

# **MTO Performance Specifications**

## **Concepts and Development**

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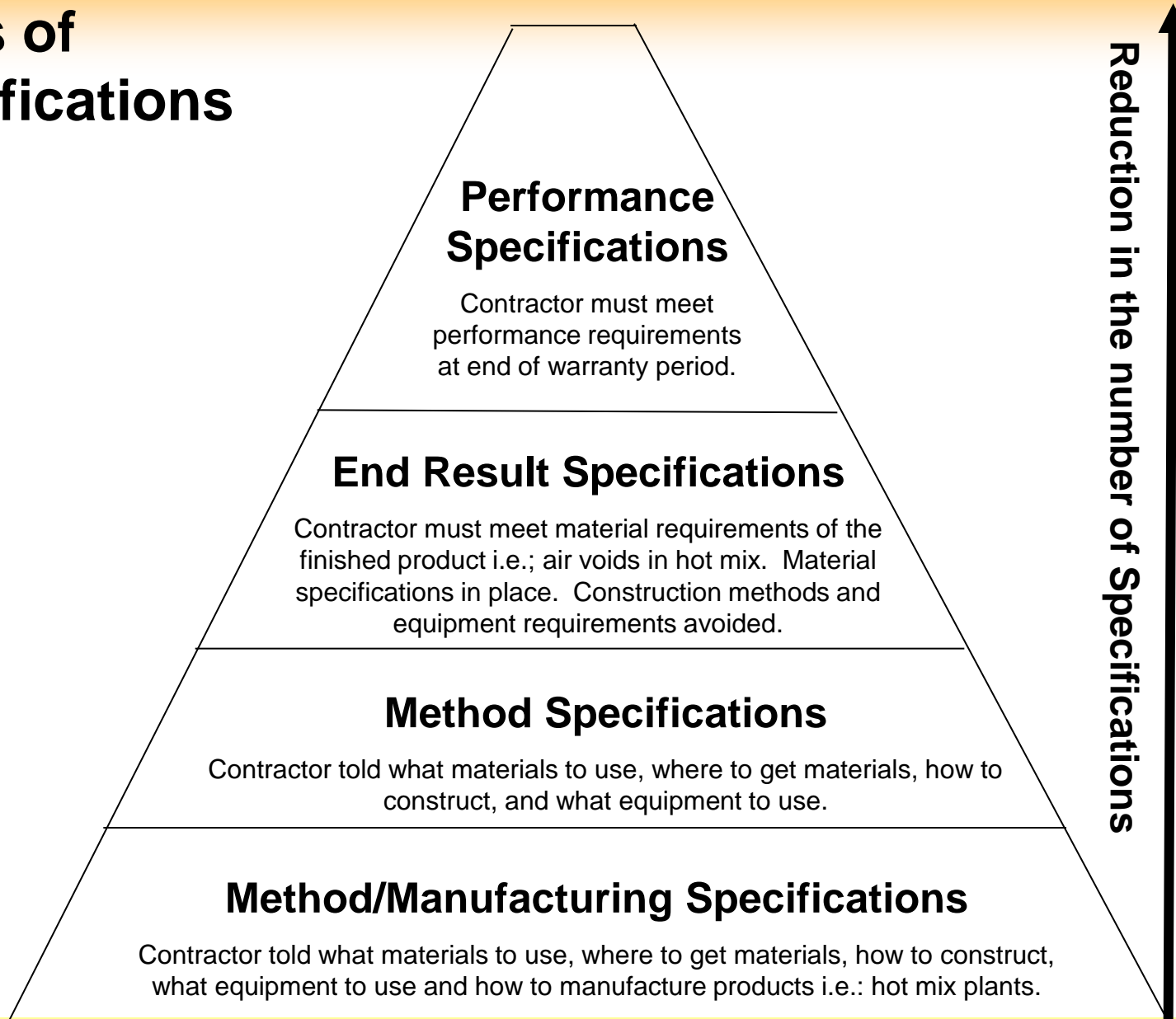
MTO Highway Standards Branch

