AASHTO Update on New PCC Related Methods and Equipment

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2022 NESMEA

Streeter-Thielke, New York

Introduction

I hope to provide you with an overview of the activities within AASHTO Committee on Materials and Pavements and NCHRP with an emphasis on cement and concrete materials.

QR Codes and Links will be provided within this document to direct you to further details.

Agenda

AASHTO 2022 – HM-42

AASHTO 2023 – HM-43

PEM Work

NCHRP Research Projects

NCHRP Synthesis Projects

AASHTO 2022 HM - 42

https://www.transportation.org/aashto-store/

List of changes – 27 Pages

2022 Overview

Total Standards – 580+

Revised 276 with 325 Ballot Items

New Standards – 3

TMD Ballots – 203

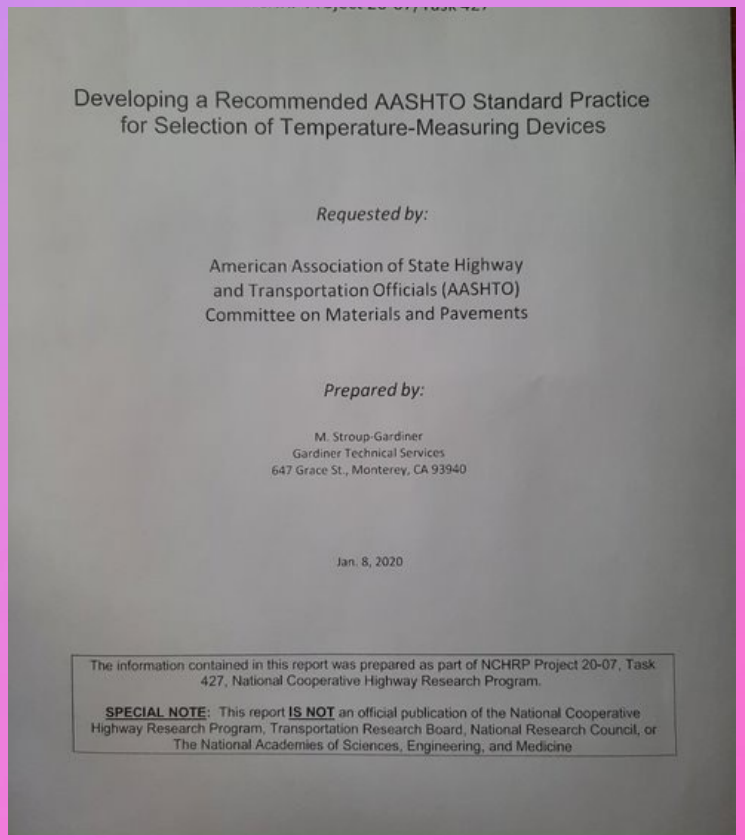
"I survived the Temperature Measuring Devices (TMD) changes!"

2022 TMD

NCHRP 20-07, Task 427

Developing a Recommended AASHTO Standard Practice for Selection of Temperature Measuring Devices (TMD)

https://onlinepubs.trb.org/Onlinepubs/nchrp/docs/NCHRP20-07-427-FR.pdf



Developing a Recommended AASHTO Standard Practice for Selection of Temperature-Measuring Devices

Requested by:

American Association of State Highway and Transportation Officials (AASHTO) Committee on Materials and Pavements

Prepared by:

M. Stroup-Gardiner
Gardiner Technical Services
647 Grace St., Monterey, CA 93940

Jan. 8, 2020

The information contained in this report was prepared as part of NCHRP Project 20-07, Task 427, National Cooperative Highway Research Program.

SPECIAL NOTE: This report **IS NOT** an official publication of the National Cooperative Highway Research Program, Transportation Research Board, National Research Council, or The National Academies of Sciences, Engineering, and Medicine

“Why we Survived the TMD Changes!”

	2021	2022	2023
Group 1 (Concrete, Pave. Pres., Environ. & QA)	44	100	45
Group 2 (Misc. Materials)	10	59	34
Group 3 (Soils and Asphalts)	27	166	~28
Total	81	325	~103

