



RESEARCH PROJECT TITLE HERE

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ABSTRACT

This study conducted an in-depth review of the current quality assurance (QA) processes for precast (PCE) and prestressed concrete elements (PSE) used in the highway construction in the New England region. On basis of the review of current practices and through input from the six New England State Transportation Agencies (STA) a set of unified QA process recommendations have been developed. Adoption of unified QA processes will enable STAs to be able to cross-utilize inspection resources and allow producers to follow same quality control; (QC) guidelines. Both of these are expected to realize cost savings for STAs. This will result in a significant save in the financial resources by reducing the number of QA inspectors while the manufacturers for different construction projects around the region follow a unified procedure for maintaining and evaluating the quality of their products. Recommendations for plant/producer pre-qualification, pre-pour, during pour and post-pour QC and agency inspection practices have been developed. Furthermore, this study evaluated various agency cost-sharing mechanisms to pay and receive funds for sharing of QA inspection resources. At present, several agreements are already in place between agencies and similar agreement can be developed to accomplish the cost-sharing goals.

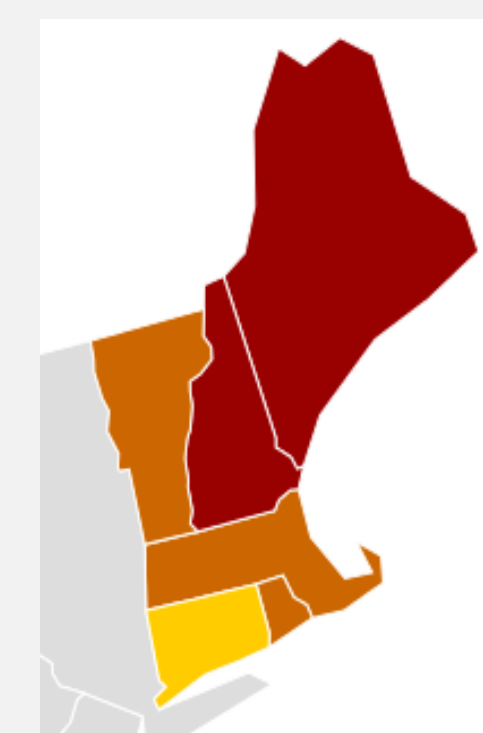
ACKNOWLEDGMENTS

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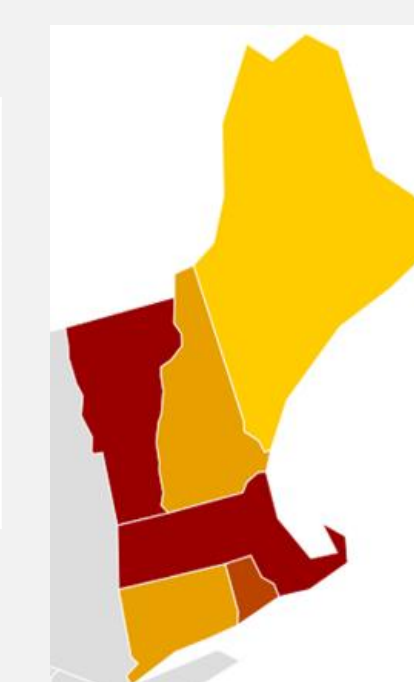
METHODOLOGY AND REVIEW FINDINGS

- 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.
- Surveys and interviews of agency personnel to explore cost-sharing mechanisms and agreements

Qualification and Certification of Plant/Producer



PCI
PCI + Agency Audit
Agency Prequalification



PCI
PCI/NPCA + Agency Audit
Agency Audit
None

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

RECOMMENDATIONS

- Unified QA process for all six New England states is proposed. Process comprises of three set of recommendations: Plant Qualification Process, Producer QC Requirements, Agency QA Inspection Process
- Recommendations are developed for three categories of elements: Non-structural Precast Concrete; Structural Pre-cast Concrete and Prestressed Concrete Elements
- Agency inspection tasks are divided into pre-placement, during placement and post-placement inspection and documentation
- Majority of New England DOTs have processes in place to invoice and reimburse efforts of employees when agencies share inspection resources.
- Management framework such as, Shift Planning is strongly recommended to be utilized by all agencies to be able to manage, schedule and allocate effort of agency employee as well as consultant inspectors

CONCLUSIONS

This review showed the various discrepancies in the quality control procedures that are currently in use by the six New England Transportation agencies. Throughout the review, the findings showed the possibility of creating a unified quality assurance specification to be implemented for PSE and PCE that are used in highway construction. The recommendations to unify these specifications are discussed in detail in the review. The second phase of the study explored various cost-sharing mechanism for the agencies to be able to appropriately allocate the cost of inspection for the correct elements. The results of this exploration showed tremendous promise in being able to develop an inter-agency agreement between all six New England DOTs to share inspection resources. As a next step, it is important to implement a pilot plan to refine the recommendations of this research and to transition the research products into routine implementation.