

Meeting Minutes: TPF-5 (334) Veta Enhancements & Technology Exchange (Meeting No. 4)

Date: 01/05/17
Minutes prepared by: Rebecca Embacher
Location: WebEx

Attendance

Pooled Fund Lead State Contacts:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Alex Middleton / MDOT | <input checked="" type="checkbox"/> Dan Clark / PennDOT |
| <input checked="" type="checkbox"/> Bill Stone / MoDOT | <input checked="" type="checkbox"/> Ebi Fini / Caltrans |
| <input checked="" type="checkbox"/> Bryan Lee / CTDot | <input type="checkbox"/> Ian Rish / GDOT |
| <input checked="" type="checkbox"/> Chris Harris / ODOT | <input checked="" type="checkbox"/> Rebecca Embacher / MnDOT |
| <input checked="" type="checkbox"/> Dale Peabody / MaineDOT | <input type="checkbox"/> Richard Giessel / Alaska DOT |

FHWA:

- | | |
|---|---|
| <input type="checkbox"/> Richard Duval / FHWA | <input type="checkbox"/> Michael Arasteh / FHWA |
| <input checked="" type="checkbox"/> Antonio Nieves / FHWA | |

The Transtec Group:

- | | |
|---|---|
| <input checked="" type="checkbox"/> George Chang / The Transtec Group | <input checked="" type="checkbox"/> Jason Dick / The Transtec Group |
|---|---|

Other Attendees: Sheri Little / PennDOT; Larry Ilg / ODOT; Ulrich Amoussou-Guenou / Maine DOT

Decisions Made

- Decision: Holding an In-Person Pooled Fund meeting on either 9/25 or 9/26/17 prior to start of IICTG Conference (http://www.iictg.org/public_html/2017Conference/IICTG2017-brochure-ENG.pdf). WebEx will still be made available to those that cannot travel.
- Decision: Further discuss the potential of using pooled fund money to pay for travel expenses and registration fee and to determine available budget.

Action items

- **All** / International Intelligent construction Technologies Group (IICTG) Conference – Answer the following questions:
 - Who is interested in attending conference and can travel out of state.
 - Provide Agenda Items for In-Person Pooled Fund Meeting (WebEx would still be held for those that cannot travel out of state).
 - Preference to meet Monday before conference (9/25) or morning prior to start of conference (9/26)
- **Embacher** / Obtain additional details regarding use of pooled fund money for out-of-state travel.
- **Harris** / Share links to Veta instructional YouTube videos when these become available.
- **Chang** / Create one-page summary of how edge / bracket filter statistically removes erroneous thermal profiling data.

Agenda

- FHWA Update / Duval (via e-mail) & Nieves
- TPF-5 (334) Phase I Contract Execution Update / Embacher
- Pooled Fund Participants – Contributions / Embacher
- MnDOT Phase VII Contract Updates / Embacher
- State Updates / All
- Other Items

Next Meeting

Date: 9/25/17 or 9/26/17 (or earlier – as needed)

Time: TBD

Location: Minnesota and WebEx

Agenda items: Submit proposed agenda items to Embacher

Meeting Notes

FHWA Update

Mike Aristaeh is still requesting letters from States requesting further support from the FHWA for deployment of intelligent compaction technologies (this includes creation of technology briefs, call center, training, equipment demonstrations, support of intelligentcompaction.com website, etc.). Support currently sunsets on 9/19/17.

FHWA TFHRC has considered and is debating (based on funding) to add to the pooled fund. Still to be determined.

Pooled Fund Participants / Contributions

See attached slides.

MnDOT Phase VII Contract Updates

See attached slides.

Veta 4.2 will be released in March 2017 in time for MnDOT training.

Consider filter group templates for other States or a generic one in the future TPF Veta Enhancements.

Pooled Fund Meeting #5 Possible Agenda Items

Brainstorm on how to best share files back and forth between the Department and Contractors. Pros and Cons of various systems.

Work on compiling current incentive and disincentives used by states for intelligent compaction. Brainstorm discussions on other possible options.

State Updates

Ebi Fini / Caltrans

First certification training for 2017 will be on March 2 and 3rd. Would like the latest release of Veta (i.e., Veta 4.2) prior to training dates.

During the past 2 years there has not been much training due to time constraints. Training materials have been difficult to retain due to too much information in too little of a time and not enough exposure.

Created a two (2) part certification program:

Part 1) 1-day training provided by Caltrans (geospatial data training with Veta) – Free Training

Part 2) Training provided by equipment vendors. Training has to be pre-approved by Caltrans. Training may or may not be provided for free by approved trainers. Currently RDO (local TopCon vendor) has submitted a training package and it has been approved.

Required certification by Vendors is valid for 1-year beginning April 1, 2017. Contractors without valid certification cannot work on intelligent compaction projects.

Bryan Lee / CTDOT

Intelligent compaction is being implemented through maintenance contracts. These projects / contracts are not typically vetted through the pavement management group. There is limited administration on maintenance contracts to ensure good quality of workmanship and materials, and therefore, moving forward with deploying intelligent compaction on these contracts first during initial deployment efforts.

Study between CTDOT and the University of Connecticut has recently been completed and is available at: <http://www.ct.gov/dot/lib/dot/documents/dresearch/CT-2288-F-16-1.pdf>.

Ulrich Amoussou-Guenou / MaineDOT

Piloting intelligent compaction technology during 2017. Requiring technology on projects for information purposes only. Starting slow to ensure low risk on both contractor and department.

Alex Middleton / MDOT

Held first 1-day, Veta workshop during 2016. Administration is strongly supporting moving forward with the technology.

