

# Asphalt Quality Assurance

## *Challenges and Opportunities*



**NESMEA 2019 Portland, ME**

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# Challenges

- **Keeping Specifications Current**
  - **Percent Within Limits (Density) *NEW!***
  - **Sampling at the Paver *NEW!***
- Tracking Samples
- Communication

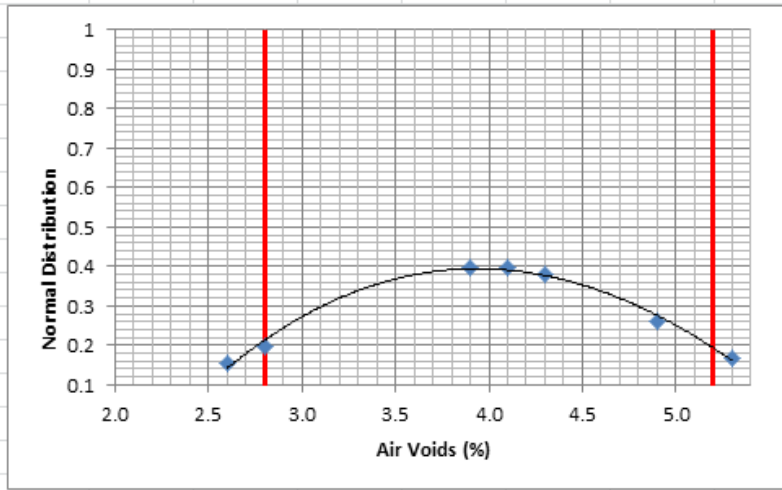




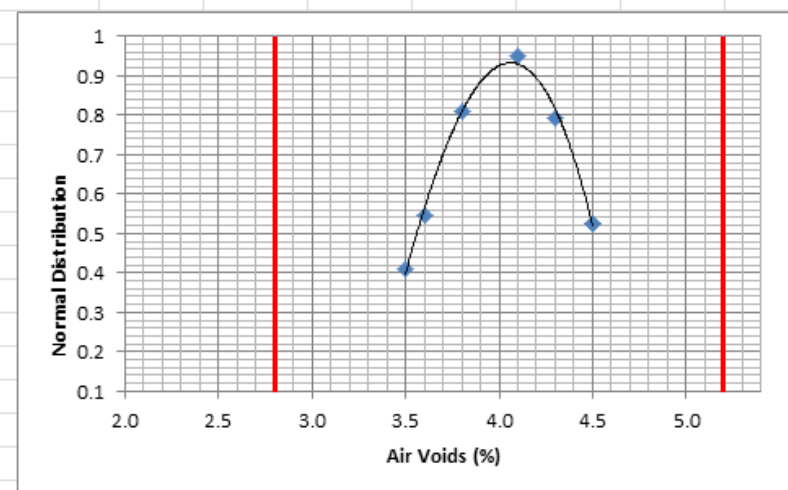
# Keeping Specifications Current

## PWL

			AV (%)
Target	4%		4.1
Average	3.99		4.3
Standard Deviation	1.001		4.9
Number of Results	7		5.3
PWL	79		2.6
Pay Adj	-5.5%		2.8
			3.9



			AV (%)
Target	4%		4.1
Average	4.04		4.5
Standard Deviation	0.416		4.5
Number of Results	7		4.3
PWL	100		3.6
Pay Adj	2.5%		3.5
			3.8

