SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1972 Test Program

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

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TESTING AND RESEARCH DIVISION

SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1972 Test Program

Research Laboratory Section
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Michigan State Highway Commission
E. V. Erickson, Chairman; Charles H. Hewitt,
Vice-Chairman, Carl V. Pellonpaa, Peter B. Fletcher
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CONTENTS

LEGEND

Direction of Test Vehicle

NB, SB, EB, WB etc. = Northbound, Southbound, etc.

Lane Tested (noted following direction of test vehicle)

RT = right turn lane
LT = left turn lane
OL = outer lane
CL = center lane
IL = inner lane
DL = deceleration lane
ML = merging lane

3 or 2 = third or second lane from centerline or median

INTRODUCTION

During the 1972 calendar year, approximately 9,500 skid tests were conducted throughout Michigan. These tests are summarized in this report according to the annual reporting procedure initiated in 1965. Skid levels for five basic categories are included:

I Initial Tests on Conventional Concrete and Bituminous Pavements
II Pavements After Five Years of Service
III Experimental Pavement Surfaces
IV High-Accident Locations
V Special Request Tests

Explanatory remarks are presented at the beginning of each category of tabulated data. All High-Accident Location tests and Special Request tests have been previously reported to interested agencies within the Department.

All skid test values are expressed as 40-mph coefficients of wet sliding friction (Wsf). A Wsf value determined from a highly textured concrete pavement would be expected to be 0.60 or higher. Surfaces with coefficients of 0.20 or less are as slippery as packed snow[1] and from our experience Wsf values below 0.07 will be representative of a glare ice condition.

Reference should be made to Research Report No. R-585 ("Summaries of Michigan Pavement Skid Resistance: 1965 Test Program") and Research Report No. R-747 ("MDSH Equipment for Measuring Pavement Skid Resistance," February 1971) for information regarding operation of the skid-test device, selection of test areas, and verification of retests.

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[1] Moyer, Ralph A., "A Review of the Variables Affecting Pavement Slipperiness," Proceedings of First International Skid Prevention Conference, 1959.

SECTION I
INITIAL TESTS ON CONVENTIONAL CONCRETE AND BITUMINOUS PAVEMENTS

INITIAL TESTS ON CONVENTIONAL CONCRETE AND BITUMINOUS PAVEMENTS

Section I summarizes skid tests representing 825.784 lane miles of trunkline surfaces tested during 1972.

Table 1 - Concrete Pavements Constructed in 1971 and 1972

1971 Construction

Skid tests were conducted on 12 portland cement projects after a one-year service period. Friction levels ranged from 0.24 to 0.70 and averaged 0.48. Seventeen of 53 lanes tested (21 percent of the 119.544 lane miles and 32 percent of the total lanes tested) yielded average Wsf values below 0.40.

1972 Construction

Two projects (19.836 lane miles) of concrete pavement were tested during the initial service year. All eight lanes yielded average coefficients above the 0.40 mark. The range of Wsf values encountered was 0.37 to 0.62, averaging 0.58.

Table 2 - Bituminous Concrete (4.12) Constructed in 1971 and 1972

1971 Construction

One-year friction levels were determined on 23 Bituminous Concrete (4.12) projects (82 lanes) during 1972. Coefficients ranging from 0.35 to 0.67 and averaging 0.50 were encountered. Skid tests on three lanes of project Ms 51011(01740A), both lanes of Mb 63131(01701A), and one lane from Mb 82081(01705A) produced Wsf values below 0.40. These six lanes represent 7 percent of the 198.790 lane miles tested.

1972 Construction

Three Bituminous Concrete projects (33.976 lane miles) were tested during their initial year of service. Coefficients ranged from 0.42 to 0.65 and averaged 0.50.

Table 3 - Bituminous Aggregate (4.11) Constructed in 1971 and 1972

1971 Construction

After a one-year service period, 10 Bituminous Aggregate projects with a total of 224.758 lane miles were tested. Wsf values ranged from 0.46 to 0.79 and averaged 0.65, thus exhibiting outstanding friction levels.

1972 Construction

Eight Bituminous Aggregate projects, amounting to 115.520 lane miles, were tested in 1972 during their initial year of service. Coefficients averaged 0.49. Three of the 19 lanes tested had average friction levels below 0.40. All three lanes had a Wsf value of 0.38 and represent 16 percent of the total lane mileage.

Table 4 - Miscellaneous Bituminous Surfaces Constructed in 1971

1971 Construction Black Base

One project (21.100 lane miles) of Black Base type construction was tested after one year of service. Coefficients of Wsf averaged 0.52 on the two lanes tested.

1971 Construction Surface Treatment

Five projects were tested after a one-year service period on 82.760 lane miles of Surface Treatment. Wsf values averaged 0.55 on the 12 lanes tested. M 61, west of Gladwin, yielded average friction levels of 0.33 and 0.32, respectively, on the EB and WB lanes. All other projects tested had coefficients exceeding 0.40. Project Mm 1 SC-3A was tested last year and omitted from the 1971 Test Year report. This project has been included in Table 4 for informational purposes.

TABLE 1
CONCRETE PAVEMENTS CONSTRUCTED IN 1971 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
1971								
RF21025(03548A)	US 2 from 1938 ft W of inters of US 2 and US 41 E'ly to Soo Line RR	Jos. D. Bonness, Inc.	17-40 and 21-46	21-12	EBOL	0.51	0.56	0.53
					EBIL	0.61	0.65	0.64
					WBOL	0.51	0.56	0.54
					WBIL	0.57	0.62	0.60
F21025-008 (00263A)	US 2 and US 41 reloc. from Soo line spur track in Gladstone N'ly to Soo line spur in Rapid River	Jos. D. Bonness, Inc.	17-66 and 21-46	21-12	EBOL	0.59	0.61	0.60
					EBIL	0.67	0.70	0.69
					WBOL	0.58	0.63	0.60
					WBIL	0.64	0.68	0.66
F23011-004 (00278A)	M 78 reloc. from S limits of Bellevue E'ly to proposed I 69 interchange	Eisenhour Construction Co.	8-80	8-80	EB	0.58	0.62	0.60
					WB	0.64	0.67	0.65
I23061-014 (00292A)	US 27 (proposed I 69) from 2600 ft SE of US 27 BR NE'ly and N'ly to 1000 ft NE of Charlotte E city limits	Carl Goodwin and Sons, Inc.	8-80	8-80	NBOL	0.50	0.54	0.53
					NBIL	0.60	0.64	0.63
					SBOL	0.37	0.53	0.45
					SBIL	0.59	0.65	0.61
U25084-028 (00351A)	M 78 from Dort Hwy E to E of Center Rd, Flint	Chas J. Rogers, Inc. and Chas J. Rogers Construction Co.	63-54	63-54	EBOL	0.30	0.33	0.32
					EBCL	0.25	0.34	0.31
					EBIL	0.48	0.54	0.52
					WBOL	0.25	0.27	0.26
					WBCL	0.30	0.35	0.33
					WBIL	0.54	0.56	0.55
U25084(02804A)	M 78 from E of Howard St E'ly to Dort Hwy, Flint	John Carlo, Inc., et al	63-54	63-54	EBOL	0.25	0.30	0.28
					EBCL	0.44	0.49	0.46
					EBIL	0.55	0.57	0.56
					WBOL	0.36	0.40	0.38
					WBCL	0.30	0.34	0.32
					WBIL	0.40	0.44	0.43
I25132(00372A)	I 475 from I 75 N of Grand Blanc Rd N to Maple Rd	Sargent Contracting Co.	63-54	63-54	NBOL	0.64	0.66	0.65
					NBIL	0.56	0.57	0.56
					SBOL	0.64	0.65	0.64
					SBIL	0.67	0.69	0.68
SS50072(00714A)	M 29 from 555 ft E of I 94 E to 797 ft E of Baker Rd	The Cooke Contracting Co.	E. C. Levy Dix	50-35	NBOL	0.39	0.44	0.41
					NBIL	0.54	0.60	0.57
					SBOL	0.42	0.48	0.45
					SBIL	0.55	0.60	0.58

TABLE 1 (Cont.)
CONCRETE PAVEMENTS CONSTRUCTED IN 1971 AND 1972

	Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1971 (CONT.)	I73101-023 (01016A)	I 675 from E limits Saginaw W'ly to W of 14th St	Sargent Contracting Co.	71-47	79-73	NBOL	0.42	0.46	0.44
						NBIL	0.56	0.63	0.61
						SBOL	0.36	0.38	0.37
						SBIL	0.60	0.63	0.62
	I73101-069 (01025A)	I 675 from 1150 ft NE of Michigan Rd N'ly to I 75	Sargent Contracting Co.	71-47	79-73	NBOL	0.48	0.53	0.51
						NBIL	0.64	0.66	0.65
						SBOL	0.57	0.62	0.59
						SBIL	0.56	0.59	0.58
	U81081(01142A)	M 17 (Washtenaw Ave) from Carpenter Rd SE'ly to Hewitt St	W. F. McNally Co.	81-78	81-78	EBOL	0.31	0.34	0.32
						EBIL	0.37	0.42	0.40
						WBOL	0.25	0.26	0.25
						WBIL	0.29	0.33	0.31
	U81081(01141A)[1]	M 17 from Hewitt St E to Summit St	Thompson-McCully Co.	81-78	81-78	EBOL	0.24	0.28	0.26
						EBIL	0.26	0.28	0.27
						WBOL	0.27	0.29	0.28
						WBIL	0.28	0.31	0.30
		WB M 17 from US 12 BR (Michigan Ave) N and W to Summit St				WBOL	0.36	0.38	0.37
						WBCL	0.41	0.44	0.43
						WBIL	0.36	0.38	0.37
1972	F50023(00665A)	M 59 reloc. from approx. 3020 ft W of Oakland-Macomb Co line E'ly to Mound Rd	L. W. Edison Co., et al	63-56 and E. C. Levy Dix	63-56	EBOL	0.47	0.66	0.57
						EBIL	0.48	0.66	0.56
						WBOL	0.55	0.66	0.62
						WBIL	0.44	0.67	0.60
	F63043-034 (00861A)	M 59 from Auburn Rd E'ly to Oakland-Macomb Co line	L. W. Edison Co., et al	63-56 and E. C. Levy Dix	63-56	EBOL	0.45	0.60	0.55
						EBIL	0.37[2]	0.61	0.55
						WBOL	0.52	0.61	0.57
						WBIL	0.54	0.62	0.58

[1] Also see Bit Conc
[2] Haul trucks entering highway at this point.

TABLE 2
BITUMINOUS CONCRETE (4.12) CONSTRUCTED IN 1971 AND 1972

1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction of Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
F08051(00061A)	M 66 from M 78 (1.443 mi S of Calhoun-Barry Co. line) N'ly to 2800 ft N of Cloverdale Rd; Barry Co.	Reith-Riley Construction	Materials Service Thornton, Ill	13-38	NB	0.58	0.66	0.63
					SB	0.63	0.68	0.65
Mb11031(01716A)	M 139 - US 31 from US 33 N'ly to bridge over the St. Joseph River	John G. Yerington Co.	39-1 and 17-66	11-75	NB	0.48	0.53	0.50
					SB	0.58	0.60	0.59
	US 33 from SE of Scottdale Rd N'ly to SE of Hollywood Rd				NB	0.59	0.62	0.61
					SB	0.61	0.62	0.62
Mb23011(03795A)	M 78 (Capital Ave) from W limits of Bellevue (400 ft E of Sand Rd) E'ly to proposed M 78 (Main St)	Reith-Riley Construction Co.	39-1	13-38	EB	0.57	0.58	0.58
					WB	0.58	0.59	0.58
Mb23011(03978A)	Proposed M 78 (Main St) from Capital Ave in Bellevue S'ly 0.402 mi to S of Sharkey	Reith-Riley Construction Co.	39-1	13-38	NB	0.61	0.64	0.63
					SB	0.62	0.63	0.63
Mtb25041 (03996A)	Old M 78 (Miller Rd) from Elms Rd in Swartz Creek NE'ly toBallenger Rd	Spartan Asphalt Paving Co.	75-5	63-54	EBOL	0.52	0.53	0.52
					EBIL	0.51	0.54	0.52
					WBOL	0.48	0.51	0.50
					WBIL	0.56	0.59	0.57
Mb25061(03669A)	M 121 from M 78 E'ly to Dort Hwy in Flint	Spartan Asphalt Paving Co.	63-4	63-54	EB	0.43	0.45	0.44
					WB	0.41	0.41	0.41
Mb25072(03950A)	M 54 from 420 ft N of Mt. Morris Rd N'ly to 670 ft N of Dodge Rd	Flint Asphalt and Paving Co.	32-4	63-54	NBOL	0.47	0.50	0.49
					NBCL	0.66	0.68	0.67
					SB	0.50	0.52	0.51
Mb28012(03951A)	US 31 from Subdivision St N'ly to 0.5 mi N of S limits of Traverse City	Peninsula Asphalt Corp.	45-19	45-19	NB	0.39	0.41	0.40
					SB	0.38	0.41	0.40
Ms33082(02585A)	M 43 (Grand River) from W of Cowley Ave E'ly to E of Evergreen Ave	Reith-Riley Construction Co.	41-38	19-33	EBOL	0.44	0.48	0.45
					EBIL	0.51	0.54	0.53
					WBOL	0.48	0.51	0.49
					WBIL	0.52	0.55	0.54
Mb46062(03954A)	US 223 from Raisin River SE'ly to High St in Blissfield	Ayling-Cunningham	47-3	46-28	EB	0.51	0.53	0.52
					WB	0.41	0.46	0.44
Ms51011(01740A)	US 31 at M 110, Mainstee Co.	Laman Asphalt and Paving Co.	75-5	70-9 and 45-19	NBOL	0.40	0.41	0.40
					NBIL	0.37	0.40	0.38
					SBOL	0.34	0.36	0.35
					SBIL	0.37	0.41	0.39

TABLE 2 (Cont.)
BITUMINOUS CONCRETE (4.12) CONSTRUCTED IN 1971 AND 1972

1971 (CONT.)

Project No.	Location	Paving Contractor	Aggregate Sources		Direction of Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
Ss62022(00840A)	M 82 (Stewart St) from 300 ft S of S limits of Fremont N'ly to M 20 in Fremont	Paul C. Miller Co., Inc.	70-9	62-33	NBOL	0.57	0.58	0.58
					NBIL	0.54	0.56	0.55
					SBOL	0.53	0.55	0.54
					SBIL	0.56	0.59	0.57
Mb63131(01701A)	M 150 from Big Beaver Rd N to Auburn Rd	Bit Con Corporation	63-4	63-4	NB	0.35	0.38	0.37
					SB	0.32	0.36	0.35
Mb63132(01701A)	M 150 from Auburn Rd N to Avon Rd	Bit Con Corporation	63-4	63-4	NB	0.46	0.47	0.46
					SB	0.43	0.44	0.43
Ms73033(03111A)	M 84 from 2 mi N of Saginaw, at Schust Rd, N past Tittabawassee Rd	W. F. McNally Co.	71-47	79-73	NB	0.45	0.47	0.46
					SB	0.55	0.58	0.56
					SBLT	0.57	0.62	0.60
Mb73131(03810A)	M 83 from 170 ft N of Saginaw Rd N'ly to M 15	Saginaw Asphalt Paving Co.	17-66	63-54	NB	0.53	0.62	0.57
					SB	0.47	0.64	0.55
Mb76062(03811A)	M 21 from E limits of Owosso (Gould St) F'ly to approx. 550 ft W of Serr Rd, omitting at State St	Spartan Asphalt Paving Co.	63-4	63-54	EBOL	0.54	0.56	0.55
					EBIL	0.56	0.56	0.56
					WBOL	0.48	0.50	0.49
					WBIL	0.54	0.56	0.55
Mb81073(01806A)	US 23 BR (N Main) from I 94 BL (Huron St) N'ly to Huron River Drive	Ann Arbor Construction Co.	47-3	81-78 and 47-3	NBOL	0.48	0.49	0.49
					NBIL	0.46	0.48	0.47
					SBOL	0.44	0.48	0.45
					SBIL	0.42	0.47	0.45
	I 94 BL from Park Lake Rd E'ly to Main St in Ann Arbor				EBOL	0.47	0.48	0.48
					EBIL	0.48	0.50	0.49
					WBOL	0.38	0.44	0.41
					WBIL	0.47	0.47	0.47
U81081(01141A)[1]	EB M 17 from Washtenaw St SE'ly to US 12 BR (Michigan Ave)	Washtenaw Asphalt Co.	81-57	81-84	EBOL	0.49	0.51	0.50
					EBCL	0.45	0.48	0.46
					EBIL	0.48	0.49	0.49
	WB M 17 from US 12 BR (Michigan Ave) N to Washtenaw St				WBOL	0.48	0.49	0.48
					WBCL	0.44	0.48	0.47
					WBIL	0.52	0.52	0.52

[1] Also see Table 1 for concrete portion

TABLE 2 (Cont.)
BITUMINOUS CONCRETE (4.12) CONSTRUCTED IN 1971 AND 1972

	Project No.	Location	Paving Contractor	Aggregate Sources		Direction of Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1971 (CONT.)	Mb82081(01705A)	M 153 from Napier Rd E to Vernon Rd	Thompson-McCully Co.	47-3	81-82	EBOL	0.39	0.41	0.40
						EBIL	0.42	0.45	0.44
						WBOL	0.43	0.44	0.44
						WBIL	0.44	0.46	0.45
						EB	0.49	0.52	0.50
						WB	0.38	0.40	0.39
	U82081-022 (01193A)	M 153 (Ford Rd) from approx. 60 ft E of Lafayette St E'ly to approx. 200 ft E of Hawthorne	The Cooke Contracting Co.	47-3	47-3	EBOL	0.45	0.46	0.45
						EBCL	0.48	0.50	0.49
						EBIL	0.53	0.55	0.54
						WBOL	0.48	0.49	0.48
						WBCL	0.47	0.51	0.49
						WBIL	0.52	0.53	0.53
	Mb83012(03826A)	M 115 - M 37 from E Jct M 37 W to W Jct M 37 in Mesick	Peninsula Asphalt Corp. and Reith-Riley Construction Co.	45-19 and 54-42	45-19 and 54-42	EBOL	0.51	0.56	0.53
						EBIL	0.50	0.53	0.51
						WBOL	0.51	0.56	0.54
						WBIL	0.49	0.51	0.50
		M 37 N from a point S of Grand-Traverse - Wexford Co. line (Control Sections 28051 and 83013)				NB	0.49	0.54	0.52
						SB	0.56	0.60	0.58
	Mb83022(03967A)	M 55 E from US 131 in Cadillac	Reith-Riley Construction Co.	54-42	54-42	EB	0.50	0.53	0.51
						WB	0.53	0.53	0.53
1972	I81063-024 (01128A)	I 94 from 1484 ft E of W junction of US 12 E'ly to the Ford Lake inlet structure	Washtenaw Asphalt Paving Co.	47-3	81-78	EBOL	0.47	0.48	0.47
						EBCL	0.57	0.60	0.58
						EBIL	0.65	0.66	0.65
						WBOL	0.45	0.49	0.47
						WBCL	0.57	0.58	0.57
						WBIL	0.62	0.64	0.63
	U82142-009 (01308A)	M 102 from E side of John Lodge interchange E'ly to W limits of Ferndale	Stolaruk Asphalt Paving Co.	47-3	47-3	EBOL	0.46	0.50	0.48
						EB#3	0.48	0.50	0.49
						EB#2	0.48	0.52	0.49
						EBIL	0.49	0.52	0.51
						WBOL	0.46	0.50	0.48
						WB#3	0.50	0.52	0.51
						WB#2	0.48	0.50	0.49
						WBIL	0.46	0.49	0.48
	Mm 2BA-7A Cs#03023	M 89 E from M 40 in Allegan	Reith-Riley Construction Co.	80-42	3-44	EBOL	0.46	0.48	0.47
						EBIL	0.41	0.43	0.42
						WBOL	0.44	0.48	0.46
						WBIL	0.41	0.44	0.42

TABLE 3
BITUMINOUS AGGREGATE (4.11) CONSTRUCTED IN 1971 AND 1972

	Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1971	Mb02011(03041A)	US 41 from 4.734 mi SE of the Alger-Marquette Co. line NW'ly to the Co. line	Fox Valley Construction Co.	21-7	21-65	NB	0.78	0.80	0.79
						SB	0.74	0.77	0.76
	Mb21051(03042A)	US 41 from US 2 in Rapid River N'ly 10.682 mi	Fox Valley Construction Co.	21-7	21-65	NB	0.70	0.74	0.72
						SB	0.69	0.72	0.70
	Mb22013(03037A) Ms22013(03975A)	M 95 from Co. Rd 569 N intermittently to Sagola, thence N to Michigamme River also at a point 4.8 mi N of Dickenson-Marquette Co. line	Geo. Hocking Construction Co.	52-61		NB	0.67	0.76	0.71
						SB	0.70	0.76	0.72
	Mb47041(01791A)	M 35 from 300 ft W of E limits of Pinckney E'ly to US 23	Lake Construction Co. and Howell Construction Co.	47-26		EB	0.52	0.60	0.56
						WB	0.56	0.62	0.58
	Ms49023(03142A)	US 2 from 0.7 mi W of I 75 E'ly 0.464 mi	Lake Construction Co. and Howell Construction Co.	49-82		EBOL	0.44	0.50	0.46
						EBIL	0.67	0.69	0.68
						WBOL	0.60	0.62	0.61
						WBIL	0.57	0.60	0.58
	Mb54022(03671A)	M 66 from M 46 N'ly to Remus	Reith-Riley Construction Co.	54-47 and 54-42		NB	0.60	0.72	0.66
						SB	0.64	0.71	0.67
		M 20 from Big Rapids SE'ly to Remus				EB	0.60	0.68	0.64
						WB	0.60	0.69	0.64
	Mtb66033 (03131A)	US 45 from 475 ft W of M 26 NW'ly to Greenland Rd in Ontonagon	Lake Construction Co. and Howell Construction Co.	66-79		NB	0.64	0.71	0.67
						SB	0.66	0.73	0.70
	F66042-001 (00958A)	US 45 relocation from M 26 NW'ly to Steel St in Ontonagon	Fox Valley Construction Co.	66-62		EB	0.58	0.71	0.66
						WB	0.61	0.71	0.66
	Mb79081(03815A)	M 25 from Bay-Tuscola Co. line NE'ly to W limits of Unionville	Frank Strausberg and Sons	32-4 and 79-50		NB	0.51	0.64	0.59
						SB	0.51	0.64	0.59
1972	Mb02021(03939A)	M 94 from US 41 E to Chatham	Payne and Dolan of Wisconsin, Inc.	2-1		EB	0.52	0.59	0.56
						WB	0.60	0.64	0.63
	Mb03071(03793A)	M 40 from VanBuren-Allegan Co. line N'ly to M 89	Reith-Riley Construction Co.	80-42		NB	0.36	0.40	0.38
						SB	0.38	0.44	0.40
	Mb07023(04331A)	US 41 - M 28 from Marquette Co. line W'ly intermittently 8.483 mi	Fox Valley Construction Co.	52-1		EB	0.46	0.57	0.52
						WB	0.45	0.58	0.52
	Mb10032(03829A)	US 31 from Platte River W'ly and S'ly intermittently to Benzonia	Peninsula Asphalt Corp.	45-19		NB	0.31	0.44	0.38
						SB	0.34	0.43	0.38
		US 31 N from Betsie River to Benzonia				NBOL	0.39	0.42	0.41
						NBIL	0.45	0.46	0.45
						SB	0.40	0.42	0.41
	Mb31021(04332A)	M 28 from Ontonagon-Houghton Co. line E'ly 3.290 mi	Fox Valley Construction Co.	52-1		EB	0.54	0.66	0.60
						WB	0.54	0.62	0.58
	RF36052(01459A)	US 141 relocation from US 2 N'ly to near Gilbert Lake	Main; Construction Co.	36-53		NB	0.51	0.60	0.55
						SB	0.55	0.57	0.56
	F36052(01460A)	US 141 relocation from near Gilbert Lake N'ly to N of Amasa Village	Mathy Construction Co.	36-53		NB	0.46	0.50	0.49
						SB	0.40	0.51	0.46
	Mb52011(04333A)	M 95 from approximately 1.0 mi N of Republic N'ly to M 28 - US 41	Fox Valley Construction Co.	52-1		NB	0.47	0.52	0.50
						SB	0.48	0.54	0.51

TABLE 4
MISCELLANEOUS BITUMINOUS SURFACES CONSTRUCTED IN 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
Black Base								
Mtb70023 (02918A)	WB M 21 from 330 ft E of 80th Ave NE'ly to 360 ft W of School St, omitting 1690 ft in Hudsonville	Reith-Riley Construction Co. West Shore Construction Co.	70-36 and 70-24		WBOL WBIL	0.45 0.50	0.50 0.59	0.48 0.55
Surface Treatment								
Mm 1SC-2A	M 94 from N limits of Manistique N'ly 9.32 mi	Payne and Dolan of Wisconsin, Inc.	52-39		NB SB	0.66 0.66	0.71 0.71	0.68 0.69
	M 35 from 0.5 mi S of Perkins N'ly 7.0 mi				NB SB	0.65 0.67	0.68 0.69	0.66 0.68
Mm 1SC-3A[1]	M 61 from W of Muskegon River W'ly and N'ly 4.75 mi	Reith-Riley Construction Co.	65-7 and 54-42		EB WB	0.53 0.60	0.57 0.65	0.56 0.62
Mm 1SC-4A	M 65 from N limits of Hale S'ly to M 55	Peninsula Asphalt Corp.	65-7		NB SB	0.41 0.30	0.60 0.63	0.49 0.48
Mm 1SC-6A	M 61 from M 18 @ W limits of Gladwin W'ly 5.4 mi	Peninsula Asphalt Corp.	65-7		EB WB	0.18 0.15	0.43 0.48	0.33 0.32
Mm 1SC-7C	M 188 from S limits of Eaton Rapids SE'ly 4.0 mi	Spartan Asphalt Paving Co.	81-57		EB WB	0.52 0.52	0.53 0.56	0.53 0.54
Mm 1SC-7D	M 118 from E limits of Allegan E'ly 8.66 mi to US 131	Beckman Co.	3-44		EB WB	0.53 0.60	0.58 0.64	0.56 0.62

[1] Tested during 1971 test year but not included in annual summary

TABLE 5
CONVENTIONAL CONCRETE AND BITUMINOUS PAVEMENT SUMMARY

Surface Type	Service Year When Tested	Total Lanes Tested	Total Lane Miles Tested	Average Friction Level
'Concrete	Initial	8	19.836	0.58
Concrete	1	53	119.544	0.48
Bituminous Concrete	Initial	18	33.976	0.50
Bituminous Concrete	1	82	198.790	0.50
Bituminous Aggregate	Initial	19	115.520	0.49
Bituminous Aggregate	1	22	224.758	0.65
Black Base	1	2	21.100	0.52
Surface Treatment	1	12	82.760	0.55

SECTION II
FRICTION LEVELS DETERMINED FOR PAVEMENTS AFTER FIVE YEARS OF SERVICE

FRICTION LEVELS DETERMINED FOR PAVEMENTS AFTER FIVE YEARS OF SERVICE

Tables 6 and 7 contain skid test results from 23 Portland Cement Concrete projects consisting of 94 lanes (284.624 lane miles) which were constructed in 1967. Initial service year tests were conducted on 10 of these projects and resulting Wsf values averaged 0.55. Thirteen of the projects were initially tested in 1968, after a one-year service period. Respective friction levels for these averaged 0.51. After five years of service, these same 23 projects were retested and although the 94 lane average value was 0.48, 15 of the lanes (7 percent of the total lane mileage and 16 percent of the total lanes) had average coefficients below 0.40. Projects U 12022F, C6 and F 12031A, C8 had average coefficients lower than 0.40 on all six lanes tested.

Tables 8 and 9 list skid test results of 37 Bituminous Concrete projects constructed during 1967. In all, 134 lanes (348.948 lane miles) were tested. Average coefficients of friction determined initially and after a one-year service period were 0.42 and 0.46, respectively. Skid tests were conducted again during 1972, after five years of service on these same 37 projects. Only 6 percent of the total lane mileage (6 lanes) yielded average five-year friction levels below 0.40, the lowest of which was 0.36.

Tables 10 and 11 contain skid test results from 37 Bituminous Aggregate (4.11) projects of which 78 lanes (371.448 lane miles) were tested. Twenty of these were tested during their initial service year; the average Wsf value was 0.37. The remaining 17 projects were tested after a one-year service period and resulting skid tests yielded an average friction level of 0.49. Skid tests were conducted in 1972 on these Bituminous Aggregate projects and four lanes, 5 percent of the lane mileage tested, had five-year average friction levels below 0.40. The overall five-year average Wsf value was 0.57.

Tables 12 and 13 contain test results of eight Stone-Filled Sand-Asphalt projects constructed in 1967. Average friction level of the three tested in their initial service year was 0.44. Projects tested after one year of service averaged 0.50. After five years of service, the average friction level for the 75.366 lane miles tested has increased to 0.60. No five-year average coefficients were below 0.40.

Five Non-Skid Surface Treatment projects, with a total lane mileage of 113.806 were constructed in 1967 and skid tested during their initial service year and after a one-year service period. Respective average Wsf values were 0.53 and 0.47. Five of these projects were retested after five service years. Coefficients at this time interval averaged 0.56 and were all above 0.40. Information for these projects may be found in Tables 14 and 15.

Table 16 contains two Special Hot Emulsion Wearing Course Mixture projects which were constructed in 1967 and had skid tests conducted at the one-year and five-year service levels. One and five-year averages representing 9.262 lane miles were 0.51 and 0.53, respectively.