Bill Stone / MoDOT

Had two (2) projects let in June 2016. One project on US24 has been completed. Project that has been completed encountered the following:

- 1) Contractor was required to collect coordinates for creation of boundaries during the paving operation. Shots were collected every 200-ft on tangent sections and every 100-ft on curves. The intelligent compaction data was not matching up well with boundaries on numerous sections. Looking into the creation of alignment files in advance to paving for future projects. Uncertain as to who would create the alignment files. Working with surveyors now to determine how to best proceed.
- 2) Project was at a full disincentive based on IC coverage. Only 65.5% of the coverage met the required optimum passes. (all sublots were in disincentive) A large amount of thermal segregation was also present in the thermal profiles, most likely due to issues from the asphalt plant.
- 3) Data format is still an issue with increasing ease of import into Veta.
- 4) The turnover of contractor's IC technician is an issue. Re-training will be a burden.
- 5) The US24 IC project uses CAT/Trimble IC system (making use of the MoDOT virtual reference stations) instead of Volvo's due to the latter fails to meet the GNSS RTK requirements. Volvo has since claimed that the GNSS issue was resolved.

11 other projects were let in October / November using the FHWA Acceleration Innovation Deployment (AID) grant. Six (6) to seven (7) different contractors were awarded these projects. Hired the Transtec Group to train and provide field support.

Training needs to be done close to paving.

Chris Harris / ODOT

Receiving support from director's office to use IC. Therefore, number of projects using the technology will continue to increase.

Determining a quicker means of generating alignment files. Purchased a Leica mobile scanning system to try to address this issue. It is still a slow process to generate alignment files from LiDAR data.

Significant efforts have been put towards updating specifications. One of the main changes has been to move the analyses requirements to the Test Methods manual. This allows for more control over updates, as the Veta software and technology continues to become streamlined.

Currently using MnDOT's incentives/disincentives for coverage.

Creating just-in-time training class for ODOT and Contractors.

Creating YouTube videos to assist with answering common / repeated questions. Plan to share videos after completion.

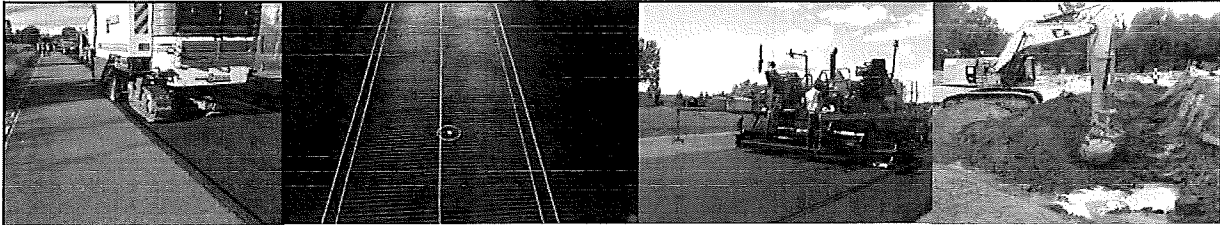
Use a lump sum pay item for both thermal profiling and intelligent compaction.

Rebecca Embacher / MnDOT

See attached slides.

Dale Peabody / Maine DOT

Maine will have two IC projects in 2017. Special provision will be used in bid documents. Slowly increasing the contractor expectations of managing and using the data.



TPF-5 (334) WebEx Meeting #4

Rebecca Embacher | Advanced Materials and Technology Engineer

January 4, 2017 | TPF-5 (334) WebEx Meeting



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

Meeting Agenda

- FHWA Update
- TPF-5 (334) Phase I Contract Execution Update
- Pooled Fund Participants / Contributions
- MnDOT Phase VII Contract Updates
- State Updates
- Other Items



FHWA Update

Veta Phase I Contract Update

- Still being processed and has not been executed.
- Current Contract Amount: \$170,000

Phase I: Scope of Work

- A.1 **Reporting [F-06]:** Customized reports (select which items to report, include logos, signatures, etc.).
- A.2 **Data Management [A-11]:** Automatic download of field data from Trimble and Moba (other vendors are not ready or have not provided needed information). Includes architecture improvements to enhance performance.
- A.3 **Filtering [C-02]:** Allow user to create location filter by entering offsets from a given line in the alignment file (e.g., 12 ft right of centerline (CL), 12 ft left of CL, etc.) and select which lines to use to trim data.
- A.4 **Analyses [E-09]:** Option to choose what to analyze (final coverage, all passes, individual passes; temperature, ICMV, frequency, etc).

Phase I: Scope of Work (cont.)

- A.5 **Spot Tests [D-01]:** Spot tests manager (add/remove/change test types, define units, include specification requirements, and define legend for spot test values).
- A.6 **Mapping [B-01]:** Display multiple maps on the same screen and a mini overview map. (Requires task A-11).
- A.7 **Data Management [A-12]:** Recalculate pass counts when using All Passes data from multiple machines.
- A.8 **Mapping [MnDOT Phase 7]:** Add map-based, user-accessible data (map clicks can show underlying data (IC, PAVE-IR, ProVAL, Test Roller).

Phase I: Scope of Work (cont.)

A.9 **Analyses [MnDOT Phase 7]:** Tabular listing of paver stops (include stop and start time stamp and duration of paver stop)

A.10 **Analyses [MnDOT Phase 7]:** Quality Control Chart (e.g., Box Whisker of temperature vs. time, temperature vs. pass count, temperature vs. speed, pass count vs. time, pass count vs. speed, speed vs. time, speed vs. amplitude, speed vs. frequency, etc.)

