NEAUPG Meeting
October 20, 2016

Asphalt Mix Committee Meeting

Performance Based Specification

Introduction

The Northeast Asphalt User Producer Group's (NEAUPG) Asphalt Mix Committee is looking closely as a region at Performance Based Specifications (PBS). The Committee would like to provide state agencies in the Northeast with information on laboratory tests which will closely predict asphalt pavement performance in the field over a typical design life. We expect that this process will require multiple tests based on differing criteria and performance characteristics. The eventual objective is to allow states the opportunity to maintain specifications that meet their needs while allowing producers/contractors the means to deviate from those specifications if the require tests are run and criteria are met on mixes in the laboratory

We are reaching out to research centers, State Materials Engineers, and stakeholders to get in site into possible laboratory tests that may be used to predict in place performance and if there is any consensus on which tests are most effect. This includes the actual test, test protocols, and possible standards.

We appreciate your participation in this Survey. All results will be kept confidential and consolidated into one final report. You will be sent a full copy of Survey results when finalized.

Thank you for your time in this matter.

Respectfully yours,

NEAUPG Mix Committee

Co-chairs: Edmund Naras – Pavement Management Engineer, MassDOT

Bruce Barkevich – Vice President, New York Construction Materials Assoc.

Performance Based Specification

Survey

Organization:_____

Individual Filling Out Survey:_____ Title:_____

Address:_____

Email:_____ Phone:_____

Pavement Distresses

Please list the 5 most important pavement distresses that you feel affect pavement performance over its life:

1) _____

2) _____

3) _____

4) _____

5) _____

Others:_____

Performance Based Specification

Survey

Laboratory Tests

Of the 5 distresses above, do you feel there is a laboratory test which can predict the performance of the pavement relative to that distress. If so, what standard for the test would you use.

	Distress	Test	Standard
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____
4)	_____	_____	_____
5)	_____	_____	_____

Other:_____

Performance Based Specification

Survey

Test Criteria

For each of the tests listed above, there are possible test criteria that will insure good performance. Please list what criteria you may want the test samples to meet and if this will change based on field conditions: (traffic, dynamics, loading, environmental, etc.)

Test	Test Criteria
1)_____	_____
2)_____	_____
3)_____	_____
4)_____	_____
5)_____	_____

Other:_____

Performance Based Specification

Survey

Conclusion:

Thank you for taking the time to fill in the above information. This is the first of many steps toward a regional acceptance of Performance Based Specifications. We appreciate your continued participation in advance. Please use the space below to list any other information, concerns, or thoughts about predicting pavement performance in the lab: cost implications, possible loop holes in this concept, additional considerations (warranties, field testing, etc). Anything that may help state agencies determine if this concept can work for their organization.

_____

_____

_____

_____

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_____

_____

Tom Bennert – Rutgers
Rand West – NCAT
Buzz Powell – NCAT
Walaa Mogawer – Umass
Jo Daniel – UNH
Craig Clark – Alfred State
Dave Newcomb – Texas A&M
Leslie McCarthy- Villanova
Mansour Solaimanian – Penn State
Brian Prowell – Advance Asphalt Technologies
John Haddock – Purdue
Kevin Hall – U Arkansas
Louay Mohammad – LSU
Richard Kim – North Carolina State
Elie Hajj – Univ of Nevada – Reno\
Dennis Coakley, Jr. – Advanced Testing

And NEAUPG State Materials Engineers

Survey

Organization: Atlantic Testing Labs

Individual Filling Out Survey: Dennis Coakley Jr.
Title: Operations Manager

Address: 251 Upper Mountain Rd, Highland, NY 12528

Email: Dcoakley@atlantictesting.com

Phone:

Pavement Distresses

Please list the 5 most important pavement distresses that you **feel** affect pavement performance over its life:

1) Fatigue Cracking
2) Rutting
3) Raveling
4) Transverse Cracking
5) Checking

Others:

Laboratory Tests

Of the 5 distresses above, do you feel there is a laboratory test which can predict the performance of the pavement relative to that distress. If so, what standard for the test would you use.

