

# **PennDOT e-Construction: Material Quality Assurance**

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Presenter:  
John Myler

PennDOT

# Overview of PennDOT

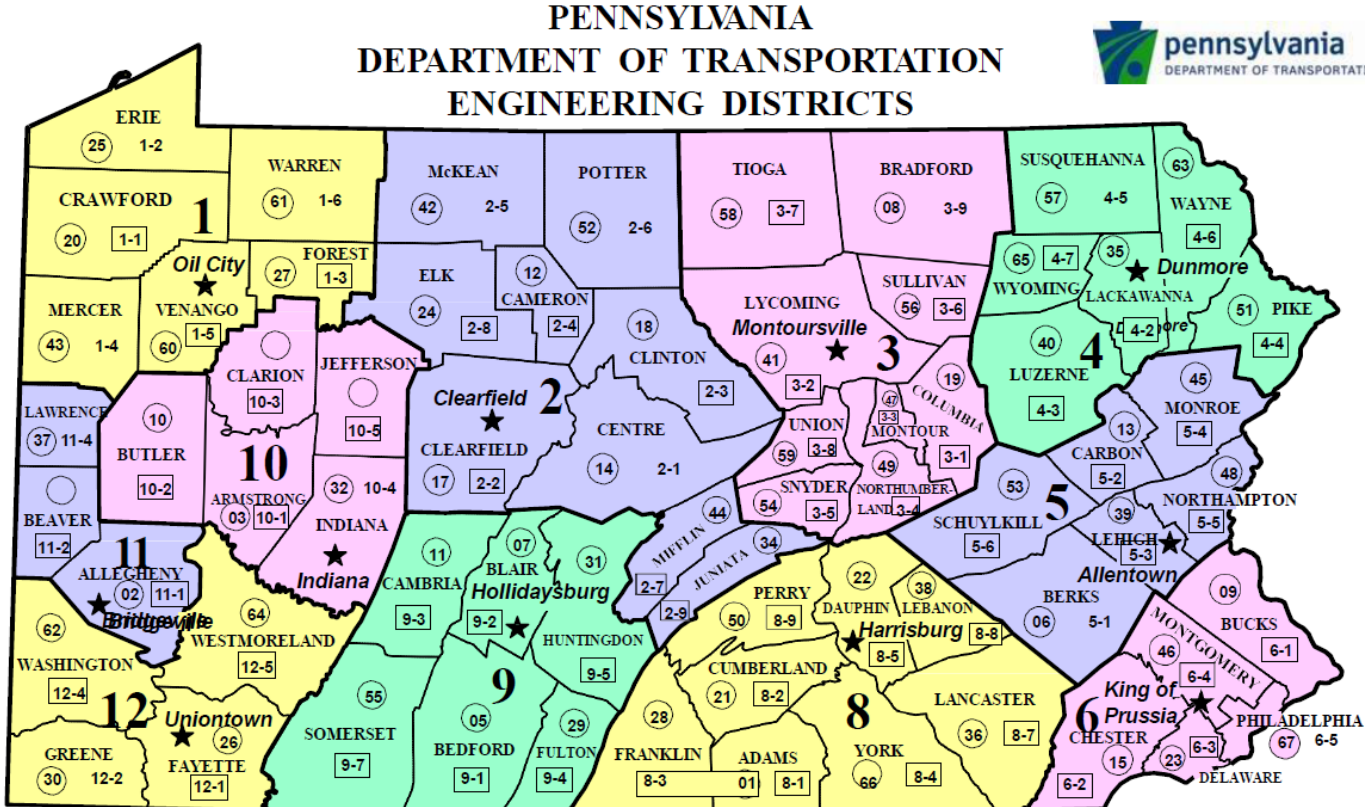
11 Districts

1162 active projects

\$7.3 Billion program

583 Full Time Inspectors

131 Local projects \$516M



# ► PennDOT e-Construction Initiative



## Construction Projects Involve LOTS of Paper

100 to 5,000 associated documents- multi-page plans, shop drawings, Requests for Information, e-mails, etc.

# PennDOT e-Construction Initiative

## ECMS/CDSv3

**PROJECT INFORMATION**

Project: 08234 Standard / PENNDOT Oversight HHS

Short Description: Elizabeth Drive  
County: Allegheny  
District: 11

Org Code: 100  
Section: A70  
Municipality: ELIZABETH T

**Detail Information**

Setup	Action	Asset	Contract	Contract
<ul style="list-style-type: none"> <li>Team</li> <li>Agreements</li> <li>Program Data (I)</li> <li>Agreements (I)</li> <li>Drawings (I)</li> <li>Drawings (I)</li> <li>Drawings (I)</li> <li>Federal Project Numbers</li> <li>Ministry List</li> </ul>	<ul style="list-style-type: none"> <li>Project Conditions</li> <li>Project Development Checklist</li> <li>Special Provisions</li> <li>Design Items</li> <li>Bill Package 1</li> </ul>	<ul style="list-style-type: none"> <li>Asset Checklist</li> <li>Inventory List/Issues</li> <li>Monthly Participation and Commitment</li> <li>Component Item Schedules</li> <li>Bonds</li> <li>Bill Items</li> <li>Contract</li> </ul>	<ul style="list-style-type: none"> <li>Addresses</li> <li>Construction Requests</li> <li>Construction Items</li> <li>Source of Supply</li> <li>Project Day Activities</li> <li>Work Order Authorizations</li> <li>Work Orders</li> <li>Estimates</li> <li>Asset Item Accounts</li> <li>False Account Estimates</li> <li>Adjustments</li> <li>The Expenditures/Adjustments</li> <li>Inventory List</li> <li>Report Utility</li> <li>Print and Subtotal Visual Site Inspections</li> </ul>	<ul style="list-style-type: none"> <li>Audit</li> <li>Construction Records</li> <li>Contract Evaluation</li> <li>Quality Survey for Design Items</li> <li>Finalization Checklist</li> <li>Acceptance Certificate</li> <li>Final Quantities</li> </ul>

**Schedule Information**

Original Completion: 06/23/2019  
Current Completion: Pending Completion  
Last CDS Revision Download:

**Financial Information**

Design Fee/Item	Amount	Adjustment Total	Amount
Original Contract	\$11,968,514.00	Work Order - Partial	\$0.00
Work Order - Initial	\$11,385,026.00	Work Order - Final	0.00%
Work Order - Deducted	\$0.00	Work Order - Pending	\$0.00
Encumbrance Adjustments Added	\$0.00	Other Adjustments Added	\$0.00
Encumbrance Adjustments Deducted	\$0.00	Other Adjustments Deducted	\$0.00
Current Contract	\$11,385,026.00	Pending Adjustments	\$0.00
Release Item Total	\$0.00	Work Completed	0.00%
Amount Transferred	\$0.00	Power (Original)	100.00%

## eCAMMS

**Job Mix Formula - Search Criteria**

Searches on this page are done against live transactional data and have a maximum of 500 results.

