



# High RAP & RAS Research in Oregon

20<sup>th</sup> Annual Oregon Asphalt Conference

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# Performance Based Selection of RAP-RAS in Asphalt Mixtures

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# Committee Members

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# Overview

This Research is a collaborative effort between ODOT and APAO to determine the maximum amount RAP-RAS binder used within a mixture without drastic effect on durability properties.

# Project Goals

- Collect data on the performance of Asphalt Mixtures containing RAP-RAS using a Dynamic Modulus Test and a Texas Overlay Test.



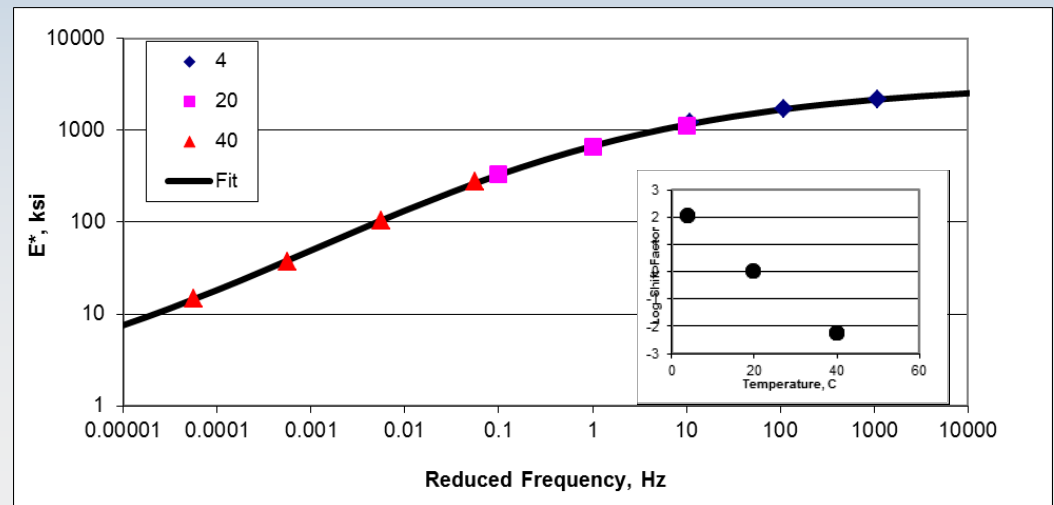
# Project Goals

- Determine the effect on durability properties from increasing the RAP-RAS content from 20, 30% and 40%, by binder virgin binder replacement



# Project Goals

- Conduct a data analysis of the relationship between performance results and RAP-RAS content. Predict maximum RAP-RAS content before performance reaches critical point.

