

Kentucky Asphalt IC Demonstration

I-65 in Hart County, KY (July 14-17, 2014)

On-Site Personnel

First name	Last name	Affiliation	Telephone	Email
FHWA IC Project Team				
George	Chang	Transtec Group	512-659-1231	gkchang@thetranstecgroup.com
Sabrina	Garber	Transtec Group		sgarber@thetranstecgroup.com
Lee	Gallivan	FHWA	317-605-4704	Victor.Gallivan@dot.gov
Bob	Horan	Asphalt Institute	804-539-3036	bhoran@AsphaltInstitute.org
Academic				
David	Hunsucker	KTC	859-257-8313	David.Hunsucker@uky.edu
Clark	Graves	KTC	859-257-7388	Clark.Graves@uky.edu
State DOT				
Paul	Looney	KYTC Design	502-564-3280	paul.looney@ky.gov
Adam	Ross	KYTC Construction	502-330-2101	adam.ross@ky.gov
Jason	Siwula	KYTC Innovation	502.782.5537	jason.siwula@ky.gov
Paul	Sanders	KYTC D4	270-766-5066	paul.sanders@ky.gov
Brandon	Bagby	KYTC D4 (project engineer)	270-766-5033	brandon.bagby@ky.gov
Allen	Myers	KYTC Materials	502-564-3160	Allen.Myers@ky.gov
Robert	Semones	KYTC Materials	502-564-3160	Robert.Semones@ky.gov
Thomas	Clements	KYTC Materials	502-564-3160	Thomas.Clements@ky.gov
Duane	Bennett	KYTC Materials	502-564-3160	Duane.Bennett@ky.gov
Todd	Capito	KYTC Materials	502-564-3160	Todd.Capito@ky.gov
Doug	Lafoe	KYTC Materials	502-564-3160	Doug.Lafoe@ky.gov
Vendors				
Tim	Kowalski	Wirtgen/Hamm	615-594-4604	tkowalski@Wirtgenamerica.com
Josh	Weston	Wirtgen/Hamm	615-693-9839	jweston@Wirtgenamerica.com
Nelson	Hunt	Caterpillar - Lead	901-493-6907	Hunt_Nelson@cat.com
Todd	Mansell	Caterpillar - Support	763-447-5695	Mansell_Todd_W@cat.com
Garry	Aicken	Kessler (LWD-a)	703-989-6612	garry@kesslerdcp.com
Jeff	Stutz	SiteTech Mid-South	502-210-2664	Jeff_stutz@sitech-midsouth.com
JD	Weis	SiteTech Mid-South	859-621-3174	JD_Weis@SITECH-MidSouth.com
Paving Contractors				
Mike	Law	Scotty's Contracting (VP Materials)	270-781-3998	mikel@scottyscontracting.com
Kenny	Reynolds	Scotty's Contracting (VP Construction)	270-781-3998	kennyr@scottyscontracting.com
Jim	Sowers	Scotty's Contracting (paving foreman)	270-783-1408	
Jon	Kemp	Scotty's Contracting (QC Manager)	270-781-3998	jonk@scottyscontracting.com

Project webpage: (<http://www.intelligentcompaction.com/projects/2012-2014-fhwa-hma/2014-field-projects/kentucky-ic-demo-2014/>)

Main Contacts

- **FHWA IC project:** Dr. George Chang, FHWA IC team
- **Field Visits:** Mike Law, Scotty's Contracting
- **Paving Operation:** Jim Sowers, Scotty's Contracting
- **DOT Project Manager:** Brandon Bagby, KYTC D4
- **Open House:** David Hunsucker, KTC
- **Roller Shipment:** Shipping address: I-65 medium next to Exit No. 65; Contacts: Mike Laws, Scotty's Contracting (cellphone: 270-781-3998); ETA: Friday, July 11, 2014

Responsibilities

FHWA IC Team

- IC training,
- Field data collection/analysis,
- Presentation during Open House.

DOT

- Personnel to be trained on IC,
- Coordination of the Open House event,
- Facility and AV for the Open House event,
- Personnel and equipment for FWD/GPR testing (cancelled),
- Arrangement for personnel and equipment for coring,
- Personnel and equipment for bulk density tests for cores.

Paving Contractor

- Personnel to be trained on IC,
- Two IC roller operators,
- Mobilization of IC rollers onsite and to Open House,
- One density gauge and an operator,
- Arrangement for personnel and equipment for coring,
- Fuel and water for IC rollers.

