SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE
1971 TEST PROGRAM

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

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TESTING AND RESEARCH DIVISION

SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1971 TEST PROGRAM

Research Laboratory Section
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Michigan State Highway Commission
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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

SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1971 TEST PROGRAM

INTRODUCTION

During the 1971 calendar year, over 8,200 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	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 of 0.40 is generally considered the dividing point between "satisfactory" and "unsatisfactory" pavement surfaces and this has been arbitrarily defined as the Departmental Safety Standard. Surfaces with coefficient values of 0.35 to 0.40 are in a "transitional" or "questionable" range. Projects below 0.35 could be dangerous under wet conditions, depending on prevailing speeds, road alignment, and geometrics. Surfaces with coefficients of 0.20 or less are as slippery as packed snow.[1] 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

CONVENTIONAL CONCRETE AND BITUMINOUS PAVEMENTS

CONVENTIONAL CONCRETE AND BITUMINOUS PAVEMENTS

Section 1 summarizes skid tests representing 671.032 lane miles of trunkline surfaces tested during 1971.

Table 1 - Concrete Pavements Constructed in 1969, 1970, and 1971

1969 Construction

Initial skid tests were conducted on 22.320 lane miles of concrete pavement after a two-year service period. Wet sliding friction (wsf) values ranged from 0.30 to 0.61 and averaged 0.46. Five of the 21 lanes, representing 29 percent of the total lane mileage tested, yielded average wsf values below the Departmental Safety Standard of 0.40.

1970 Construction

Skid tests were conducted on 106.736 lane miles of concrete pavement after a one-year service period. Wsf values ranged from 0.26 to 0.72 and averaged 0.48. Sixteen of the 68 lanes, 16 percent of the total lane mileage tested, had wsf values below 0.40. All eight lanes of Project Ms 63031-021 (01842A) yielded average wsf values below 0.40, six of which were bordering 0.30. This project is located on US 24 from 620 ft south of Exeter Dr north to north of Shallow Brook Dr in Oakland County.

1971 Construction

During the initial service year, 18 lanes of concrete (35.774 lane miles) were tested. Coefficients ranged from 0.33 to 0.59 and averaged 0.50. Two lanes, representing 11 percent of the lane mileage tested had friction levels below 0.40. Both low coefficient lanes were from Project F 63041-015 (00859A) located on M 59 between Williams Lake Rd and Airport Rd.

Table 2 - Bituminous Concrete (4.12) Constructed in 1969, 1970 and 1971

1969 Construction

Two projects, representing 8.104 lane miles of bituminous concrete (4.12) were initially tested after a two-year service period. Good skid resistance qualities were encountered on all eight lanes tested, as coefficients ranged from 0.41 to 0.56 and averaged 0.48.

1970 Construction

One-year friction levels were determined on 89.704 lane miles of bituminous concrete (4.12). Coefficients ranged from 0.37 to 0.68 and averaged 0.54. None of the lanes had average wsf values below the Departmental Safety Standard.

1971 Construction

Initial year skid tests were conducted on 48 lanes of bituminous concrete (4.12) this year. Wsf values ranging from 0.33 to 0.79 and averaging 0.49 were determined. Six of the lanes had average coefficients below 0.40. These six represent 14 percent of the 158.558 lane miles tested.

Table 3 - Bituminous Aggregate (4.11) Constructed in 1970 and 1971

1970 Construction

Only two lanes of 1970 construction bituminous aggregate (4.11) were tested during 1971. Coefficients ranged from 0.48 to 0.53 and averaged 0.50 on the 20.060 lane miles tested.

1971 Construction

Sixteen lanes (97.698 lane miles) were tested during their initial service year. Coefficients ranged from 0.20 to 0.68 and averaged 0.40. Six lanes yielded average friction levels below 0.40.

Table 4 - Surface Treatment Constructed in 1971

During 1971 132.078 lane miles of surface treatment was tested. All lanes except M 32 between Hillman and Atlanta yielded average wsf values above 0.40. The M 32 project yielded friction levels ranging from 0.06 to 0.38. Subsequently a kerosene and sand treatment has been applied to portions of this surface and results of skid tests are shown as special requests 19 and 23 in Table 27.

TABLE 1
CONCRETE PAVEMENTS CONSTRUCTED IN 1969, 1970, and 1971

	Project and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1969	U 25085-002 (00355A)	M 78 relocation from S of Ballenger Hwy E to W of Fenton Rd	Cooke Contracting Co.	63-54	63-54	EBOL	0.33	0.38	0.36
						EBCL	0.48	0.51	0.50
						EBIL	0.50	0.53	0.52
						WBOL	0.33	0.36	0.35
						WBCL	0.40	0.45	0.43
						WBIL	0.51	0.53	0.52
	F 25085-015	M 78 from Hammerburg Rd. E to E of Saginaw St	Cooke Contracting Co.	63-54	63-54	EBOL	0.38	0.41	0.39
						EBCL	0.40	0.44	0.43
						EBIL	0.57	0.58	0.58
						WBOL	0.43	0.46	0.45
						WB#3	0.39	0.40	0.40
						WB#2	0.47	0.49	0.48
						WBIL	0.57	0.61	0.59
	U 33171-025 (00488A)	US 127 from Red Cedar River N to S of Woodruff Ave.	Eisenhour Construction Co.	34-53 & 41-46	19-33	NBOL	0.33	0.36	0.34
						NBIL	0.48	0.48	0.48
						SBOL	0.30	0.33	0.32
						SBIL	0.45	0.50	0.48
	I 73101-025	I 675 from Washington St W to Michigan Ave.	Titus Construction Co.	71-47	79-73	NBOL	0.40	0.43	0.42
						NBIL	0.53	0.57	0.55
						SBOL	0.56	0.57	0.56
						SBIL	0.51	0.56	0.54
1970	I 13074-001 (00166A) [1] [2]	I 69 from N Side of I 94 interchange N to 0.5 mile N of "N Drive N"	Eisenhour Construction Co.	12-43, 12-44, 30-35, 41-46 & 41-69	12-43 & 12-44	NBOL	0.52	0.62	0.58
						NBIL	0.55	0.62	0.58
						SBOL	0.65	0.71	0.68
						SBIL	0.67	0.71	0.69
	I 13074-002 (00167A) [1] [2]	I 69 from 0.5 mile N of "N Drive N" N to Calhoun-Eaton Co. Line	Eisenhour Construction Co.	12-43, 12-44, 30-35, 41-46 & 41-69	12-43 & 12-44	NBOL	0.62	0.69	0.65
						NBIL	0.69	0.71	0.70
						SBOL	0.64	0.71	0.67
						SBIL	0.70	0.72	0.71
	F 23012-009	US 27 - M 78 Southbound from 1000-ft NE of E City Limits of Charlotte NE to 1500-ft NE of Packard Rd	Carl Goodwin & Sons, Inc.	8-80	8-80	SBOL	0.26	0.36	0.31
						SBIL	0.48	0.56	0.51
	F 25084-003 [2] (00344A)	M 78 relocation from 0.5 mile E of M 15 E to Genesee-Lapeer Co. Line	Sargent Contracting Co.	63-4	63-4	EBOL	0.50	0.52	0.51
						EBIL	0.60	0.63	0.61
						WBOL	0.62	0.65	0.64
						WBIL	0.65	0.66	0.66

[1] Skid tests were conducted during test year 1970.
[2] Slip form paver used.

