



# Meeting Minutes: NRRRA Intelligent Construction Technologies (ICT) Team

(Agency & Associate Member Meeting)

Date: October 3, 2019  
Minutes prepared by: Rebecca Embacher  
Location: Skype

## Attendance

### Agency Members

Participated	Affiliation	State Contact	e-mail
<input type="checkbox"/>	California	Deepak Maskey	<a href="mailto:deepak.maskey@dot.ca.gov">deepak.maskey@dot.ca.gov</a>
<input type="checkbox"/>	California	Ragu Thangavelautham	<a href="mailto:raguparan.thangavelautham@dot.ca.gov">raguparan.thangavelautham@dot.ca.gov</a>
<input type="checkbox"/>	Illinois	Brian Hill	<a href="mailto:Brian.Hill@illinois.gov">Brian.Hill@illinois.gov</a>
<input type="checkbox"/>	Minnesota	Rebecca Embacher	<a href="mailto:rebecca.embacher@state.mn.us">rebecca.embacher@state.mn.us</a>
<input checked="" type="checkbox"/>	Minnesota	Kyle Hoegh	<a href="mailto:kyle.hoegh@state.mn.us">kyle.hoegh@state.mn.us</a>
<input type="checkbox"/>	Missouri	Jen Harper	<a href="mailto:Jennifer.Harper@modot.mo.gov">Jennifer.Harper@modot.mo.gov</a>
<input checked="" type="checkbox"/>	Missouri	Dan Oesch	<a href="mailto:Daniel.Oesch@modot.mo.gov">Daniel.Oesch@modot.mo.gov</a>
<input checked="" type="checkbox"/>	North Dakota	Curt Dunn	<a href="mailto:cdunn@nd.gov">cdunn@nd.gov</a>
<input checked="" type="checkbox"/>	North Dakota	Amy Beise	<a href="mailto:abeise@nd.gov">abeise@nd.gov</a>

### Associate Members

Participated	Affiliation	Contact	e-mail
<input type="checkbox"/>	American Engineering and Testing, Inc.	Derek Tompkins	<a href="mailto:dtompkins@amengtest.com">dtompkins@amengtest.com</a>
<input type="checkbox"/>	Braun Intertec	Mohammad Sabouri	<a href="mailto:msabouri@braunintertec.com">msabouri@braunintertec.com</a>
<input checked="" type="checkbox"/>	Braun Intertec	Heidi Olson	<a href="mailto:holson@braunintertec.com">holson@braunintertec.com</a>
<input checked="" type="checkbox"/>	Caterpillar Global Paving	Bryan Downing	<a href="mailto:Downing_Bryan_J@cat.com">Downing_Bryan_J@cat.com</a>
<input checked="" type="checkbox"/>	Caterpillar Global Paving	Todd Mansell	<a href="mailto:mansell_todd_w@cat.com">mansell_todd_w@cat.com</a>
<input type="checkbox"/>	Concrete Paving Association	Matt Zeller	<a href="mailto:mjzeller@cpamn.com">mjzeller@cpamn.com</a>
<input type="checkbox"/>	The University of Texas at El Paso	Nazarian Soheil	<a href="mailto:nazarian@utep.edu">nazarian@utep.edu</a>
<input type="checkbox"/>	GSSI	Roger Roberts	<a href="mailto:roger@geophysical.com">roger@geophysical.com</a>
<input checked="" type="checkbox"/>	GSSI	Roger Sommerfeldt	<a href="mailto:sommerfeldtr@geophysical.com">sommerfeldtr@geophysical.com</a>
<input checked="" type="checkbox"/>	Infrasense	Ken Maser	<a href="mailto:kmaser@infrasense.com">kmaser@infrasense.com</a>

