

Meeting Minutes: NRRRA Intelligent Construction Technologies (ICT) Team

(Agency & Associate Member Meeting)

Date: January 6, 2022
 Minutes prepared by: Rebecca Embacher
 Location: Microsoft Teams
 NRRRA Team Webpage: <http://www.dot.state.mn.us/mnroad/nrra/structure-teams/intelligent-construction/index.html>

Attendance

Agency Members

Participated	Affiliation	State Contact	e-mail
<input checked="" type="checkbox"/>	California	Deepak Maskey	deepak.maskey@dot.ca.gov
<input type="checkbox"/>	California	Ragu Thangavelautham	raguparan.thangavelautham@dot.ca.gov
<input checked="" type="checkbox"/>	Illinois	Brian Hill	Brian.Hill@illinois.gov
<input type="checkbox"/>	Illinois Tollway	Cindy Williams	cmwilliams@getipass.com
<input checked="" type="checkbox"/>	Illinois Tollway	Supraja Reddy	sreddy@interraservices.com
<input checked="" type="checkbox"/>	Illinois Tollway	Signe Reichelt	smreichelt@behnkematerialsengineering.com
<input type="checkbox"/>	Illinois Tollway	Jake Sumeraj	jmsumeraj@behnkematerialsengineering.com
<input checked="" type="checkbox"/>	Iowa	Chris Brakke	Chris.Brakke@iowadot.us
<input checked="" type="checkbox"/>	Iowa	Jeff De Vries	Jeff.DeVries@iowadot.us
<input checked="" type="checkbox"/>	Michigan	Matthew Bellgowan	BellgowanM@michigan.gov
<input type="checkbox"/>	Michigan	Jason Clark	ClarkJ25@michigan.gov
<input checked="" 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"/>	Mississippi	Alex Middleton	middleton@mdot.ms.gov
<input type="checkbox"/>	Missouri	Jen Harper	Jennifer.Harper@modot.mo.gov
<input type="checkbox"/>	Missouri	Dan Oesch	Daniel.Oesch@modot.mo.gov
<input checked="" type="checkbox"/>	New York	Michael Heim	Michael.Heim@dot.ny.gov
<input type="checkbox"/>	New York	Brett Dean	Brett.Dean@dot.ny.gov
<input type="checkbox"/>	New York	Edward Collins	Edward.Collins@dot.ny.gov
<input type="checkbox"/>	North Dakota	Curt Dunn	cdunn@nd.gov
<input type="checkbox"/>	North Dakota	Amy Beise	abeise@nd.gov
<input checked="" type="checkbox"/>	Wisconsin	Drew Kottke	Drew.Kottke@dot.wi.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 type="checkbox"/>	Braun Intertec	Heidi Olson	holson@braunintertec.com
<input type="checkbox"/>	California State University, Los Angeles	Mehran Mazari	mmazari2@calstatela.edu
<input checked="" type="checkbox"/>	Caterpillar Global Paving	Brian Nagel	Nagel_Brian_D@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"/>	GSSI	Roger Roberts	roger@geophysical.com
<input type="checkbox"/>	GSSI	Rob Sommerfeldt	sommerfeldtr@geophysical.com
<input type="checkbox"/>	Headlight	Catherine Collins	catherine.collins@headlight.com
<input checked="" type="checkbox"/>	Headlight	Will Jourdan	will.jourdan@headlight.com
<input type="checkbox"/>	Highway Data Systems (UK)	Ruairi Charlesworth	joe.charlesworth@highwaydata.co.uk
<input checked="" type="checkbox"/>	Infrasense	Ken Maser	kmaser@infrasense.com
<input type="checkbox"/>	Leica Geosystems	Brad Adams	brad.adams@leicaus.com
<input checked="" type="checkbox"/>	Consultant	Erv Dukatz	flyereld@gmail.com
<input checked="" type="checkbox"/>	Mathy Construction	Matt Oman	matt.oman@mathy.com
<input type="checkbox"/>	Midstate Reclamation & Trucking, Inc.	Dan Schellhammer	dans@midstatecompanies.com
<input type="checkbox"/>	Midstate Reclamation & Trucking, Inc.	John Peterson	johnp@midstatecompanies.com
<input type="checkbox"/>	Minnesota Asphalt Paving Association	Brandon Brever	bbrever@mnapa.org
<input checked="" type="checkbox"/>	Moba	Paul Angerhofer	pangerhofer@moba.de
<input checked="" type="checkbox"/>	Moba	David Shelstad	dshelstad@moba.de
<input type="checkbox"/>	National Asphalt Pavement Association	Brett Williams	bwilliams@asphaltpavement.org
<input type="checkbox"/>	Surface Tech	Steve Santa Cruz	steve@surface-tech.com
<input checked="" type="checkbox"/>	Syracuse University	Baris Salman	bsalman@syr.edu
<input checked="" type="checkbox"/>	Terracon	Andrea Blanchette	Andrea.Blanchette@terracon.com
<input checked="" type="checkbox"/>	Terracon	Sheue Torng Lee	Sheue.Lee@terracon.com
<input checked="" type="checkbox"/>	The Transtec Group, Inc.	George Chang	GKChang@TheTranstecGroup.com
<input type="checkbox"/>	Topcon Positioning Systems, Inc.	Evan Monroe	emonroe@topcon.com
<input checked="" type="checkbox"/>	Topcon Positioning Systems, Inc.	Jim Preston	jpreston@topcon.com
<input type="checkbox"/>	Trimble	Kevin Garcia	kevin_garcia@trimble.com
<input type="checkbox"/>	Trimble	Devin Laubhan	devin_laubhan@trimble.com
<input checked="" type="checkbox"/>	The University of Texas at El Paso	Nazarian Soheil	nazarian@utep.edu
<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

