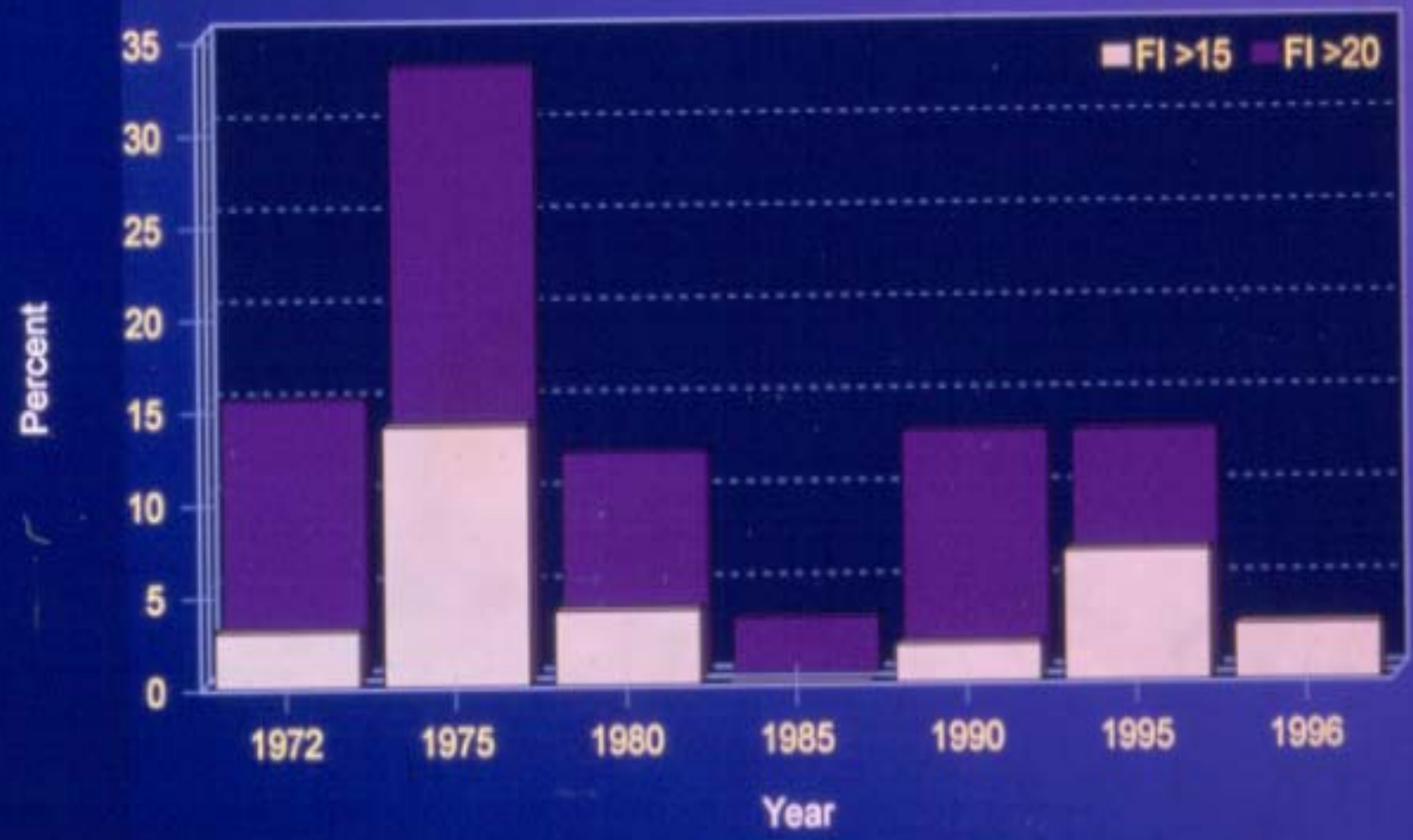


Performance

Faulting History

OSL

I-16; I-20; I-75; I-85; I-475



Smoothness Summary

I-16; I-20; I-75; I-85; I-475

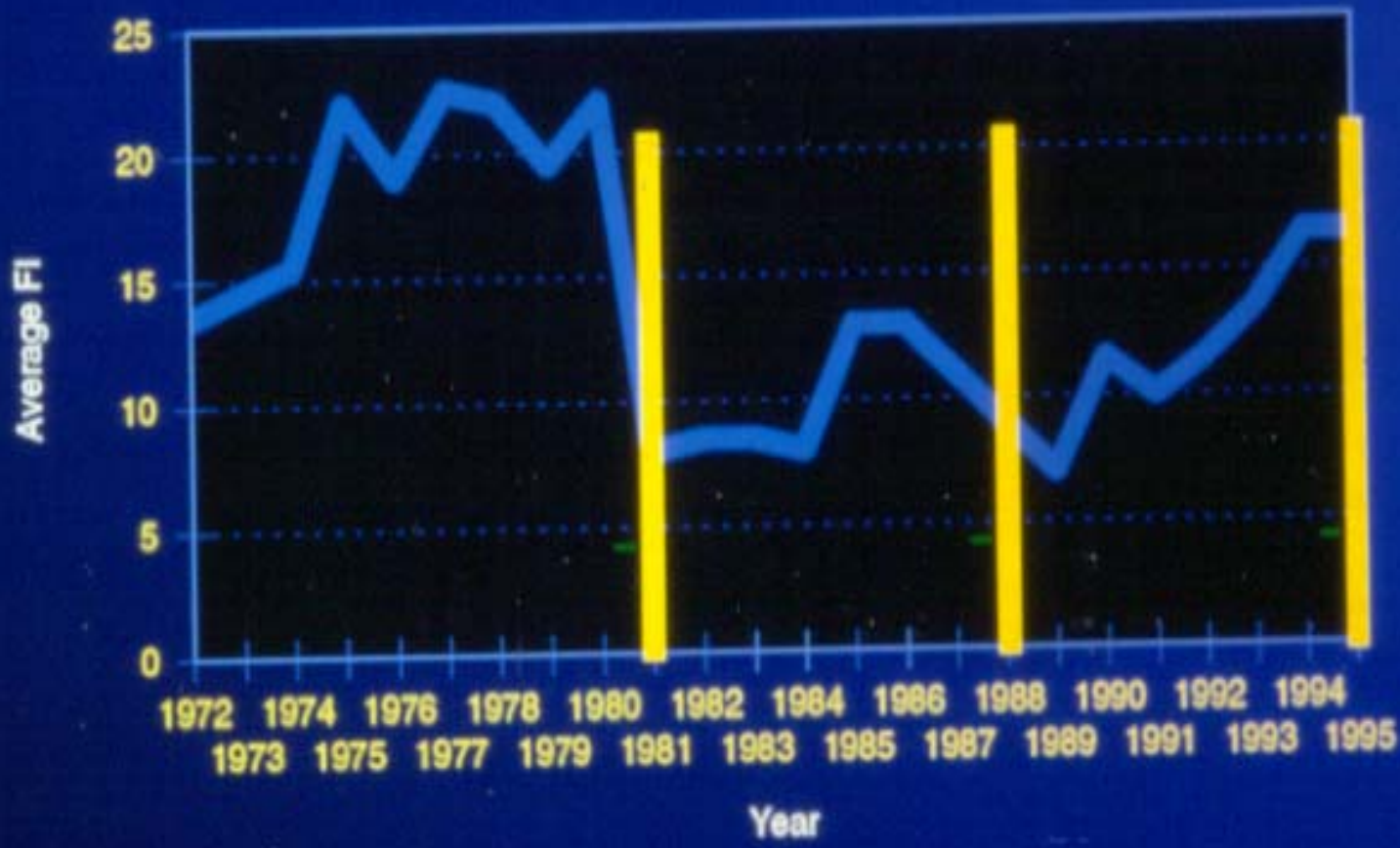

I-475

I-475

- OPENED TO TRAFFIC 1966/1967
- 9 INCH THICK PCC
- NO DOWELS, 30 FT JOINT SPACING
- SOIL/ BIT STAB. BASE
- DESIGNED FOR 5 MILLION ESAL'S
- CARRIED 50 + MILLION
- CPR IN 1980,1987,1995

