
Fiber
Reinforced
Asphalt

WELCOME

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Pacific GeoSource - Senior Pavement Engineer

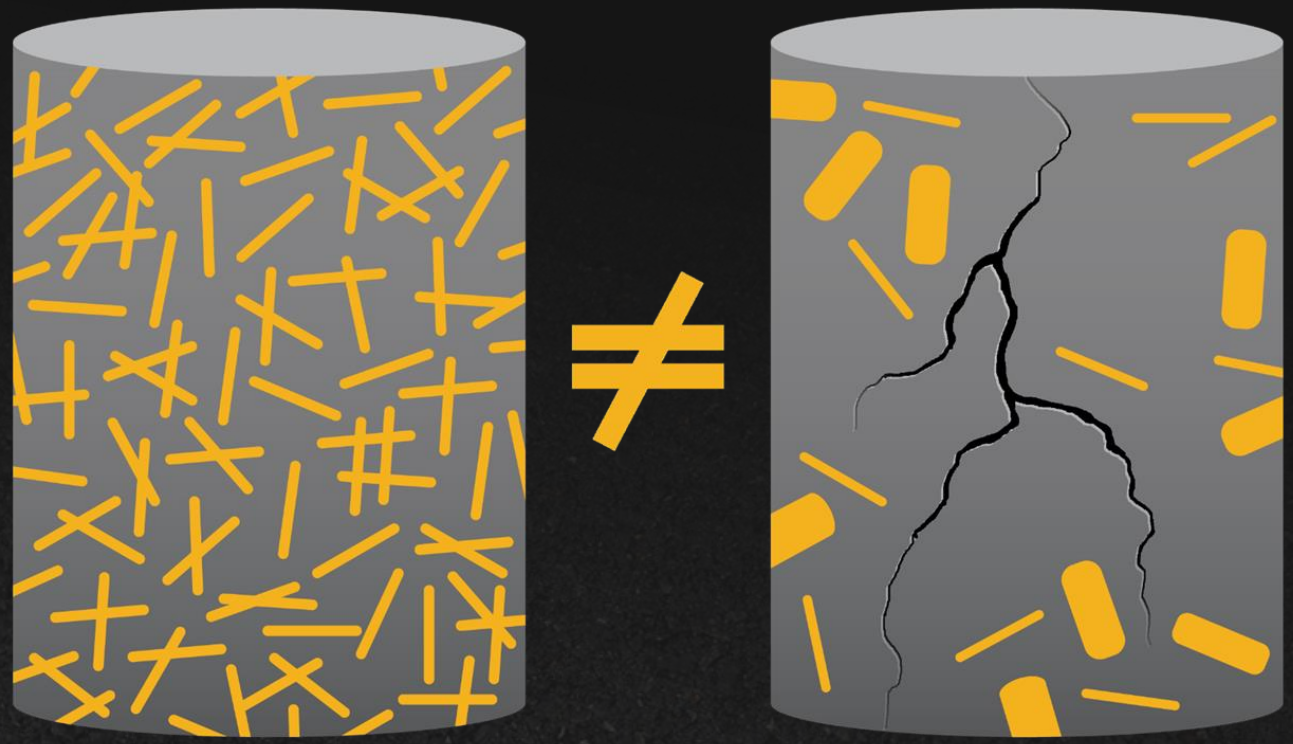