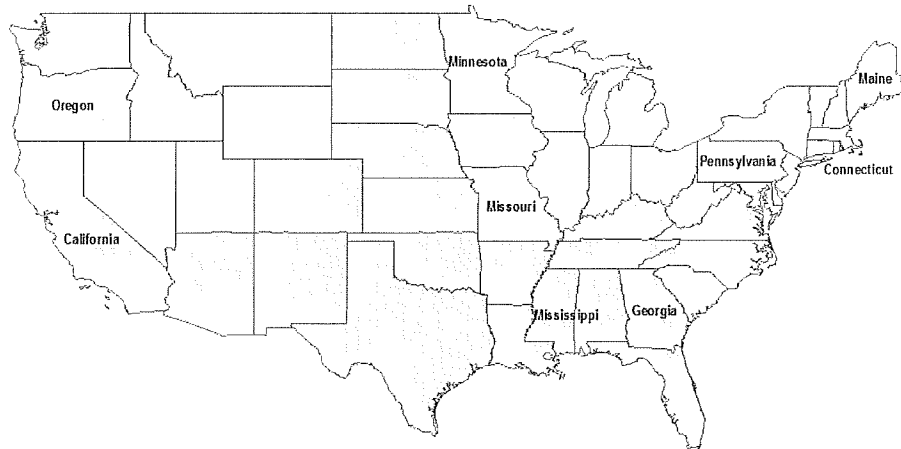
A.11 **Reporting [MnDOT Phase 7]:** Tabular listing of filter and operation/data filters query settings (sensors included, temps used, date, file, etc.) This information can be used by agency to simply QA review of submitted Veta projects.

A.12 **Bug Repairs**

Current Pooled Fund Participants



- Alaska (non-voting member)
- California
- Georgia
- Maine
- Minnesota
- **Mississippi**
- Missouri
- Oregon
- Pennsylvania



Money Currently Received

State	3-Yr Commitment	Received	Date Received
California	\$75,000	\$25,000	3/21/16
		\$25,000	12/20/16
Connecticut	\$30,000	\$10,000	6/6/16
		\$10,000	12/30/16
Georgia	\$75,000		
Maine	\$52,500		
Minnesota	\$100,000	\$50,000	2/10/16
Mississippi	\$50,000		
Missouri	\$75,000	\$25,000	3/21/16
Oregon	\$75,000	\$25,000	11/18/16
Pennsylvania	\$60,000	\$10,000	2/10/16
		\$25,000	8/30/16

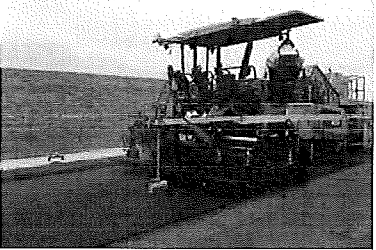
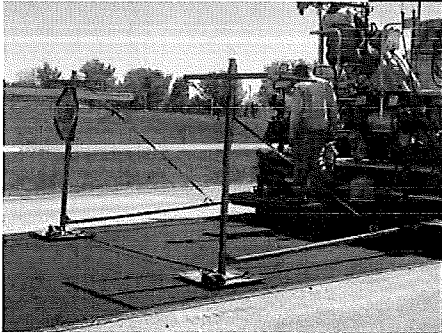
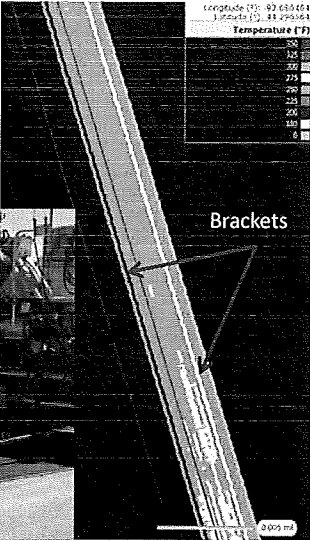
Received Through 2016:
\$205,00

Committed Through 2016:
\$255,000

Total Commitments:
\$592,500

MnDOT Phase VII Contract: Remaining Veta Enhancements

- Thermal Profiling
 - Cold Edge Filter
 - Removal of brackets used for pavement smoothness
 - Non-contact (e.g., sonic sensors)
 - Contact (e.g., contact pads)

MnDOT Phase VII Contract: Remaining Veta Enhancements

- Sublot Enhancements
 - Integrated with Filter Group
 - Automated Generation
 - Name = Filter Group Name
 - Automated generation of start and end location of lot for subplot generation
 - Start / End pins can be modified as needed



Veta Demo

Paver Mounted Thermal Profiling

MnDOT Phase VII Contract: Remaining Veta Enhancements

- Organization of Filter Groups

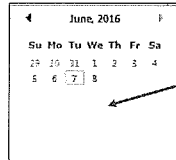
- Folder Structure

- Automated Generation

- Filter Group and Operation Filter Names

- Filter Groups per

- Lane
 - Lift
 - Lane & Machine
 - Lift & Machine
 - Lot & Machine



Lot Establishment

S-xx.3.F.1

Used for ease in mapping and data analyses in Veta

Specification	Definition
2353 (UTBWC) 2360 (HMA, WMA) 2365 (SMA)	Measurements for a given: <ul style="list-style-type: none"> • Day • Material Type • Lift • Centerline Offsets • Direction of Travel (Divided Highway)
2215 (SFDR) 2331 (CIR)	Measurements for a given: <ul style="list-style-type: none"> • Material Type • Lift • Direction of Travel (Divided Highway)

S-xx.3.F.1

Standardized Naming Convention of Lots

- Creative naming conventions.
- Multiple names for one lot.

