Meeting Minutes: TPF-5 (334) Veta Enhancements & Technology Exchange (Meeting No. 12)

Date: August 21, 2019
Minutes prepared by: Rebecca Embacher
Location: Skype

Attendance

Pooled Fund State Contacts:

Participated	State	State Contact
☐	Alaska	Richard Giessel
☐	Alaska	Dan Gettman
☐	California	Ebi Fini
☒	California	Ragu Thangavelautham
☐	California	Chuck Suszko
☐	California	Blair Anderson
☐	Connecticut	Dave Howley
☐	Connecticut	John Henault
☐	Georgia	John Martin
☐	Illinois	Brian Hill
☒	Illinois	Chad Pink
☐	Maine	Ulrich Amoussou-Guenou
☐	Maine	Richard Bradbury
☒	Maine	Dale Peabody
☐	Maine	Casey Nash
☐	Minnesota	Rebecca Embacher
☐	Minnesota	Curt Turgeon
☒	Mississippi	Alex Middleton
☐	Missouri	Bill Stone
☐	Missouri	Dan Oesch
☐	New York	Zoeb Zavery
☐	New York	Michael Heim
☒	North Dakota	Amy Beise
☒	North Dakota	Curt Dunn
☐	North Dakota	Eric Gaasland
☐	Ohio	Craig Landefeld
☐	Ohio	Adam Au
☐	Oregon	Larry Illg
☐	Oregon	Mike Stennett
☒	Pennsylvania	Dan Clark

☒	Pennsylvania	Sheri Little
☒	Tennessee	Matt Chandler
☐	Tennessee	Brian Egan

Additional State Attendees: Eric Gaasland

FHWA:

Participated	Contact
☒	Steven Cooper
☐	Matt Corrigan
☐	Dennis Dvorak
☐	Richard Duval
☒	Kevin Kliethermes
☐	Antonio Nieves
☐	Jeff Withee

The Transtec Group:

Participated	Contact
☐	George Chang
☒	Jason Dick
☒	Amanda Gilliland

Decisions Made

- Continue to schedule meetings, as needed, using survey polls for possible dates and times. Pooled fund participants will notify Embacher if a meeting is desired earlier than the next meeting which is scheduled based on Veta Enhancement Updates.
- The following tasks will not be completed under amendment #2 to address the additional resources needed to generate multiple map views within Veta and to compile IC and PMTP data within one project (i.e., ability to simultaneously create an IC and PMTP project at the same time within the same project). Additionally, the hours under C.17 “Miscellaneous – undedicated work task” will be used to complete these tasks.
    - C.1 Data Management – Allow adding alignments before data exists.
    - C.3 Data Management – When downloading data, add ability to select which dates from the range should be used.
    - C.5 Mapping – Zoom to Exclusion Filter – used when agency is verifying exclusion boundaries.

Action items

- Matt Chandler – Tennessee | Chandler will provide a state update on intelligent construction technology activities in Tennessee at the next meeting. Thank you Matt!

Agenda

- FHWA Update (Cooper)
- NDDOT Update on ICT Activities (Beise)
- Pooled Fund Budget / Participants (Embacher)
- Update on Veta Enhancements (Dick)
- Live Viewing of Veta 6.0 (Embacher)
- Independent Owner Verification of Contractor Supplied Data (All)
- IICT North America Chapter – Meeting (Embacher)
- State Updates (All)

Next Meeting

Date: TBD
Time: 12:30PM to 2:30PM CDT
Location: Skype
Agenda items: TBD

Meeting Notes

FHWA Update (Cooper)

Michael Arasteh is no longer working with FHWA.

Pooled Fund Solicitation No. 1501 "Continuous Asphalt Mixture Compaction Assessment using Density [Dielectric] Profiling System [DPS]" is moving forward. The following agencies have committed to participate:

Federal Highway Administration (FHWA), Minnesota Department of Transportation, Mississippi Department of Transportation, Missouri Department of Transportation, New York State Department of Transportation, Ohio Department of Transportation, Pennsylvania Department of Transportation and Washington State Department of Transportation. Currently, $650,000 has been committed. $150,000 of that was committed by the FHWA.

North Dakota Update on ICT Activities (Beise)

(see attached slides for additional details)

Prior to 2019, had a couple of pilot IC projects.

2017 – one nighttime paving project. Put IC on the project as there were concerns over quality on this project as a result of the nighttime paving.

2018 – required IC on another project. The project was awarded to the same contractor that was awarded the project in 2017.

Both the 2017 and 2018 IC projects were considered a success.

2019 – a more intentional approach to piloting the IC technology. Held meetings with district staff ("working group") to identify pilot projects. Had the following project criteria goals:

- Desired various locations (ND has 8 districts – wanted projects in multiple districts
- Different project types (e.g., varying thickness, etc.)
- Various Bid Openings – did not want them all bid at the same time.
- Try IC technology on projects that were piloting percent within limits requirements.

ND is often over-programmed, and therefore, more projects are on the books than are let. Consequently, selected additional projects (as backup) in case given project(s) were not let.

Route "ND18" also had a demonstration of the dielectric profile method.

2019 – all new contractors that have not used IC in ND before. All six (6) projects had IC and only one project (ND18) had both IC and PMTP. Thermal profiling project is using the thermal segregation index with monetary price adjustments. There are no monetary price adjustments associated with the IC technology. It is currently being used solely as a QC tool.

Included a lump sum pay item for IC and a separate one for PMTP. There was a large variation in bid prices. IC ranged from about $5,000 to $50,000. PMTP was bid at $5,000.

After end of season plan to modify special provision (as needed) and further look at work flows and long-term storage needs.

Pooled Fund Participants and Budget (Embacher)

Georgia is no longer participating in this pooled fund.

Budget is as follows: Total Committed ($775,169.50), Total Encumbrances ($775,169.50), Unexpended Balance ($254,609.64), Total Invoice Amount ($520,559.86)

Update on Enhancements (Dick)

Majority of tasks under the phase II contract (i.e., amendment #1) are included in Veta 6.0. A few of them are in Veta 5.2. The majority of the work has been completed under amendment #1. The remaining task is to complete review of the coding associated with compiling both IC and PMTP data into one project. Anticipate this to be completed by the end of September, which will be followed by beta testing to identify potential bugs. This task, along with the creation of multiple maps within Veta required a significantly greater amount of time than anticipated.

MnDOT has been beta testing the current features within Veta 6.0 and has assisted with flushing bugs out. The software is fairly stable. Veta 6.0 will not be released until after amendment #2 is completed, unless there is a need beforehand.

Trimble's direct data downloader for PMTP data is also completed and available within Veta 6.0. Hoping the IC component will be made available by Trimble starting construction season 2020.

