

PCCAS Seattle



A wide-angle photograph of a large crowd of people gathered on a green lawn. The lawn is lined with numerous white cherry blossom trees in full bloom. In the background, a large, multi-story brick building with Gothic-style architecture is visible. The sky is overcast. The overall scene is festive and crowded.

Welcome!

PCCAS 45th Annual Meeting



May 10 and 11 Tampa Bay



Future of Flight Boeing Plant Tour Everett, WA

Road Infrastructure



Roads—there are a bunch

World Rank	Country	Paved Roads (km)	Road km per 1000 population
1	USA	4.2 million	14.5
2	India	1.6 million	1.5
3	China	1.6 million	1.2
4	France	1.0 million	15.6
5	Japan	0.9 million	7.4
37	South Africa	0.07 million	1.5
	World Total	18.0 million	2.8

Sources: CIA Fact Book and NationMaster.

Agencies that own roads in the US

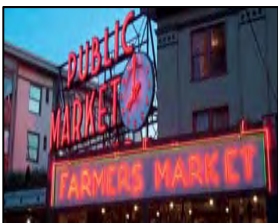
Customers for Contractors	Number
Private	a bunch...
Public	
Federal	5
State	52
Counties	2,815
Towns and townships	14,051
Municipalities	18,100
Total	35,023

Roads by ownership in the US

Owner	Kilometers	%
State	1,265,000	20%
County	2,889,000	44%
City or Town	2,039,000	31%
Federal	206,000	3%
Other	106,000	2%
Totals	6,505,000	100%

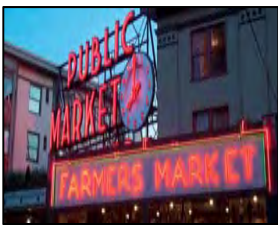
Total lane-kilometers = 13,503,000

Interstate lane-kilometers = 342,000



Perspective is fun but onward to issues...

- New tools
- Long lasting pavements
- Top down cracking



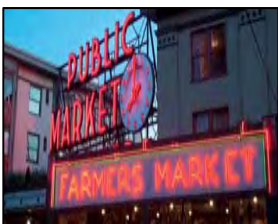
New tools

Recent useful tools

Design tools such as PaveXpress and rePave

The screenshot shows the PaveXpress website homepage. At the top left is the logo "PaveXpress" in green and black. To the right is a "Login" button. Below the logo is a navigation menu with "Home", "Getting Started", "My Projects", and "About". The main content area features a large image of a winding road with a "Welcome to PaveXpress" text overlay. To the right of the main image are three smaller images with captions: "Pavement design using AASHTO 93/98", "Pavement design for engineers and students", and "Pavement design for project scoping". Below the main image is a "Welcome to PaveXpress" section with a sub-headline "A simplified pavement design tool for flexible and rigid pavements using AASHTO 93/98." The page is divided into three columns: "Introduction" (with a paragraph about the tool's purpose), "Resources" (with a paragraph about design guides and a "View Resources" button), and "Get Started" (with a paragraph about launching the tool and a "Launch" button). At the bottom, there is a footer with "© Pavia Systems Inc. 2014", "Disclaimer", "Privacy Policy", and "Terms of Service".

The screenshot shows the rePave website homepage. At the top left is the logo "rePave" in blue and black. To the right is the "SHRP2 SOLUTIONS" logo with the tagline "Take the Road Back". Below the logo is a navigation menu with "Getting Started", "Resources", "My Projects", "My Account", and "Help". To the right is a "Login" button. The main content area features a large image of a multi-lane highway with traffic. Below the image is the "Pavement Renewal Solutions" section with a sub-headline "Guidelines for designing and building long life pavements using existing pavements in place." The page is divided into three columns: "Introduction" (with a paragraph about the rePave Scoping Tool and a "View Resources" button), "Resources" (with a paragraph about the SHRP 2 R23 study and a "View Resources" button), and "Get Started" (with a paragraph about the rePave Scoping Tool and a "Launch" button). At the bottom, there is a footer with logos for "U.S. Department of Transportation Federal Highway Administration", "AASHTO", and "TRB TRANSPORTATION RESEARCH BOARD".

