

# INDOT Soils IC Demonstration

SR 25, West Lafayette, IN. Aug. 17 to 19, 2010

## On-Site Contact List

Last name	First name	Affiliation	Telephone	Email
ICPF Project Team				
Chang	George	Transtec Group	C 512-659-1231	gkchang@thetranstecgroup.com
Horan	Bob	Asphalt Institute	C 804-539-3036	bhoran@AsphaltInstitute.org
White	David	ISU Geotechnical Mobile Lab	515-294-1463 C 515-290-1080	djwhite@iastate.edu
Gieselman	Heath	ISU Geotechnical Mobile Lab	C 515-450-1383	giese@iastate.edu
Gallivan	Lee	FHWA	317-226-7493	Victor.Gallivan@dot.gov
State DOT and etc.				
Nantung	Tommy	INDOT,ICPF State rep	765-463-1521	TNANTUNG@indot.IN.gov
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Earl	Jim	INDOT	C317-450-7783	JEARL@indot.IN.gov
Brinkerhoff	Michael	INDOT – project engineer		MBRINKERHOFF@indot.IN.gov
Berebitsky	Paul	ICA – Open House coordinator	317-472-6777	pberebitsky@inconstruction.org
Roller/GPSs Vendors				
Hanson	Kris	Caterpillar Global Paving	763- 493-7505	hanson_kris@cat.com
Young	Candace	Caterpillar–Marketing	763-493-7641 C612-210-8678	Young_Candace_R@cat.com
Dittmer	Tom	Caterpillar – territory manager	C309-253-9033	Dittmer_Tom@cat.com
Kaz	Pete	Trimble	C937-609-1946	pete_kaz@trimble.com
Adkins	Creg	Sitech (GPS)	C317-697-4311	cregadkins@sitechindiana.com
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Hale	Sam	Sitech	C317-937-7376	
Paving/Earhwork Contractors				
Schaaf	Matt	Crider & Crider		mschaaf@criderandcrider.com

## Important Notes

- **JOB SITE:** The SR-25 project site is located near the junction of SR-25 and E 300 N Street in West Lafayette. Two project trailers are onsite approx. 100 ft to the project area.
- **BRIEFING:** All onsite personnel (including roller and GPS tech supports) will meet at 8AM, Tuesday, August 17 at the ISU Geotech Lab staging area for a briefing.
- The ISU Geotech Mobile Lab will be arriving on Monday Aug. 16 (likely in after hours). ISU will contact the Matt Schaaf of Crider and Crider when it gets close to the job site.
- Soils for this demo will consist of both cohesive and granular materials.

