

**Quadrant:** S  
**Section:** 7A  
**Sublot:** 1

**Laboratory Diary**

General Description of Mix and Materials

Design Method: Super  
 Compactive Effort: 100 gyrations  
 Binder Performance Grade: 76-22  
 Modifier Type: SBS  
 Aggregate Type: Limestone/Sand/RAP  
 Design Gradation Type: DGA

Avg. Lab Properties of Plant Produced Mix

Sieve Size	Target	QC
25 mm (1"):	100	100
19 mm (3/4"):	100	100
12.5 mm (1/2"):	100	100
9.5 mm (3/8"):	95	93
4.75 mm (#4):	63	51
2.36 mm (#8):	35	26
1.18 mm (#16):	22	16
0.60 mm (#30):	15	12
0.30 mm (#50):	10	9
0.15 mm (#100):	7	7
0.075 mm (#200):	4.8	5.3
Binder Content (Pb):	5.9	5.8
Eff. Binder Content (Pbe):	4.9	4.7
Dust-to-Eff. Binder Ratio:	1.0	1.1
RAP Binder Replacement (%):	9.2	12.8
RAS Binder Replacement (%):	0.0	0.0
Total Binder Replacement (%):	9.2	12.8
Rice Gravity (Gmm):	2.487	2.476
Bulk Gravity (Gmb):	2.388	2.403
Air Voids (Va):	4.0	3.0
Agg. Bulk Gravity (Gsb):	2.650	2.63
VMA:	15.7	14
VFA:	73	79

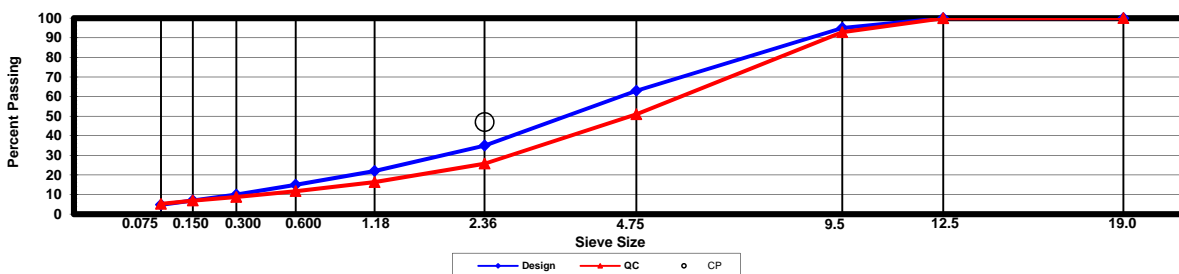
**Construction Diary**

Relevant Conditions for Construction

Completion Date: August 20, 2015  
 24 Hour High Temperature (F): 90  
 24 Hour Low Temperature (F): 73  
 24 Hour Rainfall (in): 0.00  
 Planned Subot Lift Thickness (in): 1.5  
 Paving Machine: Roadtec

Plant Configuration and Placement Details

Component	% Setting
Binder Content (Plant Setting)	5.6
KY Limestone #9	43.0
KY Limestone Sand	25.0
KY Washed Friction Sand	20.0
Kentucky RAP	12.0
Evotherm P15	0.5
As-Built Sublot Lift Thickness (in):	1.3
Total Thickness of All New Sublots (in):	1.3
Approx. Underlying HMA Thickness (in):	22.5
Type of Tack Coat Utilized:	NTSS-1HM
Undiluted Target Tack Rate (gal/sy):	0.08
Approx. Avg. Temperature at Plant (F):	345
Avg. Measured Mat Compaction:	92.1%



**General Notes:**

- References are by quadrant (E=East, N=North, W=West, S=South, L=Lee Rd 159, U=US-280), section #, and sublot (top=1).
- DGA, SMA, & OGFC refer to dense graded asphalt, stone matrix asphalt, & open-graded friction course, respectively.
- Production Gsb estimated using the actual production Gse and the difference between Gse and Gsb in the mix design.

**Section and/or Sublot Specific Notes:**

The "Target" values shown for S7A-1 comes straight from the approved mix design. The plant was run on the job mix without making an adjustment to the aggregate blend in accordance with instructions provided by the Kentucky Transportation Cabinet. The objective of the experiment was to construct an S7B-1 mat with a finer blend and lower design gyration mix than the standard mix in S7A-1 in order to improve the performance of the longitudinal joint. To support this effort, both the inside and outside lanes of the Track were paved, taking care to wait a few days between mat placements to simulate actual staged construction. There was no special mat edge treatment at the joint (i.e., the standard screed end gate was in place for both lanes). Thermoplastic centerline stripe was applied.

