



-Buried Treasure- Finding Innovative Solutions by Looking Beneath the Surface



What is a Treasure?



--TREASURE--

“ A Quantity of Precious Metals, Gems,
or other Valuable Objects”

NationalTreasure

A SYMBOL
OF FREEDOM



1956 - 2006

NATIONAL ROADWAY SYSTEM



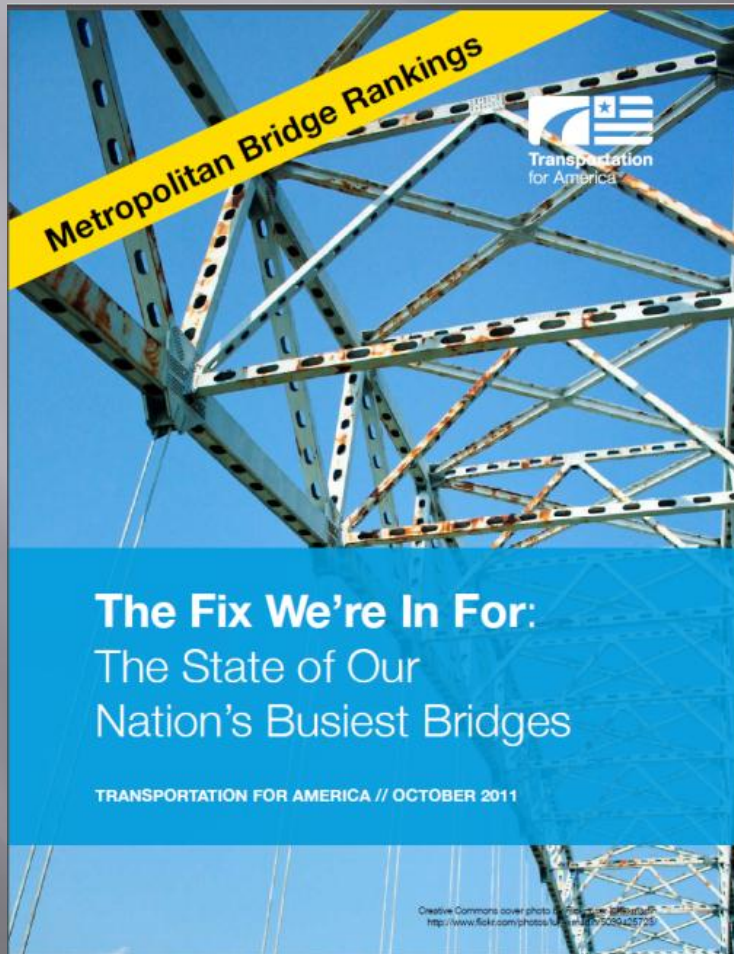
--What is Buried Treasure--

- ❑ A Pavement Preservation Technique that Uncovers and Renews Aged PCCP that has Been Overlaid with Asphalt due to Functional Requirements and Not Structural Issues
 - Functional Issues Consist of Noise, Friction, and Smoothness
- ❑ A Planned Preservation Strategy that can Maximize the Original Life of a Our National Treasure which is a Multi-Trillion Dollar Investment

How is it Accomplished

- ▣ Removing the Existing AC Overlay by Milling Off and Recovering RAP to Offset Costs
- ▣ Repair the Existing Concrete Pavement as Needed
- ▣ Diamond Grind the Surface to Restore the Roadway Template, Provide a Smooth and Quiet Ride

Is it Just Roads?