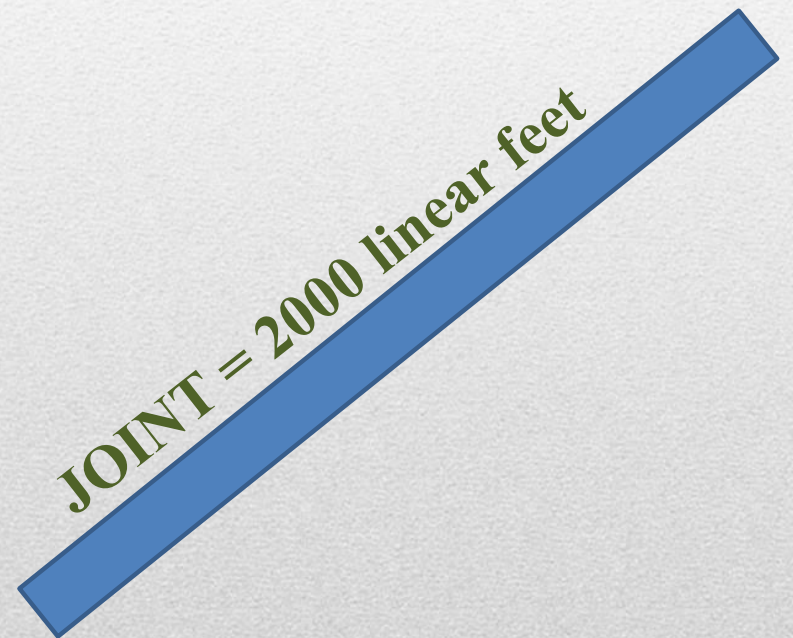


# HMA Density Lot Sizes w/PWL

**MAT**



**JOINT**





# Sampling at the Paver

## 2019 Season:

- UCONN CAPLab - study sampling at the project site (paver)
- Behind the screed – Out of wings – Out of paver hopper/MTV
- ~~Six~~ Five projects – AirVoids - Asphalt Content - Visual – No bias





# Mixture Sampling

- Project Sampling Method – open to options proposed by Contractor
- Reheating samples
- Sample security
- Contractor concerns w/ technician availability
- Sampling certification/qualification

