



Asphalt-Rubber 65 Years of People, Places and Progress

George B. Way



Chairman
Rubberized Asphalt Foundation
Scottsdale, Arizona, USA
wayouta@cox.net



Asphalt-Rubber 65 Years of People, Places and Progress Presentation Outline

Pioneers of Asphalt Rubber

Charles “Charlie” McDonald – Engineer Inventor

Gene Morris – Research Engineer

Robert “Bob” Winters – Business Owner CEO Inventor

Don Neilsen – Business Executive Inventor

Bernard “Barney” Vallergera – Engineer Scientist



Presentation Outline

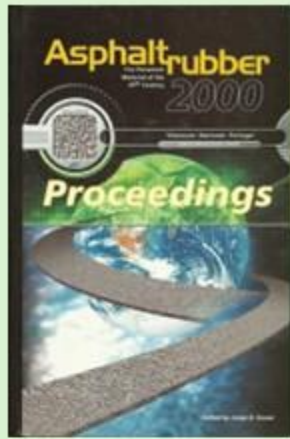
Asphalt Rubber Support Organizations

Asphalt Rubber Producers Group, ARPG 1985-1995

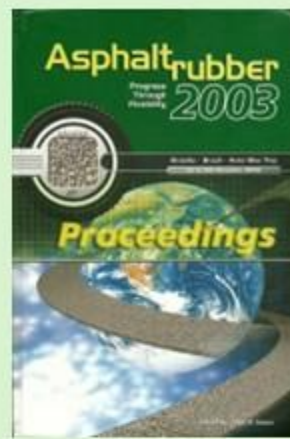
Rubber Pavements Association, RPA 1995-2020

Rubberized Asphalt Foundation, 2006-Present

Consulpav 2000 to Present



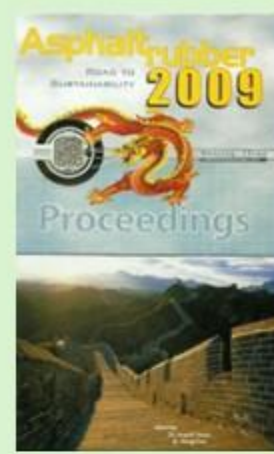
**AR2000
Portugal**



**AR2003
Brazil**



**AR2006
California**

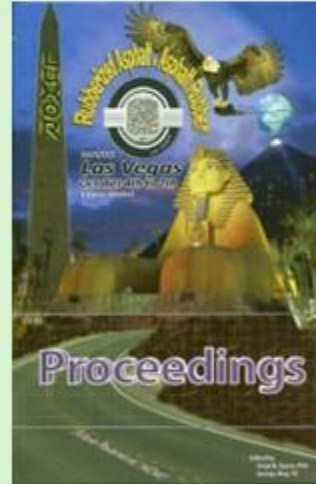


**AR2009
China**

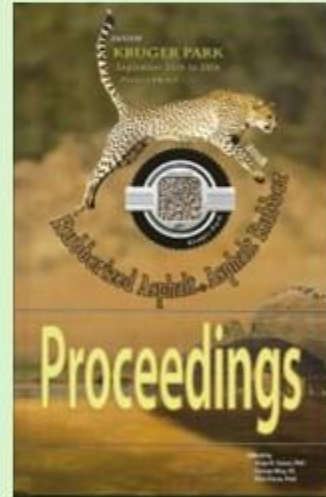
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Rubberized
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Eight International
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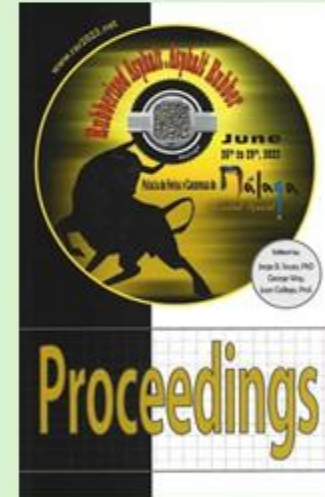
**AR2012
Germany**