## IC Roller Shipment

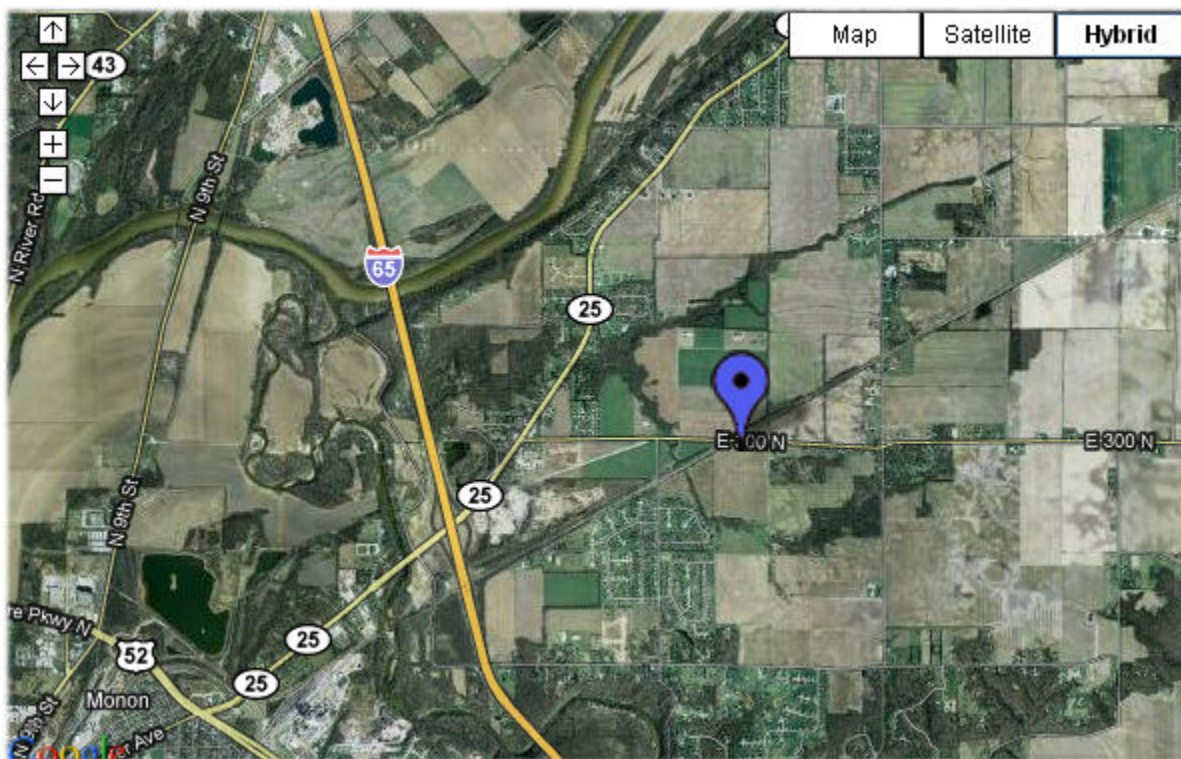
The shipping address is: 4509 E 300 N, Suite 3 (Trailer), Lafayette, IN 47905

Contacts: Matt Schaaf, 317-223-4016

Arrival: Friday, August 13, 2010

## Site Map

The SR-25 project site is located near the junction of SR-25 and E 300 N Street in West Lafayette.



# Caterpillar Single Drum IC Roller



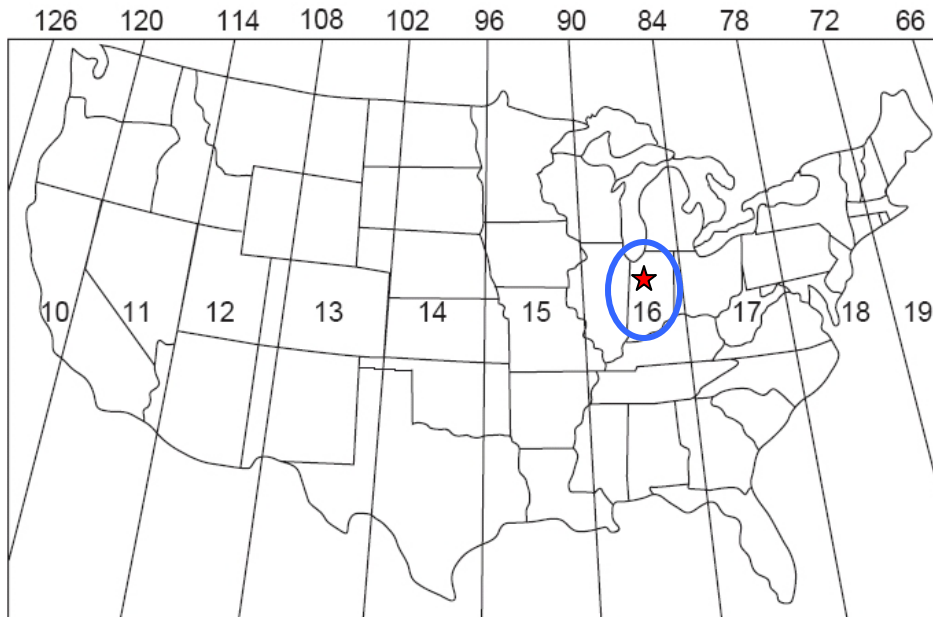
**Table 1. Features of the Caterpillar Single-Drum IC Roller.**

Manufacturer/ Vendor	Caterpillar
Model	AccuGrade
Model Number	CS563E smooth drum
Drum Size	60" dia. X 84" wide*
Machine Weight	25,000 lbs. (~ 12.5 tons)
Amplitude Settings	High: 0.070", Low: 0.035"
Frequency Setting/ Range	1,914 vpm
Auto-Feedback	No, but there is a feedback via RMV.
With measurement System	Yes
Measurement Value	CMV, MDP
Measurement Unit	Unitless
Documentation System	AccuGrade Office

# Global Position System

## Grid Reference

UTM 16-N is the preferred grid reference. State plane coordinate is the second choice.