Roller Vendors

- IC Training (esp. IC operation, data collection and transfer),
- Technical support during field demo,

- Presentation during Open House.

GPS Vendor

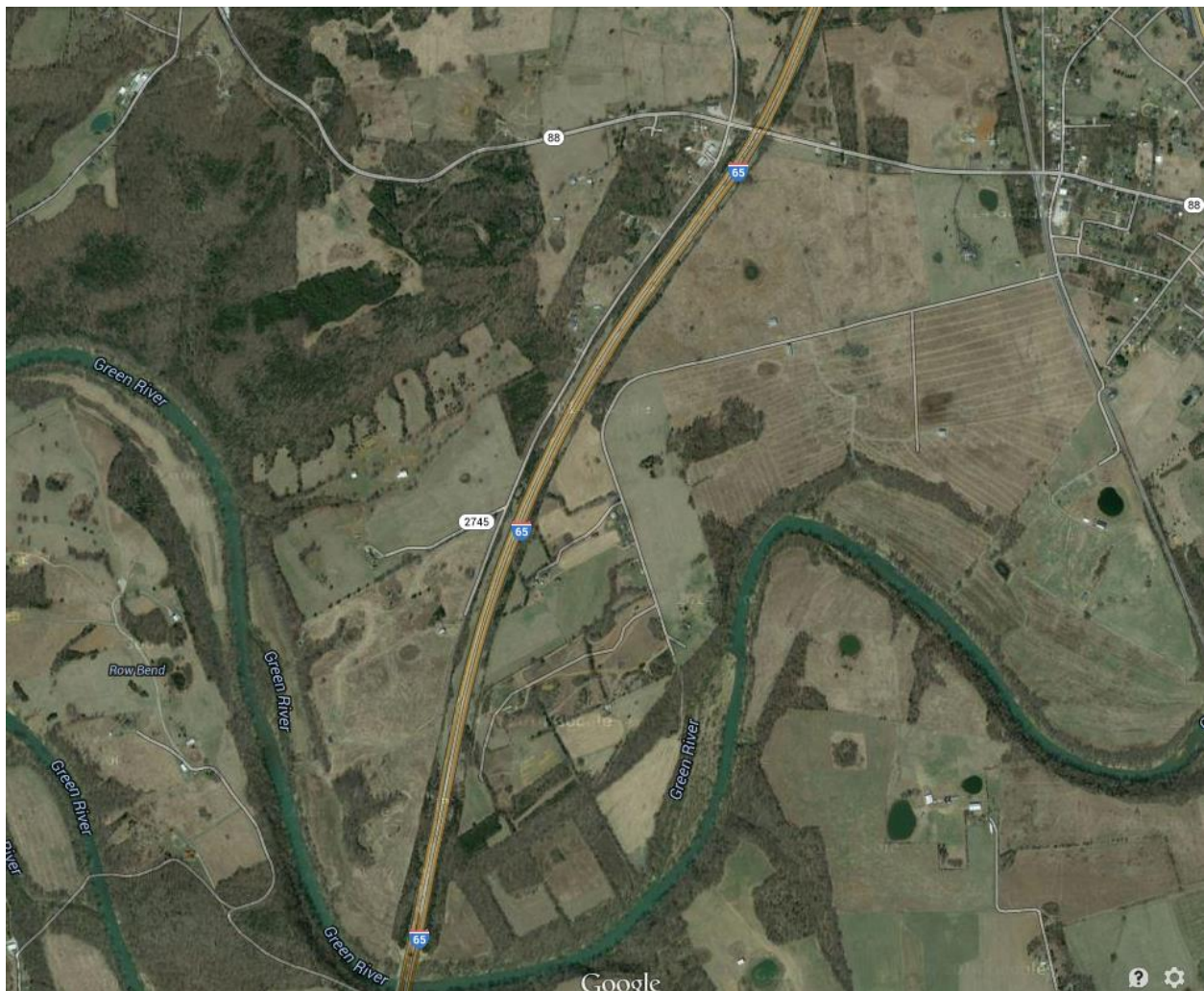
- GPS rover and an operator,
- GPS training,
- Technical support during field demo,
- Presentation during Open House.

LWD-a Vendor

- Personnel and equipment for LWD tests.