2022 TMD – New Standard

M 339M/M 339 -

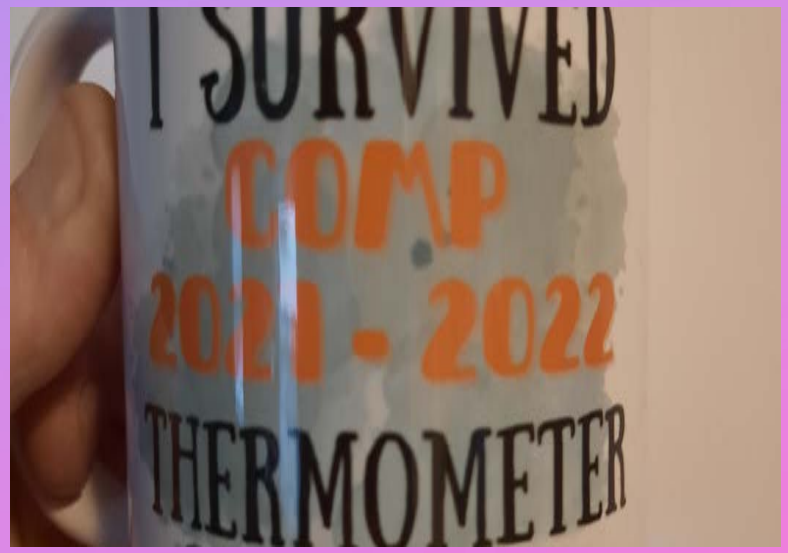
Thermometers Used in the Testing of Construction Materials

2022 TMD Enforcement

AASHTO re:source will follow the 2021 standard to allow folks to become familiarized with and acquire equipment for TMS until release of the 44th edition in late 2024

https://onlinepubs.trb.org/Onlinepubs/nchrp/docs/NCHRP20-07-427-FR.pdf

Presentation to Don Streeter



2022 3a Cement

TF 09-01 – Task Force on Harmonization of Cement Standards

M 85 – Portland Cement

M 240 – Blended Cements

M 327 – Process Additions

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

AASHTO

THE VOICE OF TRANSPORTATION

ASTM

2022 3a Cement 1

M 85 Portland Cement - Remove T 107 (Autoclave Expansion) reference

M 327 Process Additions – Remove Flexural Strength requirements

2022 3a Cement 2

T 105 – Chemical Analysis of Hydraulic Cement

Added and revised information on porcelain crucibles

2022 3a Cement 3

Appendix revisions and ASTM Equivalencies mostly for clarification.

2022 3b Fresh Concrete

"There is no truth to the rumor that this is Tyler as a youth!"

Congratulations 1!

TP 118 is now T 395 – Characterization of the Air-Void System of Freshly Mixed Concrete by the Sequential Pressure Method

Now a Full Standard

Congratulations 2!

TP 137 is now T 396 – Box Test in Slip Form Paving of Fresh Portland Cement Concrete

Now a Full Standard

	**Step 1**	Gather the different components of the Box Test.
	**Step 2**	Construct box and place clamps tightly around box. Hand scoop mixture into box until the concrete height is 9.5" (241.3 mm).
	**Step 3**	Insert vibrator downward for 3 seconds and upward for 3 seconds. Remove vibrator.
	**Step 4**	After removing clamps and the forms, inspect the sides for surface voids and edge slumping.

2022 3c Hardened Concrete

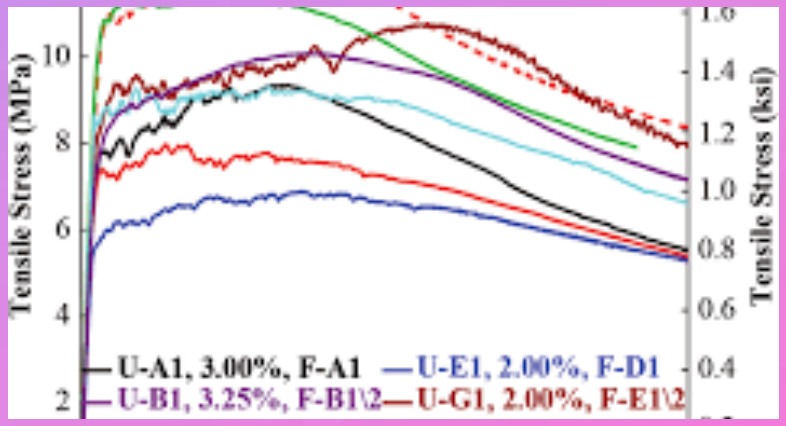
Congratulations 3!

PP 84 is now R 101 – Developing Performance Engineered Concrete Pavement Mixtures

Now a Full Standard

Congratulations 4!

