

# VDOT HMA IC Demonstration

## I-66, Fauquier County, VA

Sept. 27 to 30, 2010

### On-Site Contact List

Last name	First name	Affiliation	Telephone	Email
<b>ICPF Project Team</b>				
Chang	George	Transtec Group	C 512-659-1231	gkchang@thetranstecgroup.com
Horan	Bob	Asphalt Institute	C 804-539-3036	bhoran@AsphaltInstitute.org
Michael	Larry	LLM Asphalt Consultant	C 301331-6150	larry@larrylmichael.com
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Xu	Qinwu	Transtec Group	C 512-709-4155	qinwu@thetranstecgroup.com
<b>State DOT and etc.</b>				
Clark	Trenton	VDOT	540-860-2495	trenton.clark@vdot.virginia.gov
Diefenderfer	Brian	VDOT	434-293-1944	brian.diefenderfer@vdot.virginia.gov
Wells	Michael	VDOT		michael.wells@vdot.virginia.gov
<b>Roller/Components Vendors</b>				
Mansell	Todd	Sakai America	C 770-324-6455	t-mansell@sakaiamerica.com
Starry	Dale	Volvo	C 717- 385-3527	dale.starry@volvo.com
Saim	Mohammad	Volvo	717-532-9181 Ext. 3115	mohammad.saim@volvo.com
Hanes	Bruce	Trimble	C 937-609-1946	Bruce_Hanes@Trimble.com
Windsor	Mike	Keystone Precision Instrument	C 410-353-6436	mwindsor@keypre.com
Aickenm	Larry	Kessler Soils Engineering – LWD tests	703-589-5586	virginia@kesslerdcp.com
<b>Paving Contractors</b>				
Helmick	Dave	Superior Paving Corp	703-631-0004	davehelmick@superiorpaving.net
Mitchell	James	Superior Paving Corp		jamesmitchell@superiorpaving.net
Griffith	Chris	Superior Paving Corp	C 571-237-6417	chrisgriffith@superiorpaving.net
Atkins	Todd	Superior Paving Corp		toddatkings@superiorpaving.net

## On-site Briefing

All on-site personnel will meet at a gravel lot near the north side of the I-66 exit # 18 (to Markham/Rt 688 – see the project webpage for details) the at **7:30AM, Monday, Sept. 27** for a project briefing.

## On-Site Safety

Hard hat and safety vests are required. Flashing lights on vehicles are optional.