TABLE 6
CONCRETE PAVEMENTS TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
U 12022F, C6	I 69 BL – US 12 from 500 ft NW of E limits of Coldwater SW 0.804 mile (omitting 0.341 mile at I 69 interchange)	L. W. Edison Company	Pits 12-31 12-44 & 30-35	Pits 12-43 & 12-44	EBOL EBIL WBOL WBIL	0.46 0.49 0.50 0.50	0.31 0.34 0.30 0.33
F 12031A, C8	I 69 BL (Fenn Rd) from 1890 ft E of existing US 27 W on Fenn Rd to US 27, thence N on US 27 2675 ft	L. W. Edison Company	Pits 12-31 12-44 & 30-35	Pits 12-43 & 12-44	EB WB	0.58 0.57	0.34 0.35
I 12033D, C5	I 69 from 2882 ft N of Fenn Rd N to 1540 ft N of US 12	L. W. Edison Company	Pits 12-31 12-43 & 30-35	Pits 12-43 & 12-44	NBOL NBIL SBOL SBIL	0.59 0.58 0.60 0.59	0.52 0.64 0.47 0.54
I 12033B, C7 I 12033A, C8	I 69 from 111 ft N of Maxon Rd N to 2882 ft N of Fenn Rd	L. W. Edison Company	Pits 12-31 12-43, 12-44 & 30-35	Pits 12-43 & 12-44	NBOL NBIL SBOL SBIL	0.53 0.53 0.55 0.52	0.46 0.69 0.47 0.68
I 12033A, C10	I 69 from Michigan-Indiana State Line N to N of Copeland Rd	L. A. Davidson Company	Pits 12-31 12-43 & 12-44	Pit 12-43 & State Line Sand and Gravel	NBOL NBIL SBOL SBIL	0.56 0.64 0.54 0.61	0.42 0.66 0.68 0.46
I 12034B, C1	I 69 from 1047 ft N of Newton Rd N to Wagner Rd	Rieth-Riley Construction Co.	Pit 12-43	Pit 12-43	NBOL NBIL SBOL SBIL	0.61 0.56 0.57 0.60	0.49 0.61 0.50 0.63
I 12034A, C4	I 69 from 1540 ft N of US 12 N to 1047 ft N of Newton Rd	A Lindberg & Sons, Inc.	Pit 30-35	Pit 12-44	NBOL NBIL SBOL SBIL	0.60 0.56 0.60 0.63	0.47 0.56 0.45 0.70
I 13073A, C6	I 69 from Branch-Calhoun County Line N to N of M 60 near the village of Tekonsha	Carl Goodwin & Sons, Inc.	Pit 12-43	Pit 12-43	NBOL NBIL SBOL SBIL	0.57 0.60 0.64 0.67	0.44 0.70 0.53 0.62
U 63043A, C1	M 59 relocation from Pontiac Loop E to Grand Trunk Western RR	The Cooke Contracting Co.	Pit 63-4	Pit 63-4	EBOL EB #3 EB #2 EBIL WBOL WB #3 WB #2 WBIL	0.44 0.48 0.48 0.52 0.49 0.41 0.48 0.52	0.36 0.36 0.36 0.35 0.32 0.32 0.42 0.44

TABLE 7
CONCRETE PAVEMENTS TESTED DURING 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
F 06041-001	US 23 Connector from Melita Rd E to existing US 23	L. W. Edison Co. (WB) Hodgekiss & Douma, Inc. (EB)	65-7	65-7	EBOL EBIL WBOL WBIL	0.45 0.51 0.37 0.49	0.42 0.55 0.41 0.56
I 06111-001	I 75 from Knickerbocker Rd N to N of M 61	L. W. Edison Co.	65-7	65-7	NBOL NBIL SBOL SBIL	0.48 0.53 0.46 0.54	0.50 0.52 0.47 0.44
I 09035B, C8	I 75 from Union Rd N to N of Beaver Rd	The Kutchins Co. & Kutchins, Co., Inc.	71-15 & 63-4	71-15	NBOL NBIL SBOL SBIL	0.49 0.52 0.48 0.58	0.41 0.50 0.38 0.45
I 09035D, C9	I 75 from Beaver Rd N to Anderson Rd	Sargent Contracting Co.	65-7	65-7	NBOL NBIL SBOL SBIL	0.46 0.51 0.48 0.52	0.47 0.48 0.49 0.50
I 09035E, C10	I 75 from Anderson Rd N to Neuman Rd	Sargent Contracting Co.	65-7 & 71-47	65-7	NBOL NBIL SBOL SBIL	0.44 0.49 0.46 0.50	0.47 0.49 0.46 0.47
I 09035F, C14	I 75 from Newman Rd N to Bay-Arenac Co. Line	Sargent Contracting Co.	65-7	65-7	NBOL NBIL SBOL SBIL	0.52 0.56 0.46 0.52	0.47 0.50 0.49 0.46
I 13073-001	I 69 from S of Kalamazoo River N to I 94	Carl Goodwin & Sons, Inc.	12-43 & 8-80	12-43 & 8-80	NBOL NBIL SBOL SBIL	0.52 0.57 0.53 0.53	0.40 0.72 0.48 0.61
I 13073-007	I 69 from N of M 60 N to "J" Drive	L. A. Davidson Co.	12-31, 12-44 30-35 & 8-80	12-44	NBOL NBIL SBOL SBIL	0.51 0.56 0.51 0.50	0.48 0.61 0.47 0.65

TABLE 7 (Cont.)
CONCRETE PAVEMENTS TESTED DURING 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
U 25042-005	M 78 relocation from Miller Rd E to Bristol Rd	Chas. J. Rogers Const., Co. & Kutchins Co., Inc.	63-54	63-54	EBOL	0.51	0.45
					EBIL	0.55	0.56
					WBOL	0.52	0.48
					WBIL	0.56	0.45
F 79032-001	M 15 from West St E to Huron & Goodrich Sts	T. A. Forsberg, Inc. & W. F. McNally Co.	75-5	79-73	NBOL	0.39	0.43
					NBIL	0.42	0.35
					SBOL	0.50	0.54
					SBIL	0.38	0.36
U 82062-011	US 12 from Brady St E to Rouge River	Kutchins Co., Inc.	E. C. Levy, (Trenton & Dix)	47-15	EBOL	0.50	0.44
					EB #3	0.48	0.45
					EB #2	0.51	0.51
					EBIL	0.47	0.54
					WBOL	N.T.	0.47
					WB #3	N.T.	0.46
					WB #2	N.T.	0.50
					WBIL	N.T.	0.47
BI 82194J, C28 BI 82194K, C29	I 75 from Junction Ave Area E to E of W. Grand Blvd	Kutchins Co., Inc.	E. C. Levy, Dix	63-7 & 63-55	EBOL	0.47	0.46
					EB #3	0.50	0.49
					EB #2	0.66	0.51
					EBIL	0.63	0.59
					WBOL	0.43	0.41
					WB #3	0.48	0.45
					WB #2	0.63	0.49
					WBIL	0.64	0.49

TABLE 8
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
Mn 06071-002 (Part)	US 23 from N of Sagatoo Rd to S of Duquite Rd	Central Paving Company	79-21	65-7	NBOL NBIL SBOL SBIL	0.40 0.49 0.38 0.45	0.62 0.65 0.49 0.59
Ms 06071-002 (Part)	US 23 - I 75 from Grove St N 1.014 miles in Bay County	Central Paving Company	79-21	65-7	NBOL NBIL SBOL SBIL	0.48 0.51 0.46 0.50	0.46 0.50 0.44 0.49
Mn 06071-002 (Part)	M 13 from White Ave N in Bay County	Central Paving Company	79-21	65-7	NBOL NBIL SBOL SBIL	0.44 0.46 0.47 0.43	0.52 0.61 0.53 0.61
Ms 13032-010	M 66 from 3.5 miles N of Battle Creek and 0.11 mile S & W of Huntington Rd NE to the Wanondoger Creek Bridge	Rieth-Riley Construction Co.	39-1	13-38	NB SB	0.43 0.42	0.69 0.68
I 13073A, C6	M 60 at I 69 interchange	Rieth-Riley Construction Co.	39-1	12-31	EB WB	0.52 0.57	0.63 0.53
Mb 23031-006	US 27 from S limits of Olivet NE to US 27 BR	Rieth-Riley Construction Co.	47-3	12-31	NB SB	0.39 0.39	0.60 0.64
SS 25101C, C7	M 57 from E limits of Montrose E to I 75	Ann Arbor Construction Co.	47-3	65-54	EB WB	0.41 0.39	0.65 0.61
Mb 29031-005 (Part)	US 27 BR (Superior St) from E City limits of Alma W to Prospect St	Lake & Howell Construction Co.	37-26	37-26	EBOL EBIL WBOL WBIL	N.T. N.T. N.T. N.T.	0.42 0.41 0.45 0.48
Mb 29031-005 (Part)	US 27 BR (Wright Ave) from 500 ft N of Superior St N to West End St in Alma	Lake & Howell Construction Co.	37-26	37-26	NB SB	N.T. N.T.	0.48 0.48
Mb 38051-008	M 106 from N limits of Jackson N 2.2 miles	Workman-Richardson Asphalt Co.	38-46	38-56	NB SB	N.T. N.T.	0.46 0.43

TABLE 8 (Cont.)
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
Mb 39042-014	I 94 BL - M 43 (Michigan Ave) from Rose St E and NE to Kings Highway, Kalamazoo	Globe Construction Co.	39-1	39-4	EBOL	0.38	0.46
					EB #3	0.39	0.44
					EB #2	0.40	0.44
					EBIL	0.40	0.52
Ms 54011-004 (Part)	US 131 from Big Rapids N 0.9 mile	Rieth-Riley Construction Co.	54-42	54-42	NB	0.35	0.58
					SB	0.36	0.58
Ms 54011-004 (Part)	US 131 at Filmore Rd	Rieth-Riley Construction Co.	54-42	54-42	NB	0.42	0.64
					SB	0.41	0.61
Ms 54011-004 (Part)	US 131 at Four Mile Rd	Rieth-Riley Construction Co.	54-42	54-42	NB	0.41	0.57
					SB	0.44	0.59
F 61023A, C4	M 46 from Sheridan Dr E to Brooks Rd	Rieth-Riley Construction Co.	US Steel, Gary Indiana & 75-5	70-9	EBOL	0.31	0.42
					EBIL	0.45	0.56
					WBOL	0.38	0.46
					WBIL	0.42	0.58
U 61023A, C6	M 46 (Apple St) from Shonat St E to Sheridan Dr	Rieth-Riley Construction Co.	75-5	70-9	EBOL	0.33	0.39
					EBIL	0.37	0.47
					WBOL	0.33	0.44
					WBIL	0.36	0.48
Ms 61076-001	M 20 from Muskegon River Bridge NW to 275 ft SE of M 213	Rieth-Riley Construction Co.	70-9	70-9	NBOL	0.38	0.55
					NBIL	0.43	0.63
					SBOL	0.38	0.55
					SBIL	0.41	0.59
Mb 77031-004	US 25 BR from W limits of Marysville NE to 360 ft SE of M 29	Blue Water Asphalt Co., Inc.	17-40	74-4	NB	0.48	0.38
					SB	0.50	0.43
Mb 82071-012	US 25 - M 17 (Oakwood Ave) from Outer Drive NE to Schaefer Hwy	Ajax Asphalt Paving, Inc.	E. C. Levy	E. C. Levy	NBOL	0.45	N.T.[1]
					NBIL	0.48	N.T.[1]
					SBOL	0.45	N.T.[1]
					SBIL	0.46	N.T.[1]

[1] Deleted from trunkline system in 1967

TABLE 9
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED IN 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
Mb 09031-008	M 13 from McGraw Ave N to Lafayette Ave	Midland Contracting Co.	79-21	79-73	NBOL	0.48	N.T.
					NBIL	0.43	0.48
					SBOL	0.51	N.T.
					SBIL	0.45	0.50
F 14042-001	US 12 from M 205 NE to E of Union Rd	Rieth-Riley Construction Co., Inc.	39-1	78-25	EB	0.55	0.65
					WB	0.56	0.64
Mb 23031-006	US 27 from S limits Olivet NE to US 27 BR S of Charlotte	Rieth-Riley Construction Co., Inc.	47-3	12-31 & 12-35	NB	0.55	0.60
					SB	0.53	0.64
Mtb 23043-001	M 43 BR from M 43 E to M 100	Rieth-Riley Construction Co., Inc.	47-3	33-6	EB	0.46	0.52
					WB	0.45	0.51
Mb 25081-007	M 21 from Meida St E to Court St	Spartan Asphalt Paving Co.	47-3	63-91	EBOL	0.41	0.45
					EBIL	0.44	0.50
					WBOL	0.46	0.53
					WBIL	0.43	0.49
Mb 41043-005	M 21 from W of Whitehills Ave E 1.184 mi	Rieth-Riley Construction Co., Inc.	41-106	41-106	EB	0.58	0.51
					WB	0.56	0.63
SS 44061-006	M 90 from M 53 E to Brown City	Williams Bros. Asphalt Paving Co.	63-4	44-1	EB	0.59	0.69
					WB	0.61	0.69
Mb 46061-010 (Part)	US 223 from W on Onsted Rd E to W of Wolf Creek Rd	Ayling-Cunningham Asphalt Paving Co.	47-3 & Maumee Stone Co. Maumee, Ohio	81-57	EB	0.57	0.59
					WB	0.55	0.58
Mb 46061-010 (Part)	US 12 from M 50 E to E of M 124	Ayling-Cunningham Asphalt Paving Co.	47-3 & Maumee Stone Co. Maumee, Ohio	81-57	EB	0.48	0.57
					WB	0.52	0.62
Mb 53011-006	M 116 from US 10 N to Bryant Ave	Laman Asphalt & Paving Co.	67-2	67-2	NBOL	0.50	0.52
					NBIL	0.53	0.54
					SBOL	0.55	0.58
					SBIL	0.54	0.59

TABLE 9 (Cont.)
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED IN 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
Ms 54011-004	US 131 from 1.45 mi N of Morley N 0.95 mi from S of Filmore Rd N 0.58 mi & from 0.20 mi N of N Limits Big Rapids N 0.90 mi	Rieth-Riley Construction Co., Inc.	54-42	54-42	NB SB	0.57 0.58	0.60 0.59
Mb 55011-009	US 41 from 10th St W to Menominee River	Payne & Dolan of Wisconsin, Inc.	52-39	55-4	EBOL EBIL WBOL WBIL	0.40 0.44 0.46 0.39	0.54 0.55 0.55 0.50
F 55012-009	US 41 from S Limits to N Limits of Stephenson	George Hocking Const. Co.	52-39	55-4	NB SB	0.49 0.46	0.61 0.62
F 61023A, C4	M 46 from Sheridan Dr E to Brooks Rd	Rieth-Riley Construction Co., Inc.	US Steel, Gary, Indiana 75-5	70-9	EBOL EBIL WBOL WBIL	0.33 0.39 0.33 0.36	0.42 0.56 0.46 0.58
U 61023A, C6	M 46 (Apple St) from Shonat St E to Sheridan Dr	Rieth-Riley Construction Co., Inc.	75-5	70-9	EBOL EBIL WBOL WBIL	0.35 0.41 0.38 0.42	0.39 0.47 0.44 0.48
Ms 61076-001	M 20 from Muskegon River N to S of M 213	Rieth-Riley Construction Co., Inc.	70-9	70-9	NBOL NBIL SBOL SBIL	0.54 0.51 0.51 0.51	0.55 0.63 0.55 0.59
Ms 63041-012	US 10 from Voorhies Rd N to Watkins Lake Rd	Lind Asphalt Paving Co.	63-4	63-4	NBOL NBCL NBIL SBOL SBCL SBIL	0.43 0.35 0.45 0.36 0.34 0.39	0.42 0.49 0.48 0.37 0.41 0.48
SS 74022-008	M 90 from Wildcat Rd E to US 25	Blue Water Asphalt Co., Inc.	63-4	74-51	EB WB	0.61 0.53	0.64 0.67

TABLE 9 (Cont.)
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED IN 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
Mb 77031-004	US 25 BR from W Limits of Marysville NE to SE of M 29	Blue Water Asphalt Co., Inc.	17-40	74-4	NB	0.40	0.38
					SB	0.41	0.43
F 79032-001	M 15 from W of West St E to S of Huron & Goodrich Sts	Saginaw Asphalt Paving Co.	79-21	79-73	NB	0.34	0.47
					SB	0.36	0.48
M 79042A, C5	M 46 from W Limits of Kingston E to E Limits	Rieth-Riley Construction Co., Inc.	79-21	79-21	EBIL	0.43	0.47
					WBIL	0.39	0.52
Mb 81031-005	US 12 from Neblo Rd NE to Johnson St	Ann Arbor Construction Co.	47-3	81-57	EB	0.50	0.47
					WB	0.52	0.52
					EBOL	0.47	0.40
					EBIL	0.49	0.44
					WBOL	0.46	0.36
					WBIL	0.49	0.43
I 82022A, C29	I 94 from E of Ozga Rd E to Beech-Daly Rd	Thompson-McCully Asphalt Paving Co.	47-3	81-82	EBOL	0.36	0.45
					EBCL	0.44	0.50
					EBIL	0.52	0.61
					WBOL	0.34	0.44
					WBCL	0.44	0.51
					WBIL	0.53	0.58
U 82062-011	US 12 from Brady St E to Rouge River	Detroit Asphalt Paving Co.	47-3	47-3	EBOL	0.45	0.49
					EBCL	0.46	0.54
					EBIL	0.53	0.59
					WBOL	0.46	0.59
					WBCL	0.41	0.56
					WBIL	0.47	0.54

TABLE 10
BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
F 02041D, C4 F 52061C, C2	M 28 from US 41 SE to 900 ft E of Laughing Whitefish River	Payne & Dolan of Wisconsin, Inc.	Pit 52-7	None	EB WB	0.46 0.47	0.73 0.72
Mb 05012-004	US 31 from 2.08 miles S of the Charlevoix-Antrim Co. Line N 0.37 mi	Hodgkiss & Douma, Inc.	Pit 15-32	Pit 15-32	NB SB	0.28 0.29	0.54 0.52
F 05012-005	US 31 from 1.71 mi S of the Charlevoix-Antrim Co. Line N to a point 1.41 mi N of the Co. Line	Hodgkiss & Douma, Inc.	Pit 15-32	Pit 15-32	NB SB	0.33 0.28	0.49 0.47
Mb 10012-002	M 22 from 400-ft N of North Shore Rd N to Benzie-Leelanau County Line	Rieth-Riley Construction Co.	Pit 10-21	None	NB SB	0.40 0.40	0.59 0.60
F 15011-003	US 31 from 706-ft SW of State St NE to Carpenter St., City of Charlevoix	Hodgkiss & Douma, Inc.	Pit 15-32	None	NBOL NBIL SBOL SBIL	0.37 0.29 0.31 0.28	0.45 0.49 0.45 0.47
SS 15031-002	M 66 from US 31 in City of Charlevoix	Hodgkiss & Douma, Inc.	Pit 15-32	None	EB WB	0.38 0.42	0.51 0.49
SS 17012-005	M 123 from Chippewa-Mackinac County Line N'ly to old M 48	Hodgkiss & Douma, Inc.	Pit 17-6	None	NB SB	0.52 0.49	0.76 0.76
SS 17012-006	M 123 from old M 48 N'ly to 1,600 ft NW of Trout Lake Cemetery	Hodgkiss & Douma, Inc.	Pit 17-6	None	NB SB	0.47 0.51	0.64 0.65
Mb 21023-001	US 2 - US 41 from 1020-ft S of N Gladstone City limits N to County Rd I 24	Payne & Dolan of Wisconsin, Inc.	Pit 21-17	None	EB WB	0.33 0.24	0.67 0.69
Mob 24051-001	M 131 from US 31 N to Beach Rd, omitting from 430 ft N of US 31 to 2100 ft S of Powell Rd	Hodgkiss & Douma, Inc.	Pit 15-32	None	NB SB	0.29 0.28	N. T. N. T.
M 26022-003	M 61 intermittently from Bay-Gladwin County Line W 7 miles	Central Paving Co.	Pit 65-7	None	EB WB	0.38 0.36	0.62 0.67

TABLE 10 (Cont.)

BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
SS 28042A, C1	M 72 from US 31 E to Grand Traverse-Kalkaska County Line	Peninsula Asphalt Co.	Pit 45-13	None	EB WB	0.29 0.28	0.33 0.36
Mb 31051-013	US 41 from S limits of Chassel N to 800-ft S of Pilgrim River Bridge, omitting 1.4 miles of existing concrete pavement	George Hocking Construction Co.	Pit 31-45	None	NB SB	0.22 0.22	0.54 0.53
Mb 35011-003	M 65 from 60-ft S of Iosco-Arenac County Line N to S limits of Whittemore	Saginaw Asphalt Paving Co.	Pit 1-56	None	NB SB	0.24 0.33	0.53 0.50
Mb 36022-4	US 2 intermittently from 3 miles E of Iron River E to Fortune Lake Park entrance	Payne & Dolan of Wisconsin, Inc.	Pit 36-22	None	EB EB WB WB	0.54 0.58[1] 0.55 0.54[1]	N.T. N.T. N.T. N.T.
Mb 41091-001	M 91 from I 96 N & E to M 21 in Lowell, omitting from 1710-ft N of Emery Dr to 534-ft S of Bowes St	Michigan Colprovia Co.	Pit 70-24	None	NB SB	0.41 0.35	0.70 0.66
Mb 59022-004 (Part)	M 91 from 204-ft N of Colby Rd N to 757-ft S of M 46	Rieth-Riley Construction Co.	Pit 59-55	None	NB SB	0.31 0.32	0.62 0.61
Mb 59022-004 (Part)	M 57 from 55 ft E of M 91 E'ly 1005 ft	Rieth-Riley Construction Co.	Pit 59-55	None	EB WB	N.T. N.T.	0.46 0.47
F 66022D, C7	M 28 from 3400-ft W of Baltimore River E to US 45 in Village of Bruce Crossing	George Hocking Construction Co.	Pit 66-33	None	EB WB	0.19 0.20	0.38 0.52
F 66023A, C3	M 28 from US 45 E a distance of 0.184 mile	George Hocking Construction Co.	Pit 66-5	None	EB WB	0.46 0.48	N.T. N.T.

[1] Special lane on hill for slow moving vehicles

TABLE 11
BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
F 02041D, C4 F 52061C, C2	M 28 from US 41 SE to 900 ft E of Laughing Whitefish River	Payne & Dolan of Wisconsin, Inc.	52-7	None	EB WB	0.58 0.61	0.73 0.72
Ms 20012-003	I 75 BL - M 72 from RR crossing near S Limits Grayling NW to M 93	Lake & Howell Const. Co.	69-14	69-14	NBOL NBIL SBOL SBIL	0.44 0.45 0.46 0.46	0.48 0.48 0.47 0.50
M 31031-004	M 203 from N of Anthony Ave SE to US 41	George Hocking Construction Co.	31-45	31-45	EB WB	0.48 0.48	0.56 0.58
U 31052-001	US 41 EB from Lincoln Ave E to Reservation St	George Hocking Construction Co.	31-45	31-45	EBOL EBIL	0.36 0.34	0.31 0.50
Mb 41091-001	M 91 from I 96 N to Lowell	Michigan Colprovia Co.	70-24	70-24	NB SB	0.56 0.54	0.70 0.66
Mb 45091-004	M 201 from M 22 N & E to Co. Rd #640	Peninsula Asphalt & Const. Co.	45-19	45-19	NB SB	0.42 0.47	0.41 0.38
Mb 47041-002	M 36 from Pettysville Rd E on relocation to E of Henry Rd	Lake & Howell Const. Co.	47-26	47-26	EB WB	0.38 0.36	0.42 0.41
SS 52031-002	M 35 from Delta-Marquette Co. Line NW to S of Little Lake	Payne & Dolan of Wisconsin, Inc.	52-36	52-36	NB SB	0.65 0.68	0.76 0.76
SS 52032-009	M 35 relocation from Co. Rd EER thence E'ly 0.521 mi.	Payne & Dolan of Wisconsin, Inc.	52-9	None	NB SB	0.44 0.39	0.67 0.67
Mb 59022-004	M 91 from N of Colby Rd N to M 46	Rieth-Riley Const. Co., Inc.	59-55	59-55	NB SB	0.51 0.51	0.62 0.61
Mb 65021-001	M 55 from West Branch E to M 33	Saginaw Asphalt Paving Co.	65-47	65-47	EB WB	0.53 0.51	0.57 0.59
Mb 66012-004	M 64 from Mineral River N & E to Stony Creek	Fox Valley Construction Co.	66-63	66-63	NB SB	0.53 0.56	0.62 0.67
SS 66013C, C3 SS 66013A, C4	M 64 from Stony Creek E to US 45	George Hocking Construction Co.	66-63	66-63	EB WB	0.47 0.48	0.68 0.65
Mb 67014-005 (Part)	US 131 from Reed City N 8.527 miles	The Hicks Company	67-2 & 54-45	67-2 & 54-45	NB SB	0.51 0.53	0.63 0.63
Mb 67014-005 (Part)	M 66 from Mecosta-Osceola Co. Line N 6.013 miles	The Hicks Company	67-2 & 54-45	67-2 & 54-45	NB SB	0.53 0.50	0.68 0.71
Mb 68012-004	M 33 from M 72 N to S of County Rd #612	Rieth-Riley Const. Co., Inc.	68-14	68-14	NB SB	0.52 0.58	0.47 0.50

TABLE 12
STONE-FILLED SAND-ASPHALT PAVEMENTS TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
M 32021-004	M 142 from M 25 E to Pigeon	Saginaw Asphalt Paving Co.	Pit 32-4	Pit 79-73	EB WB	0.45 0.47	0.70 0.71
M 76041-005	M 71 from Corunna SE	Spartan Asphalt Paving Co.	Pit 63-54	Pit 63-54	NB SB	0.39 0.41	0.66 0.66
Mb 79051-007	M 24 from M 46 N to Frank St in village of Caro	Spartan Asphalt Paving Co.	Pit 17-40	Pit 79-73	NB SB	0.48 0.43	0.65 0.64

TABLE 13
STONE-FILLED SAND-ASPHALT PAVEMENTS TESTED DURING 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
Ms 21024-008 (Part)	US 2 from the Soo Line RR E 4.429 miles	Payne & Dolan of Wisconsin, Inc.	75-5	21-12	EB WB	0.60 0.61	0.63 0.66
Ms 25081-006	M 21 from E of Dye Rd E to Meida St	Ann Arbor Construction Co.	63-4	63-54	EBOL EBIL WBOL WBIL	0.43 0.58 0.43 0.48	0.52 0.56 0.54 0.56
Ms 46072-007	M 52 from Adrian NE to N of Raisin River Bridge	Ayling-Cunningham Asphalt Paving Co.	47-3	81-57	NB SB	0.47 0.47	0.49 0.56
Ms 77033-008	US 25 from Lynburner Rd N to N of Myrtle Rd	Frank Strausberg & Son Co.	17-40	74-51	NB SB	0.49 0.45	0.50 0.45
Mb 79051-007	M 24 from M 46 N to Frank St	Saginaw Asphalt Paving Co.	17-40	79-73	NB SB	0.53 0.51	0.65 0.64

TABLE 14
NON-SKID SURFACE TREATMENT PAVEMENTS TESTED DURING 1967 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1972
Mm 7SC - 7B	M 86 from S Three Rivers city limits to W Centerville village limit in St. Joseph County	Klett Construction Co.	Pit 12-31	None	EB WB	0.51 0.50	0.59 0.61
Mm 8SC - 6A	M 19 from M 46 N to the Sanilac-Huron County Line	Ward & VanNuck, Inc.	Pit 79-21	None	NB SB	0.55 0.57	0.69 0.68

TABLE 15
NON-SKID SURFACE TREATMENT PAVEMENTS TESTED DURING 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
Ms 21024-008 (Part)	US 2 from County Rd J-1 in Ensign W 1.695 miles	Payne & Dolan of Wisconsin, Inc.	75-5	21-12	EB WB	0.21 0.23	N. T. N. T.
Mm 7SC-8C (Part 38073)	M 50 from M 99 E to US 127	Spartan Asphalt Paving Co.	---	38-46	EB WB	0.50 0.54	0.47 0.53
Mm 7SC-8C (Part 81011)	M 52 from I 94 N to Territorial Rd, omitting village of Chelsea	Spartan Asphalt Paving Co.	---	38-46	NB SB	0.51 0.54	0.57 0.57
Mm 8SC-2A (49031)	M 117 from US 2 N to Mackinac-Luce Co. Line	Yockey Construction, Inc.	---	49-57	NB SB	0.59 0.61	0.44 0.49

TABLE 16
SPECIAL HOT EMULSION WEARING COURSE MIXTURE SURFACES TESTED DURING 1968 AND 1972

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1972
Mb 38061-008 (Part)	M 60 from Calhoun-Jackson Co. Line E to Spring St	Rieth-Riley Construction Co. Inc.	---	12-35	EB WB	0.57 0.52	0.56 0.59
Mb 58042-008	M 50 from US 24 to US 25	Ayling-Cunningham Asphalt Paving Co.	---	E. C. Levy, Trenton	EB WB	0.48 0.48	0.48 0.49

TABLE 17

PORTLAND CEMENT CONCRETE PAVEMENTS CONSTRUCTED DURING 1967

Test Year	Number of Projects	Number of Lanes	Average Wsf Values			Range of Wsf Values	
			OL	IL	All Lanes	Low	High
1967	10	38	0.56	0.57	0.55	0.41	0.67
1968	13	52	0.48	0.53	0.51	0.37	0.66
1972[1]	10	3	0.44	0.56	0.48	0.30	0.70
1972[2]	13	56	0.46	0.51	0.48	0.35	0.72

[1] Initial tests conducted in 1967
[2] Initial tests conducted in 1968

TABLE 18

BITUMINOUS CONCRETE PAVEMENTS CONSTRUCTED DURING 1967

Test Year	Number of Projects	Number of Lanes	Average Wsf Values			Range of Wsf Values	
			OL	IL	All Lanes	Low	High
1967	14	48	0.42	0.44	0.42	0.31	0.57
1968	23	78	0.48	0.46	0.46	0.33	0.61
1972[1]	14	52	0.53	0.54	0.53	0.38	0.69
1972[2]	23	76	0.46	0.52	0.53	0.36	0.69

[1] Initial tests conducted in 1967
[2] Initial tests conducted in 1968

TABLE 19

BITUMINOUS AGGREGATE PAVEMENTS CONSTRUCTED DURING 1967

Test Year	Number of Projects	Number of Lanes	Average Wsf Values			Range of Wsf Values	
			OL	IL	All Lanes	Low	High
1967	20	42	0.37	0.28	0.37	0.19	0.58
1968	17	34	0.50	0.42	0.49	0.34	0.68
1972[1]	20	36	0.57	0.48	0.56	0.33	0.76
1972[2]	17	34	0.59	0.49	0.58	0.31	0.76

[1] Initial tests conducted in 1967
[2] Initial tests conducted in 1968

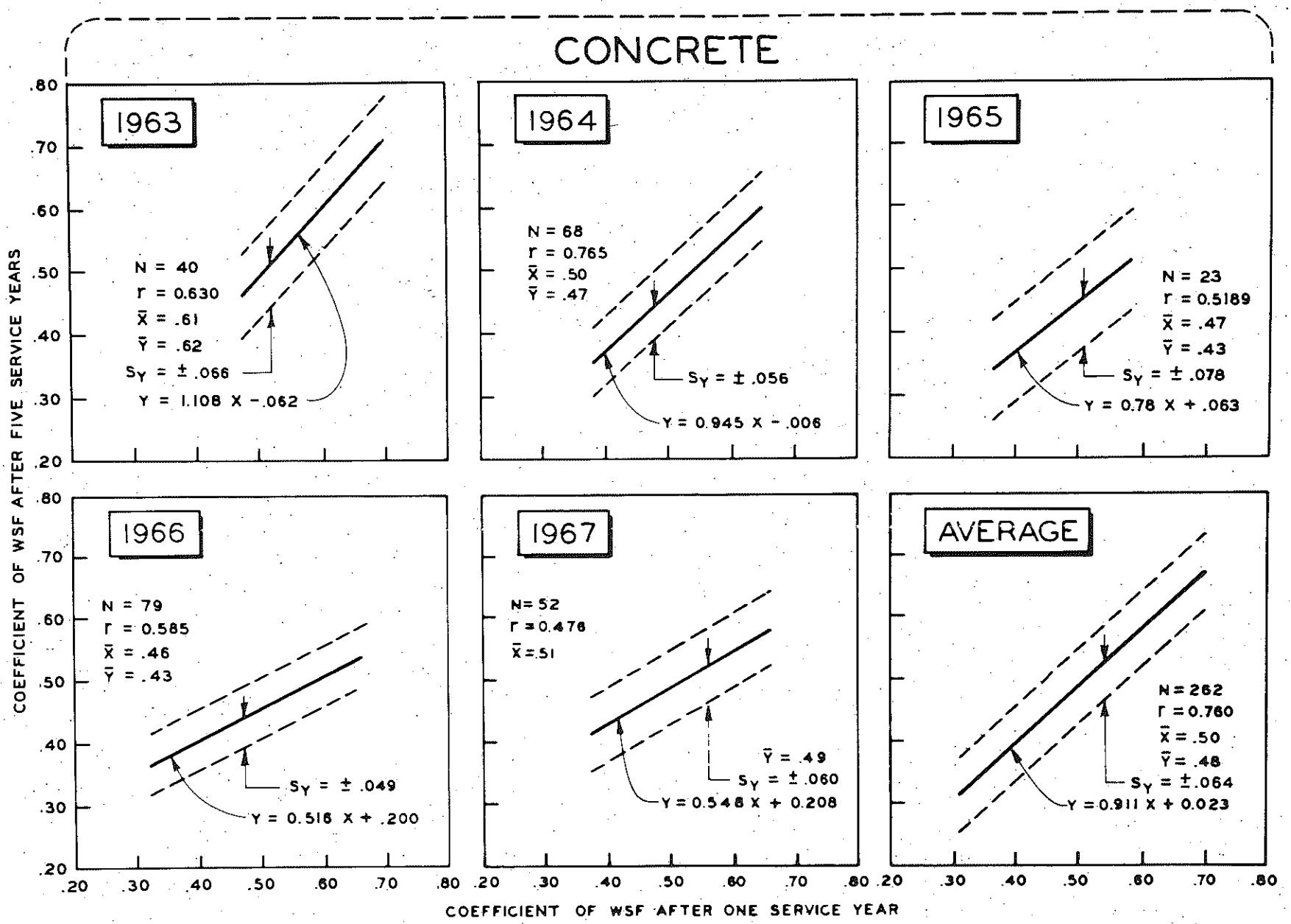


Figure 1. Relationship between one- and five-year wet sliding friction for concrete pavements.

