

# MCO

## Testing Guide

for Implementing Concrete Paving  
Quality Control Procedures

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National Concrete Pavement  
Technology Center



ctre  
Center for Transportation  
Research and Education

IOWA STATE  
UNIVERSITY

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# Front Matter & Chapters 1 through 3

- Acknowledgements
- List of Figures
- List of Tables
- Executive Summary
  
- Chapter 1 – Background
  
- Chapter 2 – Research Approach
  
- Chapter 3 – Focal Properties

## Chapter 4 – Implementing the Suite of Tests

- Variability in measurement systems is not conducive to setting acceptance limits
- However, statistical process control (SPC control charts) can be used to identify changes in the materials and/or processes
- DOTs can implement through a specification that adopts the suite of tests
- Contractors may be motivated to implement the suite of tests as warranty and PPP projects become more common

## Chapter 4 – Implementing the Suite of Tests

- Defining the appropriate project level is critical
- Level A – High AADT, high priority facilities where the risk of premature failure cannot be tolerated
- Level B – Interstate or primary U.S. and State highway routes
- Level C – Low volume roads

## Chapter 5 – Implementing Quality Control Elements

- Why should I bother measuring anything that is not an acceptance criteria?
- Because the cost of premature failure is so high (long term market preservation)
- Establish baseline values in the mixture design
- Compare during the mixture verification stage
- Monitor for changes during the QC stage

## Chapter 5 – Implementing Quality Control Elements

- Initial control chart 3s limits were developed from the MCO demonstration project testing data
- Sorted all of the demo. project data by coefficient of variation for each test procedure and used the top half (lowest variability) as the basis for suggested 3s limits
- 3s limits are then adjusted for a specific contractors materials and processes

## Chapter 6 – Example Level B Project

- Detailed step-by-step “how to”
  - Procedures dictated by the Level B suite
  - Interpreting the test results
- Mixture design stage
- Mixture verification stage
- Quality control stage

## Chapter 7 – Test Procedures

- Modified and revised IMCP test procedure sections
- Added new test procedure sections that were not included in the IMCP Manual

# Appendices

- Appendix A – copies of the field sampling worksheets that were used for the MCO demo. projects
- Appendix B – How-to copy NOAA forecast data for use in HIPERPAV
- Appendix C – Suggested testing equipment by Suite level

THANK YOU!

