



Improved Regionalization of Quality Assurance (QA) Functions



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Introduction & Objectives

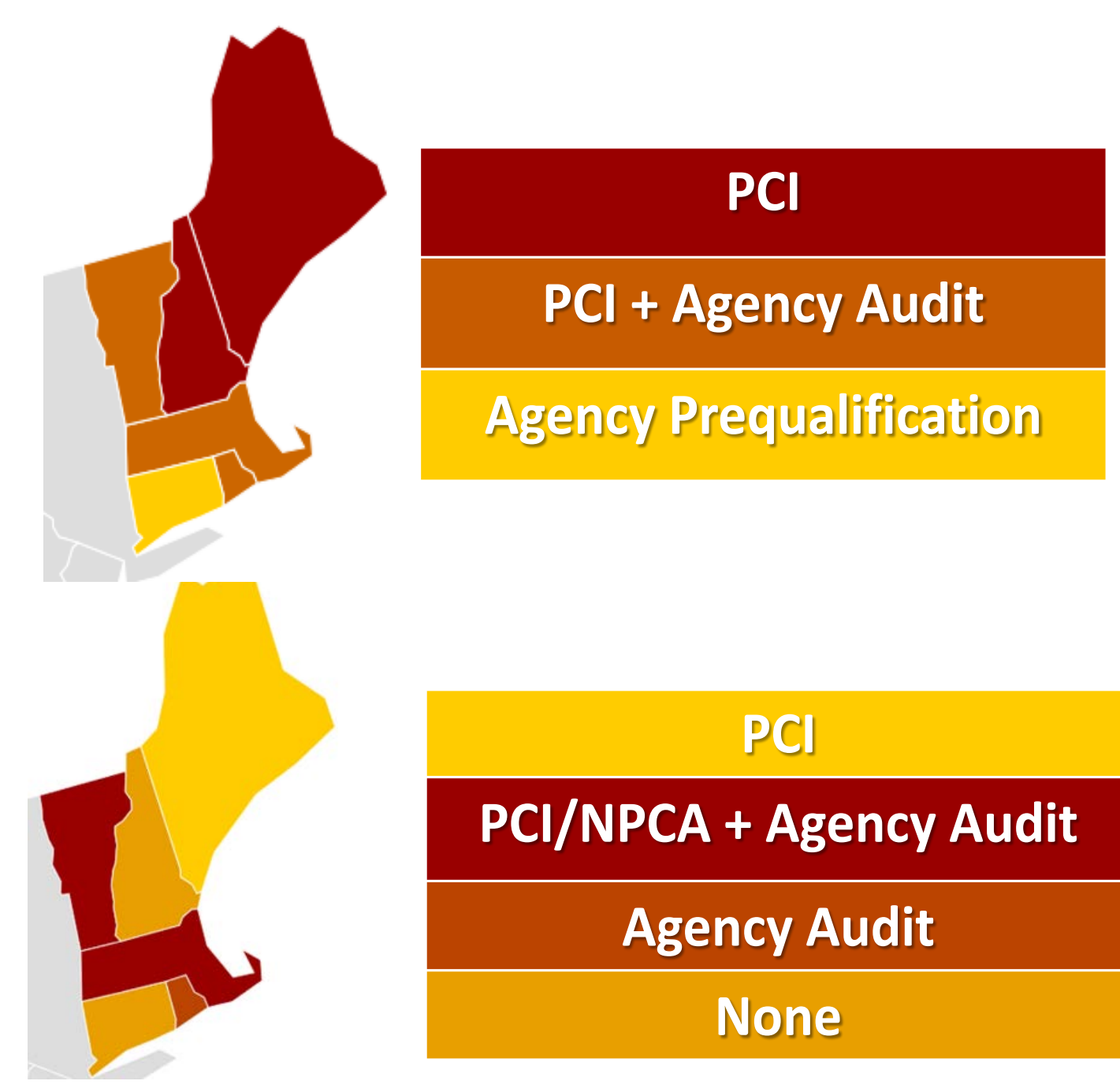
- The use of quality assurance (QA) systems in highway infrastructure is critical to ensure durable, safe, and economical transportation operations.
- Regional partnerships between DOTs can significantly lower the economic burden on agencies through use of common acceptance standards for QA
- Common acceptance standards for precast (PCE) and pre-stressed (PSE) concrete elements are possible because current standards used by New England DOTs are similar in several aspects.
- The purpose of the study is to develop common acceptance standards for the PCE/PSE in the construction of highway bridges for New England State Transportation Agencies.