1970 CONT.

TABLE 1 (Cont.)
CONCRETE PAVEMENTS CONSTRUCTED IN 1969, 1970, and 1971

Project and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
I 34044-057 (00454A)	I 496 from 140-ft W of Jenison St. E to W City Limits of East Lansing	Eisenhour Construction Co.	34-53, 41-46 & 63-48	19-33 19-48 & 76-47	EBOL	0.27	0.40	0.32
					EBIL	0.37	0.49	0.39
					WBOL	0.27	0.41	0.31
					WBIL	0.29	0.41	0.40
F 44043-002 (00627A)	M 78 relocation from 1253-ft E of Golf Rd	Cooke Contracting Co.	63-4	63-4	EBOL	0.52	0.56	0.55
					EBIL	0.64	0.65	0.65
					WBOL	0.60	0.63	0.62
					WBIL	0.57	0.60	0.59
Ms 63031-021 (01842A)	US 24 (Telegraph Rd) from 620-ft S of of Exeter Dr. N to N of Shallow Brook Dr.	D. J. McQuestion & Sons & Thompson-McCully Asphalt Paving Co.	63-7	63-7	NBOL	0.38	0.39	0.38
					NB#3	0.28	0.31	0.30
					NB#2	0.28	0.29	0.29
					NBIL	0.30	0.31	0.30
					SBOL	0.27	0.30	0.29
					SB#3	0.36	0.41	0.38
					SB#2	0.27	0.29	0.28
					SBIL	0.30	0.32	0.31
I 73101-024 (01017A)	I 675 from 165-ft W of 14th St W to Washington Ave., City of Saginaw	Sargent Contracting Co.	71-47	79-73	NBOL	0.47	0.52	0.50
					NBIL	0.52	0.57	0.55
					SBOL	0.55	0.58	0.57
					SBIL	0.54	0.57	0.55
I 73101-066 (01022A) I 73101-067 (01023A)	I 675 from 250-ft S of Ash St. N to 163-ft S of Schust Rd	Denton Construction Co.	71-47	63-54 & 79-73	NBOL	0.52	0.55	0.53
					NBIL	0.55	0.60	0.58
					SBOL	0.46	0.49	0.47
					SBIL	0.56	0.61	0.59
U 80033-001 (02543A) (part)	M 140 (LaGrange St) from 950-ft S of Aylworth Ave N to Phillips St	Titus Construction Co.	70-9	70-9	NBOL	0.44	0.50	0.47
					NBIL	0.33	0.43	0.37
					SBOL	0.40	0.44	0.42
					SBIL	0.28	0.33	0.30
U 80033-001 (02543A) (part)	M 43 - M 140 (Phillips St) from LaGrange St NW to Broadway St	Titus Construction Co.	70-9	70-9	NBOL	0.42	0.44	0.43
					NBIL	0.27	0.31	0.29
					SBOL	0.44	0.49	0.46
					SBIL	0.31	0.36	0.34
U 80033-001 (02543A) (part)	I 196 BL (Phoenix St) from Broadway St E to US 31	Titus Construction Co.	70-9	70-9	NBOL	0.39	0.41	0.40
					NBIL	0.40	0.43	0.41
					SBOL	0.42	0.44	0.43
					SBIL	0.42	0.44	0.43

TABLE 1 (Cont.)
CONCRETE PAVEMENTS CONSTRUCTED IN 1969, 1970, and 1971

	Project and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1970 CONT.	U 81083-001 (02544A)	US 12 BR (Hamilton & Huron Sts.) from Monroe St. N'ly Michigan Ave.	Thompson-McCully Asphalt Paving Co.	81-57	81-57	NBOL	0.57	0.59	0.58
						NBCL	0.47	0.51	0.49
						NBIL	0.51	0.55	0.54
						SBOL	0.56	0.60	0.59
						SBCL	0.44	0.47	0.46
						SBIL	0.50	0.58	0.54
	U 82062-013 (01185A)	US 12 (Michigan Ave) @ M 39 (Southfield Rd)	Eisenhour Construction Co.	E. C. Levy (Dix)	47-3 & 63-55	EBOL	0.44	0.48	0.46
						EB#3	0.44	0.47	0.45
						EB#2	0.49	0.53	0.51
						EBIL	0.53	0.56	0.54
						WBOL	0.53	0.56	0.55
						WB#3	0.47	0.53	0.50
						WB#2	0.42	0.47	0.45
						WBIL	0.44	0.47	0.46
	BI 82124-001 (01298A)	I 96 from S of Warren Ave to N of Myrtle St., City of Detroit	Cooke Contracting Co.	E. C. Levy (Dix)	63-7	EBOL	0.39	0.42	0.41
						EBIL	0.45	0.48	0.47
						WBOL	0.41	0.44	0.43
						WBIL	0.44	0.45	0.44
1971	BI 11014-010[a] (00087A)	I 94 from the Michigan-Indiana State Line NE to Madlin Rd	O'Connor Industries, Inc.	Material Service, Thornton, Illinois	14-45	NBOL	0.56	0.58	0.57
						NBCL	0.45	0.47	0.46
						NBIL	0.53	0.57	0.55
						SBOL	0.55	0.58	0.57
						SBCL	0.51	0.54	0.52
						SBIL	0.53	0.57	0.55
	M 50051-034 (00676A)	US 25 Southbound from 504-ft SW of Holly St. NE to 120-ft SW of Iroquois St.	John Carlo, Inc.	63-4 & E. C. Levy (Dix)	50-41 & 63-4	SBOL	0.54	0.57	0.56
						SB#3	0.49	0.51	0.50
						SB#2	0.52	0.54	0.53
						SBIL	0.45	0.50	0.48
	F 63041-015 (00859A)	M 59 from Williams Lake Rd E to W of Airport Rd	Macomb Concrete Corp.	63-56	63-56	EBOL	0.40	0.42	0.41
						EBIL	0.33	0.34	0.34
						WBOL	0.39	0.41	0.40
						WBIL	0.38	0.40	0.39
	F 73101-068 (01024A)	I 675 from Schust Rd. NE to 1150-ft N of Michigan Rd	Sargent Contracting Co.	71-47	79-73	NBOL	0.45	0.49	0.47
						NBIL	0.54	0.59	0.57
						SBOL	0.56	0.57	0.56
						SBIL	0.51	0.56	0.54

[a] For additional information see 1971 85/100 pen bit. conc.