Design Type: [Dropdown]  
Job Mix Formula Year: [Dropdown]  
JMF/Mix Design Number: [Dropdown]  
Supplier Party: [Dropdown]  
District: [Dropdown]  
JMF Component Material Code/Class: [Dropdown]  
JMF Component Material Class: [Dropdown]

Status: [Dropdown]  
Material Class: [Dropdown]  
Bituminous JMF Asphalt Content Test Method: [Dropdown]  
Bituminous JMF Design ESAL Range: [Dropdown]  
Bituminous Aggregate Skid Resistance Level: [Dropdown]

Search Search and Export Reset

## PPCC

**Favorite Projects**

Remove as Favorite	ECMS #	SR Section	County	District	Project Name
Remove Favorite	020544	0837-413	Allegheny	D11	Homestead Bridge Ramps

**My Projects**

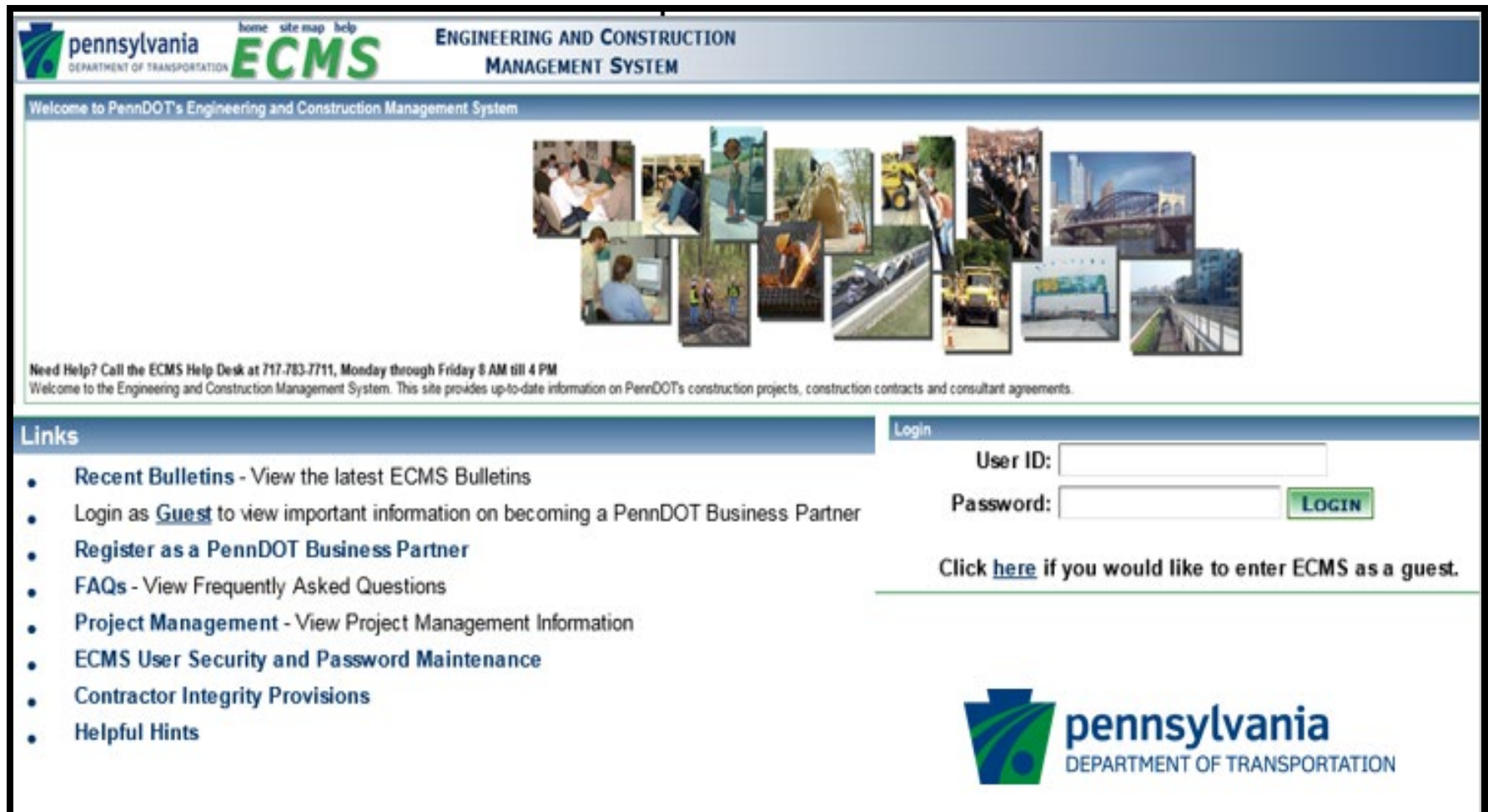
Save as Favorite	ECMS #	SR Section	County	District	Project Name
Make Favorite	020614	3069-A23	Allegheny	D11	Liberty Tunnel Interchange
Make Favorite	027267	0030-A25	Allegheny	D11	SR 30 or Bessemer Ave
Make Favorite	028800	0051-A10	Allegheny	D11	SR 51/88 Bridge/Safety Improvement
Make Favorite	028117	2037-A11	Allegheny	D11	2037 Tri-lane Lane
Make Favorite	028254	7429-LOC	Allegheny	D11	Gibson Street Bridge
Make Favorite	028297	0051-A67	Allegheny	D11	This is a partial Design Build project. Design activities are limited to: Concrete curb ramps
Make Favorite	020544	0837-413	Allegheny	D11	Homestead Bridge Ramps
Make Favorite	057100	2082-408	Allegheny	D11	Hulton Bridge