OHMPA Road Tour 2013

# Why Performance Specifications

- Increases potential for contractor innovation and initiative
- A mature industry with well developed quality control programs
- Next phase of specification development

# Types of Specifications



# What is a Performance Specification?

- A description of what the contractor is to construct
- Contractor determines the materials, methods and workmanship; may require contractor design
- Acceptance during or at end of the contract, on an item by item basis for payment
- Measure performance:
  - during or at the end of a warranty period to ensure the condition gives assurance of its future performance

# Performance Specification - Concepts

- Performance Requirements at:
  - milestones, and
  - during the warranty period
- Review of work and if there are no concerns then intensive testing and assessments may not take place
- Assessments and testing that are objective, measureable, repeatable and achievable
- Warranty period depends on item, up to 10 years
- Consequences for non-conformance with requirements to remedy

# Setting Performance Requirements

- Requirements must be reasonable and achievable
- Achieve historical quality – not raising the bar

# Transition to Performance Specifications

- Approaches to be used as appropriate for the work item and until full performance specifications are in-place:
  - Some traditional specifications
  - Enhancements to some traditional specifications to make them more performance based
  - Perhaps limited use of DSM
  - Trial contracts, as appropriate
- Stakeholder consultation

# Pavement Performance Specifications

Design and Construction Specification	Proposed Warranty Period
New and Reconstructed Concrete Pavement Structure	10
Concrete Pavement Structure Rehabilitation	TBD
Flexible Pavement Structure Rehabilitation	7
New and Reconstructed Flexible Pavement Structure	7
Composite Pavement Structure Rehabilitation	6
Hot Mix Resurfacing	3/5
Thin Surfacing	3
Crack Sealing	2