TABLE 2
BITUMINOUS CONCRETE (4.12) CONSTRUCTED IN 1969, 1970 and 1971

	Project No. and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1969	Mb 63031-027	US 24 (Telegraph Rd) from N of Maple Rd (15 Mile Rd) N to S of Long Lake Rd	A & A Asphalt Paving Co.	63-4	63-4	NBOL	0.41	0.45	0.43
						NBIL	0.47	0.51	0.49
						SBOL	0.46	0.49	0.48
						SBIL	0.52	0.56	0.54
	Ms 81032-009	US 12 @ Carpenter Rd	Ann Arbor Construction Co.	47-3	47-3	EBOL	0.48	0.49	0.48
						EBIL	0.48	0.49	0.48
						WBOL	0.47	0.52	0.50
						WBIL	0.46	0.47	0.47
1970	Mb 19061-005 (01472A)	M 21 (State St) from 180-ft W of the W. City Limits of St. Johns E to 220-ft E of Scott Rd	Spartan Asphalt Paving Co.	47-3	47-43	EB	0.42	0.44	0.43
						WB	0.47	0.48	0.47
	Mb 25072-014 (01764A)	M 53 (Dort Hwy) from N of Bristol Rd N to Manitou St., City of Flint	Spartan Asphalt Paving Co.	47-3	63-54	NBOL	0.44	0.48	0.46
						NBIL	0.42	0.44	0.43
						SBOL	0.40	0.41	0.41
						SBIL	0.43	0.47	0.46
	Ms 33082-021 (00480A)	M 43 from 767-ft W of Okemos Rd. E to 961-ft E of Marsh Rd	Spartan Asphalt	47-3	47-3	EBOL	0.59	0.60	0.59
						EBIL	0.52	0.57	0.54
						WBOL	0.62	0.66	0.64
						WBIL	0.57	0.60	0.59
	Mb 43021-001 (01562A)	US 10 from 1229-ft NW of Campbell Rd., in Mason Co., E to M 37 in Lake Co.	Reith-Riley Construction Co., Inc.	62-33	62-33	EB	0.58	0.66	0.63
						WB	0.62	0.68	0.65
	Mb 55051-037 (01702A)	US 25 from 1160-ft N of Easy St., NE to 168-ft N of 21 Mile Rd.	Ward & VanNuck, Inc.	50-35 & 63-4	50-35	NBOL	0.49	0.51	0.50
						NBIL	0.57	0.62	0.59
						SBOL	0.48	0.52	0.50
						SBIL	0.61	0.63	0.62
	Mb 62031-012 (01610A)[1]	M 37 - M 46 from N of Grant N to S of 96th St	Paul C. Miller	70-09	70-09	NB	0.60	0.64	0.61
						SB	0.63	0.63	0.63
	Mb 63041-017 (01623A)	M 59 from Tipico Lake Rd. E to Williams Lake Rd., omitting at Duck Lake Rd.	Detroit Concrete Products Corp.	47-3	63-48	EB	0.49	0.61	0.54
						WB	0.47	0.56	0.51

[1] Skid Tests were conducted during test year 1970

TABLE 2 (Cont.)
BITUMINOUS CONCRETE (4.12) CONSTRUCTED IN 1969, 1970 and 1971

	Project No. and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1970 CONT.	I 72061-001 (00993A)	I 75 from 9 Mile Hill Rd N 6.17 miles to W of M 18 structure	Hodgkiss & Douma, Inc.	65-7	72-5	NBOL	0.63	0.68	0.66
						NBIL	0.64	0.67	0.65
						SBOL	0.58	0.63	0.60
						SBIL	0.64	0.66	0.65
	M 82101-014 (02593A)	M 14 from Inkster Rd E to Telegraph Rd.	A & A Asphalt Paving Co.	47-3	63-7	EBOL	0.44	0.47	0.45
						EBIL	0.45	0.50	0.48
						WBOL	0.37	0.42	0.40
						WBIL	0.44	0.49	0.47
1971	BI 11014-010 [2] (00087A)	I 94 from the Michigan-Indiana State Line NE to Madlin Rd	Reith-Riley Construction Co., Inc.	US Steel Gary, Indiana	Hunt's Pit, Rolling Prairie, Indiana	NBOL	0.56	0.58	0.57
						NBCL	0.67	0.68	0.68
						NBIL	0.77	0.79	0.78
						SBOL	0.64	0.65	0.64
						SBCL	0.67	0.68	0.68
						SBIL	0.72	0.75	0.73
	Mb 14061 (01749A)	M 60 from 2630-ft W of Burnlynd Rd. NE & E to M 62	Reith-Riley Construction Co., Inc.	39-1	14-36	EB	0.43	0.49	0.46
						WB	0.42	0.54	0.47
	Mb 23031 (01781A)	US 27 BR from 1930-ft S of Broadway Hwy. N to 50-ft N of Battle Creek River Bridge, City of Charlotte	Reith-Riley Construction Co., Inc.	41-38	19-33	NB	0.43	0.44	0.44
						SB	0.39	0.42	0.40
	Mb 24011 (01710A)	US 31 from 770-ft E of M 131 NE to N of S Village Limits of Alanson	Hodgkiss & Douma, Inc.	17-30	15-32	NB	0.41	0.46	0.43
						SB	0.41	0.48	0.44
	Mb 33043 [3] (00449A)	M 78 from W of Touraine St. SW to Grand River Ave, thence W on M 43 - M 78 (Grand River Ave.) to Homer St.	Spartan Asphalt Paving Co.	41-38	47-43	EBOL	0.41	0.44	0.42
						EBIL	0.43	0.44	0.44
						WBOL	0.43	0.44	0.44
						WB#3	0.45	0.46	0.45
						WB#2	0.46	0.47	0.47
						WBIL	0.38	0.41	0.39
	SS 34081-001 (00503A)	M 44 (Belding Rd) from Lincoln Lake Rd in Kent Co. E to Bridge over Flat River in Belding	Reith-Riley Construction Co., Inc.	41-38	41-46	EB	0.56	0.61	0.58
						WB	0.55	0.56	0.55
	RSS 34081-002 (00502A)	M 44 from Bridge over Flat River in Belding E to M 66	Reith-Riley Construction Co., Inc.	41-38	41-46	EB	0.35	0.47	0.41
						WB	0.42	0.46	0.44

