



Benefits of Developing and Deploying Performance Specifications

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Objectives of Session

- State Experiences of **Benefits** of Using Performance Specifications
- **Real World Examples** of Linking Successes to Incentive/Disincentive Amounts
 - Group Discussion

Definitions – Method Specifications

- **Materials and methods specifications:** Also called method specifications, or prescriptive specifications.
Specifications that require the contractor to use specified materials in definite proportions and specific types of equipment and methods to place the material as directed by the transportation agency.

Tends to obligate the agency to accept the completed work regardless of quality

Definitions – End Result Specifications

- Transportation agency's responsibility is to:
 - Either accept or reject the final product, or
 - Apply a pay adjustment commensurate with the degree of compliance with the specifications.

Contractor to take the entire responsibility for supplying a product or an item of construction.

Definitions – Quality Assurance Specifications

- Specifications that require contractor QC and agency acceptance activities throughout production and placement of a product.
- Typically are statistically based specifications that use methods such as random sampling and lot-by-lot testing.

Final acceptance of the product is usually based on a statistical sampling of the measured quality level for key quality characteristics.

Definitions – Performance Specifications

- Specifications that describe performance typically in terms of changes in physical condition of the surface and its response to load, or in terms of the cumulative traffic required to bring the pavement to a condition defined as “failure.”

(Predicting Long-Term Performance)

Work still needed to develop suitable non-destructive tests to measure long-term performance immediately after construction.

MoDOT receives Accelerated Innovation and Deployment (AID) Grant

AID Grant Details

- Approximately \$750k in grant funding - requires 20% match
- Incorporates Intelligent Compaction and Infrared Scanning and Let 13 projects
- Transtec has been hired to provide training and on-site evaluation during the IC/IR projects

Memorandum

U.S. Department of Transportation
Federal Highway Administration

Subject: **ACTION:** Approval Request for AID Demonstration Award Recommendation of Missouri Intelligent Compaction Project Date:

From: Thomas Haman, Director, Center for Accelerating Innovation In Reply Refer To: HOA-3

To: Gregory G. Niekora, Administrator

ACTION REQUESTED: The Federal Highway Administration (FHWA) completed its review of an application for discretionary funding under the Accelerated Innovation Deployment (AID) Demonstration program authorized within the Technology and Innovation Deployment Program (TIDP) under the Moving Ahead for Progress in the 21st Century Act. I request your approval to allocate \$764,032 in AID Demonstration funding to the Missouri Department of Transportation (MoDOT) to support the deployment of intelligent compaction (IC) and infrared (IR) scanning on up to 10 asphalt paving projects.

The FHWA's recommendation is aligned with Secretary Fox's priority of increasing efficiency and expanding the use of technologies and innovative strategies to stretch transportation resources. This project will deploy technology to improve pavement quality. The technology is promoted under the FHWA's Every Day Counts initiative.

BACKGROUND: The AID Demonstration program provides approximately \$45 million in incentive funding for eligible entities to accelerate the implementation and adoption of innovation in highway transportation. To date, a total of \$38.2 million has been awarded.

The innovations funded under the AID Demonstration program enhance the efficiency of the development, delivery, or performance of highway projects, a priority of Secretary Fox. State departments of transportation (DOT), Federal Land Management Agencies, and tribal governments are eligible to apply for the AID Demonstration grants. Metropolitan planning organizations and local governments may also apply through State DOTs to subrecipients. The AID Demonstration funds are available for any project eligible for assistance under title 23 U.S.C. Eligible activities must address the TIDP goals to accelerate the adoption of innovation and improve efficiency and may be in any aspect of highway transportation including planning, financing, operation, structures, materials, pavements, environment, and construction.

starting on February 19, 2014, from MoDOT requesting up to 10 asphalt projects. The application was registered. An evaluation team package and provided a train MoDOT staff. Scanner software, and collected from the projects. A red projects, gather and remove of IC, and IR performance specifications use of the IR technology is an of IC into the quality

an eligible entity in (79 FR 5580). In accordance implemented. This subject innovation has proven significant improvement from eligible for funding under the

of the program, and meets the selection criteria for a qualified rating. I recommend approval of \$764,032 in AID Demonstration grant funding which the FHWA intends to allocate to MoDOT upon award.