New Standard



T 397 - Tensile Response of Ultra-High Performance Concrete

Dr. Ben Greybeal at TF HRC

2022 3c Hardened Concrete - 1

T 97 – Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)

New Terminology Section and Additional Information on Verifying the Accuracy of Testing Machines

2022 3c Hardened Concrete - 2

T 148 – Measuring Length of Drilled Concrete Cores

T 276 – Measuring Early-Age Compression Strength and Projecting Later-Age Strength

Added/Updated Precision information

New/Updated Terminology Section

Updated Other Requirements

2022 3c Hardened Concrete - 3

T 277 – Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration

Updated Vacuum Pump, Precision and TMD

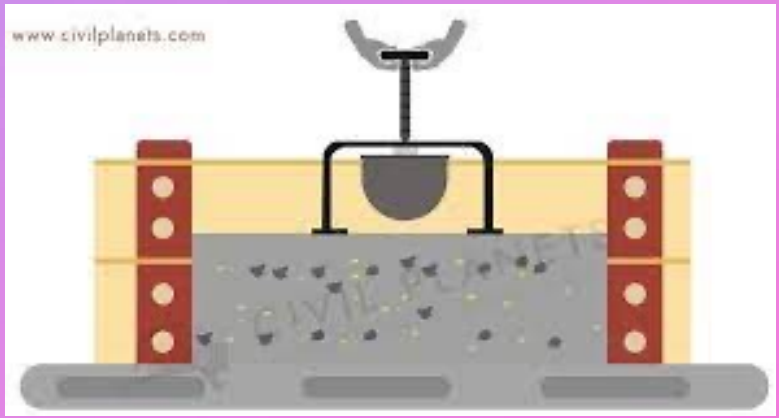
2022 3c Hardened Concrete - 4

TP 119 - Electrical Resistivity of a Concrete Cylinder Tested in a Uniaxial Resistance Test

T 358 - Surface Resistivity Indication of Concrete's Ability to Resist Chloride Ion Penetration

- Revised extensively throughout but Terminology List, Measuring and Reporting of Temp with an IR temp gun, Conditioning and New Appendix in T 358 (geometry correction).

2022 3c Hardened Concrete - 5



TP 129 – Vibrating Kelly Ball (Vkelly) Penetration in Fresh Portland Cement Conrete

Editorially revised to remove specific brands

2022 3c Hardened Concrete - 6

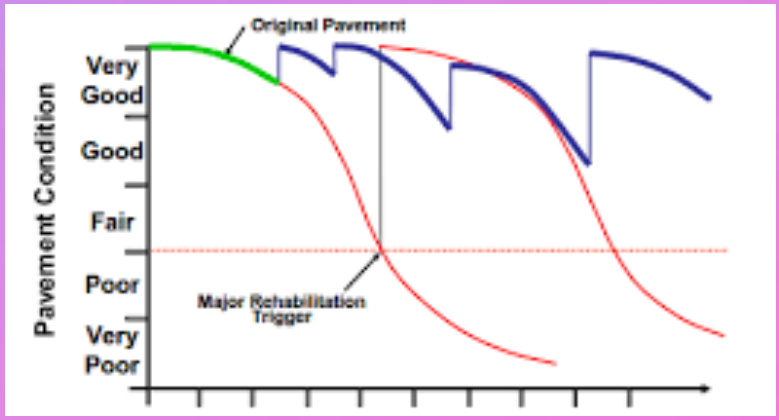
Revisions for TMD & ASTM equivalence

2022 4a Concrete Drainage Structures

M 259 – Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers Designed According to AASHTO LRFD

- Title Change, LRFD (2019) & TMD

2022 TSs 5b and 5c Preservation Area



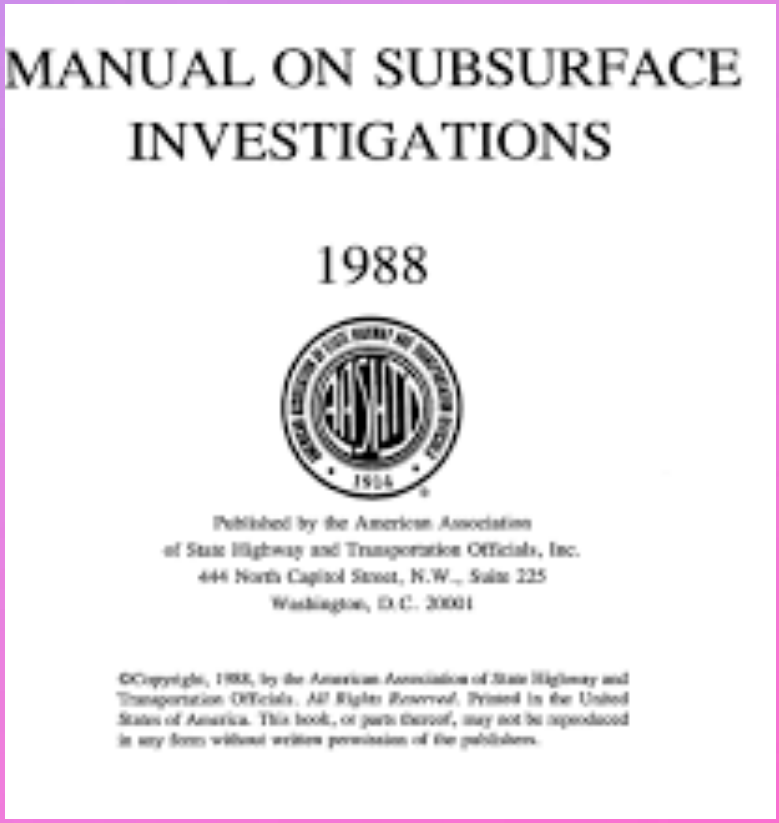
More Provisional were moved to Full Standards.