[2] For additional information see 1971 construction concrete

[3] For additional information see 71 SR-21

TABLE 2 (Cont.)
BITUMINOUS CONCRETE (4.12) CONSTRUCTED IN 1969, 1970 and 1971

1971 CONT.

Project No. and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
Mb 46101 (00643A & 01789A)	US 12 from 904-ft W of M 50 W to 56-ft E of US 127	Ayling-Cunningham Asphalt Paving Co.	30-35	46-28	EB WB	0.44 0.40	0.46 0.44	0.45 0.42
Mb 55022 (03031A)	US 2 - US 41 from the Menominee-Delta Co. Line W 7.633 miles to 1.2 mile E of Spaulding	Payne & Dolan of Wisconsin, Inc.	55-76	55-76	EB WB	0.51 0.48	0.58 0.56	0.54 0.52
Mb 59021 (01728A & 03145A)	M 57 (Carson City Rd) from 16-ft W of West City Limits of Greenville E to M 91	Reith-Riley Construction Co., Inc.	41-38	41-38	EBOL EBIL WBOL WBIL	0.40 0.33 0.38 0.38	0.46 0.36 0.41 0.42	0.43 0.34 0.40 0.40
Mtb 61011-001 (00823A)	M 123 from Scenic Dr E to M 120	Reith-Riley Construction Co., Inc.	75-5	62-33 & 70-9	EB WB	0.38 0.36	0.40 0.37	0.39 0.37
F 61023-005 (00824A)	M 46 from 360-ft E of Brooks Rd E to 730-ft E of Maple Island Rd	Reith-Riley Construction Co., Inc.	41-38	75-5	EBOL EBIL WBOL WBIL	0.38 0.38 0.37 0.44	0.42 0.40 0.40 0.45	0.40 0.39 0.38 0.45
Mb 63151-012 (01619A)	US 10 BR - I 75 BL (Woodward Ave from Square Lake Rd NW to Wide-track Drive in Pontiac	Ajax Paving Industries, Inc.	63-4	63-23	NBOL NB#3 NB#2 NBIL SBOL SB#3 SB#2 SBIL	0.61 0.49 0.50 0.50 0.48 0.43 0.47 0.54	0.64 0.51 0.52 0.53 0.52 0.46 0.51 0.56	0.62 0.52 0.51 0.51 0.50 0.45 0.49 0.55
I 72061-002 (00999A)	I 75 from NW of M 18 NW to N of M 18 - M 76 in Roscommon and Crawford Cos.	Globe Construction Co.	20-33	20-33 & 27-25	NBOL NBIL SBOL SBIL	0.46 0.50 0.52 0.52	0.50 0.52 0.54 0.54	0.48 0.51 0.53 0.53

TABLE 3
BITUMINOUS AGGREGATE (4.11) CONSTRUCTED IN 1970 and 1971

	Project No. and/or Job No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1970	Mb 72051-002	M 18 from Roscommon-Gladwin Co. Line N intermittently to 1454-ft S of M 55	Hodgkiss & Douma, Inc.	72-42	None	NB SB	0.50 0.48	0.53 0.52	0.52 0.49
1971	Mtb 06011 (01857A) & Mtb 65031 (02444A)	M 76 from 455-ft N of Maple Ridge Rd NW to 525-ft S of S I 75 Business Connector	Central Paving Co.	65-47	None	NB SB	0.34 0.41	0.49 0.50	0.41 0.46
	RSS 18041-004 (00236B)	M 61 from the Muskegon River E to Fourth St. in the City of Harrison	Saginaw Asphalt Paving Co.	18-7	None	EB WB	0.40 0.42	0.56 0.58	0.46 0.48
	Mb 27051 (03938A)	US 45 from the Michigan-Wisconsin State Line N to US 2	Hocking Construction Co.	27-20	None	NB SB	0.23 0.21	0.26 0.23	0.24 0.22
	Mtb 32092-006 (00427A)	US 25 @ two locations; near Grindstone City and near Huron City	Reith-Riley Construction Co., Inc.	32-48	None	EB WB	0.67 0.64	0.68 0.68	0.68 0.66
	Mb 38021 (01784A)	M 124 from US 12 in Lenawee Co. N & W to M 50 in Jackson Co.	Ayling-Cunningham Asphalt Paving Co.	38-10	None	EB WB	0.43 0.29	0.47 0.31	0.45 0.30
	Mb 72052 (03809A) part	M 18 from M 55 N intermittently to S Village Limits of Roscommon	Hodgkiss & Douma, Inc.	72-42	None	NB SB	0.27 0.27	0.50 0.52	0.40 0.43
	Mb 72052 (03809A) part	M 55 from Missaukee-Roscommon Co. Line E to 1000-ft W of US 27	Hodgkiss & Douma, Inc.	72-42	None	EB WB	0.38 0.35	0.43 0.39	0.41 0.37
	Mm 2BA-4A [1] (Control Section 65032)	M 55 from 60-ft E of Green Rd W in Ogemaw Co.	Central Paving Co.	72-42	None	EB WB	0.20 0.21	0.26 0.25	0.23 0.24