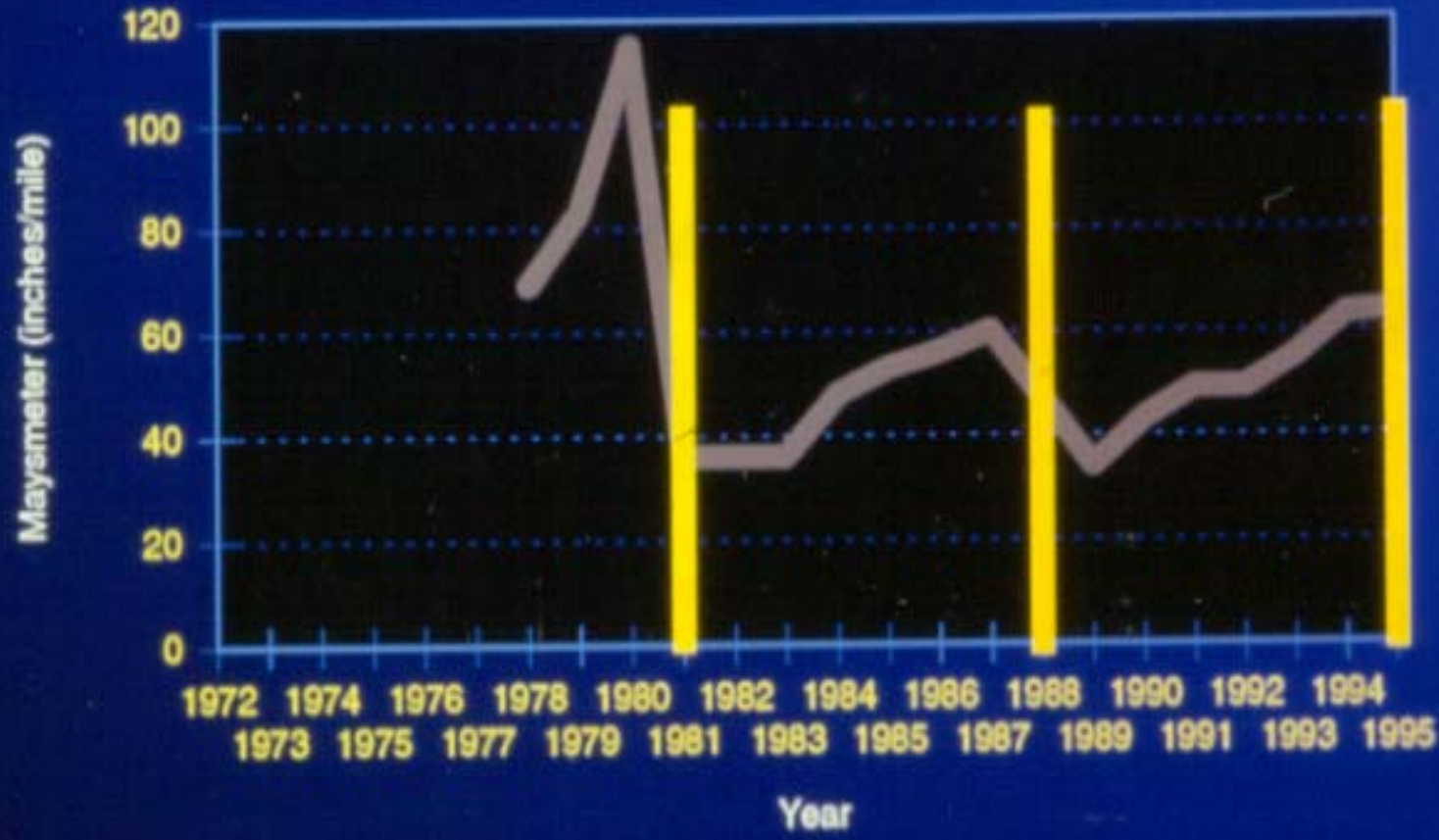
Faulting History

I - 475



Smoothness History

I - 475



Equivalent Loading History

I - 475


I-285

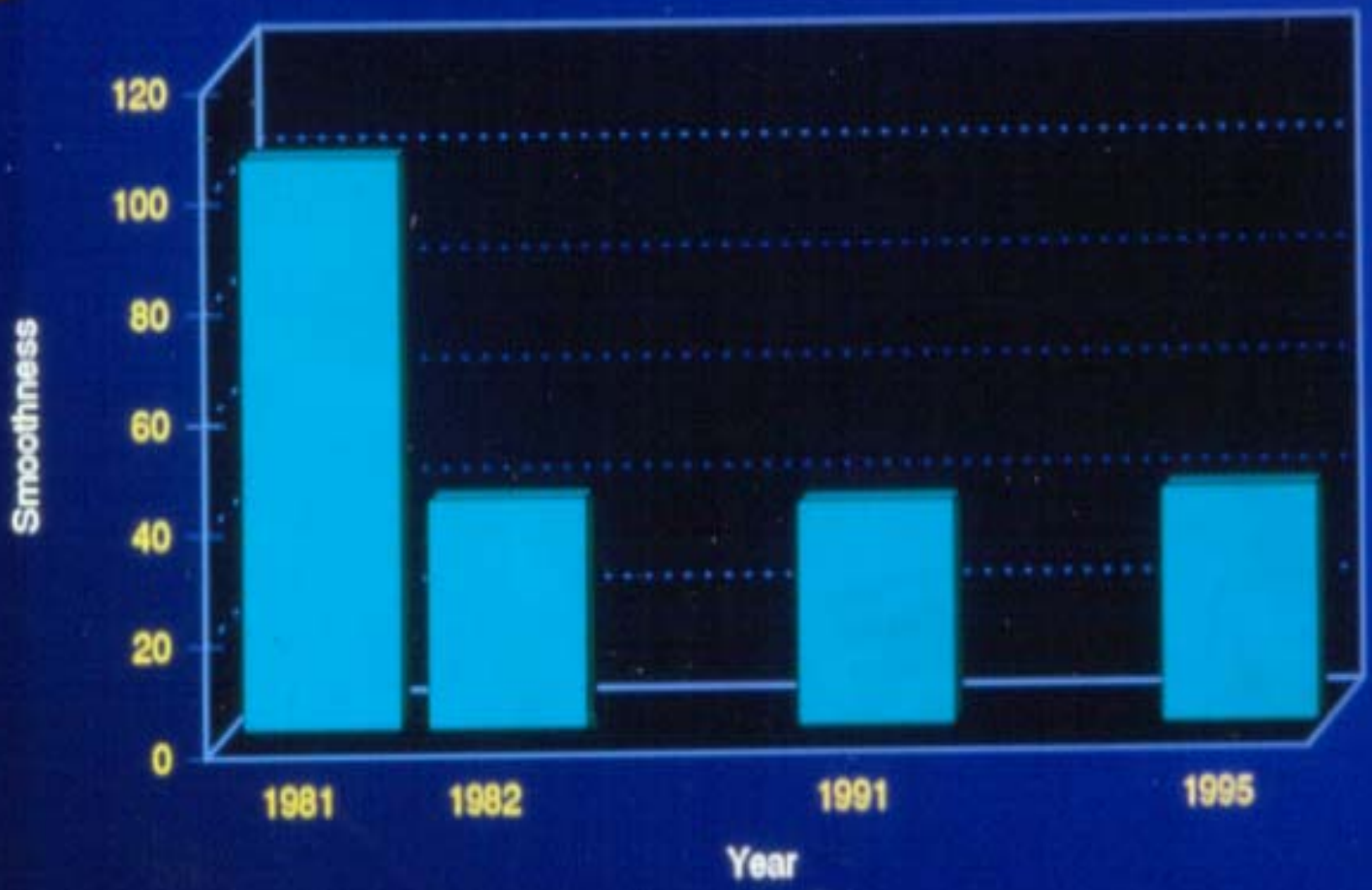
I-285
From I-20 to Chamblee-Tucker Road

- Opened to Traffic 1967/1968
- 10 inches Thickness
- No dowels. 30 ft joint spacing
- Inside lane added 1981
- Design Loads 5 to 6 million ESAL's
- 2002 Traffic 160,000 to 225,000
  15% trucks
- CPR in 1981 at 23 million ESAL,s
- Current est. ESAL's 125 million

I-285 1981 CPR

Smoothness History

I - 285 (MP 35 - 45)



Restoration Performance

- Provides 7 to10 or more years of service.
- Preliminary engineering & timing are critical.
- Overall effectiveness is highly dependent on design adequacy, construction quality, and other restoration activities.
- Future Maintenance

Concrete Pavement Preservation WILL

- Manage rate of deterioration
- Extend pavement life
- Maintain high level of serviceability
- Provide cost-effective alternative
- Allow for rapid repair under traffic
- Fit with traffic management strategies

Concrete Pavement Preservation WILL NOT

- Correct design deficiencies
- Stop aging of the pavement
- Prevent future deterioration
- Make pavement “zero maintenance”


Left to themselves,
things always go
from bad to worse.

Count on Concrete

PAVEMENT