

PAPA 59th Annual Asphalt Pavement Conference

PennDOT's 2019 Construction Program & Initiatives

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Deputy Secretary for Highway Administration
PA Department of Transportation

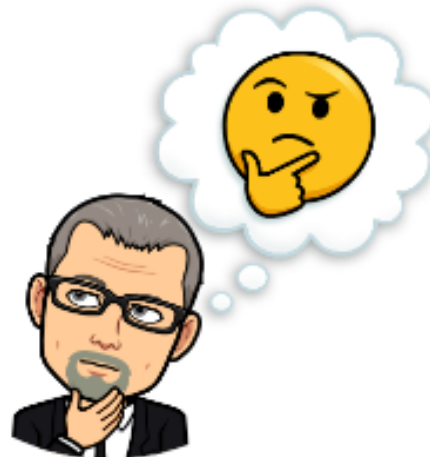
January 28-30, 2019

PENNSYLVANIA



PAPA's 59th Annual Conference

The Hotel Hershey®



PennDOT – A Very Large Enterprise



What We've Done – Where We Are Headed

- Relationships
- Diversity and Inclusion
- Asset Management
- Evolution
- Innovation



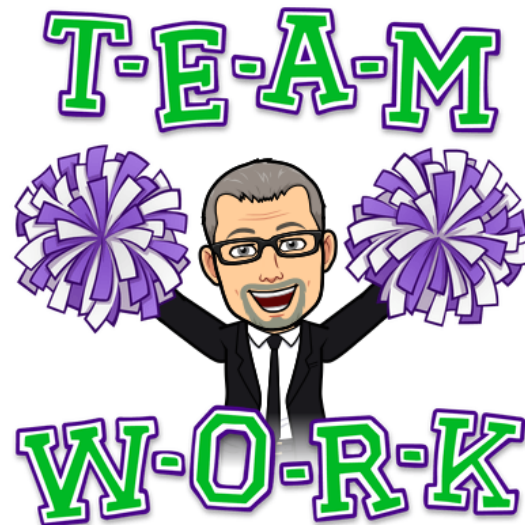
Relationships

- PennDOT Connects
- Partnering
- Future Leaders
- District and Regional Sessions
- Winter Schools
- Workforce Development



Diversity and Inclusion

- ✓ 2017 Industry Outreach
- ✓ 2018 Outreach Sessions
- ✓ ECMS process mapping
- ✓ Small/Diverse Businesses
- ✓ Training



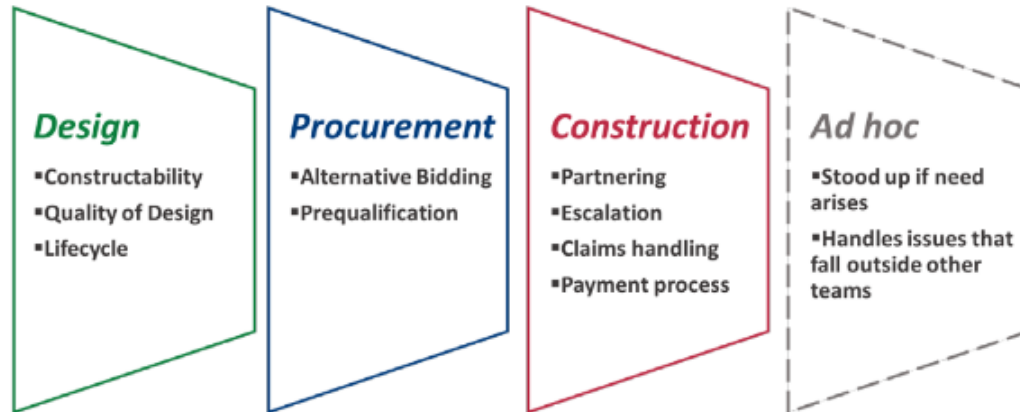
Asset Management

- Transportation Asset Management Plan (TAMP) draft approved by FHWA
- MAP-21 Performance Metrics
- Pavement Asset Management System (PAMS)
- Bridge Asset Management System (BAMS)



Quality

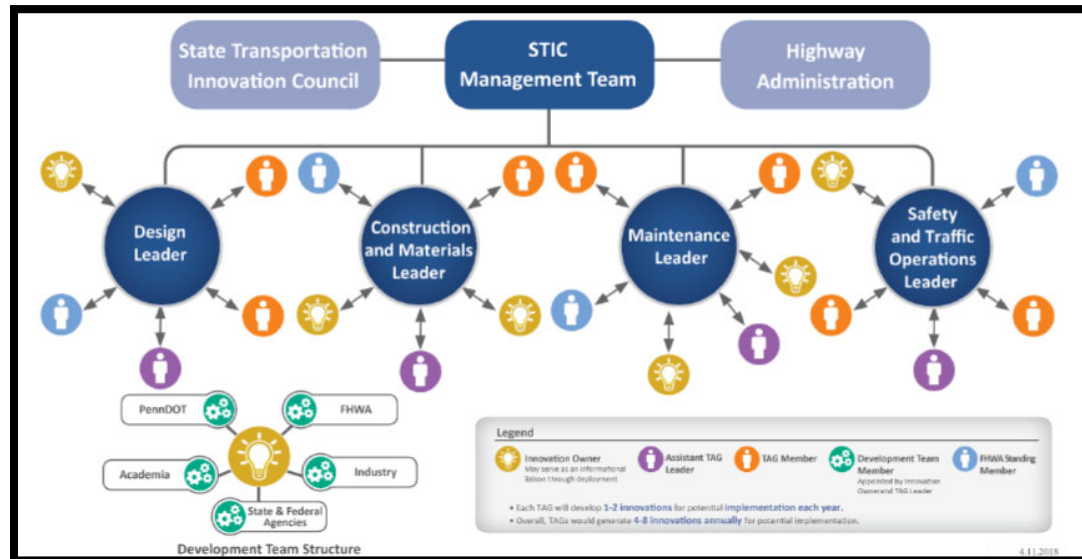
- TQI
 - Design
 - Construction
 - Procurement