Friends

Participated	Affiliation	State Contact	e-mail
<input type="checkbox"/>	FHWA	Kevin Kliethermes	Kevin.Kliethermes@dot.gov
<input checked="" type="checkbox"/>	FHWA	Stephen Cooper	stephen.j.cooper@dot.gov
<input checked="" type="checkbox"/>	Minnesota	Emil Bautista	Emil.Bautista@state.mn.us
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<input checked="" type="checkbox"/>	Minnesota	Lauren Dao	Lauren.Dao@state.mn.us
<input checked="" type="checkbox"/>	Minnesota	Joseph Podolsky	
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<input checked="" type="checkbox"/>	Minnesota	Ben Worel	ben.worel@state.mn.us
<input type="checkbox"/>	North Dakota	Jordan Nehls	jnehls@nd.gov
<input type="checkbox"/>	North Dakota	Darin Lindblom	dlindblom@nd.gov
<input type="checkbox"/>	North Dakota	Carey Schreiner	
<input type="checkbox"/>	North Dakota	David Bruins	
<input checked="" type="checkbox"/>	North Dakota	Nathan Haaland	

Other Attendees: Mike Gallant (HaulHub)

Decisions Made

- None

Action items

- Generate agenda items for future meetings.
- Consider providing updates for ICT projects at a future NRRA Research Pays Off Webinar.

Agenda

- Executive Committee Updates
- MnROAD Reconstruction Update
- Research Pays off
- Minnesota Transportation Conference & Expo (MTC&E) Expo Hall and ISIC Track Agendas
- Execution of CN1047755 Veta Enhancements for MDMS Standardized Platform and Web Conversion

Next Meeting

Date: February 3, 2022

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

Location: Microsoft Teams

Agenda items: TBD

Meeting Notes

Executive Committee Update (Worel)

No meetings during the Holidays.

Next meeting at the Minnesota Transportation Conference & Expo (MTC&E).

Monday, February 28, 2022

1:00 to 2:00PM CST

NRRA Phase II Contract Update (Worel)

See Attached Document – Project Status Table. Note vendors have been selected through the RFP process and contracts under development.

Survey will be sent out to determine whether to continue scheduling the NRRA ICT team meetings at the same day and time of each month. Additionally, a few questions will be included asking for opinions on what is working and not working, any improvements needed, etc., with the current format /setup of NRRA.

MnROAD Reconstruction (Worel)

Near finalizing first draft of special provisions and plan set.

March 25th letting date.

Working with Caterpillar with respect to the milling operation. Milling will start in May 2022. Remaining construction activities will start in June 2022.

Working on (1) finalizing the numbers, types, and placement of sensors; (2) sensor installation schedule; and (3) testing matrices, with respect to construction staging.

NRRA has partnerships with a concrete and asphalt plant for development of mix designs.

Research Pays Off (Embacher)

Members of the ICT team will be presenting at research pays off during the upcoming months. See attached slide 4.

