Welcome

2014 NDOR City/County Asphalt Update Webinar


Bob Rea


Matt Beran

Nebraska Asphalt Update

Longitudinal Joint Density
Fast Setting Tack Coats
Thin Lift Overlay – SLX
Notched Wedge and Beveled Edge
Non-Nuclear Testing
RAP & Quantity Projections
Warm Mix Update
Superpave Spec. Update

Robert C. Rea
Nebraska Department of Roads

Longitudinal Joint Density

Longitudinal Joint Density

ASPHALTIC CONCRETE LONGITUDINAL JOINT DENSITY TESTING
(J-7-1013)

Description

One sample for determination of joint density will be taken randomly from each lot. This joint density sample stands independent of the required standard density per sublot used for determining the average of 5 density pay factor.

Equipment

Testing shall be conducted in accordance with the AASHTO T 166, NDR T 587, or an approved Asphalt Density Gauge. The Contractor shall insure that the proper adjustment bias and/or correction factors are used and accessible to Department personnel, along with all other inputs when NDR T 587 or the Asphalt Density Gauge is selected. All correlation factors and test results shall be generated and reported on the Department Density spreadsheets.

Testing

1. The Contractor shall establish the method of testing in the preconstruction conference.
2. One sample for determination of joint density will be taken randomly from each lot, as determined by the Engineer. The location of the edge density samples are identified by the Random Sampling Schedule.
3. The joint density core shall be cut 1 inch away (laterally) from the identified edge of the top of the mat.
4. The Contractor shall cut cores the first day of work following placement of the mixture. The core samples shall be a minimum of a 3 inch (75mm) diameter.
5. The Department will observe the Contractor taking, transporting, and testing the cores (as applicable). The Department will take immediate custody of the cores at the completion of the testing. All disputed values determined using NDR T 587 or the Asphalt Density Gauge will be resolved using AASHTO T166.

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Random Sampling Schedule (RSS)

NEBRASKA DEPARTMENT OF ROADS

Asphaltic Concrete Pavement Random Sampling Schedule

Project No: EXAMPLE Name of Road: Wayne East Page: 1 of 1

Control No. 33333 Asphalt Weight: 30000 Asphalt Type: SP4 Lot Size: 3750 Tons

12 ft 12 ft

Lot Number	Sublot Number	Ton to be Sampled Lot	Ton to be Sampled PJT	Distance from Edge	Distance to Core	FAA/ CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR	Lot Number	Sublot Number	Ton to be Sampled Lot	Ton to be Sampled PJT	Distance from Edge	Distance to Core	FAA/ CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR
1	1	270	270	4	59		-2		IN	X	11	1	204	37704	12	-78		-21		OUT	X
1	2	1233	1233	3	33		-37				11	2	1381	38881	1	91		-36			
1	3	1892	1892	5	23		1				11	3	1684	39184	3	-48		87			
1	4	2348	2348	2	-75		-60				11	4	2724	40224	0	62	X	4	X		
1	5	3194	3194	2	-47	X	-58	X			11	5	3651	41151	8	12		-39			
2	1	715	4465	0	18		-19				12	1	310	41560	9	52		78			
2	2	1366	5116	0	66	X	44	X			12	2	1274	42524	5	52	X	-2	X	IN	
2	3	2099	5849	8	84		-82				12	3	1513	42763	6	-15		47			
2	4	2859	6609	4	88		-81				12	4	2795	44045	5	80		3			
2	5	3650	7400	9	-56		-21		IN		12	5	3036	44286	5	73		91			
3	1	459	7959	2	78	X	-73	X			13	1	317	45317	9	-91	X	-5	X		
3	2	816	8316	12	25		38				13	2	916	45916	10	6		-6		IN	
3	3	1659	9159	6	63		-17		OUT		13	3	1680	46680	1	-26		-85			
3	4	2340	9840	11	-60		-79				13	4	2532	47532	5	-75		26			
3	5	3559	11059	9	70		51			X	13	5	3061	48061	10	-48		82			
4	1	194	11444	12	77		40				14	1	421	49171	3	-67	X	-91		IN	
4	2	927	12177	0	-80	X	-41				14	2	1141	49891	8	53		86			
4	3	2017	13267	6	4		-9				14	3	2155	50905	4	-67		7			
4	4	2516	13766	6	-72		95				14	4	2863	51613	8	5		16			
4	5	3543	14793	8	12		-77		IN		14	5	3692	52442	10	-48		47			
5	1	154	15154	11	-57		-37				15	1	736	53236	4	88		-37			
5	2	1449	16449	0	45		-67				15	2	1091	53591	12	97		-26			
5	3	1824	16824	4	21	X	97	X			15	3	1608	54108	8	97		-13			
5	4	2491	17491	1	-78		48				15	4	2369	54869	9	58		15			
5	5	3134	18134	3	72		-58		OUT		15	5	3233	55733	11	36	X	-70		IN	X
6	1	732	19482	6	8		23				16	1	714	56964	4	3	X	65			
6	2	1245	19995	3	-89	X	26	X			16	2	1251	57501	3	-60		94			
6	3	2111	20861	5	-59		-10				16	3	2094	58344	11	-24		-71			
6	4	2562	21312	9	-92		37				16	4	2283	58533	2	-26		-53		OUT	
6	5	3268	22018	11	-12		17		OUT		16	5	3077	59327	7	-61		53			
7	1	364	22864	3	-34	X	94	X		X	17	1	318	60318	9	82	X	41	X		
7	2	1256	23756	12	-67		25				17	2	867	60867	0	-36		65			
7	3	1555	24055	9	25		-79		OUT		17	3	1731	61731	9	-67		46		IN	
7	4	2938	25438	3	25		65				17	4	2618	62618	8	36		24			
7	5	3339	25839	3	76		22				17	5	3728	63728	1	-52		51			
8	1	64	26314	10	-92	X	-29	X			18	1	476	64226	3	97		-74			
8	2	872	27122	7	68		23				18	2	1324	65074	2	91	X	-48	X		
8	3	2204	28454	6	-17		-94				18	3	2020	65770	2	33		64		IN	
8	4	2831	29081	12	50		13		IN		18	4	2917	66667	1	11		-88			
8	5	3159	29409	7	-47		-58				18	5	3412	67162	9	-75		54			
9	1	562	30562	0	-57		49				19	1	196	67696	5	10		46			
9	2	1151	31151	2	11	X	84	X			19	2	1301	68801	4	-46	X	-57	X	OUT	
9	3	1628	31628	3	56		1				19	3	1815	69315	7	1		-25			
9	4	2787	32787	10	-26		73		IN		19	4	2428	69928	7	53		85			
9	5	3305	33305	2	-16		99				19	5	3446	70946	4	61		-41			
10	1	222	33972	1	31		-3				20	1	591	71841	8	-8		-24			
10	2	1452	35202	5	-6		70				20	2	1018	72268	0	17	X	57	X		
10	3	1894	35644	9	45	X	-13	X			20	3	1789	73039	0	75		-76			
10	4	2941	36691	7	10		72				20	4	2644	73894	12	56		76		OUT	
10	5	3132	36882	2	-51		58		OUT		20	5	3096	74346	5	39		-95			

Date: 2/24/2014

** For Joint Density Column, OUT=Outside Edge (0' Offset) and IN=Inside Edge (Ex. 12' offset on 12' Roadway) See Special Provisions for Joint Density Requirements*

ASPHALT DENSITY GAUGE
(J-7-1013)

Description

An Asphalt Density Gauge may be used for Quality Control when determining the in-place density of asphaltic concrete.