# Proposed Performance Requirements

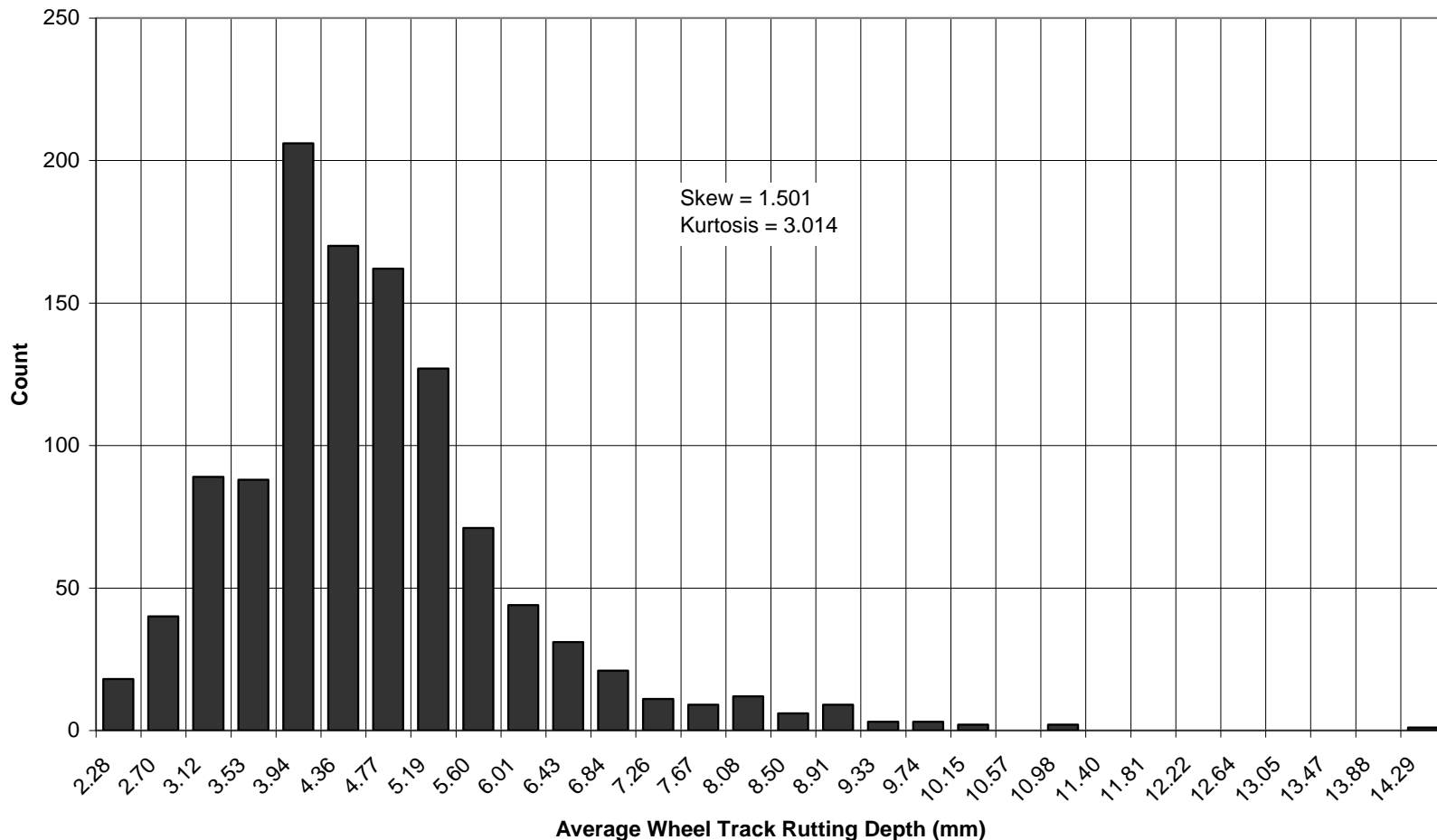
Flexible	Composite	Concrete
Coarse Aggregate Loss	Spalling and Coarse Aggregate Loss	Spalling and Coarse Aggregate Loss
Flushing	Flushing	Joint Sealant Loss
Alligator Cracking	Joint Failure	Joint Failure
Single and Multiple Cracking	Single and Multiple Cracking	Single and Multiple Cracking
Wheel Track Rutting	Wheel Track Rutting	Faulting
Roughness (IRI)	Roughness (IRI)	Roughness (IRI)
Joint Separation	Joint Separation	Longitudinal Joint Separation
Winter Roughness	Winter Roughness	Winter Roughness

# Establishing Warranty Requirements

- Performance Data
  - 10,322 PMS2 records 2005-2011
  - 5,052 ARAN records 2007-2010
  - 7-Year Pavement with Warranty Assessments
  - MinO Paving Assessments
  - Detailed Review 3,5, & 7 Yr Old Contracts 2012
- Acceptance limits based on mean + X standard deviations of a normalized data set
  - Historical practice