~14,000

Number of US locations



18,239

Number of deficient bridges



64 million

Daily customers served worldwide



210 million

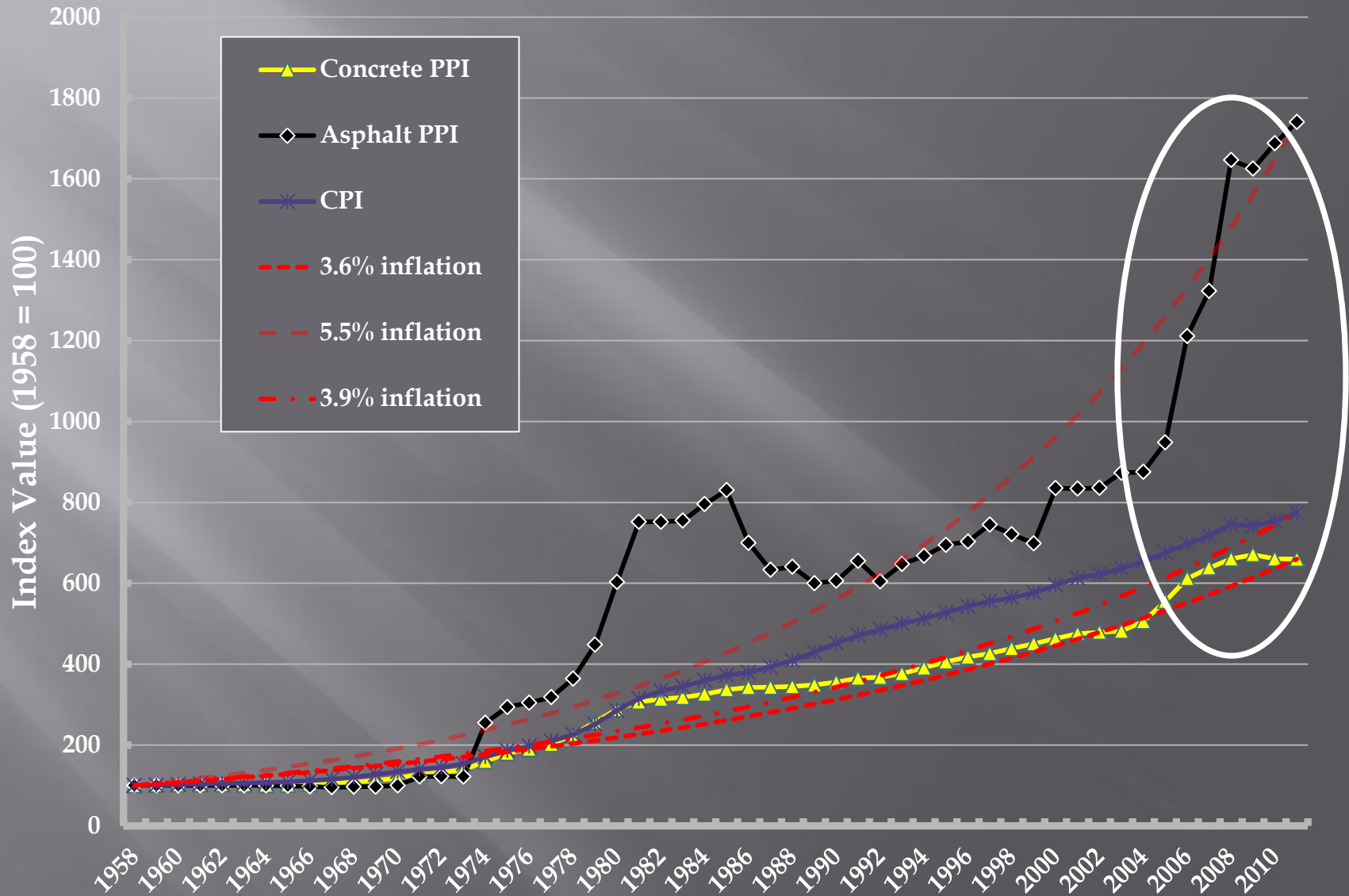
Trips taken daily on deficient bridges

So Why Consider this Now?