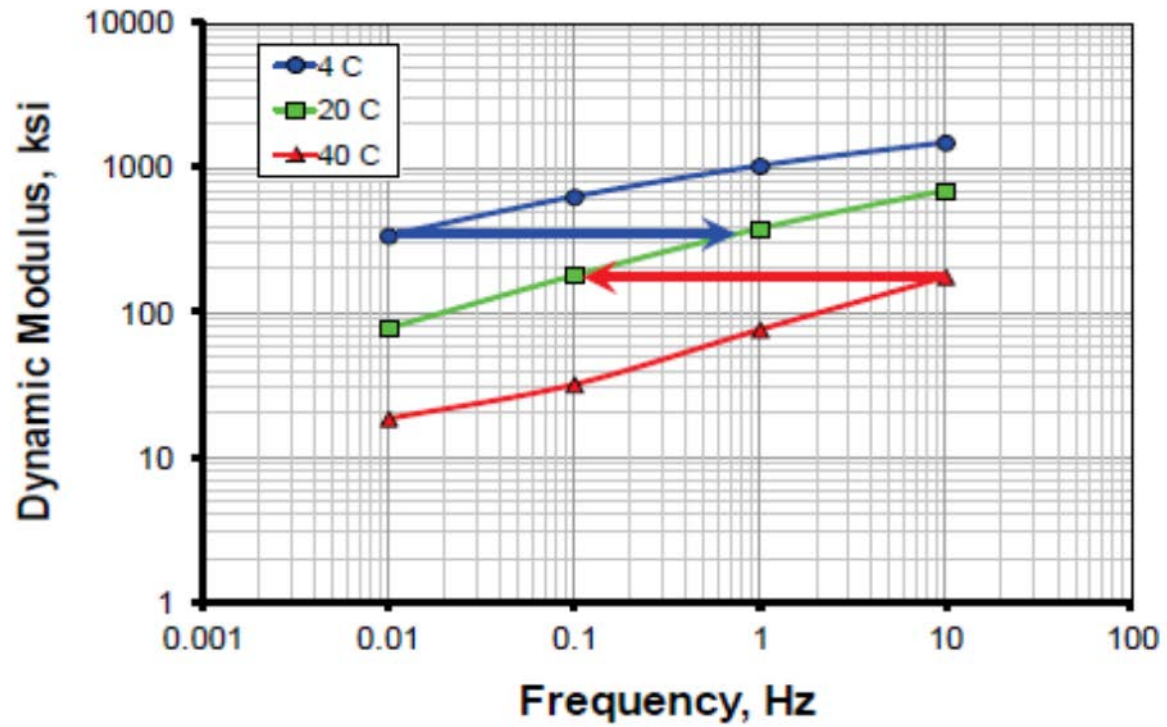


# Dynamic Modulus

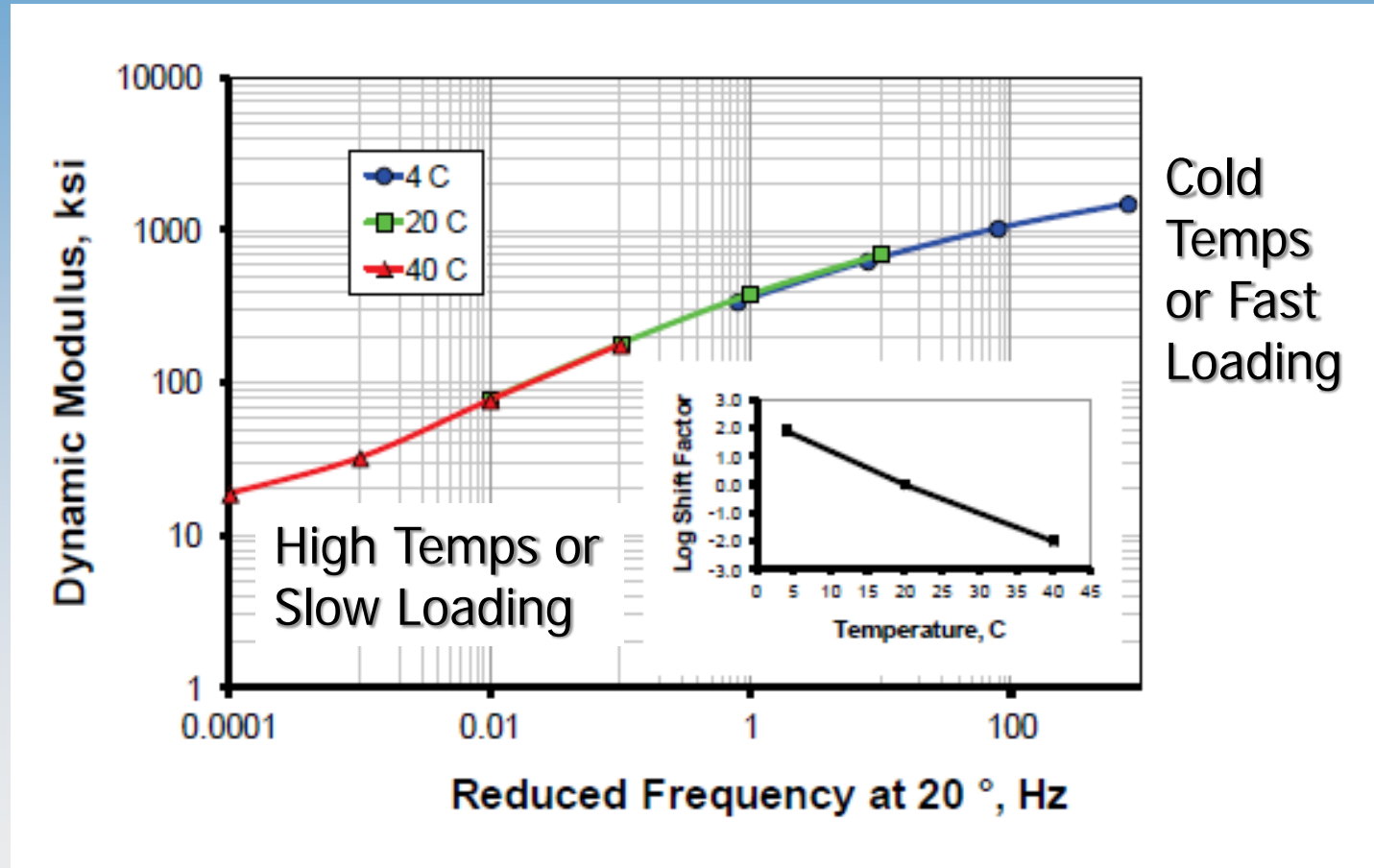
- Beneficial in Mechanistic – Empirical Pavement Design
- Relates mixture modulus to temperature and time rate of loading
- Non-Destructive







Courtesy of FHWA



# Texas Overlay

- Intended to evaluate reflective cracking potential – screening test
- Not a performance predictor for fatigue
- Easy to evaluate test results
- Destructive Test