APPROVED: *Gregory G. Niekora*

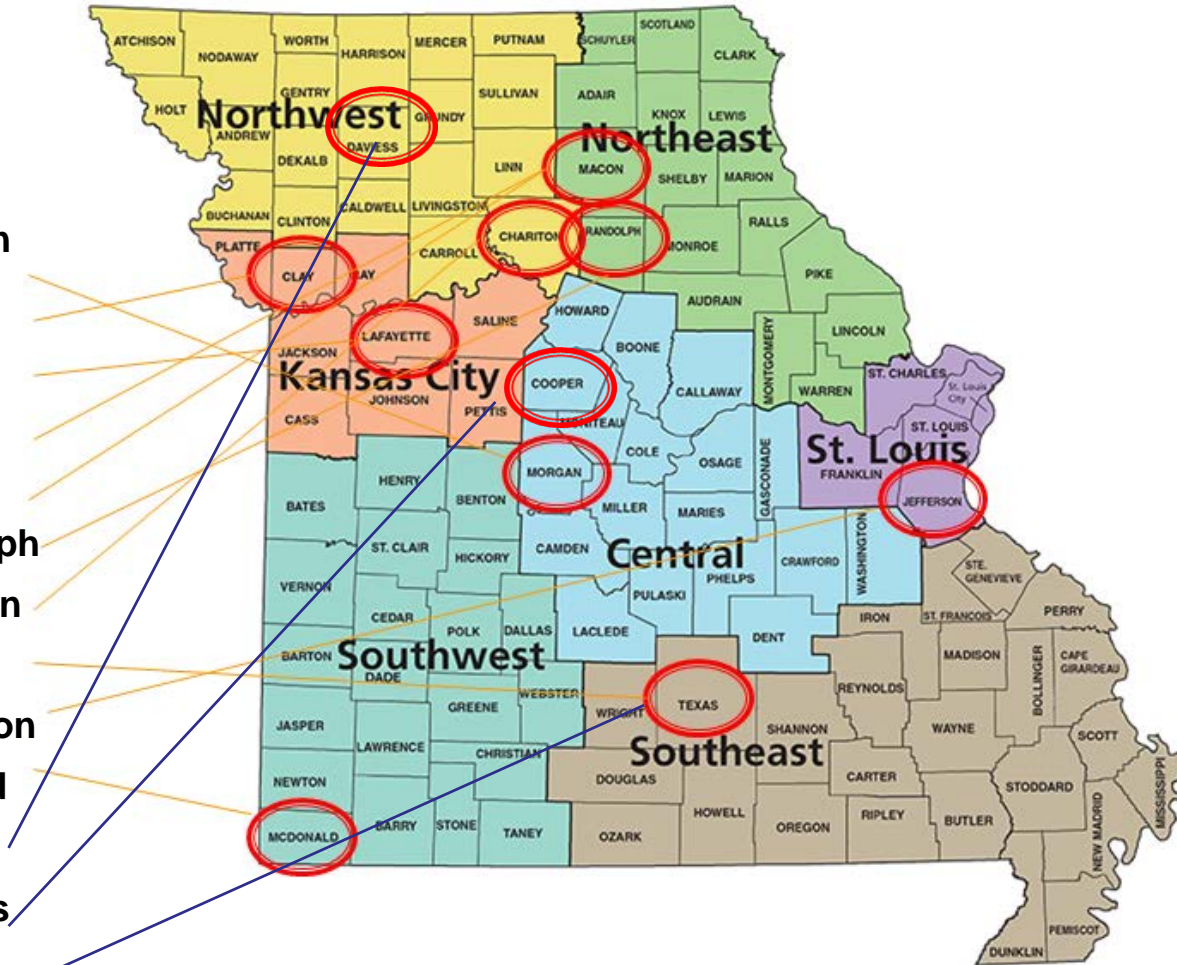
DISAPPROVED: _____

COMMENTS: _____

DATE: 5-9-16

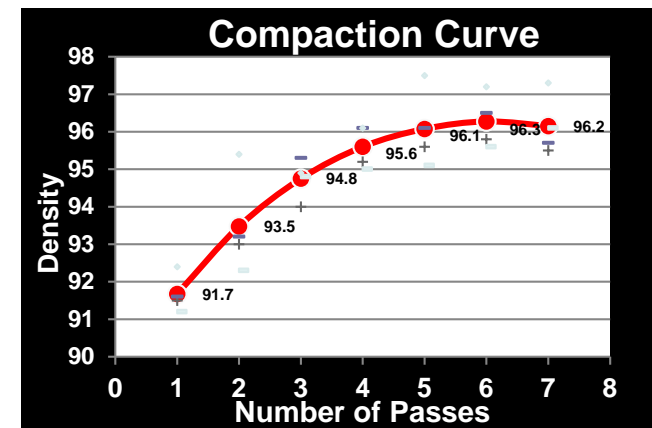
AID Grant Projects

1. MO 52, Morgan
2. I-29, Clay
3. I-70, Lafayette
4. US 36, Macon
5. US 36, Macon
6. US 24, Randolph
7. US 24, Chariton
8. MO 17, Texas
9. US 61, Jefferson
10. I-49, McDonald
11. US 69, Daviess
12. MO 5, Cooper
13. MO 17, Texas



