



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

Associate Members

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



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

Friends

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

- None at this time.

Action items

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

Agenda

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

Next Meeting

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

NRRRA Executive Committee Update (Worel)

There will be a booth at TRB 2020. Currently, putting together “ground rules” for booth. NRRRA 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 NRRRA at booth.



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

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

Encumbered 100 percent of NRRRA pooled funds.

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

NRRRA 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)

NRRRA funded approximately \$450,000 in projects.

NRRRA Team	Title / Link	Author	Affiliation	Other Team Members	NRRRA Cost	Donated Cost	Cost Share	Total Effort
Flex-2	An Innovative Practical Approach To Assessing Bitumen Compatibility As A Means Of Material Specification	Eshan V. Dave	University of New Hampshire	* Cargill BioIndustrial * H.G. Meligs LLC	204,119	121,640	37%	325,759
Flex-3	Cold Asphalt Recycling Technologies using Rejuvenating Asphalt Emulsion: Impact; Implementation; Specification	Dan Swiercz	Bitumix Solutions	* Cargill BioIndustrial	141,442	49,504	26%	190,946
Rigid-1	Performance of Concrete Overlays over Full Depth Reclamation (FDR)	Tumer Akakin	Aggregate Ready-Mix Association of Minnesota	Concrete Pavement Association of Minnesota	34,265	10,200	23%	\$44,465
Rigid-2	Blending of Higher Strength Aggregates with Recycled Concrete and Marginal Aggregates to Improve Concrete Properties	Rita Lederle	University of St. Thomas	Aggregate Ready Mix Association of Minnesota (ARM) Support Letter	32,332	9,100	22%	41,432
PM-3	Bio-material Maintenance Treatments	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	Continuous Moisture Measurement during Pavement Foundation Construction	John Siekmeier	MnDOT	<ul style="list-style-type: none"> • Caterpillar Paving Products • Center for Transportation Infrastructure Systems • Geophysical Systems Survey Inc. <ul style="list-style-type: none"> • Infracore • Ingios Geotechnics • Leica Geosystems <ul style="list-style-type: none"> • Roadscanners • Transtec Group • Wirtgen Group 	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 7th 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 Brevier (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

CATERPILLAR®



ISIC

Candidate IC Rollers

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

CATERPILLAR®



XCMG



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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



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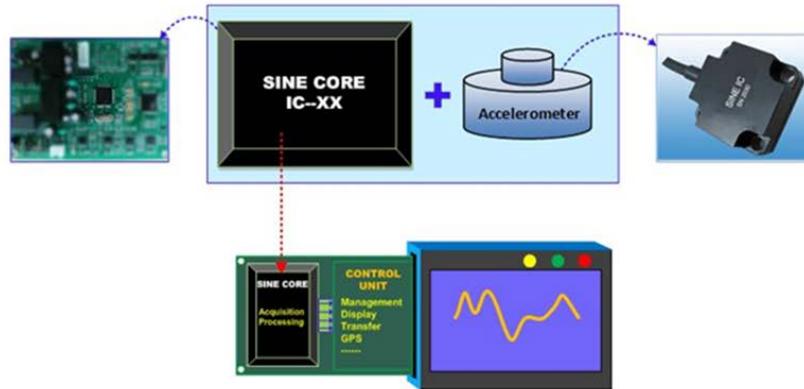
Candidate Level 3-4 ICMV Systems

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



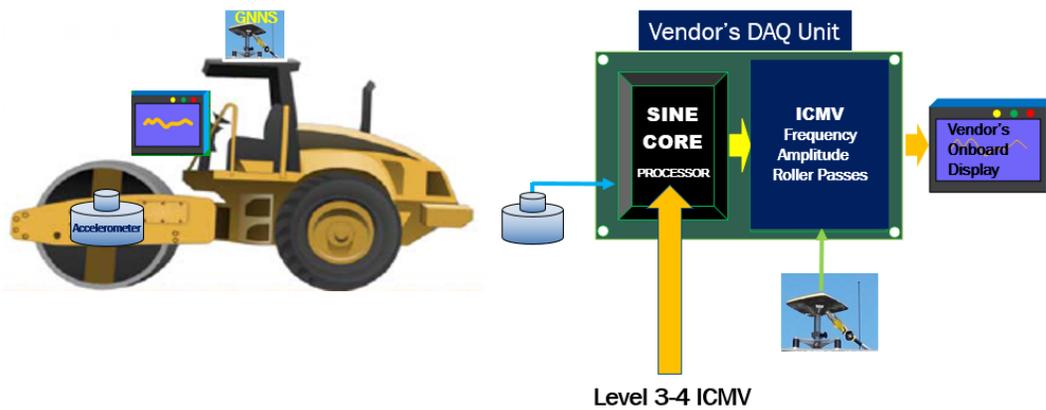
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SINE CORE Level 3-4 ICMV Modules



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Integration of Level 3-4 ICMV



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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 Dec. 2019	Integrated Level 3-4 ICMV systems
3	Roller Instrumentation and Field Tests	10 months from the start June 2020	Field test data
4	Data Analysis and Report	16 months from the start Dec. 2020	Report in State report format Dec. 2021



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 NRRRA 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 NRRRA Workshop.

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