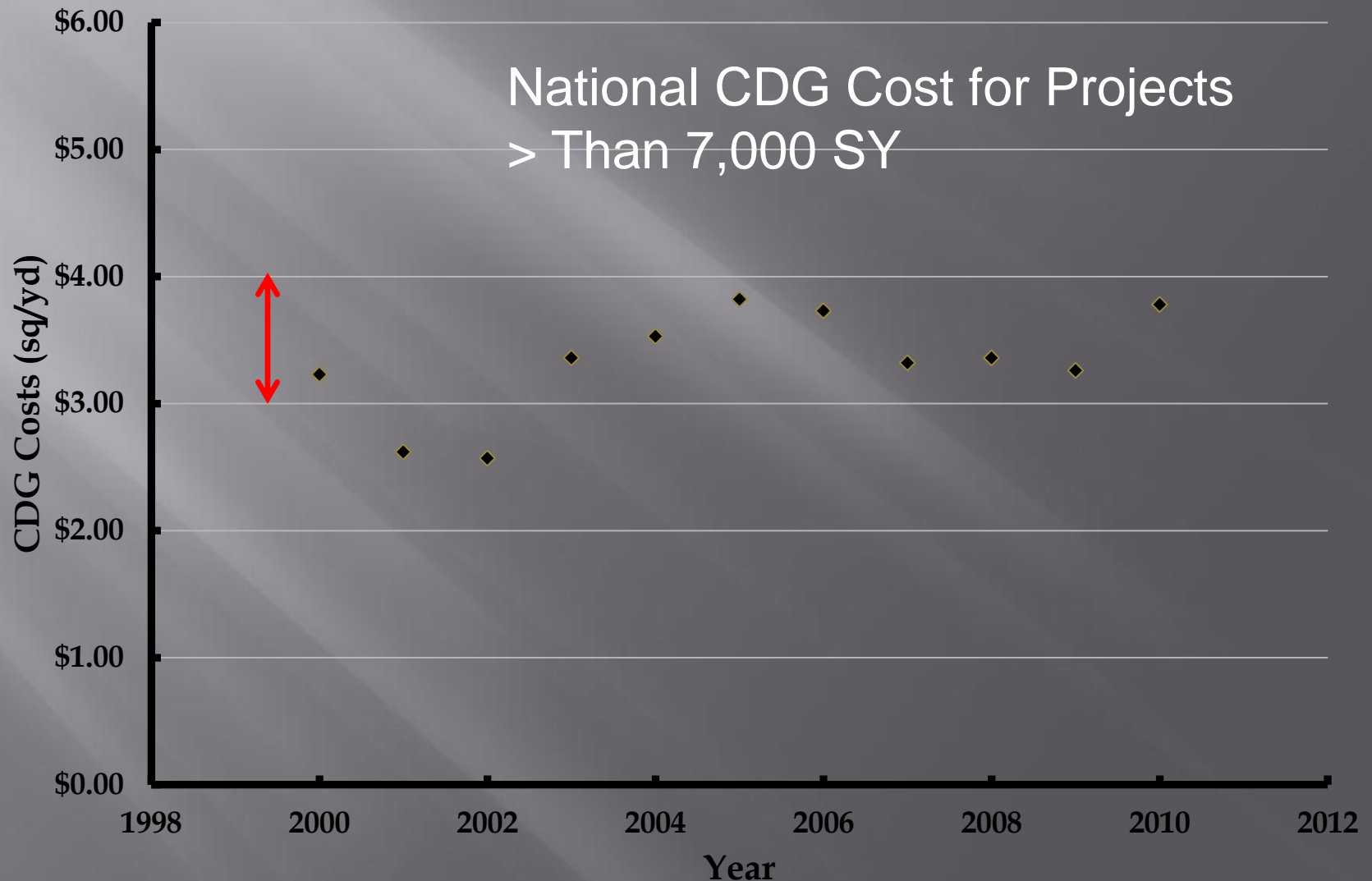


Back to the Future

Commodity Price Increases

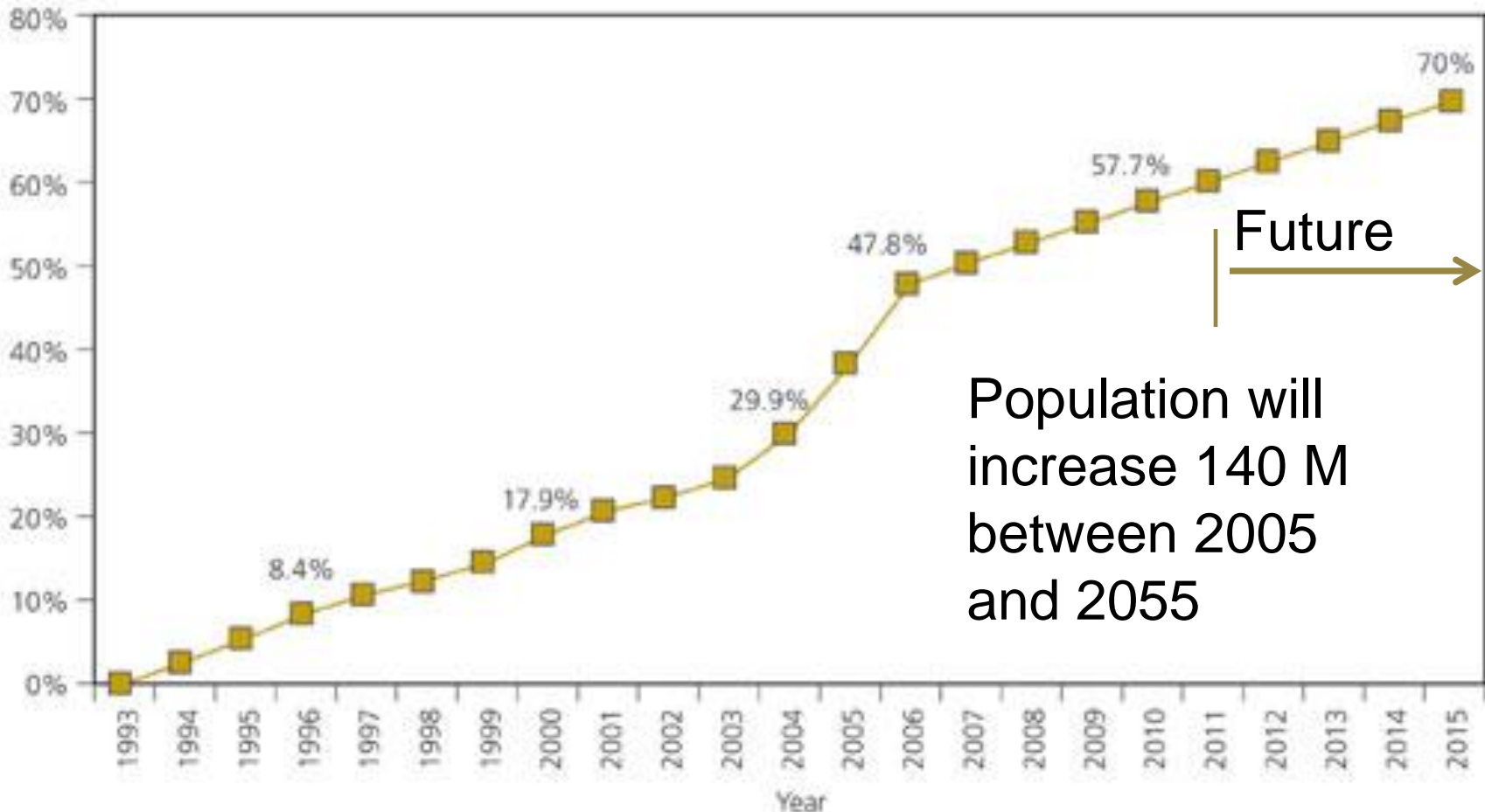


Its Cost Effective and Predictable



Construction and Population Increases

Percentage Increases in Construction Costs 1993–2015



Population will increase 140 M between 2005 and 2055

Note: Projected change from 2007 to 2015 based on the Consumer Price Index.
Data for 2004 to 2006 based on the Producer Price Index for highway construction.

How Do You Find Buried Treasure?



Finding Buried Treasures

- ❑ Identify Projects Nearing Rehab Based on Distress Conditions that were Concrete Overlaid w/ AC
- ❑ Identify Projects that were Overlaid for Functional Requirements (noise, ride, friction) or Repairable...
 - Bid Documents
 - PMS
 - Maintenance/Construction Personnel
- ❑ Conduct Engineering Analysis
 - ❑ Review Historical Records
 - ❑ Deflection Testing
 - ❑ Ground Penetrating Radar