Site Map

This project is a day-time paving job located at I-65 in Hart County between Horse Cave and Munfordville (MP 58 – MP 65).



Pavement layers

The target layer construction for this FHWA IC study will be on the base course or intermediate course of the asphalt layers.

The following is the typical section for this portion of the job (***) indicates the lifts of asphalt to be constructed):

1.5" 0.38A CL4 76-22 (Fall 2015)

3.0" 1.0D CL4 76-22 (***)

3.5" 1.0D CL4 64-22 (***)

4.5" 1.5D CL4 64-22 (***)

4.5" 1.5D CL4 64-22 (***)

6" ATDB

7" DGA

Onsite Safety



Contact Mike Law, Scotty's Contracting & Stone, for any onsite visits.

DOT and Contractor require all onsite participants to observe safety rules:

- Ingress and egress to and from the work zone, vehicles shall be equipped with yellow flashing lights.
- Location to park vehicles.
- Location for people to safely observe operations.
- Adequate PPE provided for all personnel within the work zone (hard hats - *optional*, safety vests, working gloves, safety glasses, steel toed boots, etc.).
- Suggest carpool to the job site.



On-site Activities

Schedule	Activities
Day 0 Sunday (July 13)	<ul style="list-style-type: none"> Conduct IC rollers/GPS setup and trial runs (equipment vendors and FHWA IC team only) at the staging area. (2PM-4PM)
Day 1 Monday (July 14)	<ul style="list-style-type: none"> Set up the GPS base station and IC roller/GPS system (by 7AM). Conduct project briefing at the staging area and IC training for roller operators (7AM-8AM). Start paving with one IC roller at breakdown and another IC roller at intermediate position. Select a 500-ft section as a test strip to establish the rolling pattern. Conduct NG/GPS/LWD-a testing immediately behind the paver and at selected locations after each breakdown and intermediate roller pass within the test strip. Perform production compaction using the rolling pattern. Conduct NG/GPS/LWD-a at selected locations after the finishing rolling
Day 2 Tuesday (July 15)	<ul style="list-style-type: none"> Set up the GPS base station and IC roller/GPS system (by 7AM). Start paving with one IC roller at breakdown and another IC roller at intermediate position. Conduct NG/GPS/LWD-a testing immediately behind the paver and at selected locations after each breakdown roller pass within the 1500-ft section. Conduct NG/GPS/LWD-a testing at selected locations after each intermediate roller pass within the 1500-ft section. After the finishing rolling, mark 60 locations within the 1500-ft paved section. Conduct NG/GPS tests at marked locations. Conduct GPS and LWD-a tests at designated locations. Conduct coring at the marked locations.
Day 3 Wednesday (July 16)	<ul style="list-style-type: none"> Set up the GPS base station and IC roller/GPS system (by 7AM). Start paving with one IC roller at breakdown and another IC roller at intermediate position. Select a 500-ft section. Conduct NG/GPS/LWD-a testing immediately behind the paver and at selected locations after each breakdown and intermediate roller pass within the test strip. Perform production compaction using the rolling pattern. Conduct NG/GPS/LWD-a at selected locations after the finishing rolling.
Days 4 Thursday (July 17)	<ul style="list-style-type: none"> Conduct the Open House event including presentation and equipment demonstration.

- GPS: Hand-held Global Positioning System rover will be provided by SITECH.
- NG: Nuclear density gauge and an operator will be provided by the KYTC.
- LWD-a: Lightweight deflectometer for asphalt tests will be provided by Kessler.
- Coring: 60 X 4" cores will be taken with two + coring rigs by Contractor and DOT.
- Core tests: Bulk density testing of cores will be performed by DOT.