**Quadrant:** S  
**Section:** 7B  
**Sublot:** 1

**Laboratory Diary**

General Description of Mix and Materials

Design Method: Super  
 Compactive Effort: 65 gyrations  
 Binder Performance Grade: 76-22  
 Modifier Type: SBS  
 Aggregate Type: Limestone/Sand/RAP  
 Design Gradation Type: DGA

Avg. Lab Properties of Plant Produced Mix

Sieve Size	Target	QC
25 mm (1"):	100	100
19 mm (3/4"):	100	100
12.5 mm (1/2"):	100	100
9.5 mm (3/8"):	93	100
4.75 mm (#4):	51	79
2.36 mm (#8):	26	46
1.18 mm (#16):	16	32
0.60 mm (#30):	12	24
0.30 mm (#50):	9	12
0.15 mm (#100):	7	7
0.075 mm (#200):	5.3	5.1
Binder Content (Pb):	5.8	6.0
Eff. Binder Content (Pbe):	4.7	4.9
Dust-to-Eff. Binder Ratio:	1.1	1.0
RAP Binder Replacement (%):	12.8	10.3
RAS Binder Replacement (%):	0.0	0.0
Total Binder Replacement (%):	12.8	10.3
Rice Gravity (Gmm):	2.476	2.434
Bulk Gravity (Gmb):	2.403	2.370
Air Voids (Va):	3.0	2.6
Agg. Bulk Gravity (Gsb):	2.630	2.59
VMA:	13.9	14
VFA:	79	81

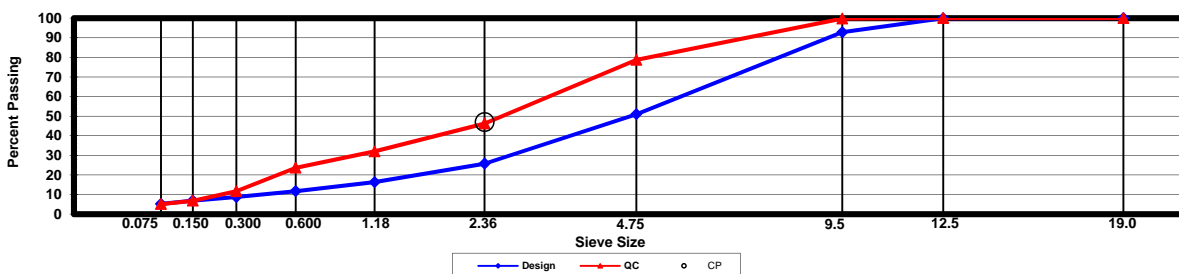
**Construction Diary**

Relevant Conditions for Construction

Completion Date: August 20, 2015  
 24 Hour High Temperature (F): 90  
 24 Hour Low Temperature (F): 73  
 24 Hour Rainfall (in): 0.00  
 Planned Sublot Lift Thickness (in): 1.5  
 Paving Machine: Roadtec

Plant Configuration and Placement Details

Component	% Setting
Binder Content (Plant Setting)	6.2
KY Limestone Sand	49.0
KY Washed Friction Sand	25.0
Kentucky Natural Sand	16.0
Kentucky RAP	10.0
Evotherm P15	0.5
As-Built Sublot Lift Thickness (in):	1.4
Total Thickness of All New Sublots (in):	1.4
Approx. Underlying HMA Thickness (in):	22.5
Type of Tack Coat Utilized:	NTSS-1HM
Undiluted Target Tack Rate (gal/sy):	0.08
Approx. Avg. Temperature at Plant (F):	345
Avg. Measured Mat Compaction:	95.1%



**General Notes:**

- References are by quadrant (E=East, N=North, W=West, S=South, L=Lee Rd 159, U=US-280), section #, and sublot (top=1).
- DGA, SMA, & OGFC refer to dense graded asphalt, stone matrix asphalt, & open-graded friction course, respectively.
- Production Gsb estimated using the actual production Gse and the difference between Gse and Gsb in the mix design.

**Section and/or Sublot Specific Notes:**

The "Target" values shown for S7B-1 are the QC values from the S7A-1 control mix to facilitate comparison. The objective of the experiment was to construct an S7B-1 mat with a finer blend and lower design gradation mix than the standard mix in S7A-1 in order to improve the performance of the longitudinal joint. To support this effort, both the inside and outside lanes of the Track were paved, taking care to wait a few days between mat placements to simulate actual staged construction. There was no special mat edge treatment at the joint (i.e., the standard screed end gate was in place for both lanes). In order for this experiment to be successful, longitudinal joint performance and overall mix durability must be improved without compromising rutting performance. QC air voids were slightly low in S7B-1, but still compared well with S7A-1. Thermoplastic centerline stripe was applied.