

# ACCELERATED IMPLEMENTATION OF INTELLIGENT COMPACTION TECHNOLOGY FOR EMBANKMENT SUBGRADE SOILS, AGGREGATE BASE, AND ASPHALT PAVEMENT MATERIALS

14<sup>th</sup> Quarterly Progress Report – Jan. 2011 to Mar. 2011  
Prepared by The Transtec Group, Inc.  
4 April. 2011

## A. ACCOMPLISHMENTS/SIGNIFICANT FINDINGS BY TASK THIS QUARTER:

### TASK 1 - Technical Working Group (TWG)

- This task is complete.

### TASK 2 - Literature Review and Evaluation of Intelligent Compaction Equipment

- This task is complete.

### TASK 3 – Preparation of Interim Report and Work Plan Package

- This task is complete.

### TASK 4 – Technical Working Group Initial Meeting

- This task is complete.

### TASK 5 - Coordinated IC Field Demonstrations

- All thirteen (13) full scale IC field demonstrations and three (3) mini demonstration are completed.

## 2010 DEMONSTRATION PROJECTS

### Full-scale demo projects

State	Dates	Materials	Rollers	Further Info
Wisconsin	May 10 to 14	HMA	Sakai	<a href="#">Webpage</a>
Pennsylvania	Sept. 20 to 23	HMA	Sakai/Volvo	<a href="#">Webpage</a>
North Dakota	August 9 to 12	Soils	CAT	<a href="#">Webpage</a>
Indiana	August 17 to 19	Soils*	CAT	<a href="#">Webpage</a>
Virginia	Sept. 27 to 30	HMA	Sakai/Volvo	<a href="#">Webpage</a>

\* Funded by INDOT

Candidate Stand-alone "Mini" Demo Projects\*

State	Dates	Materials	Rollers	Further Info
Texas	May 24 to May 26	HMA	Sakai	<a href="#">Webpage</a>
California-1	Nov. 1 to 3	HMA	Sakai	<a href="#">Webpage</a>
California-2	Nov. 9 to 11	HMA	Sakai	<a href="#">Webpage</a>

\* Funded by the FHWA

**2009 DEMONSTRATION PROJECTS**

Full-scale demo projects

State	Dates	Materials	Rollers	Further Info
New York	May 22	18- Soils/SB, HMA*	Bomag and Caterpillar (Sakai*)	<a href="#">Webpage</a>
Mississippi	July 17	13- Stabilized HMA*	base, Case/Ammann and Caterpillar (Sakai*)	<a href="#">Webpage</a>
Maryland	July 25	20- HMA	Sakai and Bomag	<a href="#">Webpage</a>
Georgia	Sept 18	14- HMA	Sakai	<a href="#">Webpage</a>
Indiana	Sept 25	21- HMA	Sakai and Bomag	<a href="#">Webpage</a>

\* Included mini HMA demonstration

**2008 DEMONSTRATION PROJECTS**

Full-scale demo projects

State	Dates	Materials	Rollers	Further Info
Minnesota	June 2-23	HMA	Sakai	<a href="#">Webpage</a>
Texas	July 20-27	Soils, SB	Case/Ammann and Dynapac	<a href="#">Webpage</a>
Kansas	Aug 17-24	Soils	Sakai and Caterpillar	<a href="#">Webpage</a>

Summary of all IC-related Reports are as follows:

Topic	Last Revision	File Size (MB)	Pages of Reports	Figures
<a href="#">MN HMA demo report</a>	Nov., 2008	11	76	56
<a href="#">TX soils/subbase demo report</a>	Dec., 2008	56	93	76
<a href="#">KS soils demo report</a>	May, 2009	26	125	93
<a href="#">NY HMA/Soils demo report</a>	Feb., 2010	34	224	181
<a href="#">MS HMA/Soils demo report</a>	April, 2010	14	198	148
<a href="#">MD HMA demo report</a>	Sept., 2009	22	98	88
<a href="#">GA HMA demo report</a>	March, 2010	33	96	78
<a href="#">IN HMA demo report</a>	June, 2010	31	98	86
<a href="#">PA HMA demo report</a>	Nov, 2010	19	73	50
<a href="#">WI HMA demo report</a>	June, 2010	7.5	127	98
<a href="#">TX mini HMA demo report</a>	June, 2010	5.7	87	69
<a href="#">VA HMA demo report</a>	Nov, 2010	1.8	56	39
<a href="#">CA HMA demo No.1 report</a>	Dec, 2010	12.5	55	44
<a href="#">Generic IC Experimental Plan</a>	June, 2008	0.7	41	7
<a href="#">Interim Report</a>	June, 2008	1.4	76	3
<a href="#">2008 Annual Report</a>	Feb., 2009	4.6	127	54
<a href="#">2009 Annual Report</a>	Jan., 2010	21	108	91
<a href="#">IC Data Management</a>	Dec., 2010	23	118	81
<a href="#">IC Demo Tech Brief</a>	Jan. 2010	0.18	4	
<a href="#">Soils IC Tech Brief</a>	March, 2010	5.7	8	
<a href="#">HMA IC Tech Brief</a>	Jan., 2010	0.9	6	
	Total	330.98	1894	1342

\* excluding experimental plans.