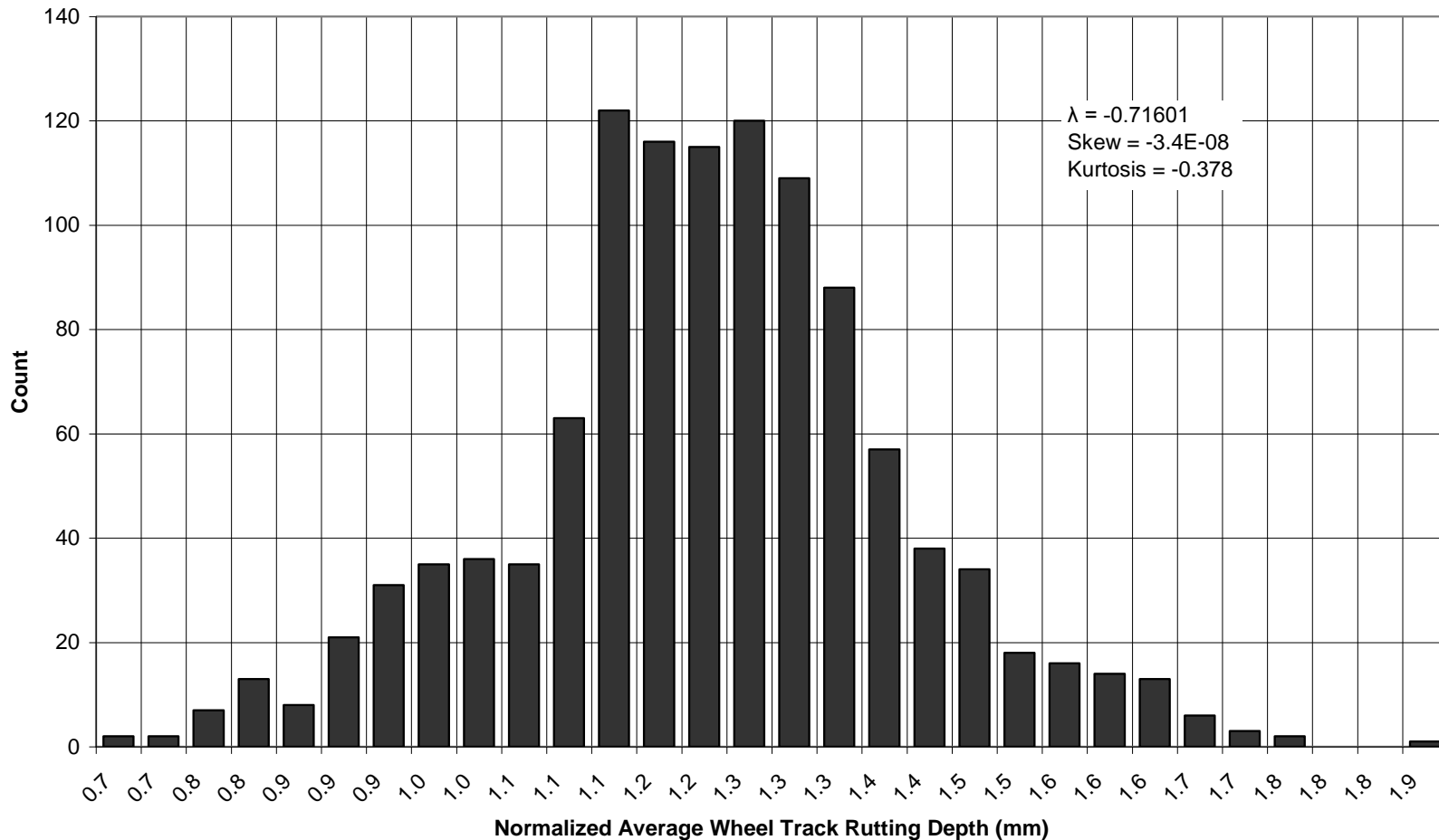
# Establishing Warranty Requirements

**Wheel Track Rutting Depth Distribution, Ontario Traffic Category D&E @ 7 Yrs  
64 Contracts, 1003-500 lane-m Sections, 2007-2010 ARAN Data**



# Establishing Warranty Requirements

**Normalized Wheel Track Rutting Depth Distribution, Ontario Traffic Category D&E @ 7 Yrs  
64 Contracts, 1003-500 lane-m Sections, 2007-2010 ARAN Data**



# Pavement Performance Evaluation

- 500 lane-m segments
- Automatic Road Analyzer
- ASTM Skid Trailer
- Inertia Profilograph
- Manual Survey/Measurement
  
- Subjective evaluation minimized
  - Transition to fully objective evaluation over time

# Consequences for Non-Conformance Proposed

- Standard repair methods, eg.:
  - Mill/pave
  - Crack sealing
  - Crack repair
  - Reconstruction
- Engineer's repair proposal

# Timeline

- Some specifications expected to be completed by end of 2013
- Remainder in early 2014
- Implementation TBD