<input type="checkbox"/>	Leica Geosystems	Brad Adams	<a href="mailto:brad.adams@leicaus.com">brad.adams@leicaus.com</a>
<input type="checkbox"/>	Mathy Construction	Erv Dukatz	<a href="mailto:ervin.dukatz@mathy.com">ervin.dukatz@mathy.com</a>
<input checked="" type="checkbox"/>	Mathy Construction	Matt Oman	<a href="mailto:matt.oman@mathy.com">matt.oman@mathy.com</a>
<input checked="" type="checkbox"/>	Midstate Reclamation & Trucking, Inc.	Dan Schellhammer	<a href="mailto:dans@midstatecompanies.com">dans@midstatecompanies.com</a>
<input type="checkbox"/>	Midstate Reclamation & Trucking, Inc.	John Peterson	<a href="mailto:johnp@midstatecompanies.com">johnp@midstatecompanies.com</a>
<input checked="" type="checkbox"/>	Minnesota Asphalt Paving Association	Brandon Brever	<a href="mailto:bbrever@mnapa.org">bbrever@mnapa.org</a>
<input checked="" type="checkbox"/>	Moba	Paul Angerhofer	<a href="mailto:pangerhofer@moba.de">pangerhofer@moba.de</a>
<input type="checkbox"/>	The Transtec Group, Inc.	George Change	<a href="mailto:GKChang@TheTranstecGroup.com">GKChang@TheTranstecGroup.com</a>
<input type="checkbox"/>	Topcon Positioning Systems, Inc.	Evan Monroe	<a href="mailto:emonroe@topcon.com">emonroe@topcon.com</a>
<input type="checkbox"/>	Topcon Positioning Systems, Inc.	Jim Preston	<a href="mailto:jpreston@topcon.com">jpreston@topcon.com</a>
<input type="checkbox"/>	Trimble	Kevin Garcia	<a href="mailto:kevin_garcia@trimble.com">kevin_garcia@trimble.com</a>
<input type="checkbox"/>	Trimble	Devin Laubhan	<a href="mailto:devin_laubhan@trimble.com">devin_laubhan@trimble.com</a>
<input type="checkbox"/>	Wirtgen Group	Tim Kowalski	<a href="mailto:Tim.Kowalski@wirtgen-group.com">Tim.Kowalski@wirtgen-group.com</a>
<input type="checkbox"/>	Wirtgen Group	Nars Laikram	<a href="mailto:Laikram.Narsingh@wirtgen-group.com">Laikram.Narsingh@wirtgen-group.com</a>
<input type="checkbox"/>	WSB & Associates	Mike Rief	<a href="mailto:mrief@wsbeng.com">mrief@wsbeng.com</a>
<input checked="" type="checkbox"/>	WSB & Associates	Andrea Blanchette	<a href="mailto:ablanchette@wsbeng.com">ablanchette@wsbeng.com</a>

## Friends

Participated	Affiliation	State Contact	e-mail
<input type="checkbox"/>	FHWA – MN	Kevin Kliethermes	<a href="mailto:Kevin.Kliethermes@dot.gov">Kevin.Kliethermes@dot.gov</a>
<input type="checkbox"/>	Minnesota	Curt Turgeon	<a href="mailto:curt.turgeon@state.mn.us">curt.turgeon@state.mn.us</a>
<input type="checkbox"/>	Minnesota	Ben Worel	<a href="mailto:ben.worel@state.mn.us">ben.worel@state.mn.us</a>
<input type="checkbox"/>	Minnesota	Lauren Dao	<a href="mailto:Lauren.Dao@state.mn.us">Lauren.Dao@state.mn.us</a>
<input type="checkbox"/>	Minnesota	Dave Van Deusen	<a href="mailto:dave.vandeusen@state.mn.us">dave.vandeusen@state.mn.us</a>
<input type="checkbox"/>	Minnesota	Shongtao Dai	<a href="mailto:shongtao.dai@state.mn.us">shongtao.dai@state.mn.us</a>
<input type="checkbox"/>	North Dakota	Jordan Nehls	<a href="mailto:jnehls@nd.gov">jnehls@nd.gov</a>
<input type="checkbox"/>	North Dakota	Darin Lindblom	<a href="mailto:dlindblom@nd.gov">dlindblom@nd.gov</a>
<input checked="" type="checkbox"/>	North Dakota	Carey Schreiner	



<input checked="" type="checkbox"/>	North Dakota	David Bruins	
<input checked="" type="checkbox"/>	North Dakota	Nathan Haaland	

Other Attendees: None

## Decisions Made

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- None at this time.