- RAC
 - Reformatted Approach

- STIC
 - Restructured

- QICs



Quality Improvement Committees

Existing QIC's

- Asphalt Paving Quality Improvement Committee (APQIC)
- Concrete Paving Quality Improvement Committee (CPQIC)
- Aggregate Quality Improvement Committee (AQIC)
- Concrete Quality Improvement Committee (CQIC)



New QIC's

- Pennsylvania Association of Asphalt Material Applicators Quality Improvement Committee (PAAMA-QIC)
- Cement Quality Improvement Committee (CEMQIC)
- Slag Quality Improvement Committee (SlagQIC)



Asphalt Paving QIC (APQIC)

Activities and Accomplishments

- Stone Matrix Asphalt (SMA)
- Longitudinal Joint Density
- High Friction Surface Treatments (HFST)
- Minimum Effective Asphalt
 - 9.5 mm Project Data Collection
- Full Depth Reclamation (FDR)
- Percent Within Tolerance (PWT)



Asphalt Paving QIC (APQIC) - (Cont'd.)

Activities and Accomplishments (continued)

- Long Life Asphalt Pavement (LLAP)
- High RAP Plant Mix for 19 mm Binder/Leveling Course on Low Volume Roads
- NECEPT Subcommittee
 - Course Materials Update
 - Technician Performance Evaluation
- Mixture Performance Testing Subcommittee

OS-600C (12-15)

 **pennsylvania**
DEPARTMENT OF TRANSPORTATION

MEMO

DATE: May 7, 2018

SUBJECT: Use Guidelines for 19.0 mm Warm Mix Asphalt High RAP Mixtures for Low Volume Roadways

TO: District Executives

FROM: George W. McAuley, Jr., P.E. 
Deputy Secretary for Highway Administration

The Department has worked with the Pennsylvania Asphalt Pavement Association to develop a standard special provision (SSP) facilitating the use of higher amounts of reclaimed asphalt pavement (RAP) into 19.0 mm asphalt mixtures for use on low volume roadways. This SSP was developed in support of the Department's RoadMaP initiative to expand the cost-effective use of RAP on our roadways. The attached SSP allows up to a maximum of 50% RAP by weight in the mix, however, existing approved mixes with lesser quantities of RAP may also meet the requirements of the SSP.

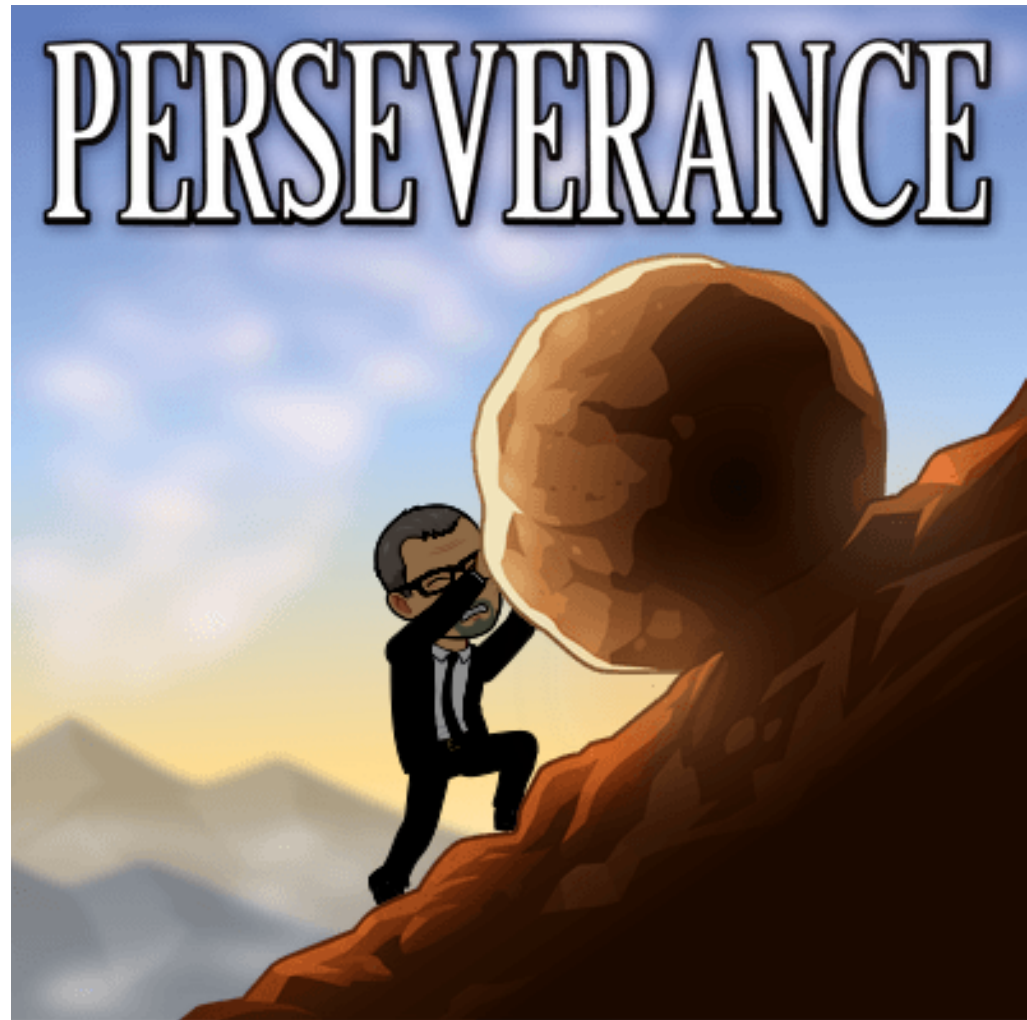
This memo outlines the use guidelines for contracting the paving work via ECMS using the SSP. The Department is also working on separate mechanisms to use this specification for Department force paving operations, which will be addressed separately from this memo.