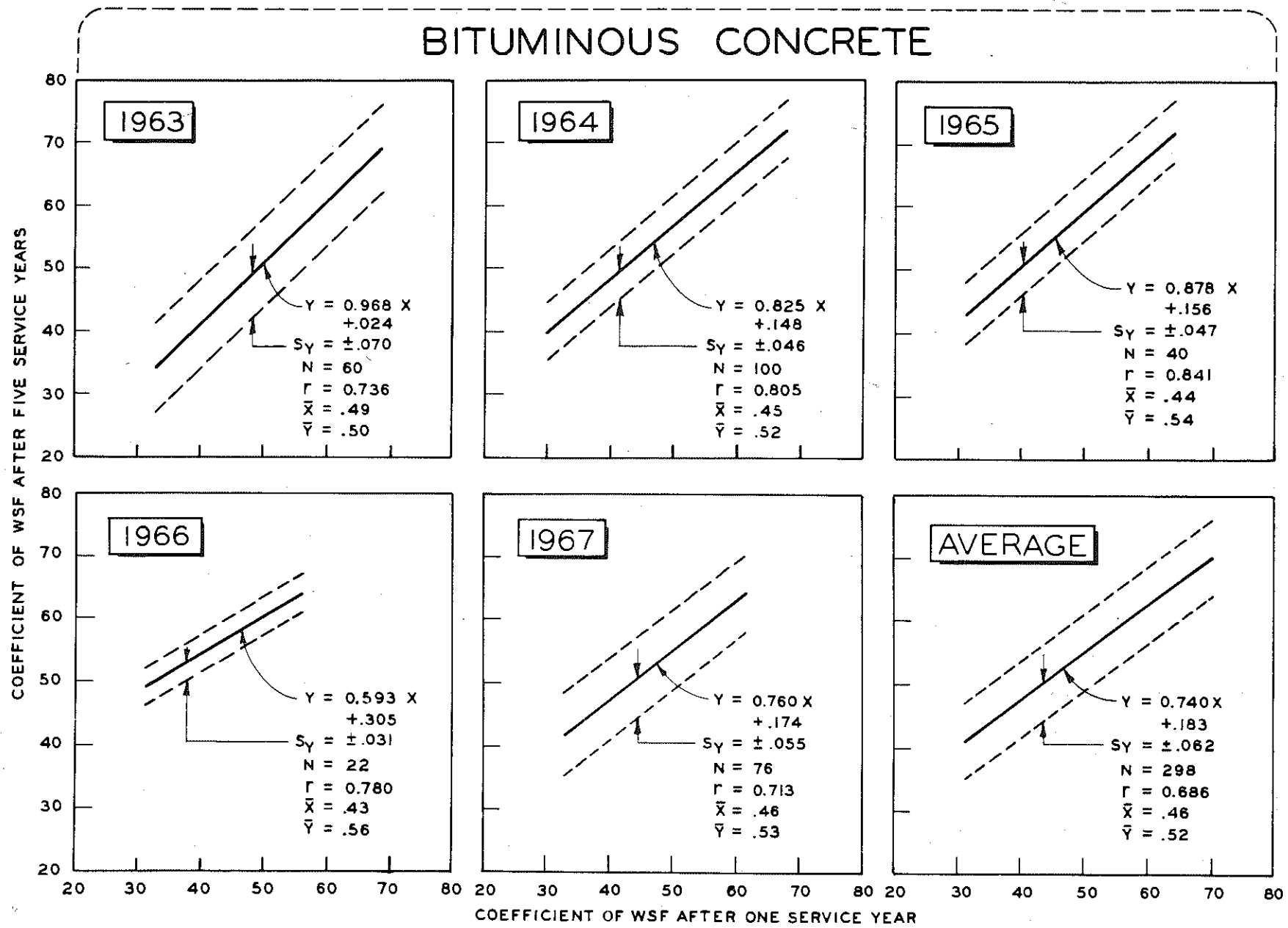


Figure 2. Relationship between one- and five-year wet sliding friction values for bituminous concrete pavements.

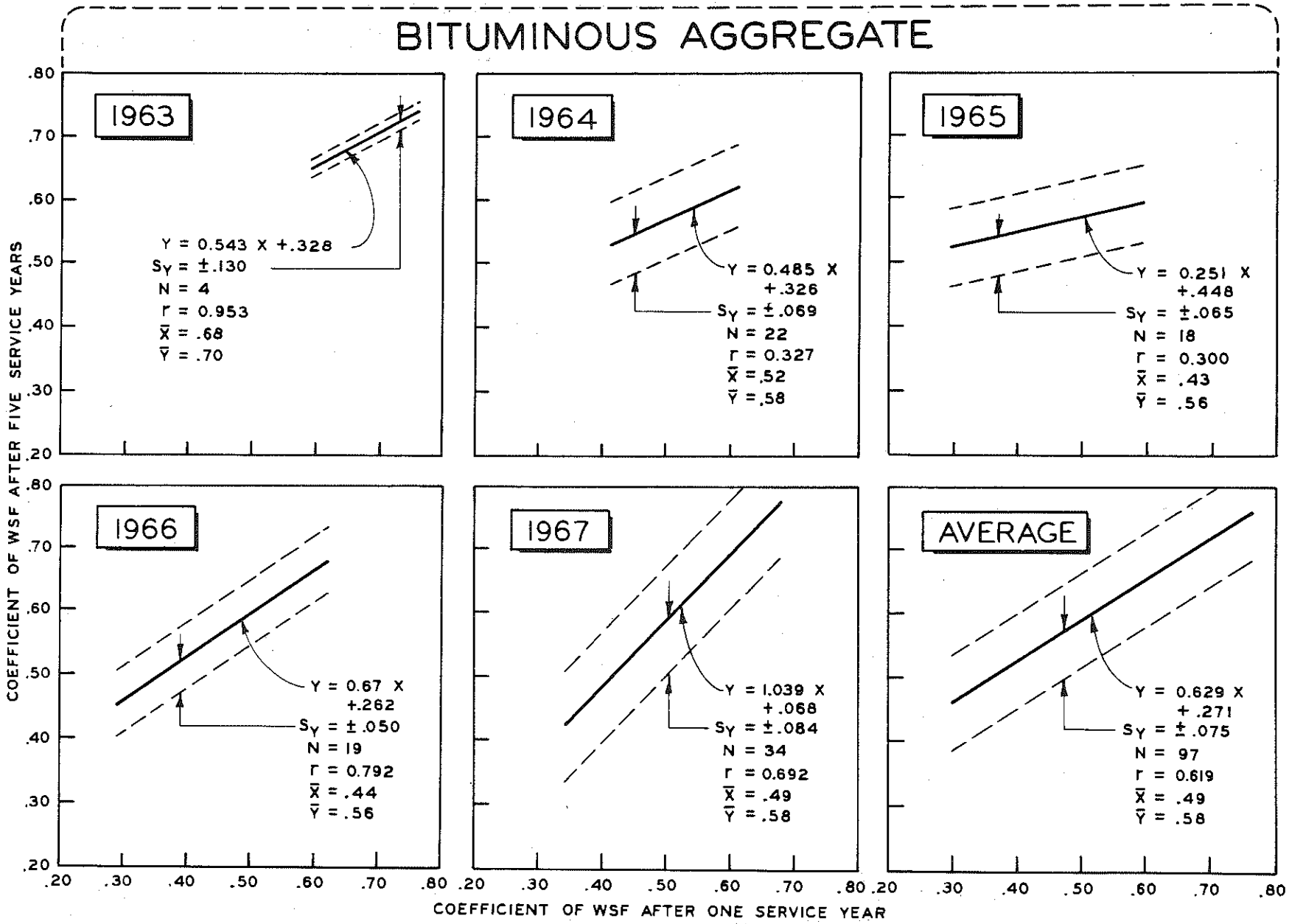


Figure 3. Relationship between one- and five-year wet sliding friction values for bituminous aggregate pavements.

SECTION III
EXPERIMENTAL FEATURES IN PAVEMENT SURFACES

Table 20 - Rubberized Sand-Asphalt; US 31, City of Charlevoix

Except for 1962, skid tests have been conducted annually on the Rubberized Sand-Asphalt surface which was placed on US 31 in October 1960. Table 20 summarized the history of these tests. After twelve service years, this pavement continues to possess an average friction level above 0.40. The current level is 0.49, .06 lower than the 1971 value and only .03 lower than the initial value determined in 1960.

Table 21 - 3BC Sand-Asphalt Resurfacing, US 131, North and South of Alba (Project Mm 4 BC-3A, Control Section 05072)

Outstanding skid resistance qualities continue with the 1972 tests on this eight-year old 3BC Sand-Asphalt surface. No significant difference in the friction level performance of the 85/100 penetration sand-asphalt using 6.9 percent bitumen and the 150/175 penetration sand-asphalt using 6.4 percent bitumen has been determined. Since US 131 was returned to a two-lane roadway in 1968, however, coefficients on the former inside lanes have gradually decayed to the point of matching those on the former outside lanes. A marked difference was noticeable before 1968.

Table 22 - Bituminous Concrete Interstate Projects

Table 22 presents the results of skid tests taken on a representative sample of interstate bituminous concrete projects which were constructed in 1961 and 1962. Particular attention has been given to differences in performance between inside (passing) and outside (traffic) lanes during the past 11 years of this study. The 1972 tests yielded friction levels ranging from 0.47 to 0.69 and averaging 0.59 in the outside lanes, and friction levels ranging from 0.59 to 0.75 and averaging 0.68 in the inside lanes. Previously established trends continued this year, as the inside lanes yield an average friction level 15 percent higher than the outside lanes. All values are well above the 0.40 mark.

Table 23 - Bridge Deck Surface Coatings

Table 23 summarizes the skid test history for five types of bridge deck surface coatings on 28 structures. Added to the study during 1972 was a Latex Modified Mortar surfacing mix.

1. Rubberized Bituminous Concrete

Ten bridges coated with Rubberized Bituminous Concrete during 1967 and 1968 were skid tested again in 1972. The average friction level determined after five years of service was 0.52. A historical review of all data indicates a continuing upward trend in average coefficients which has not yet peaked. Respective Wsf values for initial, one, two, three, four and five-year service levels were 0.47, 0.48, 0.48, 0.49, 0.51, and 0.52.

2. Asbestos Mixtures

Two structures coated in 1967 with bituminous mixtures containing asbestos were tested again in 1972. S05 of 58152 has a rubberized asbestos and bituminous concrete mixture applied to its deck. After five service years Wsf values averaged 0.54, highest since the coating was placed. The northbound lanes of X01 of 81075 were coated in 1967 with a mix comprised of asbestos and sand-asphalt, while the southbound has a rubberized bituminous concrete and sand-asphalt mixture applied. Both north and southbound deck surfaces are performing well with respective average five-year coefficients of 0.63 and 0.65.

3. Polyurethane Coatings

S18 of 82025 has a 1968 special thin coating of polyurethane on its deck. No significant differences have occurred since last year's test. The outside lanes continue to perform well with friction levels averaging 0.57 after four years of wear. The inside lanes, however, have friction levels averaging 0.26.

4. Epoxy Coatings

After three service years, skid tests revealed average friction levels of 0.37 and 0.50 on the north and south halves of the Creitz Rd bridge deck over I 496. An E15 Versamid 140 coating was used on the north half and friction levels are starting to fall off with the 1972 tests. The south half of the deck was surfaced with Guard-Kote 250; here coefficients have increased since last year.

After only one complete service year, an epoxy mortar coating on S04 of 33083 has two of its five deck lanes yielding coefficients below 0.40. Contrasting to this structure, however, B02 of 73131 possesses an average friction level of 0.58 or higher on all of its epoxy mortar coated lanes after three service years.

5. Latex Modified Mortar

Latex Modified Mortar is a portland cement mortar. Part of the mix water has been replaced with a latex emulsion to increase the bond and tensile strength of the resulting surfacing mix. Skid test results from eight structures which have been resurfaced with Latex Modified Mortar are being reported for the first time this year and are shown in Table 23. Average Wsf values ranged from 0.32 to 0.60 and averaged 0.45.

Table 24 - Experimental Skid-Resistant Resurfacing

Skid tests were continued this year at the 14 experimental skid-resistant resurfacing locations which were constructed in 1965. After seven years of service, 58 percent of the 73 lanes tested yield Wsf values averaging 0.50 or higher; the remaining 42 percent are between 0.42 and 0.49. For the first year since initial tests were conducted in 1965, none of the 73 lanes possess an average friction level below 0.40. The overall 1972 average was 0.51.

An 80-lb Crushed Fine Aggregate surface applied in 1968 to the northbound lanes of US 24 between Joy Rd and West Chicago was tested again this year. After a four-year service period, average Wsf values range from 0.48 to 0.50 and average 0.49.

Table 25 - Textured Concrete Pavement Surfaces, Northbound I 69 (Project I 13074-001)

Skid tests taken on the northbound I 69 textured concrete pavement surface after a two-year service period are shown in Table 25. The friction level on all lanes of all texturing methods has decreased for the second year in a row. However, all continue to exhibit good skid resistance qualities as average coefficients are 0.47 or higher.

Table 26 - Gussasphalt and Mastiphalt Surfaces on US 31, Research Project 72 C-14

A Gussasphalt surface was placed on US 31 commencing immediately north of the B3 of 53031 structure over Pere Marquette River and proceeding north a distance of 500 ft. Excellent initial skid resistance levels were determined on this surface as initial skid test values ranged from 0.76 to 0.83 and averaged 0.80.

Immediately north of the Gussasphalt, a 500-ft section of Mastiphalt was also placed on the US 31 roadway. Friction levels determined on this were adequate but not as impressive. Coefficients ranged from 0.37 to 0.50 and averaged 0.43.

Gussasphalt was also used to resurface and seal the deck of a US 31 structure over the north branch of the Pentwater River (B2 of 64013). Initial year Wsf values obtained on the northbound lanes ranged from 0.73 to 0.76 and averaged 0.74.

Table 27 - Spray Grip Surface, Research Project 72 NM-326

A Spray Grip surface was placed at the intersection of US 24 (Telegraph Rd) and 10 Mile Rd in the Fall of 1972. Skid tests were conducted in November and ranged from 0.73 to 0.79, averaging 0.78; thus exhibiting that excellent friction levels exist on the Spray Grip surface.

Tables 28 and 29 - Lakelite Aggregate Sections

Lakelite is a lightweight, porous material and has been incorporated into the mix design of two experimental surfaces constructed in 1972.

Project Mbr 62032-04779A, located on M 37 in Newaygo County, has variations in percent bitumen, percent Lakelite and size of material. A pattern of an increase in friction level with an increase in percent of Lakelite is consistant with the initial year Wsf values in all sections except Section 6. Section 6 uses 28 percent bitumen; the 0.82 average coefficient seems more in line with the 100 percent Lakelite category.

Project Mm 2 SC-7A (M 43 in Hastings) also had Lakelite incorporated into its mix design. Skid values determined here were of a high quality similar to those encountered on the M 37 project.

Generally speaking, the initial friction level of the two aformentioned test areas using Lakelite aggregate ranged from 0.50 to 0.94 and averaged 0.70.

TABLE 20
RUBBERIZED SAND-ASPHALT US 31, CITY OF CHARLEVOIX

Test Year	Average Coefficient of Wet Sliding Friction	
	Firestone Tire	General Tire
1958*	0.19	----
1959**	0.48	----
1960	0.52	----
1961	0.40	----
1963	0.38	----
1964	----	0.46
1965	----	0.44
1966	----	0.40
1967	----	0.40
1968	----	0.57
1969	----	0.52
1970	----	0.51
1971	---	0.55
1972	----	0.49

* Initial tests on polished portland cement surface.

** Tests conducted on temporary seal coat applied in summer 1959, with surfacing in October 1960.

TABLE 21
3BC SAND-ASPHALT RESURFACING, US 131, NORTH AND SOUTH OF ALBA
Project Mm 4 BC-3A, Control Section 05072

Test Area Locations	Asphalt Cement	Aggregate	Mineral Filler	Direction and Lane	Average Coefficient of Wet Sliding Friction									
					July 1964	Oct. 1964	June 1965	Sept. 1966	Aug 1967	June 1968	July 1969	Oct. 1970	Aug 1971	July 1972
Mancelona to S of Alba	85/100 penetration (6.9-percent bitumen)	1:1 mixture from Polous and Gerstenberger Pits	fly ash (Detroit Edison)	SBOL/SB*	0.51	0.54	0.56	0.50	0.54	0.56	0.56	0.57	0.58	0.60
				SBIL/NB*	0.68	0.66	0.68	0.62	0.65	0.63	0.59	0.60	0.59	0.59
N of Alba to M32	150/175 penetration (6.4-percent bitumen)			SBOL/SB*	0.50	0.60	0.56	0.52	0.55	0.56	0.59	0.58	0.57	0.59
				SBIL/NB*	0.63	0.68	0.68	0.64	0.67	0.62	0.60	0.60	0.60	0.60

* Effective 11-12-68, US 131 has been returned to a two-lane roadway, with the elimination of the former NB lanes between M 66 and M 32. Consequently future traffic flow over the test area will carry north and southbound traffic.

TABLE 22
BITUMINOUS CONCRETE INTERSTATE PROJECTS

Project No.	Length, mi.	Location	Date Paved (Wearing Course)	Paving Contractor	Source of Coarse Aggregate	Lane[1]	Average Coefficient of Wet Sliding Friction												
							Firestone Tire				General Tire								
							1961	1962	Apr. 1963	Aug. 1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
18034, C3	6.758	M 61 to Arnold Rd	May-June 1962	Rieth-Riley	Wallace Stone Co. (Pit 32-4)	IL	0.52[2]	----	----	----	0.58	0.64	0.56	0.59	0.60	0.65	0.57	0.59	0.63
						OL	0.51[2]	----	----	----	0.47	0.48	0.41	0.42	0.46	0.53	0.44	0.51	0.52
72014, C4 20016, C1	6.273	0.6 mi. S of Roscommon-Crawford Co. Line to M 18 - M 76	May-June 1962	Thornton Construction	Pickett, Schreur (Merrit Pit)	IL	----	0.51	----	0.58	0.68	0.63	0.56	0.64	0.64	0.72	0.72	0.72	0.73
						OL	----	0.48	----	0.53	0.59	0.53	0.49	0.54	0.59	0.66	0.63	0.65	0.68
20015, C3	4.847	Co. Rd 612 to N Crawford Co. Line	Sept. 1961	Thornton Construction	McCready Pit (Pit 60-18)	IL	0.60	0.60	0.61	0.59	0.73	0.66	0.59	0.66	0.65	0.73	0.70	0.72	0.75
						OL	0.56	0.52	0.56	0.51	0.63	0.59	0.52	0.54	0.60	0.70	0.66	0.66	0.69
69013, C1	7.665	Otsego Co. Line N	Oct. 1961	Saginaw Asphalt	Afton Quarry (Pit 20-35)	IL	----	----	0.57	0.59	0.70	0.60	0.49	0.58	0.52	0.58	0.55	0.54	0.59
						OL	----	----	0.49	0.54	0.54	0.44	0.36	0.40	0.41	0.48	0.41	0.46	0.46
		Marlette Rd to Charles Brink Rd	June 1962	Saginaw Asphalt	Afton Quarry (Pit 20-35)	IL	----	----	0.56	0.59	0.68	0.64	0.48	0.58	0.58	0.62	0.58	0.55	0.60
						OL	----	----	0.47	0.47	0.48	0.44	0.35	0.37	0.42	0.48	0.46	0.44	0.47
69013, C3, C5	5.385	Charles Brink Rd N to M 32 (Gaylord)	June 1962	Spartan Asphalt	Lewiston Pit	IL	----	----	0.59	0.63	0.71	0.66	0.60	0.70	0.66	0.73	0.72	0.72	0.74
						OL	----	----	0.54	0.57	0.62	0.57	0.50	0.56	0.58	0.67	0.66	0.66	0.67
16091, C9	2.629	0.5 mi. S of M 68 N to MC RR	Aug-Sept 1962	East Shore Asphalt	Big Cut Pit (Pit 71-15)	IL	----	0.62	----	0.63	0.75	0.75	0.70	0.70[3]	0.74	0.74	0.74	0.79	0.73
						OL	----	0.58	----	0.56	0.58	0.60	0.52	0.52[3]	0.58	0.62	0.63	0.66	0.64

[1] IL and OL denote passing and traffic lanes.
[2] Tested on leveling course mix.
[3] Average of 2 series of tests in 1967.

TABLE 23
BRIDGE DECK SURFACE COATINGS

Bridge No.	Location	Year Coated	Type of Coating	Direction and Lane	Average Coefficient of Wet Sliding Friction					
					1967	1968	1969	1970	1971	1972
B01 of 09042	I 75 BL over Saginaw River in Bay City	1967	Rubberized bituminous concrete	EBOL	*	0.45	0.49	0.44	0.47	0.48
				EBIL	*	0.50	0.56	0.51	0.47	0.53
				WBOL	0.48	0.43	0.41	0.44	0.44	0.41
				WBIL	0.51	0.49	0.54	0.48	0.49	0.51
B02 of 11052	US 31 - US 33 over St. Joseph River in Berrien Springs	1967	Rubberized bituminous concrete	NB	*	0.39	0.47	0.40	0.40	0.45
				SB	0.43	0.36	0.43	0.37	0.36	0.44
X01 of 19032	US 27 over GTWRR in St. Johns	1967	Rubberized bituminous concrete	NBOL	0.53	0.44	0.50	0.47	0.49	0.51
				NBIL	0.56	0.50	0.55	0.52	0.55	0.57
				SBOL	0.53	0.48	0.51	0.49	0.50	0.54
				SBIL	0.60	0.56	0.57	0.56	0.61	0.61
B01 of 79051	M 24 over Cass River in Caro	1967	Rubberized bituminous concrete	NB	0.53	0.48	0.56	0.51	0.54	0.57
				SB	0.50	0.48	0.55	0.53	0.55	0.59
B01 of 61076	M 20 over Muskegon River	1968	Rubberized bituminous concrete	NBOL	----	0.46	0.49	0.49	0.51	0.52
				NBIL	----	0.48	0.53	0.50	0.55	0.56
				SBOL	----	0.44	0.49	0.46	0.48	0.49
				SBIL	----	0.44	0.52	0.49	0.49	0.52
B02 of 61076	M 20 SB over Cedar Creek	1968	Rubberized bituminous concrete	SBOL	----	0.44	0.50	0.48	0.46	0.53
				SBIL	----	0.44	0.55	0.50	0.53	0.58
B03 of 61076	M 20 NB over Cedar Creek	1968	Rubberized bituminous concrete	NBOL	----	0.46	0.52	0.49	0.51	0.54
				NBIL	----	0.45	0.54	0.53	0.52	0.58
S04 of 61072	M 46 over US 31	1968	Rubberized bituminous concrete	EBOL	----	0.45	0.45	0.43	0.49	0.54
				EBCL	----	0.43	0.49	0.49	0.52	0.53
				EBIL	----	0.45	0.54	0.50	0.54	0.55
				WBOL	----	0.42	0.48	0.43	0.49	0.50
				WBCL	----	0.43	0.49	0.47	0.54	0.54
				WBIL	----	0.50	0.55	0.50	0.57	0.55
S16 of 82111	Grand River Ave (I 96 BS) over I 696 BS	1968	Rubberized bituminous concrete	EBOL	----	0.52	0.47	0.46	0.44	0.54
				EBCL	----	0.44	0.43	0.40	0.43	0.44
				EBIL	----	0.43	0.41	0.41	0.43	0.48
				WBOL	----	0.49	0.49	0.47	0.46	0.48
				WBCL	----	0.42	0.39	0.40	0.42	0.39
				WBIL	----	0.43	0.41	0.41	0.44	0.50

* Not tested

TABLE 23 (Cont.)
BRIDGE DECK SURFACE COATINGS

Bridge No.	Location	Year Coated	Type of Coating	Direction and Lane	Average Coefficient of Wet Sliding Friction					
					1967	1968	1969	1970	1971	1972
S17 of 82023	Grand River Ave (I 96 BS) over I 94	1968	Rubberized bituminous concrete	EBOL	----	0.44	0.38	0.35	0.41	0.43
				EBCL	----	0.44	0.37	0.34	0.39	0.42
				EBIL	----	0.45	0.40	0.36	0.38	0.45
				WBOL	----	0.50	0.43	0.40	0.44	0.48
				WBCL	----	0.44	0.37	0.36	0.40	0.41
				WBIL	----	0.44	0.39	0.35	0.39	0.43
S05 of 58152	Newport Rd over I 75, Newport	1967	Rubberized asbestos and bituminous concrete	EB	0.46	0.50	0.51	0.49	0.46	0.51
				WB	0.47	0.50	0.51	0.52	0.49	0.57
X01 of 81075	US 23 BR over Huron River, North of Ann Arbor	1967	Asbestos mix plus sand asphalt	NBOL	0.57	0.52	0.55	0.54	0.58	0.60
				NBCL	0.58	0.53	0.57	0.56	0.66	0.62
				NBIL	0.60	0.56	0.66	0.62	0.68	0.68
		1967	Rubberized bituminous concrete plus sand asphalt	SBOL	0.61	0.50	0.57	0.54	0.64	0.59
				SBCL	0.59	0.55	0.64	0.59	0.69	0.64
				SBIL	0.58	0.58	0.64	0.62	0.73	0.72
S18 of 82025	Allard Ave over I 94	1968	Special thin polyurethane coating	EBOL	----	0.46	0.42	0.52	0.54	0.55
				EBIL	----	0.40	0.16	0.34	0.26	0.26
				WBOL	----	0.55	0.45	0.54	0.53	0.59
				WBIL	----	0.44	0.20	0.35	0.26	0.25
S05 of 23081	Crietz Rd over I 496	1969	North half of deck only E 15 Versamid 140	NB	----	----	0.67	0.54**	0.37**	0.35
				SB	----	----	0.66	0.54**	0.44**	0.39
			South half of deck only Guard Kote 250	NB	----	----	0.75	0.52**	0.46**	0.50
				SB	----	----	0.69	0.49**	0.36**	0.49
S04 of 33083	I 96 over Cedar St - Penn Ave. Access Rd	1971	Epoxy Mortar	EBOL	----	----	----	----	0.63	0.39
				EBIL	----	----	----	----	0.68	0.46
				EBRT	----	----	----	----	0.68	0.48
				WBOL	----	----	----	----	0.63	0.31
				WBIL	----	----	----	----	0.57	0.47
B02 of 73131	M 83 over Cass River, Frankenmuth	Aug 1969	Epoxy Mortar	NBOL	----	----	----	0.57	0.57	0.60
				NBIL	----	----	----	0.52	0.58	0.58
				SBOL	----	----	----	0.60	0.63	0.66
				SBIL	----	----	----	0.56	0.60	0.60