	Distress	Test	Standard
1)	Fatigue Cracking	Flexural Bending	AASHTO T321
2)	Rutting	Hamburg wheel / AMPT	AASHTO T 340
3)	Raveling	AMPT	ASTM 7196
4)	Transverse Cracking	Flexural Bending	AASHTO T321
5)	Cracking	Ampt	Astm 7196

Other:

Test Criteria

For each of the tests listed above, there are possible test criteria that will insure good performance. Please list what criteria you may want the test samples to meet and if this will change based on field conditions: (traffic, dynamics, loading, environmental, etc.)

	Test	Test Criteria
1)	Fatigue	Traffic count, Freeze thaw, Ampt
2)	Rutting	Traffic count, Freeze thaw, Ampt, Astm 7196
3)	Raveling	Traffic count, Binder grading
4)	Transverse Cracking	Traffic count, Flex bending, load, Environment
5)	Cracking	Ampt, Binder grading

Other:

Performance Specs - Surrogate Tests

- Equipment we already have
- Specimens we typically make and are good at making
- Correlation to an excepted test method
- Timely Test Results

Tests Conducted

Test	Method
Cantabro	AASHTO TP 108-14
SCB	LTRC method
IDT	NCAT
Overlay Tester	Tex-248-F modified by NCAT

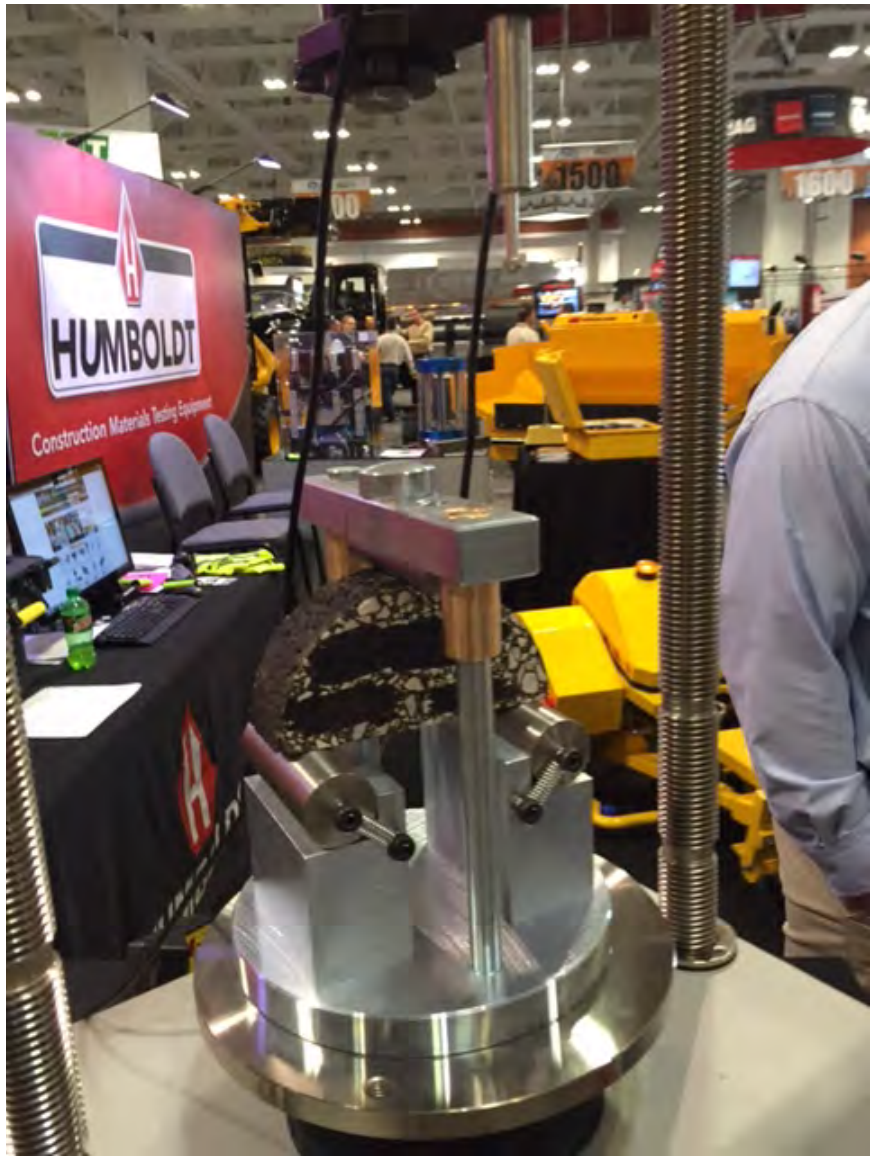
- Test specimens were made from SGC samples compacted to N_{design} (65 gyrations)
- Using N_{design} specimens provides the quickest and simplest path to implementation for any of these durability “performance” tests.
- Sealed buckets of mix were reheated, weighed out, then brought back to the compaction temperature before SGC compaction.

