APPLIED RESEARCH ASSOCIATES, INC.
TRANSPORTATION

Rolling Wheel Deflectometer

EXPANDING THE REALM OF POSSIBILITY

Applied Research Associates is developing a prototype Rolling Wheel Deflectometer (RWD) for high-speed structural characterization of pavements. The RWD was developed to meet the pavement structural assessment needs of pavement managers. The research and development was funded by the U.S. Federal Highway Administration (FHWA).

Testing Services

- Falling Weight Deflectometer
- Pavement Condition Surveys
- Dowel Bar Assessment: MIT Scan-2
- Automated Condition Surveys
- Construction Management & Quality Assurance
- Lightweight profiling
- Coring
- Ground Penetrating Radar
- Dynamic Cone Penetrometer
- ATLAS
- RWD

Evaluation Services

- Actual moving truck load
- Normal highway speeds
- Continuous measurements
- Network-level pavement management applications

Measurement Methodology

- Uses the "spatially coincident" measurement methodology
- 4 spot lasers mounted on a rigid aluminum beam
- Lasers spaced at 8.5-ft intervals
- 3 forward lasers measure the undeflected pavement surface
- Rear laser measures the deflected pavement surface
- Deflection is the difference between the deflected and undeflected pavement surfaces

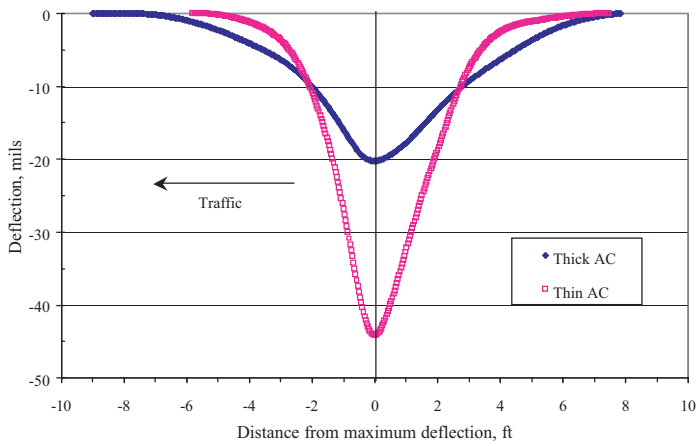
Proof of Concept Testing

- RWD was compared to deflections on thick and thin asphalt concrete (AC) pavements in Champaign, Illinois, in July 2002
- An accelerometer embedded in the AC pavements was used to determine reference deflections
- RWD deflections were within 10 percent of reference readings

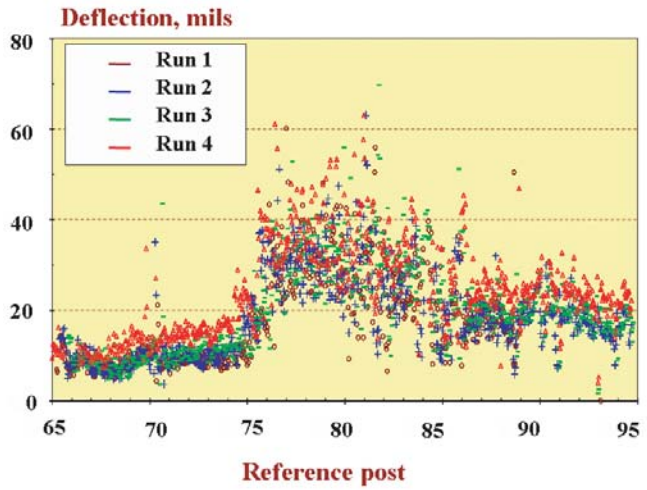
Plans for Future Deployment

- Pilot studies have been performed for the Texas DOT, Indiana DOT, Eastern Federal Land Highway Division, National Center of Asphalt Technology, Minnesota DOT, Kentucky DOT, West Virginia DOT, and Ohio DOT

Comparison of Thin and Thick RWD basins.



Indiana DOT - SR1



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