## IC Roller Shipment

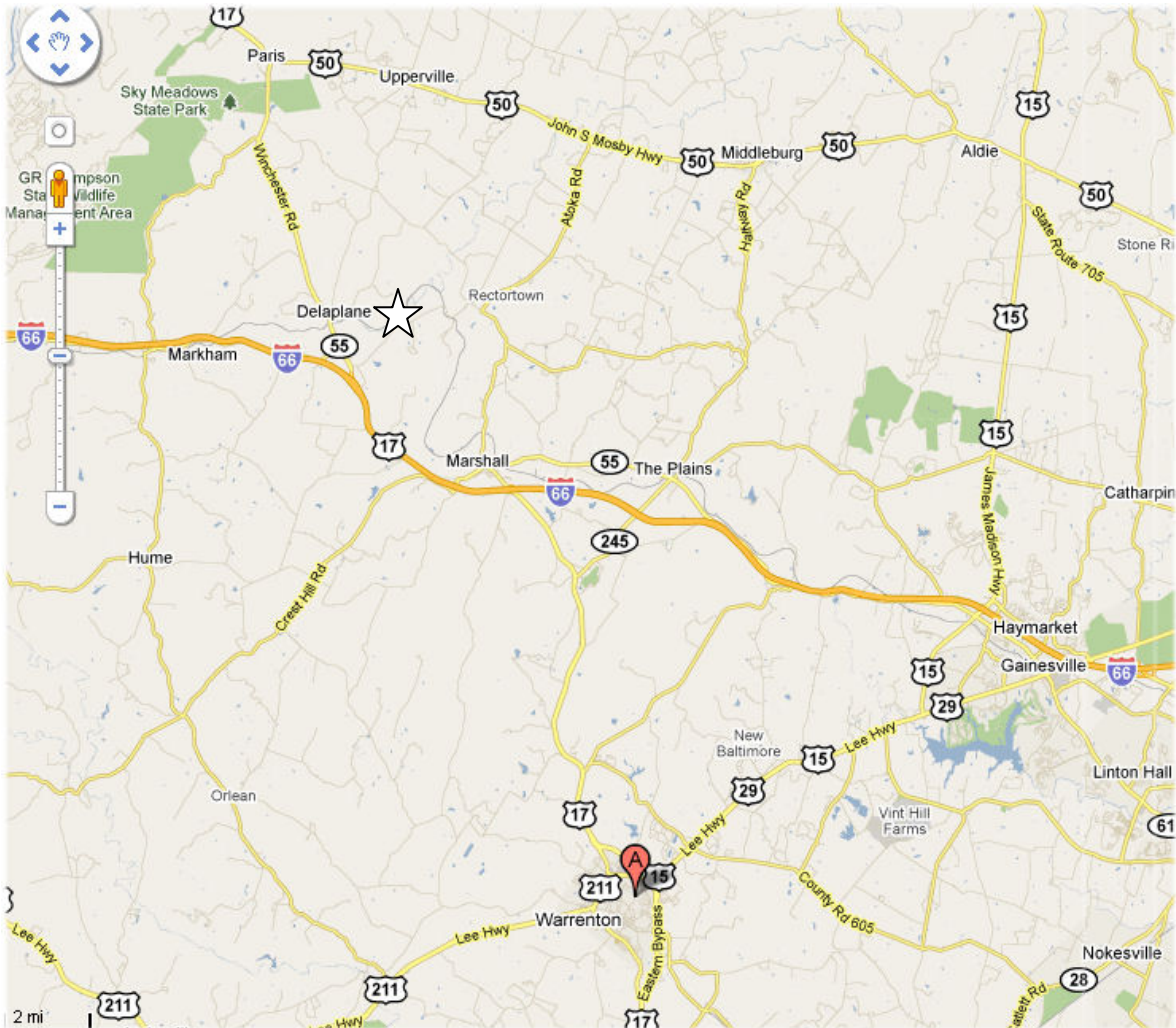
The shipping address is: **7940 Gainsford Ct. Bristow VA, 20136**

Contacts: **Chris Griffith, 703-631-0004, C 571-237-6417**

ETA: **Friday (Sept. 24).**

## Site Map

It is an HMA overlay project on I-66 west of DC on MP 23.



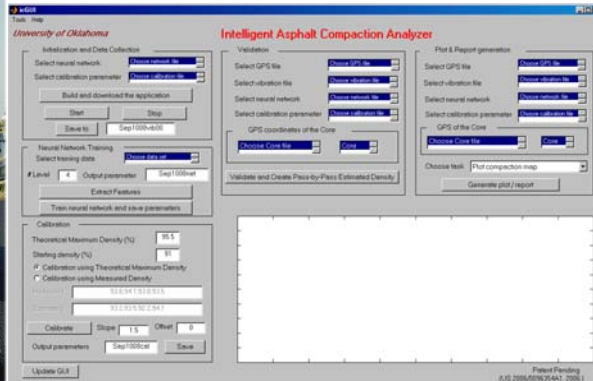
# Sakai Double Drum IC Roller



**Table 1. Features of the Sakai SW880 Double Drum IC Roller.**

Manufacturer/ Vendor	Sakai America
Model Name	Exact Compact System (ECS)
Model Number	SW880
Drum Width	79"
Machine Weight	29,560 lbs (~ 14 tons)
Amplitude Settings	0.013", 0.025" ( 0.33 to 0.64 mm)
Frequency Settings	High amp. 2500 or 3000 vpm Low amp. 2500, 3000, or 4000 vpm
Auto-Feedback	No
Measurement System	CCV with temperature and passes mapping
Measurement Value	Compaction control value (Sakai CCV)
Measurement Unit	Unitless
GPS Capability	Yes (RTK)
Temperature Measurement	Infra-red sensor at front
Documentation System	Compaction Information System (CIS)