Fiber Reinforced Asphalt

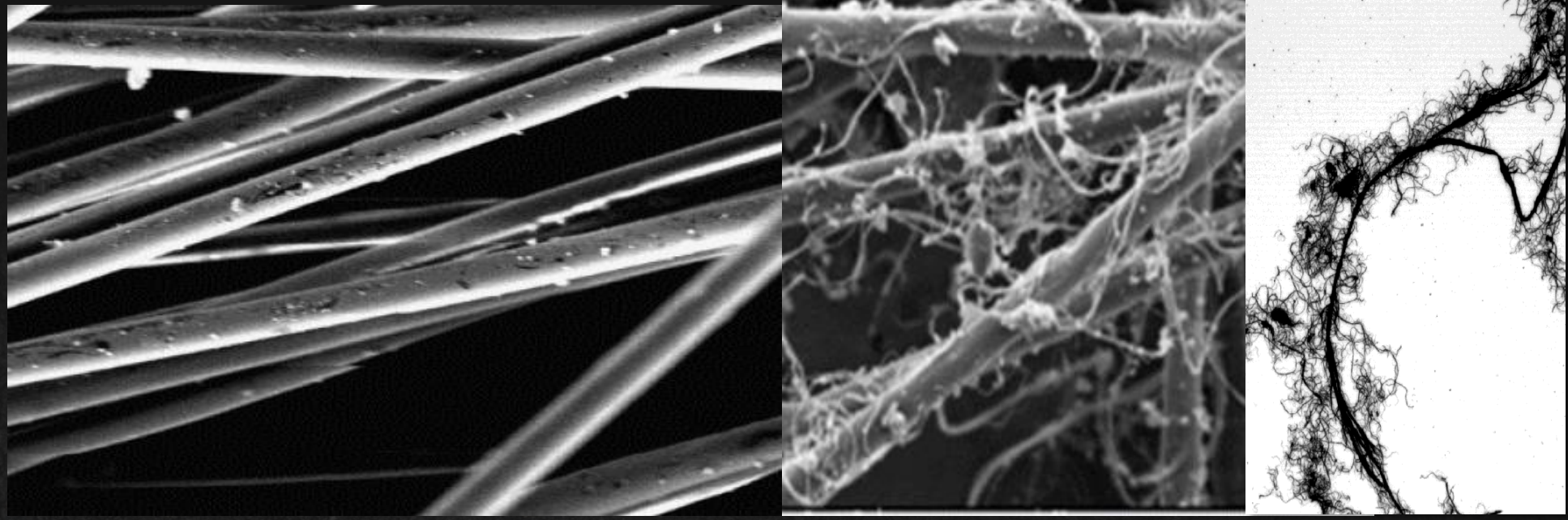
How Does Fiber Reinforced Asphalt Work?

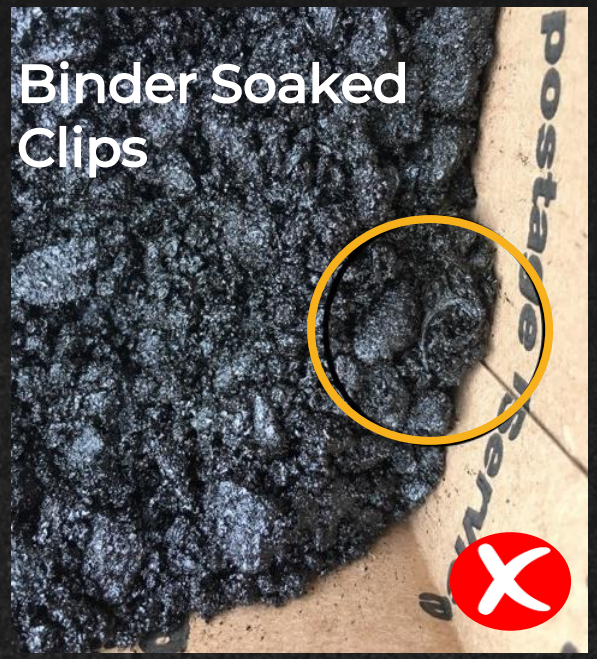
1) Strength (Aramid & Polyolefin)