Index or Category: Provisional Specification Related
Sequence ID: 4111
Version: A
Provision Name: c0411 ITEM 4411-0010 SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BINDER COURSE (LEVELING), - HIGH RAP
Status: Active
District: CO

Evolution

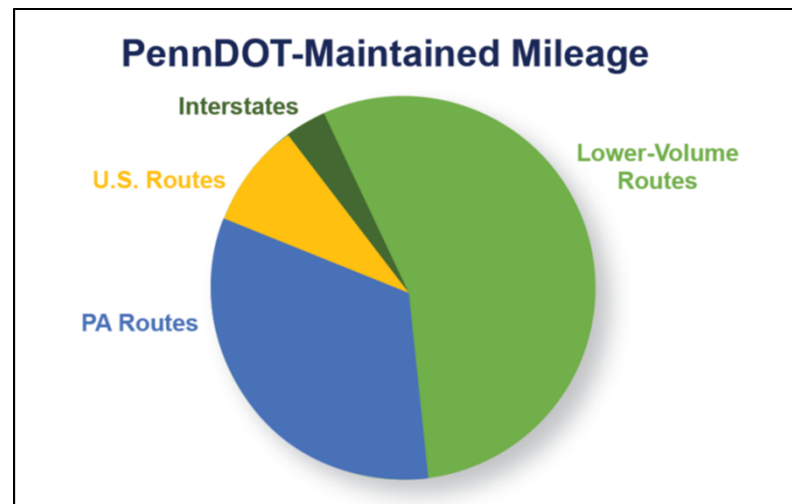
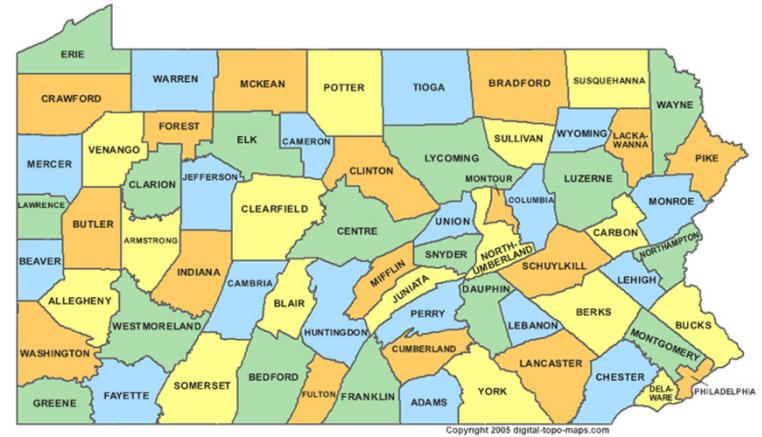
- Planning
- Design
- Construction
- Maintenance

WE GOT THIS!



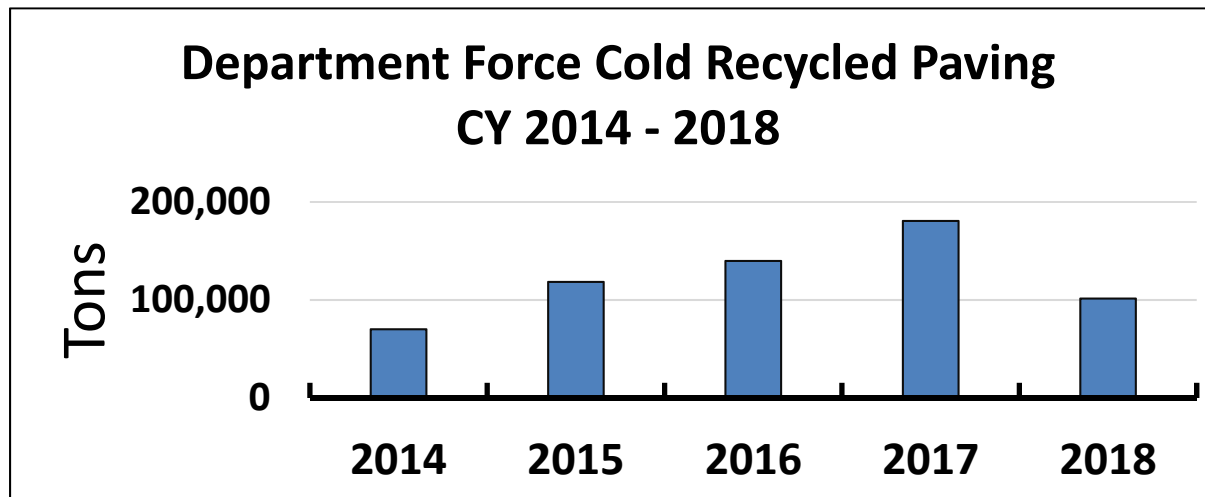
County Accreditation

- District Accreditation Plans
- District Business Plans
- Core Maintenance
- Secondary Road Improvement



RAP Paving

- Education on Operations and Logistics
- 5-year paving plans evolving
- Some Funding by Formula, some by Project



Cold Recycled Pavement - D12 Special Provision

- Contractor **mills** pavement on SR 70
- Contractor **hauls** millings to Stockpile off exit 1
- Department **provides** pugmill and the operator
- Contractor **hauls** millings to projects (SR 3021 & SR 3023) being paved with cold recycled base course
- Contractor **places** cold recycled base course



19.0mm High RAP WMA Binder/Leveling

Why High RAP Mixes?

