

# **Implementation of a Profiler Certification Program in Florida**

**Road Profile User's Group  
2017 Annual Meeting**

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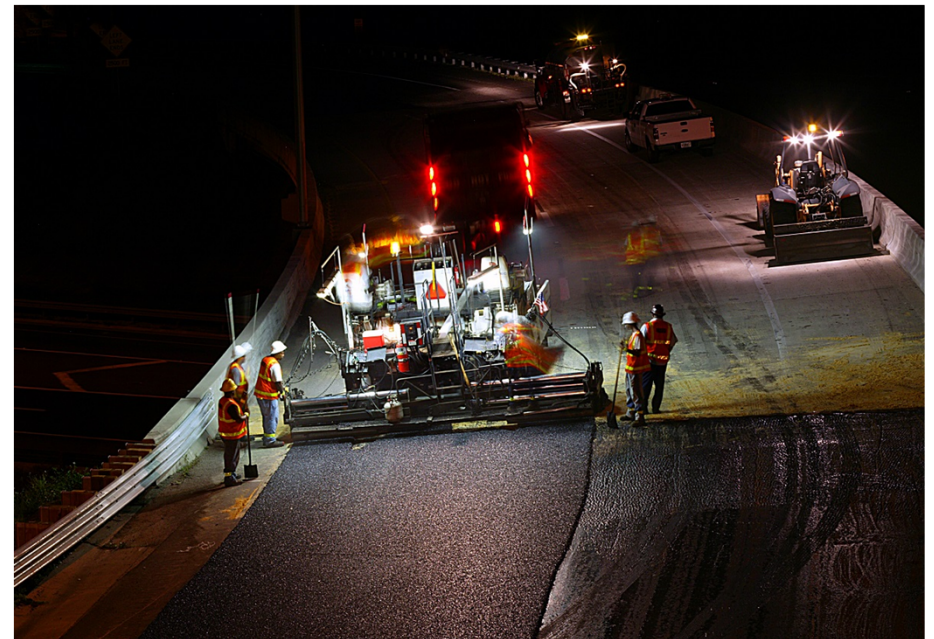
# Outline

- Profiler certification need
- Certification track design & construction
- Program status
- Next steps



# Pavement Smoothness Committee

- FDOT & industry members
- Goals of committee
  - Decoupling laser profiler & rolling straight edge
  - Develop incentive specification based on IRI