Test Settings

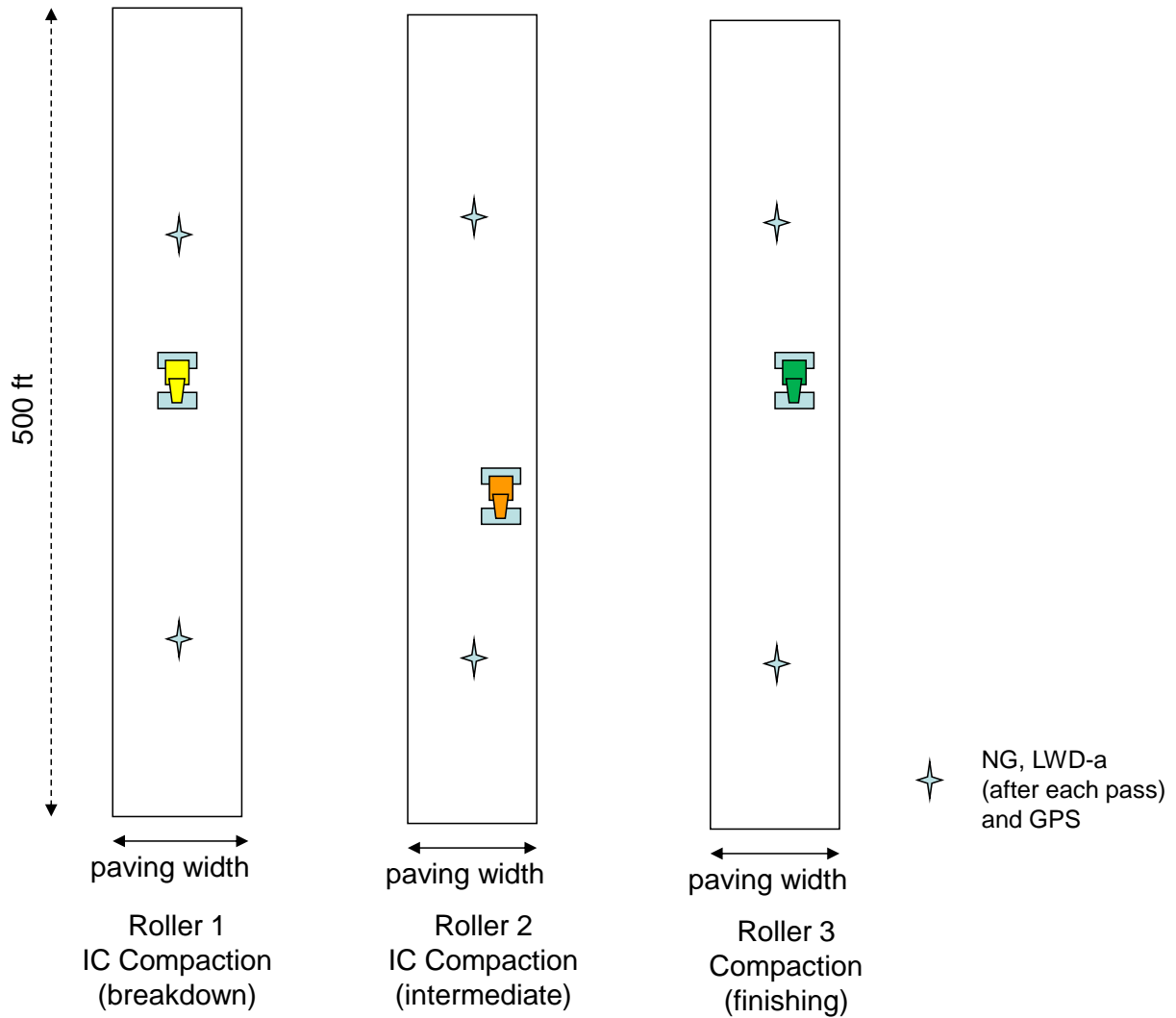
Date	TB	Machine	Setting	Spot Tests	Notes/Comments
Day 1	1A	IC 1	0.3mm at 4000 vpm	NG, GPS, LWD-a	Breakdown compaction for asphalt base course. 1. Compact with normal roller passes. 2. NG/GPS/LWD-a tests after each roller pass at selected locations within the test section.
	1B	IC 2	Low amp at 4000 vpm	NG, GPS, LWD-a	Intermediate compaction for asphalt base course. 1. Compact with normal roller passes. 2. NG/GPS/LWD-a tests after each roller pass at selected locations within the test section.
	1C	Conventional Roller	Static	NA	Finishing rolling 1. Compact with normal roller passes.
Day 2	2A	IC 2	Low amp at 4000 vpm	NG, GPS, LWD-a	Breakdown compaction for asphalt base course. 1. Compact with normal roller passes. 2. NG/GPS LWD-a tests after each roller pass at selected locations within the test section.
	2B	IC 1	0.3mm at 4000 vpm	NG, GPS, LWD-a	Intermediate compaction for asphalt base course. 1. Compact with normal roller passes. 2. NG/GPS LWD-a tests after each roller pass at selected locations within the test section.
	2C	Conventional Roller	Static	NG, GPS, LWD-a, Coring	Finishing rolling 1. Compact with normal roller passes. 2. NG/GPS/LWD-a/Coring tests after the finishing rolling at marked locations within the test section.
Day 3	3A	IC 1	0.3mm at 4000 vpm	NG, GPS, LWD-a	Breakdown compaction for asphalt base course. 1. Compact with normal roller passes. 2. NG/GPS LWD-a tests after each roller pass at selected locations within the test section.
	3B	IC 2	Low amp at 4000 vpm	NG, GPS, LWD-a	Intermediate compaction for asphalt base course. 1. Compact with normal roller passes. 2. NG/GPS LWD-a tests after each roller pass at selected locations within the test section.
	3C	Conventional Roller	Static	NA	Finishing rolling 1. Compact with normal roller passes.