- Performance risk on low volume routes
- RAP availability
- Reduce cost = more mileage

Direction

- Build structure
- Up to 50% RAP in WMA
- Simplify mix design approvals
- Provide guidance
- Mix Design Approval and Production
- Acceptance Sampling and Testing



9.5mm High RAP WMA Wearing

Use Guidelines for Low Volume Roadways

- Industry / PennDOT Team working together on SSP
- Wearing course more sensitive to high RAP effects.
- Acceptance Sampling and Testing
- Limit risk on Pilot roads
- **Future 25 mm High RAP Mix for Base?**



SMA with RAP

“Second Tier” Premium Mix

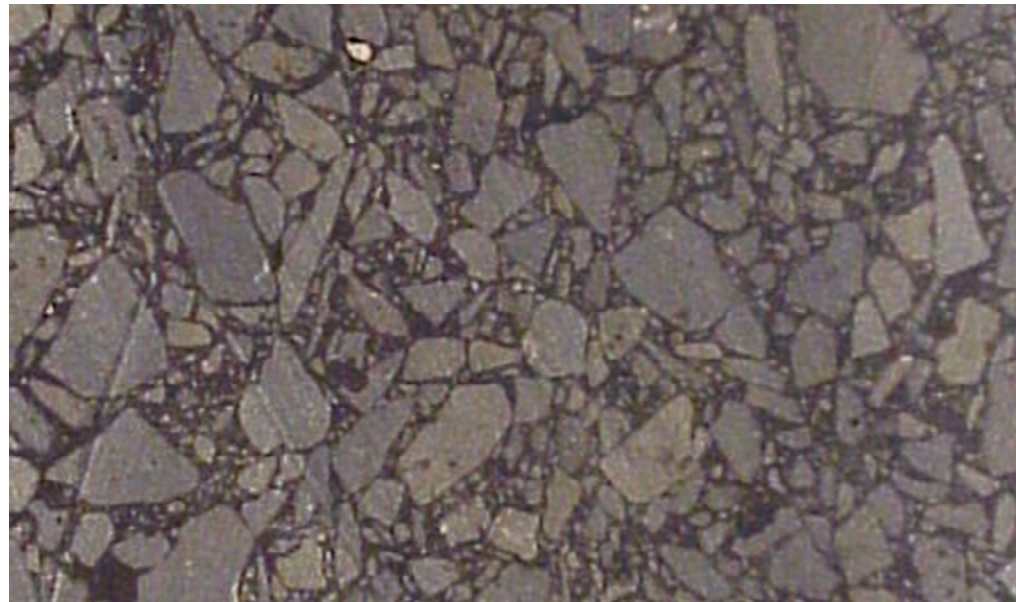
- Roads that can Accept Additional Risk

Environmental and Economical Benefits of RAP

- Pavement Performance more Cost Effectively

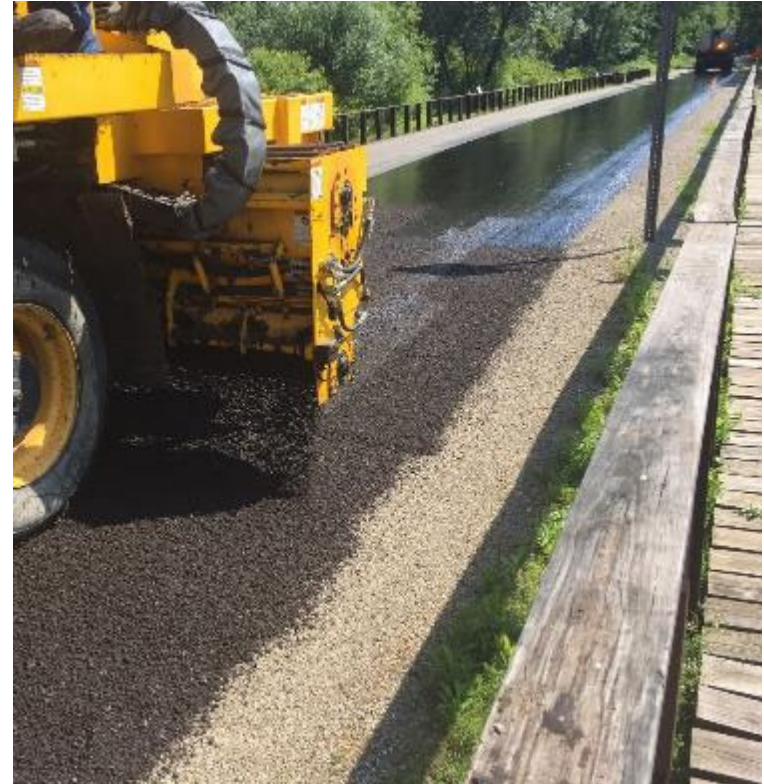
Current Status

- Initial Discussions
- Testing (trial and error)
- Pilot Project(s)