Steps to Recovering Buried Treasures

- ❑ Digging it Up (Milling Off the Overlay)
- ❑ Cleaning it Up (Repairing the Concrete)
- ❑ Preserving it (Diamond Grinding the Final Surface)

Digging it UP!

MILLING OVERLAY OFF



THINGS TO NOTE

- ▣ Prevent Milling into the Concrete
- ▣ Often times variable depth of Overlay
- ▣ Carbide Tips can Damage Transverse Joints

Repairing the Treasure!

- ❑ Slab Replacement
- ❑ Slab Jacking
- ❑ Dowel Bar Retrofit
- ❑ Patching
- ❑ Sealing
- ❑ Conventional Diamond Grinding (preserving it)

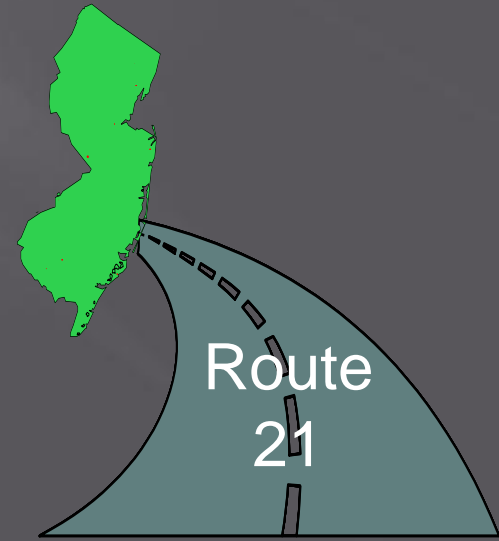
Newark N.J. Case Example

CONCRETE (23-60 YRS)

- ❑ 1931 – 1.4 Mile (Asbuilt)
- ❑ 1958 – 3.5 Mile (Asbuilt)
- ❑ 1970 – 1 Mile (Asbuilt)
- ❑ 9 Inches Thick
- ❑ 70,000 ADT
- ❑ Dowels

ASPHALT OVERLAY (7-8 YRS)

- ❑ 1993 Micro Surfacing for Skid Improvement
- ❑ 2001 Nova Chip to Replace Micro Surfacing Deterioration
- ❑ 2008 Buried Treasure



Slab Jacking (N.J.)