# Texas Overlay Data

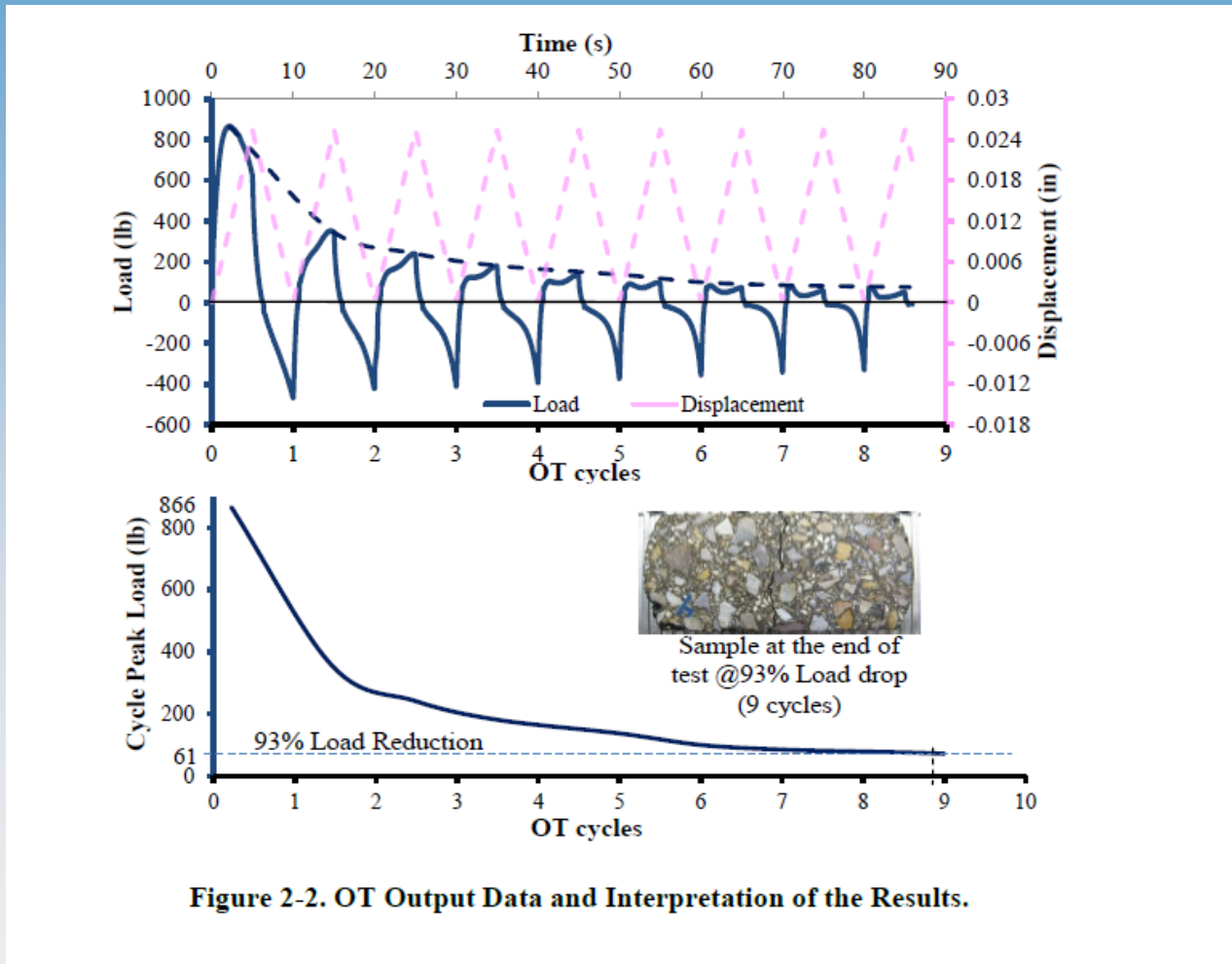


Figure 2-2. OT Output Data and Interpretation of the Results.



# Experimental Matrix

	20% Binder Replacement			30% Binder Replacement		40% Binder Replacement	
Binder Grade	20%, 0 %	8%, 3%	0%, 5%	30%, 0 %	17%, 3%	40%, 0 %	19%, 5%
PG58-28							
PG64-22							
PG??-??							

The third binder will be determined after completing the first two. A PG70-22 will show our current state of practice; while depending on results a PG58-34 maybe needed at the 40% replacement



# Other testing

- Kamela – 2<sup>nd</sup> Street project
  - Allowed 40% binder replacement in temporary mix
  - Base under PCC will be placed with over 50% binder replacement with PG58-28
- Plant samples will be taken
  - Modulus Testing
  - Flow Number Testing – (AMPT rut test)



# Questions