Seal Coat Aggregate from RAP

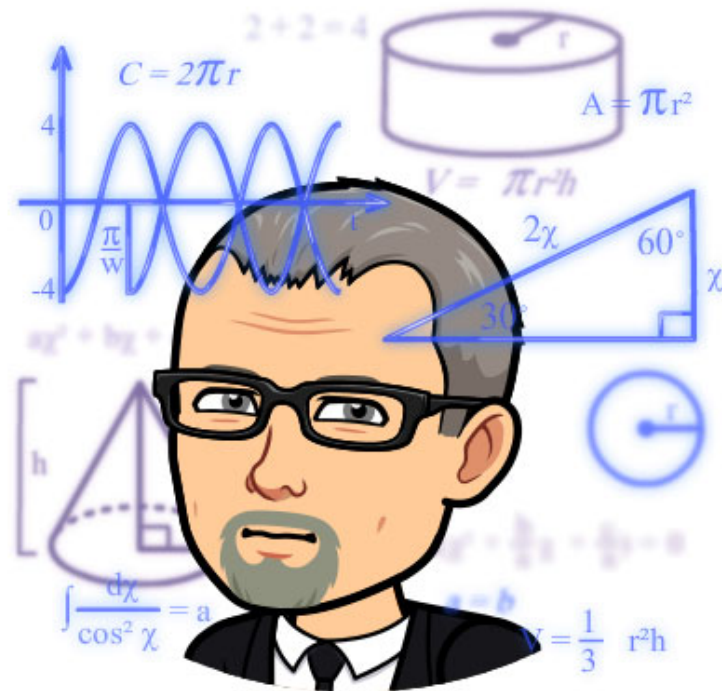
- The 1/4" aggregate size is the critical size in seal coats
- Differs from "Normal" seal coats in several ways
 - Need to monitor the roadway temperature.
 - RAP must be from a PennDOT road. (Bulletin 14 aggregates)
 - Only for SRL-L roads (under 1000 ADT) unless DME approves
- Does not look exactly like virgin aggregate Seal Coat



Innovation – RD&D

- Deployment is where we struggle
- Office of Operations and Performance

- Research
- STIC
- New Products
- QIC's
- TQI



New Technology Approval Process(es)



PennDOT & Industry Partnering

- Working together to address the items discussed (both sides involved in the heavy lifting)
- Pushing the right technologies forward that ultimately improve performance, quality, time efficiencies, cost efficiencies, etc.
- Initial use of experimental or pilot projects



Technical Assistance

New Products Evaluation Program/LTAP



New Products Evaluation Program (NPEP) for Lower Volume Local Roads

PUB 716 (2-15)

Approved Products for Lower Volume Local Roads



PUB 447 (4-18)

LTAP Provides Training and Technical Assistance for Over 6,000 Local Government Personnel Annually FREE OF CHARGE



Technical Assistance



Extended-Season Paving

2017 piloted new Extended-Season Paving Specification

2018 specification refined and issued:

- From October 31 to December 15, or from April 1 to March 1
- From October 15 to November 15 (high ESALs, PG 76-22 wearing courses)
- All temperature and surface requirements still apply
- Enhanced quality control and documentation required
- Spring inspection with performance criteria

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31					1 X	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 X	2	
3	4	5	6	7	8	9
10	11	12	13	14	15 X	16
17	18	19	20	21	22	23
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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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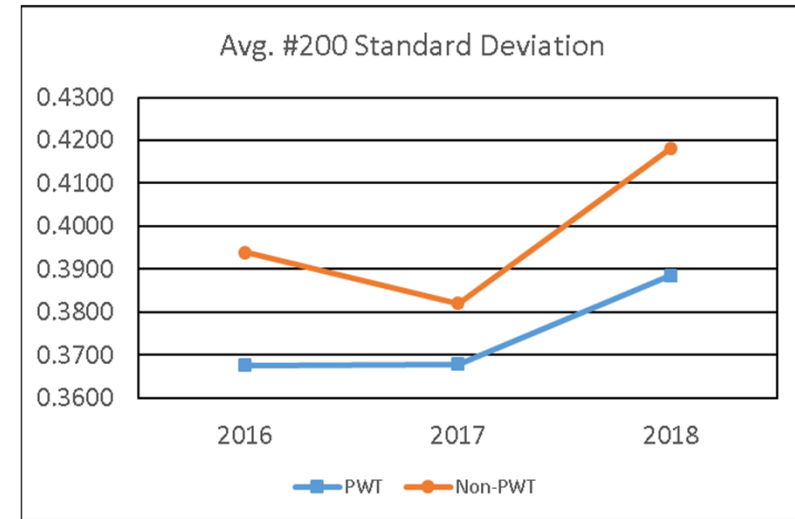
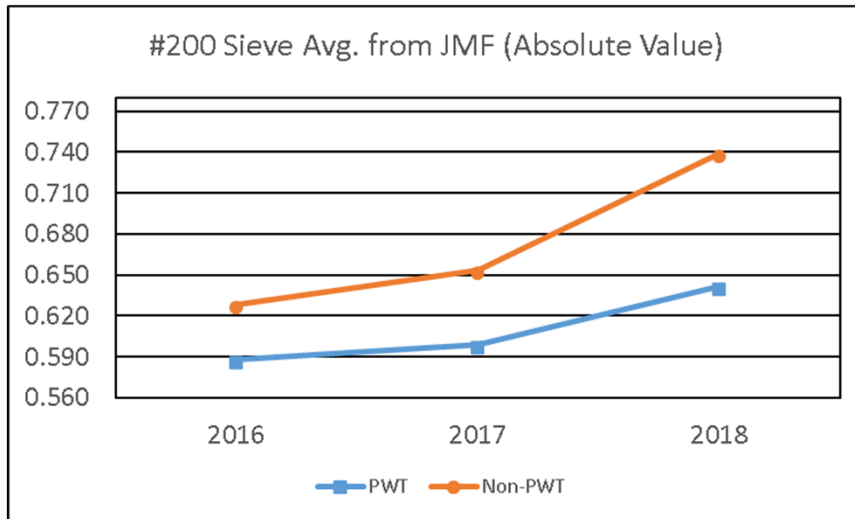
Percent Within Tolerance (PWT)