Material Requirements

The device must be approved by the Flexible Pavements Engineer.

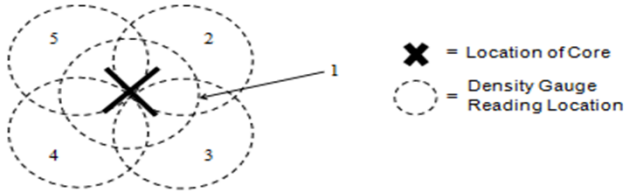
Testing Method

1. The Contractor shall establish the method of testing in the preconstruction conference. All testing shall be in accordance with AASHTO T-343 and as directed in this provision.

2. The first 3 density locations of the project shall be cored in accordance with AASHTO T166 to calibrate the asphalt density gauge. Prior to coring, the Contractor shall calibrate the device at each core location.

3. Calibration: A correction factor shall be established for the first 3 cores by calculating the difference between the average density measurement of the asphalt density gauge and the roadway core density. This correction factor shall be entered into the device and used for measuring subsequent densities. The correction factor shall be verified with another core for every 15 density readings that are to be recorded.

4. Density Reading Procedure: Place the asphalt density gauge on the asphalt mat over the area to be tested. Record the density reading, and repeat this process for a total of 5 readings, as detailed in Figure 1. An average of the 5 readings will be used as the density reading for each location. For densities taken less than 6 inches from the edge of the lift, density readings shall be taken as shown in Figure 2. The span between density reading locations in each direction shall be no greater than 12".



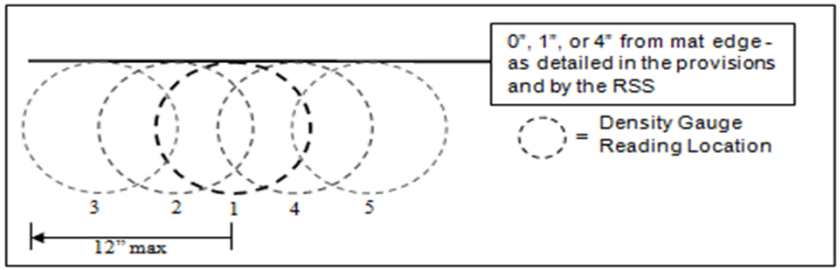


Figure 2: Asphalt density gauge reading pattern less than 6" from mat edge

Longitudinal Joint Density

6. The Contractor shall determine the density of samples by comparing the specific gravity of the core sample to the Maximum Specific Gravity (Rice) as follows:

$$\% \text{ Density} = \frac{\text{Specific Gravity of Core}}{\text{Maximum Mix Specific Gravity Rice)}} \times 100$$

where:

$$\text{Sp. Gr. of Core} = \frac{\text{Wt. of Core in Air}}{\text{Wt. of SSD Core} - \text{Wt. of Core in Water}}$$

$$\text{Maximum Mix Specific Gravity} = \text{(Rice)} \quad \frac{\text{Wt. of Mix in Air}}{\text{Wt. of Mix in Air} - \text{Wt. of Mix in Water}}$$

Note: The individual QC test value of the Maximum Mix Specific Gravity (Rice), determined by AASHTO T 209, will be used to calculate the density of each corresponding core.

7. Exceptions to the sampling and testing of joint density core samples for the determination of density are as follows:

   a. When the nominal layer thickness is 1 inch (25 mm) or less, the sampling and testing of density for this layer will be waived.

   b. When the average thickness for the standard lot is 1 inch (25 mm) or less, the testing of joint density samples for this lot will be waived.

8. If requested by the Contractor, a re-test for the original joint density test, taken no later than the working day following the receipt of the test result, will be allowed. Locations of re-tests will be provided by the Engineer from the Random Sampling Schedule. The density obtained by the re-test shall be used to establish the density pay factor for the lot.

Method of Measurement

All work related to the Asphaltic Concrete Longitudinal Joint Density Sample will not be measured and paid for but will be subsidiary to the [illegible] asphaltic concrete.

Basis of Payment

1. The pay factor shall be computed according to the following table:

Joint Density Test Lot Pay Factor			
Joint Density	**SPS**	**SPR**	**SPH**
93.0 or greater	102%	102%	102%
92.0 to 92.9	100%	102%	102%
91.0 to 91.9	98%	100%	102%
90.0 to 90.9	98%	98%	100%
89.0 to 89.9	98%	98%	98%
88.9 or Less	98%	98%	98%

2. The pay factor will be incorporated in the production specs calculation in the Superpave Software. Any incentive or disincentive will be added or subtracted to the pay factor after any other applicable production tolerances pay factors have been incorporated. The pay factor will apply to the entire lot.

Project No.		Control No.	
Location:		Type of Mix:	
Contractor:		Year:	
Project Manager:		Sheet No.	2

SUPERPAVE ASPHALT PAY FACTOR SUMMARY

			Test Results				Pay Factors (%)				
Date	Lot #	Sub Lot #	N_{design} Voids	4 Test Ave. @N_{design}	Density Individual	Density Lot Average	N_{design} Voids	4 Test Ave. @N_{design}	Density Lot Ave.	Production Specs.	Sub Lot Pay Factor
	5	1									
	5	2									
	5	3									
	5	4									
	5	5									
	6	1									
	6	2									
	6	3									
	6	4									
	6	5									
	7	1									
	7	2									
	7	3									
	7	4									
	7	5									
	8	1									
	8	2									
	8	3									
	8	4									
	8	5									