Standards related to preservation such as fog seals, sand seals, etc.

TS 1b – Geotechnical

New 2022 AASHTO

Subsurface Investigation Manual



MANUAL ON SUBSURFACE INVESTIGATIONS

1988

Published by the American Association
of State Highway and Transportation Officials, Inc.
444 North Capitol Street, N.W., Suite 225
Washington, D.C. 20001

TS 5d – Pavements

Pavement Friction Guide (2008) – Coming Nov 2022!

Pavement Design, Con., & Man.: A Digital Handbook – Will include interlocking (and interlocking permeable) pavements.

Pavement Management Guide (2012) – Revised by RPS?

AASHTO 2023 – HM-43

"Return to Normalcy"

We met IN PERSON in 2022 in Miami!!

Group 1 and 2 Ballots Out

2023 3a Cement

M 85 - Portland Cement

M 240 - Blended Cement

Remove special property designations for MH, LH, and Type IV cement, and replace with an option for purchaser to require C1702 heat of hydration

2023 3a Cement

M 240 – Blended Cements

M 327 - Processing Additions

- Remove T 107 Autoclave Requirements

2023 3a Cements

Modify some Appendix language, equivalence to ASTM Jointly Owned standards and make one Test method a Practice

2023 3b Fresh Concrete

M 194 - Chemical Admixtures for Concrete

Allow Type IL Cement

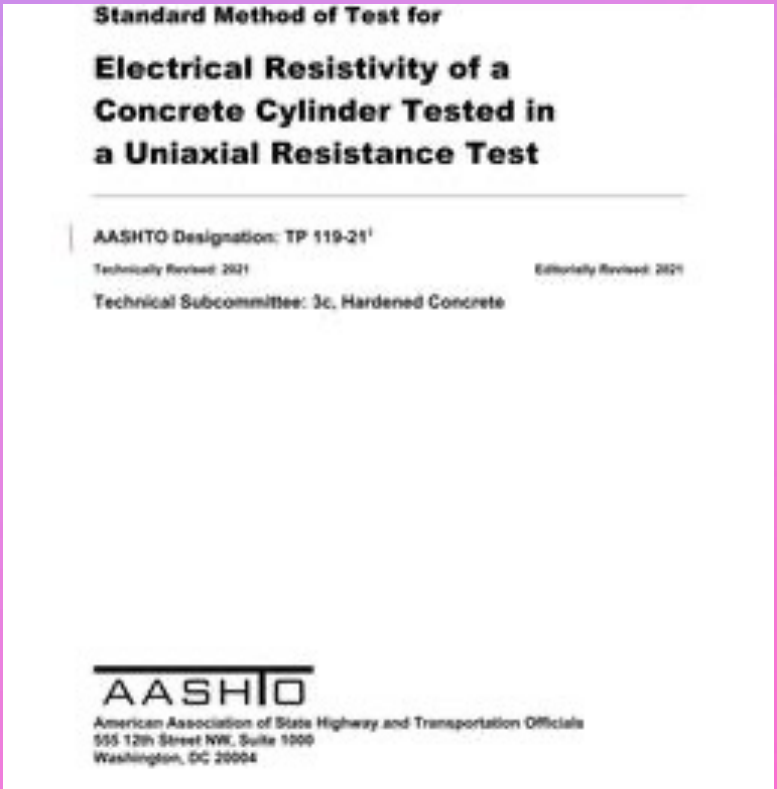
2023 3b Fresh Concrete

Updates to ASTM Equivalency mostly for clarifications.