- 286 PWT projects Let in 2018
- 1,583 PWT lots analyzed in 2018
- 2% average Incentive
- 76% of Lots earned Incentive
- 2018 Incentives, \$3.6 Million
- 2018 Disincentives, -\$1.1 Million
- Net: \$2.5 Million



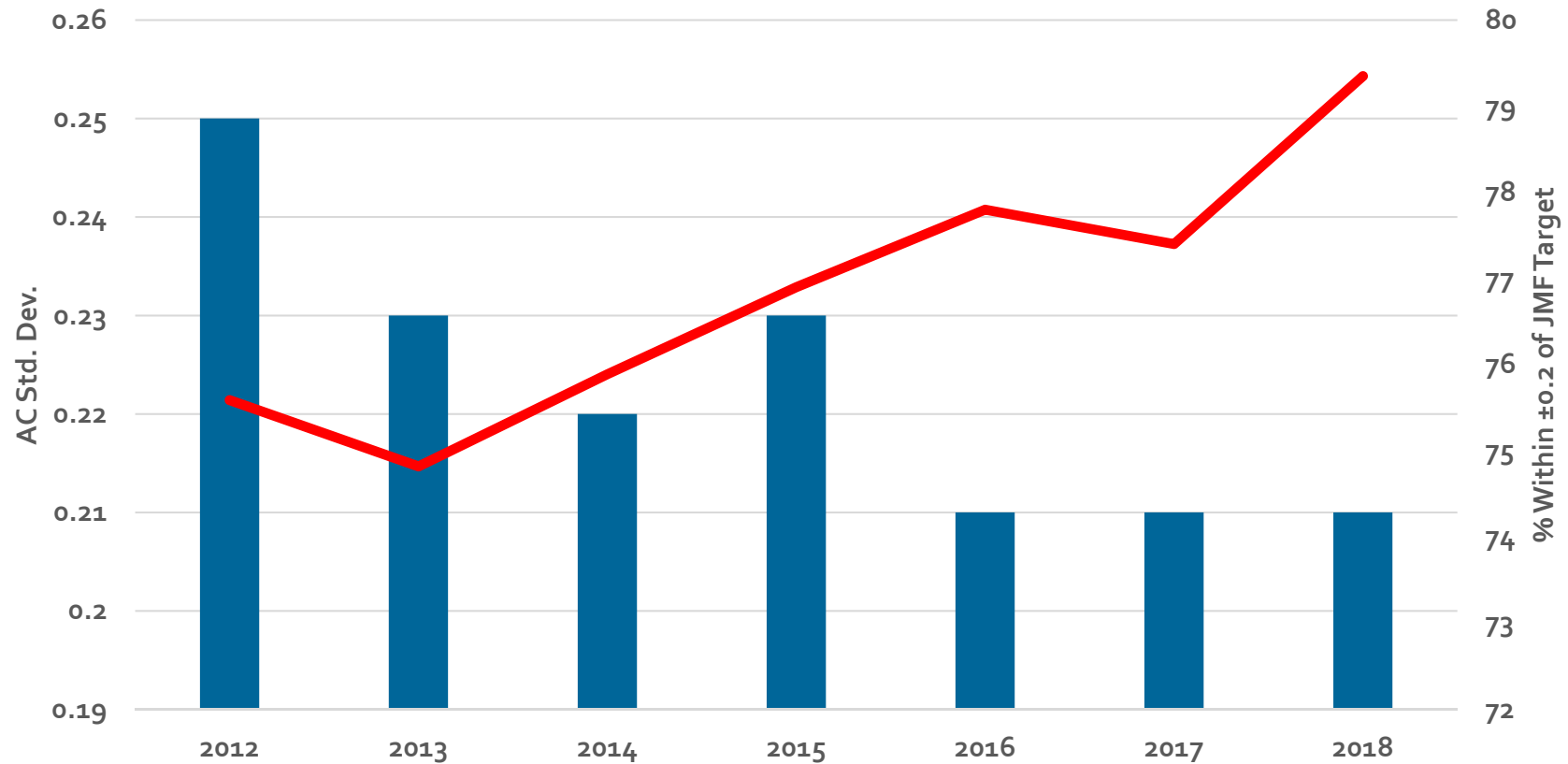
Percent Within Tolerance (PWT)

	Primary Control Sieve (PCS)					
	Total #200 PWT Lots	Avg. Pay Factor	Total #8 PWT Lots	Avg. Pay Factor	Total #4 PWT Lots	Avg. Pay Factor
2016 PWT*	437	101.12	294	100.01	143	100.74
2017 PWT	1114	100.97	769	99.47	345	100.23
2018 PWT	1553	100.61	902	99.36	651	101.18



Quality – Trends & Targets

All 9.5 mm Wearing Courses – Std. Dev. for AC



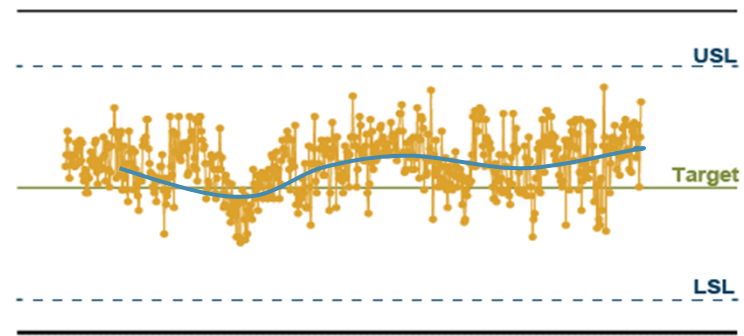
Bars = AC Std. Dev.