Binder and Emulsion Sampling

Binder and Emulsion Sampling

Only 1 Quart Sample needed for now on, not 2

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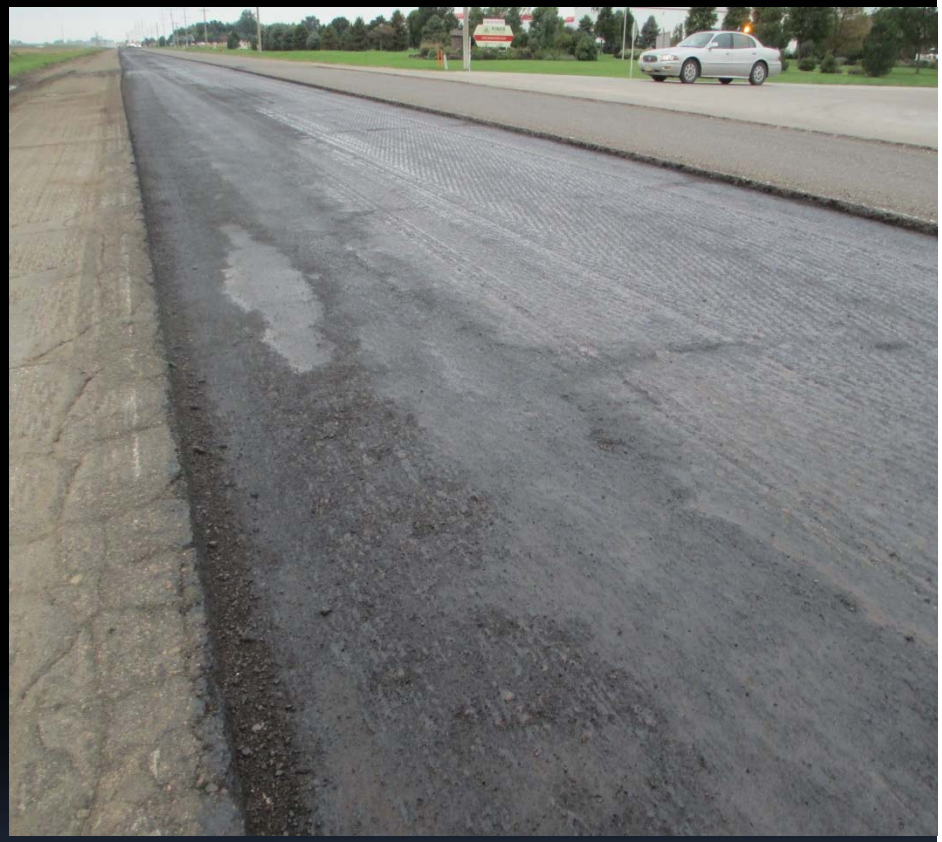
Fast Setting Tack Coat

Fast Setting Tack Coat



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Fast Setting Tack Coat
CFS-1

CFS-1 Fast Setting Tack Draft Specification

Test	Specification	Units
Saybolt Viscosity @ 77F	20 – 100	SFS
Sieve	0.30 maximum	%
Distillation Residue (500F)	57 minimum	%
Residue Penetration @77F	60 – 175	dmm
Residue Ductility @77F	40 minimum	cm
Solubility in TCE	97.5 minimum	%

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Thin Lift Overlays - SLX

Thin Lift Overlays - SLX

- 300 Miles
- 13 Projects
- All 8 Districts

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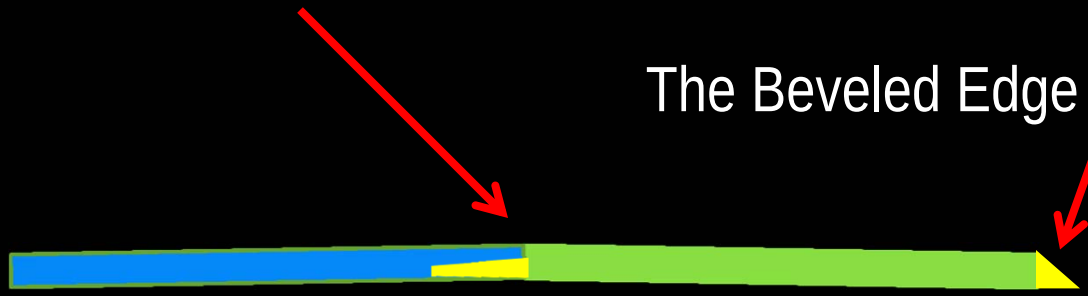
Notched Wedge & Beveled Edge

The Notched Wedge at Centerline

The Beveled Edge on outside Edge



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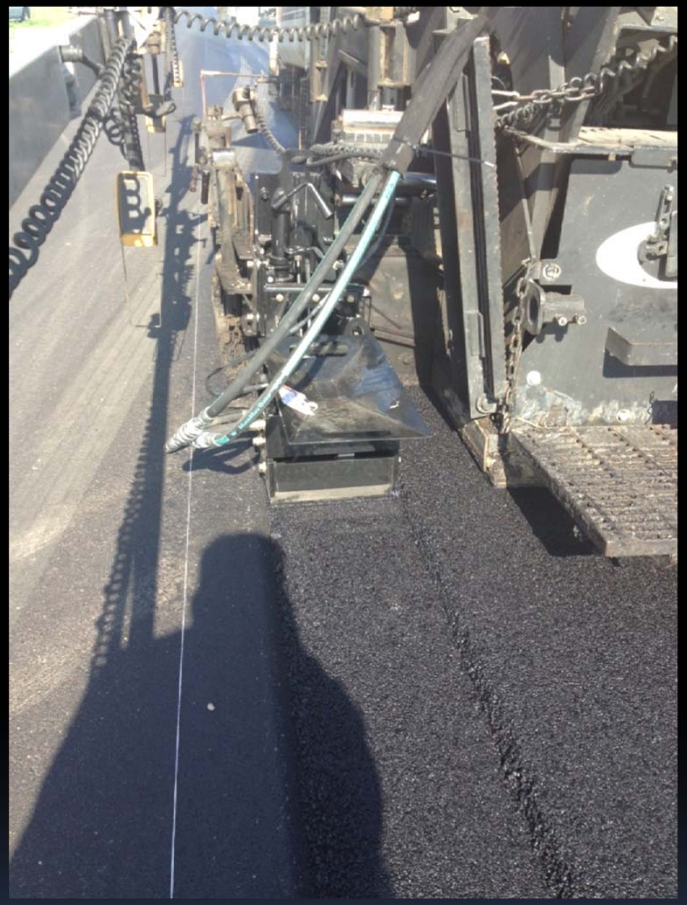
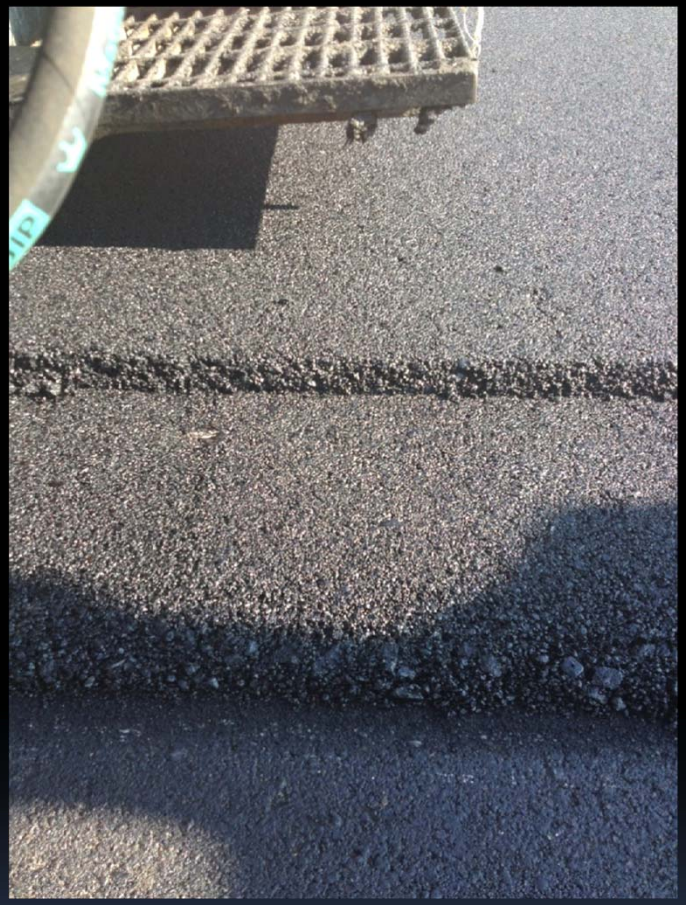
The Notched Wedge