1 For additional tests see 71 SR-15 and 71 SR-23

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
Mm 1 SC-4B (Control Sections 60021 & 60022)[1]	M 32 at 12 locations between Hillman and Atlanta	Peninsula Asphalt Corp.	65-7	----	EB WB	0.06 0.06	0.29 0.38	0.15 0.22
Mm 1 SC-4C (Control Section 71091)	US 23 BR from N Junction with US 23 E 0.7 mile	Alcona Asphalt Paving Co.	65-7	----	NB SB	0.35 0.42	0.40 0.47	0.37 0.44
Mm 1 SC-4D (Control Section 24051)	M 131 at 5 locations from Harbor Springs N to Cross Village	Lake Construction Co. & Howell Construction Co.	17-20	----	NB SB	0.61 0.59	0.64 0.64	0.63 0.61
Mm 1 SC-7A (part)(Control Section 08012)	M 43 from Freeport Rd N of Hastings, E to S Junction of M 66	Reith Riley Construction Co.	34-45	----	EB WB	0.38 0.16	0.55 0.51	0.47 0.38
Mm 1 SC-7A (part)(Control Section 08052)	M 66 from N Village Limits of Nashville N to Junction with M 50	Reith Riley Construction Co.	34-45	----	NB SB	0.40 0.34	0.48 0.45	0.43 0.40
Mm 1 SC-7A (part)(Control Section 08081)	M 50 from the Ionia-Barry County Line S & E to Junction with M 66	Reith Riley Construction Co.	34-45	----	EB WB	0.42 0.42	0.47 0.45	0.45 0.44
Mm 1 SC-9A[2] (Control Section 77011)	M 19 from N City Limits of Memphis N 6 miles to the S. Village Limits of Emmet	Ward & VanNuck, Inc.	63-4	----	NB SB	0.46 0.44	0.48 0.47	0.47 0.45

[1] For additional information see 71 SR-19 and 71 SR-23 in Special Request Table.
[2] For additional information see 71 SR-18 in Special Request Table.

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	18	35.774	0.50
Concrete	1	68	106.736	0.48
Concrete	2	21	22.320	0.46
Bituminous Concrete	Initial	48	158.558	0.49
Bituminous Concrete	1	28	89.704	0.54
Bituminous Concrete	2	8	8.104	0.48
Bituminous Aggregate	Initial	16	97.698	0.40
Bituminous Aggregate	1	2	20.060	0.50
Surface Treatment	Initial	14	132.078	0.42

SECTION II

FRICTION LEVELS DETERMINED FOR PAVEMENTS AFTER FIVE YEARS OF SERVICE

FRICTION LEVELS DETERMINED FOR PAVEMENTS AFTER FIVE YEARS OF SERVICE

Tables 6 through 8 contain skid test results from 50 portland cement concrete projects consisting of 162 lanes (360.267 lane miles) which were constructed during 1966. Initial service year tests were conducted on nine of these projects and resulting wsf values averaged 0.46. Twenty-six of the projects were initially tested in 1967, after a one-year service period. Respective friction levels for these averaged 0.46. Fifteen projects, first tested in their second service year, had an average coefficient of 0.47. After five years of service, these same 50 projects were retested and 51 of the 162 lanes, representing 22 percent of the total lane mileage, showed average coefficients below 0.40. Projects U 38071A, C1, F 59045A, C2, U 83032A, C6, F 66033C, C2, U 82052E, C36, U 50051E, C25, U 63052A, C18, and U 82062-010 had average five-year friction levels below the Departmental Safety Standard on all lanes tested.

Tables 9 through 11 list skid test results of 25 bituminous concrete projects constructed during 1966. In all, 73 lanes (229.002 lane miles) were tested. Average coefficients of friction determined during the initial and after a one- and two-year service period were 0.46, 0.43 and 0.45 respectively. Skid tests were conducted again during 1971, after five years of service, on these same 25 projects. Project Mb 82121-010 had three of its four lanes just below the 0.40 mark. This represents only 3 of the total lane mileage. Other than that, good friction levels exist, as all of the remaining lanes have average five-year wsf values of 0.40 or higher.

Tables 12, 13, and 14 contain skid test results from 17 bituminous aggregate (4.11) projects of which 29 lanes (140.318 lane miles) were tested. Four of these were tested during their initial service year; the average wsf value was 0.39. Twelve projects were tested after a one-year service period and resulting skid tests yielded an average friction level of 0.44. The remaining project, initially tested in 1968, exibited a 0.65 and 0.66 average two-year friction level on the two lanes tested. Skid tests conducted in 1971 on these bituminous aggregate projects yielded a 0.40 or higher coefficient on all lanes tested. Average five-year friction levels ranged from 0.40 to 0.76 and averaged 0.55.

Table 15 contains a Special Hot Emulsion project. In 1966, initial skid tests were conducted on both lanes (20.4 lane miles) and average coefficients of 0.38 and 0.40 were determined on the northbound and southbound

lanes, respectively. At the five-year service level, both lanes have average wsf values of 0.37.

Table 16 contains a bituminous aggregate (4.09) project. Coefficients of 0.59 and 0.60, representing 32.082 lane miles, were determined in 1967 on the northbound and southbound lanes, respectively. 1971 tests indicated increased skid resistance at the five-year level with averaged coefficients of 0.67 and 0.61 for the northbound and southbound lanes.

As in previous reports, portland cement concrete, bituminous concrete, and bituminous aggregate pavements which have had skid tests conducted at the one- and five-year service level have been selected for further study. Correlations determined between one- and five-year wsf values make it possible to estimate, within certain confidence limits, a five-year friction level from a one-year value. Following is a summary of determinations made from 495 lanes which were constructed in a period from 1963 through 1966.

Portland Cement Concrete

Two-hundred and ten portland cement concrete lanes yielded an average one-year wsf value of 0.50. The average five-year coefficient was 0.48 or 0.02 lower.

Bituminous Concrete

The average one-year friction level determined on 222 lanes of bituminous concrete was 0.46. The average five-year value was 0.52, thereby indicating an increase of 0.06 in skid resistance after four additional years of service.

Bituminous Aggregate

At the one- and five-year service level, average coefficients of 0.48 and 0.57, respectively, were determined on 63 lanes of bituminous aggregate (4.11) pavements.

Linear regressions relating one- and five-year wsf values were computed for concrete, bituminous concrete, and bituminous aggregate pavements which were constructed during 1963, 1964, 1965, or 1966. Linear regressions are shown graphically for each surface type within each of the four construction years. Also a linear regression which combines data from all four construction years is shown for each surface type. These

regressions are shown in Figures 1, 2, and 3. All include the following information:

a) Equation of Best Fit Line -- This line makes it possible to estimate within certain confidence levels, five-year wsf values from one-year wsf values.

b) Correlation Coefficient -- The closer this figure is to 1, the better the linear relationship between variables being compared. The closer the number is to 0, the poorer the linear relationship.

c) Standard Error of Estimate -- This is a measure of the confidence level of the linear relationship found between the one- and five-year wsf values and is expressed in terms of Y-scale units. The band formed by the standard error will contain about 68 percent of the data.

d) Sample Size -- The number of lanes with average one-year wsf values and average five-year wsf values.

e) X and Y -- The average of all one-year coefficients is X. The average of all five-year values is Y.