## Mobile Construction



# Engineering Construction and Management System (ECMS)

ECMS was initially implemented in 2003



The screenshot shows the ECMS website interface. At the top left is the Pennsylvania Department of Transportation logo with the text "pennsylvania DEPARTMENT OF TRANSPORTATION" and "ECMS" in large green letters. Navigation links "home site map help" are positioned above "ECMS". The main header reads "ENGINEERING AND CONSTRUCTION MANAGEMENT SYSTEM". Below the header is a welcome message: "Welcome to PennDOT's Engineering and Construction Management System". A central collage of images depicts various construction and management activities. Below the collage, a help desk contact number is provided: "Need Help? Call the ECMS Help Desk at 717-783-7711, Monday through Friday 8 AM till 4 PM". A brief description follows: "Welcome to the Engineering and Construction Management System. This site provides up-to-date information on PennDOT's construction projects, construction contracts and consultant agreements." On the left side, a "Links" section lists several resources: "Recent Bulletins - View the latest ECMS Bulletins", "Login as Guest to view important information on becoming a PennDOT Business Partner", "Register as a PennDOT Business Partner", "FAQs - View Frequently Asked Questions", "Project Management - View Project Management Information", "ECMS User Security and Password Maintenance", "Contractor Integrity Provisions", and "Helpful Hints". On the right side, a "Login" section contains input fields for "User ID:" and "Password:", a "LOGIN" button, and a link: "Click [here](#) if you would like to enter ECMS as a guest." At the bottom right is the Pennsylvania Department of Transportation logo.

home site map help  
pennsylvania DEPARTMENT OF TRANSPORTATION **ECMS**  
ENGINEERING AND CONSTRUCTION MANAGEMENT SYSTEM

Welcome to PennDOT's Engineering and Construction Management System

Need Help? Call the ECMS Help Desk at 717-783-7711, Monday through Friday 8 AM till 4 PM  
Welcome to the Engineering and Construction Management System. This site provides up-to-date information on PennDOT's construction projects, construction contracts and consultant agreements.

**Links**

- **Recent Bulletins** - View the latest ECMS Bulletins
- Login as Guest to view important information on becoming a PennDOT Business Partner
- **Register as a PennDOT Business Partner**
- **FAQs** - View Frequently Asked Questions
- **Project Management** - View Project Management Information
- **ECMS User Security and Password Maintenance**
- **Contractor Integrity Provisions**
- **Helpful Hints**

**Login**

User ID:

Password:  **LOGIN**

Click [here](#) if you would like to enter ECMS as a guest.

pennsylvania DEPARTMENT OF TRANSPORTATION

# ▶ PennDOT's Existing E-Construction



- Engineering and Construction Management System (ECMS)
  - (Material) Source of Supply
  - Project Site Activities (PSAs)
  - Actual Force Accounts
  - Force Account Estimates
  - Report Facility
  - Erosion and Sediment Visual Site Inspection
  - Audits
  - Project Punchlist

# ECMS – Construction Project Menu

## Construct

- Addresses
- Subcontractor Requests
- Construction Items
- Source of Supply
- Project Site Activities
- Contract Work Authorizations
- Work Orders
- Estimates
- Actual Force Accounts
- Force Account Estimates
- Adjustments
- Time Extensions/Reductions
- Reassigned (No)
- Report Facility
- Erosion and Sediment Visual Site Inspections

## Closeout

- Audits
- Construction Records
- Contractor Evaluations
- Quality Survey for Design Items
- Project Punchlist
- Finalization Checklist
- Acceptance Certificate
- Final Quantities

# ▶ PennDOT's Existing E-Construction



- PennDOT Project Collaboration Center (PPCC)
  - Submittals with automated workflow
  - Shared/Project Files/Photos



# ▶ PennDOT's Existing E-Construction



[Home](#) [Sample](#) [JMF](#) [ESB](#) [Maintenance](#) [Tools](#)

TR-447 Ref #:

Sample #:

Search

- Electronic Construction And Material Maintenance System (eCAMMS)
  - Material Sampling Testing Data and Reporting
  - Job Mix Formulas
  - Producer Products

# ▶ PennDOT e-Construction Initiative

## Mobile Construction

### iPad Developments



# ➤ PennDOT e-Construction Initiative

The goals of PennDOT's Mobile Program:

- Provide tools that increase productivity for our field staff and field consultants
- Transform labor intensive, manual paper processes through efficient mobile technology
  - We are NOT just “digitizing” existing forms
  - Transforming the way business is conducted
- Improve Data Collection and Reporting Capabilities

# ▶ PennDOT e-Construction Initiative

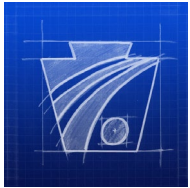
- In January 2013, PennDOT implemented our first mobile app
- With every app the business process is re-engineered
  - On-line data transfer to legacy systems
  - Improve data quality
  - Build User-Friendly interfaces
  - Reduce data entry
- Off-line work capability, synchronizing when connectivity is available

# ➤ PennDOT e-Construction Initiative

It doesn't happen overnight !!!

- Introducing APPLE into a Microsoft World
  - Technical Support
  - Resourcing - finding experienced team members
  - Apple User Agreements
- Identify and Recruit Business and Executive Champions
- Managing Senior Executives expectations
- Changing the Existing Culture and Policies
- Training, Training, Training

# PennDOT e-Construction Initiative



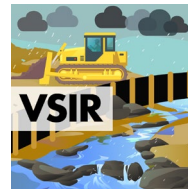
**MC DOCs**



**CMH Mobile**



**PSA**



**Visual Site  
Inspection Report**



**Punchlist**



**Sample ID**



**Force  
Account**



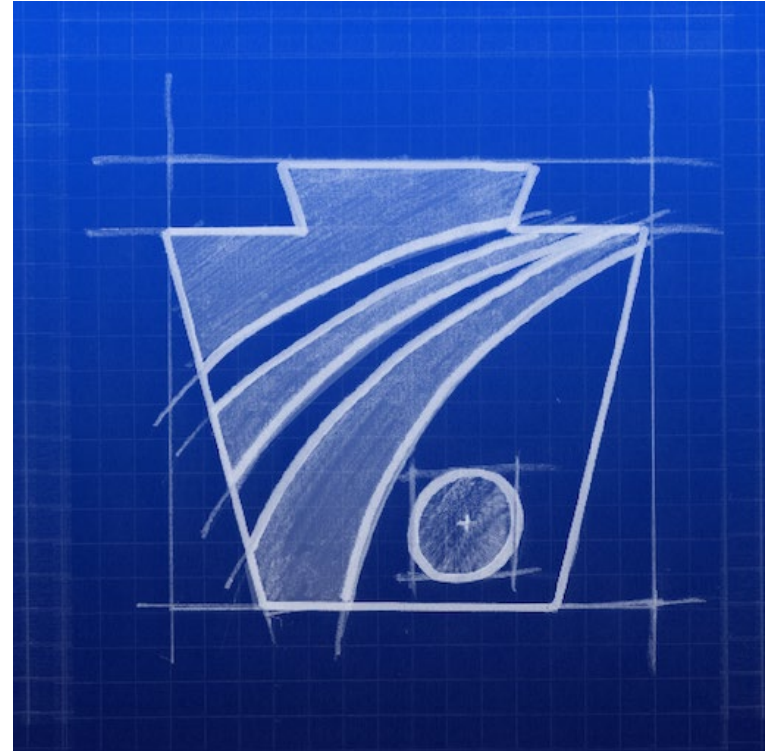
**CID**



**MPT**


# ➤ PennDOT e-Construction Initiative

**MC Docs 3.0**




# PennDOT e-Construction Initiative

3:09 PM Fri Jan 18 LTE 48%



**MCDocs**  
Version v3.0  
Login to PROD App



CWOPA USERNAME

PASSWORD

Remember Me

If you forgot your password,  
contact PennDOT IT Service Desk:  
717-783-8330 | 855-783-8330

By logging into this app, you are allowing PennDOT to view and  
monitor your actions inside of the app.