NOTCHED WEDGE JOINT





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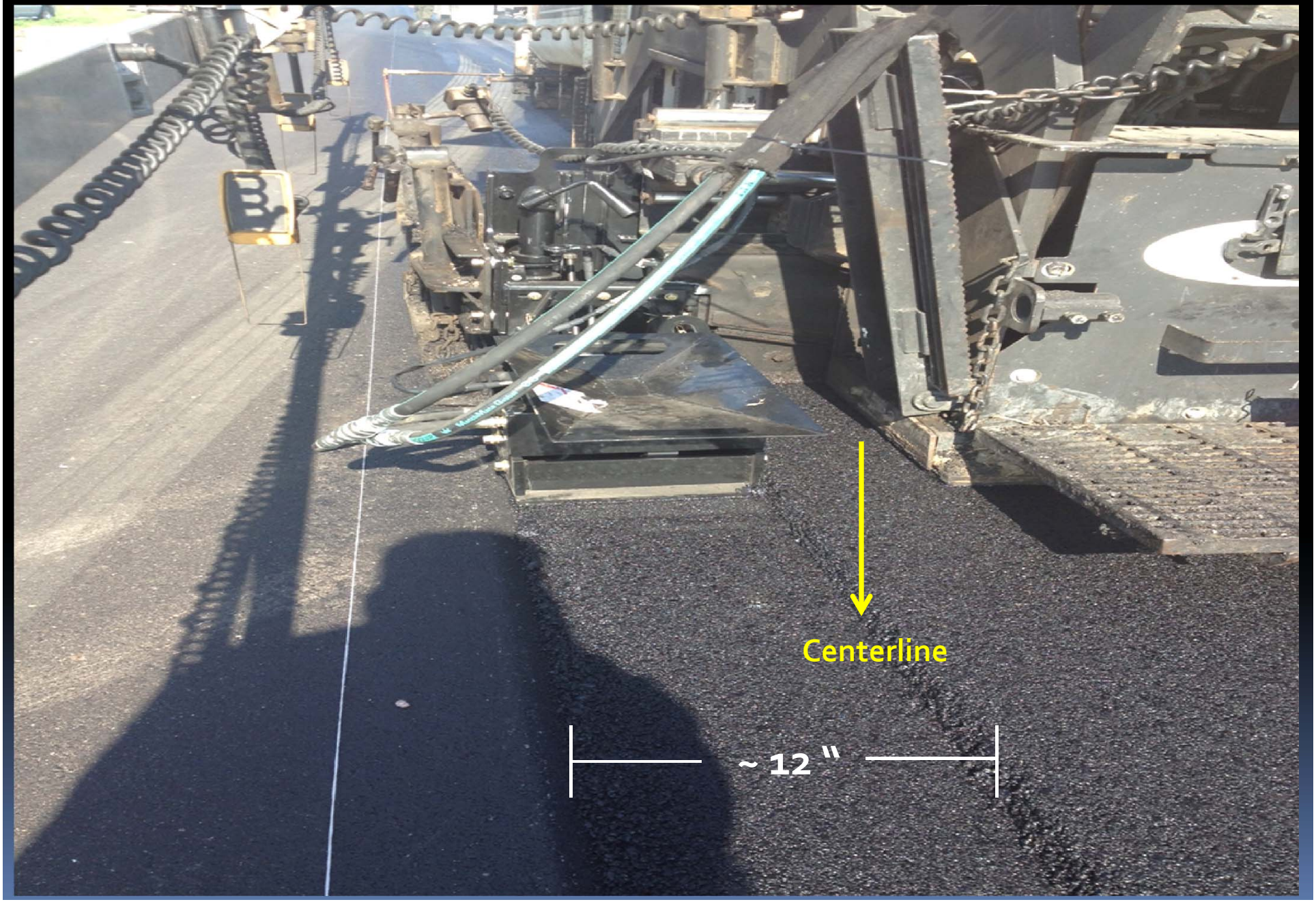
NOTCHED WEDGE JOINT