Reminder that the ICT team will not have presentation slots in the NRRA track at the MTC&E, since ISIC will have a track running on both days. Consequently, it is recommended that the principle investigators consider providing updates for ICT projects at a future NRRA Research Pays Off Webinar if interested.

MTC&E (Embacher)

See attached slides 5-10.

See Attached Draft Agendas.

Discussed presentations that will be provided in the Expo Hall on both dates and those to be provided in the ISIC track. It was noted that the presentations at the ISIC track will be non-proprietary and that all proprietary presentations will be held in the Expo Hall. Asked if there were any recommended changes or concerns with the Agendas. None were voiced at the meeting.

It was also noted that Veta training will be provided on Monday, February 28th from 1-3PM. This training will provide an overview of the features that are currently available within the Veta software and go through a few examples. Attendees will be required to bring their own computers and download the software and examples in advance to the training. More to come on where to download the needed files.

CN1047755 Veta Enhancements for MDMS Standardized Platform and Web Conversion (Embacher)

See attached slides 11-13.

CN1047755 has been executed and work can commence. Discussed the general scope of work for this contract and provided a macro level discussion on the Veta software (i.e., what ICTs can currently be imported into Veta, future technologies, data transfer, etc.).

NRRA Phase-II contracting – update provided in the January team meetings)

(Note Contractors updated & budgets last updated in Oct 2021 – see pooled fund website for the latest dollar updates)

SPR Dollars Budget/Spending			Vendors updated in January 2021 but budget updated in Oct 2021				
NRRA Focus	Project# Contract#	General Outcome / Deliverable	Vendors	SPR Budget	SPR Encumbered	Payments Invoiced	Payment Percent
Travel	TPF15466A	Agency travel / meals / meeting room costs	MnDOT	50,000			
Sensors + Purchasing	TPF15466B	MnROAD Sensors and Equipment needed for 2022 studies FHWA funding for Sensors for Carbon Cure Concrete		350,000	14,287		
MnROAD Labor	TPF15466C	MnROAD Staff - Construction, Sensors and Performance Monitoring (5 years)	MnDOT	800,000	12,891	12,891	
2021 ICT Funding	BUDGET NOTE	2021 Directed ICT funding \$1,375,000 from Executive Team - Remaining to be used		387,004			
	TPF15466D 1047755	Veta Web and Veta MDMS Standardized Platform (FHWA \$188K)	Transtec Group	987,996	987,996	-	0%
	BUDGET NOTE	2021 Directed funding \$2,125,000 from Executive Team - Remaining to be used in addtition to Missouri 400K		\$ 75,000			
	TPF15466E 1048189	MnROAD Reflective Cracking Challenge (NRRA)	UNH Auburn	225,000	225,000		Contract Develop
	TBD	Reflective Cracking Challenge Corrdination (Missouri - 400K)	University of Missouri-Columbia	TBD			
	TPF15466F 1048190	Use of Alternative Pozzolan Materials Towards Reducing Cement Content in Concrete Pavements	Nichols Consulting APT	175,000	175,000		Contract Develop
	TPF15466G 1048191	Use of Carbon Dioxide for Sustainable and Resilient Concrete Pavements (400K FHWA along with construcion, sensors, monitoring)	Iowa State	150,000	150,000		Contract Develop
	TPF15466H 1048192	The Use of Alternative Cementitious Materials in Concrete Pavements	Applied Pavement Technology NCE	150,000	150,000		Contract Develop
	TPF15466J 1048193	Performance Evaluation of Wicking Geotextiles for Improving Drainage and Stiffness of Road Foundation	Michigan State Michigan Tech Ingios	150,000	175,000		Contract Develop
	TPF15466M 1048485	Validation of Loose Mix Aging Procedures for Cracking Resistance Evaluation in Balanced Mix Design	Auburn University UNH TTI	100,000	100,000		Contract Develop
	TPF15466N 1048486	Perpetual Pavements in Wet Freeze Climate	RFP later in Fall 2022	200,000	150,000		Contract Develop
	TPF15466K 1048377	Reclamation and Recycling Techniques to Achieve Perpetual Pavements Characteristics	RFP	150,000	150,000		Contract Develop
	TPF15466P 1048487	Thinlays as a PM Treatment	Terracon	50,000	49,918	-	0%
	1036343 WO#3 TPF15466L	Flooded Pavements Assessment App-Phase 2	UNH	200,000	200,234	-	0%
	TPF15466R 1048488	Recycled Binder Availability	RFP later in Fall 2022	200,000			
	TPF15466S TBD MnIT	InfoPAVE MnROAD Database Support and Development	i-Engineering	300,000			Contract Develop
Totals =				4,700,000	2,540,326	12,891	0.5%

Last updated: 12/17/21

Expo Hall Track (Moderator ???)