Live Demonstration of Veta 6.0 (Embacher)

A live demonstration of the following features for Veta 6.0 were shown:

- Options | Filters: how to create and/or modify the filter group listing for the project settings (e.g., route system, material type, centerline offsets) and how to export/import existing list as needed.
- Add Data | Download from Trimble feature now available
- Ruler Enhancements
- New location of zoom to features (zoom to first location, zoom to last location, zoom to extents).
- New location of data menu dropdown.
- How to view multiple maps of varying data measurements.
- New dropdown menu for the Override filter.
- New override filter capabilities (i.e., override by machine ID, pass count and temperature).
- Spot Tests | Ability to use station and offsets to plot spot test results.
- **Refresher on how to create a filter group following the AASHTO data lot naming convention. All states should be using this naming convention as Veta has numerous <u>automated</u> features based on this naming convention. <u>All base projects should be created the same for each state</u>. However, override and analyses results might be done differently depending upon specification requirements.**
- LandXML Files | how to view station equation locations and discern which region a station is located within for generation of location filters and for use with spot test locations.

Independent Owner Verification of Contractor Supplied Data (All)

No updates shared by other states, other than Minnesota.

(see attached slides)

MnDOT is piloting FLIR temperature guns on 3 projects this construction season. Plan to review data this fall.

Purchasing 3 Transflo Flex TT600 devices for independent review of IC trajectories. Might not be able to make purchase in time for this construction season, but would have it available for next.

Purchasing a Transflo Document Management system for beta testing for use in independent verification of e-ticketing.

Combined Meeting for ICT ETG and ISIC NA Chapter (Embacher)

International Intelligent Construction Technologies Group (IICTG) renamed to International Society for Intelligent Construction (ISIC).

Next ICT ETG meeting will be combined with the ISIC North America Chapter. Meeting will be on October 2, 2019 from 9:00AM to 5:00PM CDT. Meeting will be available to join in person, or via GotoMeeting. Meeting held at the Arden Hills Training Center in Minnesota.

See slides for draft agenda.

State Updates

California (Thangavelautham) – piloting only IC and not PMTP. Constructed a side by side project. One portion used conventional compaction methods (without IC). The other section used rollers instrumented with the IC technology. Monitoring roadway for the next 5 years to show if there is any cost effectiveness associated with use of the technology. Minor changes to special provisions. Using IC as QC tool in demonstration project.

Pennsylvania (Clark) – still on hold for moving forward with technology. In strong need of information to justify cost effectiveness of use of technologies.

TPF-5 (334) On-Line Meeting #12

Rebecca Embacher | Advanced Materials and Technology Engineer

August 21, 2019

DEPARTMENT OF TRANSPORTATION

AMT Website | http://www.dot.state.mn.us/materials/amt/index.html

Meeting Agenda

- NDDOT Update on ICT Activities (Beise)
- Pooled Fund Budget / Participants (Embacher)
- Update on Veta Enhancements (Dick)
- Live Viewing of Veta 6.0 (Embacher)
- Independent Owner Verification of Contractor Supplied Data (All)
- IICT North America Chapter – Meeting (Embacher)
- State Updates