** Averaged of spring and fall tests

TABLE 23 (Cont.)
BRIDGE DECK SURFACE COATINGS

Bridge No.	Location	Year Coated	Type of Coating	Direction and Lane	Average Coefficient of Wet Sliding Friction					
					1967	1968	1969	1970	1971	1972
S26 of 82195	John R over I 75	1969	Latex Modified Mortar	SBOL	----	----	----	----	----	0.60
				SB#3	----	----	----	----	----	0.53
				SB#2	----	----	----	----	----	0.47
				SBIL	----	----	----	----	----	0.48
S27 of 82195	Brush St over I 75	1969	Latex Modified Mortar	NBOL	----	----	----	----	----	0.54
				NBCL	----	----	----	----	----	0.48
				NBIL	----	----	----	----	----	0.51
S03 of 82022	WB I 94 over Wayne Rd	1970	Latex Modified Mortar	WBOL	----	----	----	----	----	0.44
				WBCL	----	----	----	----	----	0.44
				WBIL	----	----	----	----	----	0.42
X01 of 82022	EB I 94 over Shook Rd and RR	1970	Latex Modified Mortar	EBOL	----	----	----	----	----	0.41
				EBCL	----	----	----	----	----	0.44
				EBIL	----	----	----	----	----	0.46
X02 of 82022	WB I 94 over Shook Rd and RR	1970	Latex Modified Mortar	WBOL	----	----	----	----	----	0.43
				WBCL	----	----	----	----	----	0.42
				WBIL	----	----	----	----	----	0.54
S04 of 41026	M 37 over EB I 96	1971	Latex Modified Mortar	NBOL	----	----	----	----	----	0.42
				NBIL	----	----	----	----	----	0.46
				SBOL	----	----	----	----	----	0.37
				SBIL	----	----	----	----	----	0.41
				SBRL	----	----	----	----	----	0.40
S05 of 41026	M 37 over WB I 96	1971	Latex Modified Mortar	NBOL	----	----	----	----	----	0.42
				NBIL	----	----	----	----	----	0.44
				SBOL	----	----	----	----	----	0.33
				SBIL	----	----	----	----	----	0.47
				SBRL	----	----	----	----	----	0.46
S02 of 63022	I 96 over Milford Rd	1971	Latex Modified Mortar	EBOL	----	----	----	----	----	0.32
				EBCL	----	----	----	----	----	0.42
				EBIL	----	----	----	----	----	0.43
				WBOL	----	----	----	----	----	0.38
				WBCL	----	----	----	----	----	0.43
				WBIL	----	----	----	----	----	0.49

TABLE 23 (Cont.)
BRIDGE DECK SURFACE COATINGS

Bridge No.	Location	Year Coated	Type of Coating	Direction and Lane	Average Coefficient of Wet Sliding Friction					
					1967	1968	1969	1970	1971	1972
S06 of 82022	WB I 94 over Middlebelt Rd	1971	Latex Modified Mortar	WBOL	----	----	----	----	----	0.38
				WBCL	----	----	----	----	----	0.40
				WBIL	----	----	----	----	----	0.42
S01 of 63022	I 96 over Kent Lake Rd	1972	Latex Modified Mortar	EBOL	----	----	----	----	----	0.50
				EBCL	----	----	----	----	----	0.45
				EBIL	----	----	----	----	----	0.53
				WBOL	----	----	----	----	----	0.46
				WBCL	----	----	----	----	----	0.48
				WBIL	----	----	----	----	----	0.52
S09 of 82022	EB I 94 over Ecorse Rd	1972	Latex Modified Mortar	EBOL	----	----	----	----	----	0.44
				EBCL	----	----	----	----	----	0.42
				EBIL	----	----	----	----	----	0.45
S12 of 82022	WB I 94 over Beech-Daly Rd	1972	Latex Modified Mortar	WBOL	----	----	----	----	----	0.46
				WBCL	----	----	----	----	----	0.47
				WBIL	----	----	----	----	----	0.43

TABLE 24
EXPERIMENTAL SKID RESISTANT RESURFACING

Control Section	Location	Construction Months	Mixture Type	Route	Direction and Lane	Average Coefficient of Wet Sliding Friction								
						1965	1966 Spring	1966 Fall	1967	1968	1969	1970	1971	1972
09033	M 13 at Linwood Rd, N of Bay City	Oct. 1965	80-lb Sandstone + asphalt	M 13	NBOL	0.71	0.49	0.43	0.50	0.51	0.51	0.50	0.50	0.53
				M 13	NBIL	0.72	0.52	0.46	0.57	0.59	0.60	0.58	0.59	0.64
				M 13	SBOL	0.73	0.49	0.45	0.54	0.54	0.53	0.55	0.51	0.55
				M 13	SBIL	0.74	0.58	0.49	0.62	0.63	0.63	0.58	0.59	0.56
09033	M 13 at Grove St, N of Bay City	Sept.-Oct 1965	80-lb Sandstone + asphalt	M 13	NBOL	0.73	0.53	0.49	0.59	0.55	0.56	0.55	0.53	0.55
				M 13	NBIL	0.76	0.61	0.56	0.66	0.62	0.66	0.67	0.66	0.66
				M 13	SBOL	0.75	0.51	0.44	0.40	*	0.43[1]	0.52[1]	0.45[1]	0.48[1]
				M 13	SBIL	0.76	0.55	0.51	0.42	*	0.44[1]	0.55[1]	0.50[1]	0.55[1]
09042	M 25 at Wagner Rd, E of Bay City	Sept. 1965	80-lb Sandstone + asphalt	M 25	EB	0.77	0.53	0.47	0.51	0.54	0.64	0.62	0.55	0.55
				M 25	WB	0.74	0.54	0.47	0.53	0.55	0.66	0.60	0.57	0.58
25072	M 54 at Coldwater Rd, N of Flint	Oct. 1965	50-lb Quartzite + asphalt	M 54	NBOL	0.67	0.50	0.51	0.55	0.54	0.54	0.54	0.57	0.53[4]
				M 54	NBIL	0.77	0.54	0.52	0.61	0.62	0.61	0.63	0.66	0.69[4]
				M 54	SBOL	0.70	0.51	0.51	0.55	0.57	0.58	0.53	0.49	0.45[4]
				M 54	SBIL	0.76	0.53	0.53	0.60	0.60	0.63	0.62	0.64	0.64[4]
25073	M 54 at M 57, N of Flint	Sept. 1965	50-lb Quartzite + asphalt + additive	M 54BR	NBOL	0.70	0.48	0.43	0.53	0.56	0.61	0.53	0.55	0.64
				M 54BR	NBIL	0.71	0.53	0.47	0.55	0.58	0.61	0.59	0.64	0.66
				M 54BR	SBOL	0.65	0.50	0.44	0.52	0.55	[2]	0.54	0.60	0.63
				M 54BR	SBIL	0.71	0.52	0.49	0.58	0.61	[2]	0.61	0.66	0.69
				M 57	EB	0.70	0.51	0.45	0.55	0.56	0.55	[3]	----	----
				M 57	WB	0.72	0.53	0.46	0.55	0.56	0.57	[3]	----	----
25072	M 54 at M 54BR (S Jct.) S of Flint	Oct. 1965	50-lb crushed beach pebbles + asphalt	M 54	NBOL	0.60	0.49	0.43	0.42	0.43	0.48	0.42	0.48	0.48
				M 54	NBIL	0.66	0.47	0.41	0.44	0.45	0.52	0.49	0.52	0.53
				M 54BR	SBOL	0.62	0.47	0.46	0.40	0.44	0.48	0.38	0.45	0.44
				M 54BR	SBIL	0.66	0.47	0.41	0.41	0.48	0.54	0.48	0.54	0.52
				M 54 (Dort)	WBOL	0.62	0.45	0.45	0.46	0.50	0.54	0.52	0.61	0.54
				M 54 (Dort)	WBIL	0.62	0.45	0.47	0.48	0.52	0.55	0.50	0.56	0.51
81031	US 12, W from Neblo Rd, NW of Clinton	Sept. 1965	50-lb 3BC + hot asphalt emulsion	US 12	EB	0.60	0.49	0.49	0.49	0.52	0.51	0.52	0.48	0.55
				US 12	WB	0.62	0.47	0.45	0.49	0.55	0.52	0.50	0.47	0.53
81031	US 12, E from Lima Center Rd, NW of Clinton	Sept. 1965	50-lb 2MS + hot asphalt emulsion	US 12	EB	0.58	0.48	0.44	0.55	0.55	0.57	0.52	0.50	0.53
				US 12	WB	0.60	0.49	0.47	0.54	0.54	0.57	0.55	0.51	0.54
82052	US 24 at Fenkell Rd, (Five Mile Rd), Detroit	Sept. 1965	50-lb 3BC + asbestos fiber + asphalt	US 24	NBOL	0.56	0.36	0.34	0.37	0.38	0.42	0.35	0.36	0.42
				US 24	NB#3	0.53	0.36	0.34	0.41	0.40	0.41	0.38	0.37	0.42
				US 24	NB#2	0.57	0.36	0.34	0.40	0.41	0.43	0.41	0.37	0.43
				US 24	NBIL	0.60	*	*	*	*	*	*	*	*
				US 24	SBOL	0.52	0.38	0.37	0.41	0.39	0.43	0.38	0.40	0.46
				US 24	SBCL	0.60	0.37	0.35	0.42	0.42	0.43	0.40	0.42	0.48
				US 24	SBIL	0.59	0.35	0.34	0.44	0.40	0.42	0.40	0.43	0.49
				Five Mile Rd	EBOL	0.51	0.37	0.31	0.36	0.38	0.37	0.37	0.38	0.43
				Five Mile Rd	EBIL	0.55	0.39	0.33	0.41	0.40	0.42	0.41	0.39	0.49
				Five Mile Rd	WBOL	0.55	0.37	0.33	0.39	0.40	0.44	0.41	0.39	0.49
				Five Mile Rd	WBIL	0.60	0.39	0.33	0.43	0.44	0.44	0.42	0.42	0.49

* Not tested
[1] Bituminous Concrete - non-experimental
[2] Work being done at intersection--SB too dirty to test
[3] Deleted by new construction
[4] Pad worn off in wheel tracks

TABLE 24 (Cont.)
EXPERIMENTAL SKID RESISTANT RESURFACING

Control Section	Location	Construction Months	Mixture Type	Route	Direction and Lane	Average Coefficient of Wet Sliding Friction								
						1965	1966 Spring	1966 Fall	1967	1968	1969	1970	1971	1972
82053	US 24 at Plymouth Rd, Detroit	Sept.-Oct. 1965	50-lb 2MS + asbestos fiber + asphalt	US 24	NBOL	0.59	0.36	0.35	0.42	0.43	0.43	0.43	0.45	0.49
				US 24	NB#3	0.59	0.37	0.36	0.41	0.43	0.45	0.42	0.47	0.48
				US 24	NB#2	0.62	0.40	0.36	0.44	0.47	0.48	0.51	0.51	0.57
				US 24	NBIL	0.62	0.40	0.38	0.45	0.45	0.46	0.55	0.51	0.51
				US 24	SBOL	0.60	0.37	0.35	0.42	0.40	0.44	0.40	0.44	0.48
				US 24	SB#3	0.62	0.39	0.35	0.43	0.43	0.46	0.42	0.45	0.47
				US 24	SB#2	0.61	0.39	0.36	0.45	0.47	0.46	0.45	0.48	0.54
				US 24	SBIL	0.64	0.42	0.37	0.50	0.52	0.46	0.59	0.51	0.57
				Plymouth Rd	EBOL	0.62	0.40	0.36	0.41	0.41	0.46	0.48	0.45	0.45
				Plymouth Rd	EBCL	0.63	0.39	0.36	0.41	0.43	0.44	0.44	0.42	0.49
				Plymouth Rd	EBIL	0.64	0.39	0.37	0.41	0.44	0.44	0.51	0.48	0.51
				Plymouth Rd	WBOL	0.63	0.40	0.38	0.46	0.47	0.46	0.49	0.49	0.53
				Plymouth Rd	WBCL	0.61	0.41	0.37	0.44	0.44	0.46	0.45	0.42	0.50
				Plymouth Rd	WBIL	0.60	0.40	0.38	0.46	0.48	0.45	0.53	0.49	0.58
82053	US 24 at W. Chicago Rd, Detroit	Oct. 1965	80-lb 2MS + 31AA + asphalt	US 24	NBOL	0.57	0.38	0.37	0.43	0.45	0.44	0.43	0.46	0.49
				US 24	NB#3	0.58	0.40	0.37	0.43	0.45	0.46	0.43	0.44	0.49
				US 24	NB#2	0.61	0.41	0.36	0.43	0.47	0.46	0.45	0.47	0.52
				US 24	NBIL	0.62	0.40	0.37	0.42	0.49	0.46	0.45	0.46	0.52
				US 24	NBLT	0.62	"	"	"	"	"	"	"	"
				US 24	SBOL	0.56	0.42	0.41	0.44	0.41	0.45	0.42	0.44	0.50
				US 24	SBCL	0.57	0.41	0.40	0.43	0.46	0.45	0.44	0.44	0.48
				US 24	SBIL	0.59	0.41	0.40	0.43	0.47	0.48	0.43	0.47	0.50
				W. Chicago Rd	EBRT	0.63	0.45	0.44	0.48	0.50	0.45	0.45	0.51	0.56
				W. Chicago Rd	EBIL	0.63	0.44	0.40	0.42	0.46	0.45	0.45	0.47	0.54
				W. Chicago Rd	WBRT	0.63	0.43	0.41	0.47	0.50	0.46	0.48	0.46	0.52
				W. Chicago Rd	WBIL	0.63	0.41	0.37	0.47	0.47	0.45	0.45	0.48	0.51
82052	US 24 at Sibley Rd, Detroit	Oct. 1965	80-lb 3NS + 31AA + asphalt	US 24	NBOL	0.50	0.41	0.34	0.44	0.45	0.49	0.44	0.44	0.44
				US 24	NBIL	0.52	0.42	0.38	0.47	0.47	0.50	0.48	0.49	0.48
				US 24	SBOL	0.51	0.43	0.39	0.46	0.47	0.52	0.50	0.47	0.48
				US 24	SBIL	0.51	0.42	0.38	0.46	0.46	0.50	0.48	0.50	0.48
				Sibley Rd	EB	0.54	0.39	0.36	0.42	0.43	0.45	0.48[5]	0.47	0.44
				Sibley Rd	WB	0.52	0.41	0.39	0.45	0.44	0.44	0.43	0.49	0.43
11031	M 139 NB at Empire Rd, Benton Harbor	Oct. 1965	80-lb 3NS (P-4) + Synopal + asphalt	M 139	NBOL	0.44	0.40	0.39	0.56	0.42	0.45	0.45	0.48	0.48
				M 139	NBIL	0.50	0.42	0.38	0.51	0.52	0.52	0.55	0.61	0.61
11031	M 139 SB at Empire Rd, Benton Harbor	Oct. 1965	80-lb 3NS (P-4) + asphalt	M 139	SBOL	0.45	0.38	0.40	0.51	0.43	0.47	0.48	0.50	0.48
				M 139	SBIL	0.48	0.44	0.41	0.52	0.51	0.50	0.52	0.57	0.59
82053	US 24 NB (Telegraph Rd) from Joy Rd to West Chicago	Aug. 1968	80-lb crushed fine aggregate	US 24	NBOL	----	----	----	----	0.59	0.44	0.41	0.42	0.48
				US 24	NB#3	----	----	----	----	0.60	0.48	0.41	0.42	0.48
				US 24	NB#2	----	----	----	----	0.61	0.46	0.42	0.44	0.50
				US 24	NBIL	----	----	----	----	0.61	0.45	0.42	0.46	0.49

[5] Tested slightly out of wheel track because of gravel graded onto pavement

TABLE 25
TEXTURED CONCRETE PAVEMENT SURFACES ON
NORTHBOUND I 69, Project I 13074-001

Texture Method	Test Limits (Sta. to Sta.)	Direction and Lane	Average Coefficient of Wsf		
			1970	1971	1972
Conventional Burlap	2232+00 to 2238+00	NBOL	0.61	0.51	0.47
		NBIL	0.65	0.63	0.61
Longitudinal Brooming	2242+00 to 2248+00	NBOL	0.69	0.56	0.49
		NBIL	0.72	0.68	0.65
Transverse Combing	2253+00 to 2259+00	NBOL	0.86	0.70	0.60
		NBIL	0.87	0.86	0.78
Transverse Brooming	2272+00 to 2278+00	NBOL	0.76	0.56	0.48
		NBIL	0.79	0.74	0.72

TABLE 26
GUSSASPHALT AND MASTIPHALT SURFACES ON US 31
Research Project 72 C-14

Surface Tested	Direction and Lane	1972 Coefficients of Wsf		
		Low	High	Avg
1958 Bituminous Concrete N of experimental surfaces (Control Section 53031)	NB	0.35	0.37	0.36
	SB	0.33	0.36	0.34
1958 Bituminous Concrete S of experimental surfaces (Control Section 53031)	NB	0.38	0.40	0.39
	SB	0.31	0.36	0.33
Gussasphalt (Control Section 53031)	NB	0.76	0.82	0.78
	SB	0.79	0.83	0.81
Gussasphalt (B2 of 64013)	NB	0.73	0.76	0.74
	SB	not completed		
Mastiphalt (Control Section 53031)	NB	0.37	0.50	0.44
	SB	0.37	0.49	0.42

TABLE 27
SPRAY GRIP SURFACE
US 24 (Telegraph Rd) at 10 Mile Rd, Oakland County
Research Project 72 NM-326

Test Location	Lane	Before Spray Grip			After Spray Grip		
		9-19-72 Coefficient of Wsf			11-2-72 Coefficient of Wsf		
		Low	High	Avg	Low	High	Avg
US 24 (Telegraph Road), Immediately North of 10 Mile Road	SBRT	0.31	0.36	0.34	0.79	0.79	0.79
	SBOL	0.37	0.38	0.37	0.73	0.79	0.77
	SB#3	0.33	0.34	0.33	0.78	0.79	0.79
	SB#2	0.33	0.36	0.34	0.76	0.79	0.78
	SBIL	0.34	0.37	0.36	0.78	0.79	0.79
10 Mile Road, Immediately West of US 24	EB	0.33	0.41	0.38	0.77	0.78	0.78

TABLE 28

M 37 LAKELITE AGGREGATE SECTIONS - PROJECT Mbr 62032-04779A

Section No.	Station to Station	Percent Bitumen	Lakelite Aggregate	Lane	Coefficient of Wsf 11-9-72		
					Low	High	Avg
1	240+00 to 244+75	9.0	30% 31A	NB	0.55	0.59	0.57
2	244+75 to 264+15	9.0	32% 31A	NB	0.60	0.61	0.61
3	264+15 to 290+95	8.0	16% 31A	NB	0.50	0.55	0.52
4	290+95 to 292+30	9.5	100% 31A	NB	0.92	0.94	0.93
5	292+30 to 294+20	10.0	100% 31A	NB	0.88	0.90	0.89
6	294+20 to 295+00	8.5	28% 31A	NB	0.80	0.84	0.82
7	295+00 to 302+50	8.0	25% 31A	NB	0.50	0.61	0.56
8	307+70 to 291+25	9.5	42% 25A	SB	0.66	0.69	0.68
9	291+25 to 264+65	8.0	16% 31A	SB	0.55	0.58	0.57
10	264+65 to 254+00	9.0	30% 31A	SB	0.55	0.58	0.56
11	254+00 to 242+15	9.0	35% 31A	SB	0.65	0.66	0.66
12	242+15 to 239+75	9.0	40% 31A	SB	0.66	0.70	0.68
North Control	302+50 North	---	None	NB	0.50	0.51	0.51
	307+70 North	---	None	SB	0.50	0.52	0.51
South Control	240+00 South	---	None	NB	0.45	0.48	0.47
	239+75 South	---	None	SB	0.49	0.50	0.50

TABLE 29
M 43 LAKELITE AGGREGATE SECTION
Project Mm 2SC-7A (Control Section 08012)
Research Project 72 NM-347

Location	Surface	Lane	Coefficients of Wsf		
			9-6-72		
			Low	High	Avg
Coats Grove Rd South (N of Hastings)	28B Agg. Seal	NB	0.59	0.63	0.61
		SB	0.57	0.60	0.59
Coats Grove Rd N 0.5 mile	(Light wt Agg. Seal)	NB	0.87	0.88	0.87
		SB	0.90	0.91	0.91
From 0.5 Mile N of Coats Grove Rd N	28B Agg. Seal	NB	0.57	0.59	0.58
		SB	0.58	0.60	0.59

SECTION IV
HIGH-ACCIDENT LOCATIONS

HIGH-ACCIDENT LOCATIONS

This section reports the Department's continuing program to reduce skidding accidents on wet pavement at critical locations. High-Accident locations are skid tested to indicate priorities for resurfacing. In some cases, these locations are used for testing experimental skid-resistant resurfacing mixtures.

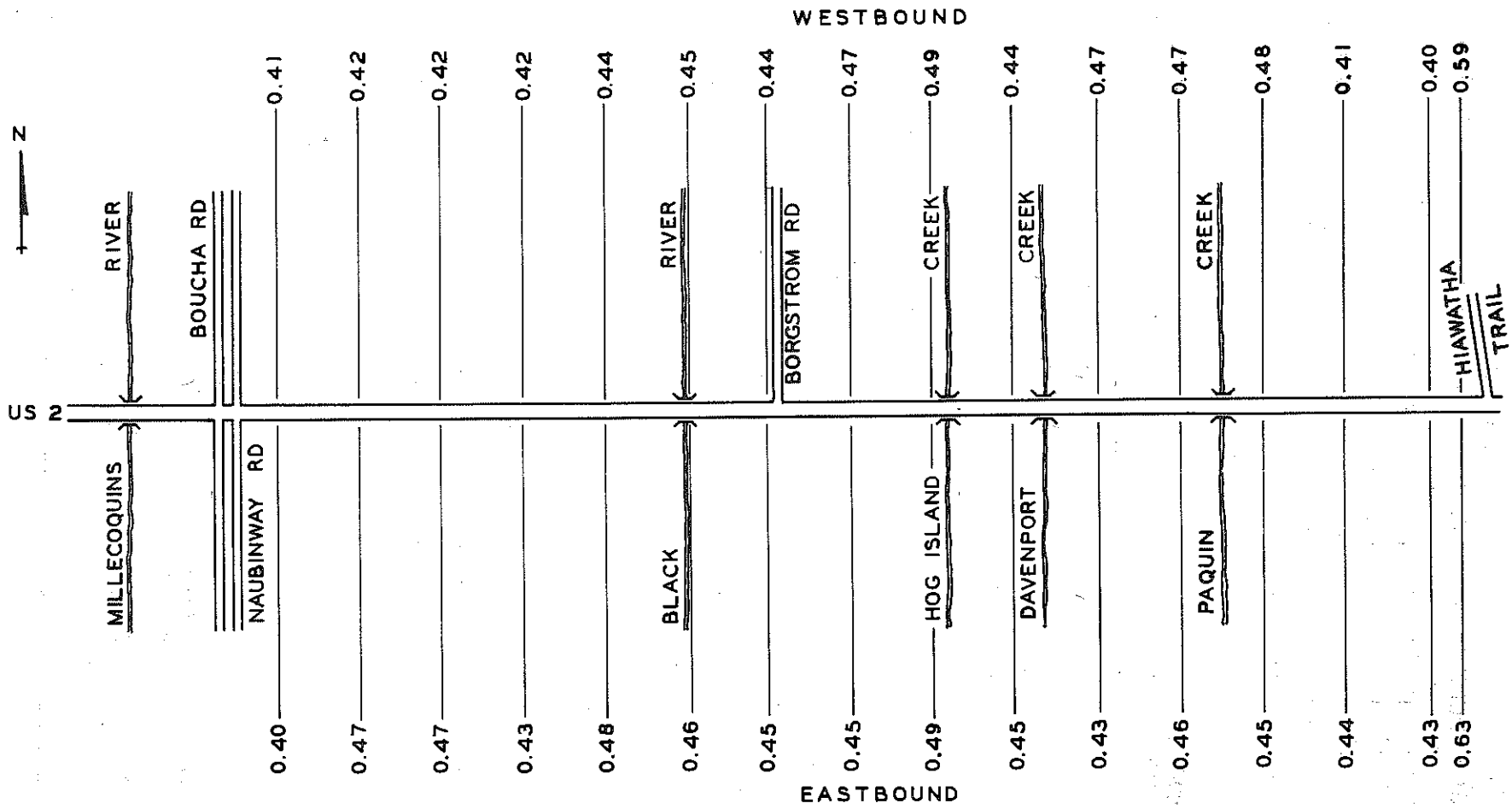
Selection of high-accident locations for this test year was made by the Traffic and Safety Division and is based on 1971 accident data. Skid tests yielded average Wsf values below 0.40 at 33 percent of the 700 lanes tested in 1972. Friction levels for 3 percent of the lanes averaged below 0.30.

During 1972, skid tests were conducted on 51 major highway routes. Testing was dispersed throughout all nine districts, 36 counties, and 162 separate locations. Table 30 summarizes the high-accident skid tests.

TABLE 30
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

	Control Section	Location and Mileage	1971 Accidents Total	1971 Accidents % Wet Surface	Lane Tested	Surface Type	Coefficient of wsf Low	Coefficient of wsf High	Coefficient of wsf Avg
DISTRICT 1	**Gogebic County**								
	27011	US 2 BR from 0.31 to 0.61 (Lowell, 0.51) City of Ironwood	11	45	EB	BIT	0.45	0.48	0.46
					WB		0.44	0.47	0.45
	27011	US 2 BR from 0.52 to 0.67 (Ayer, 0.67) City of Ironwood	17	29	EB	BIT	0.44	0.48	0.47
					WB		0.44	0.49	0.47
	Houghton County								
	31013	M 26 from 14.41 to 14.60 (Third, 14.42) Village of Laurium	12	33	NB	BIT	0.57	0.63	0.59
					SB		0.60	0.65	0.63
	Marquette County								
	52042	US 41 from 5.93 to 6.12 (US 41 BR, 5.93) City of Marquette and rural	17	47	EBOL	CONC	0.43	0.45	0.44
					EBIL		0.43	0.49	0.46
					WBOL	BIT	0.54	0.65	0.55
					WBIL		0.61	0.65	0.64
	52042	US 41 from 15.16 to 15.35 (Oak, 15.17) City of Negaunee	14	36	EBOL	CONC	0.37	0.41	0.40
					EBIL		0.42	0.43	0.42
					WBOL		0.42	0.44	0.43
					WBIL		0.41	0.43	0.42
	52042	US 41 from 15.37 to 15.57 (Baldwin Kiln Rd, 15.35) City of Negaunee	12	33	EBOL	CONC	0.42	0.47	0.45
					EBIL		0.42	0.45	0.43
					WBOL		0.39	0.45	0.43
					WBIL		0.41	0.44	0.43
	52044	US 41 BR from 1.57 to 1.77 (4th, 1.58) City of Marquette	46	33	EB	BIT	0.50	0.55	0.53
					WB		0.53	0.55	0.54
	52044	US 41 BR from 1.78 to 1.97 (Front, 1.78) City of Marquette	43	28	EB	BIT	0.51	0.55	0.52
					WB		0.53	0.53	0.53
	Menominee County								
	55011	US 41 from 0.47 to 0.64 (13th, 0.51) City of Menominee	22	36	NBOL	CONC	0.30	0.33	0.32
					NBIL		0.33	0.34	0.33
					SBOL		0.30	0.33	0.32
					SBIL		0.33	0.37	0.34
DISTRICT 2	**Delta County**								
	21031	M 35 from 17.16 to 17.36 (7th St., 17.16) City of Escanaba	11	36	NBOL	CONC	0.42	0.46	0.44
					NBIL	BIT	0.48	0.51	0.49
					SBOL	CONC	0.41	0.47	0.44
					SBIL	BIT	0.44	0.46	0.45
	Mackinac County								
	49022	US 2 from 6.10 to 21.27 (Naubinway - 941 Rd, 6.07) (Hiawatha Trail - 930 Rd, 21.27) Garfield, Hudson and Hendricks Twp.	42	19	EB[1]	BIT	0.40	0.63	0.46
					WB		0.40	0.59	0.45
	49026	BL 75 from 1.23 to 1.41 (Truckey, 1.21) City of St. Ignace	13	38	EB	BIT	0.48	0.51	0.50
					EBLT		0.50	0.51	0.51
					WB		0.41	0.43	0.42
DISTRICT 3	**Charlevoix County**								
	15012	US 31 fm 0.10 to 0.30 (Antrim 0.24) City of Charlevoix	12	42	NB	BIT	0.30	0.32	0.31
					SBOL		0.33	0.35	0.34
					SBIL		0.30	0.32	0.31
	Clare County								
	18022	US 10 fm 6.95 to 7.15 (Beech 7.05) City of Clare	13	31	EB	BIT	0.39	0.41	0.40
					WB		0.37	0.39	0.38
	18022	US 10 fm 7.16 to 7.17 (McEvan St. (BR-27), 7.16), City of Clare	10	40	EB	BIT	0.37	0.41	0.39
					WB		0.37	0.40	0.39

[1] See attached diagram.



Coefficients of wsf on US 2, Naubinway Road E to Hiawatha Trail, Control Section 49022.
Tested September, 1972.

