

STABILOMETER "S" VALUE COMPARISON
USING ANTI-STRIPPING ADDITIVES

by

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INTRODUCTION

From January through July, 1985, asphalt mixes from five construction projects, with and without an anti-stripping additive, were compared for stability. Ten mix samples for each project, at varying asphalt cement content, were prepared and tested in the Hveem stabilometer ("S" value). Both first and second compaction results were determined. A table of the data appears in the Appendix.

The anti-stripping additive was 0.5% Pave Bond Special for all samples. The asphalt cements were Chevron AR4000W for three projects, Chevron AC 20 for one, and Sound AR4000W on the fifth project.

DATA ANALYSIS

The results were first compared on a project basis. Mean and standard deviation of five sample sets were calculated and then the with-additive vs. without-additive results compared for significance.

The Student-t test and the chi-squared test were both used, the first in a normal distribution analysis and the second in a two-by-two contingency table.

Similar analysis were made for the 5.5% and 6.0% AC content (the percentages common to all five projects) and for all 25 samples.

The averages of the stabilometer "S" values are shown in Figures 1 and 2.

RESULTS AND CONCLUSIONS

In all of the statistical comparisons, no significant difference were found between the stabilometer "S" value with additive and those without additive.

As can be seen from Figures 1 and 2, two projects had with-additive means greater than the without-additive means and three projects had the reverse relationship. The 5.5% and 6.0% AC content had opposite results, with the relationship reversing going from first to second compaction.

Comparing the 25 samples; at first compaction nine had higher "S" value with additive, 13 had lower and three were the same. For second compaction, 12 had higher "S" values with additive and 13 had lower values.

In summary, the "S" value is not significantly affected by the addition of 0.5% anti-stripping agent (Pave Bond Special).