North Dakota Update on ICT Activities

Amy Beise

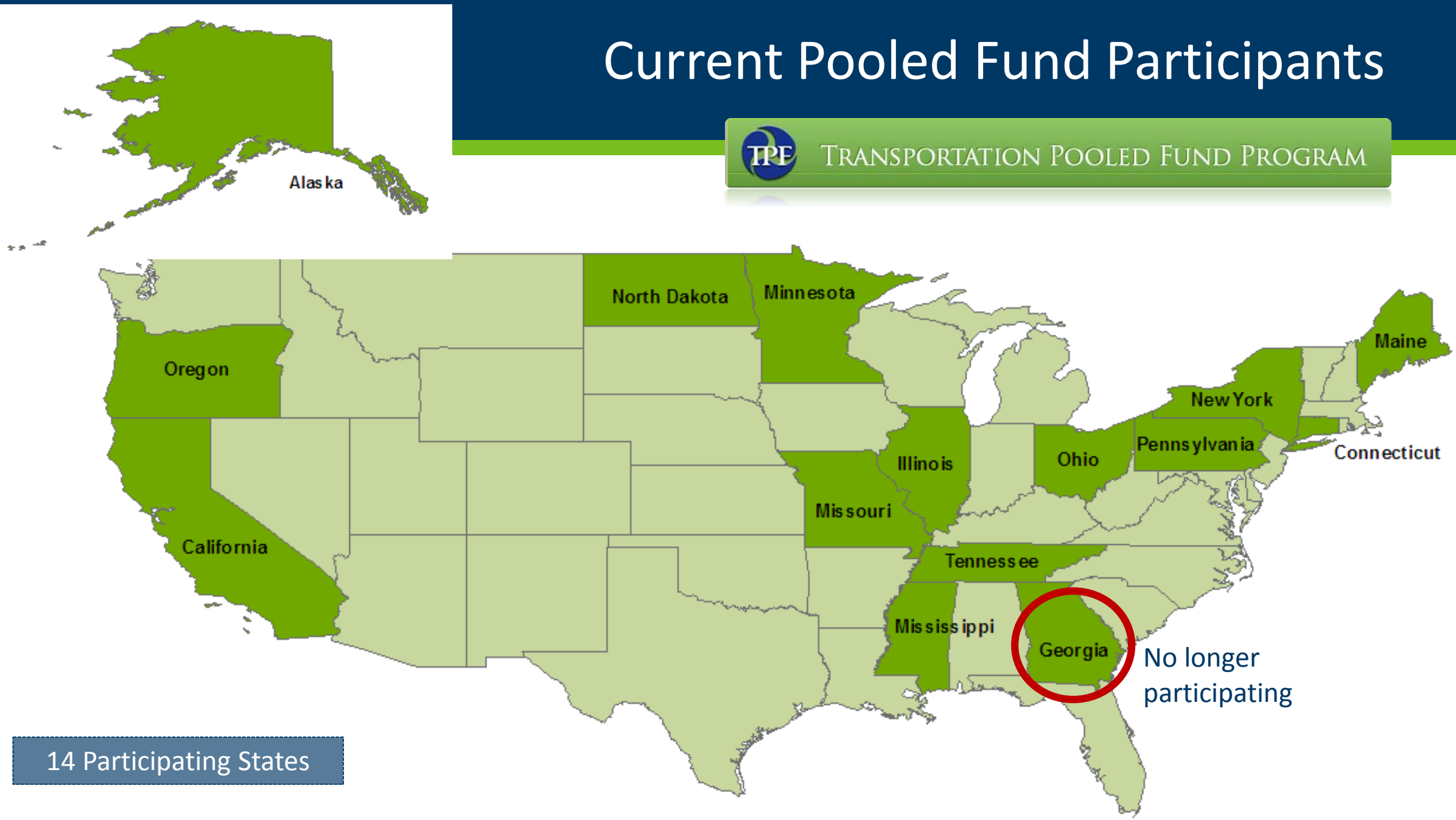
DEPARTMENT OF TRANSPORTATION

Pooled Fund Participants and Budget

Rebecca Embacher

Current Pooled Fund Participants

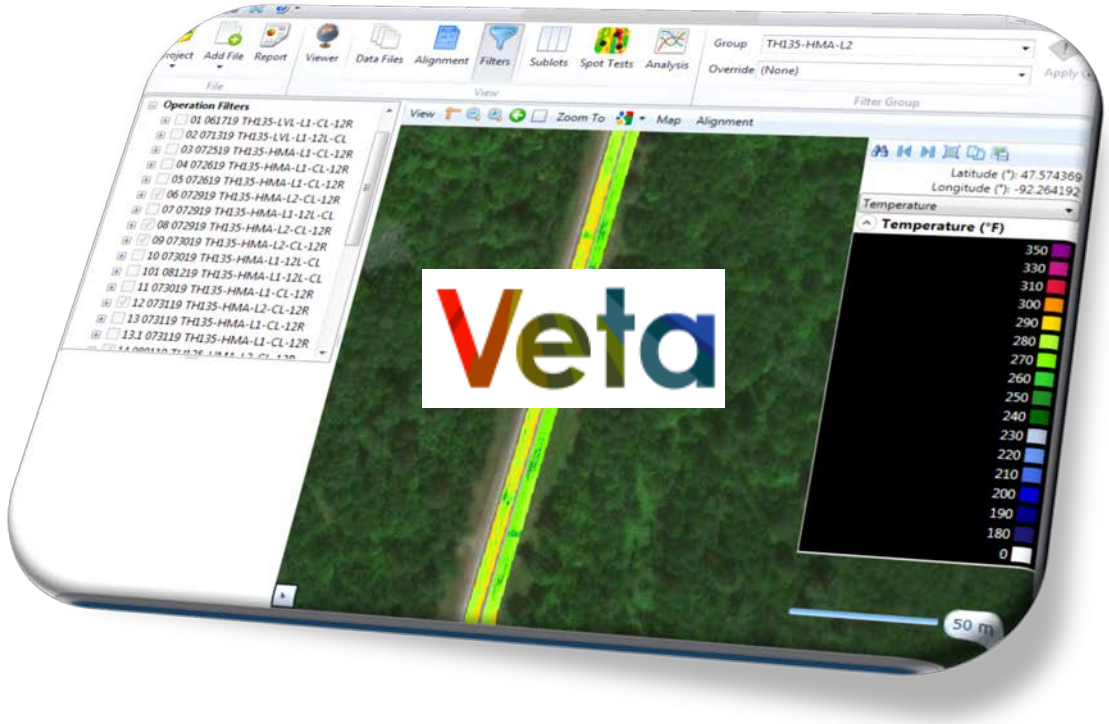
TPF TRANSPORTATION POOLED FUND PROGRAM



14 Participating States

Budget Available

Total Committed	$775,169.50
Total Encumbrances	$775,169.50
Unexpended Balance	$254,609.64
Total Invoice Amount	$520,559.86



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Update on Enhancements

Jason Dick

Scope of Work Modifications

- Additional time was required:
  - Compiling IC and PMTP data together into one project
- Adjustment of Current Scope of Work Needed
- Recommend Removing the Following
  - Based on number of hours for task and
  - Priority Level of Task

- ***C.1: Data Management:*** Allow adding alignments before data exists.
- ***C.2: Data Management:*** Add ability to securely export vendor data stored in Veta and add the ability to import the data (critical with new direct download feature – where export files no longer stored/exist) and ability to export when Veta project won't open.
- ***C.3: Data Management:*** When downloading data, add ability to select which dates from the range should be used.
- ***C.4: Mapping:*** Export, import and revert default legend.
- ***C.5: Mapping:*** CFR: Zoom to Exclusion Filter – used when agency is verifying exclusion boundaries.
- ***C.6: Filtering:*** CFR: Autogenerate start/stop locations for sublots with IC data (similar to PMTP) – tie to start and end limits of location filter or data if location filter not used.
- ***C.7: Analysis:*** Calculate percent changes in ICMVs between passes and in IC data.
- ***C.8: Analysis:*** Calculate changes in temperatures between passes and in IC data.
- ***C.9: Analysis:*** Use density and temperature gun data from spot tests after each roller pass to produce compaction curves (density growth, temperature drops, and ICMV) and their correlation at given spot locations (MO, CA).
- ***C.10: Analysis:*** IC provide coverage stats for each sublot – includes coverage values.
- ***C.11: Analyses***: Allow different targets for different passes (per roller position).
- ***C.12: Analyses:*** CFR: Batch analysis of filter groups (select all filter groups in folder at folder level, or by individually selecting filter groups); with batch analyses – provide *csv export of user selected tables (e.g. coverage, TSI per sublot, etc.)
- ***C.13: Analysis:*** Per Data Lot & Data Sublot: Graph of Average Temp vs. Pass count.
- ***C.14: Reporting:*** CFR: Report whether sublot start/end points have been moved more than 100 feet from the automated location established by Veta for both IC and PMTP in the filter setting report.
- ***C.15: Misc.:*** Update Standard user's guide. Ensure readme/definitions are included in the user guide (e.g. definitions of lot, sublot, filter group, operation filter, override filter, semi variogram, CoV, editor, etc.)
- ***C.16: Misc.:*** Veta Bug Fixes
- ***C.17: Misc.:*** Undedicated Work Task
- ***C.18: Analyses***: Support Importing, Viewing and Analysis of Dielectric Constant Data into Veta

Live Demonstration of Veta 6.0

Rebecca Embacher

Federal Highway Administration, DOT §637.207

Subpart A [Reserved]

Subpart B—Quality Assurance Procedures for Construction

§637.201 Purpose.

To prescribe policies, procedures, and guidelines to assure the quality of materials and construction in all Federal-aid highway projects on the National Highway System.

§637.203 Definitions.

Acceptance program. All factors that comprise the State highway agency's (SHA) determination of the quality of the product as specified in the contract requirements. These factors include verification sampling, testing, and inspection and may include results of quality control sampling and testing.

Independent assurance program. Activities that are an unbiased and independent evaluation of all the sampling and testing procedures used in the acceptance program. Test procedures used in the acceptance program which are performed in the SHA's central laboratory would not be covered by an independent assurance program.

Proficiency samples. Homogeneous samples that are distributed and tested by two or more laboratories. The test results are compared to assure that the laboratories are obtaining the same results.

Qualified laboratories. Laboratories that are capable as defined by appropriate programs established by each SHA. As a minimum, the qualification program shall include provisions for checking test equipment and the laboratory shall keep records of calibration checks.

Qualified sampling and testing personnel. Personnel who are capable as defined by appropriate programs established by each SHA.

Quality assurance. All those planned and systematic actions necessary to provide confidence that a product or service will satisfy given requirements for quality.

