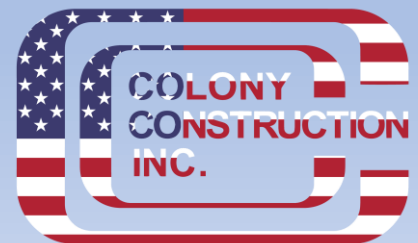
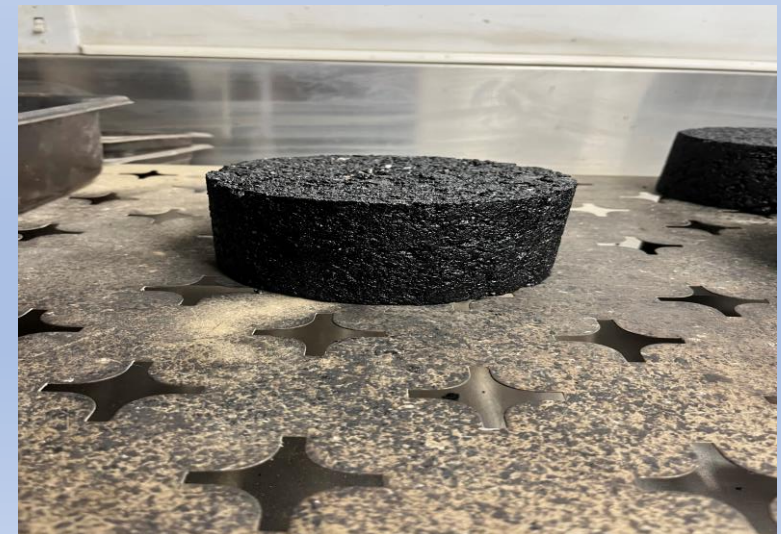


BMD – What to Expect in the Field

Travis Cable
Colony Construction INC.



Before we can we discuss the Field we must first understand what changes may be needed to meet Performance testing



Initial Mix Evaluation

- 2020 we began testing plant produced mix which showed excellent results
- 2021 we developed our first lab design which did not do well
- After attempting several blends we contacted the VTRC to get some Guidance



FILM THICKNESS

Virginia Transportation Research Council
Asphalt Lab

Revised 8/2016

ASPHALT FILM THICKNESS

Sample ID: Design
Material: SM-9.5 BMD

Date: 2/15/2021
Technician: MA

Estimate Blend Surface Area

Enter values in blue.

Sieve Size	Percent Passing	Surface Area Factor	Surface Area
19.0mm (3/4 in.)	100.0	0.41	0.41
12.5mm (1/2 in.)	99.0		
9.5mm (3/8 in.)	92.0		
4.75mm (No. 4)	64.0	0.41	0.26
2.36mm (No. 8)	44.0	0.82	0.36
1.18mm (No. 16)	33.0	1.64	0.54
0.6mm (No. 30)	22.0	2.87	0.63
0.3mm (No. 50)	18.0	6.14	1.11
0.15mm (No. 100)	11.0	12.29	1.35
0.075mm (No. 200)	6.0	32.77	1.97
			6.63