2023 3c Hardened Concrete

TP 119 – Electrical Resistivity of a Concrete Cylinder Testing in a Uniaxial Resistance Test

Ballot to make a Full Standard



Standard Method of Test for

Electrical Resistivity of a Concrete Cylinder Tested in a Uniaxial Resistance Test

AASHTO Designation: TP 119-21[1]

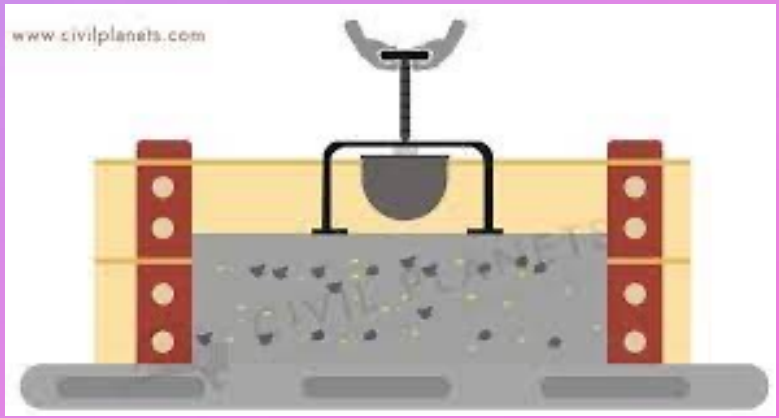
Technically Revised: 2021 Editorially Revised: 2021

Technical Subcommittee: 3c, Hardened Concrete

AASHTO

American Association of State Highway and Transportation Officials
555 12th Street NW, Suite 1000
Washington, DC 20004

2023 3c Hardened Concrete



TP 129 – Vibrating Kelly Ball (Vkelly) Penetration in Fresh Portland Cement Concrete

Ballot to make a Full Standard

2023 3c Hardened Concrete

Updates to ASTM Equivalency

PEM Work

CP Tech Center

https://cptechcenter.org/

National Concrete Pavement Technology Center

Tech Center

Uniting agencies, industry, and researchers to advance concrete pavement technology

Precision and Bias

T 395 - Characterization of the Air-Void System of Freshly Mixed Concrete by the Sequential Pressure Method

T 396 - Evaluating the Workability of Slip Form Concrete Paving with the Box Test

TP 129 - Vibrating Kelly Ball (VKelly) Penetration in Fresh Portland Cement Concrete

TP 119 - Electrical Resistivity of a Concrete Cylinder Tested in a Uniaxial Resistance Test

T 358 - Surface Resistivity Indication of Concrete's Ability to Resist Chloride Ion Penetration

Precision and Bias

Looking for Volunteers to be a part of this research effort!

SAM, Vkelly or Box Tests – Mid West in March 2023

Resistivity Tests – Perform in your laboratory

TP 129 – Vkelly Test & T 396 Box Test

Minor changes will be made to the frequency of the vibrator.

NCHRP

https://www.trb.org/NCHRP/NCHRP.aspx

NCHRP Recently Completed Project

NCHRP 961 – Entrained Air Void Systems for Durable Highway Concrete

Peter Taylor – ISU and John Kevern - UMO

https://www.trb.org/Main/Blurbs/181668.aspx

FY 23 - 3 Research Projects Related to Materials

C-06: Impact of Flooding and Inundation on the Resiliency of Pavements

$650,000 for 24 months

D-04: Variability in Pavement Materials and Construction

$500,000 for 30 months

D-18: Quality Assurance and Sustainability

$350,000 for 24 months

FY 24 – COMP SUBMITTALS

TS 2d – Guidance to Dev. Opt. Framework of AM Per. Testing for BMD

TS 2d – Feasibility Evaluation and Guidance Dev Implementing Practical Protocols for BMD

TS 3a – Alternate SCM's for Concrete

TS 4c – Pavement Markings Friction Levels

TS 5d – Update the AASHTO Pavement Management Guide

NCHRP Synthesis Projects Completed

20-05/06-05 - Rapid Setting Materials for Repairing Concrete

20-05/07-01- Consolidation of Concrete for Pavements, Bridge Decks and Overlays

20-05/12-04 – Resealing Joints and Cracks in Rigid and Flexible Pavements

Many others in many different areas

Current Synthesis Projects..and More

20-05/53-07 – Curing Practices for Concrete Pavements

20-05/53-19 – State DOT Product Evaluation Practices

New Synthesis Projects
22 in total

54-17 – State DOT Innovation Programs and Practices

Synthesis Projects

Due February 17, 2023

Talk then do!

Mark Felag

Summary

I hope you found this presentation useful. Within this document there are QR Codes and links associated with the topics that may be helpful. Please feel free to reach out to me if you need further assistance.

Thank you so much for your time!

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