NOTCHED WEDGE JOINT

The Beveled Edge

BEVELED EDGE

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BEVELED EDGE

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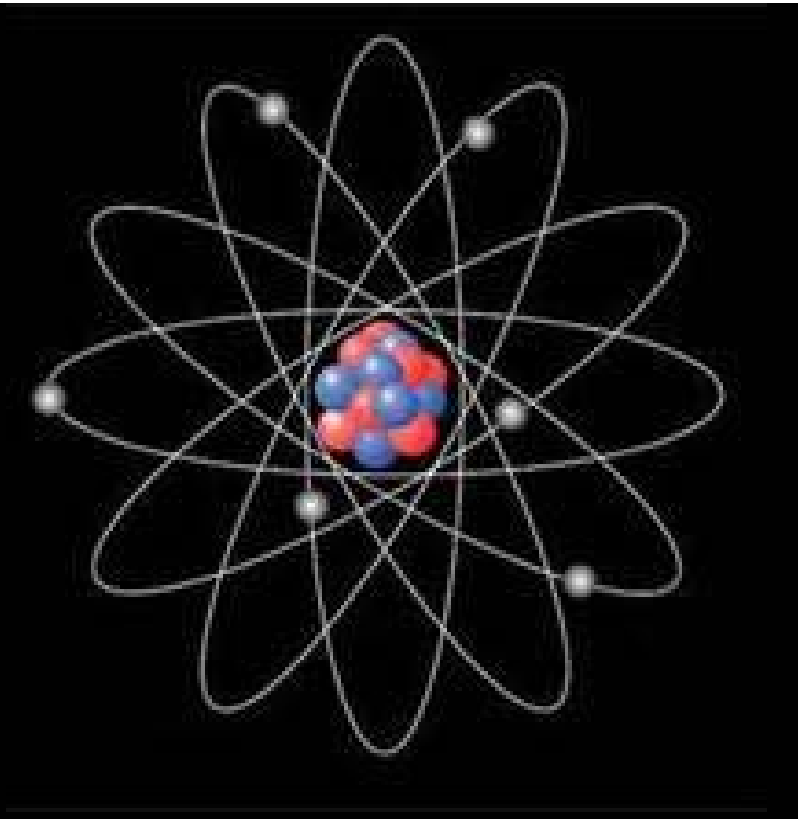
Non-Nuclear Testing

NDOR Going Non-Nuclear



- PQI (Asphalt Density)

- LWD (Soils Density)

Pavement Quality Indicator (PQI)

- Non-Nuclear
- From Microwave Technology
- Effective February 2013 Lettings

Pavement Quality Indicator (PQI)

- Test run according to AASHTO TP 68 and as directed
- First 3 density locations on project cored for correction factor, every 15th density after that
- Average of 5 readings at each location:

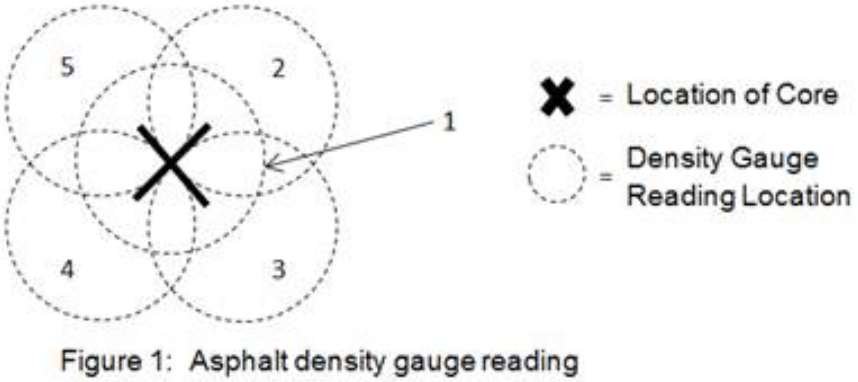
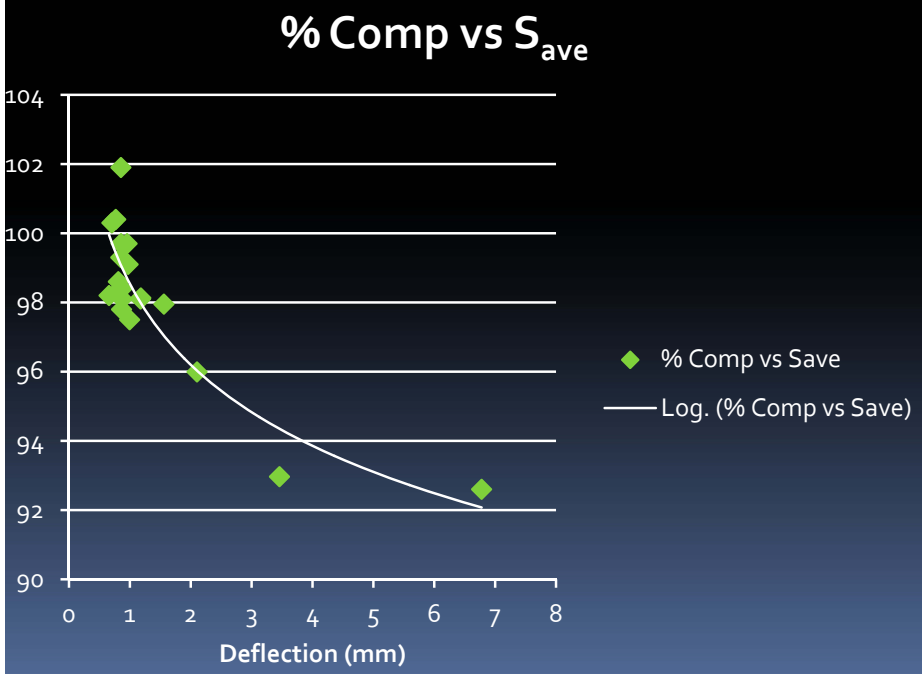


Figure 1: Asphalt density gauge reading

- Any density reading below 90% will require a core cut to be used for density at that location

ightweight Deflectometer (LWD)

- Non-Nuclear
- Testing and Acceptance based on Moisture and Deflection
- Each District in 2013
- Implementation over next 2 years



Soil Moisture Testing Kit

RAP and Quantity Projections

➢ Average % RAP in 2013 (by Mix)