Methodology

- In-depth review of PCE/PSE acceptance specifications of all states.
- Interviews with staff from each of the six DOTs.
- Processing the data by compiling the information into a single master table that includes the specifications of interest for each agency.

Review Findings

Qualification and Certification of Plant/Producer



Fabricator QC Requirements

Agency	Pre-stressed Inspector Qualification	Precast Inspector Qualification
CT	ACI level 1 equivalent	ACI level 1 equivalent
MA	PCI Level 2	-
ME	PCI Level 2	PCI Level 1, 2, or 3
NH	PCI Level 2	PCI Level 2
RI	In-House Certification	In-House Certification
VT	PCI Level 1	PCI Level 1

Unified QA Process Recommendations

Plant Certification Recommendations

Item	Element	PCI/NPCA Requirement	Recommendations
QC Plan (QSM) and Plant Requirements	PSE	PCI MNL-116	PCI MNL-137 for repair works and AASHTO M-157 for Ready Mix
	Structural PCE	PCI MNL-116/NPCA	
	Non-Structural PCE	NPCA	

Agency QA inspection Recommendations (Pre-Placement)

Item	Element	Recommendations
Stressing Jack and Gauges	PSE	Date of last calibration. Once per year or in case of any erratic result.
	Structural PCE	Date of last calibration. Ensure that calibration was done once per year.
Compression Tester (Cylinder)	Non-Structural PCE	
Strand Temperature	PSE	If temperature deviates from 70°F, temperature correction should be used to determine proper tensioning length.

Producer Testing Recommendations

Item	Element	PCI/NPCA Requirement	Recommendations
Casting Bed	PSE	-	Profile and Alignment check
	Structural PCE	-	
	Non-Structural PCE	-	
J-Ring or L-Box	PSE	-	For each SCC design
	Structural PCE	-	-
	Non-Structural PCE	-	
Strength Cylinders	PSE	Minimum of 4 Cylinders per element	Additional 4 cylinders for de-stressing strength
	Structural PCE	4 Cylinders	Min. once per each day's
	Non-Structural PCE	4 Cylinders, every 150 CY	Min. once per each day's

(Placement)

Item	Element	Recommendations
Temperature	PSE	At least once per element
	Structural PCE	
	Non-Structural PCE	Once per continuous placement
W/C	PSE	At least once per element
	Structural PCE	
	Non-Structural PCE	Once per continuous placement
Strength Cylinders	PSE	Once Per element or every 100CY; Number: Total 6 cylinders for permeability and strength tests
	Structural PCE	
	Non-Structural PCE	Once per continuous placement; Number: Total 4 cylinders for strength tests

(Post-Placement)

Item	Element	Recommendations
Curing	PSE & Structural PCE	(a) The concrete in the form shall be maintained at a temperature of not less than 50°F during the curing period (b) Accelerated Curing – The controlling temperatures shall be those actually achieved within the concrete elements (c) Accelerated curing shall be started after the concrete has attained initial set
	Non-Structural PCE	Specify the type of curing (wet/moist curing, chemical membrane curing, steam curing)

Conclusions and Next Steps

- Unified QA process recommendations for PSE/PCE in New England
- Inspection cost-sharing mechanisms
- Pilot implementation

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