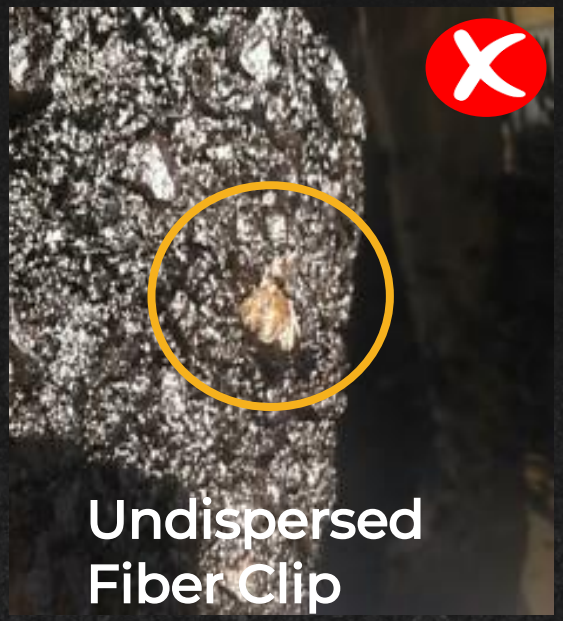
2) Distribution & Dispersion

3) Micro-Fibrillation






Binder Soaked
Clips


Undispersed
Fiber Clip


Voyager
FORTA
Voyager
FORTA-FI

Lab Research

Rutting: Flow Number

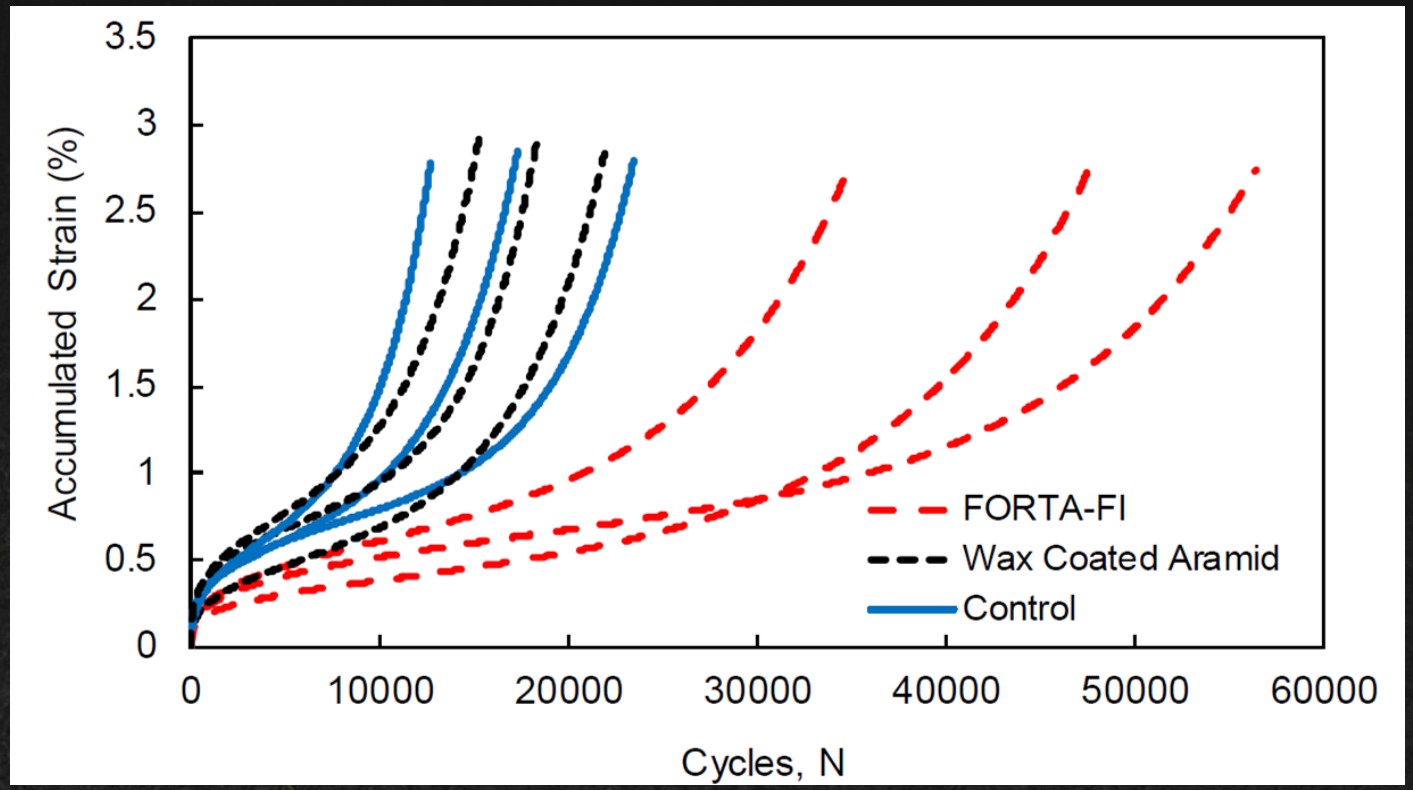


Image: Noorvand, Hossein, et al. "Effect of Synthetic Fiber State on Mechanical Performance of Fiber Reinforced Asphalt Concrete." *Transportation Research Record* (2018).