Quality control. All contractor/vendor operational techniques and activities that are performed or conducted to fulfill the contract requirements.

Random sample. A sample drawn from a lot in which each increment in the lot has an equal probability of being chosen.

Vendor. A supplier of project-produced material that is not the contractor.

Verification sampling and testing. Sampling and testing performed to validate the quality of the product.

§637.205 Policy.

(a) *Quality assurance program.* Each SHA shall develop a quality assurance program which will assure that the materials and workmanship incorporated into each Federal-aid highway construction project on the NHS are in conformity with the requirements of the approved plans and specifications, including approved changes. The program must meet the criteria in §637.207 and be approved by the FHWA.

(b) *SHA capabilities.* The SHA shall maintain an adequate, qualified staff to administer its quality assurance program. The State shall also maintain a central laboratory. The State's central laboratory shall meet the requirements in §637.209(a)(2).

(c) *Independent assurance program.* Independent assurance samples and tests or other procedures shall be performed by qualified sampling and testing personnel employed by the SHA or its designated agent.

(d) *Verification sampling and testing.* The verification sampling and testing are to be performed by qualified testing personnel employed by the SHA or its designated agent, excluding the contractor and vendor.

(e) *Random samples.* All samples used for quality control and verification sampling and testing shall be random samples.

§637.207 Quality assurance program.

(a) Each SHA's quality assurance program shall provide for an acceptance program and an independent assurance (IA) program consisting of the following:

(1) Acceptance program.

(i) Each SHA's acceptance program shall consist of the following:

(A) Frequency guide schedules for verification sampling and testing which will give general guidance to

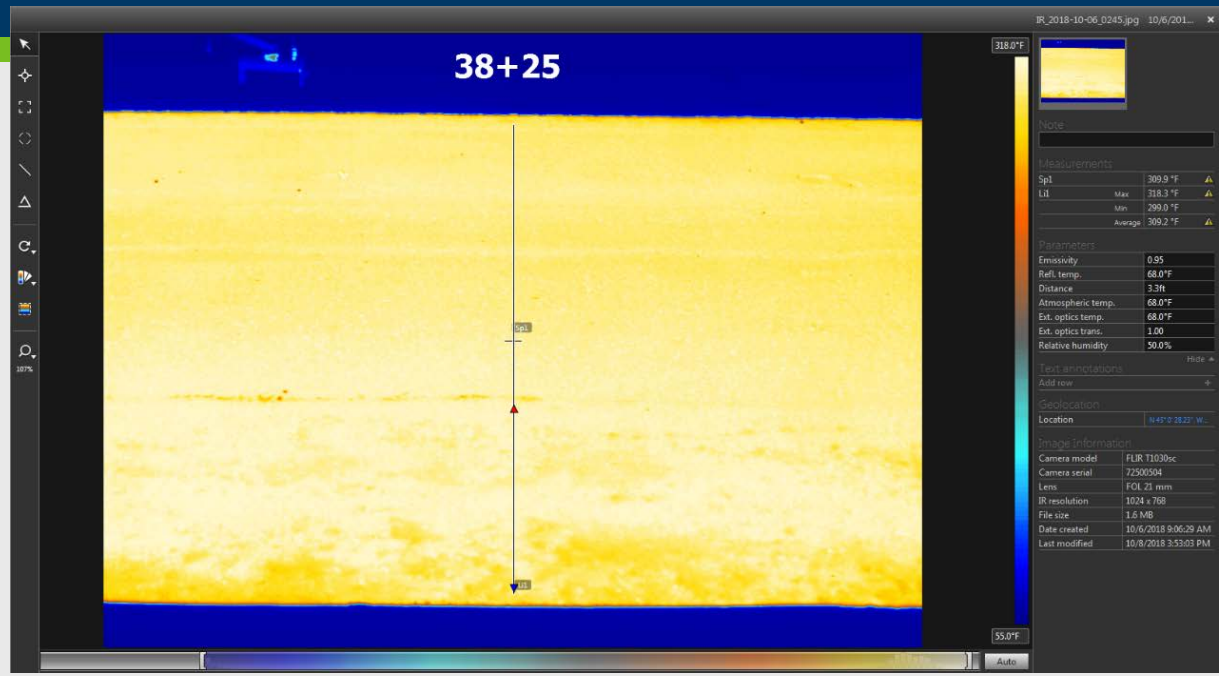
195

Independent Owner Verification of Contractor Supplied Data

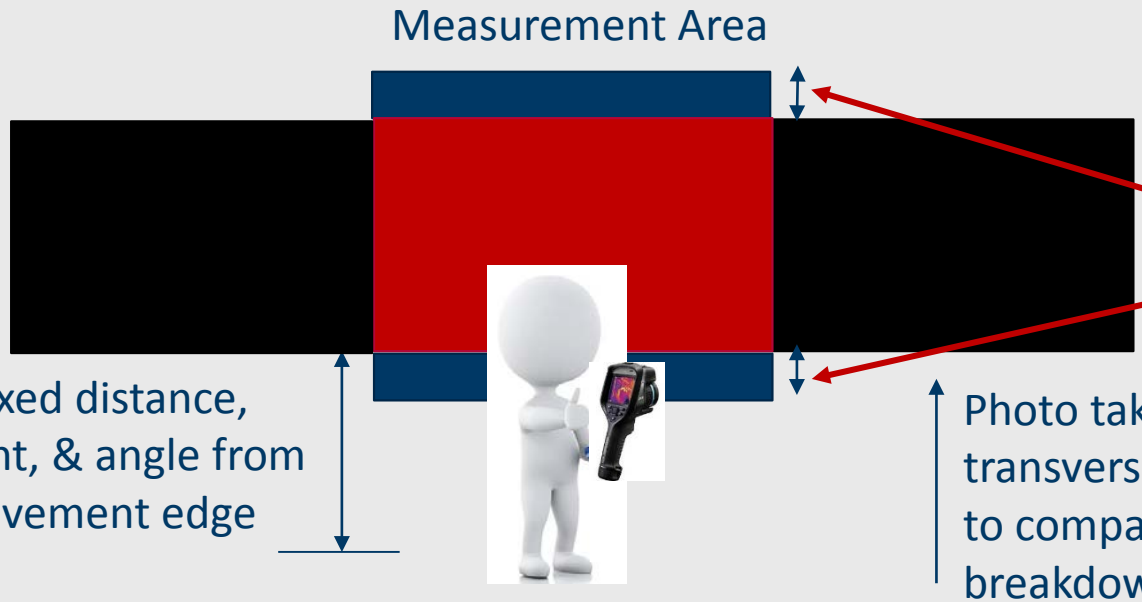
23 CFR Part 637

Any State Updates?