**Figure 1. UTM Zones in the US.**

## Caterpillar

- Provide a Caterpillar CS56 smooth drum roller (with a padfoot shell) that equipped a Trimble GPS receiver and a radio.

## ISU Geotechnical Lab

- Provide a hand-held Trimble GPS rover for in-situ point measurements.
- Provide a Trimble GPS base station to broadcast RTK correction signals.

## Trimble and Sitech

- Sitech will provide GPS tech support onsite and may try out the VRS.
- Trimble will provide personnel to make a presentation during the open house.

## **Responsibility of All Participants**

### **INDOT/ICA**

- Provide a LWD and an operator for in-situ testing.
- Provide a DCP (17.6 lb hammer), a nuclear density gauge with along with operators.
- Perform testing on soil samples (both cohesive soils and granular) from this project prior to the IC demonstration.
- Assist the Open House by inviting DOT district engineers, cities/counties, Universities, local earth work associations, and others.
- Provide a LCD projector and a screen for the indoor presentation portion of the Open House.
- (INDOT/ICA) Coordinate and co-sponsor the Open House.

### **Crider & Crider**

- Provide ISU mobile lab a 50 ft X 100 staging location (leveled and without clayey soils).
- Provide ISU mobile lab with 50 gallon of potable water.
- Provide 300 gallons of fuel for the IC roller(s).
- Provide 1 to 2 roller operators for the production work, if necessary.

# Experimental Plan

## Goals

- Document impact of variable feedback control on compaction uniformity
- Document machine vibration amplitude influence on compaction efficiency
- Study IC roller measurement influence depth
- Develop correlations b/w IC roller values to traditional measurements
- Compare IC results to tradition compaction operations
- Study IC roller measurement values in production compaction operations
- Evaluate IC measurement values in terms of alternative specification options

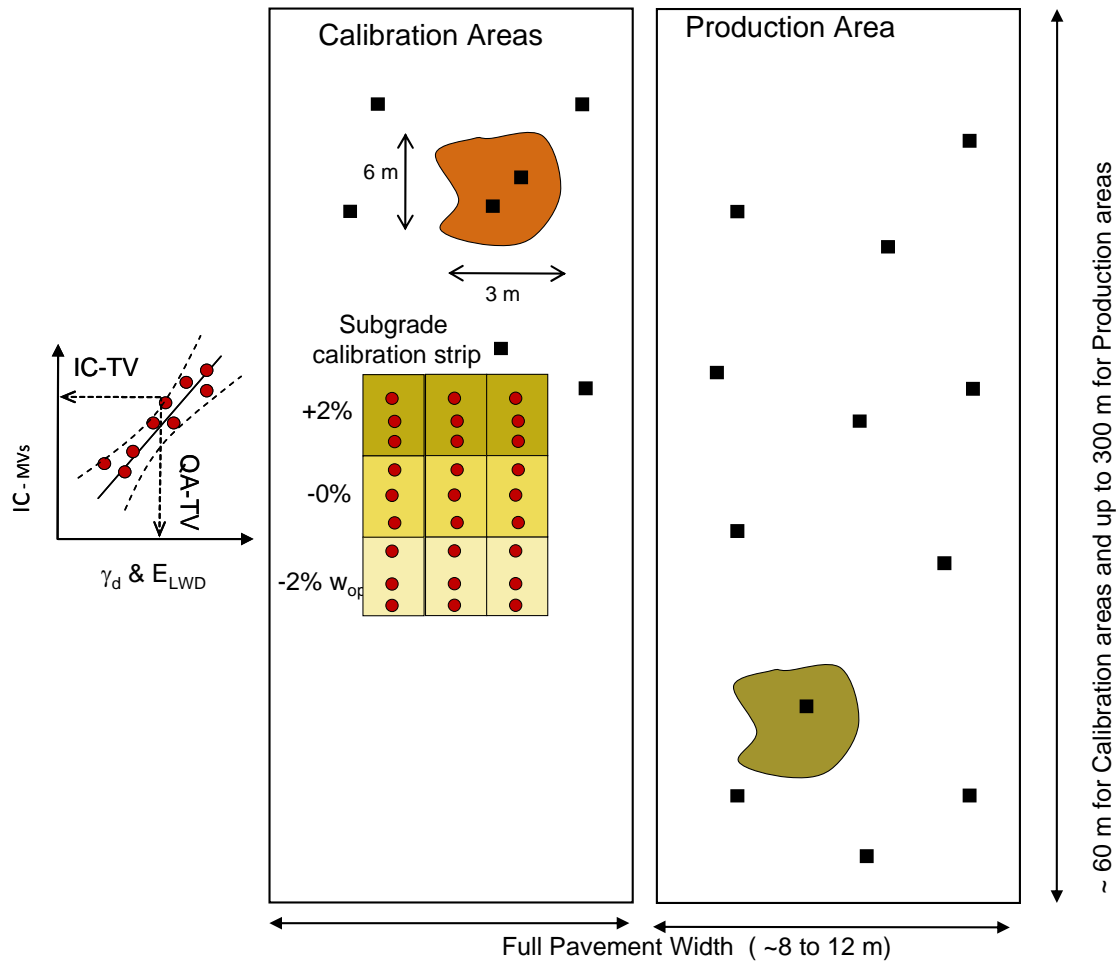
## Test Plan and Schedule (a sample)