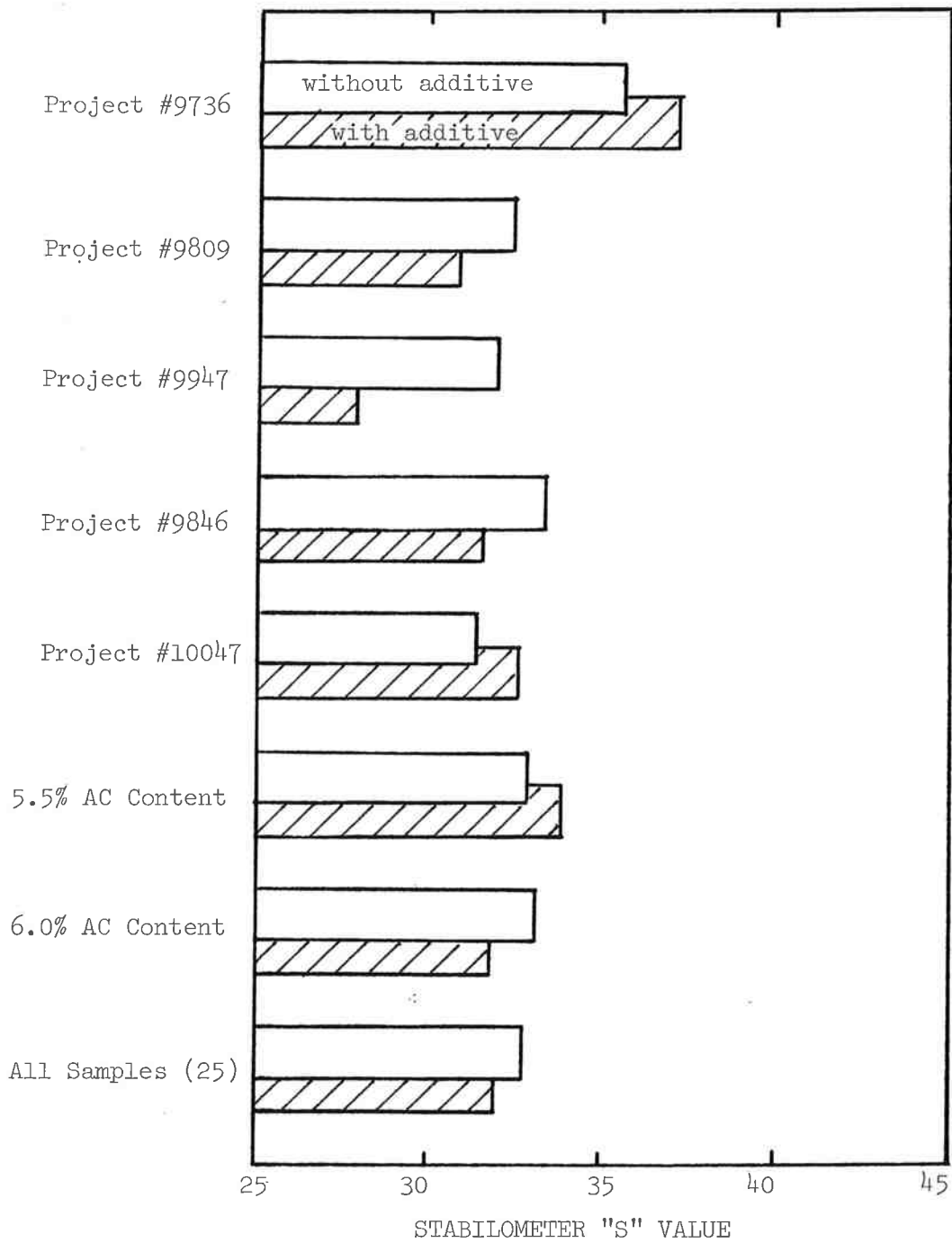


FIGURE 1. Stabilometer "S" values for first compaction.