MnDOT Update
PMTP Method

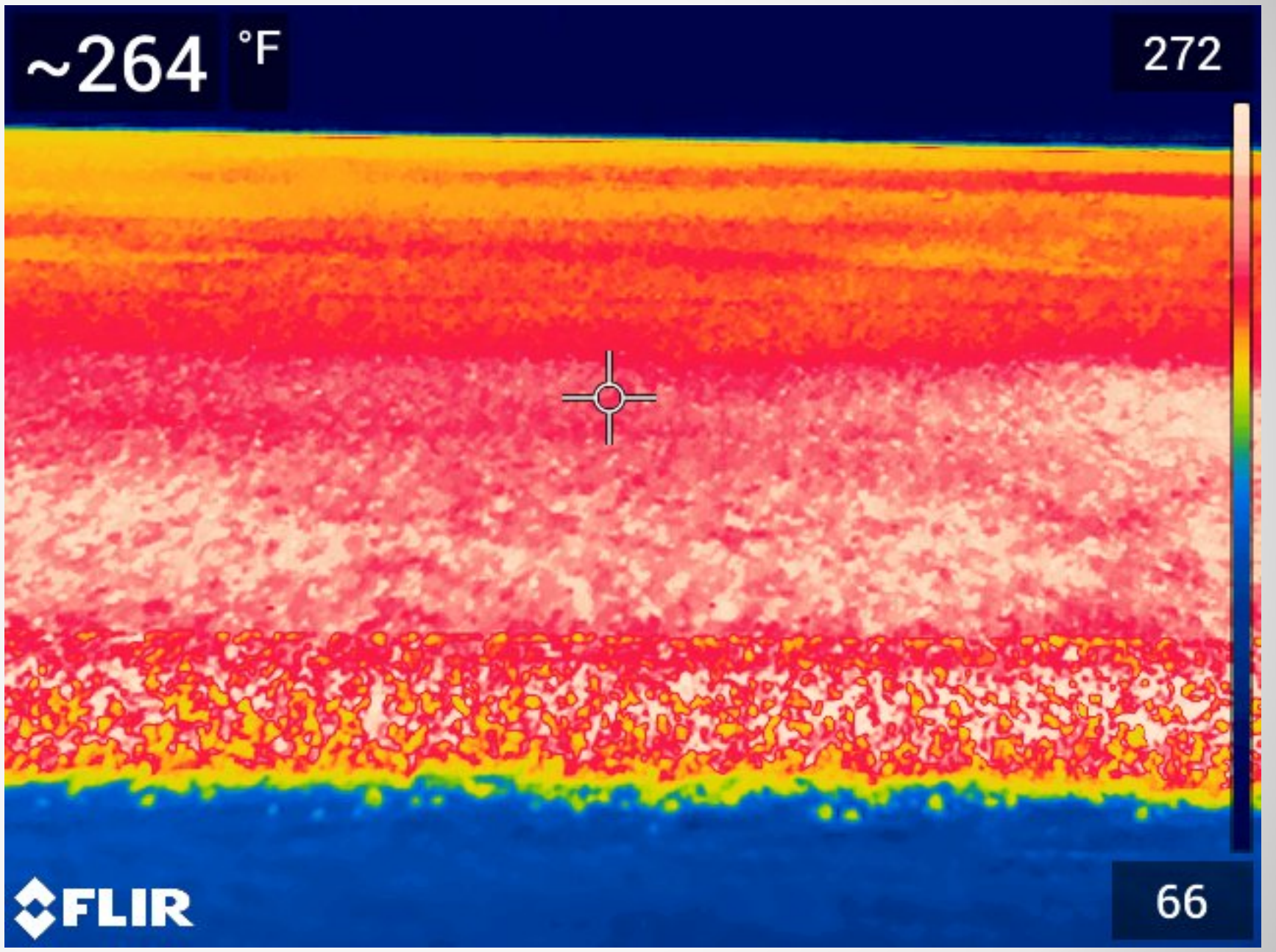


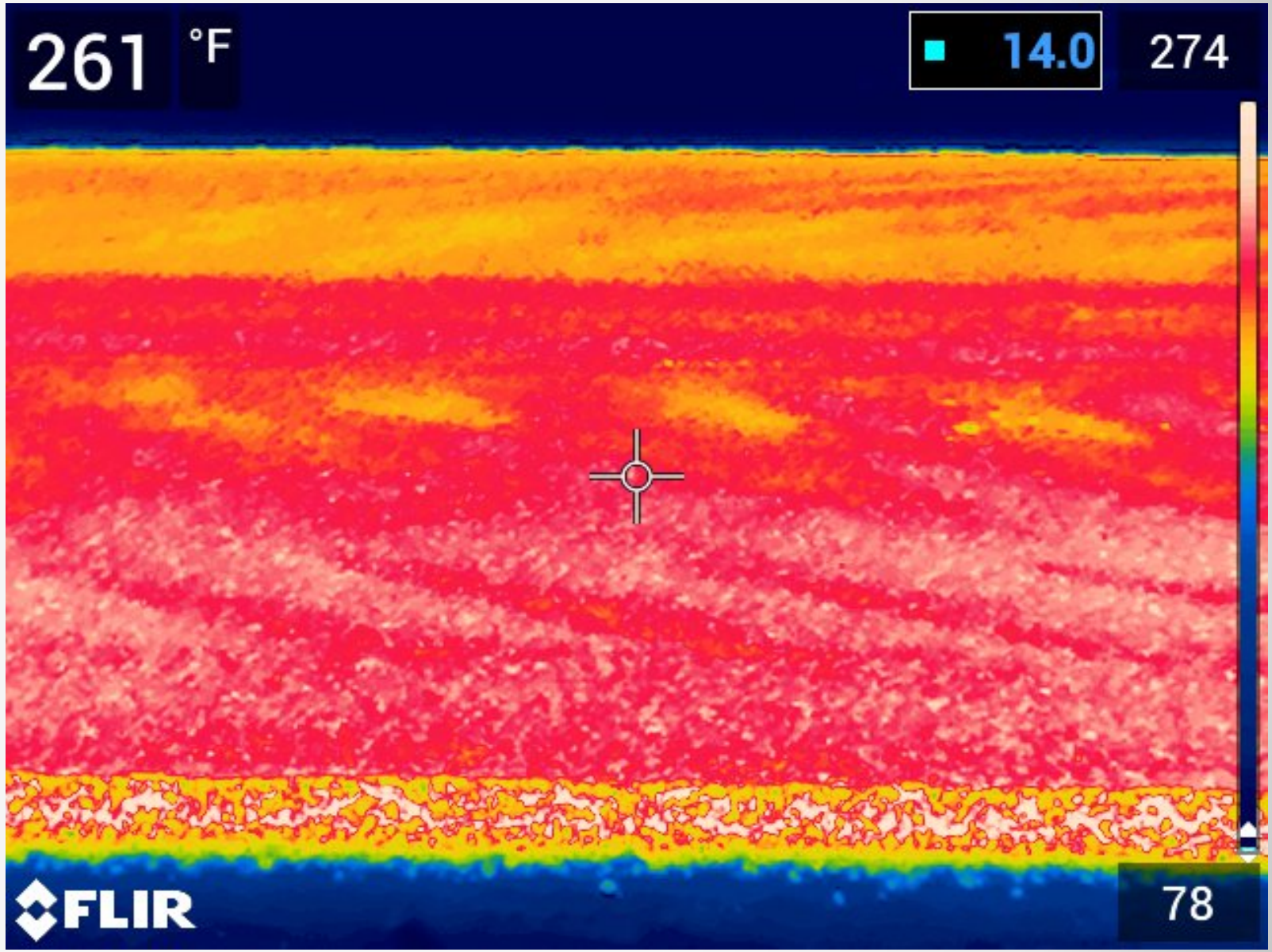
Collecting Independent measurements on 3 projects
Fall – Review & Analyses