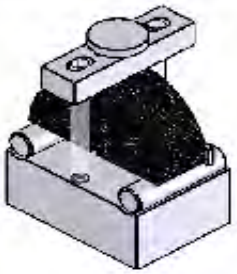
Cantabro Test

- Primarily used for OGFC mixes
- One compacted specimen placed in LA Abrasion drum at a time
- No Steel Balls
- 300 drum revolutions
- Calculate mass loss
- Studies by Doyle and Howard

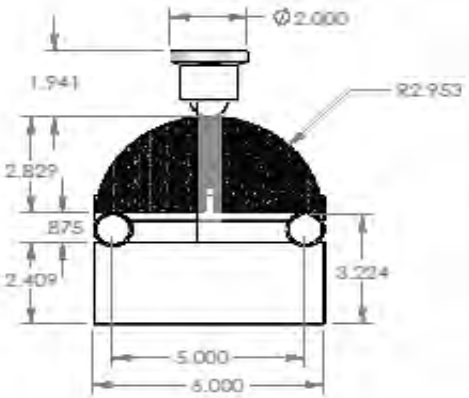
Modified Overlay Test

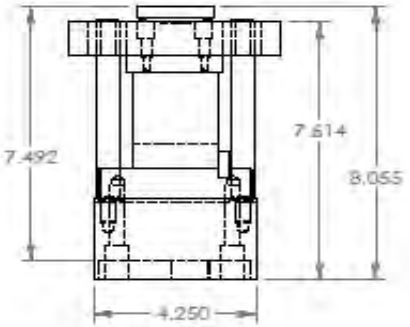
- Method modified by NCAT
  - Displacement = 0.381 mm
  - Cycle = 1 Hz
  - Failure = peak of normalized load x cycle
- Conducted in AMPT @ 25°C
- Triplicates

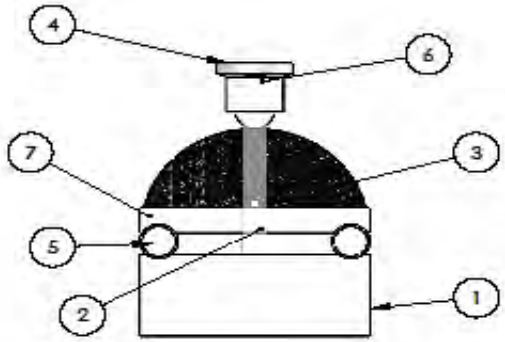

HUMBOLDT
Construction Materials Testing Equipment
1500
1600



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SAT Base Plate	ALUMINUM BASE PLATE	1
2	Base Upright Post	ACRYLIC UPRIGHT GUIDE POST	2
3	ASPHALT SAMPLE	ASPHALT SAMPLE	1
4	TOP PUSH CAP	RADIUS TOP PUSH CAP	1
5	Base Press Block Pin	BASE PUSH BLOCK PINS	2
6	Push Block	PUSH BLOCK	1
7	STOP	ALUMINUM SAMPLE STOP	1







Rev	Name	Date	Description
0	BW	02/11/13	ORIGINAL
1	BW	04-01-14	Modified base, removed pin blocks, changed post from SS to Acrylic and shortened 1 inch.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES
FRACTIONAL: ± 1/32
ANGULAR: ± .5°
TWO PLACE DECIMAL ± .01
THREE PLACE DECIMAL ± .005

