Intelligent Compaction
Pooled Fund Project

INTELLIGENT COMPACTION

For Hot Mix Asphalt

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What is Intelligent Compaction?

An Innovation in Compaction Control and Acceptance
Why Do We Need IC?

- Proper in-place density is vital for good performance
- Conventional compaction equipment and procedures have shortcomings and too often produce poor results
- Intelligent compaction technology appears to offer “a better way”
INTELLIGENT COMPACTION for HMA

• Shortcomings in the Compaction Process…

Limited “On The Fly” Feedback

Over or Under-Compaction Can Occur
INTELLIGENT COMPACTATION for HMA

• Shortcomings in Density Acceptance Process…

Limited Number of Locations

After Compaction is Complete
• Roller Passes

Shoulder (Supported)

Paving Direction

Longitudinal Joint

Number of roller passes

1  2  3  4  5  6  7  8

Courtesy Sakai America
INTELLIGENT COMPACION for HMA

What is Intelligent Compaction?

Vibratory Single Drum Soil Roller

Vibratory Tandem Drum Asphalt Roller
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Currently Available Tandem Drum IC Rollers

Bomag America

Sakai America
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Infrared Thermal Gauge
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Typical GPS Setup
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Minneapolis ICPF Project

Compaction/mapping of HMA base course layer
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Subsurface Layer (1) ~ 200 ft
Final Layer (2) ~ 40 ft

Region of soft subsurface layer condition reflecting through surface compaction layer

Hard subsurface layer reflecting through surface compaction layer

~ 40 ft

Courtesy of Dr. David White
Special Issues for IC on HMA

- Thin lift construction
- Allowable temperature ranges to eliminate binder viscosity stiffening
- Surface vs. internal mat temperature measurement
- Non-destructive, in-situ stiffness / modulus companion tests
Benefits of IC for HMA

• Improve density…. better performance
• Improve efficiency…. cost savings
• Increase information… better QC/QA

• Overall Benefit:
  Improved Pavement Performance!
INTELLIGENT COMPACTION for HMA

Yesterday

Buffalo Springfield Steam Roller
INTELLIGENT COMPACTION for HMA

Today
IC – The Future of Compaction Technology

www.intelligentcompaction.com
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Thank you!