Cooler – Different Emissivity
Capture a minimum of one pavement edge
(capturing of 2 will be dependent upon paving width)

Photo taken transversely across fresh mat prior to compaction efforts of breakdown roller

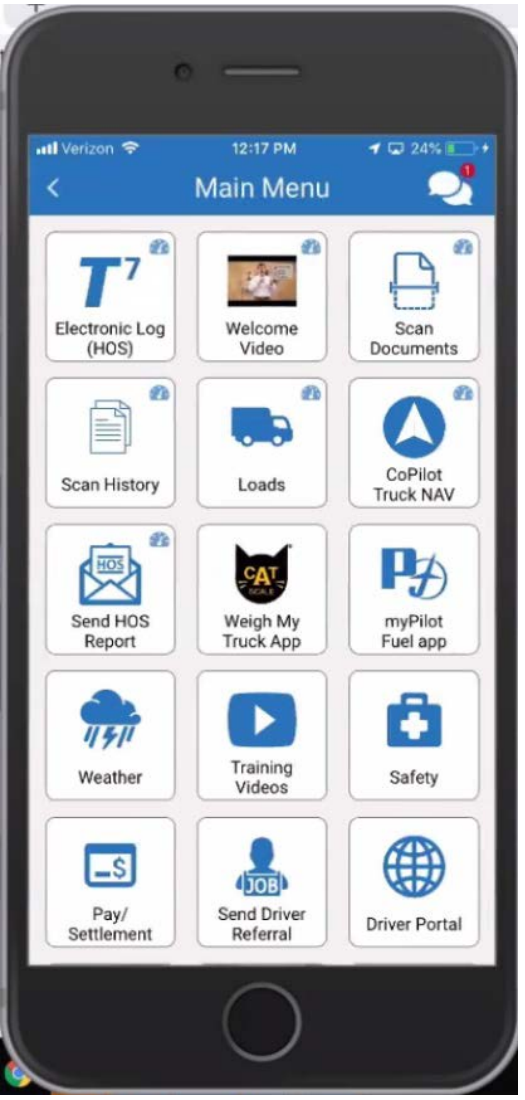

~264 °F
272
FLIR
66

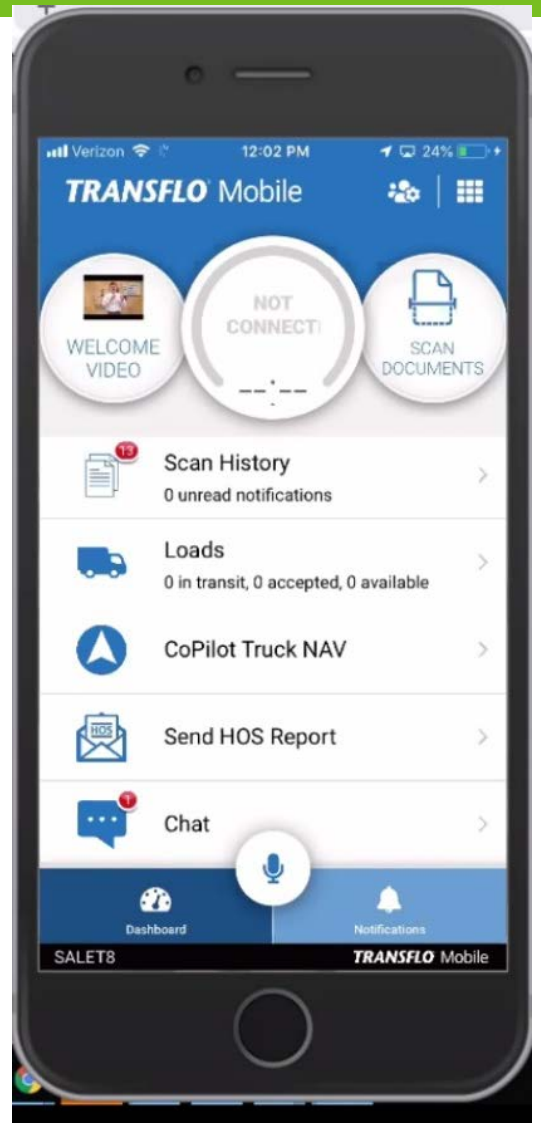

261 °F
14.0
274
FLIR
78

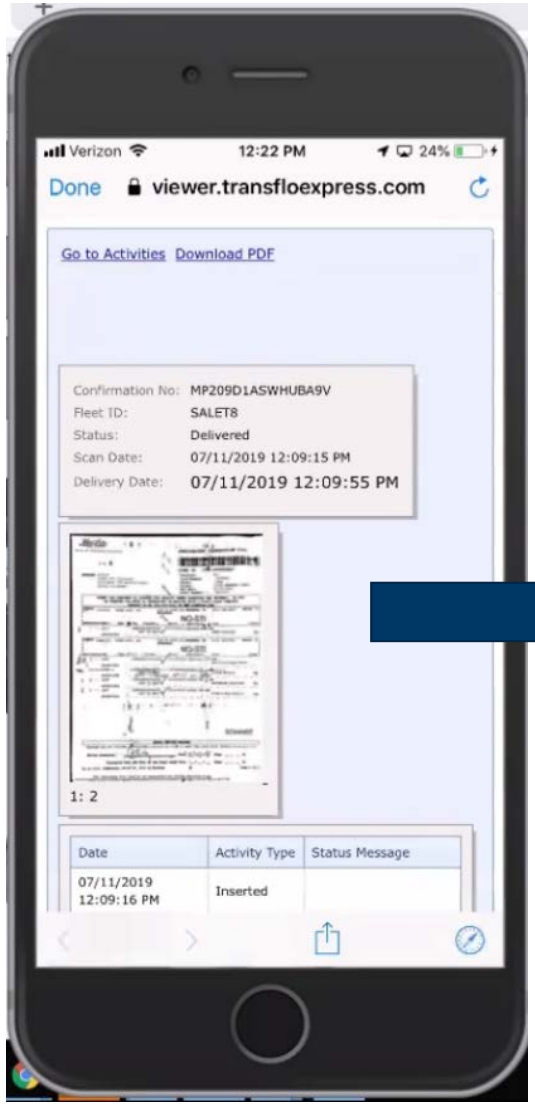
MnDOT Update
IC Method

- Purchasing 3 Devices to Pilot in Fall CY2019 and/or CY2020
- Transflo Flex TT600
  - Solar Powered Asset Tracker
  - Industrial Grade (mechanical vibration, etc.)
  - Sampling Interval – 1 minute when moving
  - Reporting Interval – 10 minutes when moving
  - GPS – multi-constellation
  - Dimensions: 10.31” × 3.46” × 1.18” (1.17 lb)