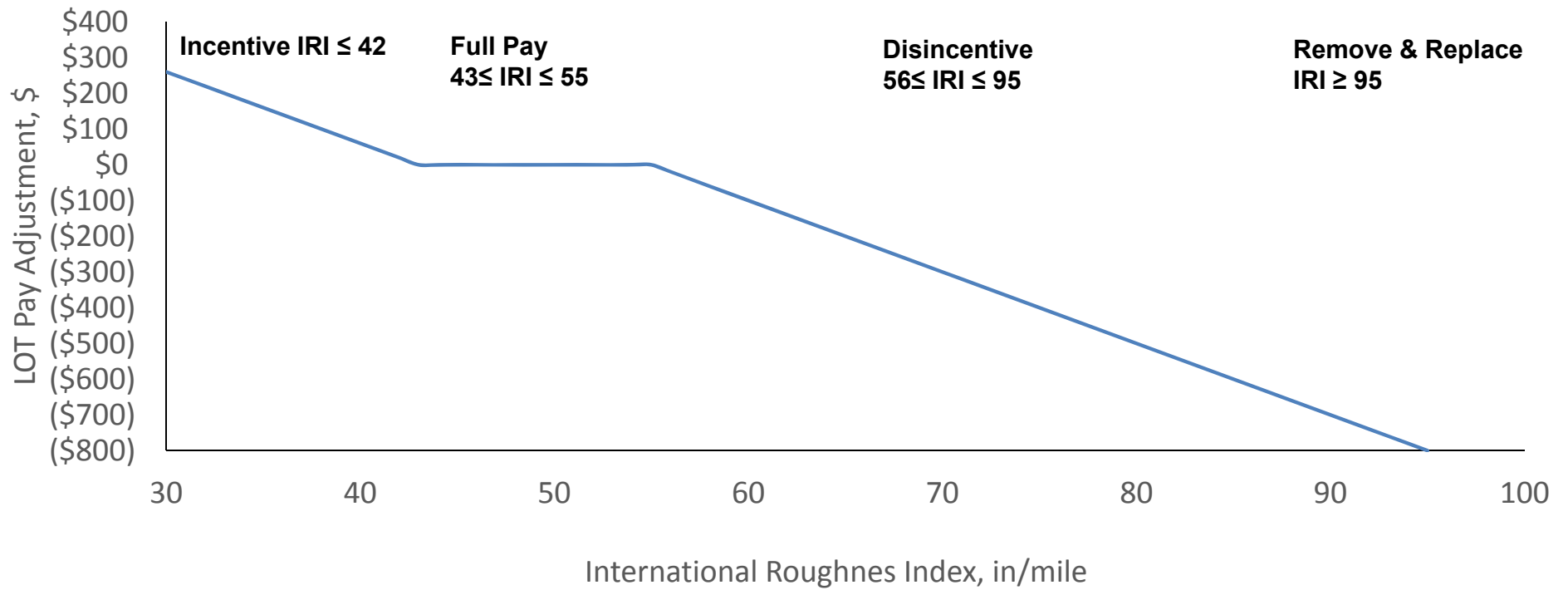
# IRI Incentive Specification

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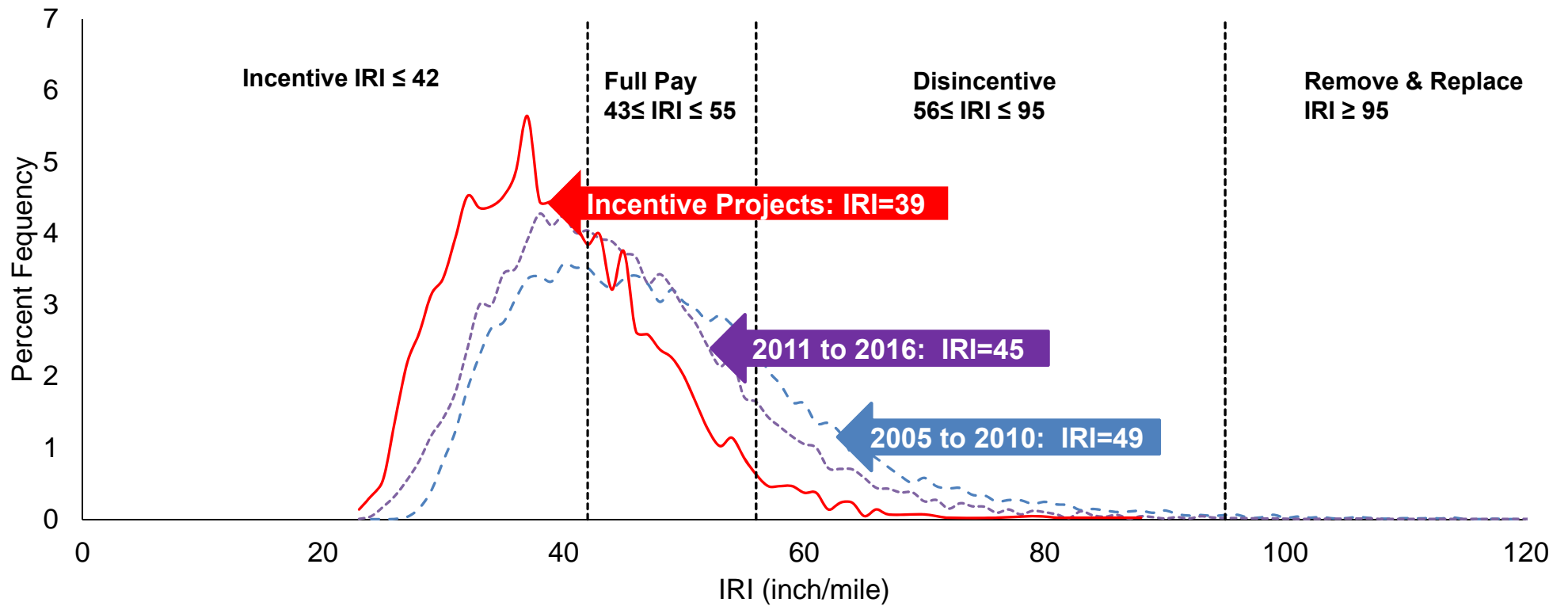
- Limited access roadways
- Incentive:  $IRI \leq 42$  in/mile
- Full pay:  $43 \text{ in/mile} \leq IRI \leq 55 \text{ in/mile}$
- Disincentive:  $56 \text{ in/mile} \leq IRI \leq 95 \text{ in/mile}$
- Remove & replace:  $IRI > 95$  in/mile
- Consistency: 3% bonus if all LOTs  $\leq 55$  in/mile