Intelligent Compaction

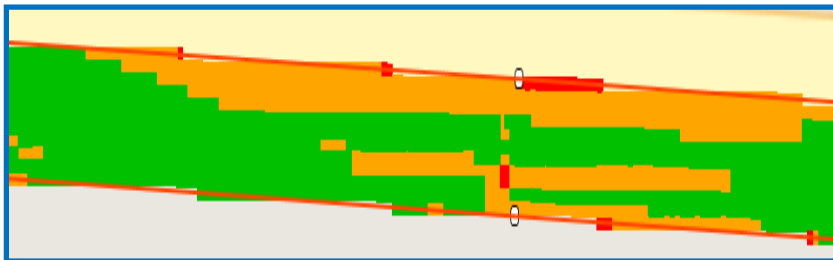
- Optimum Pass Count
- % Coverage at Optimum Pass Count
 - **Incentive / Disincentive**
- Resistance of Underlying Material
 - Areas Needing More Effort
- Compaction Surface Temperature



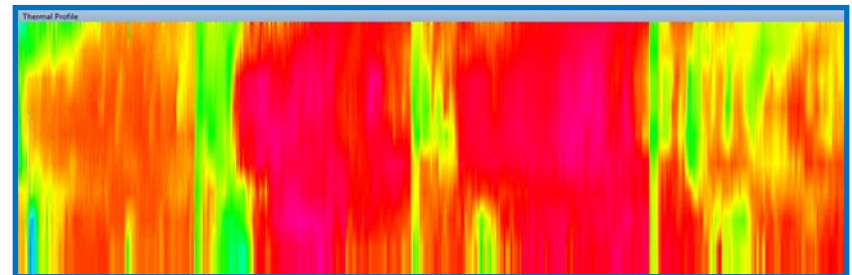
Complete Mapping

- No Longer Relying on Statistical Evaluation from a Single Core
- Real-time Quality Control Tool
- Investigating the use of LiDAR for Boundary Limits of projects with IC/IR
- Incentive / Disincentive for Temperature Differential

Roller Pass Coverage



Thermal Profile



Moving Forward

- Correlate Field Performance to Specification
- Evaluate:
 - **Report Findings**
 - **Job Special Provision**



Moving Forward

- Lead to Performance-Based Specification
 - Sec 403 First (SMA, Superpave)
- Anticipating Expansion in 2018
 - Larger Group of Projects
 - Potentially Eliminate Density Requirement
 - Reduction in Coring



Incentive/Disincentive – Pay Factor

Common areas of Incentive/Disincentive among states

State	Asphalt								Concrete		
	Density	Joint Density	Volumetrics	Liquid Asphalt	Smoothness	Percent w/Limits	Mix Gradations	TSR	Strength	Thickness	Smoothness
Alabama	Inc/Dec		Inc/Dec	Inc/Dec	Inc/Dec		Inc/Dec		Inc/Dec	Inc/Dec	Inc/Dec
California	Dec Only				Inc/Dec						
Federal Lands				Inc/Dec	Inc/Dec				Dec Only		
Indiana	Inc/Dec		Inc/Dec		Inc/Dec	Inc/Dec			Inc/Dec	Dec	Inc/Dec
Missouri	Inc/Dec		Inc/Dec	Inc/Dec	Inc/Dec			Inc/Dec			
Montana	Inc/Dec		Inc/Dec		Inc/Dec						
Nevada					Inc/Dec						Inc/Dec
North Dakota					Inc/Dec						Inc/Dec
Vermont	Inc/Dec	Inc/Dec	Inc/Dec		Inc/Dec						
Washington	Inc/Dec			Inc/Dec	Inc/Dec	Inc/Dec					

Missouri Density Requirements

Field Density Percent of Maximum Theoretical Density	Percent of Contract Unit Price
89.5 or above	100%
89.0 to 89.4, inclusive	97%
88.5 to 88.9, inclusive	94%
88.0 to 88.4, inclusive	90%
87.5 to 87.9, inclusive	80%
Below 87.5	Remove and Replace

Open Discussion

*How
Dinosaurs
became
extinct*

**The very first
"senior
moment"**



Incentives / Disincentives and Performance Specifications



- Department reaction and acceptance
- Industry reaction and acceptance
- Barriers to adoption
- Financial impacts to projects
- FHWA Division Office reaction and acceptance
- Public reaction to Incentives /Disincentives

Thank You

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