Standardized Format*	Definition
ROUTE-MATL-L#-XXX-XXX	Undivided Highways (e.g., TH12-HMA-L1-CL-12R)
ROUTE-MATL-L#-XXX-XXX-DT	Divided Highways (e.g., TH12-HMA-L1-CL-12R-NB)

*Add an additional designation behind route for instances where more than one site calibration is needed within the project limits
(e.g., TH12N-HMA-L1-12L-CL, TH12S-HMA-L1-12L-CL)

S-xx.3.F.1

Lot Naming Standardization: Route

ROUTE-MATL-L# -XXX-XXX

Acronym or Short Form	Full Name or Meaning
CR	County Road
CSAH	County State Aid Highway
MS	Municipal Street
MSAS	Municipal State Aid Street
TH	Trunk Highway

Replace ROUTE with route system followed by the route number (e.g., TH12)
Route needed - systems on multiple jobs during season.

S-xx.3.F.1

Lot Naming Standardization: Material / Surface Type

ROUTE-MATL-L# -XXX-XXX

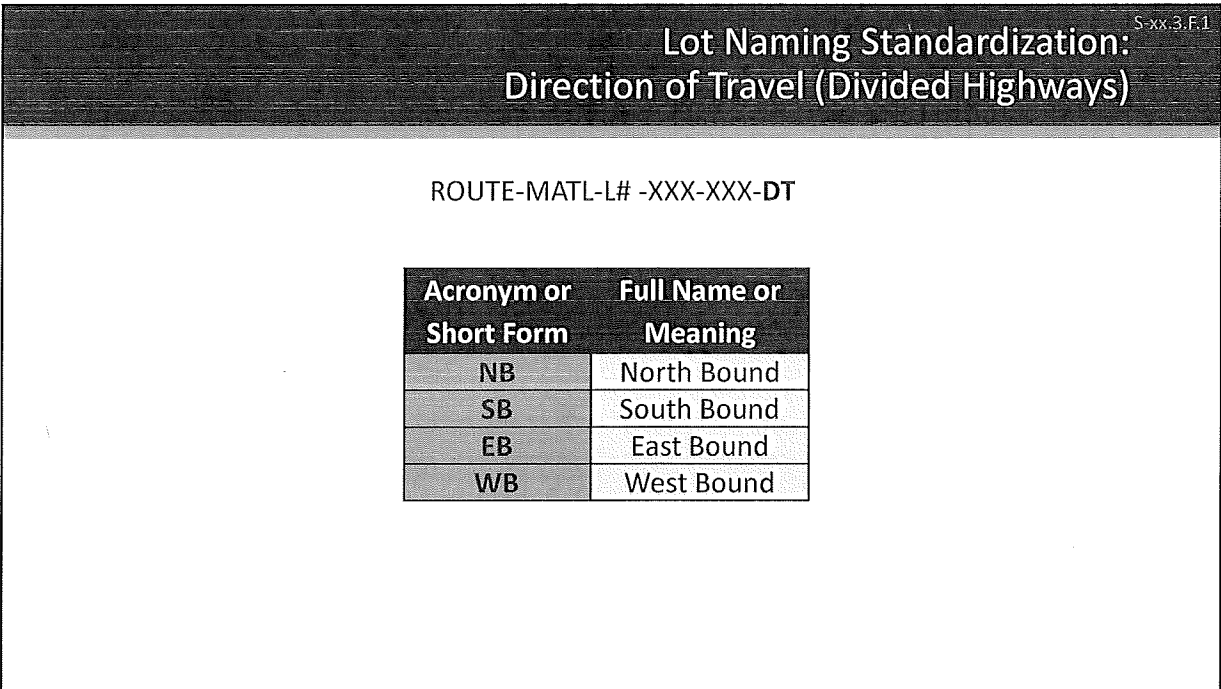
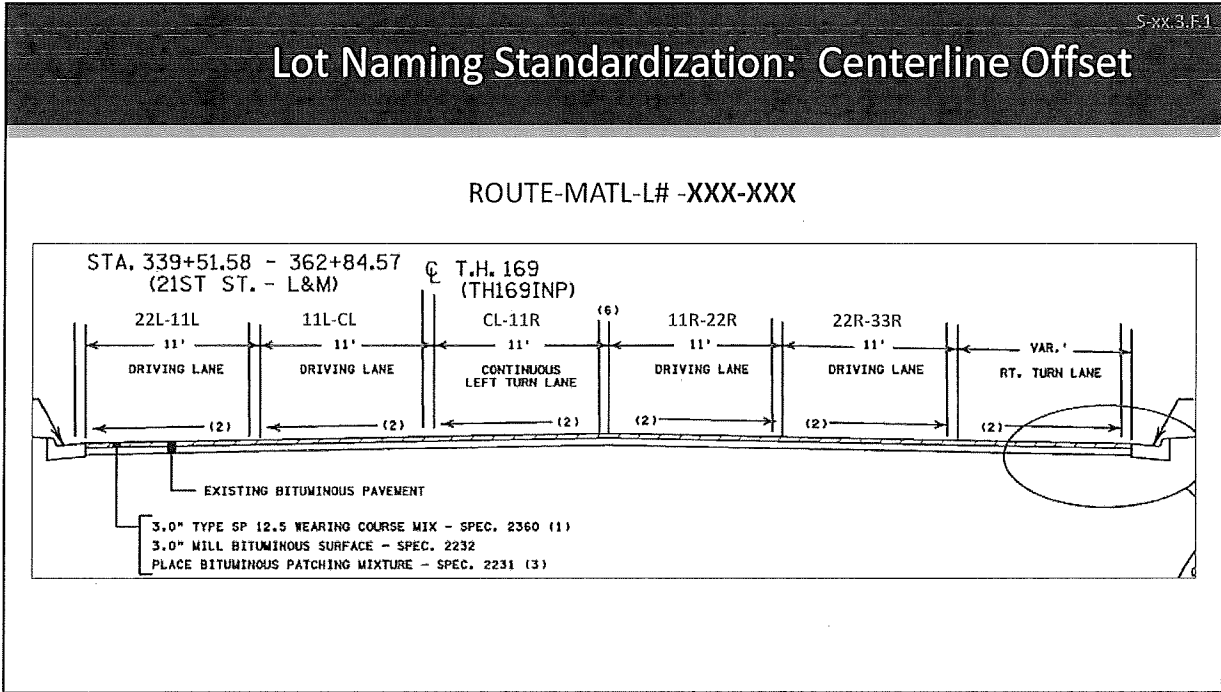
Acronym or Short Form	Specification	Full Name or Meaning
SFDR-P	2215	SFDR - Pulverization
SFDR-I		SFDR – Mixing/Injecting
CIR	2331	Cold In-Place Recycling
UTBWC	2353	Ultrathin Bonded Wearing Course
HMA	2360	Hot Mix Asphalt
WMA		Warm Mix Asphalt
SMA	2365	Stone Matrix Asphalt