Tuesday, March 1

10:15AM to 10:40AM	How Do We Become Infrastructure Resilient and Sustainable Jennifer Harrell, American Concrete Pipe Association (see submitted abstract)
10:45AM to 11:10AM	Added Service Life for Intersection and Roundabouts John Cunningham, American Ready Mix Association of MN (see submitted abstract)
11:15AM to 11:40AM	Taconite Mining Materials: An Overview of Past and Current Research, Challenges, and Potential Opportunities Lawrence Zanko, National Resources Research Institute (see submitted abstract)
12:00PM to 1:00PM	Lunch
1:00PM to 1:25PM	Highway Data Systems Ruairi Charlesworth, Highway Data Systems (description needed – sent e-mail request)
1:30PM to 1:55PM	EDC-6 Initiatives: Digital Project Delivery, Digital As-Builts, and E-Ticketing Dave Unkerfer, FHWA (description needed – sent e-mail)
2:00PM to 2:25PM	Caterpillar TBD (description needed – sent e-mail)
2:30PM to 2:55PM	Topcon TBD (description needed – sent e-mail)
3:00PM to 3:30PM	Break
3:30PM to 3:55PM	Trimble TBD (description needed – sent e-mail)
4:00PM to 4:25PM	Wirtgen TBD (description needed – sent e-mail)

Wednesday, March 2

9:15AM to 9:40AM	Technical Certification Program Overview John Micheau, MnDOT (description needed – sent e-mail request)
9:45AM to 10:10AM	Hyperloop Project: MSP to Rochester in 15 Minutes Chuck Michael, Hyperloop Transportation Technologies (see submitted abstract)
10:15AM to 10:45AM	Break
10:45AM to 11:10AM	OnStation Patrick Russo, OnStation (description needed – sent e-mail request)
11:15AM to 11:40AM	Intelligent Construction Technologies Support and Training Amanda Gilliland, Transtec Group (description needed – sent e-mail request)
12:45AM to 1:15PM	Innovations in Construction Materials Testing Data Delivery Michael Jenkins, Terracon (see submitted abstract)
1:30PM and Later	Vendors Break Down Booths

Last updated: 01/07/22

ISIC Track (Room 4)

Monday, February 28

1:00PM to 3:00PM Veta Training

George Chang, The Transtec Group, Inc.
Rebecca Embacher, MnDOT
Amanda Gilliland, The Transtec Group, Inc.
Michael Johnson, MnDOT
James Schneider, MnDOT
John Siekmeier, MnDOT
Abbasali Taghavighalesari, The Transtec Group, Inc.

Tuesday, March 1

10:15AM to 11:15PM Milling 101

Tom Chastain, Wirtgen Group
Kevin Garcia, Trimble
Jim Preston, TOPCON

11:15PM to 12:00PM AMG Milling Using Relative Surface

Don Matthews, Pavement Recycling systems, Inc.
Tony Carden, RDO (see submitted abstract)

1:30PM to 3:00PM Paving 101

Todd Mansell, Caterpillar
Laikram Narsingh, Voegelé

3:30PM to 4:30PM Compaction 101

Tim Kowalski, Wirtgen Group
Todd Mansell, Caterpillar
Jim Preston, TOPCON

Wednesday, March 2

9:15AM to 10:15AM Current Intelligent Construction Technologies

Paul Angerhofer, MOBA
Ed Shappell, Trimble
Bert Erdmann, BOMAG

10:45AM to 11:15AM Artificial Intelligence

Soheil Nazarian, University of Texas at El Paso

11:15AM to 11:45AM Complexity of Using Automation and Autonomous

Kevin Garcia, Trimble
Todd Mansell, Caterpillar

1:30PM to 2:30PM Preplanning Construction with Virtual Playback

Ed Shappell, Trimble
Jim Preston, TOPCON
TBD, Bentley

2:45PM to 4:15PM Panel Discussion on Intelligent Construction Technologies

Curt Turgeon, MnDOT (Moderator)
Curt Dunn, NDDOT
Rebecca Embacher, MnDOT
Bert Erdmann, BOMAG
Kevin Garcia, Trimble
Tim Kowalski, Wirtgen Group
Todd Mansell, Caterpillar
Laikram Narsingh, Voegelé
Dan Oesch, MODOT
Jim Preston, TOPCON