**RAR2015
Nevada**



**RAR2018
South Africa**



**RAR2022
Spain**



**RAR2025
Lisbon**

Places



**Arizona Early
1900's**



**USA 1900
9000 cars
100 paved miles**

**1904
Illinois**



**Southwest
Desert**



USA 2021
269 million cars
2.7 million miles
Paved Roads

Modern
Pavements





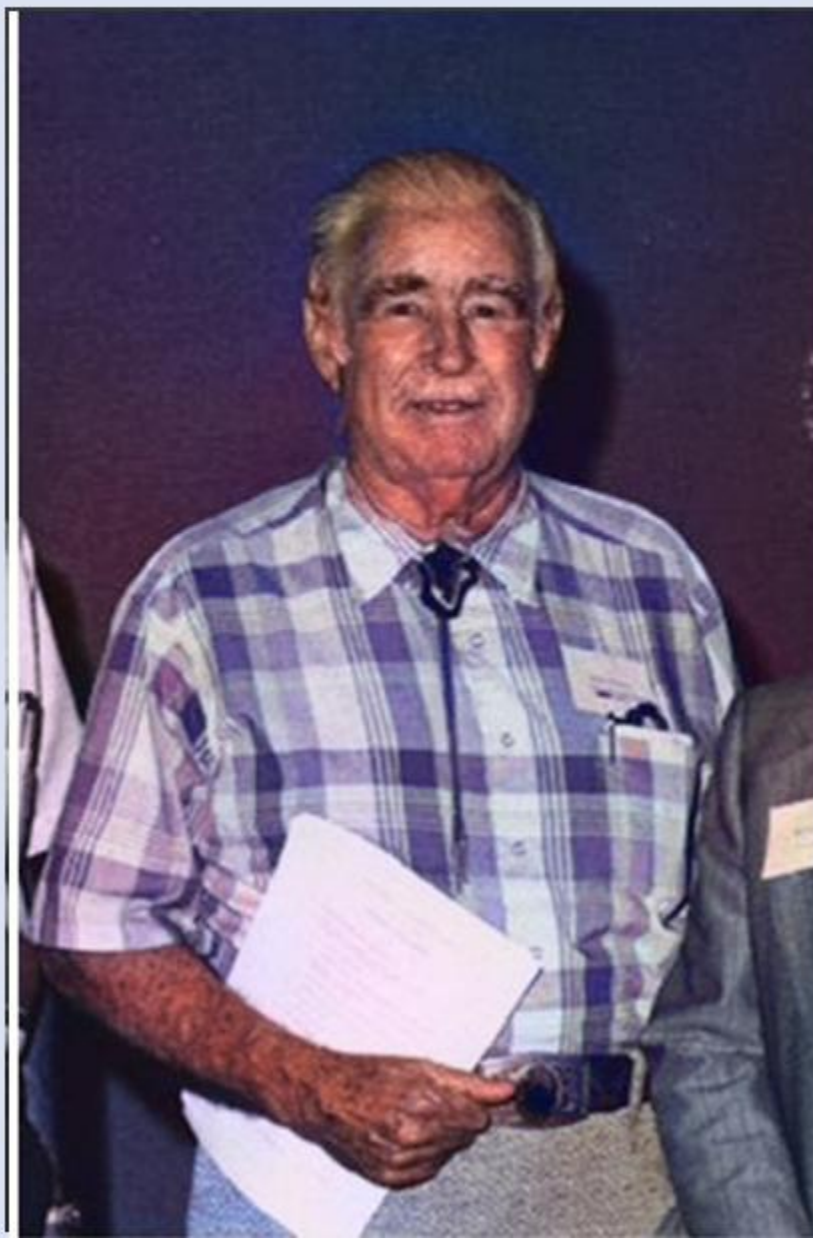
**Former City of Phoenix, Arizona
Materials Engineer**

**Began researching AR in 1960s
First paper on AR in 1965**

**Inventor Five US AR Patents &
Four Canadian Patents 1975-1978**

**Considered the Father Asphalt
Rubber**

1960's Charles H. McDonald Asphalt Rubber Inventor



■ Asphalt Rubber inventor

Charles McDonald 1960's-1990's

In 1960's mixed recycled tire crumb rubber with asphalt to increase flexibility and reduce low temperature cracking.