# LOT Pay Adjustment



# Incentive Impact



# Specification Implementation

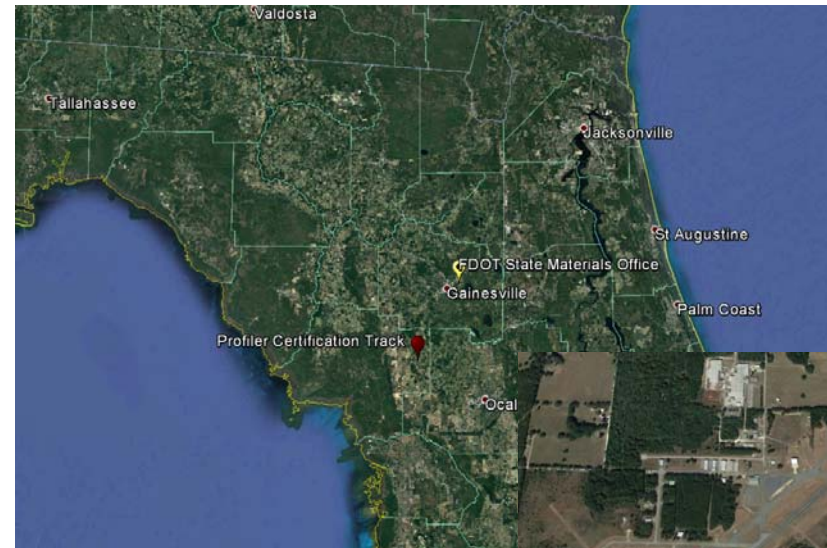
- All limited access roadways
- FDOT currently conducts smoothness acceptance testing
- Immediate need for contractor process control
- Goal: contractor acceptance testing





# Profiler Certification Track

- Establish a standardized process to verify profilers are reliable and accurate
- Williston Municipal Airport, Levy County
- ~3,700 ft. long and 14 ft. wide





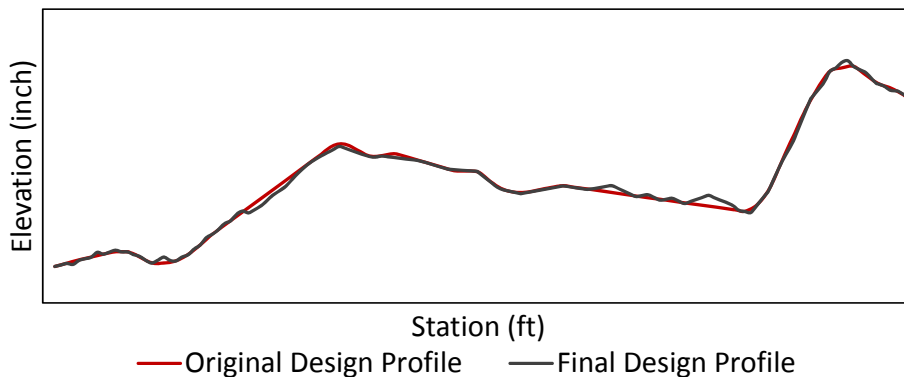
# Track Sections

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- Open and dense-graded sections
- Three 0.1 mile long segments per surface type
  - Smooth, IRI = 30 to 45 in/mile
  - Medium, IRI = 50 to 80 in/mile
  - Rough, IRI = 95 to 180 in/mile
- Smoothness ranges based on IRI specification & AASHTO R-56

# How we targeted a specific roughness

1. Altered base elevation based on profile simulation
2. Adjusted paver tow arm based on profile simulation
3. Measured smoothness
4. Repeat 2 & 3 for each AC lift



# Lessons Learned

- There are many ways to create roughness
- Treat as a research project
- Coordination is critical