Trends noted in last year's report, "Summaries of Michigan Pavement Skid Resistance--1970 Test Program," are continued with the addition of 1971 data. Portland cement concrete pavements tend to decrease in skid resistance with age during the first five years of service. In contrast, bituminous pavements tend to increase in friction level during the first five service years. Extrapolating friction levels beyond the fifth service year, one might expect portland cement concrete pavements to continue to show a slight decline in skid resistance. Skid coefficients on the bituminous pavements might be expected to level off and gradually decline as exposed aggregates become polished.

TABLE 6
CONCRETE PAVEMENTS TESTED DURING 1966 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1971
U 38071A, C1	US 127BR relocation from N of Mansion St NW to N of E Franklin St. in Jackson	Eisenhour Construction Co., Inc.	Pits 30-35 & 47-3	Pit 30-35	NBOL	0.48	0.28
					NBIL	0.53	0.30
					SBOL	0.49	0.31
					SBIL	0.54	0.34
I 47064A, C20 I 63022A, C10	I 96 from existing 36-ft pavement, E of US 23, SE to 1025 ft W of Beck Rd., omitting from Livingston-Oakland Co. Line E to E of Kent Lake Rd.	L. W. Edison Co.	Pit 63-7	Pit 63-7	EBIL	0.48	0.38
					WBIL	0.48	0.44
F 59045A, C2	M 46 from 488 ft E of M 66 E to Second St. in Edmore	Denton Construction Co.	Pits 67-2 & 37-26	Pit 37-26	EB	0.38	0.33
					WB	0.41	0.31
I 63022A, C9	I 96 from Beck Rd. SE to I 696	L. W. Edison Co.	Pits 63-7	Pit 63-7	EBIL	0.49	0.46
					WBIL	0.46	0.43
F 67015A, C1	US 131 relocation from 860 ft S of 1 Mile Rd. N to 1717 ft N of Marion Rd.	Denton Construction Co.	Pit 67-2	Pit 67-2	NB	0.45	0.45
					SB	0.42	0.51
F 67015A, C2 F 83031A, C6	US 131 relocation N from 1717 ft N of Marion Rd. to 0.52 mi. N of Osceola Wexford Co. Line	Denton Construction Co.	Pit 67-2	Pit 67-2	NB	0.43	0.45
					SB	0.40	0.47
U 83032A, C6	US 131 from 13th St. to Boon Rd. in Cadillac	Hogdkiss & Douma, Inc.	Pit 67-2	Pit 67-2	NBOL	0.49	0.33
					SBOL	0.44	0.35

TABLE 7
CONCRETE PAVEMENTS TESTED DURING 1967 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1971
F 02041B, C5	M 28 from County Rd 801 E to intersection of M 28 and Hickory St.	Bacco Construction Co.	Pit 75-5	Pit 70-9	NBOL	0.44	0.41
					NBIL	0.44	0.47
					SBOL	0.44	0.41
					SBIL	0.38	0.39
EBBF 09091A, C4 & EBBF 73075A, C4	SB M 47 from 2268-ft S of Buck Rd N to 3044-ft N of Salsbury Rd	Sargent Construction Co.	Pits 67-2 & 75-5	Pits 67-2 & 79-21	SBOL	0.50	0.44
					SBIL	0.50	0.48
I 12033A, C9	I 69 from N of Copeland Rd to N of Maxon Rd S of Coldwater	Rieth-Riley Construction Co., Inc.	Pits 12-31 & 12-43	Pit 12-43	NBOL	0.64	0.41
					NBIL	0.66	0.57
					SBOL	0.63	0.38
					SBIL	0.63	0.63
BI 13033D, C10 I 13033E, C11	I 194 from Golden Ave, S of Battle Creek, N to intersection of Division and Jackson Sts. in Battle Creek	Carl Goodwin & Sons, Inc.	Pit 08-80	Pit 08-05	NBOL	0.46	0.50
					NBIL	0.50	0.58
					SBOL	0.46	0.41
					SBIL	0.47	0.51
SS 25101C, C8 SS 73021C, C11	M 57 (Peet Rd) commencing 378 ft W of Stuart Rd thence E to 211 ft W of W village limits of Montrose	Sargent Construction Co.	Pit 71-47	Pit 76-1	EB	0.50	0.42
					WB	0.50	0.37
F 32011A, C6	M 25 (Conboro Rd) from N limits of Sebewaing NE on relocation to Lange Rd, thence E along Dutcher Rd to Unionville Rd	Sargent Construction Co.	Pit 32-4	Pit 79-63	NB	0.49	0.51
					SB	0.54	0.49
F 33035A, C6	US 127 from 2000 ft N of Columbia Rd N to 2000 ft S of Holt Rd	Sargent Construction Co.	Pit 47-3	Pit 33-79	NBOL	0.53	0.46
					NBIL	0.52	0.60
					SBOL	0.47	0.45
					SBIL	0.55	0.62

TABLE 7 (Cont.)
CONCRETE PAVEMENTS TESTED DURING 1967 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1971
I 63022-021	I 96 from the Livingston-Oakland County Line E 1.70 miles	Sargent Construction Co.	Pit 47-3	Pit 47-3	EBOL	0.32	0.42
					EBCL	0.38	0.44
					EBIL	0.49	0.50
					WBOL	0.42	0.39
					WBCL	0.49	0.47
					WBIL	0.49	0.50
F 66033C, C2	US 45 (River St) from M 64 (Ontonagon St) SE to Steel St. in the village of Ontonagon	Fox Valley Construction Co.	Pit 27-66	Pit 27-55	EB	0.37	0.35
					WB	0.37	0.34
F 73073D, C6	M 47 from Sarle Rd SE to M 81, W of Saginaw	Denton Construction Co.	Pits 17-40 & 71-47	Pits 67-2 & 79-21	NBOL	0.50	0.39
					NBIL	0.52	0.48
					SBOL	0.47	0.41
					SBIL	0.50	0.49
F 74061A, C2	M 46 from the W Sanilac County Line E to M 53	L. W. Edison Company	Pit 32-4	Pits 79-21 & 79-29	EB	0.46	0.42
					WB	0.51	0.42
F 79042A, C3	M 46 from M 24 to the village limits of Kingston	L. W. Edison Company	Pit 32-4	Pits 79-21 & 79-29	EB	0.53	0.42
					WB	0.56	0.43
F 79042A, C4	M 46 from E village limits of Kingston E to County Line	L. W. Edison Company	Pit 32-4	Pits 79-21 & 79-29	EB	0.53	0.48
					WB	0.53	0.47
U 82052E, C31	US 24 from Hayes St N to Cypress St	The Kutchins Company	E. C. Levy (Trenton)	Pit 47-15	NBD	0.39	0.41
					NBOL	0.41	0.38
					NBCL	0.43	0.41
					NBIL	0.45	0.38
					SBD	0.40	0.35
					SBOL	0.38	0.38
					SBCL	0.42	0.39
					SBIL	0.41	0.40