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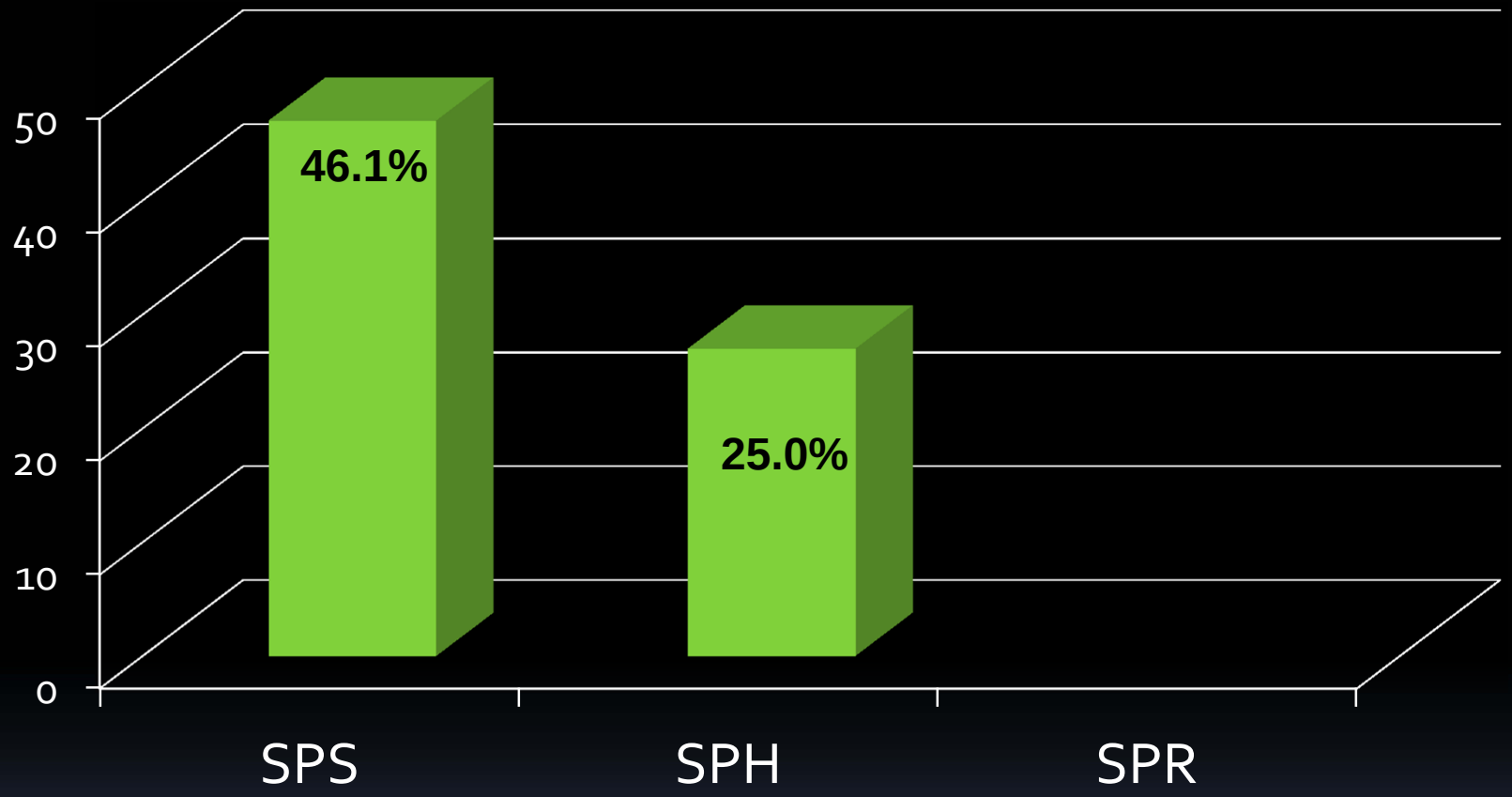
➢ Average % RAP in 2013 (by Mix)



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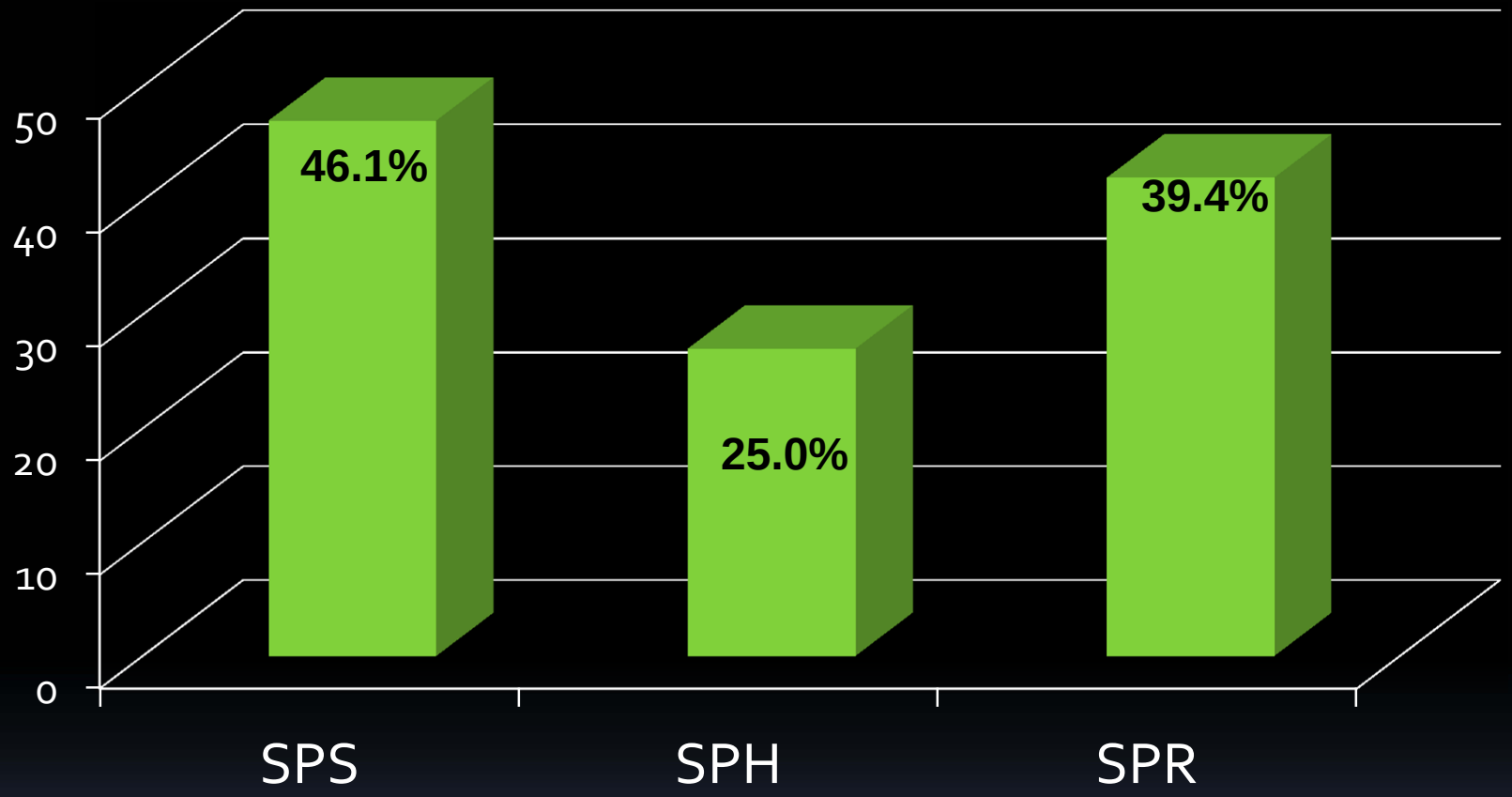
➢ Average % RAP in 2013 (by Mix)