[App Info](#)



# PennDOT e-Construction Initiative

7:22 PM Fri Jan 18 LTE 99%

**My Library** MCDocs v3.0 CHECK-(PROD)  
Shared Libraries/Common Publications

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**My Briefcase**

- File Imports
- Merged Files

---

**Common Documents**

- Shared Libraries v
- Common Publications  
Downloaded: 2    Used: 14.4 MB
- Reference Manuals  
Downloaded: 0    Used: --
- Strike-Off Letters  
Downloaded: 0    Used: --

---

**ECMS Projects** All Projects

- 26614 i >
- 27275 i >
- 28000 i >

---

Search	Sort: Name	Download	Remove Files
	<b>72M_2010.pdf</b> Updated: Aug 31, 2017    Used: 41 KB		
	<b>PUB 148.pdf</b> Updated: Dec 28, 2011    Size: 2.5 MB		
	<b>PUB 194.pdf</b> Updated: Mar 2, 2015    Size: 5.3 MB		
	<b>PUB 212.pdf</b> Updated: Mar 10, 2011    Size: 316 KB		
	<b>PUB 219M.pdf</b> Updated: Aug 8, 2017    Used: 14.4 MB		
	<b>PUB 372.pdf</b> Updated: Oct 29, 2013    Size: 696 KB		
	<b>PUB 445.pdf</b> Updated: Jan 10, 2018    Size: 7 MB		
	<b>PUB 8.pdf</b> Updated: May 22, 2014    Size: 4 MB		
	<b>Pub 111.pdf</b> Updated: Jan 21, 2014    Size: 12.2 MB		
	<b>Pub 2.pdf</b> Updated: Apr 7, 2015    Size: 11.4 MB		

Shared Libraries:Common Publications

# PennDOT e-Construction Initiative

9:37 AM Tue Jan 22 LTE 100%

**My Library**

**ECMS Projects** All Projects

- 100605 (i) >
- 100632 (i) >
- 100683 (i) >
- 105229 (i) >
- 109324 (i) >
- 110594 (i) v
- ECMS  
Downloaded: 413    Used: 368.2 MB ⋮
- PPCC  
Downloaded: 33    Used: 47.6 MB ⋮
- Project Specific Manuals  
Downloaded: 2    Used: 71.6 MB ⋮
- 110880 (i) >
- 111743 (i) >

MCDocs v3.0 CHECK-(PROD)  
110594/ECMS:Project Development Checklist Home

Search
Sort: Name
Download
Remove Files

- 2 Construction Coordination**  
Downloaded: 2    Used: 1.1 MB
- 5 Construction Items**  
Downloaded: 5    Used: 127.8 MB
- 4 Contract Award Items**  
Downloaded: 4    Used: 644 KB
- 2 Environmental Clearances**  
Downloaded: 2    Used: 298 KB
- 3 Estimates**  
Downloaded: 3    Used: 703 KB
- 1 Local Agreements and Coordination**  
Downloaded: 1    Used: 2 MB
- 3 Permits**  
Downloaded: 3    Used: 1.1 MB
- 146 Plans**  
Downloaded: 146    Used: 51 MB
- 8 Project-Specific Checklist Items**  
Downloaded: 8    Used: 32.8 MB
- 1 Railroad Coordination**  
Downloaded: 1    Used: 202 KB

< 110594:ECMS > Project Development Checklist

# PennDOT e-Construction Initiative

9:37 AM Tue Jan 22 LTE 100%

**My Library** MCDocs v3.0 CHECK-(PROD)  
110594/PPCC

ECMS Projects		<span>Search</span>   <span>Sort: Name</span>   <span>Download</span>   <span>Remove Files</span>			
	100605		<b>OC</b>	Downloaded: 0	Used: --
	100632		<b>PennDOT</b>	Downloaded: 0	Used: --
	100683		<b>Pictures</b>	Downloaded: 0	Used: --
	105229		<b>Prime</b>	Downloaded: 0	Used: --
	109324		<b>ProjectFiles</b>	Downloaded: 0	Used: --
	<b>110594</b>		<b>ProjectVideos</b>	Downloaded: 0	Used: --
	<b>ECMS</b>	Downloaded: 413	Used: 368.2 MB		
	<b>PPCC</b>	Downloaded: 33	Used: 47.6 MB		
	<b>Project Specific Manuals</b>	Downloaded: 2	Used: 71.6 MB		
	110880		<b>RFI</b>	Downloaded: 1	Used: 15 KB
	111743		<b>SOS</b>	Downloaded: 0	Used: --
			<b>SharedFiles</b>	Downloaded: 0	Used: --
			<b>Submittals</b>	Downloaded: 32	Used: 47.6 MB

110594:PPCC

# ➤ PennDOT e-Construction Initiative

**PSA V4.4**



# ➤ PennDOT e-Construction Initiative

## MC-Force Account V1.3



## Punchlist V1.5



# ➤ PennDOT e-Construction Initiative

**MC-MPT V1.4**



# ➤ PennDOT e-Construction Initiative

**CMH Mobile**





# ► PennDOT e-Construction Initiative

## Visual Site Inspection Report



# ➤ PennDOT e-Construction Initiative

**Sample ID**



# PennDOT e-Construction Initiative

TR-447 (2-15)

**SAMPLE IDENTIFICATION**

Material Class: **A700909**

LTS USE ONLY

Lab Set of Number: **A700909**

Aggregate Usage by Spec. (M2, M3, M4)

Lab/Match Number

Location Code, Place Collected, Core Collector

TR-447e (8-18)

Contract Number: **E**

WORK BREAKDOWN STRUCTURE (WBS)

Pub. AOS Year, Ver., Section, Special Provision

Sampled By: Title, First Name, Middle Name, Phone Number, Lvl., Certification ID, PennDOT Employee, Consultant, Other