- In 1970's invented and patented asphalt rubber as a commercial product. more than 8 AR related patents issued in the 1970's
- From 1970's until his death in the 1990's continued research on asphalt rubber.

Phoenix, Arizona failed streets in the 1960's.
McDonalds goal to maintain failed streets until reconstruction.





1966 Slurry box type seal coat, Phoenix, Arizona



1967 AR Seal Coat



Bill Brake
Sahuaro Asphalt & Petroleum,
Phoenix Arizona/
Edgington Oil, Los Angeles,
California
Early supporters of McDonald
AR in Arizona and continued
support until 1995.

**Early AR Chip Seal AR
Distributor Truck
Technology 1970s**



**Ken Hill Owner and Founder in 1969
Bear Cat Manufacturing Asphalt
Distributor Trucks Specialized in AR
Equipment**

**Modern AR Chip AR
Distributor Truck
Computerized**



1967 City of Phoenix McDonald AR seal coat on main runway



Then



NOW





**Gene Morris Former
Arizona Department of
Transportation Director
Research Division Engineer**

**Sponsor of many AR
research Studies**

**Author of many AR
research papers.**

Author of AR History

2003 drafted a history of AR, Reason for this paper

The Development of Asphalt-Rubber & Associated Paving Systems-Draft Unpublished

COMPILED BY: GENE MORRIS, P.E.