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
DISTRICT 3 CONT.								
Clare County Cont.								
18031	US 27 BR fm 0.67 to 0.87 (John R., 0.67) City of Clare	13	31	NBOL	BIT	0.36	0.37	0.36
				NBIL		0.30	0.35	0.32
				SBOL		0.33	0.33	0.33
				SBIL		0.34	0.36	0.35
Grand Traverse County								
28012	US 31 fm 5.84 to 5.99 (11th St., 5.90) City of Traverse City	10	30	NBOL	CONC	0.28	0.28	0.28
				NBIL		0.28	0.31	0.30
				SBOL		0.30	0.35	0.33
				SBIL		0.27	0.30	0.28
28012	US 31 fm 6.60 to 6.77 (Xavier, 6.72) City of Traverse City	16	37	NBOL	CONC	0.36	0.37	0.37
				NBIL		0.38	0.44	0.40
				SBOL		0.41	0.44	0.43
				SBIL		0.39	0.41	0.40
28013	US 31 fm 1.46 to 1.68 (Barlow, 1.50) City of Traverse City	23	30	NBOL	CONC	0.38	0.41	0.40
				NBIL		0.41	0.41	0.41
				SBOL		0.38	0.40	0.39
				SBIL		0.41	0.42	0.41
28013	US 31 fm 1.69 to 1.87 (Peninsula Dr, 1.73) City of Traverse City	26	27	NBOL	CONC	0.41	0.41	0.41
				NBIL		0.41	0.43	0.42
				SBOL		0.39	0.44	0.41
				SBIL		0.41	0.42	0.41
28013	US 31 fm 4.41 to 4.56 (Ent. to State Park, 4.38) East Bay Twp.	10	30	NBOL	CONC	0.33	0.37	0.35
				NBIL		0.39	0.43	0.41
				SBOL		0.38	0.41	0.40
				SBIL		0.39	0.43	0.41
Manistee County								
51011	US 31 fm 4.37 to 4.57 (Cypress St., 4.41) City of Manistee	14	29	NBOL	CONC	0.33	0.36	0.34
				NBIL		0.30	0.34	0.31
				SBOL		0.31	0.32	0.32
				SBIL		0.19	0.37	0.25
	N fm S City Limits 4.05 to 4.37 (not part of request)	--	--	NB	CONC	0.29	0.33	0.31
				SB		0.29	0.33	0.31
Mason County								
53021	US 10 fm 1.02 to 1.12 (Washington, 1.12) City of Ludington	25	32	EBOL	BIT	0.48	0.51	0.50
				EBIL		0.54	0.55	0.54
				WBOL		0.45	0.49	0.48
				WBIL		0.54	0.55	0.54
Wexford County								
83032	US 131 fm 0.00 to 0.20 (N. Jct. M 55, 0.00) City of Cadillac	37	38	NBOL	BIT	0.33	0.34	0.33
				NBIL		0.32	0.33	0.32
				SBOL		0.34	0.37	0.36
				SBIL		0.34	0.37	0.36
83032	US 131 fm 0.44 to 0.64 (North St., 0.46) City of Cadillac	26	42	NBOL	BIT	0.30	0.34	0.33
				NBIL		0.34	0.38	0.36
				SBOL		0.34	0.37	0.36
				SBIL		0.34	0.38	0.35
DISTRICT 4								
Alpena County								
04021	M 32 fm 21.05 to 21.25 (Ripley St., 21.25) City of Alpena	11	45	EB	BIT	0.51	0.55	0.53
				WB		0.49	0.54	0.51
04032	US 23 fm 0.00 to 0.20 (Second Ave., 0.08) City of Alpena	29	35	NB	BIT	0.48	0.50	0.49
				SB		0.51	0.54	0.52

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 5

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Gratiot County								
29011	SB US 27 @ the Ithaca curve from 11.58 to 12.40, Emerson and N. Star Twps.	2	50	SBOL	CONC	0.46	0.53	0.50
				SBIL		0.55	0.64	0.59
				SBOL	BIT	0.62	0.68	0.63
				SBIL		0.72	0.78	0.75
Isabella County								
37011	US 27 BR fm 3.32 to 3.47 (Bellows, 3.34) City of Mt. Pleasant	32	28	NBOL	CONC	0.41	0.41	0.41
				NBIL		0.44	0.44	0.44
				SBOL		0.39	0.44	0.42
				SBIL		0.44	0.44	0.44
37012	US 27 BR fm 0.53 to 0.73 (Broadway 0.61) City of Mt. Pleasant	33	33	NBOL	CONC	0.43	0.47	0.46
				NBIL		0.44	0.49	0.46
				SBOL		0.45	0.46	0.46
				SBIL		0.46	0.49	0.47
Kent County								
41014	US 131 BR fm 0.70 to 0.88 (Monroe Ave., 0.71) City of Grand Rapids	36	36	NBOL	BIT	0.49	0.52	0.51
				NBIL		0.44	0.46	0.45
				SBOL		0.44	0.51	0.48
				SBIL		0.44	0.47	0.46
41014	US 131 BR fm 2.12 to 2.32 (Leonard St., 2.30) City of Grand Rapids	30	27	NBOL	BIT	0.51	0.52	0.51
				NBIL		0.52	0.54	0.52
				SBOL		0.49	0.53	0.51
				SBIL		0.51	0.55	0.53
41041	M 21 fm 0.75 to 0.95 (P.M. RR, 0.75) City of Grandville	48	29	EBOL	BIT	0.42	0.44	0.43
				EBIL		0.46	0.48	0.47
				WBOL		0.42	0.47	0.45
				WBIL		0.45	0.47	0.46
41061	M 11 fm 7.34 to 7.54 (Wilson Ave., 7.52) City of Grandville	42	33	EBOL	CONC	0.33	0.37	0.34
				EBIL		0.32	0.38	0.35
				WBOL		0.25	0.30	0.27
				WBIL		0.37	0.41	0.38
				WBLT	BIT	0.37	0.42	0.40
41063	M 11 fm 0.38 to 0.58 (Madison Ave, 0.46) Cities of Grand Rapids and Wyoming	30	30	EBOL	BIT	0.44	0.48	0.46
				EBIL		0.52	0.55	0.53
				WBOL		0.36	0.42	0.40
				WBIL		0.48	0.52	0.50
41131	US 131 fm 7.90 to 8.10 (44th St., 8.10) City of Wyoming	24	32	NBOL	CONC	0.47	0.48	0.47
				NBIL		0.51	0.53	0.52
				SBOL		0.43	0.49	0.47
				SBIL		0.54	0.54	0.54
41131	US 131 fm 8.99 to 9.19 (36th St., 9.11) City of Wyoming	40	33	SBOL	CONC	0.46	0.46	0.46
				SBIL		0.51	0.52	0.52
41131	US 131 fm 11.98 to 12.17 (Hall St., 12.10) City of Grand Rapids	36	39	NBOL	CONC	0.41	0.42	0.42
				NBCL		0.42	0.44	0.43
				NBIL		0.46	0.48	0.47
				SBOL		0.40	0.41	0.40
				SBCL		0.42	0.43	0.42
				SBIL		0.44	0.47	0.46
41131	US 131 fm 12.98 to 13.17 (Wealthy St., 13.23) City of Grand Rapids	32	38	NBOL	CONC	0.41	0.44	0.43
				NBCL		0.40	0.45	0.41
				NBIL		0.48	0.50	0.49
				SBOL		0.39	0.42	0.41
				SBCL		0.42	0.44	0.43
				SBIL		0.42	0.44	0.43
41131	US 131 fm 13.19 to 13.36 (Wealthy St., 13.23) City of Grand Rapids	52	33	NBOL	CONC	0.30	0.37	0.34
				NBCL		0.39	0.40	0.39
				NBIL		0.44	0.47	0.45
				SBOL		0.37	0.42	0.39
				SBCL		0.38	0.41	0.39
				SBIL		0.42	0.47	0.44

TABLE 30 (Cont.)

HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

	Control Section	Location and Mileage	1971 Accidents Total	1971 Accidents % Wet Surface	Lane Tested	Surface Type	Coefficient of wsf Low	Coefficient of wsf High	Coefficient of wsf Avg
DISTRICT 5 CONT.	Muskegon County								
	61022	M 46 fm 2.02 to 2.17 (Creston St., 2.04) City of Muskegon	55	31	EBOL	CONC	0.35	0.38	0.37
					EBIL		0.37	0.39	0.38
					WBOL		0.37	0.43	0.40
					WBIL		0.36	0.38	0.37
	Ottawa County								
	70012	M 21 fm 0.00 to 0.19 (US 31 BR (Eighth St.) 0.00) City of Holland	74	27	EBOL	BIT	0.43	0.47	0.45
					EBCL		0.44	0.48	0.46
					EBIL		0.49	0.54	0.51
					WBOL		0.46	0.51	0.49
					WBCL		0.45	0.51	0.48
					WBIL		0.48	0.51	0.49
	70014	US 31 fm 6.36 to 6.56 (Pennoyer St., 6.42) City of Grand Haven	54	31	NBOL	CONC	0.38	0.41	0.40
					NBIL		0.41	0.43	0.42
					SBOL		0.39	0.41	0.40
					SBIL		0.44	0.44	0.44
	70041	M 45 @ the curve in the area of 26th Ave. 16.95, 16.79 to 17.09, Tallmadge Twp.	4	25	EB	BIT	0.47	0.48	0.48
					WB		0.50	0.55	0.52
DISTRICT 6	Bay County								
	09032	M 13 from 2.52 to 2.71 (Midland, 2.66) City of Bay City	34	29	NBOL	BIT	0.51	0.51	0.51
					NBIL		0.50	0.55	0.52
					SBOL		0.55	0.56	0.55
					SBIL		0.51	0.55	0.53
	09032	M 13 from 3.22 to 3.42 (Fulton St, 3.29) Bangor Twp	30	30	NBOL	BIT	0.48	0.50	0.49
					NBIL		0.54	0.55	0.55
					SBOL		0.51	0.55	0.52
					SBIL		0.54	0.57	0.55
	Genesee County								
	25051	M 54 BR from 3.14 to 3.33 (Atherton, 3.22) City of Flint	33	27	NBOL	BIT	0.34	0.35	0.35
					NBIL		0.43	0.45	0.44
					SBOL		0.37	0.37	0.37
					SBIL		0.39	0.41	0.40
	25052	M 54 BR from 0.00 to 0.20 (M 56, 0.00) City of Flint	40	48	NBOL	BRICK	0.24	0.30	0.28
					NBIL		0.27	0.33	0.30
					SBOL		0.26	0.30	0.27
					SBIL		0.28	0.31	0.29
	25052	M 54 BR from 1.64 to 1.83 (Hamilton, 1.64) City of Flint	56	27	NBOL	BIT	0.40	0.41	0.40
					NBIL		0.42	0.45	0.44
					SBOL		0.44	0.44	0.44
					SBIL		0.42	0.47	0.45
	25052	M 54 BR from 1.95 to 2.15 (Leith St, 2.15) City of Flint	30	33	NBOL	BIT	0.40	0.43	0.41
					NBIL		0.42	0.45	0.44
					SBOL		0.42	0.44	0.43
					SBIL		0.38	0.44	0.41
	25052	M 54 BR from 5.21 to 5.41 (Coldwater Rd, 5.40) Genesee Twp	38	29	NBOL	BIT	0.41	0.44	0.42
					NBIL		0.44	0.47	0.45
					SBOL		0.41	0.42	0.42
					SBIL		0.41	0.44	0.43
	25072	M 54 from 3.24 to 3.43 (Manitou, 3.28) City of Flint	37	27	NBOL	BIT	0.35	0.37	0.36
					NBIL		0.42	0.44	0.43
					SBOL		0.35	0.35	0.35
					SBIL		0.41	0.43	0.42
	25072	M 54 from 3.75 to 3.95 (Lippincott, 3.95) City of Flint	36	31	NBOL	BIT	0.31	0.37	0.34
					NBIL		0.38	0.43	0.40
					SBOL		0.39	0.41	0.40
					SBIL		0.44	0.45	0.44

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

Control Section	Location and Mileage	Accidents Total	Accidents % Wet Surface	Lane Tested	Surface Type	Coefficient of wsf Low	Coefficient of wsf High	Coefficient of wsf Avg
DISTRICT 6 CONT.								
Genesee County Cont.								
25072	M 54 from 6.43 to 6.63 (Leith, 6.62) City of Flint	35	40	NBOL	BIT	0.43	0.43	0.43
				NBIL		0.49	0.50	0.49
				SBOL		0.35	0.40	0.37
				SBIL		0.43	0.44	0.44
25081	M 56 from 12.16 to 12.34 (Grand Traverse, 12.17) City of Flint	45	36	EBOL	BIT	0.42	0.46	0.44
				EBIL		0.48	0.50	0.49
				WBOL		0.37	0.42	0.40
				WBIL		0.37	0.43	0.41
Saginaw County								
73061	M 46 from 3.40 to 4.10:	12	42					
	East of RR Track and Cornwall Rd			EB	BIT	0.46	0.48	0.47
				WB		0.44	0.49	0.47
	W of RR Track and Cornwall Rd			EB		0.45	0.46	0.46
				WB		0.43	0.47	0.45
	In curve at Cornwall Rd			EB		0.44	0.51	0.47
				WB		0.45	0.51	0.49
73063	M 46 from 1.83 to 2.00 (BL 75 (Genesee Ave) 1.93) City of Saginaw	30	27	EBOL	CONC	0.39	0.44	0.42
				EBCL		0.41	0.43	0.42
				EBIL		0.38	0.39	0.38
				WBOL		0.34	0.39	0.36
				WBCL		0.38	0.39	0.38
				WBIL		0.35	0.38	0.36
73063	WB M 46 (Remington) from 80.90 to 81.08 (Sheridan, 81.07) City of Saginaw	39	31	WBOL	CONC	0.41	0.43	0.42
				WB #3		0.42	0.45	0.43
				WB #2		0.39	0.44	0.42
				WBIL		0.52	0.55	0.53
73073	M 58, M 47 from 3.69 to 3.89 (N Center Rd, 3.89) Saginaw Twp	43	33	EBOL	BIT	0.60	0.64	0.62
				EBCL		0.56	0.59	0.57
				EBIL		0.64	0.67	0.66
				WBOL		0.55	0.57	0.56
				WBCL		0.58	0.59	0.59
				WBIL		0.55	0.58	0.56
	W from Bit W of Center Rd			EBOL	CONC	0.47	0.49	0.48
				EBCL		0.48	0.51	0.49
				WBOL		0.44	0.47	0.45
				WBCL		0.43	0.44	0.43
Shiawassee County								
76061	M 21 from 7.35 to 7.95 (G.T W. RR, 7.65)	7	14	EB	BIT	0.36	0.39	0.38
				WB		0.42	0.45	0.44
DISTRICT 7								
Berrien County								
11013	BL 94 fm 0.07 to 0.27 (Wayne St., 0.20) City of St. Joseph	30	27	NBOL	BIT	0.25	0.27	0.26
				NBCL		0.29	0.31	0.30
				NBIL		0.36	0.41	0.38
				SBOL	CONC	0.33	0.40	0.37
				SBCL		0.30	0.36	0.32
				SBIL		0.35	0.41	0.37
11013	BL 94 fm 0.41 to 0.61 (Industrial Ave., 0.44) Cities of St. Joseph and Benton Harbor	30	43	NB	BIT	0.39	0.41	0.40
				SB		0.35	0.41	0.38
11013	BL 94 fm 1.36 to 1.53 (Pipestone-Water Sts., 1.43) City of Benton Harbor	42	31	NBOL	BIT	0.41	0.42	0.41
				NBIL		0.35	0.41	0.38
				SBOL		0.37	0.41	0.38
				SBIL		0.41	0.44	0.42
11013	BL 94 fm 1.65 to 1.85 (Paw Paw Ave, M 139 N, 1.85) City of Benton Harbor	42	31	NB	BIT	0.40	0.44	0.42
				SBOL		0.38	0.44	0.41
				SBIL		0.37	0.41	0.40

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 7 CONT.

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Berrien County Cont.								
11031	M 139 fm 3.35 to 3.55 (Napier Ave., 3.39) Benton Twp.	62	29	NBOL	CONC	0.33	0.33	0.33
				NBIL		0.32	0.34	0.33
				SBOL		0.35	0.44	0.40
				SBIL		0.34	0.39	0.35
11031	M 139 fm 4.55 to 4.74 (Britian Ave., 4.72) City of Benton Harbor	30	27	NBOL	CONC	0.34	0.41	0.36
				NBIL		0.33	0.36	0.35
				SBOL		0.33	0.34	0.33
				SBIL		0.30	0.34	0.32
				SBOL	BIT	0.30	0.41	0.36
				SBIL		0.35	0.36	0.35
11041	US 31 fm 0.08 to 0.28 (Second, 0.08) City of Niles	45	36	EBOL	BIT	0.29	0.33	0.31
				EBIL		0.33	0.34	0.33
				WBOL		0.29	0.31	0.30
				WBIL		0.36	0.38	0.37
11052	US 33 fm 22.5 to 22.7 (Whittlesey Ave., 22.46) City of St. Joseph	34	29	NBOL	CONC	0.34	0.36	0.35
				NBIL		0.33	0.37	0.35
				SBOL		0.27	0.31	0.30
				SBIL		0.32	0.38	0.36
11053	US 33 fm 0.30 to 0.49 (Broad St., 0.43) City of St. Joseph	40	40	NBOL	CONC	0.18	0.24	0.22
				NBIL		0.30	0.34	0.32
				SBOL		0.28	0.33	0.31
				SBIL		0.27	0.33	0.29
11053	US 33 fm 0.51 to 0.69 (BL 94, N. Jct. (Ship St), 0.53) City of St. Joseph	37	35	NBOL	CONC	0.22	0.26	0.24
				NBIL		0.30	0.36	0.33
				SBOL		0.24	0.30	0.28
				SBIL		0.25	0.32	0.30
Calhoun County								
13044	BL 94 fm 0.08 to 0.28 (Jefferson St., 0.28) City of Marshall	31	32	EBOL	BIT	0.41	0.43	0.42
				EBIL		0.48	0.50	0.49
				WBOL		0.46	0.48	0.47
				WBIL		0.44	0.48	0.47
13061	M 89 fm 3.61 to 3.81 (M 37 (Bedford Rd) 3.77) City of Battle Creek	35	37	EBOL	BIT	0.34	0.39	0.36
				EBIL		0.33	0.33	0.33
				WBOL		0.35	0.38	0.37
				WBIL		0.30	0.33	0.32
Kalamazoo County								
39041	BL 94 fm 3.54 to 3.73 (Academy, 3.73) City of Kalamazoo	56	32	EBOL	BIT	0.32	0.35	0.33
				EBCL		0.32	0.37	0.34
				EBIL		0.34	0.40	0.38
				WBOL		0.34	0.36	0.35
				WBCL		0.37	0.38	0.38
				WBIL		0.27	0.31	0.29
39041	BL 94, M 43 fm 3.80 to 4.00 (M 43 (Main) 3.82) City of Kalamazoo	47	38	EBOL	BIT	0.34	0.43	0.38
				EB #4		0.34	0.38	0.37
				EB #3		0.37	0.41	0.39
				EB #2		0.36	0.42	0.39
				EBIL		0.31	0.45	0.39
				EBOL	BIT	0.41	0.48	0.43
				EBCL		0.43	0.48	0.44
				EBIL		0.44	0.44	0.44
				WBOL	CONC	0.37	0.41	0.38
				WBCL		0.40	0.41	0.40
				WBIL		0.33	0.36	0.34
39042	BL 94 EB fm 0.42 to 0.61 (Pitcher St., 0.55) City of Kalamazoo	71	31	EBOL	BIT	0.44	0.44	0.44
				EBCL		0.48	0.48	0.48
				EBIL		0.48	0.53	0.50
39081	M 43 fm 7.71 to 7.91 (Dartmouth, 7.87) Kalamazoo Twp.	30	33	EBOL	CONC	0.35	0.36	0.36
				EBIL		0.33	0.37	0.36
				WBOL		0.30	0.33	0.32
				WBIL		0.36	0.38	0.37

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 7 CONT.

Control Section	Location and Mileage	1971 Accidents Total	1971 Accidents % Wet Surface	Lane Tested	Surface Type	Coefficient of wsf Low	Coefficient of wsf High	Coefficient of wsf Avg
Kalamazoo County Cont.								
39081	M 43 fm 6.90 to 7.15 (Salon-Nichols, 7.04) Kalamazoo Twp.	27	44	EBOL	CONC	0.29	0.32	0.30
				EBIL		0.36	0.37	0.36
				WBOL		0.31	0.33	0.32
				WBIL		0.35	0.36	0.36
39081	M 43 fm 7.96 to 8.10 (Arlington, 8.06) Kalamazoo Twp.	19	37	EBOL	CONC	0.30	0.33	0.32
				EBIL		0.35	0.38	0.36
				WBOL		0.35	0.37	0.36
				WBIL		0.38	0.39	0.38
39082	M 43 fm 0.02 to 0.22 (Mill St., 0.15) City of Kalamazoo	34	35	EBOL	CONC	0.30	0.33	0.32
				EBIL		0.35	0.38	0.36
				WBOL		0.35	0.37	0.36
				WBIL		0.38	0.39	0.38
St. Joseph County								
78042	M 60 fm 0.96 to 1.16 (M 86 S & US 131 BR N (Main St.) 1.03) City of Three Rivers	30	33	EBOL	BIT	0.29	0.30	0.29
				EBIL		0.31	0.33	0.32
				WB		0.27	0.30	0.29

DISTRICT 8

Eaton County								
23052	M 50 @ the curve @ Cochran Rd (16.30) Chester Twp	4	25	NB	BIT	0.54	0.57	0.55
				SB		0.48	0.62	0.56
Ingham County								
33021	M 36 from 1.63 to 1.83 (Jefferson Ave, 1.75) City of Mason	32	31	EB	BIT	0.51	0.56	0.54
				WBOL		0.52	0.58	0.54
				WBIL		0.49	0.51	0.50
33033	US 27 (Larch) from 0.51 to 0.69 (M 143, 0.56) City of Lansing	33	30					
	Larch at Michigan			NBOL	BIT	0.45	0.49	0.48
				NB #3		0.46	0.46	0.46
				NB #2		0.43	0.47	0.46
				NBIL		0.41	0.45	0.42
	Michigan at Larch			EBOL		0.44	0.44	0.44
				EBIL		0.44	0.45	0.45
				WBOL		0.44	0.49	0.46
				WBIL		0.43	0.48	0.46
33033	US 27 (Cedar St) from 60.72 to 60.86 (Shiawassee, 60.82) City of Lansing	31	29	SBOL	BIT	0.47	0.48	0.48
				SBCL		0.41	0.43	0.42
				SBIL		0.40	0.43	0.41
33034	US 27 (Larch) from 0.04 to 0.23 (Sheridan St, 0.21)	36	36					
	NB US 27 @ WB M 43			NBOL	BIT	0.46	0.48	0.47
				NBCL		0.47	0.50	0.49
				NBIL		0.49	0.53	0.51
	WB M 43 @ NB US 27			WBOL	CONC	0.37	0.38	0.38
				WBCL		0.38	0.41	0.39
				WBIL		0.38	0.41	0.39
33042	M 43 (Saginaw) from 1.08 to 1.26 (Fairview, 1.14)	36	36	EBOL	BIT	0.41	0.43	0.42
				EB #3		0.48	0.51	0.50
				EB #2		0.45	0.50	0.48
				EBIL		0.48	0.51	0.50
33042	M 43 (Oakland) from 80.18 to 80.35 (Pennsylvania, 80.31)	41	29	WBOL	BIT	0.41	0.44	0.43
				WBCL		0.41	0.43	0.42
				WBIL		0.42	0.46	0.45
				WBOL	CONC	0.35	0.38	0.37
				WBCL		0.38	0.41	0.39
				WBIL		0.43	0.46	0.44

TABLE 30 (Cont.)

HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 8 CONT.

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Ingham County Cont.								
33042	M 43 (Grand River) from 81.69 to 81.89 (Homer, 81.73)	30	37	WBOL	BIT	0.43	0.45	0.44
				WB #3		0.45	0.48	0.47
				WB #2		0.47	0.49	0.48
				WBIL		0.42	0.45	0.44
				WBOL	CONC	0.38	0.41	0.39
				WB #3		0.41	0.42	0.41
				WB #2		0.37	0.40	0.39
				WBIL		0.36	0.38	0.37
	Homer at Grand River			NBOL	CONC	0.47	0.50	0.49
				NBCL		0.47	0.47	0.47
				NBIL		0.48	0.50	0.49
33043	M 78 from 1.08 to 1.28 (Abbott, 1.27) City of East Lansing	44	34	EBOL	BIT	0.34	0.40	0.38
				EBIL		0.47	0.51	0.49
				WBOL		0.37	0.39	0.38
				WBIL		0.44	0.46	0.45
33061	M 43 (Saginaw) from 2.56 to 2.69 (Washington, 2.59) City of Lansing	37	30	EBOL	CONC	0.38	0.40	0.39
				EB #4		0.38	0.41	0.39
				EB #3		0.38	0.44	0.41
				EB #2		0.41	0.43	0.42
				EBIL		0.36	0.39	0.38
33061	M 43 (Saginaw) from 2.82 to 3.01 (Cedar St, 2.91) City of Lansing	35	31	EBOL	CONC	0.38	0.40	0.39
				EB #4		0.38	0.41	0.39
				EB #3		0.39	0.41	0.40
				EB #2		0.40	0.42	0.41
				EBIL		0.40	0.42	0.41
	Cedar at Saginaw			SBOL	BIT	0.41	0.46	0.44
				SBCL		0.41	0.44	0.43
				SBIL		0.42	0.43	0.42
33082	M 43 (Grand River) from 1.39 to 1.56 (Division St, 1.43) City of East Lansing	37	27	EBOL	BIT	0.40	0.44	0.41
				EBCL		0.31	0.38	0.35
				EBIL		0.37	0.41	0.39
				WBOL		0.41	0.44	0.43
				WBCL		0.40	0.41	0.40
				WBIL		0.43	0.45	0.44
33082	M 43 (Grand River) from 1.61 to 1.80 (Bogue, 1.80)	52	29	EBOL	BIT	0.40	0.41	0.41
				EBCL		0.37	0.41	0.38
				EBIL		0.41	0.42	0.41
				WBOL		0.34	0.37	0.35
				WBCL		0.39	0.41	0.40
				WBIL		0.44	0.46	0.45
33082	M 43 from 1.84 to 2.02 (Woodmere Ave, 2.01) City of East Lansing	48	27	EBOL	BIT	0.47	0.48	0.48
				EBIL		0.50	0.51	0.50
				WBOL		0.45	0.48	0.46
				WBIL		0.48	0.51	0.49
33082	M 43 (Grand River) from 3.14 to 3.26 (Park Lake Rd, 3.16) Meridian Twp	33	27	EBOL	BIT	0.48	0.49	0.48
				EBIL		0.54	0.56	0.55
				WBOL		0.50	0.51	0.50
				WBIL		0.58	0.61	0.60
Jackson County								
38083	WB BL 94 from 80.94 to 81.11 (Jct SB M 106, 81.09) City of Jackson	31	32	WBOL	CONC	0.33	0.37	0.35
				WB #3		0.34	0.36	0.35
				WB #2		0.37	0.38	0.38
				WBIL		0.38	0.39	0.39
Lenawee County								
46061	US 223 BR from 20.54 to 20.74 (M 34 (Beecher St) 20.73) City of Adrian	38	29	NBOL	BIT	0.37	0.41	0.39
				NBIL		0.44	0.49	0.46
				SBOL		0.35	0.42	0.38
				SBIL		0.44	0.48	0.45

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
DISTRICT 8 CONT.								
Lenawee County Cont.								
46072	M 53 from 0.21 to 0.41 (WB US 223 BR, 0.21) City of Adrian	48	40	NBOL	BIT	0.38	0.39	0.38
				NBCL		0.39	0.40	0.39
				NBIL		0.39	0.42	0.41
				SBOL		0.39	0.41	0.40
				SBCL		0.41	0.42	0.41
				SBIL		0.38	0.44	0.42
Monroe County								
58011	US 223 from 2.65 to 3.00 (between Riga Rd, 2.65 and Beck Rd, 2.96) Whiteford Twp	5	20	NB	BIT	0.41	0.47	0.45
				SB		0.41	0.45	0.43
58071	US 25 (South Dixie Hwy) @ Dunbar Rd (West Dunbar, 13.38; East Dunbar 13.40) Monroe Twp	26	19	NB	BIT	0.27	0.32	0.29
				SB		0.23	0.31	0.28
58071	US 25 from 13.85 to 14.05 (Monroe Shoping Center, South Dr, 14.04) Monroe Twp	40	28	NBOL	BIT	0.29	0.34	0.31
				NBIL		0.30	0.31	0.31
				SB		0.23	0.25	0.24
Washtenaw County								
81072	BL 94, US 23 BR from 0.38 to 0.58 (State St, 0.38) City of Ann Arbor	33	27	EBOL	BIT	0.42	0.44	0.43
				EBIL		0.50	0.52	0.51
				WBOL		0.45	0.48	0.47
				WBIL		0.49	0.51	0.50
81072	BL 94, US 23 BR from 3.35 to 3.55 (Huron Parkway, 3.45) City of Ann Arbor	40	35	EBOL	BIT	0.43	0.47	0.46
				EBIL		0.44	0.47	0.46
				WBOL		0.42	0.44	0.43
				WBIL		0.40	0.41	0.41
81081	WB M 17 from 80.66 to 80.86 (Summit, 80.85) City of Ypsilanti	30	27	EBML	CONC	0.33	0.36	0.34
				EBOL		0.27	0.30	0.28
				EBIL		0.35	0.36	0.35
				WBOL		0.28	0.29	0.29
				WBIL		0.30	0.33	0.31
				WBLT		0.35	0.40	0.38
DISTRICT METRO								
Macomb County								
50011	M 53 from 2.50 to 2.70 (Bernice, 2.66) City of Centerline	33	27	NBOL	BIT	0.39	0.41	0.40
				NBCL		0.40	0.41	0.41
				NBIL		0.41	0.44	0.43
				SBOL		0.42	0.44	0.43
				SBCL		0.43	0.46	0.44
				SBIL		0.45	0.46	0.45
50011	M 53 from 2.81 to 3.01 (11 Mile, 2.99) Cities of Centerline and Warren	49	27	NBOL	BIT	0.43	0.45	0.44
				NBCL		0.47	0.48	0.47
				NBIL		0.47	0.47	0.47
				SBOL		0.42	0.43	0.43
				SBCL		0.44	0.44	0.44
				SBIL		0.45	0.45	0.45
50011	M 53 from 3.48 to 3.62 (Martin, 3.49) City of Warren	33	30	NBOL	BIT	0.38	0.41	0.39
				NBCL		0.42	0.45	0.44
				NBIL		0.48	0.48	0.48
				SBOL		0.41	0.45	0.44
				SBCL		0.45	0.47	0.46
				SBIL		0.43	0.46	0.45
50011	M 53 from 5.00 to 5.20 (13 Mile, 5.06) City of Warren	30	33	NBOL	BIT	0.44	0.48	0.46
				NBCL		0.51	0.53	0.52
				NBIL		0.52	0.55	0.53
				SBOL		0.42	0.43	0.43
				SBCL		0.50	0.50	0.50
				SBIL		0.51	0.53	0.52

DISTRICT METRO CONT.