## Action items

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- NRRA ICT Team | Compile possible session and/or presentation topics for NRRA workshop.
- NRRA ICT Team | Send November agenda items to Embacher.

## Agenda

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- NRRA Executive Committee update
- NRRA 2020 Workshop
- International Society for Intelligent Construction – Northern America Chapter & Intelligent Construction Technologies Expert Task Group
- Project Updates
- Round Robin

## Next Meeting

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Date: November 7, 2019

Time: 10:30-11:30AM Central Time

Location: Skype

*(no conference call will be used; skype audio is also available via smart phone application if needed)*

Agenda items: TBD

## Meeting Notes

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### NRRA Executive Committee Update (Worel)

There will be a booth at TRB 2020. Currently, putting together “ground rules” for booth. NRRA will have 2 adjacent booths in a corner. Looking for both agency and associate members to take shifts to run the both. Looking for ideas on how to help promote associate members that are part of NRRA at booth.



There will be a 1.5 hour NRRA meeting on Wednesday at TRB. More details to come.

NRRA will be funding travel for 2 individuals from each participating state agency to attend TRB.

Encumbered 100 percent of NRRA pooled funds.

Projects currently underway by each NRRA team have now been added to team pages. See pages for more details on projects being completed by other teams.

NRRA workshop will be at Shoreview Community Center on May 19-22, 2020.

- Day 1 | Tuesday, May 19
  - Open for ideas (Training? One session or break into team efforts, full or half day)
  - 3-5pm: Tour at MnROAD with pop and cookies
- Day 2 | Wednesday May 20
  - Morning 9-12 : Welcome, General Chair Overviews
  - Afternoon 1-4 : Team Meetings (Open for ideas)
  - Evening: Reception
- Day 3 | Thursday, May 21
  - All day: Large group presentations (speaker /topic ideas)

NRRA funded approximately \$450,000 in projects.

NRRA Team	Title / Link	Author	Affiliation	Other Team Members	NRRA Cost	Donated Cost	Cost Share	Total Effort
Flex-2	<a href="#">An Innovative Practical Approach To Assessing Bitumen Compatibility As A Means Of Material Specification</a>	Eshan V. Dave	University of New Hampshire	* Cargill BioIndustrial * H.G. Melgs LLC	204,119	121,640	37%	325,759
Flex-3	<a href="#">Cold Asphalt Recycling Technologies using Rejuvenating Asphalt Emulsion: Impact; Implementation; Specification</a>	Dan Swiercz	Bitumix Solutions	* Cargill BioIndustrial	141,442	49,504	26%	190,946
Rigid-1	<a href="#">Performance of Concrete Overlays over Full Depth Reclamation (FDR)</a>	Tumer Akakin	Aggregate Ready-Mix Association of Minnesota	Concrete Pavement Association of Minnesota	34,265	10,200	23%	\$44,465
Rigid-2	<a href="#">Blending of Higher Strength Aggregates with Recycled Concrete and Marginal Aggregates to Improve Concrete Properties</a>	Rita Lederle	University of St. Thomas	Aggregate Ready Mix Association of Minnesota (ARM) <a href="#">Support Letter</a>	32,332	9,100	22%	41,432
PM-3	<a href="#">Bio-material Maintenance Treatments</a>	Ashley Buss	Iowa State University	United Soybean Board (USB)	50,000	50,000	50%	100,000
					\$ 462,158	\$ 240,444	34%	\$ 702,602

On hold until Iowa and Illinois Tollway Joins

NRRRA Team	Title / Link	Author	Affiliation	Other Team Members	NRRRA Cost	Donated Cost	Cost Share	Total Effort
Geo-4	<a href="#">Continuous Moisture Measurement during Pavement Foundation Construction</a>	John Siekmeier	MnDOT	<ul style="list-style-type: none"> <li>• Caterpillar Paving Products</li> <li>• Center for Transportation Infrastructure Systems</li> <li>• Geophysical Systems Survey Inc. <ul style="list-style-type: none"> <li>• Infrasense</li> </ul> </li> <li>• Ingios Geotechnics</li> <li>• Leica Geosystems</li> <li>• Roadscanners</li> <li>• Transtec Group</li> <li>• Wirtgen Group</li> </ul>	140,000	35,000	20%	175,000