# Volvo IACA Roller

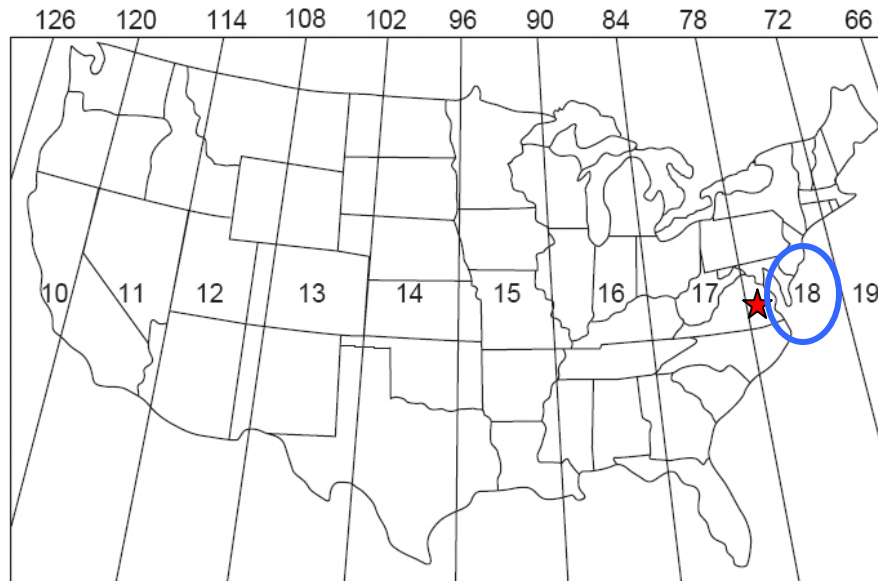


**Table 2. Features of the Volvo IACA Roller.**

# Global Position System

## Grid Reference

UTM 18-N is the preferred grid reference. State plane coordinate is the second choice.



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

## Sakai

- A Trimble GPS receiver and a radio will be mounted on the Sakai SW880 machine.
- A Trimble GPS base station will be setup to provide RTK correction signals.

## Volvo

- A Trimble GPS receiver and a radio will be mounted on the Volvo IACA machine.

## Keystone Precision Instrument

- A hand-held Trimble GPS rover will be used for in-situ point measurements. May use the correction signals from Trimble base station.
- A 12 V battery to power the GPS base station.
- (As a backup) A Trimble GPS base station will be setup to provide RTK correction signals.
- Provide the research team with the GPS data in text format (including long/lat and grids in UTM meter).

# **In-Situ Point Testing and Other Support**

## **VDOT**

- Provide a FWD and an operator for in-situ testing.
- Conduct coring of finished pavement within the test strips at locations designated by the research team (?).
- Assist the Open House by inviting DOT district engineers, cities/counties, Universities, local asphalt paving associations, and others.

## **Superior Paving Corp.**

- Provide fuel for the IC rollers.
- Provide 2 personnel to operate the IC rollers, and one QC personnel to perform nuclear density gauge measurements. Note that either roller will be served as the break-down roller.
- Mobilize IC rollers on site and to the Open House location.
- Assist the Open House by providing a facility, a LCD projector, and a screen for the indoor presentation.

## **Kessler Soils and Engineering**

- Conduct LWD measurements (1) on existing surface after IC mapping runs, and (2) on finished HMA overlay surface after the compaction at locations instructed by the IC research team. (?)

## **Keystone Precision Instrument**

- Assist on local calibration of GPS.
- Conduct GPS rover measurements along side with in-situ point tests (e.g. FWD tests and nuclear density gauge measurements) and coring locations.