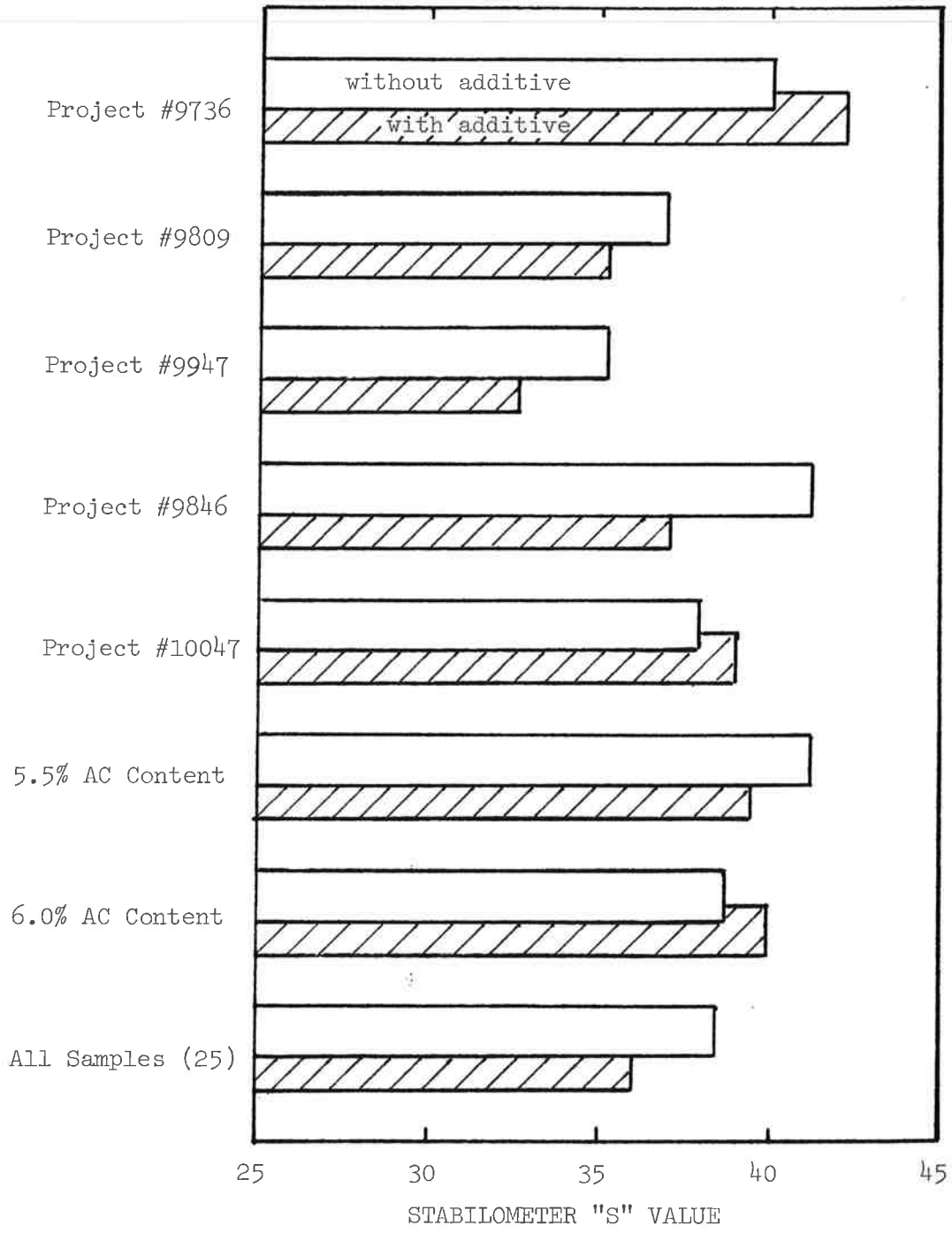


FIGURE 2. Stabilometer "S" values for second compaction.

APPENDIX I

<u>Project</u>		<u>% asphalt</u>	<u>"S" Value</u>			
			<u>1st stability</u>		<u>2nd stability</u>	
			<u>w/o</u>	<u>with</u>	<u>w/o</u>	<u>with</u>
#9736	AR4000W Chevron	4.5	36	38	42	47
		5.0	36	36	39	43
		5.5	35	40	43	40
		6.0	37	36	41	42
		6.5	34	36	35	39
#9809	AR4000W Chevron	5.5	34	34	42	40
		6.0	32	31	37	41
		6.5	34	33	41	34
		7.0	32	26	38	39
		7.5	30	30	26	22
#9947	AC 20 Chevron	4.5	32	26	43	41
		5.0	33	32	45	39
		5.5	34	32	41	36
		6.0	33	27	36	32
		6.5	28	22	11	15
#9846	AR4000W Sound	4.0	35	30	39	25
		4.5	35	30	48	40
		5.0	34	32	40	39
		5.5	32	33	40	39
		6.0	31	33	39	42
#10047	AR4000W Chevron	5.0	31	34	42	39
		5.5	29	30	40	42
		6.0	33	32	40	42
		6.5	31	35	39	41
		7.0	30	32	28	31

Note: All samples under heading "with" have 0.5% Pave Bond Special additive.

APPENDIX II

<u>Project</u>	<u>Additive</u>	<u>1st compaction</u>		<u>2nd compaction</u>	
		<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
#9736	w/o	35.60	1.14	40.00	3.16
	with	37.20	1.79	42.20	3.11
#9809	w/o	32.40	1.67	36.80	6.38
	with	30.80	3.11	35.20	7.85
#9947	w/o	32.00	2.34	35.20	13.94
	with	27.80	4.27	32.60	10.41
#9846	w/o	33.40	1.82	41.20	3.83
	with	31.60	1.52	37.00	6.82
#10047	w/o	31.40	1.14	37.80	5.58
	with	32.60	1.95	39.00	4.64
5.5% AC	w/o	32.80	2.39	41.20	1.30
	with	33.80	3.77	39.40	2.19
6.0% AC	w/o	33.20	2.28	38.60	2.07
	with	31.80	3.27	39.80	4.38
All (n=25)	w/o	32.84	2.28	38.40	7.34
	with	32.00	3.99	36.00	9.16

Note: All samples opposite the title "with" have 0.5% Pave Bond Special additive.

Unless otherwise indicated, all values are based on a sample size of five (n=5).