Day 0 – IC Setup, Trial Runs, and GPS Validation

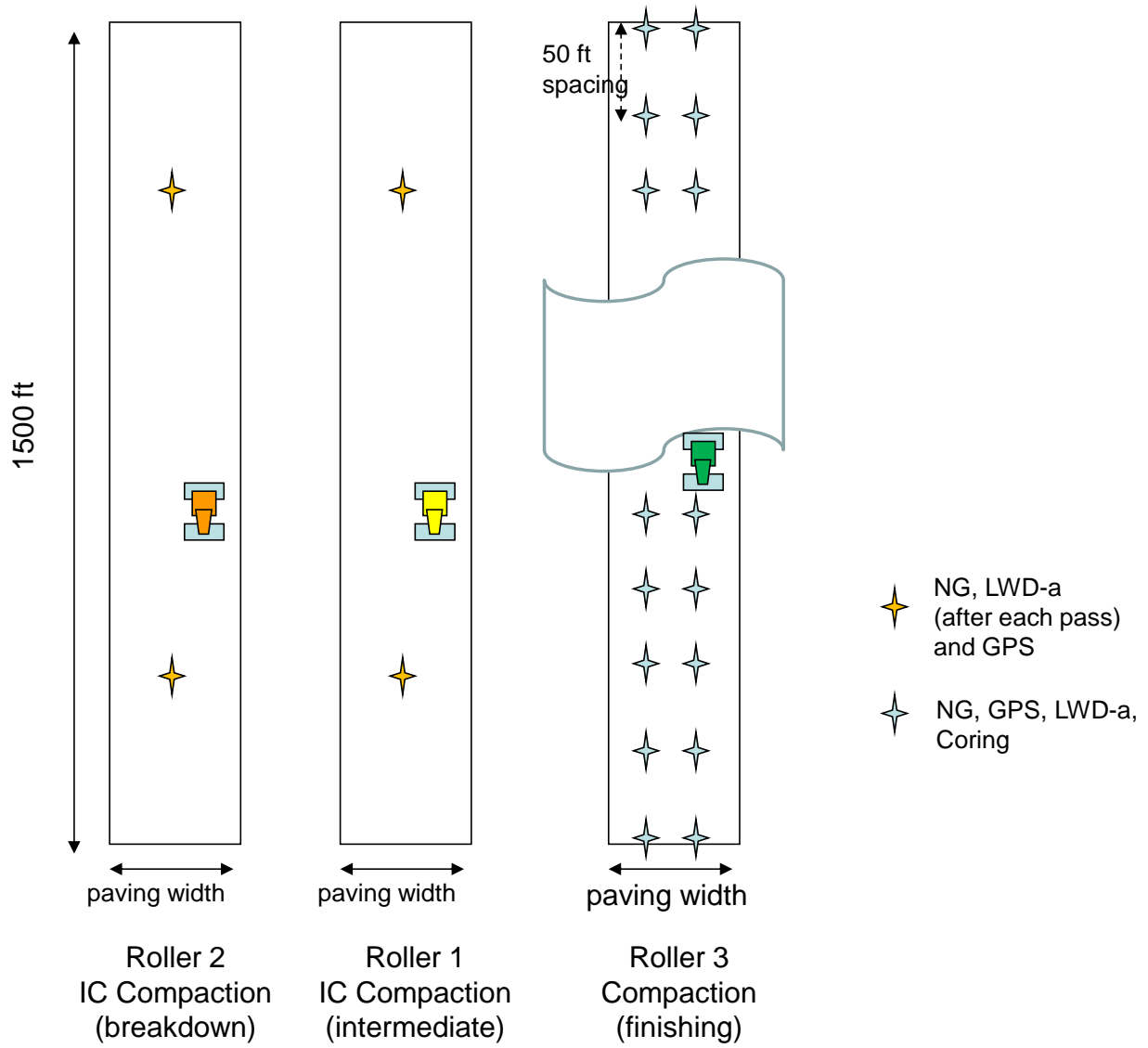
- A ground-based GPS base station will be setup onsite.
- IC rollers will be fully setup and functioning.
- Brief trial runs in vibratory mode will be conducted with each IC roller.
- Data files will be exported from vendors' software or online solution and re-imported to Veda for checking.
- Recon the job site to identify possible GPS shadows or blind spots.
- GPS Validation will be conducted via the following procedures:
 1. Move the IC roller around until the GPS header computation is initialized.
 2. Move the IC roller and park at a selected location.
 3. Record the GPS measurements from the IC roller ensuring the distance offsets are applied so that the GPS coordinate is at the center or at left/right edges of the front drum.
 4. Mark two locations on the ground adjacent to the right and left edges of the front drum contact patch.
 5. Move the IC roller from the marked locations.
 6. Use a hand-held rover to measure at the marked locations.
 7. Average the rover GPS measurements if the roller GPS measurement is at the center of the front drum.
 8. The differences between the roller GPS and rover measurements shall be within 12 inches (300 mm) for northing and easting.