Slab Replacement



Pre-cast Panel Installed Ready for Diamond Grinding



Partial Depth Patches



Conventional Diamond Grinding through AC and PCCP



Conventional Diamond Grinding



30 % Ride
Improvement

Conventional Diamond Grinding

--Low Spots In AC--



Joint Resealing



Washington—Case 2

CONCRETE

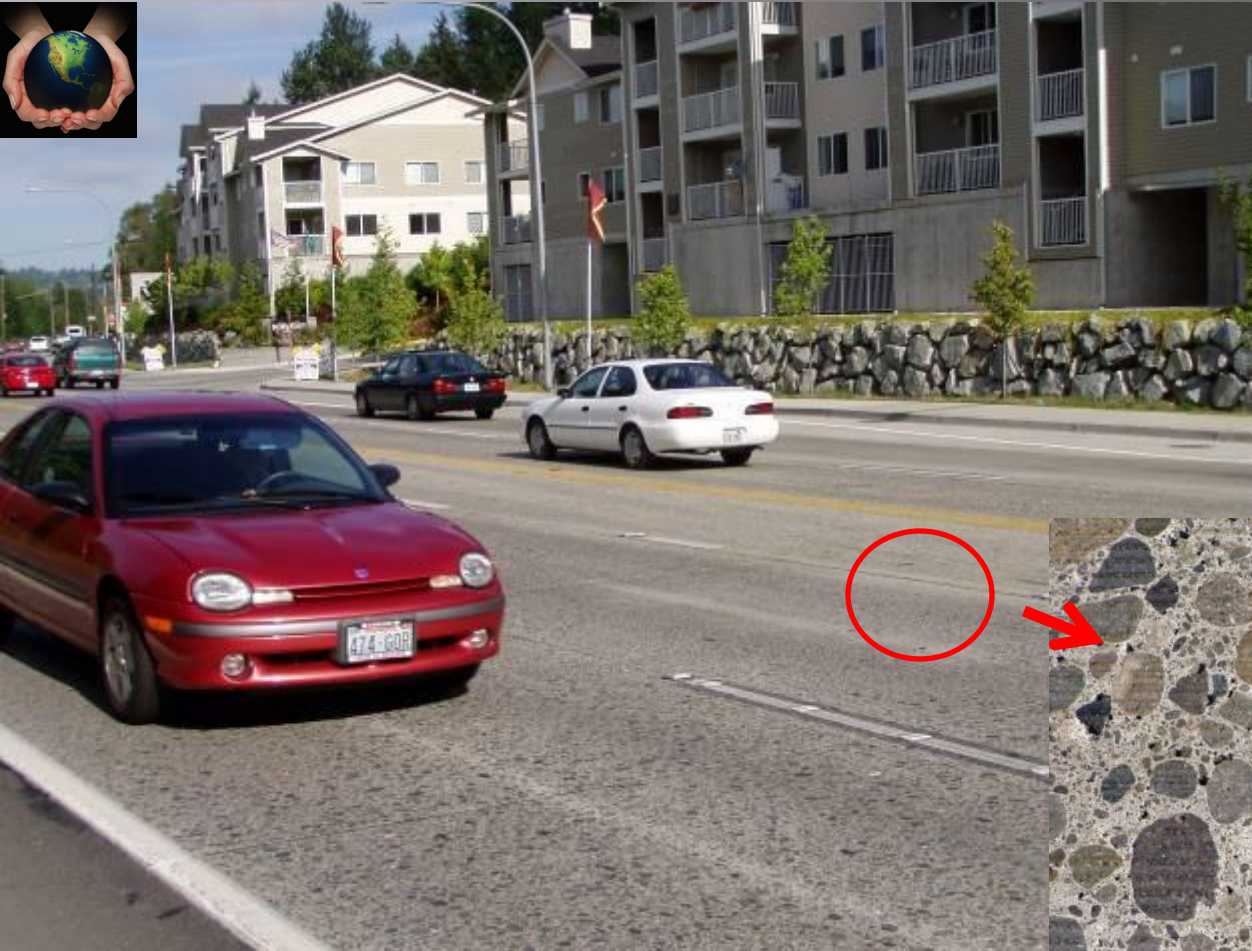
- 1917(?) Construction
 - ❑ 8" Plain Reinforced Concrete Pavement
 - ❑ Previous Asphalt widened lanes removed and replaced with concrete then entire project diamond ground