U.S. Department of Transportation
Federal Highway Administration

BOEING

ASU
ARIZONA STATE UNIVERSITY

WELCOME TO
NEW JERSEY
THE GARDEN STATE

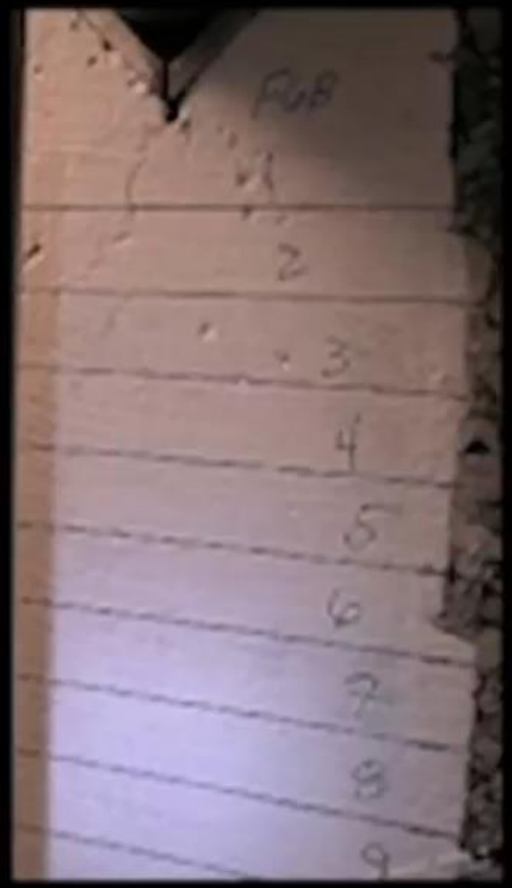
PIMA COUNTY

Cracking: C* Line Integral

FRA

Crack Length Time

FORTA-FI



CONTROL

Control

Crack Length Time

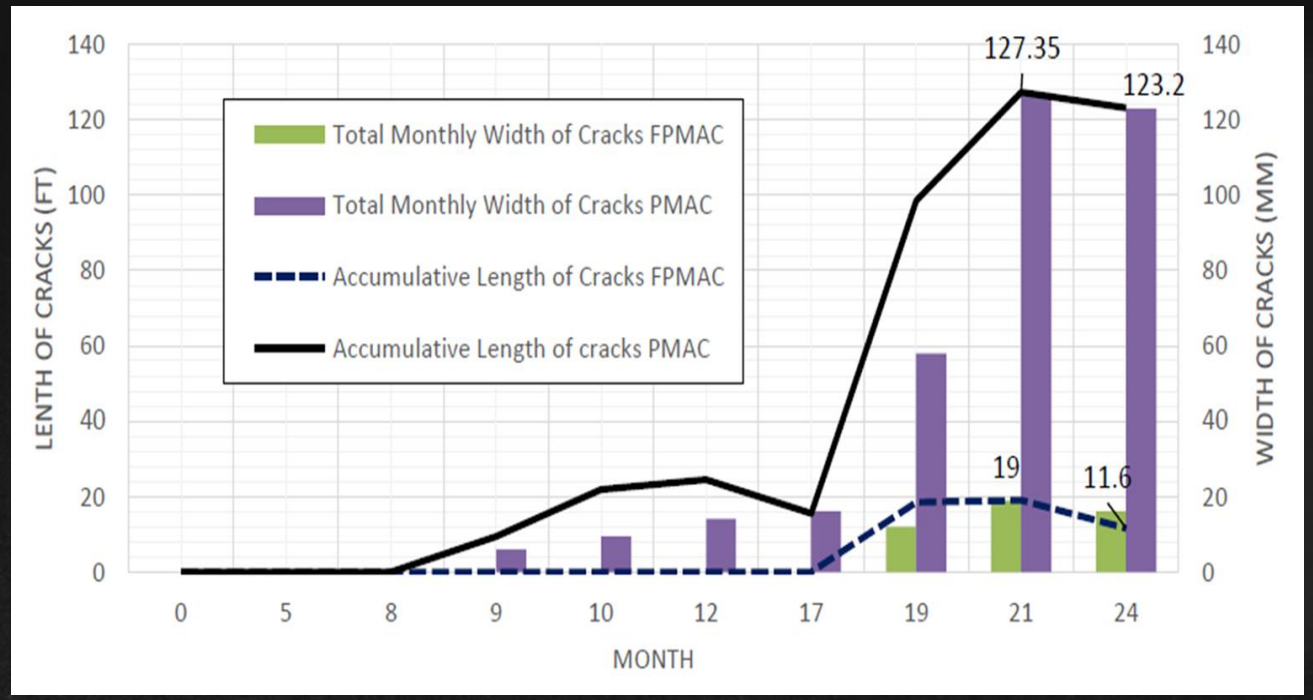
Loading Rate: 0.9mm/min. Test Temp 21C

Field Research

Northern Arizona University

Havasupai Rd

- 2” Mill & Overlay - PG 76-22 TR+
  2 Year Evaluation
  200 Freeze-Thaw Cycles a Year (7000 ft)
- Total Crack Length
  Control: 127’ FORTA-FI: 19’



New York DOT
Control vs Fiber

- **Control**

  6-in Joint Repair Dig Outs, Polymer Modified Binder (PG 64V-22), 2-in Mill & Overlay

- **Fiber Reinforced Asphalt**

  2-in Mill & Overlay, Neat Binder (PG 64S-22)

- **Results**

  FRAC section significantly outperformed. Further adoption from NYDOT

Jackson Hole Wyoming Airport Runway

- **Standard Treatment – Prior to 2009**
  6-7 yr Lifespan, Maintenance Every 2-3 yrs
  Failures attributed to high dynamic loading, locked-wheel turning, and extreme environmental conditions
- **Fiber Reinforced - 2009**
  12+ yrs Lifespan, Maintenance – 1 Application
- **Condition Survey Completed by NCE, 10 yrs**

LA County
Davenport Rd

- **Fiber vs Control – Constructed 2017**
  2-in Mill and Overlay, PG 70-10
- **Pavement Engineering Inc.**
  Independent Condition Survey
- **Results: Picture Speaks for Itself**

I-5 South
Roseburg, OR

- **Standard Treatment – Prior to 2013**
  “Replacement needed every 2-3 years” ODOT Maintenance Supervisor

- **Fiber Reinforced - 2013**
  8+ yrs, Still in Great Condition

Avenue D
Lancaster, CA

- Asphalt Destroyed, Reconstruction Needed
- Despite Warning They Did A 2-in Overlay
- Side-by-side Showed Significant Benefit from Fiber but Still Will Fail

THANK YOU

Any Questions?

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