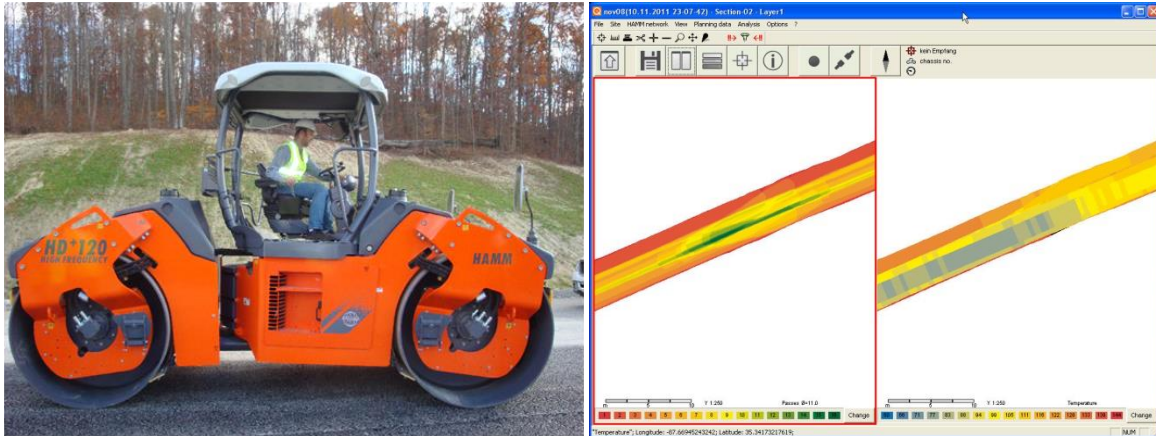
Day 1 & 3 – Test Sections



Day 2 – Test Section

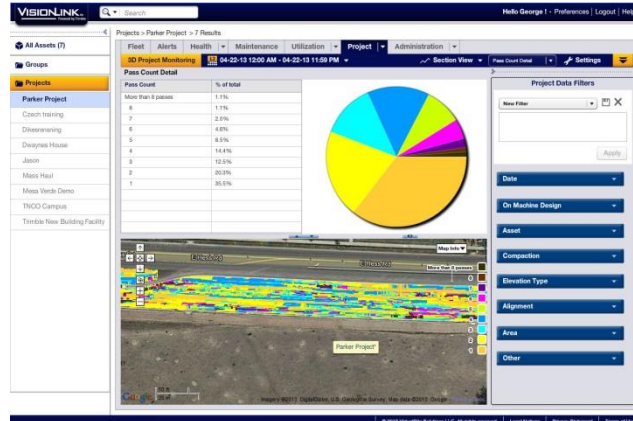


HAMM Double-Drum IC Roller



Manufacturer/ Vendor	HAMM/Wirtgen
Model Name	HCQ (Hamm Compaction Quality)
Model Number	HD+ 90 / HD+ 110, HD+ 120 / HD+ 140
Drum Width	78" w/offset to 84.7"
Machine Weight	Operating wt. 27,569 lbs. w/max of 32,187 lbs.
Amplitude Settings	High/Low - .028/.011 in. (0.71/0.27 mm)
Frequency Settings	Variable from 2700 - 4020 vpm
Auto-Feedback	NA
Measurement System	HAMM Compaction Quality (HCQ)
Measurement Value	HMV, density estimator, temperature, passes
Measurement Unit	[unitless, % compaction, °C, color coded]
GPS Capability	Yes
Documentation System	HCQ with ability to export to Veda
Contact	Tim Kowalski (615) 594-4604 tkowalski@Wirtgenamerica.com

Caterpillar Double-Drum IC Roller



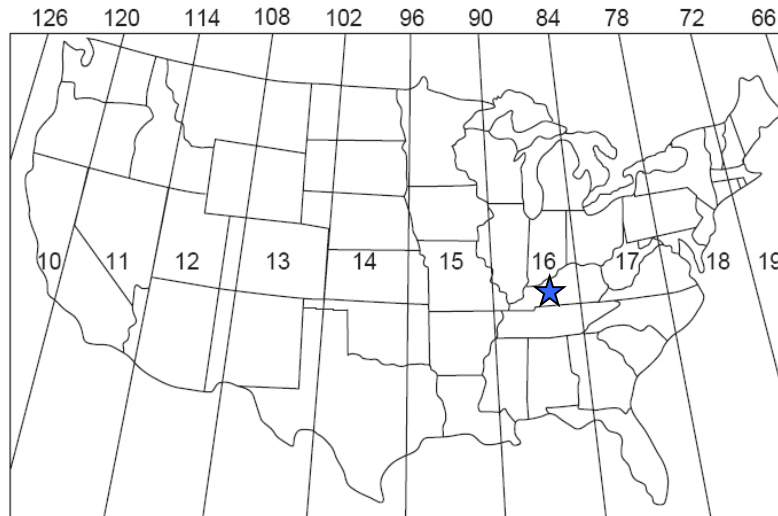
Manufacturer/ Vendor	Caterpillar
Model Name	Tandem vibratory rollers
Model Number	CB44B, CB54B, CD44B and CD54B
Drum Width	51" (solid or split drums)
Machine Weight	split drum: Operating wt. 20,569 lbs. w/max of 23,082 lbs. solid drum: Operating wt. 18,056 lbs. w/max of 19,709 lbs.
Amplitude Settings	0.024 – 0.012"
Frequency Settings	split drum: 2,520 and 3,200 vpm solid drum: 3,200 and 3,800 vpm