Date	TB	Machine	Amp (mm)	Spot Tests	Notes/Comments
8/16	ISU arrives at site to setup mobile lab				
8/17	Meet with Contractor and identify potential test areas Setup IC rollers and make trial runs with GPS Collect material samples for on-site laboratory characterization				
	1	CAT (padfoot)	Static, 0.9, 1.8	DCP, LWD, NG, and PLT	<b>8 m x 60 m calibration test area.</b> 1.Prepare then compact foundation layer with 8 roller passes and map for subgrade. 2.Place one 200 to 300 mm loose lift of subgrade. 3.Create variable moisture conditions. 4.Compact in three lanes using static, medium, and high amplitude @ 8-12 passes + 3 mapping passes 5.Develop compaction curves 6.Repeat compaction for <b>3 lifts</b> in same area
	2	CAT (smooth)	TBD	DCP, LWD, NG, PLT, FWD	<b>Roller mapping in production areas</b> of subgrade. Monitor existing practice and perform in-situ tests for comparison. Use data for test run on IC QC/QA specification.
8/18	3	CAT(smooth)	Low, High, Feedback control	DCP, LWD, NG, PLT	<b>12 m x 60 m calibration test area.</b> 1.Compact foundation layer with 8 roller passes and map. 2.Place 150 mm lift of stabilized subgrade 3.Create variable moisture conditions. 4.Compact in three lanes using low, high, and feedback control @ 8-12 passes + 3 mapping passes 5.Develop compaction curves
	4	CAT (padfoot)	Static, 0.9, 1.8	DCP, LWD, NG, PLT	
8/19	Open House –presentation of preliminary results and roller demonstrations.				

Notes:

- A. Moisture condition calibration test strip areas  $\pm$  1.5% optimum except as noted.  
 B. DOT assistance requested for FWD testing and information on project QA testing requirements.  
 C. As time permits repeatability passes for roller will be performed on embankment.

### Schematic of Test Plan (a sample)



# Open House

## Where

INDOT R&D, 1205 Montgomery Street, West Lafayette, IN 47906

## When

8:30 AM to noon (EDT), Thursday, Aug. 19, 2010

## Agenda

- Session 1 – 8:30AM to 10:30AM - Indoor Presentation
- Session 2 – 10:30 AM to noon – IC Roller and GPS Equipment Demonstration (at the INDOT parking facility)

## Contact

Paul Berebitsky, ICA, [pberebitsky@inconstruction.org](mailto:pberebitsky@inconstruction.org), (317) 472-6777

## Safety



Safety vest are required.