## On-site Activities

Schedule	Activities
<b>Day 1 (9/27)</b>	<ul style="list-style-type: none"> <li>• Conduct project briefing (all parties) at the local project office/trailor.</li> <li>• Discussion, training of DOT and contractor personnel in machine operations, data collection, data management, and in-situ testing strategies.</li> <li>• At project site, set up the GPS base station and IC roller/GPS system.</li> <li>• Conduct trial runs to verify the machine is operating and communicating with the GPS. Verify that GPS rover location corresponds to GPS roller location.</li> <li>• Training of roller operators</li> <li>• Compaction of the HMA overlay layer.</li> </ul>
<b>Day 2 (9/28)</b>	<ul style="list-style-type: none"> <li>• Mapping of existing surface using roller measurement system of the IC rollers within a 500-ft test strip.</li> <li>• LWD testing and GPS measurements at designated locations within the test strip.</li> <li>• Compaction of the HMA overlay layer.</li> <li>• Conduct in-situ tests (nuclear density gauge, LWD, and coring) on the test strip. Up to 20 locations on the pavement will be marked and both density and GPS measurements will be obtained at each location.</li> <li>• The IC roller will be used in the breakdown roller position and all measurement values will be taken when the surface temperature measurements are in excess of 230 °F and the internal measured temperature is in excess of 240 °F.</li> </ul>
<b>Day 3 (9/29)</b>	<ul style="list-style-type: none"> <li>• Repeat the Day 2 operation.</li> </ul>
<b>Days 4 (9/30)</b>	<ul style="list-style-type: none"> <li>• Analyze and report the IC and in situ results, generating a preliminary report and presentation of results for the Open House.</li> </ul>

The paving on Monday will start with conventional compaction. The IC rollers will be used at the breakdown and intermediate positions after the set up and trial runs are complete.

## Test Settings

Date	TB	Machine	Amp (mm)	Spot Tests	Notes/Comments
9/26	Arrive on site.				
9/27	1	Sakai Volvo	0.3 (low) at 4000 vpm	NG F(L)WD	<b>Machine and GPS setup and trial runs.</b>  <b>Production rolling for HMA overlay.</b> 1. Verify the roller temperature measurements 2. Compact HMA overlay with normal roller passes. 3. Spot test with nuclear density gauge.
9/28	2	Sakai Volvo	0.3 (low) at 3000 vpm  0.3 (low) at 4000 vpm	F(L)WD  NG LWD	<b>Mapping of Existing Base.</b> 1. Map the existing base for 500 ft. 2. Spot test with LWD and GPS within the test strip.  <b>Production rolling for HMA overlay.</b> 1. Verify the roller temperature measurements 2. Compact HMA overlay with normal roller passes. 3. Spot tests with nuclear density gauge and other devices within the test strip.
9/29	3	Sakai Volvo	0.3 (low) at 3000 vpm  0.3 (low) at 4000 vpm	F(L)WD  NG LWD	<b>Mapping of Existing Base.</b> 1. Map the existing base for 500 ft. 2. Spot test with LWD and GPS within the test strip.  <b>Production rolling for HMA overlay.</b> 1. Verify the roller temperature measurements 2. Compact HMA overlay with normal roller passes. 3. Spot tests with nuclear density gauge and other devices.
9/30	Open House –presentation of preliminary results and roller demonstrations.				