Inspected By: Title, First Name, Middle Name, Phone Number, Fc., Certification ID, PennDOT Employee, Consultant, Other

INCREMENT INFORMATION

Inc.	County	SR	Segment	Offset	Section	Status	CIR Offset
1							
2							
3							
4							
5							
6							
7							

JMF: Year, Number, Design: Thickness, Concrete: All, Sample, Temp, Self Consolidating Concrete: H-Res, Slump Flow, VSI

Remarks:



W000166-01



W000166-04



W000166-07



W000166-10



W000166-02



W000166-05



W000166-08



W000166-11



W000166-03



W000166-06



W000166-09



W000166-12



# ▶ PennDOT e-Construction Initiative

9:59 AM Sat Jan 19 SampleID v0.9.6 SYST New Sample

Sample ID Dashboard

General Info

Owning Lab  
LTS

Material Code / Material Class  
555 - Mechanical Rebar Splices

Placement Info

Lot/Batch Number  
6111482202

Location Code

Tank #

Product Name  
Mech splice

Work Breakdown

Work Breakdown Structure  
Contract / E1109

Pub 408  
2016 / 2 / 1002 /

Special Provision

Material Code / Material Class

Material Code	Material Class
<NONE>	<NONE>
555 - Mechanical Rebar Splices	BLACK
560 - Junction Boxes	EPOXY
565 - Prefabricated Drain	GALV
570 - Arrowboard-deisel	
575 - Arrowboard-solar	
580 - Tie Wire	
585 - Traffic Counter Hose	
590 - Change. Mess. Sign-deisel	
595 - Change. Mess. Sign-solar	

555 - Mechanical Rebar Splices > EPOXY

FV - Field Verification

Sr51-A79 05/22/2018

ACTIONS



# ➤ PennDOT e-Construction Initiative

## MC-Concrete Inspection Diary V1.10



# PennDOT e-Construction Initiative



## MC-CID

- This application will capture all information pertaining to a concrete placement.
- The inspector will enter the test result data into the app for the concrete placement.
- This information will then continue through the 7 and 28 day cylinder breaks.
- Data can then be sync'd with the Electronic Construction and Materials Management System (eCAMMS) for data retention and future analysis or reporting.
- Ability to generate reports on countless parameters like comparing concrete strengths, slump or air content against the original mix design. Also allow for regional data comparison by supplier or specific mix design.

# ▶ PennDOT e-Construction Initiative

The screenshot shows a mobile application interface for a concrete inspector. At the top, the status bar displays 'Verizon LTE', '12:38 PM', and '100%' battery. The app title is 'PennDOT Concrete Inspector's Diary'. Below the title, there is a 'Read Only' button, a help icon, and a share icon. A welcome message reads 'Welcome: John B Myler/PennDOT'. A search bar labeled 'Search Projects' is present, along with a green circular badge indicating '8 Projects'. The main content area lists seven project entries, each with a project ID, name, and icons for sharing and information.

Project ID	Project Name	Share Icon	Info Icon	More Icon
20159	READING ROAD BRIDGE		ⓘ	>
20163	READING ROAD BRIDGE	📄	ⓘ	>
20204	Armstrong Valley Road	📄	ⓘ	>
20231	READING ROAD BRIDGE	📄	ⓘ	>
61345	Lincoln Way Improvement	📄	ⓘ	>
85179	CDSV3 - Performance Testing	📄	ⓘ	>
85180	CDSV3 - Performance Testing	📄	ⓘ	>



# PennDOT e-Construction Initiative

Verizon LTE 11:22 AM 75%

PennDOT Concrete Book Project Dashboard

20159 - 272 / 012

Welcome  
**John B Myler/PennDOT**

1 RECORD HAS ERRORS [Sync Now](#)

Record Type	Record ID	Document Count	Warning Count	Refresh Count
Daily Placement Record	CS-472	0	1	0
Report of Compressive Strength	CS-458A	0	0	0
Air Meter Calibrations	Overdue: 0 -- Upcoming: 0	0	0	1
Verification Test Summary				







# PennDOT e-Construction Initiative

Verizon LTE 1:49 PM 95%

CS-472 Daily Placement Record - 07/05/2016 QC Plan

Placement

GENERAL CONCRETE MIX SLUMP AIR TEMPERATURE

ECMS Project No.	Work Item
<b>61345</b>	<b>0303-0001 (CEMENT TREATED PERMEABLE BASE COURSE, 4" DEPTH)</b>
Released By	Date
<b>John B Myler/PennDOT</b>	<b>07/05/2016 11:13 AM</b>
Supplier Name	Supplier Code
<b>Essroc</b>	<b>ERC02C42</b>
Contractor	
<b>Azure Excavation and Grading</b>	
Type of Curing	
<b>White Polyethylene Curing</b>	
Weather	
<b>Clear</b>	

PTM  
Trucks  
Comments  
Wire Mesh  
Summary  
Signatures  
Curing Logs



# PennDOT e-Construction Initiative

Placement		GENERAL	CONCRETE	MIX	SLUMP	AIR	TEMPERATURE
CY for Day	Lot Size	Wasted	Used	Rejected			
<b>10.00</b>	<b>10</b>	<b>0.00</b>	<b>10.00</b>	<b>0.00</b>			
From Station	To Station						
<b>1</b>	<b>2</b>						
Placement Method							
<b>Chute</b>							
Type of Placement	Part of Structure Concrete Placed In						
<b>Pavement Patching</b>	<b>Roadway</b>						



# PennDOT e-Construction Initiative

Verizon LTE 1:50 PM 95%

< CS-472 Daily Placement Record - 07/05/2016

**Specimen Type**  
**Acceptance Test**

**Cylinder Series**                      **Construction Area**  
**PP-AT-A-4**                                      **PP**

**Class**                      **Random No**                      **Random Decimal Fraction**  
**A**                                      **4**                                      **0.6**

**Lot Size**                      **CY Tested**                      **Test Loads**  
**10**                                      **6.00 CY**                                      **1**

Placement  
PTM  
Trucks  
Comments  
Wire Mesh  
Summary  
Signatures  
Curing Logs

First    Prev                      [PP-AT-A-4 \(1 of 1\)](#)                      Next    Last



# PennDOT e-Construction Initiative

Verizon LTE 1:50 PM 94%

< CS-472 Daily Placement Record - 07/05/2016

Placement  
Truck No **1** Rejected **No**

PTM  
CS-4220 Received **Yes** CS-4337 Received **Yes**

Trucks  
Serial No. Concrete Plant Slip **TEGDGDY** Total Mixing Water **32.00 GAL**