ASPHALT

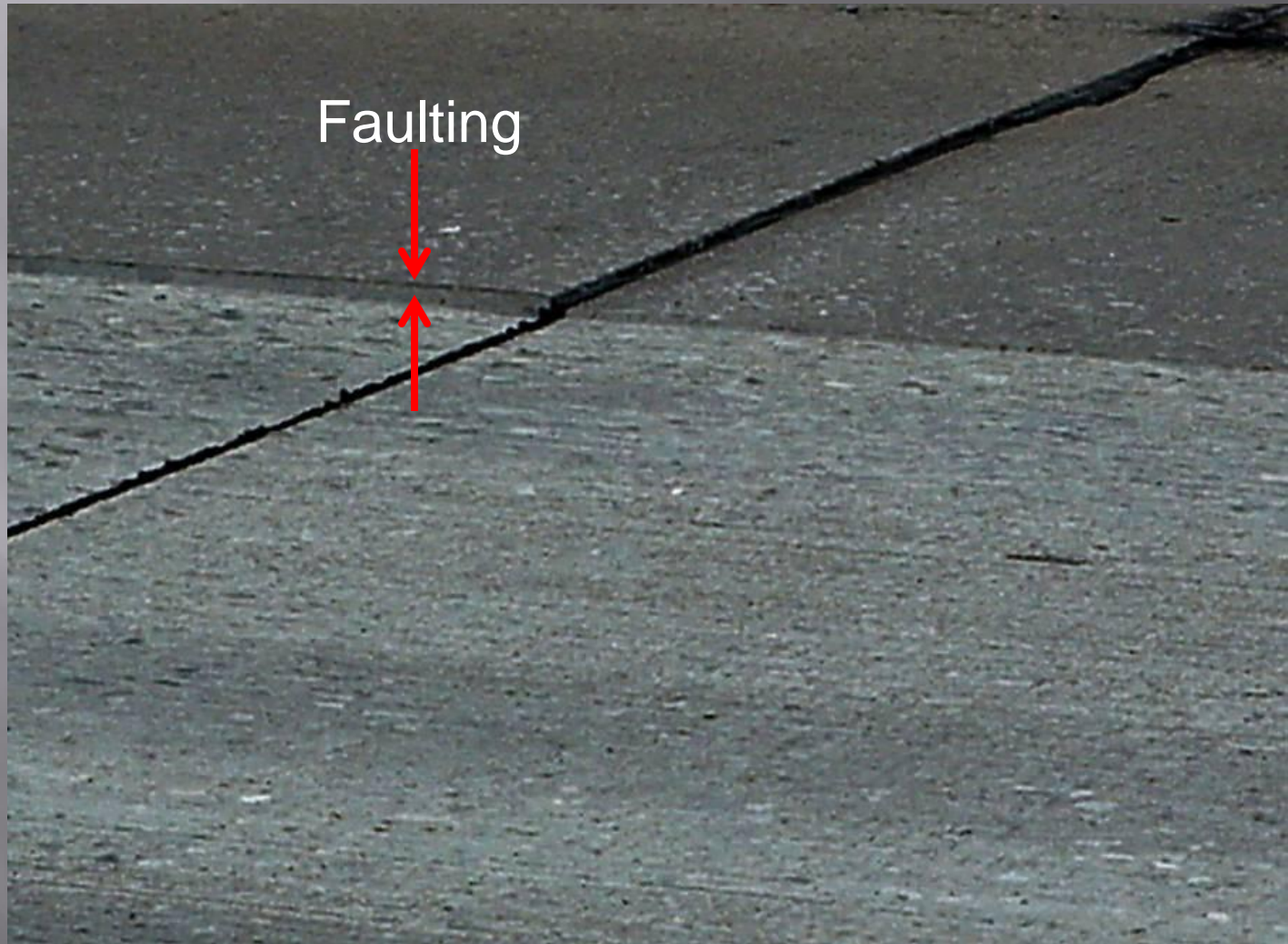
- ❑ Numerous Overlays
- ❑ Lane Widening with Full Depth Asphalt
- ❑ Ride quality and appearance suffered due to multiple patches, overlays and aging asphalt lane additions so Buried Treasure Approach Used in 2002



