Analysis of Asphalt Acceptance Data

Howie Moseley

Flexible Pavement Committee Meeting

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Purpose

- The purpose of the analysis is to determine the effectiveness of the FDOT materials acceptance program for asphalt.
- The findings of these analyses are documented and submitted annually to the Florida Division of the Federal Highway Administration (FHWA).
- This report presents the findings of the analysis conducted for test results from samples obtained during calendar year 2022.

Overview

- **For this analysis, test data was compiled from the FDOT Materials Acceptance and Certification system (MAC), and included the following sample types:**
  - Quality Control (QC)
  - Verification (VT)
  - Independent Verification (IV)
  - Process Control (PCX)
  - Process Control Split (PCS)

The data sets were compared to the pass/fail criteria identified in the master production ranges for both dense-and open-graded mixtures, and failure rates for each of the specified material properties were calculated for QC, VT, IV, PCS, and PCX samples on a statewide, and district basis.

Dense-Graded Mixture Failure Rates – Air Voids

% AV															
District	QC			VT			IV			PCS			PCX		
	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure
1	1	674	0.15%	5	228	2.19%	3	141	2.13%	0	139	0.00%	1	396	0.25%
2	2	717	0.28%	0	234	0.00%	6	200	3.00%	2	200	1.00%	1	1085	0.09%
3	0	513	0.00%	3	177	1.69%	5	176	2.84%	1	164	0.61%	4	531	0.75%
4	0	498	0.00%	1	202	0.50%	3	157	1.91%	1	136	0.74%	0	588	0.00%
5	3	719	0.42%	7	273	2.56%	11	221	4.98%	2	210	0.95%	4	1356	0.29%
6	0	168	0.00%	0	57	0.00%	1	56	1.79%	0	51	0.00%	0	121	0.00%
7	0	437	0.00%	1	165	0.61%	2	125	1.60%	3	124	2.42%	1	718	0.14%
TP	5	566	0.88%	6	209	2.87%	8	145	5.52%	2	132	1.52%	3	809	0.37%
Totals	11	4292	0.26%	23	1545	1.49%	39	1221	3.19%	11	1156	0.95%	14	5604	0.25%
Previous CY	17	4336	0.39%	25	1608	1.55%	43	1155	3.72%						

Open-Graded Mixture Failure Rates – Binder Content

	% AC														
District	QC			VT			IV			PCS			PCX		
	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure
1	5	114	4.39%	2	36	5.56%	0	22	0.00%	0	22	0.00%	0	102	0.00%
2	0	88	0.00%	0	27	0.00%	4	28	14.29%	1	28	3.57%	0	85	0.00%
3	0	74	0.00%	0	20	0.00%	2	21	9.52%	1	21	4.76%	0	20	0.00%
4	0	89	0.00%	3	26	11.54%	2	26	7.69%	0	20	0.00%	1	35	2.86%
5	0	198	0.00%	2	58	3.45%	4	43	9.30%	4	37	10.81%	3	189	1.59%
6	0	0	0.00%	0	0	0.00%	0	0	0.00%	0	0	0.00%	0	0	0.00%
7	0	53	0.00%	1	15	6.67%	0	12	0.00%	0	12	0.00%	0	48	0.00%
TP	1	33	3.03%	1	9	11.11%	0	4	0.00%	0	4	0.00%	2	16	12.50%
Totals	6	649	0.92%	9	191	4.71%	12	156	7.69%	6	144	4.17%	6	495	1.21%
Previous CY	32	1310	2.44%	22	399	5.51%	18	300	6.00%						

Open-Graded Mixture Failure Rates – No. 4 Sieve

							Passing #4								
District	QC			VT			IV			PCS			PCX		
	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure	Failure	Test	% Failure
1	0	114	0.00%	0	36	0.00%	1	22	4.55%	2	22	9.09%	0	102	0.00%
2	0	88	0.00%	2	27	7.41%	2	28	7.14%	0	28	0.00%	0	85	0.00%
3	0	74	0.00%	0	20	0.00%	3	21	14.29%	0	21	0.00%	0	20	0.00%
4	1	89	1.12%	2	26	7.69%	1	26	3.85%	0	20	0.00%	0	35	0.00%
5	1	198	0.51%	3	58	5.17%	7	43	16.28%	3	37	8.11%	1	189	0.53%
6	0	0	0.00%	0	0	0.00%	0	0	0.00%	0	0	0.00%	0	0	0.00%
7	1	53	1.89%	1	15	6.67%	1	12	8.33%	0	12	0.00%	0	48	0.00%
TP	0	33	0.00%	0	9	0.00%	0	4	0.00%	0	4	0.00%	0	16	0.00%
Totals	3	649	0.46%	8	191	4.19%	15	156	9.62%	5	144	3.47%	1	495	0.20%
Previous CY	10	1310	0.76%	11	399	2.76%	17	300	5.67%						

Question from Jim Musselman

- Why do IV Splits always have a lower failure rate than IV samples? Especially with FC-5?

Questions?