Line = % Subplot Results within ± 0.2 of JMF Target

ISO for Asphalt → PASIN

Pennsylvania ASphalt Improvement Network

- ISO based Quality Management System (QMS)
- QC data can portray consistency
- “Paperwork” is cumbersome
- IT systems will be the solution
- Consistent quality will yield longest performing assets



Long Life Asphalt Paving – LLAP

Many Best practices

- MTV required
- Tack Every Layer
- PWT spec
- Incentives
- Longitudinal Joint Spec

Balanced Asphalt Mix Design Program

- Predict and balance rutting and cracking
- Traffic loads
- Weather conditions
- Aging

Future Direction

- SMA projects only
- Robust research effort needed
 - Select best test(s)
 - Identify spec. limits



LLAP Full Depth Applications

District 2 Potters Mills Gap, SR 0322 Bo6

- GOH project
- Full depth pavement on new alignment
- Includes asphalt rich base layer
- Paving scheduled 2019 / 2020

District 11 SR 28 A55

- Lindy Paving Project
- Break and seat project
- Paving scheduled 2018

District 4 SR 0084 450

- James Morrissey project
- Full depth asphalt reconstruction
- Includes asphalt rich base layer
- Paving scheduled 2019 to 2022



Performance-Based Specifications

Performance related testing

\$500,000 balanced asphalt mix design research project.

- Evaluate cracking tests.
- Rutting test – Hamburg wheel tracking test.



Semi-Circular Bend Test (SCB)



Hamburg Wheel Tracking Test (HWT)

HOLA?

Lack of Trained Personnel

- Seasonal need

HOLA comes with extra costs

- Overtime
- Travel
- Sample security



2018 Flood Impacts

- \$117 Million total in Emergency Funding
- In 2018 \$22 Million has been bid and \$18.5 Million anticipated for remainder of the year
- Secondary Road Improvement Program impacts

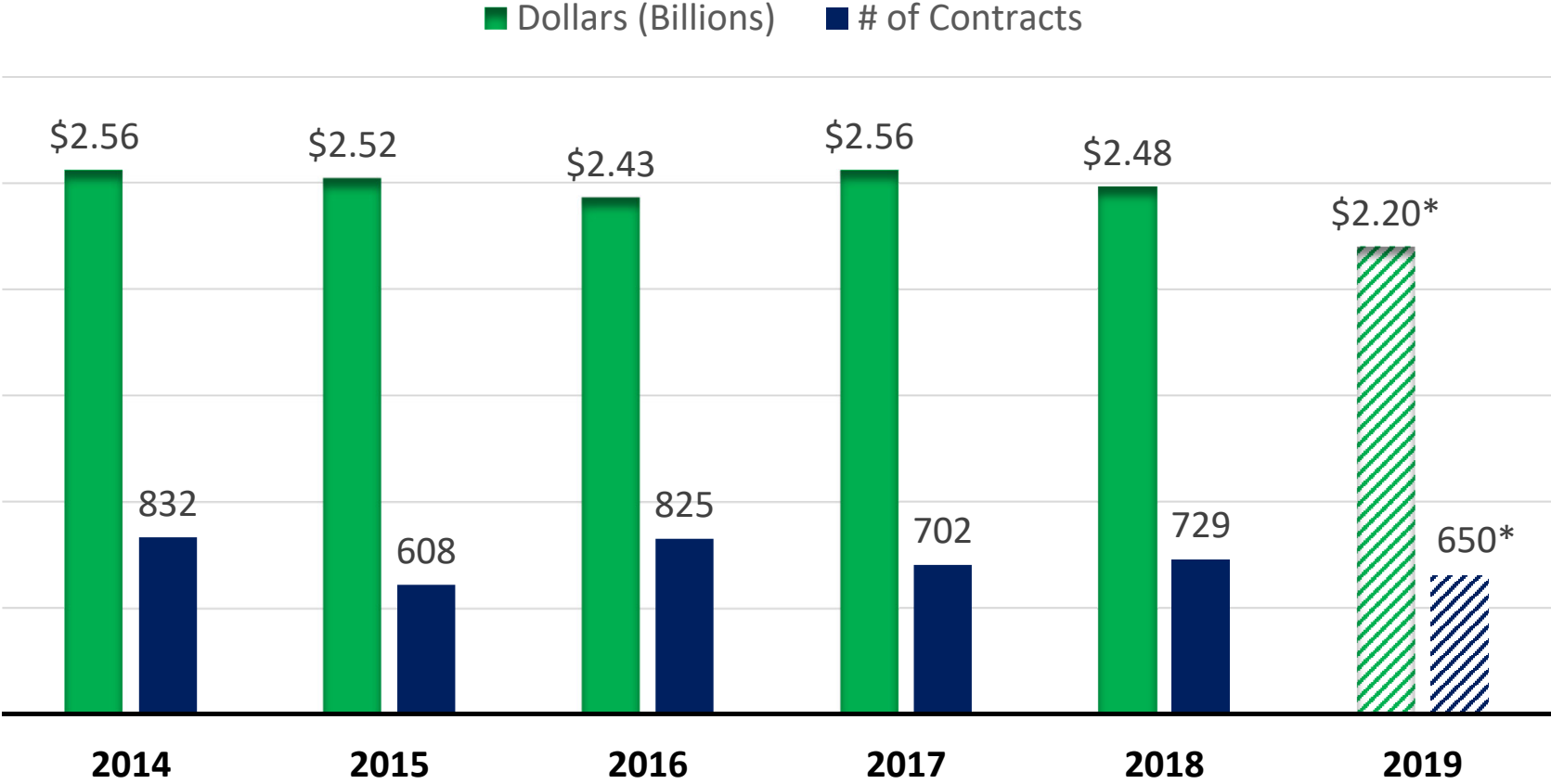


Surface Improvement Miles

	2014	2015	2016	2017	2018
Structural restoration	94	63	70	80	209
Resurfacing	1,253	1,769	1,785	2,360	2,112
Surface repairs	3,270	3,367	3,444	3,376	2,940
Total miles of state maintained highways improved	4,618	5,199	5,299	5,816	5,261