### Intelligent Construction Technologies Expert Task Group (ICT-ETG) & International Society for Intelligent Construction – Northern America Chapter (ISIC-NA)

- New website created for ISIC and North America Chapter
  - ISIC Webpage: <https://www.is-ic.org/>
  - ISIC-NA Webpage: <https://www.is-ic.org/chapters/north-american-chapter/>
- Meeting held October 2, 2019 in Minnesota and online
- Meeting Objectives
  - Update on the national / international US DOTs intelligent construction technologies (ICT) implementation activities.
  - Discuss hot issues / solutions and share experiences.
  - Build stronger partnership among ETG members to provide best values of ICT technologies to industry.
  - Discuss possible collaboration between ICT ETG and ISIC NA Chapter
- Presentations
  - Update on TPF-5 (334) Pooled Fund and Veta Update
  - IC Research and Development
  - FHWA Updates on ICT-related Independent Verification
  - Update on code of federal regulations – independent verification pilot work
  - Agencies' ICT Activities Updates: Lessons Learned
  - Industry's ICT Solutions
  - Future ISIC NA Chapter Activities, webinars and conferences.
- Discussed 1-day Workshop (partnering NRRRA and ISIC NA Chapter)
  - Yes, agreed to put-together a draft agenda.
  - Focus will be on ICT as related to construction activities
  - Goal – Draft agenda of topic areas by November 7<sup>th</sup> NRRRA ICT team meeting.

## **Seismic Approach to Quality Management of Asphalt Paving Applications**

- RFP closed on September 12, 2019.
- Technical Advisory Member (TAP) names have been submitted to research serves. The following are the members:
  - Choon Park, PhD (Found/Principal Geophysicist, Park Seismic LLC) – Principal Investigator (PI)
  - Nils Ryden, PhD (Research Director Norrfee Tech AB, Sweden) – Co Investigator (CI)
  - Josefin Starkhammar, PhD (Founder Norrfee Tech AB, Sweden) – CI
  - Jin Park (Operations Manager/Financial Coordinator, Park Seismic LLC) – Administrative Staff
  - Jason Richter (MnDOT) – Technical Liaison (TL)
  - Ragu Thangavelautham (Caltrans)
  - Rebecca Embacher (MnDOT)
  - Erv Dukatz (Mathy Construction)
  - Brandon Brever (Minnesota Asphalt Paving Association)
  - Soheil Nazarian (University of El Paso)
  - George Chang (The Transtec Group)
  - Tim Kowalski (Wirgen Group)
  - Todd Mansell (Caterpillar)
  - Bryan Downing (Caterpillar)
  - Eyoab Zegeye (MnDOT)
  - John Siekmeier (MnDOT)
  - Tim Andersen (MnDOT)
- Current Tasks: Finalization of Scope of Work
  - PI, CI and TL are finalizing the Scope of Work.
  - Send out for TAP review and approval.
  - Creation and execution of contract.

## **Importing Dielectric Measurements into Veta (Contract Amendment #2)**

- No change.
- Completing amendment #1 tasks.
- Anticipate to start work early 2020.

## Evaluation of Levels 3-4 ICMV for Soils Subgrade and Aggregate Subbase Compaction

### Industry Partners

- Caterpillar
  - Provide a single-drum IC roller with CMV
- MOBA
  - Provide an IC Retrofit with a Candidate Level 3 ICMV
- SINE
  - Provide candidate Level 3 and Level ICMV Core Units
- XCMG
  - Provide a single-drum IC roller with a Candidate Level 3-4 ICMV

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**ISIC**

### Candidate IC Rollers

- Caterpillar single drum roller with CMV (and/or MDP?)
- XCMG single drum roller with Level 3-4 ICMV prototype

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**XCMG**



**ISIC**

## Candidate Level 3-4 ICMV Systems

- MOBA IC retrofit system prototype with SINE CORE ICMV module
- XCMG OEM IC system prototype with SINE CORE ICMV module
- UTEP DAQ system - Computed Stiffness value (Level 3-4) from NCHRP 24-45 IC components