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Macomb County Cont.								
50011	M 53 (Van Dyke) both directions at 18 Mile Rd (18 Mile Rd, 10.04) City of Sterling Heights	32	28	NBOL	CONC	0.36	0.38	0.37
				NBIL		0.37	0.38	0.38
				NBRT		0.52	0.61	0.57
				SBOL		0.38	0.39	0.39
				SBIL		0.37	0.42	0.39
				SBRT		0.38	0.38	0.38
50031	M 97 from 3.45 to 3.63 (11 Mile, 3.57) City of Warren	39	33	NBOL	BIT	0.48	0.51	0.49
				NBIL		0.52	0.55	0.53
				SBOL		0.44	0.50	0.47
				SBIL		0.46	0.48	0.47
50031	M 97 from 3.97 to 4.17 (Martin Rd, 4.15) City of Roseville	40	48	NBOL	CONC	0.37	0.39	0.38
				NBIL		0.40	0.44	0.41
				SBOL		0.37	0.40	0.39
				SBIL		0.40	0.40	0.40
50031	M 97 from 8.08 to 8.28 (15 Mile, 8.28) Clinton Twp	41	29	NBOL	CONC	0.42	0.43	0.42
				NBIL	BIT	0.49	0.50	0.50
				SBOL	CONC	0.41	0.44	0.42
				SBIL	BIT	0.45	0.48	0.47
50051	US 25 from 0.41 to 0.61 (Toepfer, 0.59) City of East Detroit	37	27	NBOL	BIT	0.41	0.41	0.41
				NBCL		0.44	0.46	0.45
				NBIL	CONC	0.43	0.44	0.44
				SBOL		0.40	0.41	0.41
				SBCL		0.42	0.43	0.43
				SBIL		0.36	0.38	0.37
50051	US 25 from 0.64 to 0.84 (Glander, 0.64) City of East Detroit	36	31	NBOL	BIT	0.43	0.45	0.44
				NBCL		0.44	0.46	0.45
				NBIL	CONC	0.43	0.43	0.43
				SBOL		0.38	0.42	0.41
				SBCL		0.38	0.44	0.40
				SBIL		0.39	0.41	0.40
50051	US 25 from 11.16 to 11.36 (Market, 11.34) City of Mt. Clemens	38	29	NBOL	CONC	0.39	0.41	0.40
				NB #3		0.41	0.42	0.41
				NB #2		0.41	0.44	0.43
				NBIL		0.41	0.44	0.43
				SBOL	BIT	0.59	0.67	0.63
				SB #3		0.58	0.66	0.63
				SB #2		0.49	0.52	0.51
				SBIL		0.65	0.67	0.66
Oakland County								
63041	M 59 from 15.48 to 15.68 (Crescent Lake Rd, 15.58) Waterford Twp.	34	41	EBOL	CONC	0.31	0.33	0.32
				EBIL		0.36	0.38	0.37
				EBIL	BIT	0.51	0.52	0.51
				WBOL	CONC	0.34	0.37	0.36
				WBIL		0.35	0.38	0.37
				WBIL	BIT	0.54	0.57	0.56
63041	M 59 from 20.65 to 20.85 (W. Widetrack Dr, 20.83) City of Pontiac	71	28	EBOL	BIT	0.38	0.40	0.39
				EBOL	CONC	0.27	0.33	0.31
				EBIL	BIT	0.38	0.43	0.40
				EBIL	CONC	0.32	0.33	0.32
				EBRT	CONC	0.31	0.34	0.32
				WBOL	CONC	0.33	0.33	0.33
				WBOL	BIT	0.36	0.39	0.37
				WBIL	CONC	0.32	0.33	0.33
				WBIL	BIT	0.40	0.42	0.41
63051	M 1 from 8.15 to 8.35 (Northwood Blvd, 8.31) Cities of Royal Oak and Berkley	35	37	NBOL	BIT	0.43	0.44	0.43
				NB #3		0.45	0.47	0.46
				NB #2		0.47	0.48	0.47
				NBIL		0.49	0.51	0.50
				SBOL		0.42	0.48	0.45
				SB #3		0.45	0.48	0.46
				SB #2		0.48	0.50	0.49
				SBIL		0.50	0.51	0.51

DISTRICT METRO CONT.

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Oakland County Cont.								
63051	M 1 from 8.36 to 8.56 (12 Mile, 8.38) Cities of Royal Oak and Berkley	73	27	NBOL	BIT	0.45	0.46	0.46
				NB #3		0.42	0.47	0.44
				NB #2		0.45	0.50	0.48
				NBIL		0.48	0.50	0.49
				SBOL		0.47	0.51	0.49
				SB #3		0.51	0.51	0.51
				SB #2		0.48	0.52	0.50
				SBIL		0.51	0.53	0.52
63051	M 1 from 10.82 to 10.97 (Main St., 10.93) City of Pleasant Ridge	38	37	NBOL	BIT	0.46	0.49	0.48
				NB #3		0.48	0.50	0.49
				NB #2		0.48	0.51	0.50
				NBIL		0.48	0.51	0.50
				SBOL		0.37	0.43	0.41
				SB #3		0.44	0.45	0.44
				SB #2		0.45	0.49	0.48
				SBIL		0.48	0.51	0.49
63052	US 10 (Telegraph) from 0.00 to 0.18 (US 10 BR (Dixie Hwy) 0.00) Waterford Twp	30	30	NBOL	BIT	0.44	0.45	0.44
				NBIL		0.36	0.42	0.38
				NBLT		0.37	0.41	0.40
				SBOL		0.34	0.41	0.36
				SBIL		0.44	0.45	0.44
63052	US 10 (Telegraph) from 2.43 to 2.62 (Glendale, 2.55) Waterford Twp	37	46	NBOL	BIT	0.47	0.51	0.50
				NBCL		0.51	0.53	0.52
				NBIL		0.55	0.55	0.55
				SBOL		0.41	0.44	0.43
				SBCL		0.46	0.49	0.47
				SBIL		0.47	0.51	0.50
63052	US 10 (Telegraph) from 2.64 to 2.83 (Voorheis, 2.77) Waterford Twp and City of Pontiac	53	28	NBOL	BIT	0.40	0.46	0.42
				NBCL		0.43	0.45	0.44
				NBIL		0.46	0.49	0.48
				SBOL		0.41	0.45	0.44
				SBCL		0.46	0.48	0.47
				SBIL		0.50	0.52	0.51
63052	US 10 (Telegraph) from 3.89 to 4.09 (Humphrey, 4.03) Bloomfield Twp	34	32	NBOL	CONC	0.33	0.40	0.35
				NBIL		0.37	0.37	0.37
				SBOL		0.34	0.36	0.35
				SBIL		0.35	0.36	0.36
63052	US 10 (Telegraph) from 4.10 to 4.30 (Fairfax, 4.24) Bloomfield Twp	50	30	NBOL	BIT	0.45	0.48	0.46
				NBIL		0.48	0.49	0.48
				SBOL		0.45	0.46	0.46
				SBIL		0.44	0.47	0.45
63053	US 10 (Dixie) from 3.38 to 3.58 (Sashabaw Rd, 3.56) Waterford Twp	36	36	NBOL	BIT	0.37	0.40	0.39
				NBIL		0.41	0.43	0.42
				SBOL		0.39	0.40	0.40
				SBIL		0.42	0.46	0.43
63053	US 10 (Dixie) from 5.44 to 5.64 (Silver Lake Rd, 5.64) Waterford Twp	33	33	NBOL	BIT	0.40	0.42	0.41
				NBIL		0.42	0.44	0.43
				SBOL		0.42	0.44	0.43
				SBIL		0.45	0.46	0.45
63091	BL 75 from 0.21 to 0.41 (Elwood, 0.35) City of Pontiac	30	37	NBOL	BIT	0.38	0.42	0.41
				NBIL		0.38	0.41	0.39
				SBOL		0.39	0.41	0.40
				SBIL		0.37	0.41	0.40
63091	BL 75 from 0.49 to 0.69 (Glenwood, 0.69) City of Pontiac	42	29	NBOL	BIT	0.44	0.48	0.47
				NBIL		0.44	0.49	0.47
				SBOL		0.41	0.44	0.43
				SBIL		0.45	0.49	0.48
63091	BL 75 from 1.77 to 1.97 (Madison, 1.97) City of Pontiac	43	35	NBOL	BIT	0.43	0.46	0.45
				NBIL		0.45	0.47	0.46
				SBOL	CONC	0.36	0.37	0.36
				SBIL		0.35	0.38	0.36

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT METRO CONT.

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Oakland County Cont.								
63112	BL 75 from 7.29 to 7.48 (Flint St, 7.32) Lake Orion	39	28	NBOL	BIT	0.41	0.45	0.43
				NBIL		0.41	0.42	0.41
				SBOL		0.37	0.41	0.38
				SBIL		0.39	0.44	0.41
63131	M 150 from 0.28 to 0.45 (16 Mile Rd, 0.28) City of Troy	38	32	NB	BIT	0.37	0.37	0.37
				SB		0.40	0.41	0.41
				NBML		0.37	0.45	0.42
				SBRT		0.38	0.40	0.39
63151	US 10 BR from 62.40 to 62.59 (Florence, 62.44) City of Pontiac	33	30	NBOL	BIT	0.47	0.48	0.48
				NBCL		0.51	0.52	0.51
				NBIL		0.50	0.55	0.52
				SBOL	CONC	0.39	0.40	0.39
				SBCL		0.33	0.37	0.36
				SBIL		0.36	0.39	0.38
63174	I 75 from 10.14 to 10.30 (16 Mile, 10.26) City of Troy	31	36	NBOL	CONC	0.38	0.39	0.39
				NBCL		0.41	0.44	0.42
				NBIL		0.43	0.46	0.44
				SBOL		0.37	0.38	0.38
				SBCL		0.42	0.44	0.43
				SBIL		0.46	0.46	0.46
63174	SB I 75 (Service Dr) from 62.49 to 62.69 (Rowland, 62.49) City of Royal Oak	48	29	SBOL	CONC	0.36	0.41	0.39
				SBCL		0.40	0.41	0.41
				SBIL		0.40	0.41	0.40
St. Clair County								
77023	WB M 21 from 87.97 to 88.16 (10th, 88.14) City of Port Huron	33	30	WBOL	BIT	0.55	0.58	0.56
				WBCL		0.51	0.55	0.54
				WBIL		0.55	0.58	0.56
77091	US 25 BR from 0.16 to 0.36 (10th - Scott, 0.35) City of Port Huron	35	34	NBOL	BIT	0.45	0.48	0.46
				NBIL		0.43	0.44	0.43
				SBOL		0.38	0.41	0.40
				SBIL		0.48	0.50	0.49
77091	US 25 from 0.66 to 0.86 (12th - Church, 0.74) City of Port Huron	39	31	NBOL	BIT	0.42	0.46	0.43
				NBIL		0.47	0.48	0.47
				SBOL		0.40	0.45	0.43
				SBIL		0.34	0.37	0.36
Wayne County								
82052	US 24 from 4.13 to 4.30 (Eureka, 4.12) Taylor Twp	37	38	NBOL	BIT	0.34	0.36	0.35
				NBCL		0.45	0.47	0.46
				NBIL		0.37	0.44	0.40
				SBOL	CONC	0.34	0.36	0.35
				SBCL		0.37	0.40	0.39
				SBIL		0.33	0.40	0.36
82081	M 153 from 7.85 to 8.05 (Wayne, 8.04) Canton Twp	76	29	EBOL	BIT	0.43	0.48	0.45
				EBIL		0.42	0.48	0.44
				WBOL		0.38	0.42	0.39
				WBIL		0.41	0.44	0.43
82081	M 153 from 8.74 to 8.94 (Farmington Rd, 8.94) Canton Twp and Garden City	39	33	EBOL	BIT	0.39	0.44	0.42
				EBIL		0.44	0.45	0.44
				WBOL		0.39	0.41	0.40
				WBIL		0.43	0.46	0.44
82081	M 153 from 9.15 to 9.35 (Venoy, 9.31) City of Garden City	44	27	EBOL	BIT	0.37	0.37	0.37
				EBIL		0.40	0.41	0.40
				WBOL		0.37	0.42	0.39
				WBIL		0.43	0.44	0.44
82081	M 153 from 10.43 to 10.63 (Shotka, 10.44) Garden City	36	31	EBOL	BIT	0.46	0.47	0.46
				EBIL		0.41	0.42	0.41
				WBOL		0.36	0.44	0.40
				WBIL		0.44	0.45	0.44

TABLE 30 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT METRO CONT.

Control Section	Location and Mileage	1971 Accidents		Lane Tested	Surface Type	Coefficient of wsf		
		Total	% Wet Surface			Low	High	Avg
Wayne County Cont.								
82081	M 153 from 11.93 to 12.12 (Inkster, 12.02) Garden City and Dearborn Heights	79	29	EBOL	BIT	0.41	0.42	0.41
				EBIL		0.40	0.44	0.43
				WBOL		0.39	0.43	0.41
				WBIL		0.44	0.47	0.45
82081	M 153 from 13.49 to 13.69 (Colonial, 13.63) Dearborn and Dearborn Heights	39	33	EBOL	BIT	0.41	0.44	0.42
				EBIL		0.44	0.45	0.44
				WBOL		0.38	0.42	0.39
				WBIL		0.42	0.45	0.44
82081	M 153 from 13.73 to 13.93 (Vernon, 13.85) Dearborn and Dearborn Heights	38	34	EBOL	BIT	0.43	0.44	0.44
				EBCL		0.39	0.46	0.43
				EBIL		0.42	0.44	0.43
				WBOL		0.50	0.52	0.51
				WBCL		0.47	0.48	0.47
				WBIL		0.45	0.50	0.48
82081	M 153 from 15.22 to 15.41 (Golfview, 15.28) Dearborn and Dearborn Heights	32	28	EBOL	CONC	0.40	0.44	0.43
				EBCL		0.39	0.45	0.42
				EBIL		0.51	0.59	0.55
				WBOL	BIT	0.54	0.58	0.57
				WBCL		0.55	0.57	0.56
				WBIL		0.54	0.57	0.55
82101	M 14 from 10.14 to 10.34 (Merriman, 10.33) City of Livonia	60	33	EBOL	BIT	0.38	0.41	0.39
				EBIL		0.36	0.41	0.38
				WBOL		0.34	0.38	0.37
				WBIL		0.39	0.43	0.41
82101	M 14 from 10.94 to 11.14 (Ford Plant Dr, 11.06) Livonia	30	30	EBRT	BIT	0.48	0.53	0.51
				EBCL		0.44	0.45	0.44
				EBIL		0.47	0.48	0.48
				WBRT		0.44	0.45	0.44
				WBCL		0.40	0.41	0.40
				WBIL		0.44	0.47	0.45
82101	M 14 from 11.22 to 11.42 (Middle Belt, 11.34) Livonia	106	31	EBOL	BIT	0.36	0.39	0.38
				EBIL		0.44	0.47	0.45
				WBOL		0.37	0.39	0.38
				WBIL		0.37	0.42	0.40
82121	I 96 BS from 1.23 to 1.43 (Beech-Daly, 1.39) Redford Twp	39	33	EBOL	BIT	0.30	0.34	0.33
				EB #3		0.32	0.34	0.33
				EB #2		0.35	0.37	0.36
				EBIL		0.37	0.41	0.40
				WBOL		0.39	0.41	0.40
				WB #3		0.32	0.34	0.33
				WB #2		0.36	0.39	0.37
				WBIL		0.37	0.42	0.40
82131	M 1 from 2.46 to 2.66 (Ferris-Pilgrim, 2.61) Highland Park	33	39	NBOL	BIT	0.42	0.45	0.43
				NBCL		0.44	0.45	0.44
				NBIL		0.44	0.46	0.45
				SBOL		0.39	0.43	0.41
				SBIL		0.44	0.46	0.45
82131	M 1 from 3.04 to 3.22 (Ford, 3.15) Highland Park	60	33	NBOL	BIT	0.41	0.46	0.43
				NBIL		0.39	0.41	0.40
				SBOL		0.39	0.41	0.40
				SBIL		0.41	0.42	0.42
82211	M 85 from 5.78 to 5.93 (King, 5.90) Riverview and Trenton	40	40	NBOL	CONC	0.42	0.43	0.43
				NBIL		0.39	0.44	0.41
				SBOL		0.36	0.38	0.37
				SBIL		0.43	0.46	0.44
82211	M 85 from 9.93 to 10.13 (Northline, 10.13) Southgate and Wyandotte	60	30	NBOL	BIT	0.45	0.48	0.47
				NB #3		0.44	0.48	0.47
				NB #2		0.44	0.49	0.46
				NBIL		0.43	0.48	0.45
				SBOL		0.34	0.38	0.36
				SBCL		0.41	0.44	0.43
				SBIL		0.38	0.43	0.40

SECTION V
SPECIAL REQUEST TESTS

SPECIAL REQUEST TESTS

During the course of the year, requests for skid tests are received from field personnel or through the Design, Maintenance, Traffic and Safety, or Testing and Research Divisions. These requests receive priority considerations during scheduling of skid tests. Friction data are forwarded to the person or agency initiating the request as soon as possible after completion of field measurements.

In the past, only a condensed version of the special request letters has been reported. Commencing with this year's report, a copy of the complete data transmittal will be included for all special request locations.

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

May 24, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on M 115 from one mile NW of Bear Creek SE; a distance of five miles in Manistee County. Research Project 54 G-74, 72 SR-1.

In accord with a December 21, 1971 request from Paul J. Marek, Engineer of Maintenance, skid tests were conducted May 17, 1972 on the five mile section of kerosene and sand treatment described in the subject above. A 79° F air and 80° F pavement temperature prevailed during time of tests. Coefficients of wsf ranged from 0.19 to 0.46 and averaged 0.30. The kerosene and sand treatment has been worn off in the wheel tracks but is still evident elsewhere.

Additional breakdown of skid test results may be found in the attached table.

TESTING AND RESEARCH DIVISION

L. T. Oehler

Engineer of Research
Research Laboratory Section

Attachment

LTO:PMS:bf

cc: Paul J. Marek
T. R. Wiseman

SKID TEST RESULTS
5-17-72

M 115 from one mile NW of Bear Creek SE a distance of five miles in Manistee County, 72 SR-1.

Location	Lane	Coefficient of Wsf		
		Low	High	Avg
E. of Viaduct Rd.	EB	0.28	0.30	0.29
	WB	0.30	0.35	0.32
E. of Listen	EB	0.24	0.30	0.27
	WB	0.26	0.31	0.29
W. of Rice Rd.	EB	0.30	0.34	0.32
	WB	0.23	0.30	0.26
Hilltop, W. of Rice Rd.	EB	0.25	0.31	0.27
E. of Read Rd.	EB	0.27	0.30	0.29
	WB	0.30	0.33	0.31
@ E. Limits of Copemish	EB	0.32	0.38	0.35
	WB	0.31	0.34	0.33
Adjacent to Copemish	EB	0.29	0.37	0.32
	WB	0.23	0.35	0.27
E. of Big Bear Creek	EB	0.38	0.46	0.42
	WB	0.36	0.38	0.37
E. of Thompsonville Rd.	EB	0.25	0.34	0.29
	WB	0.19	0.32	0.26
Entire M 115 Area	EB	0.24	0.46	0.31
	WB	0.19	0.38	0.29
	Both Lanes	0.19	0.46	0.30

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

July 7, 1972

To: M. N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on US-41 - M-28 (By Pass) at US-41 - M-28 BR (Front St.), E. Junction Ramps and Approaches, City of Marquette.
Research Project 54 G-74, 72 SR-2

In accord with a December 29, 1971 request from Mr. H. H. Cooper, Engineer of Traffic and Safety, skid tests were conducted June 22, 1972 on all ramps and approaches of US-41 - M-28 at US-41 - M-28 BR, east junction. Coefficients of wsf, obtained at air and pavement temperatures of 50° and 58°F, respectively, ranged from 0.36 to 0.47 and averaged 0.40.

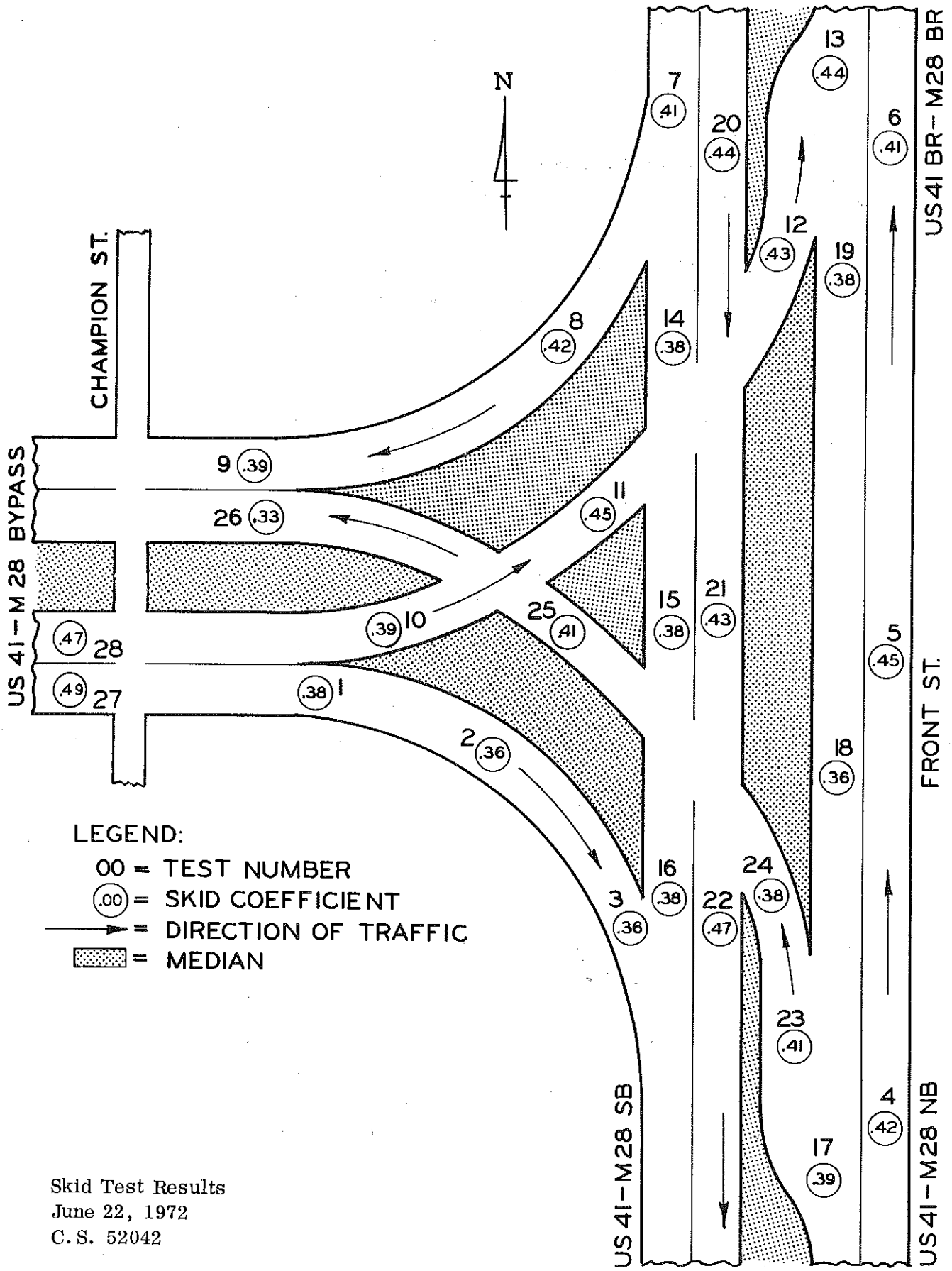
Additional details regarding skid test locations and results are included in the attached drawing.

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PTL:cgc
Attachment

cc: H. H. Cooper
P. H. DeCamp
E. L. Martin



Skid Test Results
June 22, 1972
C. S. 52042

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

May 26, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on the 3 Degree Curve Located on US 10, 0.2 mi. W. of Flajole Rd., Bay County. Research Project 54 G-74, 72 SR-3.

Skid tests were conducted May 22, 1972, in accord with a request from H. H. Cooper dated January 7, 1972. Wsf values on the 3 degree curve, 0.2 mi. W. of Flajole Rd., were obtained at 82 F and 92 F air and pavement temperatures respectively. Friction levels ranged from 0.42 to 0.53 and averaged 0.48. A slippery pavement surface does not appear to be the problem as all friction levels were above 0.40.

TESTING AND RESEARCH DIVISION

L. T. Oehler

Engineer of Research
Research Laboratory Section

LTO:PMS:bf

cc: H. H. Cooper
P. H. DeCamp
L. J. Mikulich

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

May 26, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on I 75, South of Bay City and on US 10 between Bay City and Midland. Research Project 54 G-74, SR-4.

In accord with a February 1, 1972 request from Paul J. Marek, Engineer of Maintenance, skid tests have been conducted on I 75, south of Bay City and on US 10 between Bay City and Midland. Friction levels were determined May 22, 1972 at air and pavement temperatures of 82° F and 92° F respectively.

Wsf values determined on US 10 ranged from 0.42 to 0.55 and averaged 0.48. All values were above the 0.40 mark, thus indicating good skid resistance levels.

I 75 friction levels ranged from 0.33 to 0.51 and averaged 0.42. Two NBOL sections and two SBOL sections had wsf values averaging below the level of 0.40; wsf values on the remaining eight I 75 sections averaged 0.40 or higher.

The attached summary of skid tests is for your review and use.

TESTING AND RESEARCH DIVISION

L. Ray T. Oehler

Engineer of Research
Research Laboratory Section

Attachment

LTO:PMS:bf

cc: P. J. Marek
H. H. Cooper
J. M. Lindemuth, Jr.

SKID TEST RESULTS
5-22-72

I 75, South of Bay City, 72 SR-4

Location	Lane	Coefficient of Wsf		
		Low	High	Avg
US 10 to Salzburg Rd.	NBOL	0.33	0.35	0.34
	NBIL	0.45	0.48	0.47
	SBOL	0.37	0.42	0.40
	SBIL	0.43	0.46	0.45
Salzburg Rd. to Hotchkiss Rd.	NBOL	0.33	0.38	0.35
	NBIL	0.43	0.45	0.44
	SBOL	0.38	0.39	0.39
	SBIL	0.46	0.51	0.48
Hotchkiss Rd. to Amelita Rd.	NBOL	0.42	0.45	0.43
	NBIL	0.47	0.51	0.49
	SBOL	0.35	0.38	0.36
	SBIL	0.40	0.43	0.42
All I 75 Locations	NBOL	0.33	0.45	0.37
	NBIL	0.43	0.51	0.46
	SBOL	0.35	0.42	0.38
	SBIL	0.40	0.51	0.45
	All Lanes	0.33	0.51	0.42

US 10 between Bay City and Midland

Location	Lane	Coefficient of Wsf		
		Low	High	Avg
In curve 0.2 mi. W. of Flajole Rd.	EBOL	0.42	0.46	0.44
	EBIL	0.48	0.50	0.49
	WBOL	0.45	0.46	0.45
	WBIL	0.50	0.53	0.51

SKID TEST RESULTS (Cont.)
5-22-72

Location	Lane	Coefficient of Wsf		
		Low	High	Avg
Auburn Rd. to 9 Mile Rd.	EBOL	0.48	0.54	0.51
	EBIL	0.49	0.55	0.52
	WBOL	0.46	0.51	0.49
	WBIL	0.50	0.54	0.52
7 Mile Rd. to Mackinaw Rd.	EBOL	0.46	0.51	0.48
	EBIL	0.48	0.52	0.51
	WBOL	0.45	0.48	0.47
	WBIL	0.48	0.49	0.49
Mackinaw Rd. to I 75	EBOL	0.42	0.46	0.44
	EBIL	0.49	0.50	0.49
	WBOL	0.43	0.45	0.44
	WBIL	0.46	0.48	0.47
All US 10 Locations	EBOL	0.42	0.54	0.47
	EBIL	0.48	0.55	0.50
	WBOL	0.43	0.51	0.46
	WBIL	0.46	0.54	0.50
	All Lanes	0.42	0.55	0.48

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

May 23, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on US 31 Southbound Exit Ramp to 3rd St., City of Ferrysburg. Research Project 54 G-74, 72 SR-5.

In accord with a request from the District Traffic Engineer and subsequent memorandum from L. J. Doyle, Acting Engineer of Traffic and Safety, dated February 4, 1972, skid tests have been conducted on the US 31 Southbound Exit Ramp to 3rd St. in the City of Ferrysburg. Skid tests were conducted on May 19, 1972 at air and pavement temperatures of 75 and 81° F respectively. Wsf values ranged from 0.27 to 0.34 and averaged 0.31. Polished and closely packed large limestone chips were evident on this rather steep downhill bituminous approach to a stop sign. A potential safety hazard does exist at this location.

TESTING AND RESEARCH DIVISION

L. T. Oehler

Engineer of Research
Research Laboratory Section

LTO:PMS:bf

cc: L. J. Doyle
R. S. Shoemaker
P. H. DeCamp

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

May 26, 1972

To: A. R. Phillipich
Programming Engineer

From: L. T. Oehler

Subject: Skid Tests on I 94 from Michigan Ave. E to US 127, Control Section 38101, Jackson Co., Research Project 54 G-74, 72 SR-6.

In accord with paragraph four of your memo dated March 8, 1972 covering the minutes of the meeting of that date, skid tests have been conducted on I 94 from Michigan Ave. E to the US 127 N junction.

Wsf values were obtained May 18, 1972 on this 17 to 19 year old concrete surface. Air and pavement temperature prevailing at the time of tests were 81 F and 94 F respectively. Coefficients on the entire 10 mile section of I 94 ranged from 0.41 to 0.58 and averaged 0.50. All coefficients tested above 0.40, thus indicating acceptable skid resistance properties.

The attached table affords additional breakdown of skid test results.

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

Attachment

LTO:PMS:bf

cc: M. N. Clyde
J. Dykstra
W. Hartwig
J. Nyquist

SKID TEST RESULTS
5-18-72

I 94 from Michigan Ave. E to US 127 N Junction. Control Section 38101, Jackson Co., 72 SR-6.