MnDOT Update
E-Ticketing







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Combined Meeting for ICT ETG and ISIC NA Chapter

Next Meeting: October 2, 2019 9:00AM to 5:00PM CDT

Time (AM)	Topic	Presenters
09:00 to 09:10	Welcome	Turgeon, MNDOT
09:20 to 09:30	Introduction to ICT ETG	Chang, Transtec Group
09:30 to 09:40	Introduction to ISIC NA Chapter	Kowalski, Wirtgen-Hamm
09:40 to 10:00	TPF-5(334) Pooled Fund and Veta Updates	Embacher, MNDOT
10:00 to 10:15	break	
10:15 to 11:00	FHWA/SHRP II/EDC updates on ICT-related Initiatives	TBA, FHWA
11:00 to Noon	Global IC Research & Development Updates	Nazarian, UTEP Chang, Transtec Group

Lunch

Time (PM)	Topic	Presenters
01:00 to 02:00	CFR: ICT Data QA Requirement Pilot Studies Reports	Embacher, MNDOT Oesch, MODOT
02:00 to 03:00	Agencies' ICT Activities Updates 3-4 DOTs	TBA, DOTs
03:00 to 03:15	Break	
03:15 to 4:30	Industry's upcoming ICT Solutions: 3-4 Vendors	TBA, Industry
4:30 to 5:00	Discussion on future ISIC NA Chapter activities (absorbing ICT ETG?)	Kowalski and etc.
5:00	Adjourn	Turgeon, MNDOT

- Meeting Platform
  - GotoMeeting
  - MnDOT – Arden Hills Training Center

IICTG → ISIC

International Intelligent Construction Technologies Group

International Society For Intelligent Construction

DEPARTMENT OF TRANSPORTATION

State Updates

DEPARTMENT OF TRANSPORTATION

Thank you again!

Rebecca Embacher

rebecca.embacher@state.mn.us

651-366-5525

North Dakota Intelligent Compaction

AMY BEISE, P.E.

NDDOT MATERIALS & RESEARCH

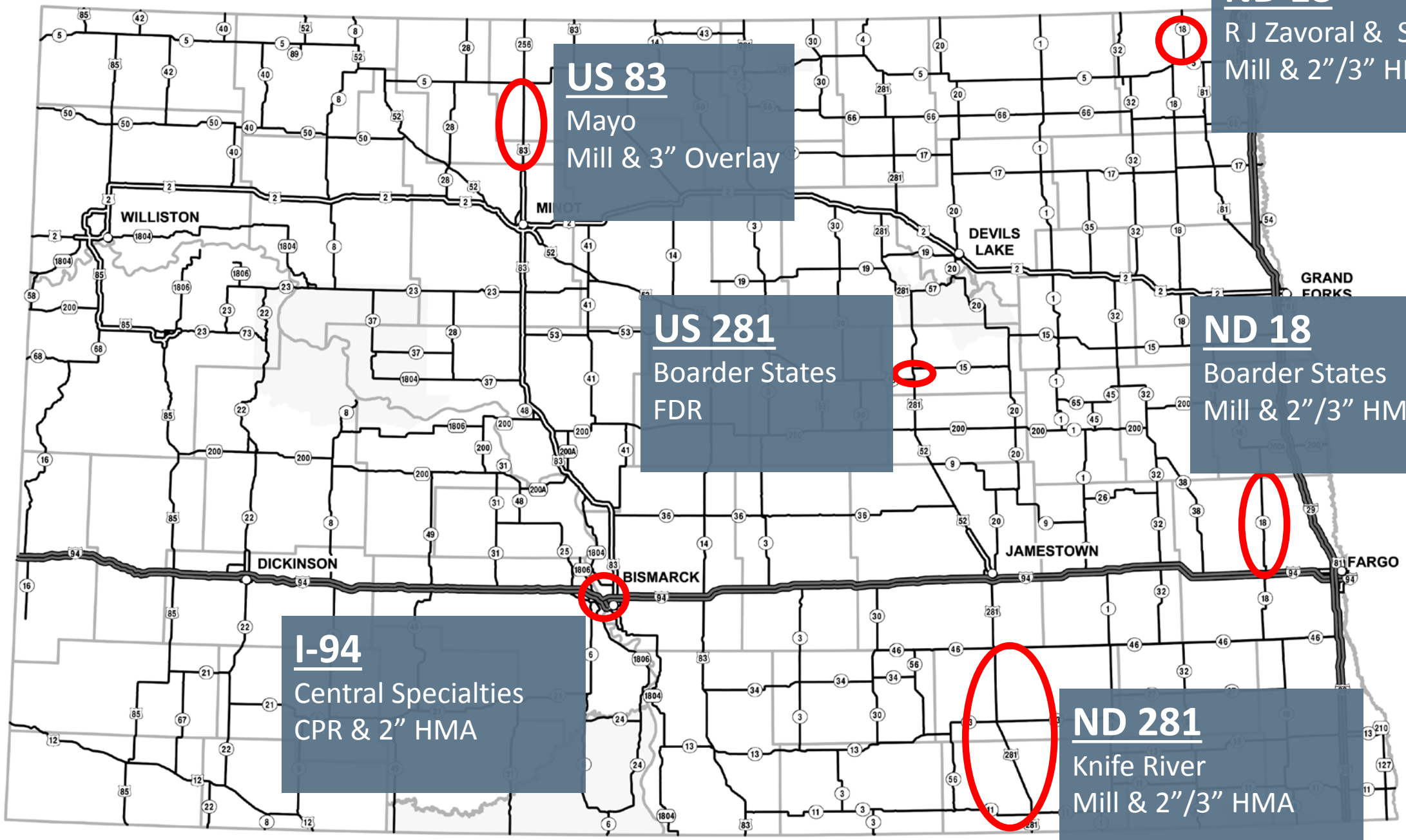
Identify Pilot Projects

Considerations:

- Various Locations
- Various Project Types
- Various Bid Openings

Lesson Learned: Have some back-up projects

NDDOT
North Dakota
Department of Transportation



ND 18
R J Zavoral & Sons
Mill & 2”/3” HMA

US 83
Mayo
Mill & 3” Overlay

US 281
Boarder States
FDR

ND 18
Boarder States
Mill & 2”/3” HMA

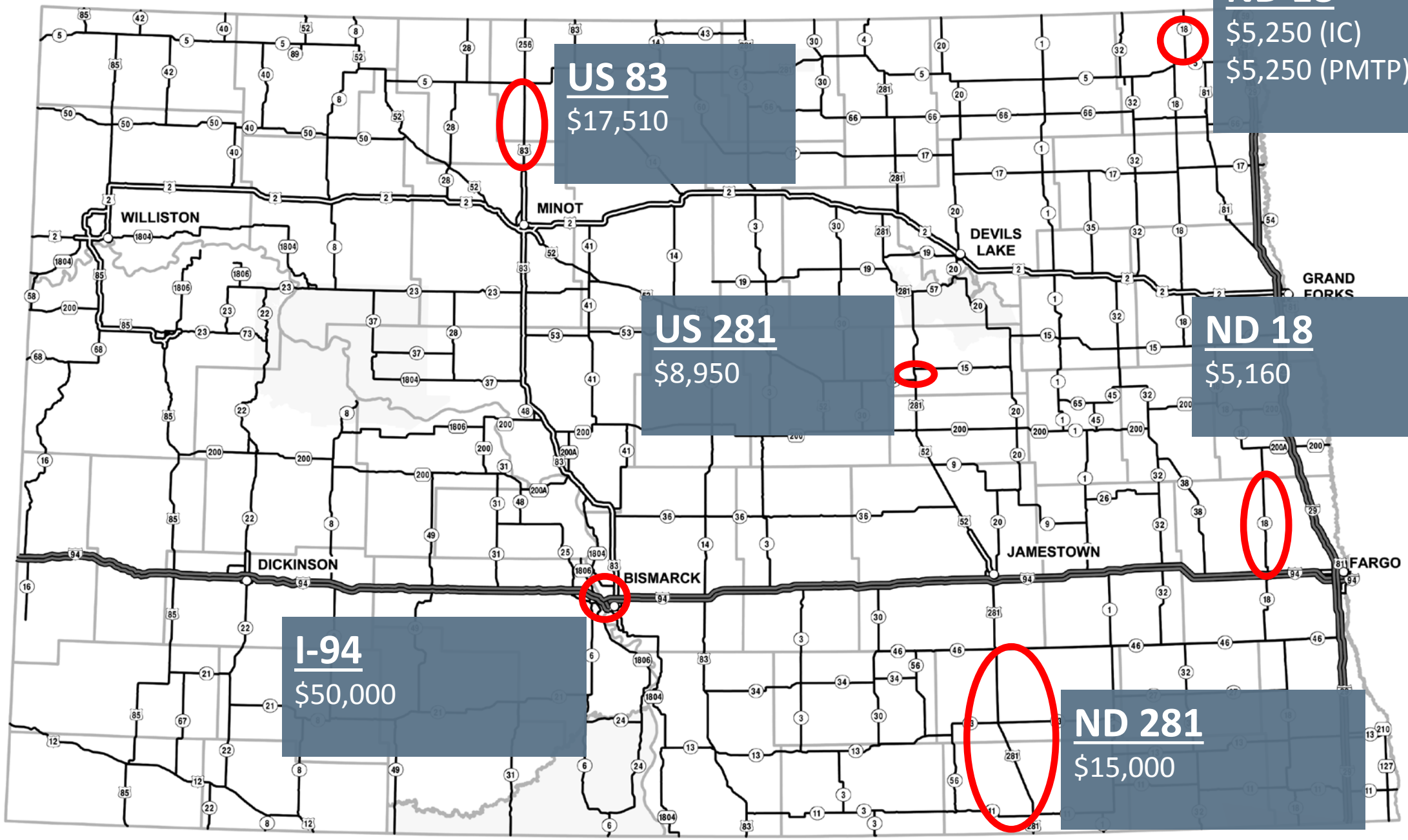
I-94
Central Specialties
CPR & 2” HMA

ND 281
Knife River
Mill & 2”/3” HMA

Bid Prices

430-400 HMA INTELLIGENT COMPACTION (L SUM)

430-425 PAVER MOUNTED THERMAL PROFILER (L SUM)


ND 18
$5,250 (IC)
$5,250 (PMTP)
US 83
$17,510
US 281
$8,950
ND 18
$5,160
I-94
$50,000
ND 281
$15,000
WILLISTON
MINOT
DEVILS LAKE
GRAND FORKS
DICKINSON
BISMARCK
JAMESTOWN
FARGO

PCN	Project No.	Bid Opening	Location	Work Type	Improvement Type	Miles	Notes
21505	NH-3-281(129)139	11/8/2019	US 281, N OF SHEYENNE TO NEAR JCT 57	FULL DEPTH RECLAMATION	MAJOR REHABILITATION	9.7047	IC, PMTP, Density Spec
21578	SS-2-046(048)030	11/8/2019	JCT 281 EAST TO JCT 1	MILL AND OVERLAY 2" MAX UNDERSEAL	PREVENTIVE MAINTENANCE	29.7399	IC, PWL
17871	SS-8-018(063)011	2/7/2020	N JCT 11 TO JCT 13	THIN LIFT OVERLAY	PREVENTIVE MAINTENANCE	13.0774	IC
22217	SS-1-036(028)000	2/7/2020	JCT US 83-WILTON E TO JCT 14-WING	MILL AND OVERLAY > 2" < OR = 3" SHOULDER REHABILITATION	MINOR REHABILITATION	23.9121	IC, Density Spec
21988	NH-4-083(141)237	2/7/2020	W JCT ND 5 E TO E JCT ND 5-WESTHOPE	MILL AND OVERLAY > 2" < OR = 3" SLIVER GRADING	MINOR REHABILITATION	16.6039	IC, PMTP
22591, 22592, 22593	NH-6-001(041)162; NH-6-001(042)181; SS-6-017(053)077	2/7/2020	Lakota to Nekoma	MILL/OL 2" MAX	PREVENTIVE MAINTENANCE	41.2222	IC, PMTP, PWL
22595	NH-6-081(104)192	3/13/2020	N URBAN LIMIT GRAFTON TO N JCT 66	THIN OVERLAY	PREVENTIVE MAINTENANCE	12.0268	PMTP
21856	SS-5-008(050)113	4/17/2020	ND 8, N JCT 200 TO NEAR TWIN BUTTES	HOT BITUMINOUS SURFACING	STRUCTURAL OVERLAY	13.6224	IC
22329	SOIB-7-073(013)000	4/17/2020	JCT ND 23 TO NEAR RP 6	FULL DEPTH RECLAMATION-CEMENT STA WIDENING	NEW/RECONSTRUCTION	5.8009	IC, Density Spec

Follow up and Evolve

Review:

- Special Provision
- Work Flow
- Long Term Storage

NDDOT
North Dakota
Department of Transportation