### Notes

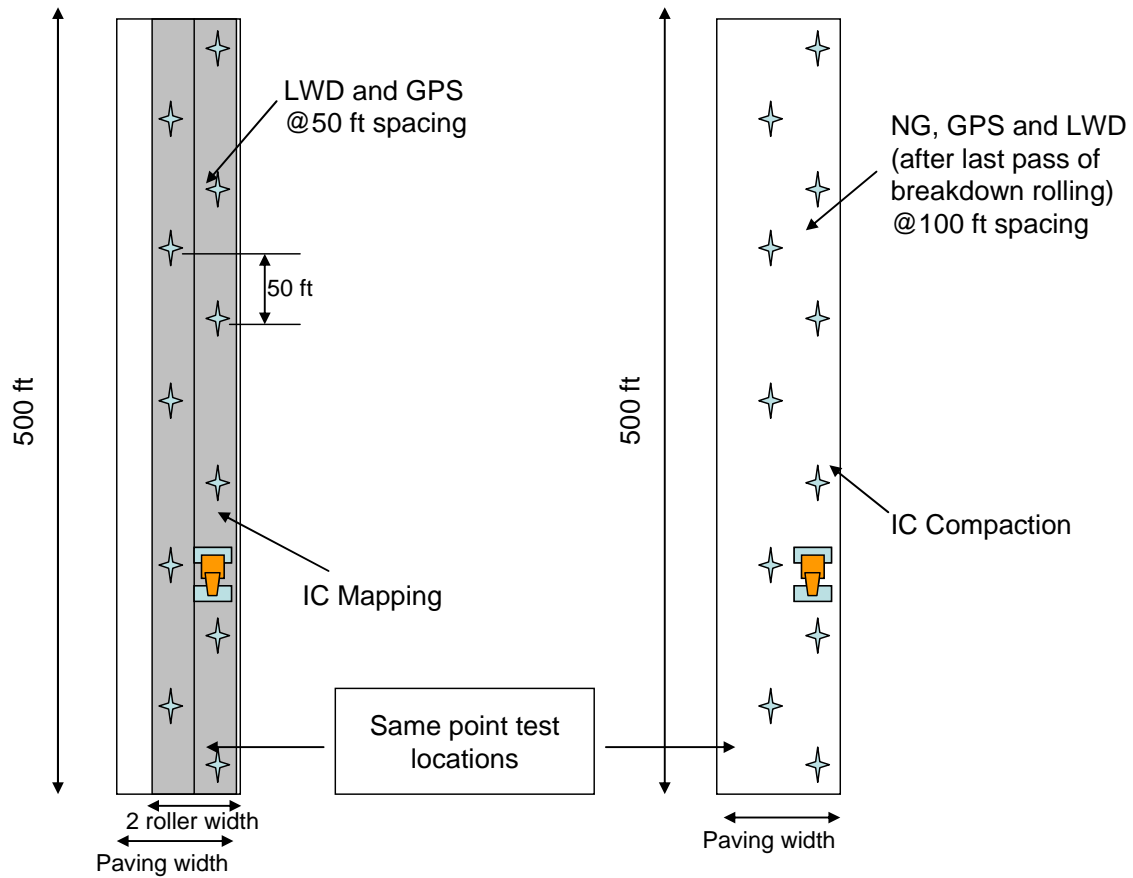
- Sakai SW880 or Volvo IACA will be used as the break-down roller.
- FWD: Falling weight deflectometer
- LWD: Light weight deflectometer
- GPS: hand-held Global Position System rovers
- NG: Nuclear density gauge

### FWD Test Settings

- Platen Size: 5.9” radius (rigid plate)
- Sensor positions: 0, 8, 12, 18, 24, 36, 48, 60, 72 inches
- Test patterns: At test locations designated in the test strip scheme. Spray paint on the loading locations for GPS measurements. Also, spray paint at the shoulder to help identify the same test locations for subsequent point tests on the HMA overlay.
- Drops/Loads: Save 2 drops at targeting 9,000 and 12,000 lbs.
- File format: F25, DDX, MDB, or any text format (including load history)



## Test Strip – Day 2 to 3



### Existing Base

### HMA layer

- Test lines are corresponding to the center of the IC drum for the base mapping.
- All point tests will be conducted on the same locations with the same location IDs after the mapping and HMA compaction.
- Mapping: Test point location IDs can be number as: XM01, XM02, to XM11 for test bed No. X (X = 2 or 3).
- HMA layer: Test point location IDs can be number as: XA01, XA02, to XA11 for test bed No. X (X = 2 or 3).

# Open House

## Where:

Superior Paving Corporate Office, 7940 Gainsford Ct. Bristow VA, 20136, 703-631-0004

## When:

9:00 AM to noon, Thursday, Sept 30, 2010



## Agenda:

- *Session 1 - 9:00AM to 11:00AM - Indoor Presentation*
- *Session 2 - 11:00AM to noon – IC Roller and GPS Equipment Demonstration*

## Contact:

Contact Ruth Calish, Transtec Group, [Ruth@TheTranstecGroup.com](mailto:Ruth@TheTranstecGroup.com), (512) 451-6233 for RSVP by Sept. 24.

## Safety

Safety vests are recommended.