Contract Letting Trends



* Estimated 2019 Projections

Construction Program

For 2019 we anticipate up to 15 projects will be greater than \$20 Million



Pennsylvania's Interstate System

Annual Funding Need*

\$460M

- Current Interstate Funding

\$1.2B

- Cyclic Asset Based Need
- Maintain existing highway and bridges

\$1.5-\$3B

- Address Reconstruction Needs
- Modernization
- Strategic Investments

*Needs are based on current dollars, unadjusted for inflation

Project Distribution

	Cost Based Percentage					
	2014	2015	2016	2017	2018	2019*
Highway	59%	69%	53%	64%	63%	50%
Bridge	36%	24%	35%	21%	26%	30%
Other	5%	7%	12%	15%	11%	20%

*Projections for 2019 from MPMS Classification

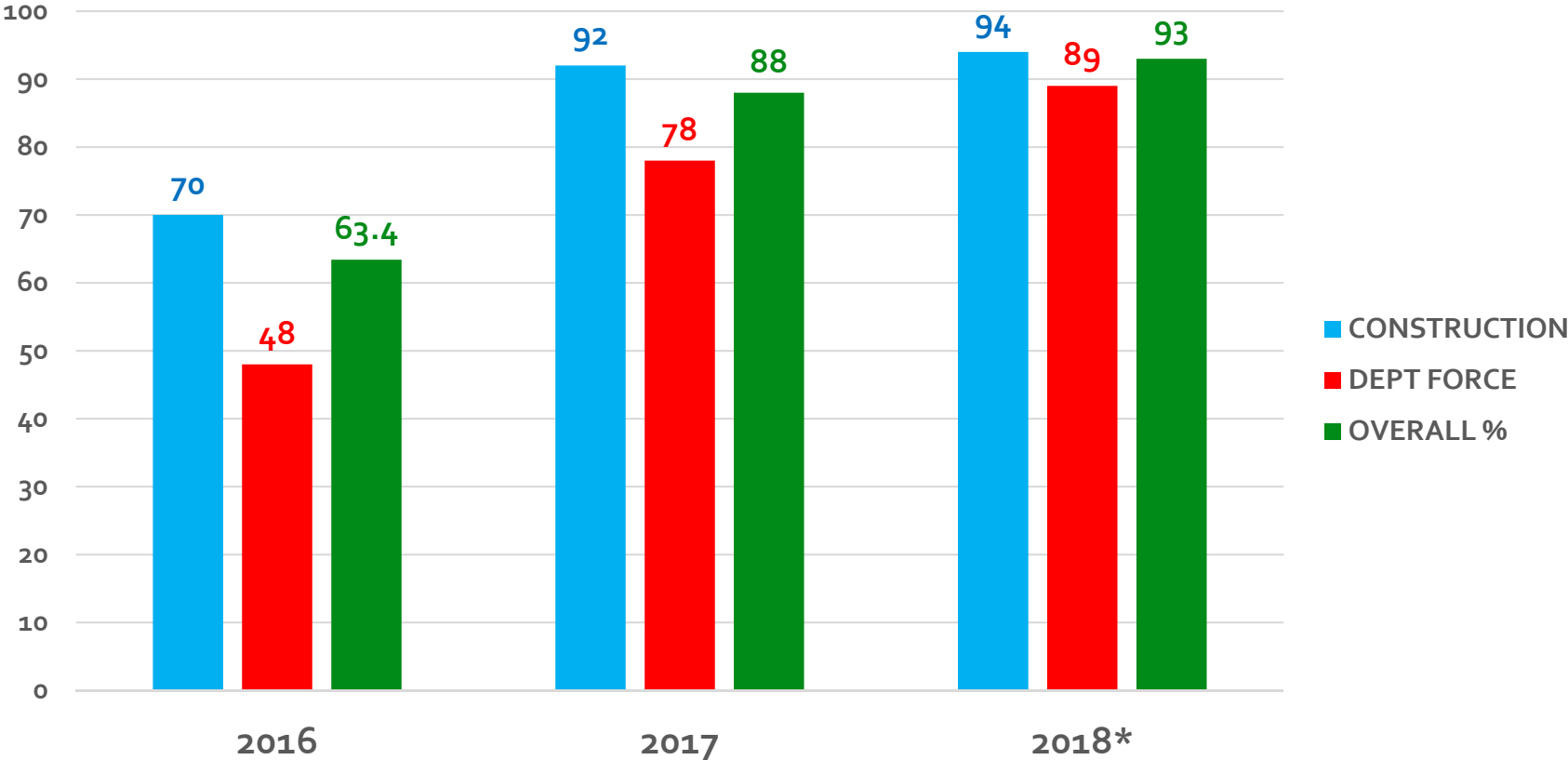
Construction Material Quantities

Material	2014	2015	2016	2017	2018 To Date	2019*
Asphalt (Tons)	6,118,528	6,750,851	6,105,573	7,591,403	7,182,059	7,290,000
Structural Concrete (CY)	319,582	385,717	371,221	359,393	404,844	440,000
Concrete Paving (SY)	670,206	1,007,192	1,042,982	801,621	674,394	670,00
Aggregate (Tons)	9,551,075	11,586,949	9,881,639	10,807,613	8,996,689	8,150,000

* Estimated Projections

Warm Mix Asphalt (WMA)

WMA Percentage



Moving Forward into 2019

We look forward to working with PAPA and its members in 2019!

THANKS!



Any Questions?