Washington SR 522



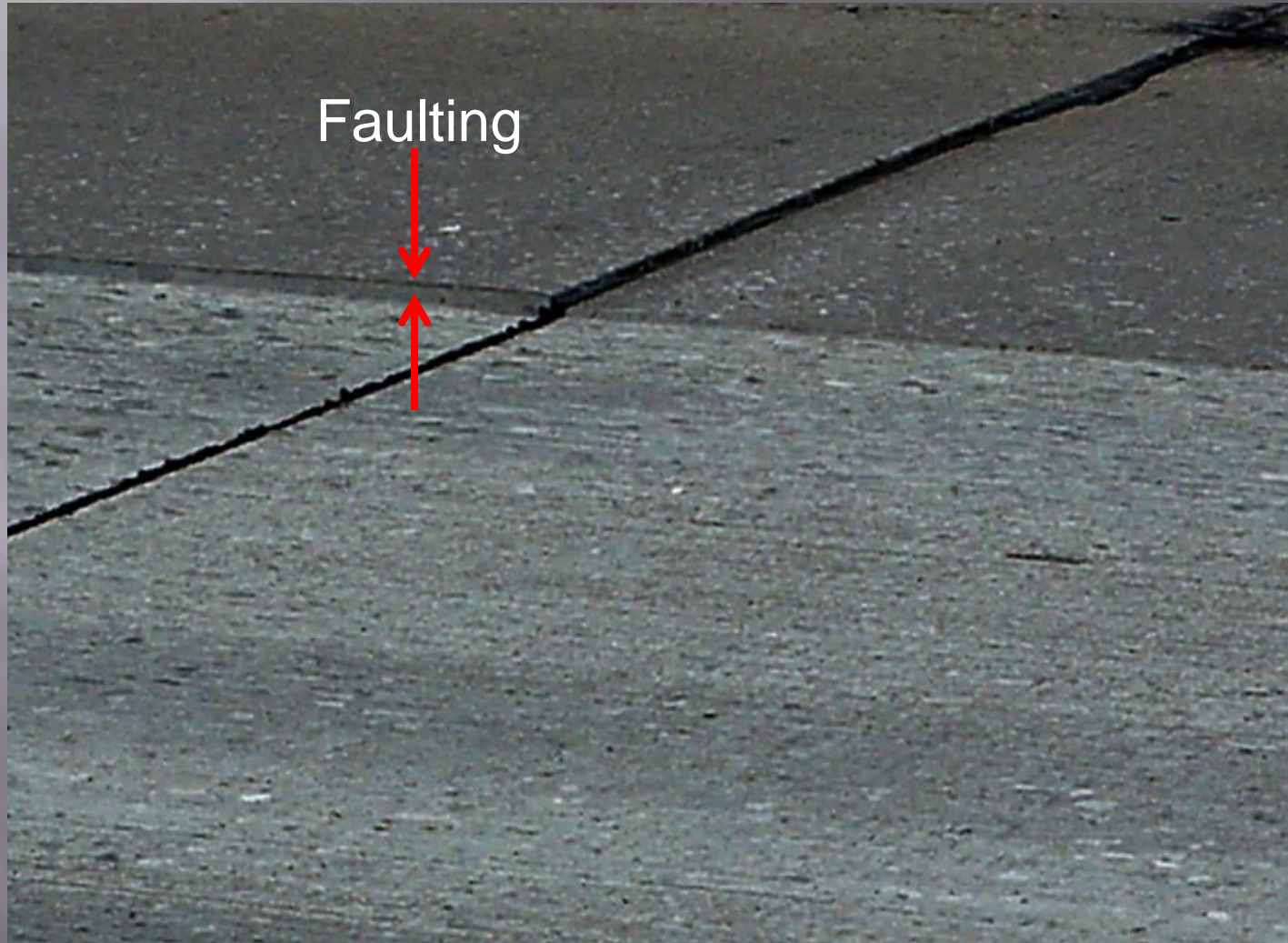
Case 3- More Traditional Functional Distress Removal



What is Diamond Grinding?

- ❑ Removal of thin surface layer of hardened PCC using closely spaced diamond saw blades;
- ❑ Results in smooth, level pavement surface;
- ❑ Longitudinal texture with desirable friction and low noise characteristics;
- ❑ **Comprehensive part of any PCC Pavement Preservation program**

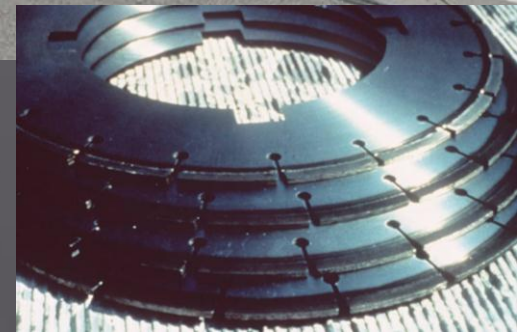
Case 3- More Traditional Functional Distress Removal



What is Diamond Grinding?