MATERIAL *******
FINISH *******

DO NOT SCALE DRAWING

Associated Technologies & Manufacturing, Inc. atm

LTRC SCB Tester

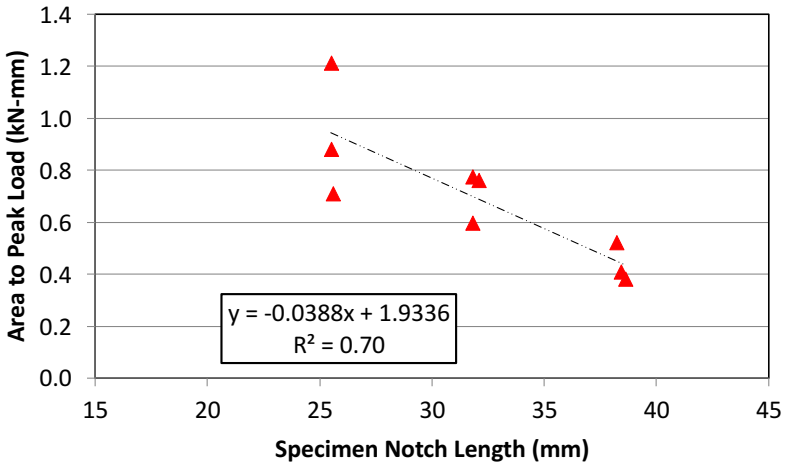
SIZE	DWG. NO.	REV
A	SCB TESTER	0

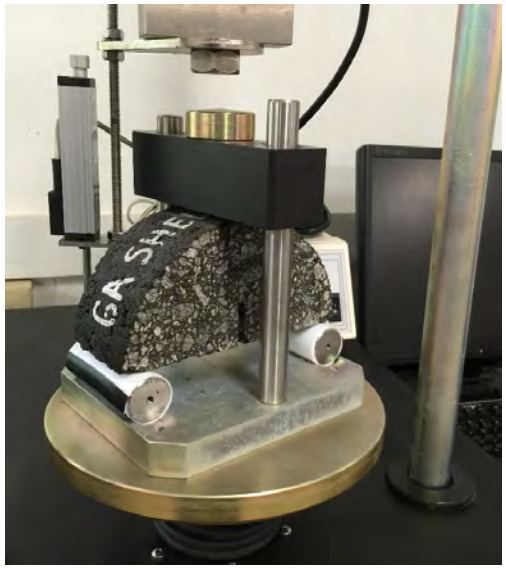
DATE: | DRAWN BY: BILL WITMER | SCALE:

5 4 3 2

Semi-Circular Bend Test (LTRC)

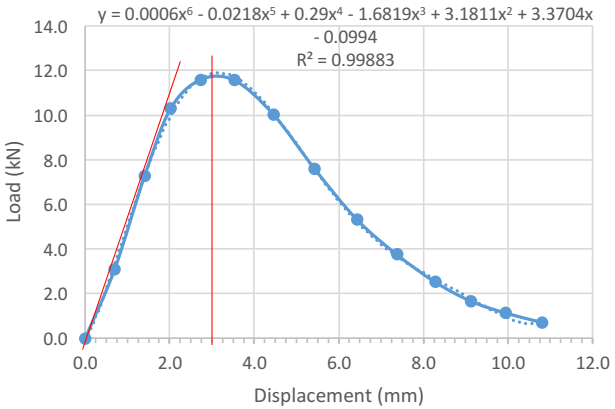
- 50 mm thick specimens
- Ram rate = 0.5 mm/min.
- Notch depths of 38.1, 31.8, 25.4 mm
- Triplicates





IDT Fracture Energy

- 50 mm thick specimens
- Ram rate = 50 mm/min.
- Temp. = 25°C
- Area under load vs. displ. at peak load
- Triplicates



Preliminary Assessment

Test	Time[1]	COV	Sens.	Corr.
Cantabro	40 min.	19%	B	
Mod. OT	2 days	32%	C	
SCB-LTRC	1.5 days[2]	27%[3]	C	
IDT Nflex factor	4 hours	11%	A	

[1] once Ndes specimens are cooled
[2] requires five SGC specimens
[3] COV of Work (area under load-def. curve)