Location	Lane	Coefficient of Wsf		
		Low	High	Avg
E. of Michigan Ave	EBOL	0.46	0.49	0.47
	EBIL	0.52	0.54	0.53
	WBOL	0.44	0.48	0.46
	WBIL	0.49	0.51	0.50
E. of Parma Rd @ Milepost 130	EBOL	0.46	0.47	0.47
	EBIL	0.53	0.54	0.53
	WBOL	0.47	0.47	0.47
	WBIL	0.53	0.54	0.54
W. from Deering Rd.	EBOL	0.45	0.52	0.49
	EBIL	0.51	0.56	0.54
	WBOL	0.46	0.48	0.47
	WBIL	0.52	0.53	0.52
W. from Sandstone Rd.	EBOL	0.47	0.48	0.48
	EBIL	0.53	0.57	0.55
	WBOL	0.46	0.48	0.47
	WBIL	0.52	0.53	0.52
W. from M 60	EBOL	0.48	0.48	0.48
	EBIL	0.55	0.57	0.56
	WBOL	0.46	0.50	0.48
	WBIL	0.49	0.52	0.51
W. from Airport Rd.	EBOL	0.47	0.49	0.48
	EBIL	0.53	0.58	0.55
	WBOL	0.46	0.48	0.47
	WBIL	0.49	0.51	0.50

SKID TEST RESULTS (Cont.)
5-18-72

Location	Lane	Coefficient of Wsf		
		Low	High	Avg
W. from US 127 N	EBOL	0.45	0.48	0.47
	EBIL	0.46	0.50	0.48
	WBOL	0.41	0.44	0.43
	WBIL	0.47	0.48	0.48
All I 94 Sections	EBOL	0.45	0.52	0.48
	EBIL	0.46	0.58	0.53
	WBOL	0.41	0.50	0.46
	WBIL	0.47	0.54	0.51
	All Lanes	0.41	0.58	0.50

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

July 18, 1972

To: P. J. Serafin, Bituminous Engineer
Testing Laboratory Section

From: L. T. Oehler

Subject: Skid Tests on US-12 Between Quincy and Jonesville - Project Mb 12022, Job No. 03799A in Branch and Hillsdale Counties
Research Project 54 G-74, 72 SR-7

In response to your July 12, 1972 teletype request, skid tests were conducted July 13th on the newly resurfaced portion of US-12 between Quincy and Jonesville. That project is currently under construction and nearing completion as State Project Mb 12022, Job No. 03799A.

Coefficients of wsf, representing 80% of the total contract length of 10.39 miles, ranged from 0.21 to 0.48 and averaged 0.38. No testing was performed east of Wise Road (2 miles west of Jonesville) due to construction in progress.

The Branch County section of this project exhibits good friction levels and a uniform appearance throughout its' entire length. The Hillsdale County section provided erratic friction levels and had an uneven appearance throughout most of its' length. Four locations warrant special interest because of low friction levels occuring over relatively great lengths of pavement or occuring at a curve. These locations are noted in the attached tabulation of skid test results.

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PTL:cgc
Attachment

cc: Max N. Clyde

7/13/72 Skid Tests
Mb 12022 - Job No. 03799A
(CS 12022 and 30061)
72 SR-7

Test Location	Direction or Lane	No. of Tests	Coefficient of wsf Low	High	Average
E. limits Quincy E. to Branch-Hillsdale Co. Line	EB	3	0.44	0.47	0.46
	WB	3	0.46	0.48	0.47
Branch-Hillsdale Co. Line E. approx. 0.3 mile (1)	EB	4	0.30	0.37	0.33
	WB	4	0.31	0.39	0.36
Approx. 0.3 mile to 0.6 mile E. of Branch-Hillsdale Co. Line	EB	3	0.44	0.45	0.44
	WB	3	0.36	0.44	0.41
In curve W. of Hog Creek Rd. (1)	EB	3	0.34	0.38	0.36
	WB	3	0.21	0.41	0.31
Curve E. to Hog Creek Rd. (1)	EB	3	0.37	0.42	0.40
	WB	3	0.23	0.25	0.24
E. of Hog Creek Road	EB	3	0.46	0.48	0.47
	WB	3	0.42	0.47	0.44
Duck Lake Rd. E. to W. Limits of Allen	EB	6	0.32	0.48	0.40
	WB	6	0.37	0.42	0.40
E. of Edon Road	EB	3	0.43	0.48	0.46
	WB	3	0.39	0.43	0.41
Buelow Rd. E. to Sand Lake Road (1)	EB	13	0.33	0.47	0.41
	WB	12	0.24	0.31	0.28
Total All Tests	EB-WB	81	0.21	0.48	0.38

(1) Locations of special interest.

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

July 26, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on NB US-127 at the Trowbridge Road Overpass and Northerly to the I-496 Junction, City of East Lansing
Research Project 54 G-74 - 72 SR-8

In accord with a July 12, 1972 request from Mr. H. H. Cooper, Engineer of Traffic and Safety, skid tests were conducted July 24, 1972 at the subject location when air and pavement temperatures were 79° and 85°F, respectively. Coefficients of wsf ranged from 0.35 to 0.41 and averaged 0.39 for this concrete surface.

It should be noted that the fatal accident which happened in this area, occurred during a dry pavement condition and skid test data reported herein represent wet pavement conditions. Wet and dry skid test results cannot be directly compared.

Additional skid test results and approximate test locations are contained in the attached sketch.

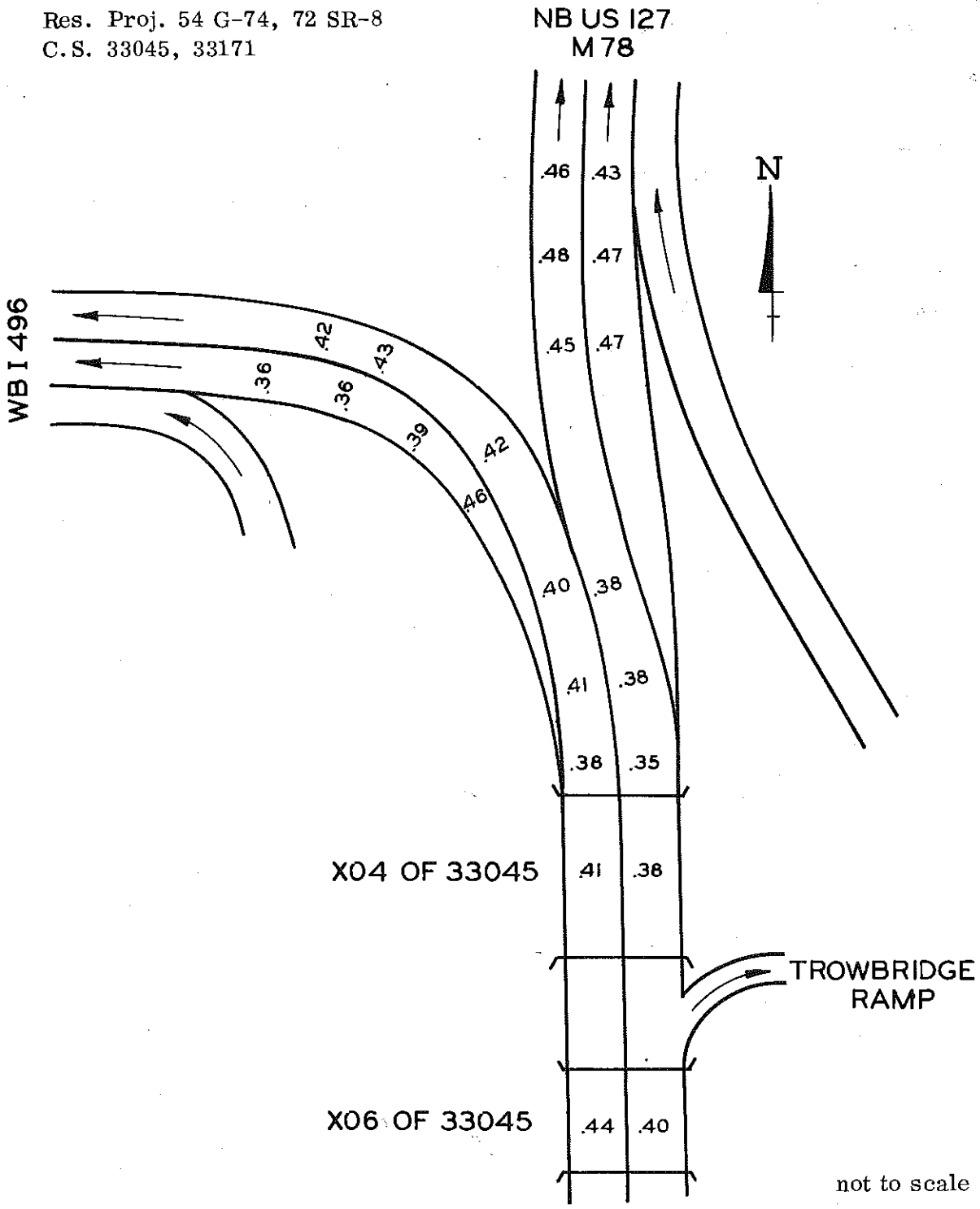
TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PTL:cgc
Attachment

cc: H. H. Cooper

July 24, 1972
Skid Test Data
NB US 127 - I 496 Junction
Res. Proj. 54 G-74, 72 SR-8
C.S. 33045, 33171



not to scale

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

September 11, 1972

To: H. H. Cooper
Engineer of Traffic & Safety

From: L. T. Oehler

Subject: Skid Tests on US-27 at M-57 in Gratiot County and on M-66 at Washington Street in City of Ionia.
Research Project 54 G-74 - 72 SR-9

Complying with your request dated August 8, 1972, skid tests were conducted August 30, 1972 at both subject locations.

Good skid resistance qualities were determined on all legs of the US-27 - M-57 intersection as all but the SBIL of US-27 yielded an average friction level of 0.40 or higher. Average wsf value for the SBIL was 0.39.

Wsf levels at the M-66 - Washington Street location averaged below 0.35 for all four lanes.

Below, in tabular form, is a summary of our skid test results:

Location	Route	Surface Type	Direction and Lane	Coefficient of Wsf Low	High	Avg
US-27 at M-57 in Gratiot County	US-27	Bit.	NBOL	0.39	0.42	0.41
		Bit.	NBIL	0.54	0.56	0.55
		Bit.	NBLT	0.51	0.55	0.53
		Conc.	SBOL	0.38	0.41	0.40
		Conc.	SBIL	0.36	0.41	0.39
		Conc.	SBLT	0.42	0.47	0.44
	M-57	Bit.	EB	0.54	0.58	0.56
		Bit.	EBRT	0.50	0.56	0.53
		Bit.	WB	0.50	0.56	0.53
		Bit.	WBRT	0.46	0.50	0.48
M-66 at Washington	M-66	Conc.	NBOL	0.31	0.33	0.32
		Conc.	NBIL	0.28	0.30	0.29
		Conc.	SBOL	0.34	0.35	0.34
		Conc.	SBIL	0.33	0.34	0.34

TESTING AND RESEARCH DIVISION

L. T. Oehler

Engineer of Research

LTO:PMS:bf

cc: M. N. Clyde
M. L. Jones

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

September 21, 1972

To: A. Chritz
Testing Laboratory Section

From: L. T. Oehler

Subject: Skid Tests on M 43 Seal Coat, Project Mm 2SC-7A (Control Section 08012), Research Project 54 G-74, 72 SR-10.

In response to your August 31, 1972 teletype request, skid tests were performed September 6, 1972 on the newly constructed seal coat surface, Project Mm 2SC-7A, located on M 43 from Hastings north city limits, north 3.42 miles.

Coefficients of wsf ranged from 0.57 to 0.63 and averaged 0.59 for the 28B natural aggregate surface placed north and south of the lightweight aggregate surface. Coefficients of wsf obtained on the lightweight aggregate portion ranged from 0.87 to 0.91 and averaged 0.89. Additional testing on a periodic basis will be performed upon your request.

TESTING AND RESEARCH DIVISION

L. T. Oehler

L. T. Oehler, Engineer of Research
Research Laboratory Section

LTO:PTL:bf

cc: M. N. Clyde

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

October 2, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on M-21 (Freeway) in the Vicinity of M-54 (Dort Hwy.) City of Flint. Research Project 54 G-74, 72 SR-11

In accord with an August 31, 1972 request from L. J. Doyle, Assistant Engineer of Traffic and Safety, skid tests have been conducted on the M-21 Freeway. A 0.23 to 0.57 range of coefficients was encountered in the 5400-ft section requested by Mr. Doyle. Below in tabular form are results of our September 18, 1972 tests, identified by lane and pavement stationing.

Station	EBOL	EBCL	EBIL	WBOL	WBCL	WBIL
640+00				0.35	0.33	0.52
643+00	0.28	0.46	0.46			
648+00				0.32	0.32	0.41
650+00	0.31	0.34	0.51			
658+00	0.34	0.46	0.52	0.43	0.33	0.47
668+00	0.29	0.44	0.51			
672+00				0.23	0.35	0.56
678+00	0.28	0.35	0.51			
681+00				0.25	0.28	0.39
688+00	0.30	0.34	0.57			
689+00				0.30	0.35	0.48

TESTING AND RESEARCH DIVISION

L. Ray T. Oehler

Engineer of Research

LTO:PMS:cgc

cc: L. J. Doyle
L. J. Mikulich

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

October 12, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on M-77, Community of Germfask, Schoolcraft County
Research Project 54 G-74, 72 SR-12

In accord with a August 31, 1972 request from Paul Michelin, District Traffic and Safety Engineer, skid tests have been conducted on M-77 in the area between milepost 9.00 and 11.30 in control section 75051. Skid tests conducted September 21, 1972 ranged from 0.36 to 0.52 and averaged 0.43. Test results in each of five areas are shown below for your review.

M-77 Test Area	Lane Tested	Coefficient of WSF		
		Low	High	Avg.
In curve N. of Manistique River	NB	0.48	0.51	0.49
	SB	0.38	0.41	0.40
In curve S. of Germfask	NB	0.42	0.43	0.42
	SB	0.44	0.47	0.45
In Germfask	NB	0.36	0.38	0.37
	SB	0.36	0.39	0.37
Immediately N. of Germfask	NB	0.36	0.42	0.40
	SB	0.44	0.49	0.47
In curve .02 mi. N. of Germfask	NB	0.49	0.52	0.51
	SB	0.44	0.47	0.45

TESTING AND RESEARCH DIVISION

L. T. Oehler

Engineer of Research
Research Laboratory Section

LTO:PMS:cgc

cc: L. J. Doyle
O. F. Eichen
P. A. Michelin

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 15, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests at Telegraph Road and 10 Mile Road, Before and After Spray Grip Surfacing. Research Project 54 G-74, 72 SR-13 and Research Project 72 NM-322.

In accord with a teletype request from A. Chritz, Testing Laboratory Section, skid testing of subject location has been completed. Tests were conducted on the south-bound deceleration lanes of Telegraph Road, north of 10 Mile Road and on the east-bound deceleration lane of 10 Mile Road, west of Telegraph Road.

Friction levels ranging from 0.31 to 0.41 and averaging 0.36 were obtained from September 19, 1972 tests. The "Spray Grip" surface was applied October 26, 1972. Follow up skid tests, conducted November 2, 1972 on the new surface, yielded outstanding wsf values ranging from 0.73 to 0.79 and averaging 0.78.

Below, in tabular form, are before and after skid test results for your review.

Test Location	Lane	Coefficient of WSF					
		Before Spray Grip			After Spray Grip		
		Low	High	Avg	Low	High	Avg
US-24 (Telegraph Road), immediately North of 10 Mile Road	SBRT	0.31	0.36	0.34	0.79	0.79	0.79
	SBOL	0.37	0.38	0.37	0.73	0.79	0.77
	SB#3	0.33	0.34	0.33	0.78	0.79	0.79
	SB#2	0.33	0.36	0.34	0.76	0.79	0.78
	SBIL	0.34	0.37	0.36	0.78	0.79	0.79
10 Mile Road, immediately West of US-24	EB	0.33	0.41	0.38	0.77	0.78	0.78

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PMS:cgc

cc: H. H. Cooper
A. Chritz
New Materials Committee
D. E. Orne

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

October 16, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on I-75 at Two Curves Between 8 Mile and 9-1/2 Mile Roads, City of Hazel Park, Oakland County
Research Project 54 G-74, 72 SR-14

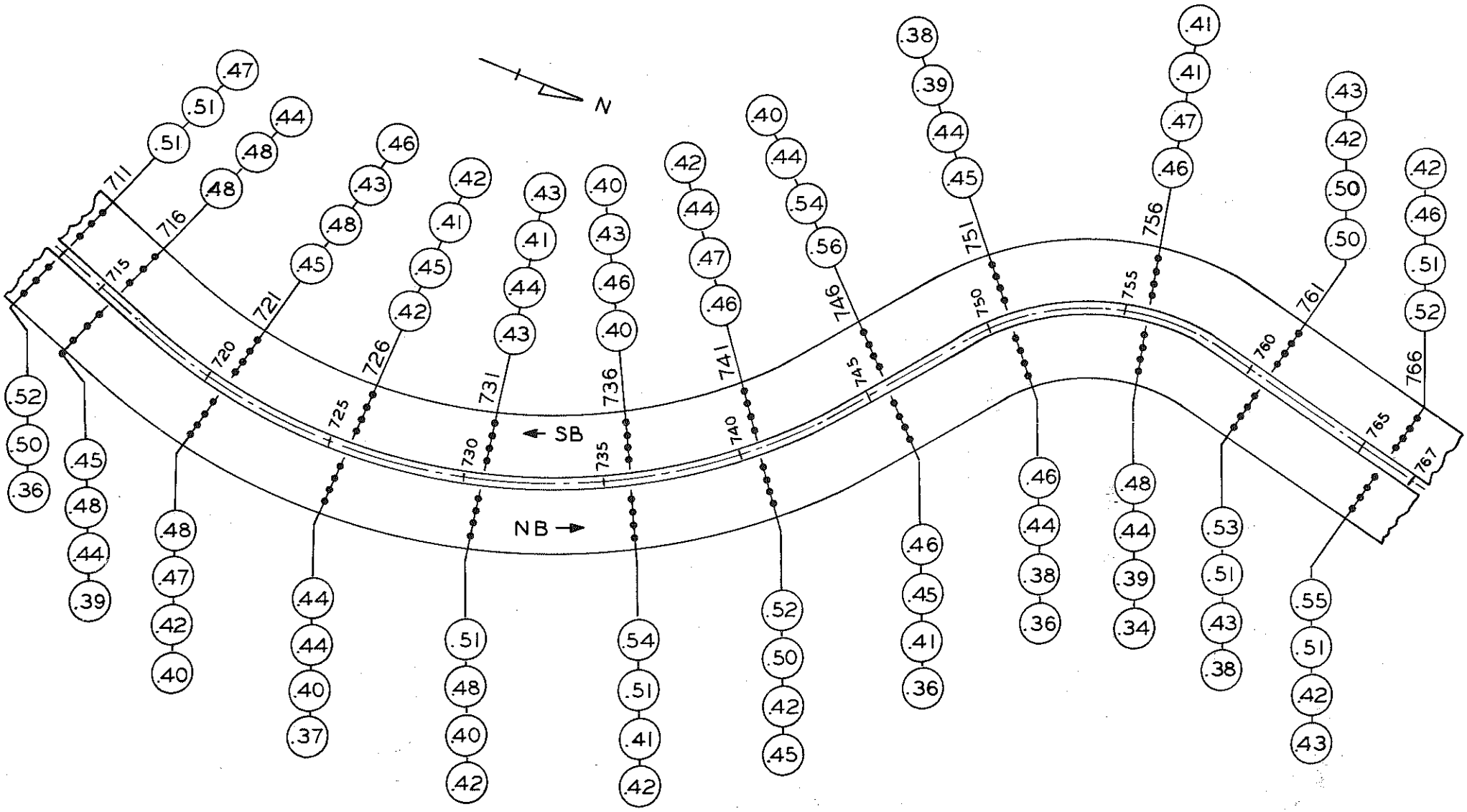
Skid tests have been completed, in accord with a September 18, 1972 request from H. H. Cooper, Engineer of Traffic and Safety. Tests were conducted October 2, 1972 on I-75 between 8 Mile Road and 9-1/2 Mile Road, City of Hazel Park. Wet sliding friction values ranged from 0.34 to 0.56 and averaged 0.45. Location of tests and respective coefficients are shown on the attached diagram for your review.

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PMS:cgc

cc: H. H. Cooper
F. J. Skebensky
P. J. Riley



1972 Skid Test Results: Research Project 54 G-74, 72 SR-14 (October 2, 1972)
I 75 at 2 curves between 8 Mile and 9-1/2 Mile Rds, City of Hazel Park, Oakland County.

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

October 13, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on M-43 (Grand River) between Francis Street and Foster Street, City of Lansing
Research Project 54 E-74, 72 SR-15

Skid tests have been completed in accord with a September 25, 1972 request from H. H. Cooper, Engineer of Traffic and Safety. Wsf values were obtained October 9, 1972. Friction levels ranged from 0.27 to 0.38 and averaged 0.32. Low, high and average coefficients for each lane are shown below for your review.

Lane	Coefficient of WSF		
	Low	High	Avg.
WBOL	.27	.27	.27
WB#3	.31	.37	.34
WB#2	.28	.33	.30
WBIL	.36	.38	.37

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PMS:cgc

cc: H. H. Cooper
R. C. Mastin

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 16, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests Conducted on M 21 Freeway from Flint East to M 24. Research Project 54 G-74, 72 SR-16.

In accord with a October 6, 1972 request from H. H. Cooper, Engineer of Traffic and Safety, skid tests have been completed on the subject M 21 roadway. Tests were conducted during the period October 24 - 30, 1972 on M 21 Freeway from BR 54 (Saginaw St in Flint) to M 24 (South of Lapeer). Skid test results and approximated station locations are shown on the attached tables for your review.

A Tennant machine has been used to treat a 300' length in the WBOL of M 21. Wsf values after the roadway was treated with the Tennant machine are 31 to 33 percent higher than those obtained in the same area prior to treatment. This is evidenced by the data shown below.

Not Treated		Treated - Tennant Machine				Not Treated	
648+50		647+00		646+00		644+00	
Oct 24	Oct 30	Oct [1] 24	Oct [2] 30	Oct [1] 24	Oct [2] 30	Oct 24	Oct 30
34	34	40	46	35	46	36	36
30	32	34	45	32	43	36	33
32	31	31	46	33	44	34	32
Avg 32	32	35	46	33	44	35	34

[1] Before treatment
[2] After treatment

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:bf

cc: H. H. Cooper
E. Upson
L. J. Mikulich

Lane	Test No.	Coefficient of Wsf at Station Locations										
		462+00	467+00	472+00	477+00	482+00	487+00	619+00	620+00	625+00	630+00	635+00
WBOL	1	0.35	0.44	0.40	0.36	0.36	0.34	0.37	0.42	0.40	0.39	0.39
	2	0.36	0.40	0.41	0.36	0.36	0.31	0.35	0.43	0.40	0.36	0.39
	3	0.35	0.37	0.42	0.38	0.38	0.33	0.39	0.44	0.37	0.38	0.39
	AVG	0.35	0.40	0.41	0.37	0.37	0.33	0.37	0.43	0.39	0.38	0.39
WBCL	1	0.30	0.39	0.42	0.32	0.34	0.33	0.40	0.37	0.42	0.38	0.35
	2	0.32	0.38	0.39	0.25	0.35	0.34	0.39	0.36	0.44	0.35	0.37
	3	0.30	0.42	0.41	0.26	0.37	0.37	0.41	0.36	0.43	0.37	0.36
	AVG	0.31	0.36	0.41	0.28	0.35	0.35	0.40	0.36	0.43	0.37	0.36
WBIL	1	0.47	0.52	0.53	0.45	0.45	0.48	0.57	0.60	0.47	0.45	0.50
	2	0.54	0.51	0.52	0.46	0.45	0.53	0.57	0.61	0.53	0.51	0.52
	3	0.50	0.53	0.58	0.40	0.46	0.50	0.58	0.60	0.52	0.48	0.49
	AVG	0.50	0.52	0.54	0.44	0.45	0.50	0.57	0.60	0.51	0.48	0.50
EBIL	1	0.48	0.49	0.53	0.48	0.53	0.56	0.49	0.53	0.57	0.59	0.55
	2	0.48	0.48	0.57	0.54	0.58	0.59	0.52	0.52	0.55	0.58	0.54
	3	0.53	0.48	0.58	0.56	0.58	0.59	0.51	0.50	0.58	0.57	0.52
	AVG	0.50	0.48	0.56	0.53	0.56	0.58	0.51	0.52	0.57	0.58	0.54
EBCL	1	0.38	0.37	0.29	0.34	0.44	0.40	0.35	0.41	0.42	0.47	0.42
	2	0.38	0.35	0.29	0.32	0.43	0.41	0.36	0.42	0.43	0.46	0.41
	3	0.38	0.41	0.26	0.36	0.43	0.43	0.36	0.42	0.43	0.46	0.42
	AVG	0.38	0.38	0.28	0.34	0.43	0.41	0.36	0.42	0.43	0.46	0.42
EBOL	1	0.42	0.44	0.44	0.39	0.38	0.34	0.35	0.37	0.38	0.43	0.35
	2	0.40	0.49	0.40	0.36	0.36	0.33	0.34	0.38	0.39	0.38	0.31
	3	0.40	0.45	0.41	0.37	0.37	0.32	0.33	0.38	0.38	0.38	0.32
	AVG	0.41	0.46	0.42	0.37	0.37	0.33	0.34	0.38	0.38	0.40	0.33

Lane	Test No.	Coefficient of Wsf at Station Locations										
		640+00	643+00	644+00	645+00	646+00	647+00	648+00	650+00	655+00	660+00	665+00
WBOL	1	0.40	0.40	0.36	0.41	0.35	0.40	0.34	0.33	0.40	0.35	0.48
	2	0.38	0.37	0.36	0.37	0.32	0.34	0.30	0.31	0.37	0.35	0.43
	3	0.38	0.32	0.34	0.35	0.33	0.31	0.32	0.32	0.42	0.37	0.42
	AVG	0.39	0.36	0.35	0.38	0.33	0.35	0.32	0.32	0.43	0.36	0.44
WBCL	1	0.45	0.44	0.40	0.38	0.35	0.38	0.38	0.32	0.35	0.39	0.44
	2	0.46	0.42	0.40	0.40	0.36	0.41	0.39	0.30	0.36	0.36	0.41
	3	0.40	0.40	0.40	0.38	0.35	0.40	0.38	0.33	0.38	0.41	0.44
	AVG	0.44	0.42	0.40	0.39	0.35	0.40	0.38	0.32	0.36	0.39	0.43
WBIL	1	0.58	0.49	0.50	0.41	0.42	0.42	0.41	0.41	0.56	0.54	0.55
	2	0.58	0.49	0.51	0.42	0.44	0.41	0.40	0.47	0.44	0.54	0.61
	3	0.59	0.48	0.50	0.39	0.46	0.41	0.42	0.43	0.45	0.52	0.52
	AVG	0.58	0.49	0.50	0.41	0.44	0.41	0.41	0.44	0.48	0.53	0.56
EBIL	1	0.63	0.62	0.60	0.62	0.64	0.61	0.57	0.59	0.42	0.58	0.48
	2	0.62	0.59	0.59	0.57	0.60	0.56	0.60	0.58	0.43	0.61	0.50
	3	0.61	0.59	0.59	0.58	0.61	0.57	0.59	0.57	0.48	0.60	0.48
	AVG	0.62	0.60	0.59	0.59	0.62	0.58	0.59	0.58	0.44	0.60	0.49
EBCL	1	0.49	0.48	0.49	0.48	0.54	0.47	0.48	0.46	0.34	0.45	0.34
	2	0.47	0.49	0.41	0.50	0.47	0.46	0.46	0.44	0.35	0.43	0.34
	3	0.47	0.48	0.42	0.47	0.45	0.45	0.45	0.50	0.36	0.45	0.36
	AVG	0.48	0.48	0.44	0.48	0.49	0.46	0.46	0.47	0.35	0.44	0.35
EBOL	1	0.38	0.49	0.46	0.53	0.53	0.51	0.54	0.54	0.38	0.40	0.34
	2	0.38	0.43	0.42	0.51	0.48	0.50	0.54	0.42	0.31	0.40	0.36
	3	0.38	0.44	0.42	0.46	0.47	0.46	0.49	0.46	0.30	0.36	0.40
	AVG	0.38	0.45	0.43	0.50	0.49	0.49	0.52	0.47	0.33	0.39	0.37

Lane	Test No.	Coefficient of Wsf at Station Locations														
		671+00	675+00	680+00	685+00	690+00	695+00	705+00	710+00	712+00	713+00	714+00	715+00	716+00	725+00	735+00
WBOL	1	0.36	0.34	0.36	0.42	0.33	0.28	0.34	0.40	0.32	0.30	0.30	.29 .33	0.33	0.42	0.45
	2	0.30	0.35	0.30	0.35	0.30	0.28	0.33	0.34	0.28	0.31	0.28	.30 .28	0.31	0.41	0.42
	3	0.30	0.32	0.38	0.34	0.32	0.30	0.32	0.33	0.31	0.28	0.34	.30 .30	0.29	0.40	0.40
	AVG	0.32	0.34	0.35	0.37	0.32	0.29	0.33	0.36	0.30	0.30	0.31	0.30	0.31	0.41	0.42
WBCL	1	0.32	0.33	0.37	0.41	0.42	0.36	0.33	0.38				0.32		0.43	0.44
	2	0.30	0.42	0.43	0.43	0.37	0.33	0.35	0.38				0.32		0.45	0.46
	3	0.34	0.40	0.44	0.41	0.42	0.34	0.34	0.36				0.33		0.46	0.44
	AVG	0.32	0.42	0.41	0.42	0.40	0.34	0.34	0.37				0.32		0.45	0.45
WBIL	1	0.58	0.43	0.57	0.57	0.58	0.51	0.60	0.55				0.64		0.53	0.50
	2	0.56	0.52	0.53	0.59	0.59	0.57	0.60	0.57				0.63		0.56	0.52
	3	0.56	0.50	0.51	0.58	0.58	0.51	0.60	0.56				0.63		0.50	0.53
	AVG	0.57	0.48	0.54	0.58	0.58	0.53	0.60	0.56				0.63		0.53	0.52
EBIL	1	0.54	0.61	0.52	0.61	0.53	0.56	0.54	0.57				0.56		0.43	0.50
	2	0.57	0.58	0.55	0.58	0.54	0.54	0.55	0.56				0.58		0.43	0.47
	3	0.55	0.56	0.50	0.57	0.52	0.59	0.53	0.53				0.58		0.42	0.46
	AVG	0.55	0.58	0.52	0.59	0.53	0.56	0.54	0.55				0.57		0.43	0.48
EBCL	1	0.33	0.39	0.43	0.38	0.31	0.41	0.42	0.40				0.42		0.43	0.45
	2	0.34	0.38	0.44	0.38	0.31	0.40	0.42	0.40				0.42		0.47	0.46
	3	0.32	0.39	0.45	0.37	0.36	0.39	0.42	0.41				0.42		0.46	0.46
	AVG	0.33	0.39	0.44	0.38	0.33	0.40	0.42	0.40				0.42		0.45	0.46
EBOL	1	0.33	0.38	0.31	0.33	0.35	0.35	0.40	0.36				0.41		0.43	0.40
	2	0.30	0.32	0.32	0.34	0.30	0.32	0.39	0.36				0.45		0.41	0.39
	3	0.27	0.33	0.34	0.34	0.28	0.34	0.38	0.36				0.41		0.41	0.40
	AVG	0.30	0.34	0.32	0.34	0.31	0.34	0.39	0.36				0.42		0.42	0.40

