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
• **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**
• 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.**
• 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.
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
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

<table>
<thead>
<tr>
<th>State</th>
<th>Asphalt Density</th>
<th>Asphalt Joint Density</th>
<th>Asphalt Volumetrics</th>
<th>Asphalt Liquid Asphalt</th>
<th>Asphalt Smoothness</th>
<th>Percent w/Limits</th>
<th>Mix Gradations</th>
<th>TSR</th>
<th>Strength</th>
<th>Thickness</th>
<th>Smoothness</th>
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</thead>
<tbody>
<tr>
<td>California</td>
<td>Dec Only</td>
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<td>Inc/Dec</td>
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<td>Federal Lands</td>
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<td>Inc/Dec</td>
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<td>Dec Only</td>
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<td>Nevada</td>
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<td>North Dakota</td>
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<td>Vermont</td>
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## Missouri Density Requirements

<table>
<thead>
<tr>
<th>Field Density Percent of Maximum Theoretical Density</th>
<th>Percent of Contract Unit Price</th>
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<tbody>
<tr>
<td>89.5 or above</td>
<td>100%</td>
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<tr>
<td>89.0 to 89.4, inclusive</td>
<td>97%</td>
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<tr>
<td>88.5 to 88.9, inclusive</td>
<td>94%</td>
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<tr>
<td>88.0 to 88.4, inclusive</td>
<td>90%</td>
</tr>
<tr>
<td>87.5 to 87.9, inclusive</td>
<td>80%</td>
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<tr>
<td>Below 87.5</td>
<td>Remove and Replace</td>
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</tbody>
</table>
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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