S-xx.3.F.1

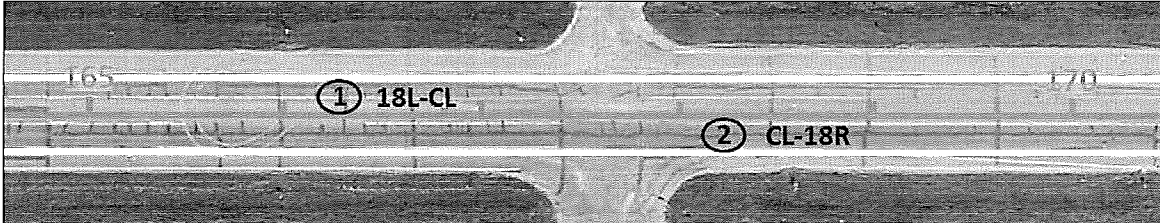
Lot Naming Standardization: Lift Number

ROUTE-MATL-L# -XXX-XXX

Acronym or Short Form	Full Name or Meaning
L1	Lift 1
L2	Lift 2
L3	Lift 3
...	...
Ln	Lift n



Undivided Highway, Auxiliary Lane, 18-ft Asphalt Paving

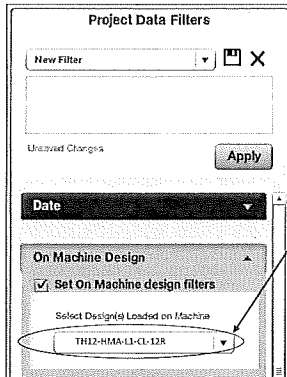


Production Area	Lift	Lot ID
1	1	TH12-HMA-L1-18L-CL
	2	TH12-HMA-L2-18L-CL
2	1	TH12-HMA-L1-CL-18R
	2	TH12-HMA-L2-CL-18R