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Projected Tons in 2014 (1,000 tons)

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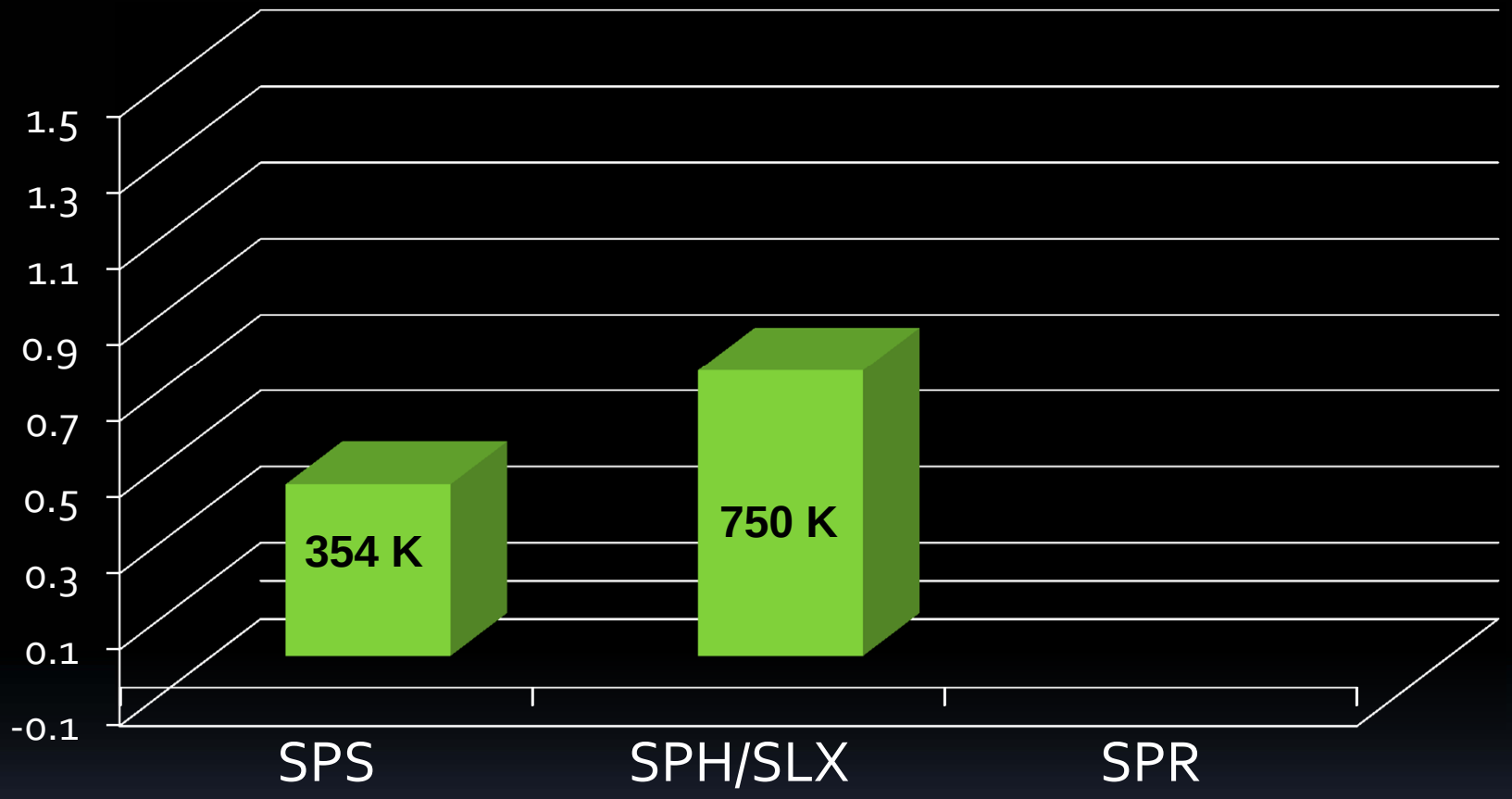
Projected Tons in 2014 (1,000 tons)



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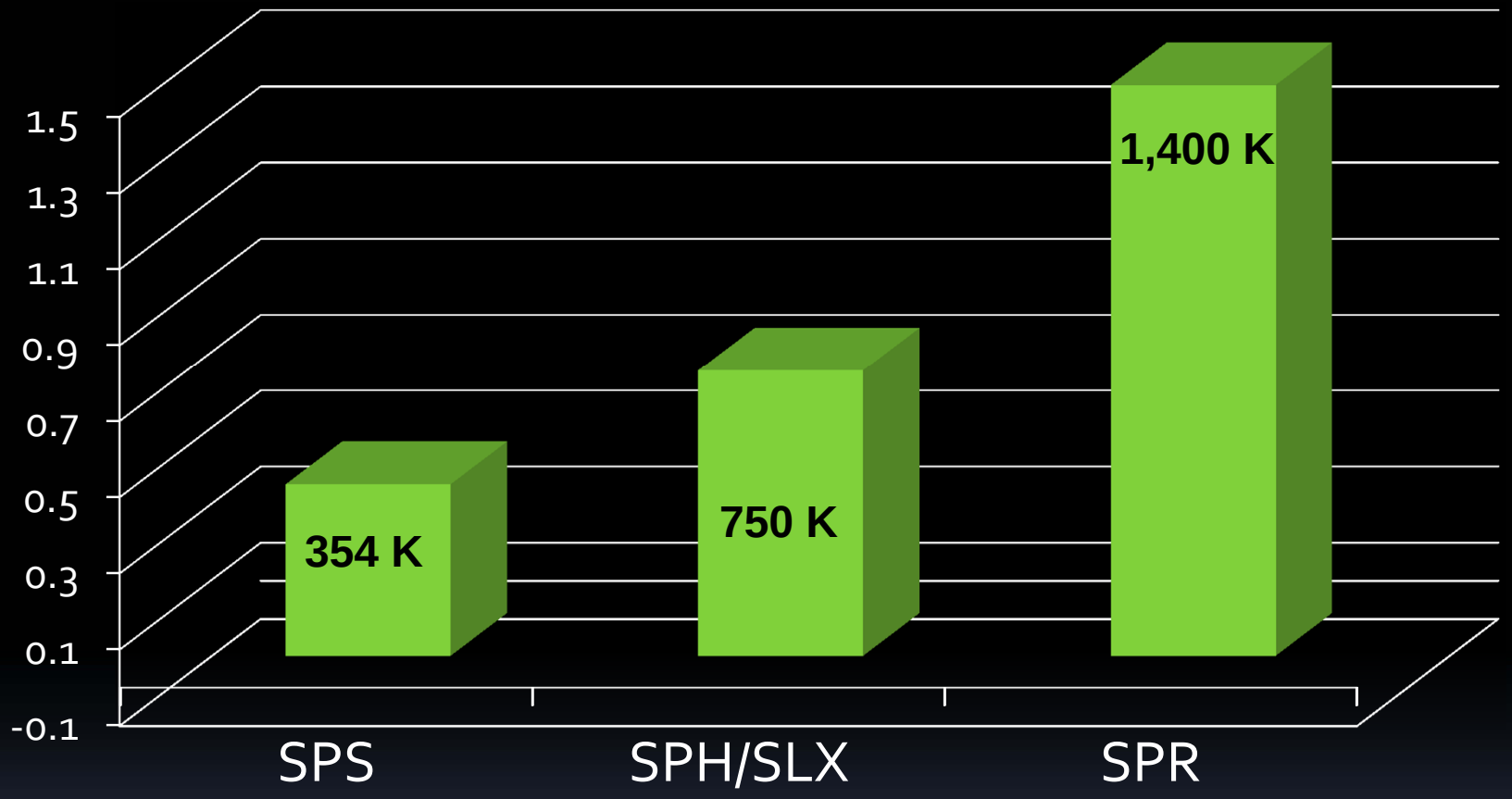
Projected Tons in 2014 (1,000 tons)