Intelligent Construction Technology Team

Meeting | 01/06/22

Microsoft Teams



General Updates

- Executive Committee
- MnROAD Reconstruction

Welcome

- Georgia DOT
 - Joining Veta portion of NRRRA Pooled Fund
- Jacob Walker, Office of Materials and Testing

Research Pays Off

- March 15, 2022
 - Highway Data Systems, Ruairi Charlesworth
 - <https://www.highwaydatasystems.com/>
- Future Month 2022
 - (EDC-6) E-Ticketing and Digital As-Builts (DAB), Dave Unkerfer, FHWA
 - https://www.fhwa.dot.gov/innovation/everydaycounts/edc_6/

MTC&E | Expo Hall Agenda

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10:15AM to 10:40AM

[How Do We Become Infrastructure Resilient and Sustainable](#)
Jennifer Harrell, American Concrete Pipe Association

10:45AM to 11:10AM

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[Lunch](#)

1:00PM to 1:25PM

[Highway Data Systems](#)
Ruairi Charlesworth, Highway Data Systems

1:30PM to 1:55PM

[EDC-6 Initiatives: Digital Project Delivery, Digital As-Builts, and E-Ticketing](#)
Dave Unkerfer, FHWA

MTC&E | Expo Hall Agenda

Tuesday, March 1 (cont.)

2:00PM to 2:25PM

Caterpillar

2:30PM to 2:55PM

Topcon

3:00PM to 3:30PM

Break

3:30PM to 3:55PM

Trimble

4:00PM to 4:25PM

Wirtgen

MTC&E | Expo Hall Agenda

Wednesday, March 2

9:15AM to 9:40AM

Technical Certification Program Overview

John Micheau, MnDOT

9:45AM to 10:10AM

Hyperloop Project: MSP to Rochester in 15 Minutes

Chuck Michael, Hyperloop Transportation Technologies

10:15AM to 10:45AM

Break

10:45AM to 11:10AM

OnStation

Patrick Russo, OnStation

11:15AM to 11:40AM

Intelligent Construction Technologies Support and Training

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12:45AM to 1:15PM

Innovations in Construction Materials Testing Data Delivery

Michael Jenkins, Terracon

1:30PM and Later

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MTC&E | ISIC Track (Room 4)

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1:00PM to 3:00PM

Veta Training

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Rebecca Embacher, MnDOT

Amanda Gilliland, The Transtec Group, Inc.

Michael Johnson, MnDOT

James Schneider, MnDOT

John Siekmeier, MnDOT

Abbasali Taghavighalesari, The Transtec Group, Inc.



MTC&E | ISIC Track (Room 4)

Tuesday, March 1

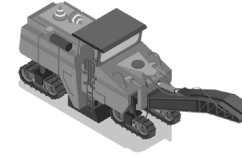
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Todd Mansell, Caterpillar

1:30PM to 2:30PM

Preplanning Construction with Virtual Playback

Kevin Garcia, Trimble

Jim Preston, TOPCON

TBD, Bentley

2:45PM to 4:15PM

Panel Discussion on Intelligent Construction Technologies

CN1047755 Veta Enhancements for MDMS Standardized Platform and Web Conversion

- Contract Authorized Start Date: December 27, 2021
- Contract Expiration: October 31, 2024
- Contract Amount: \$987,996.61