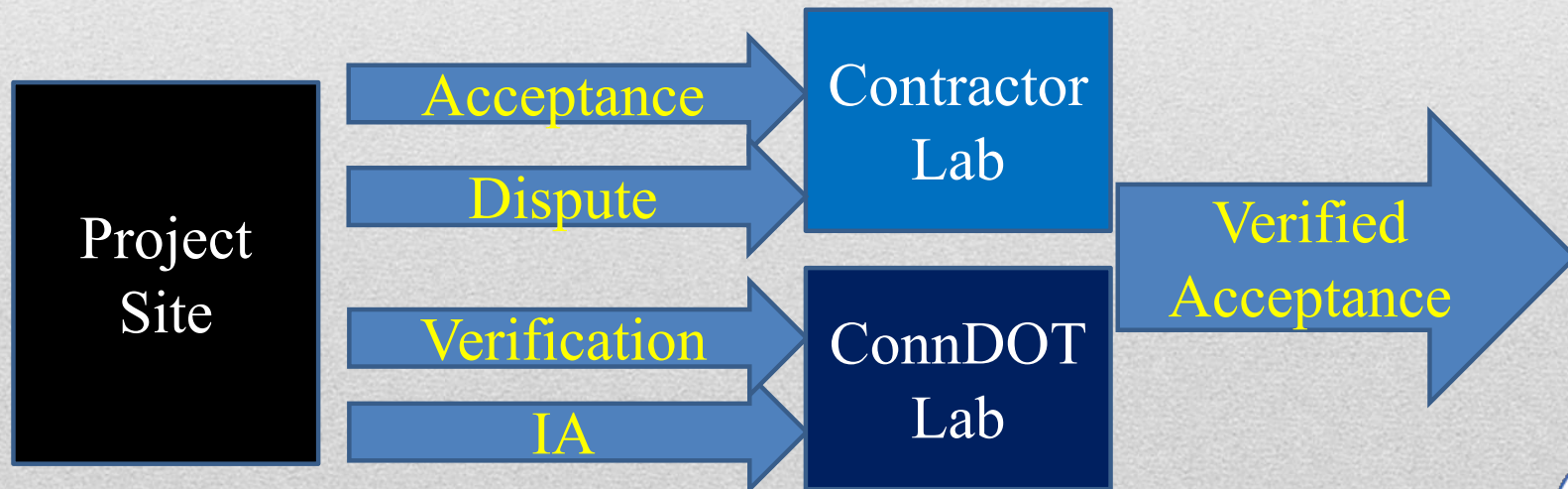




# Mix Acceptance Procedure

## 2019 Season:

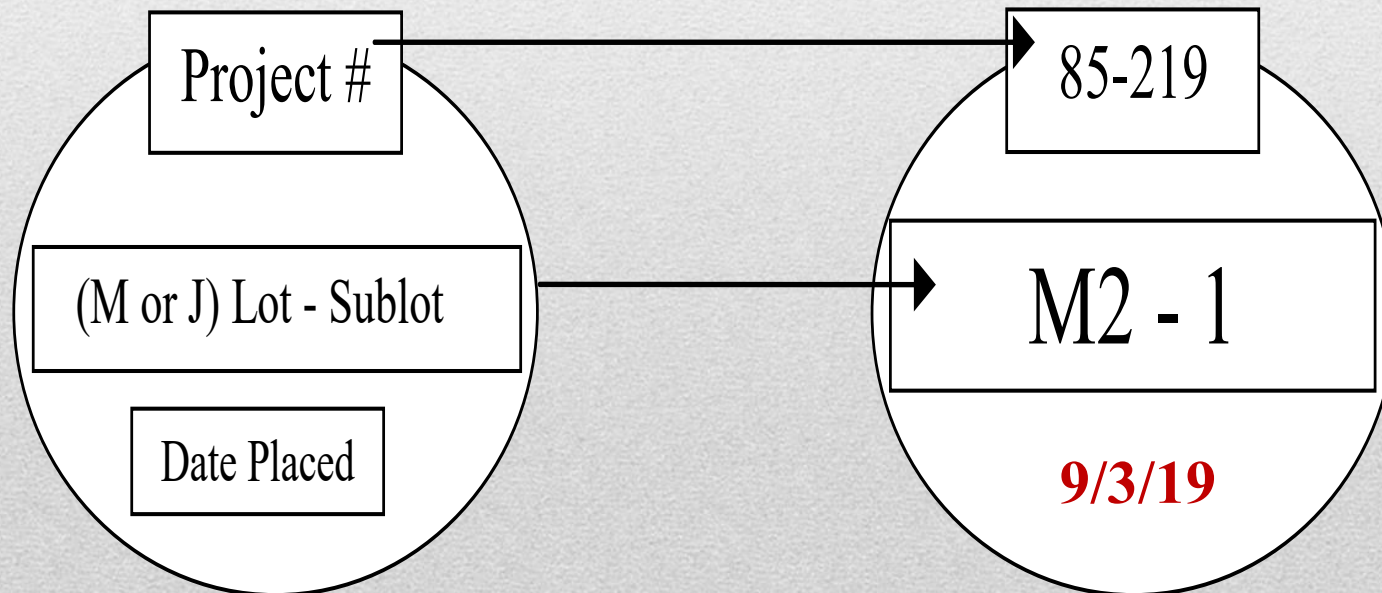
- Department witnessed sampling at the project site (paver)
- Split samples to the Contractor and the Department



# Tracking Samples

## Common Error

Documentation and density core lot labeling does not match.





# Communication

## Bituminous Concrete Summary Testing Report - 2019 Season

Printed: 9/19/2019

### 2019 Plant Testing Results

Table 1. Pay Adjustments (Non-PWL)

	Voids		Binder Content	
	245	%	245	%
Total	245	%	245	%
Neg	47	19	17	7
Pos	180	0	0	93
100%	18	81	228	93

Table 2. Pay Adjustments (PWL)

	Voids		Binder Content		VMA	
	100	%	99	%	100	%
Total	100	%	99	%	100	%
Neg	36	36	4	4	29	29
Pos	64	0	94	96	70	71
100%	0	64	1	96	1	71

### 2019 Field Density Results

Table 3. Pay Adjustments

	MAT Lots		JOINT Lots	
	211	%	131	%
Total	211	%	131	%
Neg	53	25	40	31
Pos	114	75	67	69
100%	44	75	24	69

Table 4. Average In-place Density by Mix Type

Cores	Superpave	Warm Mix	Polymer	*Total
Mat	93.99	93.68	93.71	
Joint	92.56	91.63	92.22	
Samples	753	383	557	1693

Table 5. Average and Standard Deviation of In-Place Density (%) by Lot

Lot Type	Roadway		Combo				Bridge	
	Average	St. Dev.	All Combo		Roadway	Bridge	Average	St. Dev.
			Average	St. Dev.	Average (by core)			
Mat	93.82	1.51	93.46	1.33	93.67	92.72	92.23	1.60
Joint	92.19	1.26	92.48	1.94	92.62	91.28	91.05	1.36
Samples	1547		68		50	18	82	
Lots	192		8				11	