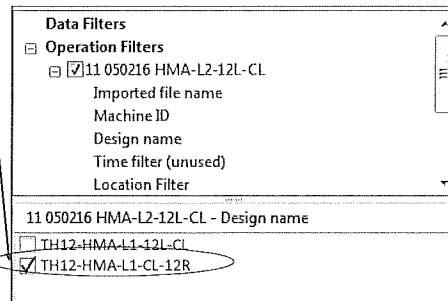
Use S-xx,3.F.1 to Store Lot Names

TH12-HMA-L1-CL-12R

Trimble VisionLink Legacy



Veta



Selection of Lot Name using the CB460

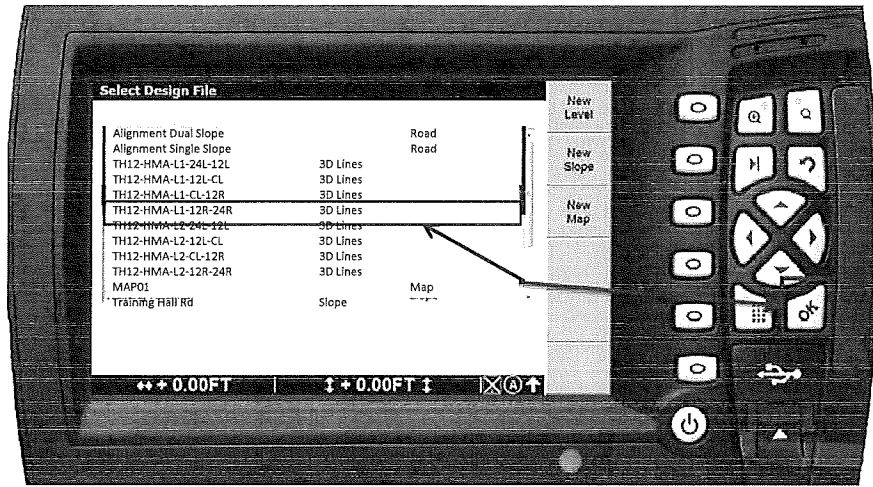


Figure Courtesy of Ziegler CAT

Verification of Selected Lot Name on CB460

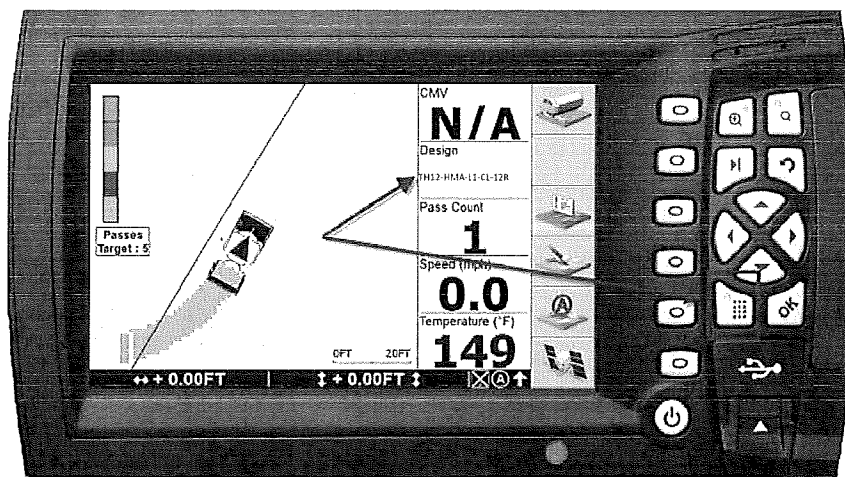
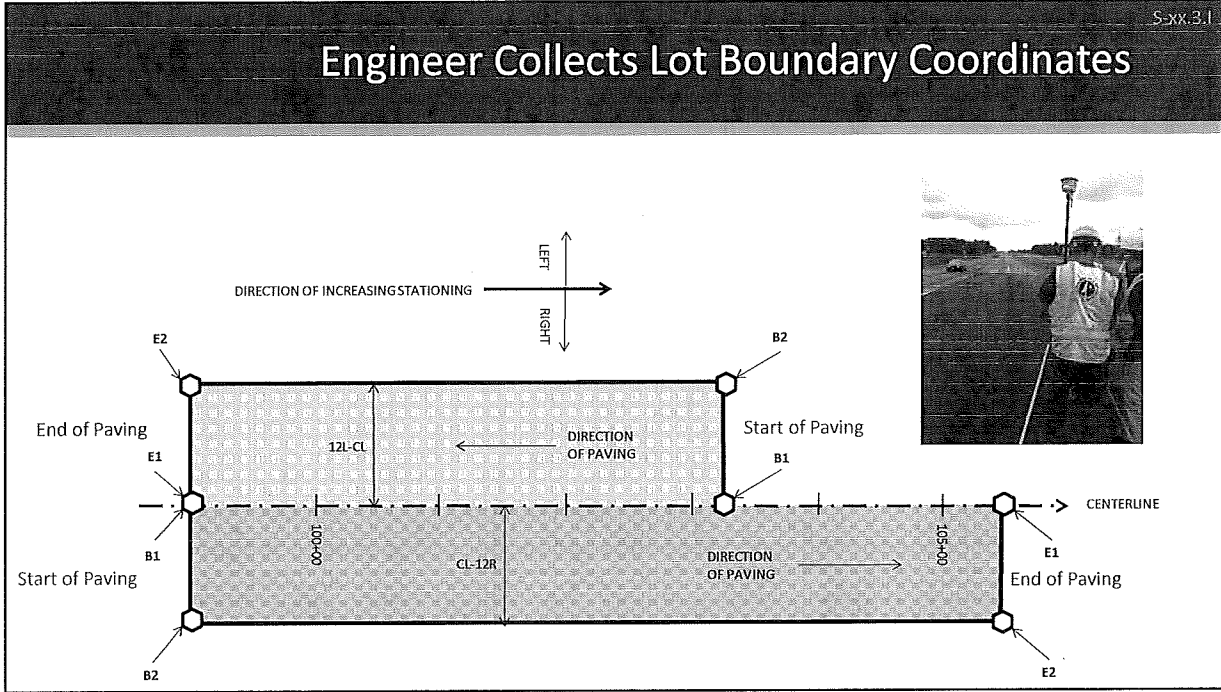


Figure Courtesy of Ziegler CAT



Trimble Feature Code Library used for Lot Boundary Coordinates

Boundaries [Navigation icons]

PROJECT NUMBER: <input type="text" value="SP2105-56"/>	ROUTE SYSTEM: <input type="text" value="TH"/>
ROUTE NUMBER: <input type="text" value="54"/>	Material Type: <input type="text" value="HMA (2360)"/>
Paving Date: <input type="text" value="Wednesday, August 17, 2016"/>	Boundary: <input type="text" value="Lot"/>
Lot Corners: <input type="text" value="B1"/>	Lift Number: <input type="text" value="L1"/>
Centerline Offset Typical: <input type="text" value="12L-CL"/>	Keyed in CL Offsets (non typical): <input type="text" value="?"/>
Direction of Travel: <input type="text" value="NB"/>	

Auton H:? V:?

Esc [Options] Store

Lot Boundary Coordinates used in Veta Location Filter

Data Filters

Operation Filters

31 092316 TH12-HMA-L2-12L-CL - Location Filter

Enter the coordinates to be searched on the alignment display. The first and last two locations must be the start and stop locations.