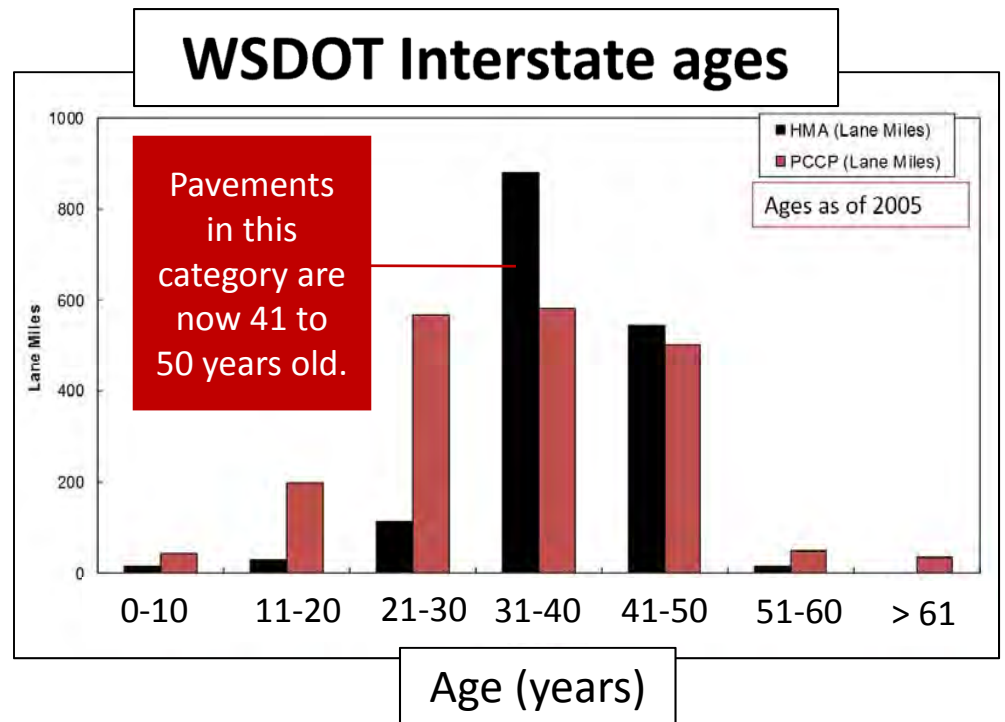
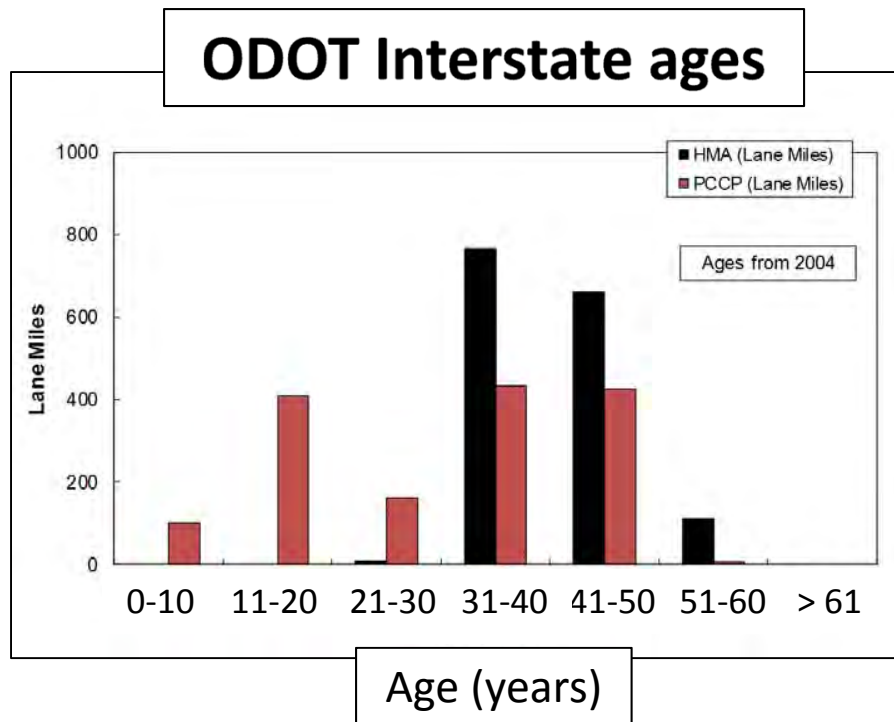


Long lasting pavements

What are long-lasting pavements?

- Similar to the perpetual pavement concept.
- Asphalt pavement designed and built to last longer than 50 years without requiring major structural rehabilitation or reconstruction is readily achievable.
- Not a new concept in that long-lasting pavements have been discussed and researched for some time and **exist all around us.**

Oregon and Washington Interstate Ages (10 years ago)

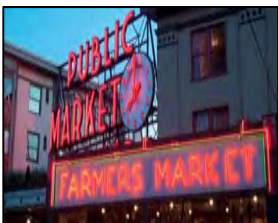


Over the last 10 years there have been no reconstruction of flexible pavements for Washington Interstate pavements and only limited reconstruction of JPCP.

Long-Lasting Pavements

Quote from Roger LeClerc—former WSDOT
Materials Engineer made during the 1970s.

**“Design and construct pavements so that you drive
the distress to the surface.”**



Top down cracking

Top down cracking

Examples are numerous of this type of cracking and it is critical to understand. We have been observing this type of cracking for at least 40 years in Washington State.

I-90 near Ellensburg, WA
Photo taken in 1976



City Street, Kirkland, WA



Top down cracking

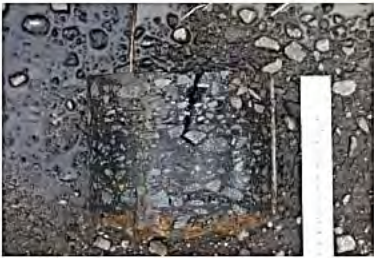
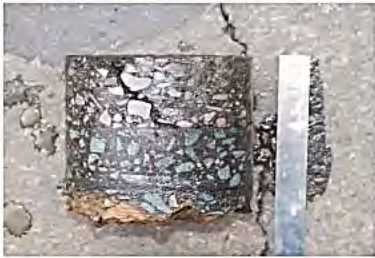


Top down cracking in cores from Panama



Why care about Panama?—it is a tropical climate and we see the same type of cracking in the **Pacific NW and Panama**. This should tell us something about the cause of the cracking.

Top down cracking in Panama (the pavement does not need to be thick to have this type of cracking)



These cores vary in thickness but most are about 3 to 4"



6+000



6+600



8+200



8+800



6+900



7+200



9+100



9+400

The End