Table 6. Average In-Place Density (%) by Lot / Prior Years

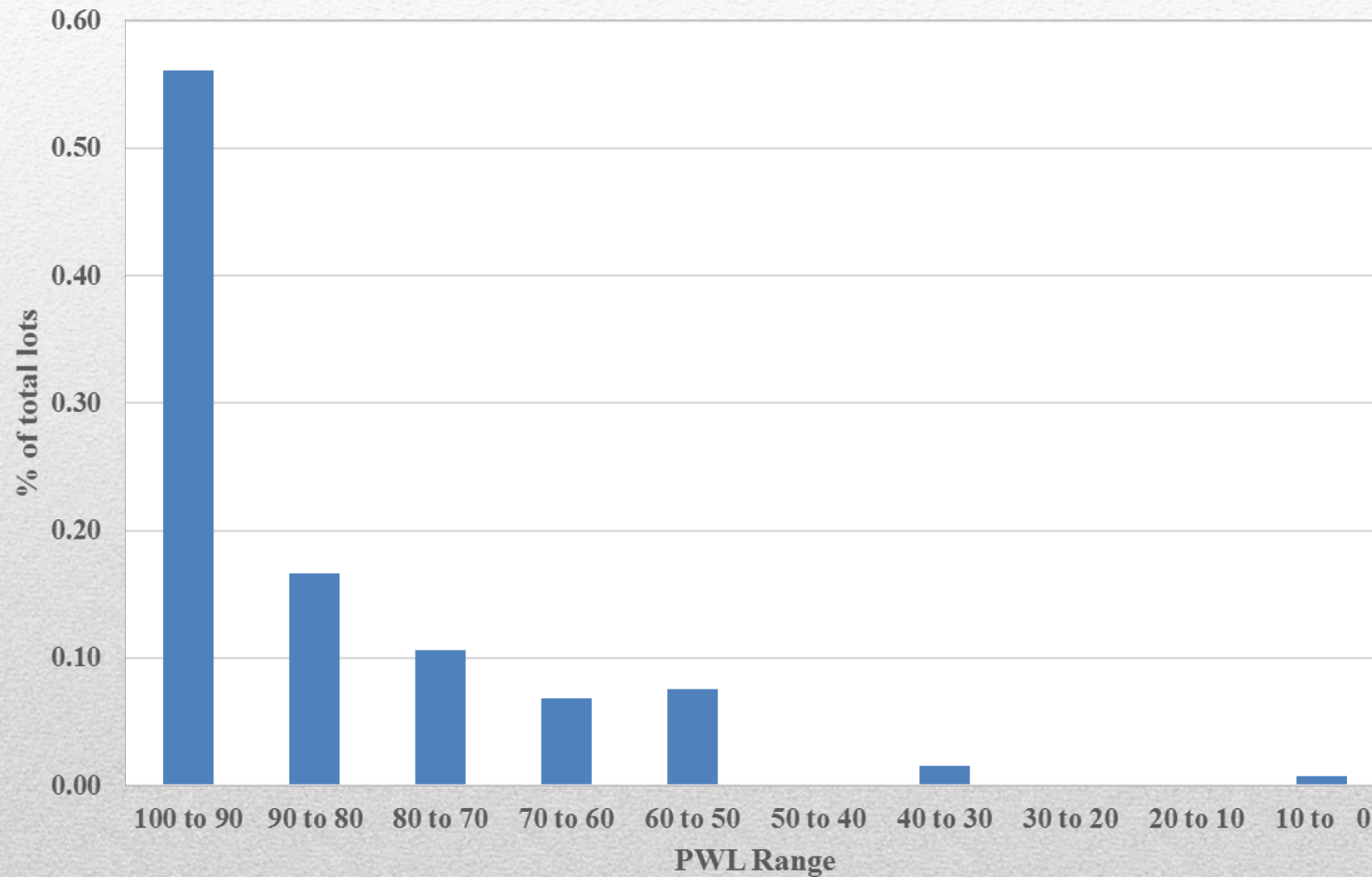
Year	2018			2017		
	Roadway	Combo	Bridge	Roadway	Combo	Bridge
Mat	93.90	93.30	92.76	93.68	93.37	93.63
Joint	91.94	91.50	90.84	92.09	92.31	91.42
Samples	3817	766	130	4143	701	153





# First Annual PWL Report

2019 Roadway Density (PWL) 132 lots





# Summary

## Asphalt Quality Assurance

### Main challenges:

- Keeping specifications current
- Educating both sides
  - Procedures
- Collecting valid results
- Analyzing results
- Communication w/industry