Northing (ft)	Eastng (ft)
114912.5	692223.6
114902.0	693112.6
114179.7	692493.6
114187.7	692583.3

Rover Coordinates

31 092316 TH12-HMA-L2-12L-CL

Created (ft): 690223.6
Northing (ft): 114943.2

Pass Count

Final Coverage
 Individual Passes

Use Standardized Naming Convention for Filters in Veta

Data Filters

Operation Filters

- 01 080816 TH14-HMA-L1-12L-CL
- 02 080916 TH14-HMA-L1-12L-CL
- 03 081016 TH14-HMA-L1-12L-CL
- 04 081216 TH14-HMA-L1-12L-CL
- 05 081516 TH14-HMA-L1-12L-CL
- 06 081616 TH14-HMA-L1-12L-CL
- 07A 081716 TH14-HMA-L1-CL-12R
- 07B 081716 TH14-HMA-L1-CL-12R
- 08 081816 TH14-HMA-L1-12L-CL
- 09 081816 TH14-HMA-L1-CL-12R
- 10 082216 TH14-HMA-L1-CL-12R
- 11A 082316 TH14-HMA-L1-CL-12R
- 11B 082316 TH14-HMA-L1-CL-12R
- 12 082416 TH14-HMA-L1-CL-12R
- 13 082916 TH14-HMA-L2-12L-CL
- 14 082916 TH14-HMA-L2-12L-CL
- 15 083016 TH14-HMA-L2-12L-CL
- 16 083016 TH14-HMA-L2-12L-CL
- 17 083116 TH14-HMA-L2-CL-12R
- 18 083116 TH14-HMA-L2-CL-12R
- 19 090116 TH14-HMA-L2-CL-12R
- 20 090116 TH14-HMA-L2-CL-12R
- 21 090616 TH14-HMA-L2-CL-12R
- 22 090616 TH14-HMA-L2-CL-12R
- 23 090816 TH14-HMA-L2-CL-12R
- 24 090816 TH14-HMA-L2-CL-12R

Filter Group Names

01 080816 TH14-HMA-L1-12L-CL
02 080916 TH14-HMA-L1-12L-CL
03 081016 TH14-HMA-L1-12L-CL
04 081216 TH14-HMA-L1-12L-CL
05 081516 TH14-HMA-L1-12L-CL
06 081616 TH14-HMA-L1-12L-CL
07A 081716 TH14-HMA-L1-CL-12R
07B 081716 TH14-HMA-L1-CL-12R
08 081816 TH14-HMA-L1-12L-CL

Eastng (ft): 660358.8
Northng (ft): 167240.2

CMV

- 65.0
- 40.0
- 30.0
- 10.0
- 0.0

Final Coverage
 Individual Passes

MnDOT Phase VII Contract: Remaining Veta Enhancements

- Auto-Selection

- File (by date)
 - Intelligent Compaction
 - MMDDYY (in exported file name)
 - Thermal Profiling
 - Default date in PPM file.



Ensure paving operator starts a new file per day, lane and lift, otherwise the automated selection of Imported File Names will not work correctly.

MnDOT Phase VII Contract: Remaining Veta Enhancements

- Auto-Selection

Machine Design Name – Intelligent Compaction



Ensure roller operators understand the importance of selecting the correct lot name during compaction efforts, otherwise the automated Design Name selection feature will not work correctly.



Veta Demonstration

Filter Groups, Operation Filters, Sublots



IICTG 2017 Conference

Sept. 26-28, 2017

Minneapolis, MN USA

Who Should Attend

- Federal, State & Local Agencies
- Construction Specification Writers
- Pricing Contractors and GC Managers
- Grading Contractors and QC Managers
- Surveyors
- Pavement Design Engineers
- Construction and Material QA Engineers
- Equipment Vendors
- University Researchers
- Engineering Consultants

The First International Intelligent Construction Technologies Group (IICTG) Conference



Agenda
 The conference will include a Veta workshop, technical sessions, open panel discussion, IICTG business meeting, and vendors' exhibits. Check on the IICTG website for details on call-for-presentations.



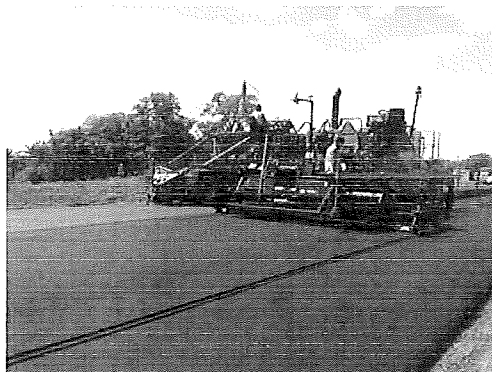
Co-Sponsors

- Transportation Research Board (TRB)
- Transportation Research Board (TRB)
- International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)
- Minnesota Department of Transportation
- TRB AFCEM Pavement Surface and Vertical Integration Committee
- TRB AFCEM Florida Pavement Construction
- TRB AFCEM Material Aggregate Committee
- University of Minho, Portugal
- University of Texas, El Paso, USA
- Southwest Jiaotong University, China

Topics: Intelligent construction Technologies; IC; PMTP; Automated Machine Guidance; digital records and more