- ❑ Removal of thin surface layer of hardened PCC using closely spaced diamond saw blades;
- ❑ Results in smooth, level pavement surface;
- ❑ Longitudinal texture with desirable friction and low noise characteristics;
- ❑ **Comprehensive part of any PCC Pavement Preservation program**

Diamond Grinding Equipment



Diamond Grinding Equipment Process



Finished Surface



Pavement Problems Addressed

- ❑ Faulting at joints and cracks
- ❑ Built-in or construction roughness
- ❑ Polished concrete surface
- ❑ Wheelpath rutting
- ❑ Unacceptable noise level
- ❑ Permanent upward slab warping
- ❑ Inadequate transverse slope

In Summary



NationalTreasure

A SYMBOL
OF FREEDOM

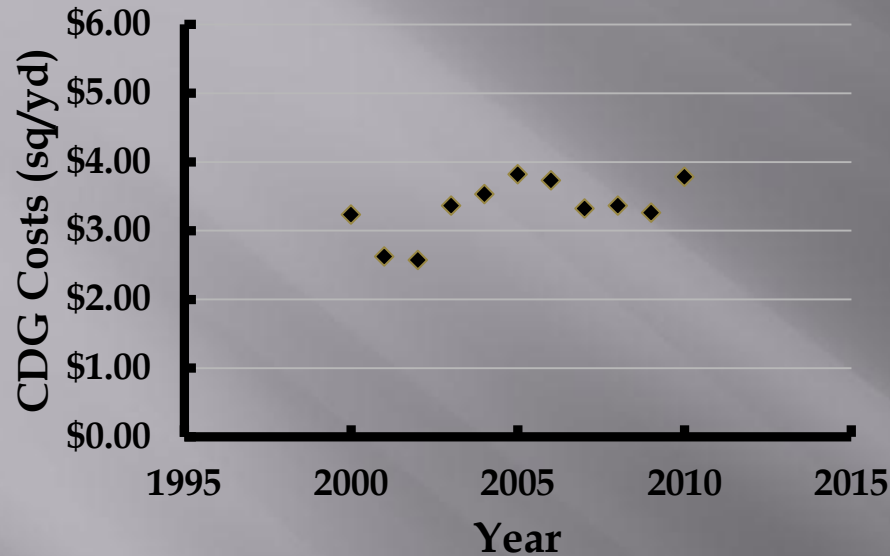


1956 - 2006

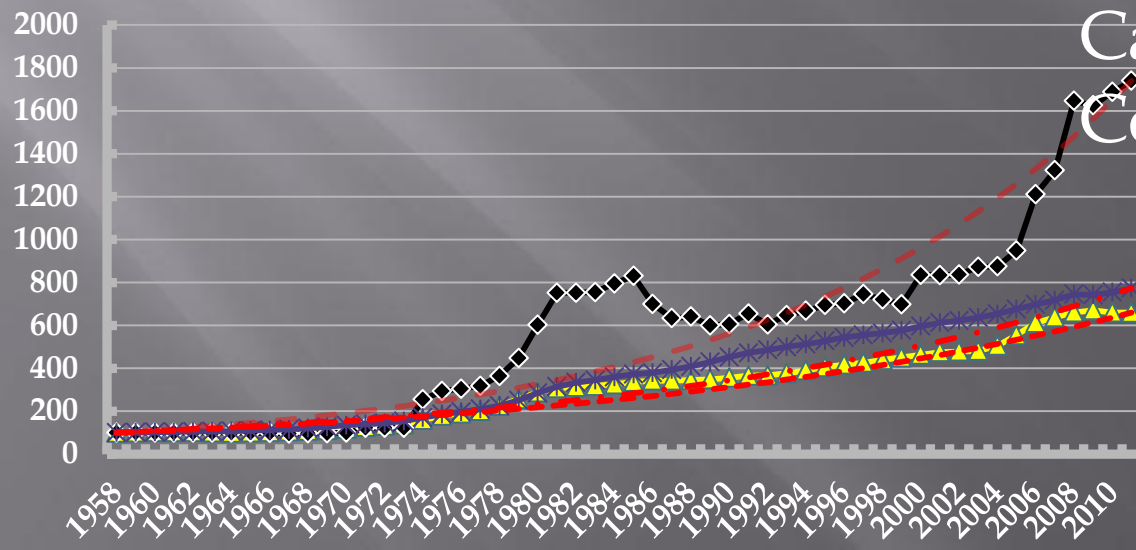
NATIONAL ROADWAY SYSTEM



Summary



- Uncovering Buried Treasure Can be the Most Cost Effective Solution
- It Can be the Most Sustainable Solution Since Few New Resources are Consumed
- The RAP has Value and Can Offset the Project Costs



Thank You

and

Visit Us on the Web

www.igga.net



Conventional Diamond Grinding through AC and PCCP