**ISIC**

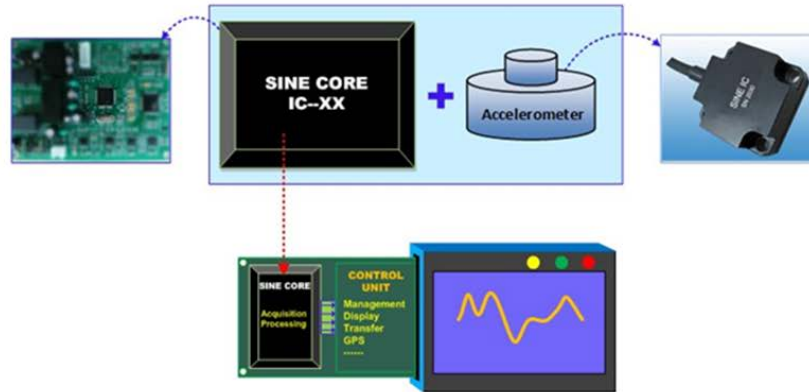
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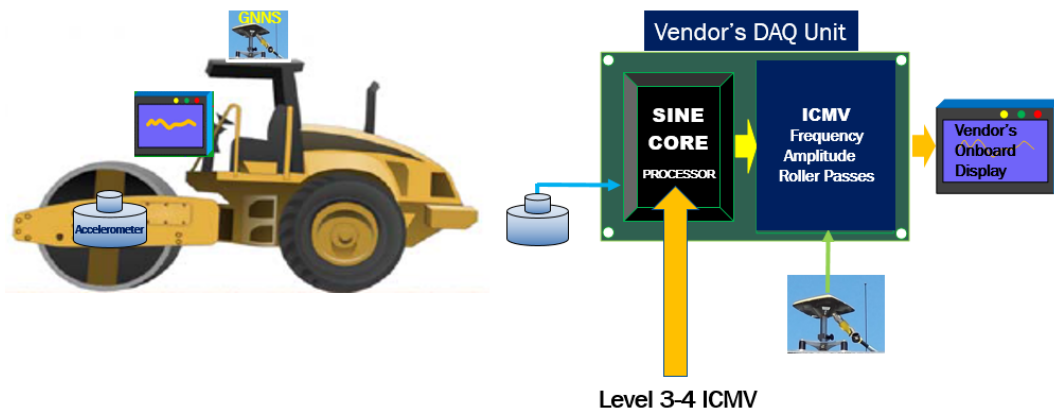
**ISIC**

## SINE CORE Level 3-4 ICMV Modules



**ISIC**

## Integration of Level 3-4 ICMV



**ISIC**

## Same Approach as NCHRP 24-45



Except for using Vendors' Level 3-4 ICMVs



## Work Plan

Task	Description	Due Date	Deliverables
1	Project Management	Based on project schedule	One kick-off meeting minutes Five quarterly reports Oral report and presentation at two <u>NRRA</u> meetings
2	Level 3-4 ICMV Integration	4 months from the start <b>Dec. 2019</b>	Integrated Level 3-4 ICMV systems
3	Roller Instrumentation and Field Tests	10 months from the start <b>June 2020</b>	Field test data
4	Data Analysis and Report	16 months from the start <b>Dec. 2020</b>	Report in State report format <b>Dec. 2021</b>



## Round-Robin

(Hoegh) Dielectric Profile Method (DPM) | collected dielectric measurements on 5-7 projects during CY2019. Use coreless calibration and had good results. Working on proof of concept that this technique can be used. Other states are also interested in coreless calibration technique. Alaska DOT has also been beta testing this calibration concept. A pooled fund was established for the DPM. 9 States participating, along with the FHWA. Pooled fund setup as a 3-year commitment of \$25,000 per year. Kickoff meeting will be held the beginning of December.

(Angerhofer) Interested in presentations on the PMTP method at the NRRA Workshop. Would like MAPA to have a contractor present on the benefits of the PMTP method.

(Dunn) Interested in a presentation on the DPM at the NRRA Workshop.

(Kleithernes) Interested in a session on BIM for Pavements (including subgrade layer) at the NRRA Workshop.