TABLE 7 (Cont.)
CONCRETE PAVEMENTS TESTED DURING 1967 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1971
U 82052E, C36	US 24 from Cypress St N to Van Born St	Cooke Contracting Co.	E. C. Levy (Dix)	Pit 82-10	NBOL	0.43	0.36
					NBCL	0.42	0.37
					NBIL	0.43	0.38
					SBOL	0.35	0.38
					SB #3	0.36	0.37
					SB #2	0.44	0.35
					SBIL	0.41	0.37
I 82191K, C29 I 82191J, C35	I 75 (Seaway Freeway) from N of Dix-Toledo Rd to N of Southfield Rd	The Kutchins Company	E. C. Levy (Dix & Trenton)	Pits 47-3 & 47-15	NBOL	0.39	0.38
					NBCL	0.43	0.42
					NBIL	0.46	0.45
					SBOL	0.37	0.38
					SBCL	0.44	0.44
					SBIL	0.48	0.45
I 82191J, C44	I 75 (Seaway Freeway) from S of US 25 to N of US 25	Cooke Contracting Co.	E. C. Levy (Dix)	Pits 63-7 63-55 & 82-10	NBOL	0.40	0.39
					NBCL	0.45	0.43
					NBIL	0.49	0.48
					SBOL	0.38	0.38
					SBCL	0.43	0.45
					SBIL	0.50	0.47
BI 82194E, C4 BI 82194F, C5	I 75 (Fisher Freeway) from S of Schaefer to Leonard Ave	The Kutchins Company	E. C. Levy (Dix)	Pits 47-15 82-5 & 82-10	NBOL	0.43	0.41
					NBCL	0.41	0.43
					NBIL	0.43	0.45
					SBOL	0.35	0.41
					SBCL	0.43	0.43
					SBIL	0.46	0.46
I 82194A, C12 I 82194B, C13 I 82194D, C14	I 75 (Seaway Freeway) from N of Southfield to S of Schoolcraft	L. A. Davidson Company	E. C. Levy (Dix & Trenton)	Pits 63-55 & 82-10	NBOL	0.42	0.42
					NBCL	0.42	0.43
					NBIL	0.43	0.49
					SBOL	0.32	0.39
					SBCL	0.41	0.43
					SBIL	0.45	0.47

TABLE 8
CONCRETE PAVEMENTS TESTED DURING 1968 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1971
U 50051E, C25	US 26 (SB) from Gratiot Ave to Welts St	Anderson & Ruzzin, Inc.	E. C. Levy	50-1 &	SBOL	0.42	0.32
			Dix	50-41	SBCL	0.42	0.38
					SBIL	0.46	0.37
BI 50111G, C73	I 94 from S of 8 Mile Rd N to 10 Mile Rd	Eisenhour Construction Co., Inc.	E. C. Levy	50-41	NBOL	0.41	0.42
I 82025H, C47			Dix		NBCL	0.47	0.45
					NBIL	0.47	0.44
					SBOL	0.36	0.40
					SBCL	0.40	0.48
					SBIL	0.49	0.50
BI 50111G, C74	I 94 from 10 Mile Rd N to 12 Mile Rd	Eisenhour Construction Co., Inc.	E. C. Levy	50-41	NBOL	0.40	0.42
			Dix		NBCL	0.45	0.47
					NBIL	0.56	0.49
					SBOL	0.39	0.44
					SBCL	0.45	0.50
					SBIL	0.56	0.51
BI 50111G, C75	I 94 from 12 Mile Rd N to 14 Mile Rd	Eisenhour Construction Co., Inc.	E. C. Levy	50-41	NBOL	0.39	0.48
			Dix		NBCL	0.44	0.52
					NBIL	0.60	0.46
					SBOL	0.41	0.44
					SBCL	0.52	0.54
					SBIL	0.58	0.54
U 63052A, C18	M 24 from Telegraph Rd E to Woodward Ave	Cooke Contracting Co.	63-4	63-4	EBOL	0.30	0.30
					EBCL	0.34	0.34
					EBIL	0.45	0.33
					WBOL	0.27	0.33
					WBCL	0.32	0.34
					WBIL	0.37	0.35
I 63174B, C61	I 75 from 6th St N to Sprague St	Cooke Contracting Co.	E. C. Levy	82-5 &	NBOL	0.42	0.35
			Dix	50-41	NBCL	0.39	0.42
					NBIL	0.53	0.48
					SBOL	0.38	0.39
					SBCL	0.46	0.41
					SBIL	0.63	0.41

TABLE 8 (Cont.)
CONCRETE PAVEMENTS TESTED DURING 1968 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1971
I 63174A, C66	I 75 from Bernhard St N to Manatee St	Cooke Contracting Co.	E. C. Levy Dix	50-41	NBOL	0.54	0.40
					NB#3	0.43	0.42
					NB#2	0.53	0.46
					NBIL	0.50	0.48
					SBOL	0.50	0.41
					SB#3	0.40	0.42
					SB#2	0.46	0.43
					SBIL	0.57	0.43
F 77023A, C2	M 21 reloc. from E of Barth Rd E to near Michigan Rd	Denton Construction Co.	75-5 & 71-47	50-26	EBOL	0.55	0.41
					EBIL	0.66	0.52
					WBOL	0.49	0.43
					WBIL	0.61	0.54
U 77023B, C9	M 21 reloc. from 40th St E to M 146	Eisenhour Construction Co., Inc.	75-5	50-26	EBOL	0.49	0.39
					EBIL	0.51	0.39
					WBOL	0.53	0.30
					WBIL	0.53	0.47
U 82062-010	US 12 from W of Haigh St W to E of US 24 (WB only)	Thompson-McCully Co.	63-7	63-7	WBOL	0.34	0.27
					WB#3	0.29	0.30
					WB#2	0.37	0.30
					WBIL	0.34	0.29
BI 82194E, C4 BI 82194F, C5	I 75 from S of Schaefer Rd N to Leonard Ave	Kutchins Co., Inc.	E. C. Levy (Trenton & Dix)	82-10 82-5 & 47-15	NBOL	0.43	0.41
					NBCL	0.45	0.43
					NBIL	0.56	0.45
					SBOL	0.39	0.41
					SBCL	0.51	0.43
					SBIL	0.58	0.46
BI 82194I, C22 BI 82194H, C24	I 75 from W of Green Ave E to W of Livernois Ave	L. A. Davidson Co.	E. C. Levy Dix	82-10 & 63-55	NBOL	0.45	0.45
					NB#3	0.50	0.48
					NB#2	0.53	0.52
					NBIL	0.58	0.52
					SBOL	0.45	0.43
					SB#3	0.49	0.44
					SB#2	0.59	0.54
					SBIL	0.61	0.63