TECHNICAL ADVISORY BOARD CO-CHAIRMAN

RUBBER PAVEMENTS ASSOCIATION

Paper on RAF website Ra-foundation.org



**William "Bill" Price
ADOT State Engineer
Supporter Of AR
ADOT Research conducted
By Gene Morris**



**Robert E. Winters, President and
CEO of Atlas Rubber Inc.
California Based Company**

**Financed development of AR
\$250,000 from 1967 to 1974 to
Obtain patents**

**Holder of two patents on AR 1974
& 1975**

**2003 letter of recollections of AR
development**



**Don Neilsen, Chairman of the
Board Arizona Refining
Company/Union Oil Company
of California**

Holder of a AR patent 1978

**Company financed AR
development in California,
Europe and South Africa**

**2003 letter of recollections of
AR development**

Introduction to South Africa, Chip Seal 1982



Don Nielsen

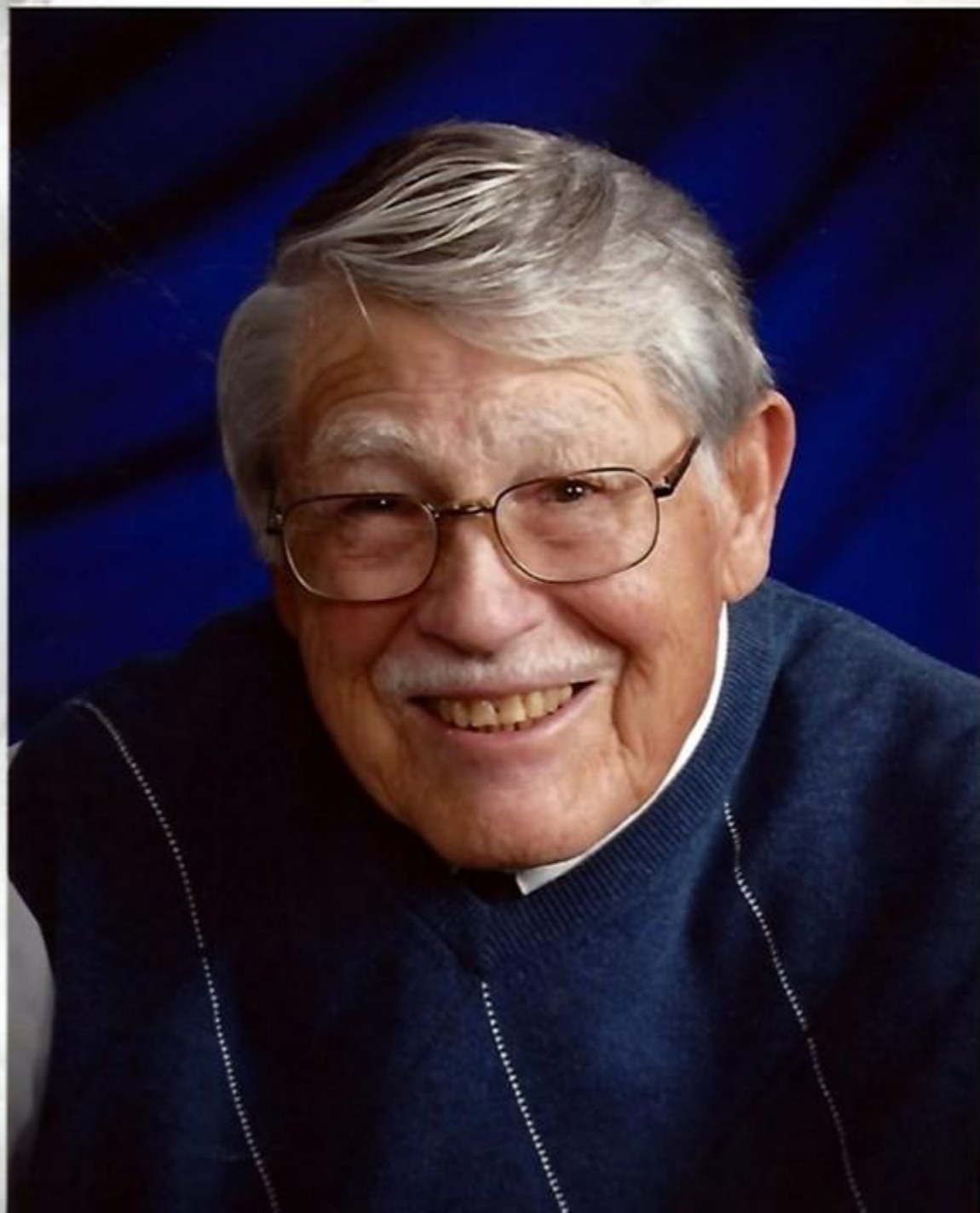




Bernard "Barney" Vallergera

A noted engineer scientist consultant who was an early supporter of AR

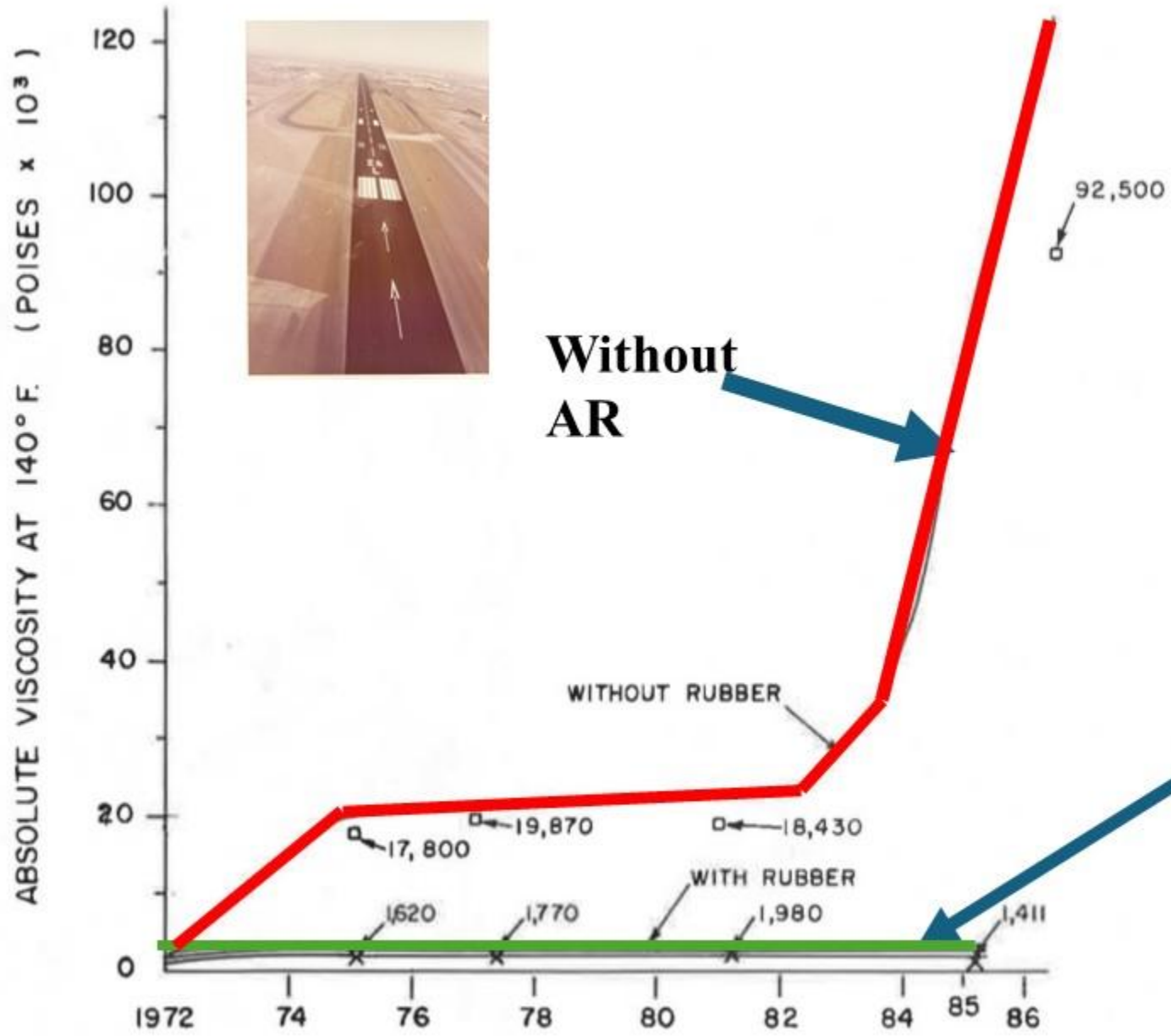