#### TASK 6 – Database Management Plan

- This task is complete.

#### TASK 7 – Development of a Feasibility Report for an European Scan

- This task is eliminated from the original scope.

#### TASK 8 – Quality Control/Assurance Training and Assistance

- Quality control/assurance training and assistance has been continuing for the pooled fund States.
- MnDOT has developed pilot IC specifications for granular materials that have been tested in six (6) construction projects in 2010. The IC research team is assisting MnDOT

by developing an IC Data Management tool under a contract funded by Mn/DOT and FHWA. It is expected the tool will be used in the field during this coming construction season. Under this separate contract, the IC team also developed an IC Data Management

Guideline ([http://www.intelligentcompaction.com/downloads/reports/IC\\_Data\\_Guidelines\\_V3.3\\_all.pdf](http://www.intelligentcompaction.com/downloads/reports/IC_Data_Guidelines_V3.3_all.pdf)) and Technical Manual for the IC Viewer Tool ([http://www.intelligentcompaction.com/downloads/reports/Veda\\_TechnicalManual\\_V1.03\\_all.pdf](http://www.intelligentcompaction.com/downloads/reports/Veda_TechnicalManual_V1.03_all.pdf)) as practical guidance for IC implementation.

- TxDOT has developed pilot IC specifications for granular materials that have been tested in IC projects in Dallas area. IC is currently used as quality control tool at several TX projects including the DFW connector project.
- INDOT has been developing a plan and specification for IC implementation in 2011. The IC research team is assisting INDOT on its soils IC specification which will serve as a basis for the HMA IC specification.

#### TASK 9 – Presentations

- The project team has delivered for presentations in the following meetings:
  - On Feb. 8, 2011, the IC team presented under "Track 3: Intelligent Construction (Practical Implementation of Intelligent Compaction)" at the second International Conference on transportation Construction Management, Orlando, FL.
  - On Mar. 27, 2011, the IC team (Lee Gallivan, George Chang, and Bob Horan) conducted a Leading Edge Workshop - Intelligent Compaction Forum, during the AAPT 2011 conference, March 27-30, 2011 in Tampa, FL. The workshop information and presentation materials are posted (<http://www.intelligentcompaction.com/index.php?q=node/232>)
- Presentation materials have been constantly updated and incorporated with recent findings. All presentation events by the IC research team are posted: (<http://www.intelligentcompaction.com/index.php?q=node/167>)

#### TASK 10 – Annual and Final Reports

- The draft annual report for 2008 is revised and posted on the pooled fund page of the IC website. ([http://www.intelligentcompaction.com/downloads/TPF/IC\\_Annual%20Report\\_2008\\_V4.pdf](http://www.intelligentcompaction.com/downloads/TPF/IC_Annual%20Report_2008_V4.pdf))
- The draft annual report for 2009 is revised and posted on the pooled fund page of the IC website. ([http://www.intelligentcompaction.com/downloads/TPF/IC\\_Annual\\_Report\\_2009\\_V1c.pdf](http://www.intelligentcompaction.com/downloads/TPF/IC_Annual_Report_2009_V1c.pdf))
- The draft annual report for 2010 is revised and posted on the pooled fund page of the IC website. ([http://www.intelligentcompaction.com/downloads/TPF/IC\\_Annual\\_Report\\_2010\\_V1.pdf](http://www.intelligentcompaction.com/downloads/TPF/IC_Annual_Report_2010_V1.pdf))
- The final report is under review by the IC research and will be submitted to the pooled fund States for further review.

**B. WORK PLANNED FOR NEXT QUARTER (APRIL 2011 TO JUNE 2011):**

TASK 1 - Technical Working Group (TWG)

- This task is complete.

TASK 2 - Literature Review and Evaluation of Intelligent Compaction Equipment

- This task is complete.

TASK 3 – Preparation of Interim Report and Work Plan Package

- This task is complete.

TASK 4 – Technical Working Group Initial Meeting

- This task is complete.

TASK 5 - Coordinated IC Field Demonstrations

- This task is complete.

TASK 6 – Database Management Plan

- This task is complete.

TASK 7 – Development of a Feasibility Report for an European Scan

- This task is eliminated.

TASK 8 – Quality Control/Assurance Training and Assistance

- Quality control/assurance and assistance will be conducted within this period.
- The IC team will keep assisting Mn/DOT, TxDOT, and INDOT in their implementation efforts.

TASK 9 – Presentations

- The project team has planned and will deliver for presentations in the following meetings:
  - The IC team is preparing, under a separate contract with the FHWA, for an IC workshop at the GeoHunan Conference in June, 2011.

TASK 10 – Annual and Final Reports

- The following reports will be completed:
  - Final IC Report

**C. IDENTIFICATION OF PROBLEMS/RECOMMENDED SOLUTIONS:**

- No problems are identified in this quarter.