State Updates

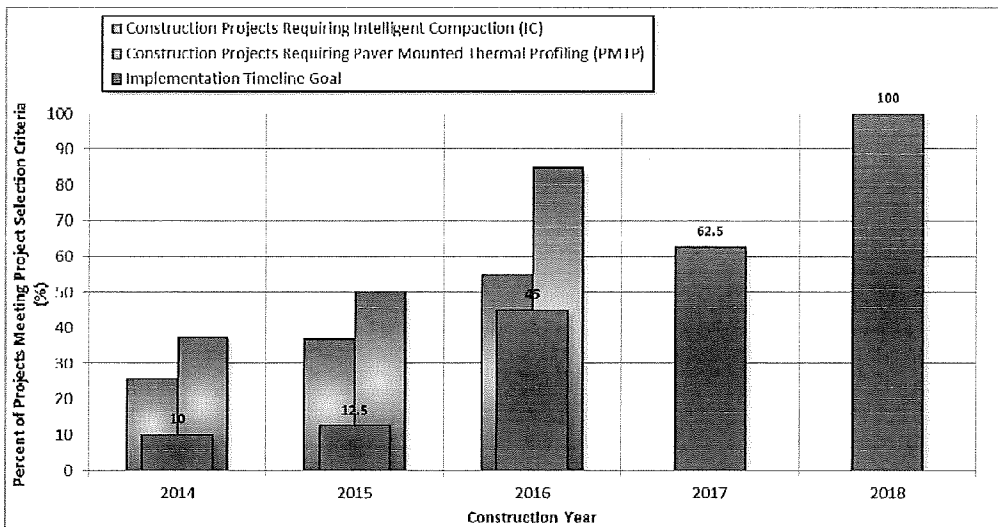


MnDOT's Updates

Contractor Requests

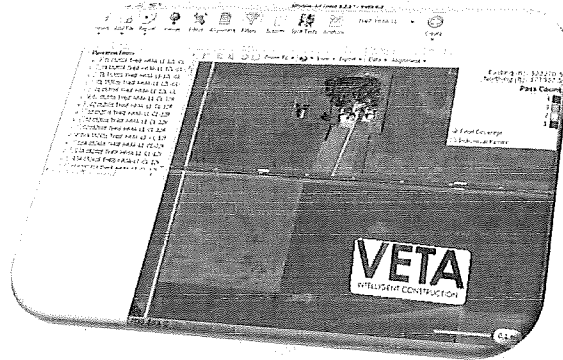
- Automation . . . Automation . . . Automation . . .
- Overlay datasets
 - Pavement Smoothness (ProVal)
 - Intelligent Compaction
 - Thermal Profiling
 - Spot Tests
- Dash Boards
 - Quick Checks
- Quality Control Charts (TPF-5 (334) Phase I)

Increased Transparency: Established Roadmap in 2014



2017 IC and PMTP Special Provisions and Veta Software Classes

- March 2, 2017 (2 seats left)
- March 7, 2017 (Full)
- March 21, 2017 (Full)
- March 23, 2017 (Full)
- March 28, 2017 (Full)
- March 30, 2017 (Full)
- April 3, 2017 (Full)
- April 10, 2017
- April 18, 2017
- April 20, 2017 (2 seats left)

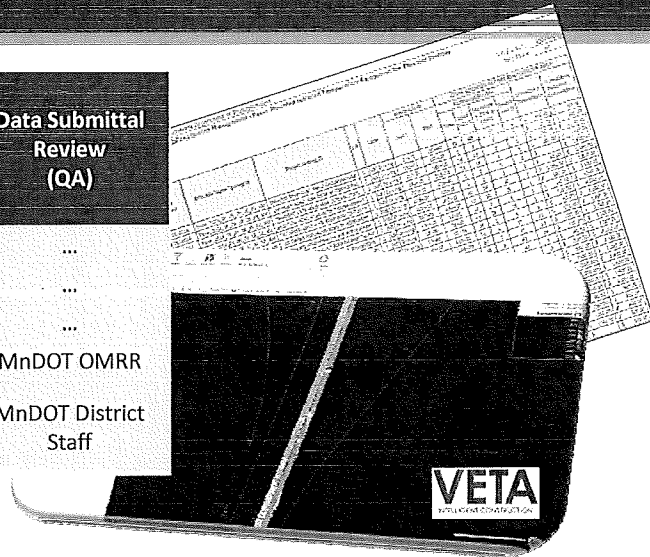


Class updated to contain instruction on new Veta Enhancements.
 Register at:
<http://www.dot.state.mn.us/materials/amt/index.html>

Staged Submittal Requirements

Construction Year	Software	Creation of Veta Projects & Required Forms	Data Submittal Review (QA)
2004 - 2014	Proprietary
2015	Veta	MnDOT	...
2016	
2017		Contractor	MnDOT OMRR
2018 (Full Deployment)			MnDOT District Staff

2010 – 1st MnDOT Veta Contract



Construction Highlights

1st year utilizing data near, real-time to assist with workmanship issues!



m DEPARTMENT OF
TRANSPORTATION

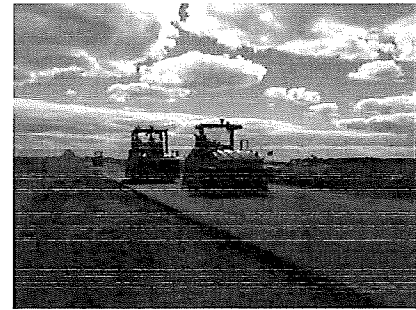
Other Updates



Thank you again!



Rebecca Embacher
rebecca.embacher@state.mn.us
651-366-5525



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

Fick, Debra (DOT)

From: Embacher, Rebecca (DOT)
Sent: Tuesday, January 24, 2017 12:32 PM
To: Fick, Debra (DOT)
Subject: TPF-5 (334) Quarterly Report #3 Update and Partner Justification
Attachments: TPF-5 334 SPR Quarterly Report 03 - Binder 01.24.17.pdf; TPF-5 334 SPR Quarterly Report 03 - Justification 01.24.17.pdf

Good afternoon, Deb.

Per our discussion, attached is the quarterly report and justification information for MnDOT to continue to partner with this pooled fund.

Please let me know if you need any additional information.

Kind Regards,

Rebecca

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