Comments  
Time Mixed **07/05 10:00 AM** Time Discharged **07/05 11:17 AM**

Wire Mesh  
CY Total **10.00 CY** CY Wasted **0.00 CY**

Summary  

TEST TYPE	SLUMP	AIR	TEMP	W/C RATIO	NO. CYLS. MOLDED	TOTAL REV	REJECT?	CYL. SERIES
QC/AT	6.00 in	5.00%	70°	0.320	10	150	N	PP-AT-A-4
VT	--	5.00%	75°	0.320	4	150	N	PP-VT-A-1

Signatures  
Curing Logs

Buttons: Add Test, No Comments, First, Prev, [Truck 1 \(1 of 1\)](#), Next, Last



# PennDOT e-Construction Initiative

Verizon LTE 1:50 PM 94%

< CS-472 Daily Placement Record - 07/05/2016 PDF

CS 472 (3-16)

**pennsylvania**  
DEPARTMENT OF TRANSPORTATION

**Concrete Book**  
**Daily Record Summary**

**DAILY RECORD INFO**

**General**

ECMS Project No: 61345 Work Item: 0303-0001 (CEMENT TREATED PERMEABLE BASE COURSE, 4" DEPTH) Date: 07/05/2016 11:13 AM

Released By: John B Myler/PennDOT Supplier Name: Essroc Supplier Code: ERC02C42

Contractor: Azure Excavation and Grading Type of Curing: White Polyethylene Curing Weather: Clear

**Concrete**

CY For Day: 10 Lot Size: 10 Station (From/To): 1/2

Wasted: 0 Used: 10 Rejected: 0

Placement Method: Chute Type of Placement: Pavement Patching Part of Structure Concrete Placed In: Roadway

**Mix**

Plant-Mixed Delivery: Mixer Truck Class Of Concrete: A

JMF Mix ID: 300 Mix #: T Adj. W/C Ratio: 0.477

Air Meter #: Myler-1 AT/VT Air Meter No: Plum #1 QA/QA Air Meter No: Myler-1

**Slump/Air**

Target Slump: 6.50 in Slump Range: 5.00 in - 8.00 in Slump Upper Limit: 8.00 in

Slump Action Point: 5.50 in - 7.50 in Air Range: 4.00% - 7.00% Air Action Point: 4.50% - 6.50%

**Temperature**

Concrete Temperature Range: 40° - 80° Temperature Action Points: 45° - 75° Air Temperature Range: 40° - 90°

**PTM NO. 1**

**PTM Test**

Specimen Type	Cylinder Series	Random No	Random Fraction	Lot Size	CY Tested	Test Loads
Acceptance Test	PP-AT-A-4	4	0.6	10	6.00 CY	1



# PennDOT e-Construction Initiative

Verizon LTE 11:22 AM 75%

PennDOT Concrete Book Project Dashboard

20159 - 272 / 012

Welcome  
**John B Myler/PennDOT**

1 RECORD HAS ERRORS [Sync Now](#)

Record Type	Record ID	Documents	Errors	Syncs
Daily Placement Record	CS-472	0	1	0
Report of Compressive Strength	CS-458A	0	0	0
Air Meter Calibrations	Overdue: 0 -- Upcoming: 0	0	0	1
Verification Test Summary				



# PennDOT e-Construction Initiative

Verizon LTE 1:51 PM 94%

CS-458A Report of Compressive Strength

Info GENERAL MOLDING TESTING QUALITY CONTROL ACCEPTANCE

Date Completed & Sent to District	Test For:
<b>06/03/2016</b>	<b>Control</b>
Class of Concrete	Series No.
<b>A</b>	<b>PP-AT-A-1</b>
JMF No.	Mix #
<b>T</b>	<b>300</b>
Contractor	Producer
<b>Azure Excavation and Grading</b>	<b>Essroc</b>
ECMS Project No.	S. R. No.
<b>61345</b>	<b>0094</b>
Section	County
<b>007</b>	<b>York</b>

Test Data  
Test Summary  
QC/AT Signoff  
VT Signoff  
Comments  
Summary  
Signatures





# PennDOT e-Construction Initiative

Verizon LTE 1:51 PM 94%

CS-458A Report of Compressive Strength

Info	Sample Age <b>7</b> Days	Test Type <b>QC</b>
Test Data	Break Type <b>B (Cone &amp; Split)</b>	Length <b>12.00 in.</b>
Test Summary	Diameter #1 <b>6.00 in.</b>	Diameter #2 <b>6.00 in.</b>
QC/AT Signoff	Diameter Avg. <b>6.00 in.</b>	Area <b>28.27 sq. in.</b>
VT Signoff	Maximum Applied Load <b>85000 lbs.</b>	Compressive Strength <b>3010 psi</b>
Comments	Test Performed Date <b>06/03/2016</b>	Test Performed By <b>John B Myler/PennDOT</b>
Summary	Test Result <b>Pass</b>	
Signatures		

First Prev [7-Day QC \(1 of 3\)](#) Next Last



# PennDOT e-Construction Initiative

Verizon LTE 1:51 PM 94%

< CS-458A Report of Compressive Strength

Maximum Applied Load Compressive Strength

Test Spec	7-Day QC	7-Day VT
1	85000	84000
2	80000	
Avg.	82500	84000

Info

Test Data

Test Summary

QC/AT Signoff

VT Signoff

Comments

Summary

Signatures

Prev Next



# PennDOT e-Construction Initiative

Verizon LTE 1:51 PM 94%

CS-458A Report of Compressive Strength PDF

CS 458A (3-16)

**pennsylvania**  
DEPARTMENT OF TRANSPORTATION

**Concrete Book**  
**Compressive Summary**

**COMPRESSIVE REPORT INFO**

**General**

Date Completed & Sent to District: 06/03/2016	Test For: Control	Class of Concrete: A
Series No: PP-AT-A-1	JMF No: T	Mix #: 300
Contractor: Azure Excavation and Grading	Producer: Essroc	ECMS Project No: 61345
S.R. No: 0094	Section: 007	County: York

**Molding**

Station Molded: 1	Date Molded: 06/03/2016	Concrete Placed In: Roadway
Weather: Cloudy	Relative Humidity: 50%	Air Temperature: 90° - 50°

**Testing**

**Testing Apparatus**

Make: Forney	Serial No: 1626374	Date Calibrated: 04/03/2016
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**Acceptance Test**

Air Content: 5.10%	Concrete Temperature: 78°	Slump: 5.00 in
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**Verification Test**

Air Content: --	Concrete Temperature: --	Slump: --
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**Quality Control**