# Stabilized Subgrade





# Base & 1<sup>st</sup> Asphalt Lift



# 2<sup>nd</sup> Asphalt Lift & Friction Course





# Initial Certification Values

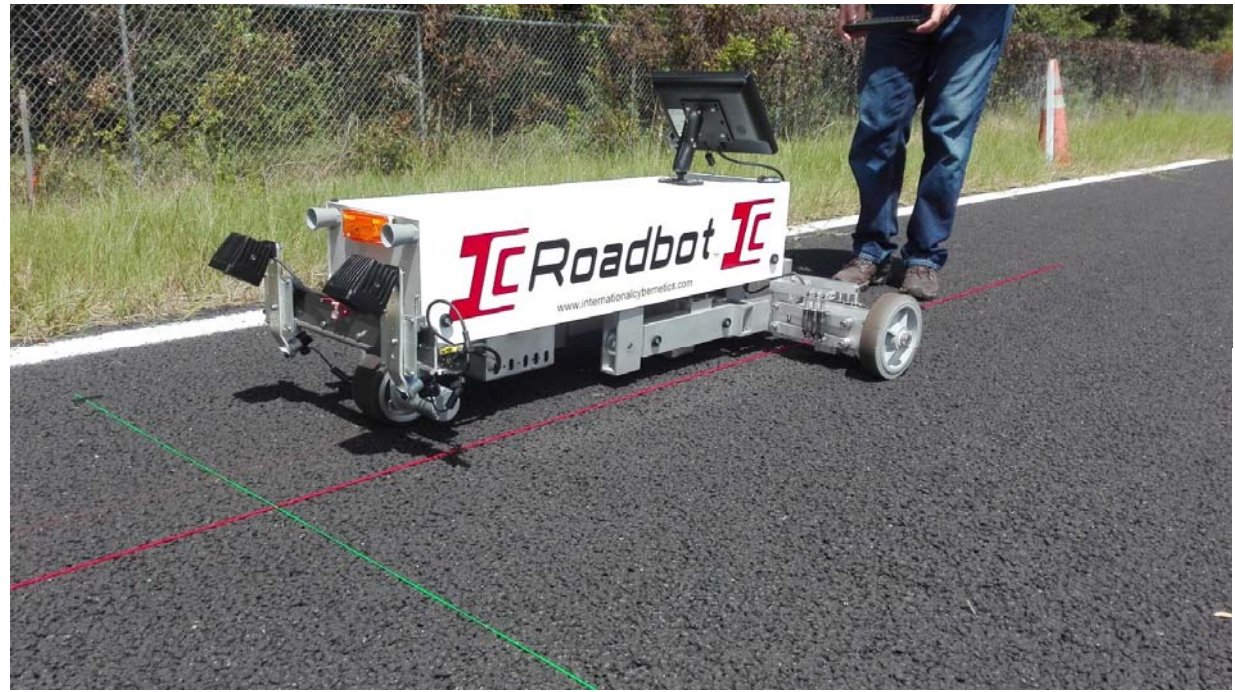
PROFILER	SURFACE	SECTION	IRI FILTER ACCURACY (%)	IRI FILTER REPEABILITY (%)
1	Dense	Smooth	94.6	96.5
		Medium	97.1	98.5
	Open	Smooth	78.1	85.0
		Medium	92.8	94.1
2	Dense	Smooth	95.8	97.8
		Medium	98.4	99.1
	Open	Smooth	84.7	91.5
		Medium	96.9	98.8
3	Dense	Smooth	94.2	96.5
		Medium	97.2	98.2
	Open	Smooth	82.8	93.7
		Medium	96.2	98.5



# Before & After Line Laser Upgrade

SURFACE	SECTION	LASER TYPE	IRI FILTER ACCURACY (%)	IRI FILTER REPEABILITY (%)
Dense	Smooth	Spot	78.0	96.1
		Line	94.6	96.5
	Medium	Spot	94.3	96.9
		Line	97.1	98.5
Open	Smooth	Spot	66.6	68.0
		Line	78.1	85.0
	Medium	Spot	80.6	88.4
		Line	92.8	94.1

# Reference Profilers



# Cross-Correlation Comparison

SECTION	REFERENCE PROFILER	IRI FILTER REPEABILITY (%)	MAX PERCENT IRI DIFFERENCE
Dense Smooth (IRI < 45 in/mile)	Roadbot	99.4	0.34
	FDOT SurPro 4000	96.5	1.80
	TTI SurPro 3000	97.0	0.62
Open Smooth (IRI < 35 in/mile)	Roadbot	96.6	1.41
	FDOT SurPro 4000	88.4	3.83
	TTI SurPro 3000	89.5	3.38

# Next Steps

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- Certification details
  - Criteria
  - Cost
- FDOT fleet certification
- Expand incentive specification
- Open house – first week of April 2018

# Questions?

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