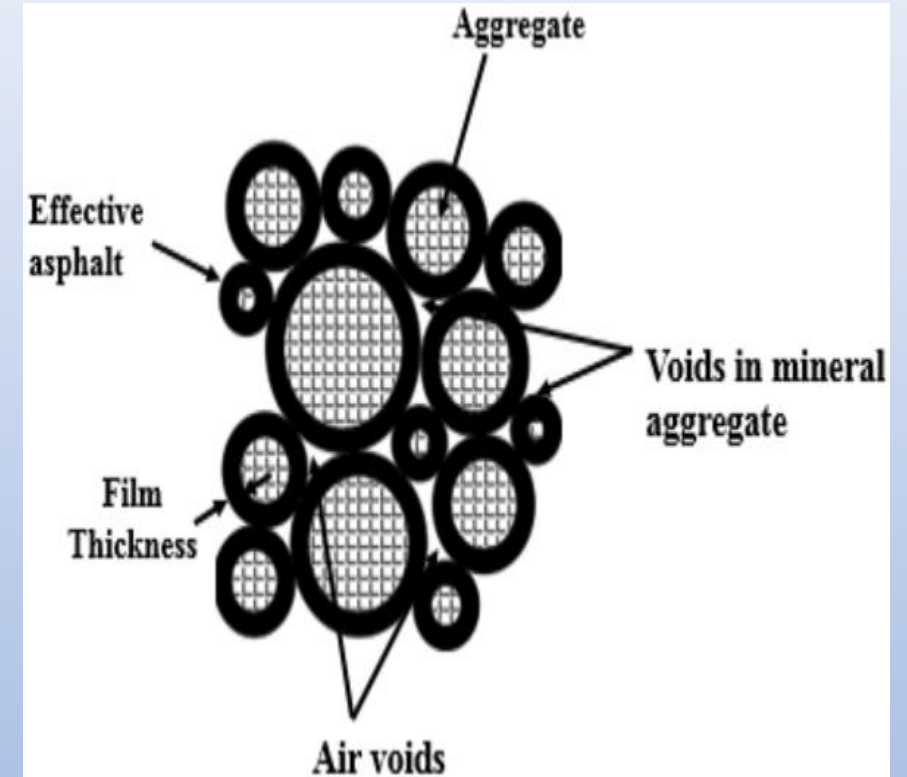
sq. m/kg

Asphalt Specific Gravity, $G_b =$	1.030	
Aggregate Bulk Specific Gravity, $G_s =$	2.693	
Aggregate Effective Specific Gravity, $G_{se} =$	2.718	
Asphalt Content, $P_b =$	6.35	%
Absorbed Asphalt, $P_{ba} =$	0.352	%
Effective asphalt content, $P_{be} =$	6.00	%
Effective film thickness, $F_T =$	9.38	microns

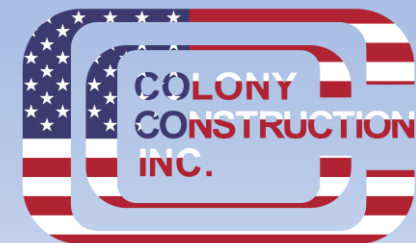
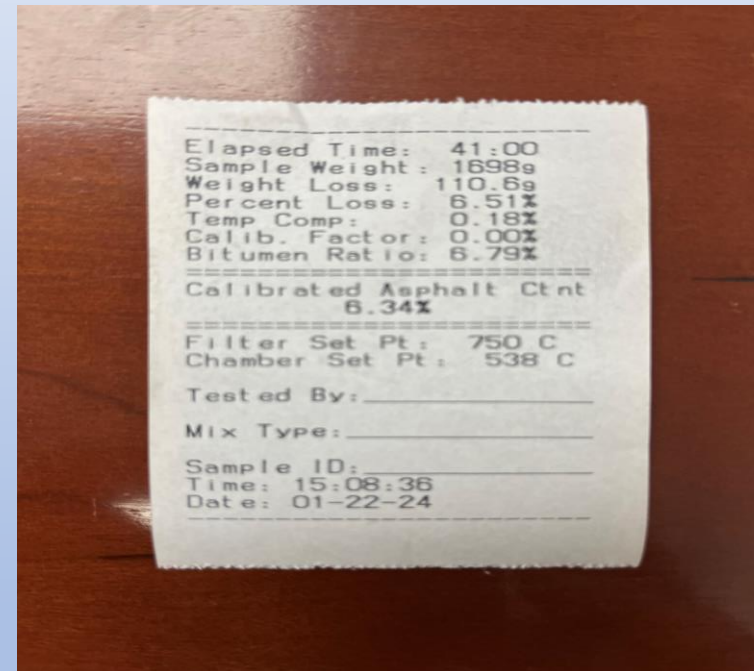
Film thickness equation:

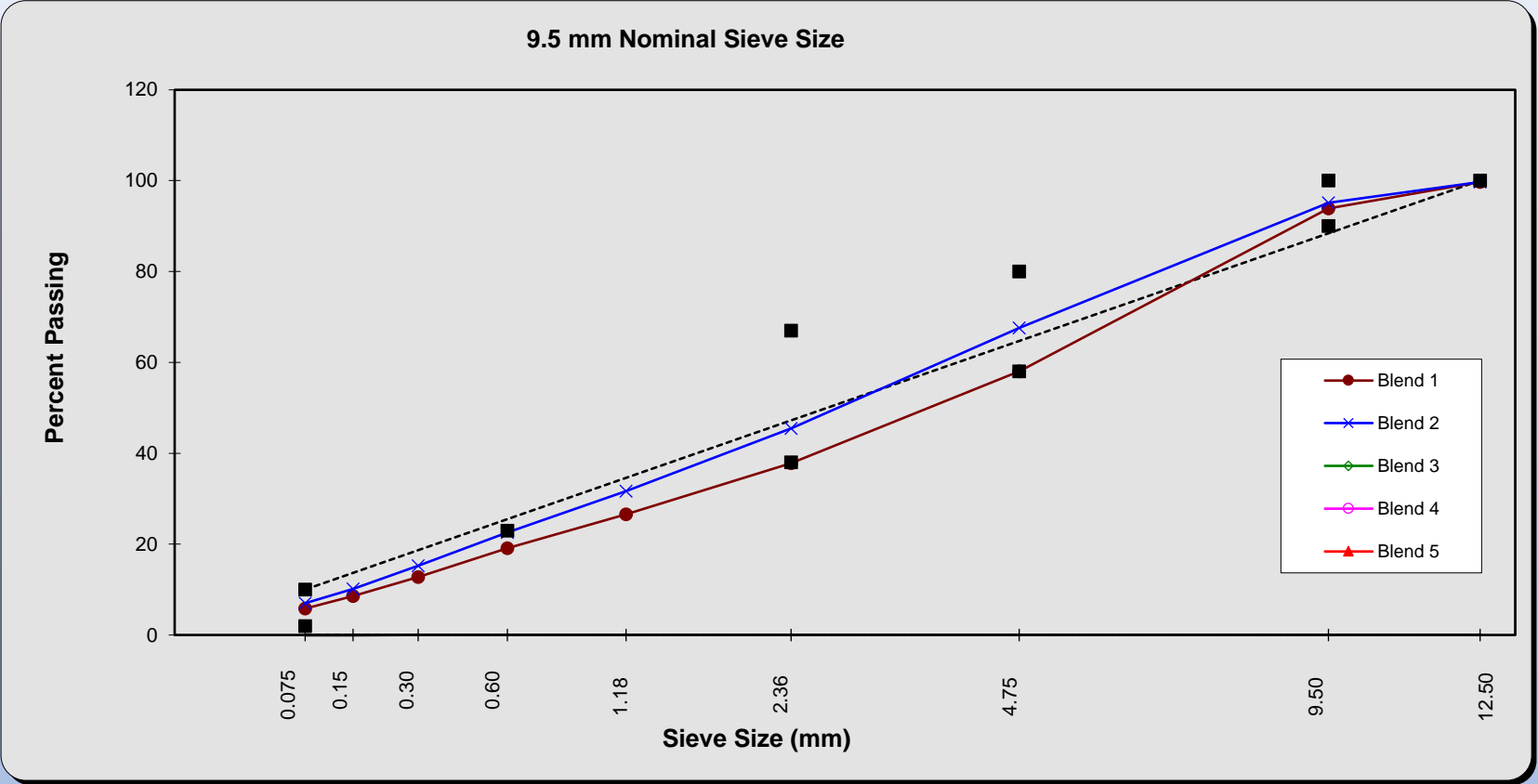
$$F_T = 1000 \frac{P_{be}}{SA \times (100 - P_b) \times G_b}$$

Brown, E.R., P.S. Kandhal, F. L. Roberts, Y. R. Kim, D.-Y. Lee, and T. W. Kennedy. (2009) Hot Mix Asphalt Materials, Mixture Design and Construction. 3rd edition, NAPA Research and Education Foundation, Lanham, MD.



% Asphalt doesn't mean you have the film thickness needed





How does this relate to placement?

- Some mixes may have no issue meeting the Performance testing
 - No change to current paving practices
- If the mix needs more Film thickness to meet the specification
 - Change in the roller pattern
 - Improved density across the mat
 - A mix that doesn't look dull
 - Warm Mix compaction temperature behind paver 260 F



Tender Mix



PAVING 101

- Uniform Temperature during compaction
- Keep the vibratory screed on
- Watch for rollover marks
- If you have never placed this mix try it on a private job to evaluate the mix through the plant and through the paver



THANK YOU