Auto-Feedback	NA
Measurement System	Compaction Meter Value (CMV)
Measurement Value	CMV
Measurement Unit	[unitless]
GPS Capability	Yes
Documentation System	VisionLink
Contact	Todd Mansell, 763-447-5695 Mansell_Todd_W@cat.com

A CB54 XW (26,300 lbs., 79") will be provided for this demo.

Global Positioning System (GPS)

Grid Reference

UTM-16N is the preferred coordinate reference for all devices.



Trimble GPS

- A Trimble GPS receiver and a radio will be mounted on the Caterpillar IC roller.
- A Trimble GPS base station will be setup to provide RTK correction signals.
- A hand-held Trimble GPS rover with both RTK and OmniSTAR capability will be used for in-situ point measurements.

OmniSTAR GPS

- A GPS receiver with OmniSTAR subscription will be mounted on the HAMM IC roller.

Open House



Time: Thursday, 8AM to noon, July 17, 2014

Location: Cave City Convention Center, 502 Mammoth Cave St, Cave City, KY 42127

Contact: David Hunsucker, Kentucky Transportation Center, University of Kentucky, (859) 257-8313, david.hunsucker@uky.edu

Agenda

- **Session 1** - 8:00AM to 11:00AM - Indoor Presentation
- **Session 2** - 11:00AM to noon – Outdoor Equipment Demonstration (IC rollers, LWD-a and GPS)

Online Registration is required:

Webpage (<https://fhwaicopenhouseky.eventbrite.com/>)