Lane	Test No.	Coefficient of Wsf at Station Locations												
		750+00	760+00	765+00	767+00	768+00	769+00	770+00	779+00	780+00	781+00	785+00	790+00	795+00
WBOL	1	0.40	0.39	0.43									0.31	
	2	0.43												
	3	0.41												
	AVG	0.41												
WBCL	1	0.44							0.39	0.39	0.41			
	2	0.44												
	3	0.50												
	AVG	0.46												
WBIL	1	0.61			0.57	0.64	0.65	0.56						
	2	0.59												
	3	0.57												
	AVG	0.59												
EBIL	1	0.53												
	2	0.53												
	3	0.52												
	AVG	0.53												
EBCL	1	0.44												
	2	0.46												
	3	0.44												
	AVG	0.45												
EBOL	1	0.40	0.40					0.38				0.34		0.42
	2	0.41												
	3	0.41												
	AVG	0.41												

Lane	Coefficient of Wsf at Station Locations												
	800+00	805+00	815+00	825+00	835+00	845+00	860+00	865+00	866+00	867+00	884+00	885+00	886+00
WBOL	0.36				0.40		0.36					0.39	
WBCL													
WBIL													
EBIL											0.57	0.54	0.54
EBCL								0.51	0.51	0.52			
EBOL		0.36	0.36	0.42	0.36	0.38	0.44						

F 25084 - 00346A

Lane	Coefficient of Wsf at Station Locations												
	889+00	890+00	891+00	899+00	900+00	901+00	905+00	910+00	920+00	930+00	940+00	950+00	960+00
WBOL										0.43	0.36		0.40
WBCL				0.41	0.46	0.38	0.39						
WBIL	0.61	0.60	0.57										
EBIL													
EBCL													
EBOL					0.35			0.33	0.43	0.37	0.38	0.36	0.38

Lane	Coefficient of Wsf at Station Locations										
	970+00	980+00	889+00	990+00	991+00	1000+00	1005+00	1010+00	1015+00	1020+00	1025+00
WBOL		0.36								0.37	
WBIL			0.51	0.47	0.49						
EBIL											
EBOL	0.37	0.40		0.44		0.42	0.36	0.38	0.36	0.36	0.37

Lane	Coefficient of Wsf at Station Locations										
	1030+00	1035+00	1040+00	1045+00	1050+00	1060+00	1070+00	1074+00	1075+00	1076+00	1077+00
WBOL					0.40				0.40		
WBIL											
EBIL								0.51	0.53	0.64	0.56
EBOL	0.51	0.52	0.51	0.47	0.39	0.39	0.39				

F 25084 - 00344A

Lane	Coefficient of Wsf at Station Locations							
	1090+00	1100+00	1105+00	1110+00	1115+00	1120+00	1125+00	1140+00
WBOL	0.42			0.46				0.39
WBIL								
EBIL								
EBOL	0.43	0.42	0.44	0.38	0.38	0.38	0.46	0.42

Lane	Coefficient of Wsf at Station Locations							
	1150+00	1160+00	1165+00	1170+00	1180+00	1185+00	1190+00	1200+00
WBOL				0.42			0.38	
WBIL								
EBIL					0.62	0.64	0.62	
EBOL	0.41	0.40	0.37	0.45				0.48

F 44043 - 001

Lane	Coefficient of Wsf at Station Locations										
	1210+00	1215+00	1220+00	1230+00	1240+00	1250+00	1260+00	1270+00	1279+00	1280+00	1290+00
WBOL		0.34			0.37			0.34			
WBIL									0.50	0.47	0.52
EBIL											
EBOL	0.39		0.38	0.40	0.40	0.37	0.41	0.46			0.36

Lane	Coefficient of Wsf at Station Locations										
	1300+00	1315+00	1320+00	1330+00	1340+00	1350+00	1355+00	1360+00	1365+00	1380+00	1389+00
WBOL	0.38	0.41		0.41		0.46	0.45		0.39		
WBIL											0.57
EBIL											
EBOL	0.35		0.40		0.43	0.43		0.45		0.40	

Lane	Coefficient of Wsf at Station Locations										
	1390+00	1391+00	1399+00	1400+00	1401+00	1410+00	1415+00	1420+00	1425+00	1430+00	1435+00
WBOL			0.38	0.40	0.40	0.38		0.34	0.37	0.41	
WBIL	0.58	0.57									
EBIL									0.62	0.61	0.61
EBOL	0.50	0.54		0.55	0.53	0.51	0.53	0.50			

F 44043 - 002

Lane	Coefficient of Wsf at Station Locations											
	1440+00	1445+00	1450+00	1455+00	1460+00	1465+00	1470+00	1480+00	1490+00	1500+00	1505+00	1515+00
WBOL	0.38		0.47					0.44	0.38	0.37		
WBIL					0.52		0.53					
EBIL										0.50	0.54	0.54
EBOL	0.37	0.41	0.40	0.46	0.45	0.44	0.40	0.41	0.40			

Lane	Coefficient of Wsf at Station Locations											
	1520+00	1525+00	1530+00	1535+00	1540+00	1550+00	1561+00	East of Sta 1561+00 (Baldwin Rd)				
WBOL		0.42								0.37	0.37	0.42
WBIL						0.57	0.59	0.59				
EBIL												
EBOL	0.44	0.42	0.41	0.41	0.49	0.45			0.41		0.40	

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 9, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid tests on I-75 at Three Curve Locations in Oakland County.
Research Project 54 G-74, 72 SR-17.

Complying with a October 20, 1972 request from H. H. Cooper, Engineer of Traffic and Safety, skid tests have been conducted on I-75 at three curve locations he specified. A total of 270 skid tests were taken on November 3, 1972. Each location had tests conducted in all 6 lanes, at intervals spaced at 500 feet. Both air and pavement temperatures, at time of test, were 42°F.

The three test areas are:

Area 1 — I-75 from 11 Mile Rd to 12 Mile Rd in the cities of Royal Oak and Madison Heights.
(Station 870 to Station 930)

Area 2 — I-75 from Maple Rd through M-150 Interchange in the city of Troy.
(Station 1085 to Station 1160)

Area 3 — I-75 from Long Lake Rd to 0.25 mile West of Crooks Rd, in City of Troy.
(Station 530 to Station 605)

Eighteen percent of the skid tests (49 of 270), conducted in the 3 areas, yielded Wsf values below 0.40. However 11 of this 18 percent was confined to the outside lanes of area 2. Another 3 percent of the coefficients below 0.40 were found in the Southbound outside lane of area 3. The remaining 4 percent were scattered throughout area 1.

Attached for your review are Tables showing the individual coefficients of Wsf and their respective location along with ranges and averages for each area.

TESTING AND RESEARCH DIVISION

L. T. Oehler

Engineer of Research
Research Laboratory Section

LTO:PMS:nag

cc: H. H. Cooper
P. J. Riley

AREA 1

I 75 FROM 11 MILE RD TO 12 MILE RD
IN THE CITIES OF ROYAL OAK AND MADISON HTS
(Station 870 to Station 930)

Station	Coefficient of Wsf					
	SBOL	SBCL	SBIL	NBIL	NBCL	NBOL
870+00	0.46	0.48	0.51	0.53	0.47	0.47
875+00	0.45	0.46	0.51	0.49	0.47	0.46
880+00	0.44	0.42	0.43	0.49	0.49	0.43
885+00	0.40	0.42	0.44	0.43	0.42	0.42
890+00	0.40	0.43	0.44	0.44	0.40	0.42
895+00	0.40	0.41	0.44	0.45	0.42	0.40
900+00	0.42	0.39	0.44	0.46	0.40	0.42
905+00	0.40	0.39	0.44	0.39	0.39	0.40
910+00	0.37	0.42	0.43	0.41	0.42	0.39
915+00	0.42	0.43	0.43	0.42	0.40	0.43
920+00	0.39	0.39	0.45	0.43	0.39	0.40
925+00	0.41	0.42	0.43	0.38	0.42	0.42
930+00	0.43	0.41	0.41	0.44	0.43	0.41

AREA 2

I 75 FROM MAPLE RD THROUGH M 150
(ROCHESTER RD) INTERCHANGE IN THE
CITY OF TROY
(Station 1085 to Station 1160)

Station	Coefficient of Wsf					
	SBOL	SBCL	SBIL	NBIL	NBCL	NBOL
1085+00	0.34	0.40	0.45	0.45	0.43	0.37
1090+00	0.36	0.43	0.46	0.48	0.43	0.37
1095+00	0.38	0.47	0.47	0.47	0.46	0.38
1100+00	0.36	0.46	0.48	0.48	0.45	0.39
1105+00	0.36	0.43	0.46	0.48	0.45	0.36
1110+00	0.37	0.41	0.46	0.46	0.45	0.36
1115+00	0.37	0.42	0.43	0.47	0.44	0.35
1120+00	0.35	0.42	0.45	0.47	0.45	0.35
1125+00	0.37	0.41	0.46	0.48	0.44	0.34
1130+00	0.36	0.40	0.46	0.46	0.46	0.37
1135+00	0.36	0.40	0.44	0.49	0.46	0.37
1140+00	0.34	0.42	0.45	0.50	0.45	0.38
1145+00	0.36	0.43	0.48	0.50	0.46	0.38
1150+00	0.36	0.42	0.48	0.50	0.47	0.39
1155+00	0.39	0.46	0.50	0.50	0.49	0.39
1160+00	0.40	0.46	0.48	0.51	0.47	0.38

AREA 3

I 75 FROM LONG LAKE RD TO 0.25 MILES
WEST OF CROOKS RD, IN THE CITY OF TROY
(Station 530 to Station 605)

Station	Coefficient of Wsf					
	SBOL	SBCL	SBIL	NBIL	NBCL	NBOL
530+00	0.39	0.40	0.46	0.48	0.45	0.42
535+00	0.39	0.44	0.52	0.49	0.43	0.42
540+00	0.40	0.44	0.49	0.47	0.44	0.41
545+00	0.38	0.44	0.49	0.52	0.45	0.44
550+00	0.41	0.40	0.46	0.52	0.44	0.43
555+00	0.40	0.42	0.52	0.51	0.43	0.42
560+00	0.39	0.42	0.49	0.49	0.44	0.42
565+00	0.40	0.43	0.46	0.49	0.42	0.45
570+00	0.38	0.42	0.47	0.48	0.44	0.40
575+00	0.39	0.44	0.45	0.49	0.43	0.43
580+00	0.40	0.43	0.47	0.48	0.44	0.40
585+00	0.42	0.42	0.48	0.49	0.45	0.43
590+00	0.39	0.41	0.48	0.49	0.44	0.41
595+00	0.38	0.44	0.51	0.50	0.44	0.42
600+00	0.40	0.42	0.51	0.49	0.46	0.45
605+00	0.40	0.45	0.52	0.51	0.43	0.42

SUMMARY OF I 75 SKID TESTS
AT OAKLAND COUNTY CURVE LOCATIONS

Area		Coefficient of Wsf					
		SBOL	SBCL	SBIL	NBIL	NBCL	NBOL
1	Low wsf	0.37	0.39	0.41	0.38	0.39	0.39
	High wsf	0.46	0.48	0.51	0.53	0.49	0.47
	Avg wsf	0.41	0.42	0.45	0.44	0.42	0.42
2	Low wsf	0.34	0.40	0.43	0.45	0.43	0.34
	High wsf	0.40	0.47	0.50	0.51	0.49	0.39
	Avg wsf	0.36	0.43	0.46	0.48	0.45	0.37
3	Low wsf	0.38	0.40	0.45	0.47	0.42	0.40
	High wsf	0.42	0.45	0.52	0.52	0.46	0.45
	Avg wsf	0.40	0.43	0.49	0.49	0.44	0.42
All	Low wsf	0.34	0.39	0.41	0.38	0.39	0.34
	High wsf	0.46	0.48	0.52	0.53	0.49	0.47
	Avg wsf	0.40	0.43	0.47	0.47	0.44	0.40

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 17, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on I 75 from North of Maple Rd to South of Mount Morris Rd, Genesee County.
Research Project 54 G-74, 72 SR-18

In accord with a October 30, 1972 verbal request from Louis Cook, Assistant to Engineer of Soils, skid tests have been conducted on the subject I 75 roadway. Tests were conducted November 2, 1972 at an air and pavement temperature of 66 F. All Wsf values were equal to or higher than 0.40. Friction level ranges and respective averages are attached for your review.

TESTING AND RESEARCH DIVISION

L Ray T. Oehler
Engineer of Research

LTO:PMS:bf

cc: H. H. Cooper
L. J. Cook
C. J. Zajac

Location		Coefficient of Wsf			
		SBOL	SBIL	NBIL	NBOL
North of Maple Rd	Low	0.44	0.47	0.46	0.40
	High	0.44	0.50	0.46	0.42
	Avg	0.44	0.49	0.46	0.41
South of Bristol Rd	Low	0.44	0.47	0.45	0.41
	High	0.46	0.52	0.47	0.42
	Avg	0.45	0.49	0.46	0.41
North of Bristol Rd	Low	0.42	0.46	0.45	0.44
	High	0.44	0.50	0.48	0.47
	Avg	0.43	0.48	0.47	0.46
South of Miller Rd	Low	0.43	0.47	0.46	0.41
	High	0.45	0.49	0.48	0.46
	Avg	0.44	0.48	0.47	0.44
South of Corunna Rd	Low	0.42	0.43	0.43	0.41
	High	0.44	0.46	0.45	0.43
	Avg	0.43	0.45	0.44	0.42
North of Corunna Rd	Low	0.43	0.48	0.45	0.41
	High	0.44	0.50	0.48	0.44
	Avg	0.43	0.49	0.46	0.42
North of Beecher Rd	Low	0.44	0.48	0.48	0.42
	High	0.46	0.48	0.49	0.44
	Avg	0.45	0.48	0.49	0.43
North of Flint River	Low	0.44	0.48	0.47	0.45
	High	0.45	0.50	0.49	0.46
	Avg	0.44	0.49	0.48	0.45
North of Pierson Rd	Low	0.44	0.51	0.49	0.44
	High	0.47	0.53	0.50	0.45
	Avg	0.46	0.52	0.50	0.45
North of Carpenter Rd	Low	0.43	0.51	0.50	0.45
	High	0.47	0.52	0.52	0.47
	Avg	0.46	0.52	0.51	0.46

Location		Coefficient of Wsf			
		SBOL	SBIL	NBIL	NBOL
North of Coldwater Rd	Low	0.43	0.50	0.49	0.48
	High	0.48	0.53	0.52	0.50
	Avg	0.46	0.52	0.51	0.49
South of Mount Morris Rd	Low	0.44	0.50	0.49	0.47
	High	0.49	0.50	0.51	0.49
	Avg	0.46	0.50	0.50	0.48
ALL AREAS SHOWN ABOVE	Low	0.42	0.43	0.43	0.40
	High	0.49	0.53	0.52	0.50
	Avg	0.45	0.49	0.48	0.44

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 14, 1972

To: M. N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on I 96 from the Grand River Bridge easterly 0.620 miles to the Emergency Crossover east of Creyts Road, Windsor Township, Eaton County. Research Project 54 G-74, 72 SR-19.

In accord with a October 31 request from H. H. Cooper, Engineer of Traffic and Safety, skid tests were conducted November 1, 1972 on the subject location.

With one exception, wet sliding friction values obtained at 200 ft intervals were uniform, within lanes, over the entire requested length. The WBIL between station 441+30 and 442+20 (NW of Creyts Rd) yielded a low wsf value of 0.37 caused by some asphaltic like material spilled on the roadway. Low, high and average coefficients for each lane are tabulated below for your review.

Lane	Coefficient of Wsf		
	Low	High	Avg
EBOL	0.42	0.46	0.44
EBIL	0.47	0.51	0.49
WBOL	0.44	0.47	0.45
WBIL	0.37	0.49	0.45

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:bf

cc: H. H. Cooper
E. H. Miller

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 21, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on M 91 in Ionia County
Research Project 54 G-74, 72 SR-20

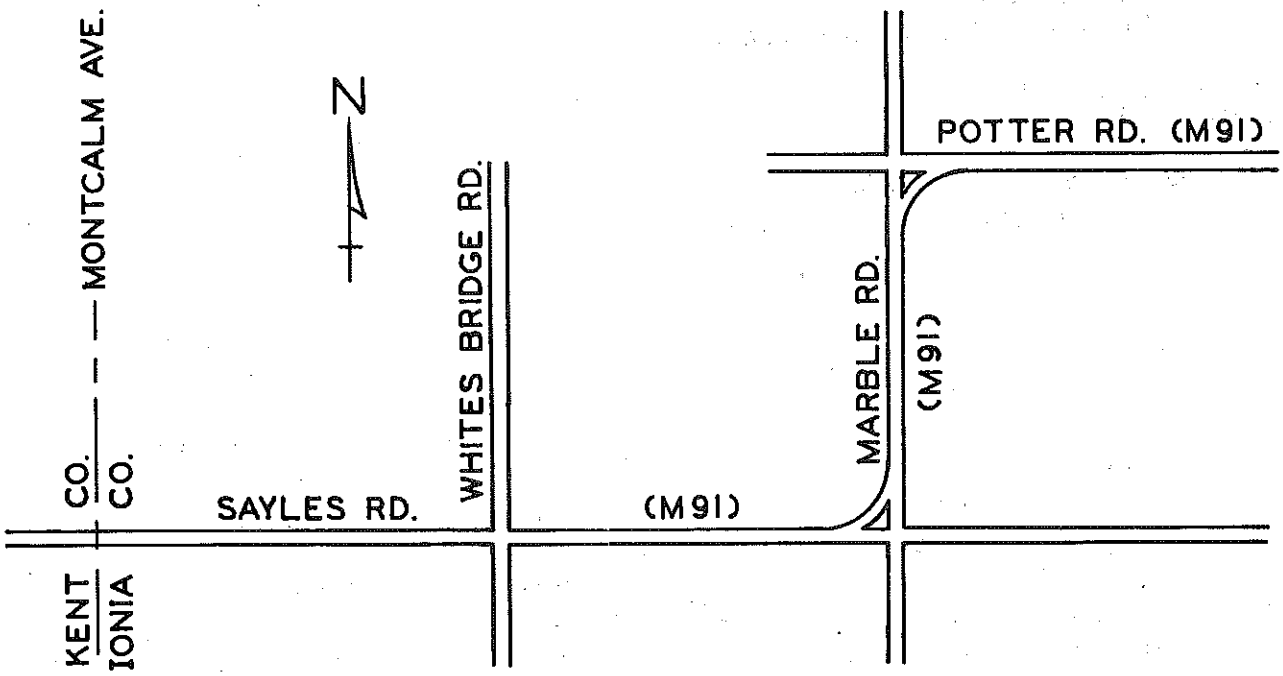
In accord with a November 9, 1972 request from H. H. Cooper, Engineer of Traffic and Safety, skid tests have been completed on M 91 in Ionia County. A wide range of friction levels were encountered throughout a 3 mile section of M 91 between the Kent-Ionia County Line and Potter Rd, with wsf values ranging from 0.12 to 0.66. Sixteen noticeable surface changes occur between the county line and Potter Rd. Ten of these were skid tested November 6, 1972 at an air and pavement temperature of 48 F. Wide friction level ranges within surface types may be explained by an intermittent flushing condition present in areas with wsf values below 0.40. Attached is a table showing surface locations, surface types and respective wsf values for your review.

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PMS:bf

cc: H. H. Cooper
M. L. Jones



M 91 Test Location	Surface Type	Coefficient of Wsf	
		NB	SB
1.05 to 0.75 mi W of Whites Bridge Rd	Seal Coat	0.29 0.38	0.34 0.38
0.75 to 0.65 mi W of Whites Bridge Rd	Bit Conc	Not Tested	
0.65 to 0.3 mi W of Whites Bridge Rd	Seal Coat	0.57 0.62 0.56 0.50	0.59 0.53 0.50 0.49 0.49 0.53 0.42
0.3 to 0.15 mi W of Whites Bridge Rd	Seal Coat	0.16 0.47 0.19	0.22
0.15 to 0.14 mi W of Whites Bridge Rd	Seal Coat	Not Tested	
0.14 to 0.05 mi W of Whites Bridge Rd	Seal Coat	0.47 0.50 0.52	0.54 0.47 0.53
0.05 mi W of to 0.01 mi E of Whites Bridge Rd	Bit Conc	Not Tested	

M 91 Test Location	Surface Type	Coefficient of Wsf	
		NB	SB
0.01 to 0.15 mi E of Whites Bridge Rd	Seal Coat	0.25	0.28
		0.15	0.28
		0.18	0.23
		0.12	0.30
0.15 to 0.55 mi E of Whites Bridge Rd	Seal Coat	0.55	0.64
		0.49	0.66
		0.55	0.51
		0.61	0.62
		0.64	0.47
		0.59	0.52
		0.62	
		0.66	
0.55 to 0.65 mi E of Whites Bridge Rd	Bit Conc	Not Tested	
0.65 to 0.85 mi E of Whites Bridge Rd	Seal Coat	0.34	0.27
		0.28	0.28
		0.19	
0.85 to 0.9 mi E of Whites Bridge Rd	Bit Conc	Not Tested	
0.9 to 0.95 mi E of Whites Bridge Rd	Seal Coat	0.50	0.37
0.05 mi W of Marble Rd to 0.05 mi N of Sayles Rd	Seal Coat	Not Tested	
0.05 to 0.6 mi N of Sayles Rd	Seal Coat	0.61	0.64
		0.58	0.65
		0.34	0.65
		0.48	0.48
		0.30	0.45
		0.24	0.43
		0.22	0.29
			0.45
0.6 mi N of Sayles Rd N to Potter Rd	Seal Coat	0.66	0.56
		0.62	0.50
		0.55	0.63

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, GOVERNOR

DEPARTMENT OF STATE HIGHWAYS

STATE HIGHWAYS BUILDING – POST OFFICE DRAWER K – LANSING, MICHIGAN 48904

JOHN P. WOODFORD, STATE HIGHWAY DIRECTOR

February 1, 1973

Mr. Dale C. Lyzenga
Grocers Dairy Company
2555 Buchanan Avenue, S. W.
Grand Rapids, Michigan

Dear Mr. Lyzenga:

Skid Tests on M-91 in Ionia County
Research Project 54 G-74, 72 SR-20B

Skid tests were conducted on November 6, 1972, from 0.15 to 0.30 miles west of Whites Bridge Road. Wet sliding friction (wsf) values obtained ranged from 0.16 to 0.47. In your letter dated December 20, 1972, you requested skid test results for a 300 ft. section of M-91. You defined this section as follows:

> "Approximately one and one half miles east of the Flat River Bridge an old schoolhouse stands on the north side of M-91. Directly across M-91 from said house is a fence line running north and south. We are interested in the roadway area from this fence line to 300-ft east."

The area you requested is within the limits of the 0.15 mile (792 ft.) area we tested west of Whites Bridge Road on November 6, 1972. We do not have sufficient information to indicate the exact location of the variable wet sliding friction values.

Very truly yours,

TESTING AND RESEARCH DIVISION

Max N. Clyde

Max N. Clyde
Engineer of Testing and Research

MICHIGAN
THE GREAT LAKE STATE

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

January 18, 1973

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on Projects Using Lakelite Aggregate.
Research Project 54 G-74, 72 SR-21.

In accord with a November 3, 1972 request from P. J. Serafin and your subsequent request dated January 8, 1973, skid tests were completed late in 1972 on two projects using Lakelite Aggregate.

Project Mm 2 SC-7A (Control Section 08012) was skid tested September 6, 1972 and data reported in a letter to A. Chritz, Testing Laboratory Section on September 21, 1972. This project is located on M 43, from Hastings north city limits north 3.42 miles. Coefficients of wsf ranged from 0.57 to 0.63 and averaged 0.59 for the natural aggregate surface placed north and south of the lightweight aggregate surface. Coefficients of wsf obtained on the lightweight aggregate portion ranged from 0.87 to 0.91 and averaged 0.89. A further breakdown of data is shown in Table 1.

Project Mbr 62032-04779A, located on M 37 from Pierce Rd north to the Newaygo - Lake county line was skid tested November 9, 1972. Different percents of Lakelite aggregate and bituminous content were used on portions of this project. Initial skid tests on the natural aggregate portion of this contract yielded wsf values ranging from 0.45 to 0.52 and averaging 0.50. Results of tests on areas using Lakelite are shown in Table 2.

TESTING AND RESEARCH DIVISION

L Ray T. Oehler

Engineer of Research

LTO:PMS:bf

cc: D. Orne
P. Serafin

TABLE 1
Mm 2 SC-7A
(Control Section 08012)

Location	Surface	Lane	9-6-72 Coefficient of Wsf		
			Low	High	Avg
Coats Grove Rd South (N of Hastings)	28B Agg. Seal	NB	0.59	0.63	0.61
		SB	0.57	0.60	0.59
Coats Grove Rd N 0.5 mile	Light wt Agg. Seal	NB	0.87	0.88	0.87
		SB	0.90	0.91	0.91
From 0.5 mile N of Coats Grove Rd N	28 B Agg. Seal	NB	0.57	0.59	0.58
		SB	0.58	0.60	0.59

TABLE 2
LAKELITE SECTIONS OF PROJECT Mbr 62032-04779A

Station	% Bit	Coefficient of Wsf		
		Low	High	Avg
100% Lakelite				
239+75 – 242+15 LT	9.0	0.66	0.70	0.68
242+15 - 254+00 LT	9.0	0.65	0.66	0.66
254+00 - 264+65 LT	9.0	0.55	0.58	0.56
240+00 - 244+75 RT	9.0	0.55	0.59	0.57
244+75 - 264+15 RT	9.0	0.60	0.61	0.61
50% Lakelite				
264+65 - 291+25 LT	8.0	0.55	0.58	0.57
264+15 - 290+95 RT	8.0	0.50	0.55	0.52
31A Lakelite				
290+95 - 292+30 RT	9.5	0.92	0.94	0.93
292+30 - 294+20 RT	10.0	0.88	0.90	0.89
294+20 - 295+70 RT	8.5	0.80	0.84	0.82
295+70 - 302+50 RT	8.0	0.50	0.61	0.56
25A Lakelite				
291+25 - 307+70 LT	9.5	0.66	0.69	0.68

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 21, 1972

To: Max N. Clyde
Engineer of Testing and Research

From: L. T. Oehler

Subject: Skid Tests on Project Mtb 70023-02918A
Research Project 54 G-74, 72 SR-22

Project Mtb 70023-02918A, located on WB M 21 from a point 330 ft E of 80th Ave NE'ly to 360 ft W of School St., omitting 1690 ft in Hudsonville, was initially skid tested June 7, 1972. Wsf values ranged from 0.45 to 0.59 and averaged 0.52. This black base project was constructed in 1971.

Paul J. Serafin, Bituminous Engineer at the Testing Laboratory requested additional skid tests in a November 13, 1972 teletype. In this teletype Mr. Serafin stated, since no wearing course was specified the top layer of black base was enriched with additional asphalt and filler. The surface is wearing well, however, since the 24A gravel used had little or no crushed in it, he was concerned over the possibility of the surface becoming slippery.

Complying with this request, additional skid tests were conducted. Wsf values determined November 13, 1972 ranged from 0.40 to 0.62 and averaged 0.50, thus indicating no immediate concern over this pavement's skid resistance qualities.

Attached are wsf values from both test dates, conducted at various points within limits of subject project, for your review.

TESTING AND RESEARCH DIVISION

L. Ray T. Oehler
Engineer of Research

LTO:PMS:bf

attachment

cc: P. J. Serafin

	M 21 Location	Lane	Coefficient of Wsf		
			Low	High	Avg
Test Date 6-7-72	1 Mile W. of School St.	WBOL	0.47	0.50	0.48
		WBIL	0.54	0.58	0.56
Test Date 6-7-72	1 Mile E. of Hudsonville	WBOL	0.49	0.50	0.49
		WBIL	0.57	0.59	0.58
Test Date 6-7-72	W. of 40th St.	WBOL	0.45	0.47	0.46
		WBIL	0.50	0.53	0.52
Test Date 11-13-72	W. of Wyoming	WBOL	0.43	0.44	0.43
		WBIL	0.51	0.53	0.52
Test Date 11-13-72	1 Mile W. of School St.	WBOL	0.44	0.48	0.45
		WBIL	0.54	0.57	0.56
Test Date 11-13-72	1 Mile E. of Hudsonville	WBOL	0.46	0.48	0.47
		WBIL	0.58	0.61	0.60
Test Date 11-13-72	E. Limits of Hudsonville	WBOL	0.44	0.48	0.46
Test Date 11-13-72	W. of Hudsonville	WBOL	0.43	0.45	0.44
		WBIL	0.52	0.55	0.54
Test Date 11-13-72	W. of 40th St.	WBOL	0.40	0.44	0.43
		WBIL	0.60	0.62	0.61

OFFICE MEMORANDUM

MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

November 24, 1972

To: Max N. Clyde
Engineer of Testing & Research

From: L. T. Oehler

Subject: Skid Tests on M-17 between Ballard and Summit Streets in the City of Ypsilanti. Research Project 54 G-74, 72 SR-23

In accord with a November 3, 1972 request from H. H. Cooper, Engineer of Traffic and Safety, additional skid test data is herein supplied for subject high-accident location.

Tests on the concrete portion of this area were taken August 1, 1972 and results were included in the August High-Accident report to District Engineers. The bituminous portion of this request was skid tested July 16, 1972, but results were not included in the August release. Below all skid data for the subject high-accident location are included for your review.

A follow-up letter will be sent to District Engineers to update their records for this area.

Eastbound M-17 (Washtenaw St.) and Westbound M-17 (Cross St.) between Ballard and Summit Streets in the City of Ypsilanti, Washtenaw County.

Surface Type	Lane Tested	Coefficient of WSF		
		Low	High	Avg.
Concrete	EBML	0.33	0.36	0.34
	EBOL	0.27	0.30	0.28
	EBIL	0.35	0.36	0.35
	WBOL	0.28	0.29	0.29
	WBIL	0.30	0.33	0.31
	WBLT	0.35	0.40	0.38
Bituminous	EBOL	0.49	0.51	0.50
	EBCL	0.45	0.48	0.46
	EBIL	0.48	0.49	0.49
	WBOL	0.48	0.49	0.48
	WBCL	0.44	0.48	0.47
	WBIL	0.52	0.52	0.52

TESTING AND RESEARCH DIVISION

L. T. Oehler
Engineer of Research

LTO:PMS:cgc

cc: H. H. Cooper