First 24 Hrs	After 24 Hrs
Temperature: --	Temperature: --
Method: Cure Box	Method: Cure Box

**Acceptance**

First 24 Hrs	After 24 Hrs
Temperature: --	Temperature: --
Method: Cure Box	Method: Field



# PennDOT e-Construction Initiative

Verizon LTE 1:51 PM 94%

CS-458A Report of Compressive Strength PDF

**MAX APPLIED LOAD / COMPRESSIVE STRENGTH**

Sample Age	Test Type	Max Applied Load	Compressive Strength	Test Performed On	Test Performed By	Pass / Fail
7-Day	QC	85000	3010	06/03/2016	John B Myler/PennDOT	Pass
7-Day	VT	84000	2970	06/03/2016	John B Myler/PennDOT	Pass
7-Day	QC	80000	2830	06/03/2016	John B Myler/PennDOT	Pass

**QUALITY CONTROL**

Molded By	<i>Alan Hillegas</i>	Alan Hillegas/PennDOT	06/03/2016 01:36 PM
Witnessed By	<i>John B Myler</i>	John B Myler/PennDOT	06/03/2016 01:36 PM
<b>Cert No</b>	57438578	<b>Method Of Capping</b>	Neoprene
7-Day Tested By	<i>John B Myler</i>	John B Myler/PennDOT	06/03/2016 01:36 PM
Witnessed By	<i>John B Myler</i>	John B Myler/PennDOT	06/03/2016 01:36 PM
28-Day Tested By	<i>John B Myler</i>	John B Myler/PennDOT	06/03/2016 01:36 PM
Witnessed By	<i>John B Myler</i>	John B Myler/PennDOT	06/03/2016 01:36 PM
7-Day Tested By	--	--	--
Witnessed By	--	--	--
<b>Date of Loading</b>	06/03/2016	<b>Date Discontinued</b>	06/03/2016

**VERIFICATION TEST**

Molded By	--	--	--
Witnessed By	--	--	--
<b>Cert No</b>	--	<b>Method Of Capping</b>	--
7-Day Tested By	--	--	--
Witnessed By	--	--	--
28-Day Tested By	--	--	--

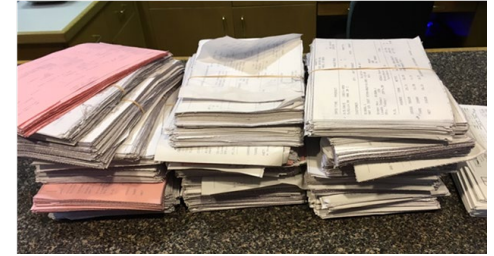
Info, Test Data, Test Summary, QC/AT Signoff, VT Signoff, Comments, Summary, Signatures



# Electronic Ticketing

## Why Electronic Ticket?

- Eliminate Paper Tickets
- No More Lost Tickets
- Provide Materials and Tonnage Verification
- No Time-Consuming Ticket Sorting
- Quickly Summarize Tickets for Contractor Payments
- Reduce Worksite Hazards For Inspectors Frequently Dodging Trucks



# Why GPS Tracking?

Information can be used for analysis and forensics of vehicle histories. For instance:

- Designed To Reduce Costs Associated with Over-Trucking or Under-Trucking
- Eliminate Bottle-necks at Paver and/or Plant
- Hold Drivers Accountable For Performance and Production
- Optimize Cycle Times – Move More Tonnage
- Virtual Shift Tickets to Automate Payroll Processes
- Scales Integration to Help with Job Costing / Future Bidding
- Alerts / Notifications to Management When Benchmarks Fall Outside of Norm
- Track Paver Speed for Production

## ▶ Electronic Ticketing Pilots

- In 2017, District 11 Piloted e-Ticketing on 4 Group Roadway projects in Allegheny County.
- The Districts Special Provision took the e-Ticketing one step farther to also include GPS tracking of equipment.
- This resulted in the Special Provision titling of: **Electronic Delivery Management System For HMA/WMA Material.**
- Another Special Provision was also added for tracking the delivery of milled materials to a specified plant or stockpile site.
- About to enter our 4<sup>th</sup> season.

# Special Provisions Overview

- GPS tracking of all equipment associated with paving and milling operations
- Full GPS integration with plant scale system
- Ability to measure and track material from plant to final placement destination
- Provide the data real-time with a web-based system compatible with iOS and windows environments



## ▶ FleetWatcher Features

- GPS and Ticketing all in one system.
- System is fully integrated with the Asphalt Plant
- Ticket data is available in a CSV file format