KEY MILESTONES

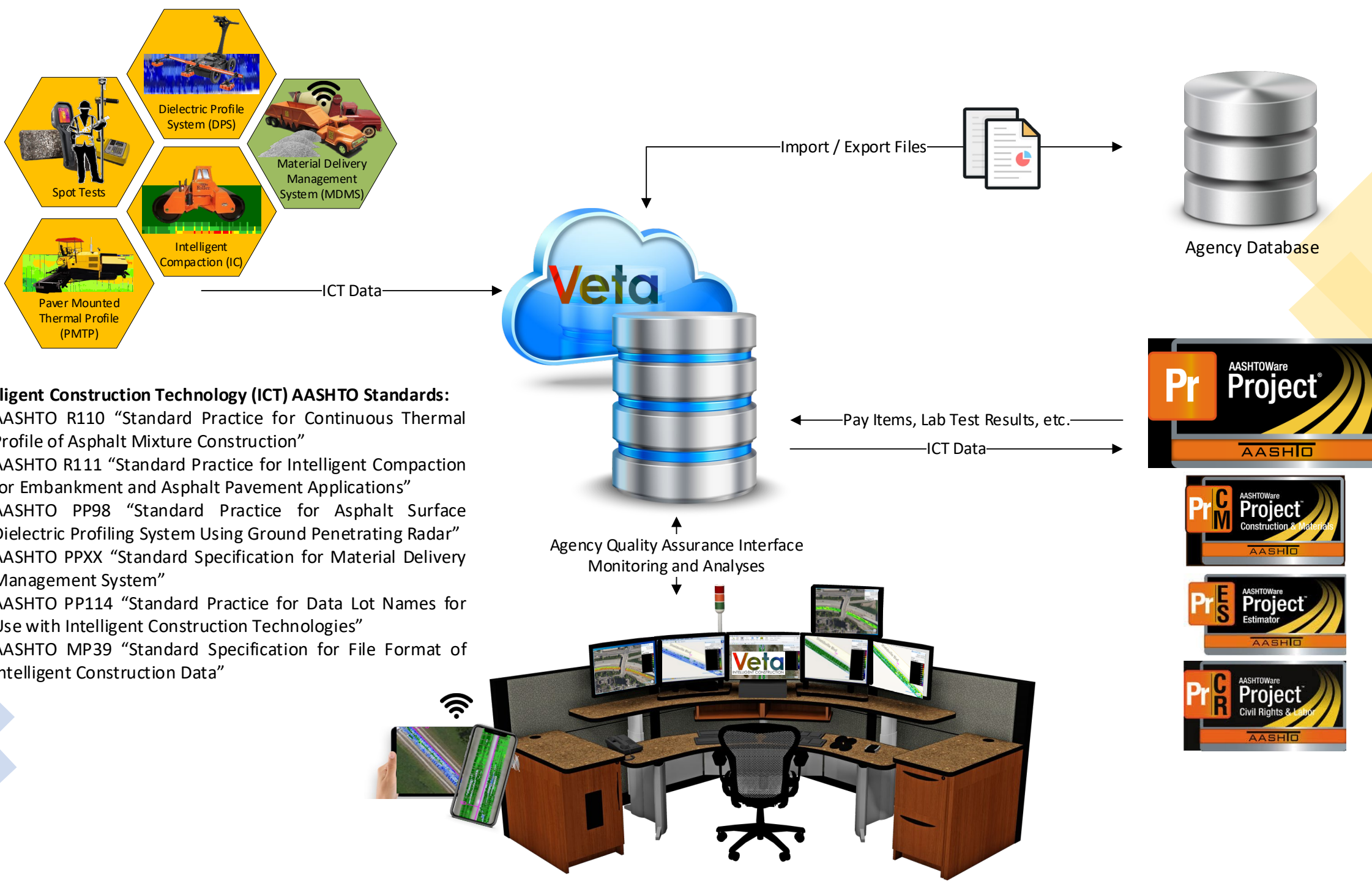
Key Milestone	Target Date
Veta Web Phase I Completion	July 2023
Veta Web MDMS Completion	July 2023
Veta Web Phase II – Part I Completion	July 2024

Virtual Roadway (BIM)

- In Veta
- Funded & Under Contract
- Funding Approved
- Unfunded Needs



Download Veta Software:
<https://www.intelligentconstruction.com>



Intelligent Construction Technology (ICT) AASHTO Standards:

- AASHTO R110 “Standard Practice for Continuous Thermal Profile of Asphalt Mixture Construction”
- AASHTO R111 “Standard Practice for Intelligent Compaction for Embankment and Asphalt Pavement Applications”
- AASHTO PP98 “Standard Practice for Asphalt Surface Dielectric Profiling System Using Ground Penetrating Radar”
- AASHTO PPXX “Standard Specification for Material Delivery Management System”
- AASHTO PP114 “Standard Practice for Data Lot Names for Use with Intelligent Construction Technologies”
- AASHTO MP39 “Standard Specification for File Format of Intelligent Construction Data”