National Academy of Engineering recognized his many engineering accomplishments, "For unique achievements and novel applications in asphalt technology: pavement design, rehabilitation, and recycling; hydraulic revetments; membranes; and soil stabilization."



**Russell “Russ” Schnormeir City
of Phoenix, Arizona
Materials Engineer after Charles
McDonald retired**

**After Russell retired he became
Director of Asphalt Rubber
Producers Group (ARPG). In the
late 1990’s ARPG ended and was
Replaced by the Rubber
Pavements Association.**

Sky Harbor Airport Runway/Taxi Way Samples of Seal Coat With and with AR Aging 1972 -1986



Russell Schnormeir supported research and reported on the findings for ARPG



**Directors of Rubber Pavements Association (RPA)
L to R Donna Carlson, Doug Carlson and Mark Belshe. RPA
Discontinued in 2020.**

Recycle Tire Engineering and Research Foundation (RTERF)

Founded in 2004 – Chairman George Way



Rubberized Asphalt Foundation (RAF)

Founded in 2012 by support of Liberty Tire to replace RTERF –

Chairman George Way

Consulpav – Jorge Sousa

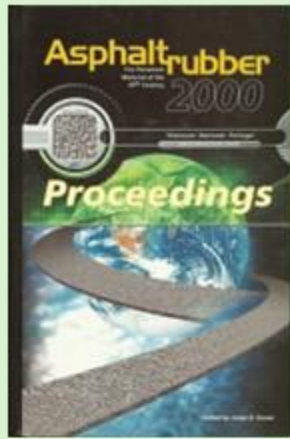


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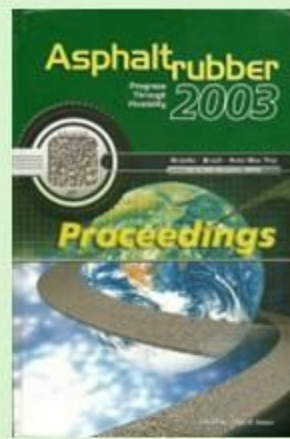