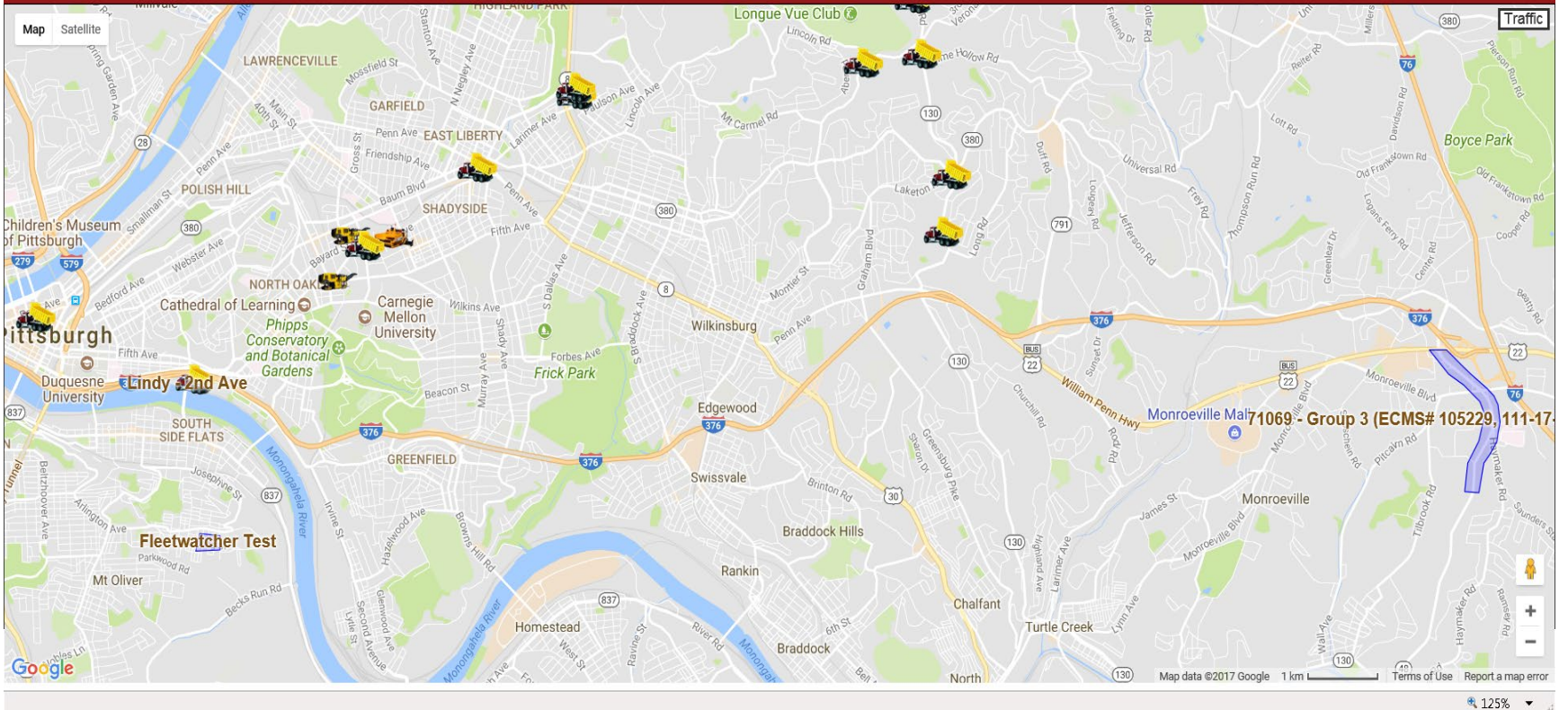


# Fleet Watcher Real-Time Mapping

FleetWATCHER Home Reports Material Delivery E-Logs My Company Help Logout

11:12:31 AM

Welcome Michael Grace from A. Folino Construction, Inc. Control Panel Saved View Equipment Save Current View



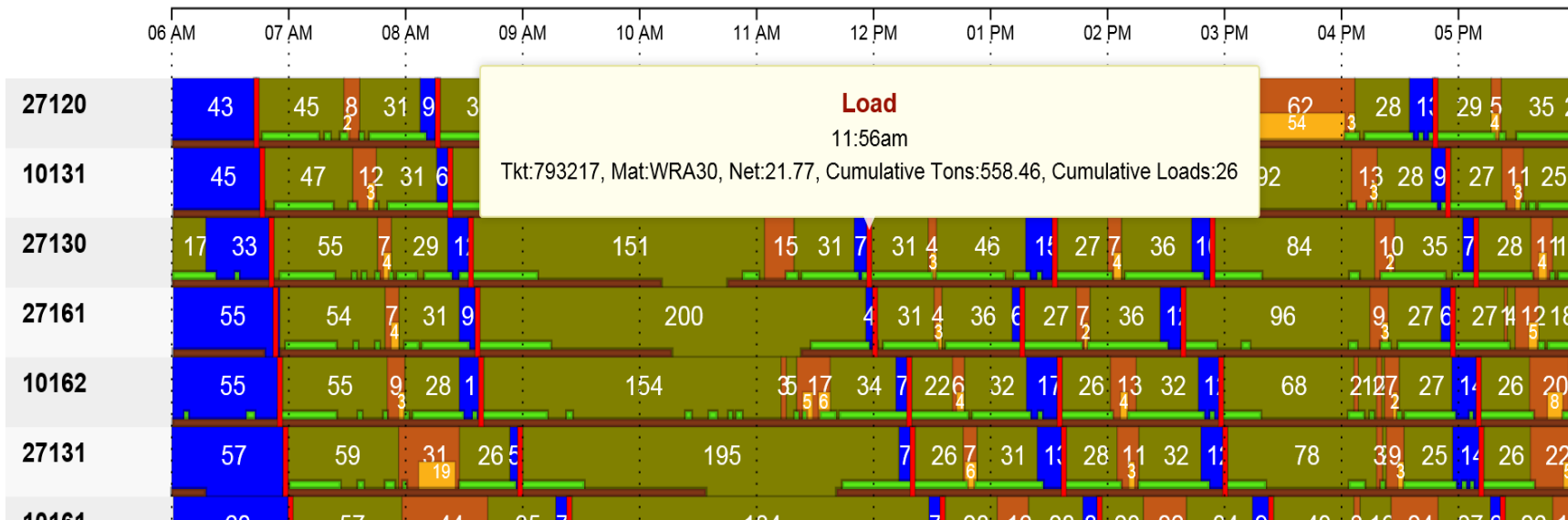
# Fleet Watcher LCA Line Graph Report

## Default Legend

- Travel
- Engine On
- Moving
- Transport

## Geozone Legend

- Travel
- Engine On
- Moving
- Transport
- Lindy - 2nd Ave
- A. Folino Shop
- (( 71069 - Group 3 (ECMS# 105229, 111-17-7135-3) PAVING ))
- ( 53101 )
- Load



# ▶ PennDOT e-Construction Initiative

- E-Ticketing 2.0
  - District 11 Pilot Projects
  - PennDOT Evolution of the E-Ticketing Process
- Construction Contractors App Access and Functionality
  - APC STIC
  - Providing Access Improves Both Parties
- Support for PennDOT Maintenance Systems
  - Construction Data Evolves Into Maintenance Data
  - Guiderail Mobile App
- RFID Tags
  - Material Sample Tracking
  - Asset Management
  - PreCast Products

# ➤ PennDOT e-Construction Initiative

- Photographic Documentation and Photogrammetry  
Contour Mapping Services
  - District 11 Pilot Projects
  - Plans overlaid on Arc GIS Map
  - Ground and UAS photogrammetry
  - Mobile App for inspection photos with Geo Tags
- Plan Less 2025 i.e. 3D Model Designs
  - Construction will be ready...

# ► PennDOT's Return On Investment

Project	Initiation Dates	Development Cost	Overall Savings
<b>CDSv3</b>	<b>August 2012</b>	<b>\$ 4.0 million</b>	<b>\$13.5 million</b>
Release 1 implemented 8-18-14			
<b>Mobile Construction</b>	<b>July 2012</b>	<b>\$2.3 million</b>	<b>\$39 million</b>
Sprint 1 implemented 9-6-12			
Sprint 74 implemented 4-1-19			
<b>PPCC</b>	<b>October 2011</b>	<b>\$6.3 million</b>	<b>\$34.4 million</b>
Release 1 implemented 9-13-13			
<b>eCAMMS</b>	<b>January 2012</b>	<b>\$6.9 million</b>	<b>Being assessed</b>
Implemented April 2014			

## Contact Information

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**Phone: 412-429-5063**