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Coming Soon in 2014

Project Name	FY 2012 to 2013			**ASPHALT MATERIALS**								
Project Number												
Project Control No.												
Material Cost Average Statewide Values - Updated annually												
Average Value of Aggregates	$12											
Average Value of Portland Cement	$110											
Average Value of PG Binders	$702											
Average Value of Fly Ash	$40											
Material Item	**Quantitiy**	**Units**	**Mass**	**Material Recycled Detail**	**% Recycle**	**Aggregate Mass Recycled**	**Aggregate Value Recycled**	**Cement Mass Recycled**	**Cement Value Recycled**	**Total Tons of Recycled Material**	**Value of Recycled Material**	
Crushed Concrete Foundation Course - 4 Inch	0	sq yd	0	100% Crushed Concrete	100	0	$0	0.0	$0	0	$0	
Crushed Concrete Foundation Course - 5 Inch	0	sq yd	0	100% Crushed Concrete	100	0	$0	0.0	$0	0	$0	
Crushed Concrete Foundation Course - 6 Inch	0	sq yd	0	100% Crushed Concrete	100	0	$0	0.0	$0	0	$0	
Bituminous Foundation Course - 4 Inch	502	sq yd	94	100% RAP	100	94	$1,130	0.0	$0	94	$1,130	
Bituminous Foundation Course - 5 Inch	0	sq yd	0	100% RAP	100	0	$0	0.0	$0	0	$0	
Bituminous Foundation Course - 6 Inch	26187	sq yd	7365	100% RAP	100	7365	$88,381	0.0	$0	7365	$88,381	
Fly Ash for Subgrade or Stabilized Bituminous	28276	Ton	28276	12 to 15% Typical	100	0	$0	28276.0	$1,131,040	28276	$1,131,040	
Cement for Stabilization	0	Ton	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
Concrete for Structures	0	cu yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
Concrete Pavement Repair	0	cu yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
Broken Concrete Rip Rap	0	Tons	0	100% Crushed Concrete	100	0	$0	0.0	$0	0	$0	
Concrete for Drives, walks and Intersections (calcs on 7 inc	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
6 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
7 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
8 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
9 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
10 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
11 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
12 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
13 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
14 inch Concrete Pavement	0	sq yd	0	25% Fly Ash in Cement	5.85	0	$0	0.0	$0	0	$0	
Surfacing - any thickness (calculates based on 8")	109397	sq yd	47260	41% RAP Content	41	19376	$232,517	1046.3	$734,520	20423	$967,037	
Type SPS Asphaltic Concrete	298371	Tons	298371	46.1% RAP Content	46.1	130672	$1,568,059	7427.6	$5,214,209	138099	$6,782,268	
Type SPR Asphaltic Concrete	1578419	Tons	1578419	39.4% RAP Content	39.4	590802	$7,089,627	33582.4	$23,574,875	624385	$30,664,502	
Type SLX Asphaltic Concrete	0	Tons	0	25% RAP Content	25	0	$0	0.0	$0	0	$0	
Type LC Asphaltic Concrete	55203	Tons	55203	0% RAP Content	0	0	$0	0.0	$0	0	$0	
Type SPH Asphaltic Concrete	329293	Tons	329293	25.0% RAP Content	25	78207	$938,485	4445.5	$3,120,710	82653	$4,059,195	

Project Raw Materials (Tons)

2,344,281

Post Consumer Recycle Content in Project Raw Materials (Tons)

901,294

Post Consumer Recycle Content

38%

Estimated Value of Post Consumer Content Recycled

$43,693,552

On Project Plan Sets in 2014

Project Raw Materials (Tons)

2,344,281

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901,294

Post Consumer Recycle Content

38%

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$43,693,552

NDOR
Nebraska Department of Roads

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
AGC
SKILL RESPONSIBILITY INTEGRITY

U.S. Department of Transportation
Federal Highway Administration

Warm Mix Asphalt Update

WMA Update

2013

- 70% of Projects utilized WMA
  - Over 1.5 Million Tons
- 90% Evotherm
- 10% Water-Foaming

WMA Update

- New Approved Additive: Rediset LQ-1102C
  - Chemical Additive – Similar to Evotherm
- Utilized on Hwy. 15 – Wayne South

AkzoNobel
Tomorrow's Answers Today

Superpave Spec. Updates

Superpave Spec Updates

- Included Ignition Oven Adjustment Factor of 0.1% for mixes containing WMA

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- Included Ignition Oven Adjustment Factor of 0.1% for mixes containing WMA
- Increased Maximum RAP percentage for SPS and SPR to 55%

Superpave Spec Updates

- Included Ignition Oven Adjustment Factor of 0.1% for mixes containing WMA
- Increased Maximum RAP percentage for SPS and SPR to 55%
- Removed scaled pay table on FAA for SPH mixtures
  - Now straight 20% penalty

Questions
&
Open Discussion

Longitudinal Joint Density
Fast Setting Tack Coats
Thin Lift Overlay – SLX
Notched Wedge and Beveled Edge
Non-Nuclear Testing
RAP & Quantity Projections
Warm Mix Update
Superpave Spec. Update