NOW





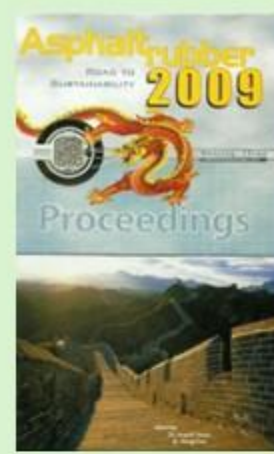
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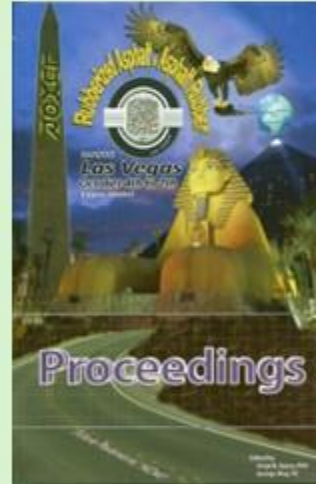


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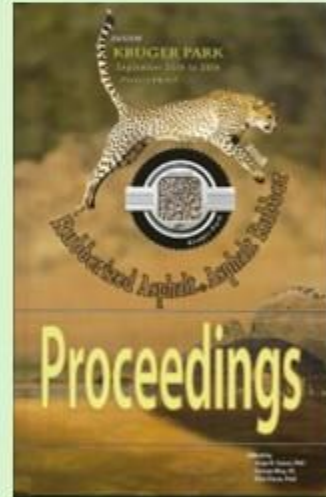
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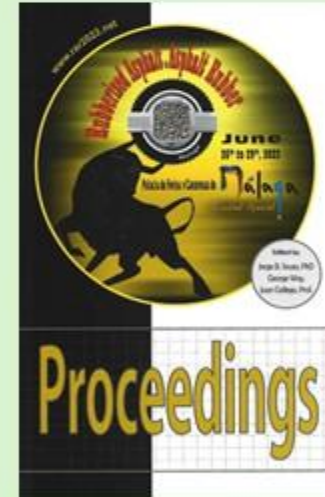
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Spain**



**RAR2025
Lisbon**

Places



Supporters of Asphalt Rubber & there are so many more



Howard Cox
AR Contractor



Richard Stubstad
Consultant



Jeff Smith
AR Industry

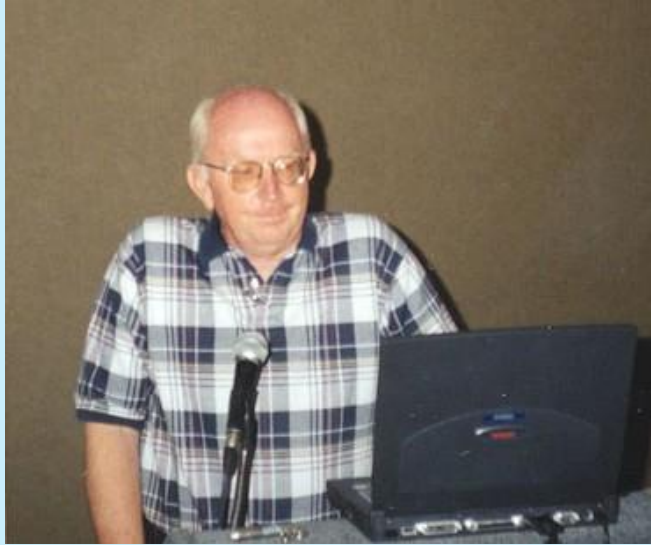
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Jorge Pais
Professor



Shakir Shatnawi
Consultant



Doug Forstie
Retired Arizona DOT
Materials Engineer



Joe Cano
Retired City of
Phoenix Engineer



Anne Stonex
AR Consultant
Engineer

Happy Trails to Arizona