TABLE 9

BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1966 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1971
F 55012B, C7 F 55012D, C8	US 41 from N limits of Daggett N to 740 ft S of US 2	Payne & Dolan of Wisconsin Inc.	Pit 55-119	Pit 55-4	NBOL NBIL SBOL SBIL	0.46 0.53 0.46 0.52	0.54 0.54 0.55 0.52
F 74072C, C2	US 25 from N of Huron Ave. in Lexington N to S limits of Port Sanilac	Rieth-Riley Construction Co., Inc.	Pits 17-40 & 32-4	Pits 63-4 & 74-60	NB SB	0.49 0.53	0.58 0.56
F 83031A, C6 (part)	US 131 relocation N from 0.52 mi. N of Osceola-Wexford Co. Line to existing US 131	The Hicks Co.	Pit 67-2	Pit 67-2	NBOL NBIL SBOL SBIL	0.46 0.49 0.42 0.45	0.70 0.75 0.69 0.75
F 83031A, C6 (part)	M 115 from intersection with old US 131 W 0.7 mi.	The Hicks Co.	Pit 67-2	Pit 83-57	EBOL EBIL WBOL WBIL	0.47 0.43 0.44 0.44	0.57 0.53 0.49 0.54
U 83032A, C6	US 131 from Clam River to Boon Rd. in Cadillac	Hodgkiss & Douma, Inc.	Pit 67-2	Pit 67-2	NBOL NBIL SBOL SBIL	0.41 0.44 0.44 0.40	0.50 0.51 0.47 0.52

TABLE 10

BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1967 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1971
Mb 10012C, C1	M 22 in Frankfort from M 115 (Forest Ave) W & N to 400-ft N of South Shore Rd	Hodgkiss & Douma, Inc.	Pit 67-2	Pit 10-25 & Local Pit	NB SB	0.49 0.43	0.55 0.53
Mb 25021C, C2	US 23 BR from US 23 SE on US 23 BR (Silver Lake Rd) to Beach St in Fenton	Flint Asphalt and Paving Co.	Pit 63-4	Pit 63-54	EB WB	0.36 0.33	0.50 0.51
Mb 29031C, C3	US 27 BR from 2610-ft S of N city limits of Alma, N to M 46	The Hicks Company	Pit 37-26	Pit 37-26	NB SB	0.37 0.47	0.56 0.61
F 35031C, C2 F 35032C, C6	US 23 from S limits of Tawas City at M 55 (Hemlock St) thence NE to E city limits	Central Paving Company	Pit 65-7	Pit 71-15	NBOL NBIL SBOL SBIL	0.39 0.44 0.37 0.41	0.51 0.51 0.52 0.54
SS 38011A, C2	M 99 from E village limits of Springport E & N to Crawford Rd	Workman Richardson Asphalt Co.	Pit 38-46	Pit 38-46	NB SB	0.55 0.56	0.70 0.65
F 41122A, C1	M 57 from Ramsdell Dr E to Kent-Montcalm County Line	Rieth-Riley Construction Co.	Pit 41-38	Pit 41-101	EB WB	0.44 0.48	0.57 0.54
F 41122D, C4	M 57 from Teft Ave E to Ramsdell Dr	Rieth-Riley Construction Co.	Pit 41-38	Pit 41-101	EB WB	0.47 0.45	0.59 0.61
F 59021A, C2	M 57 from Kent-Montcalm County Line E to Greenville	Rieth-Riley Construction Co.	Pit 41-38	Pit 41-101	EB WB	0.31 0.32	0.54 0.49
Mb 61073C, C5	US 31 BR from 90-ft N of Water St in Montague N on US 31 BR - US 31 to the Muskegon-Oceana County Line	Paul C. Miller	Pits 17-40 & 41-38	Pit 70-9	NB SB	0.44 0.48	0.55 0.58
Mb 70081C, C7	M 104 from 300-ft W of Savidge Rd., in Spring Lake, E to I 96, omitting from Cutler St to Fruitport St., in Spring Lake	Muskegon Asphalt Paving Co.	Pit 70-38	Pit 70-9	EB WB	0.45 0.42	0.59 0.56

TABLE 11
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1968 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1971
Mb 50051C, C26	US 25 from Welts St N to N of Patterson Ave	Ward & VanNuck, Inc.	50-35 & 63-4	50-35	NBOL	0.40	0.45
					NBCL	0.44	0.49
					NBIL	0.44	0.48
Mb 63051C, C25 Mb 63051C, C26	US 10 (SB) from Lincoln Ave SE to Webster Rd	A & A Asphalt Paving Co.	47-3	47-3	SBOL	0.42	0.46
					SB#3	0.45	0.47
					SB#2	0.46	0.45
					SBIL	0.47	0.47
F 77023D, C11	M 21 reloc (WB) from M 146E to US 25	Blue Water Asphalt Co., Inc.	17-40	63-4	WBCL	0.47	0.50
					WBIL	0.49	0.52
Mb 81031A, C4	US 12 from NE of Maple Rd, thence NE 0.707 mi	Washtenaw Asphalt Co.	47-3	81-57	EBOL	0.54	0.57
					EBIL	0.59	0.58
					WBOL	0.57	0.57
					WBIL	0.57	0.61
Mb 81072C, C6	I 94 BL from W of Arlington Blvd E to W of Chalmers Rd	Ann Arbor Construction Co.	47-3	81-57	EBOL	0.52	0.55
					EBIL	0.53	0.58
					WBOL	0.51	0.54
					WBIL	0.55	0.58
U 82062-010	US 12 from US 24 E to Haigh St	Thompson-McCully Asphalt Paving Co.	47-3	81-82	EBOL	0.39	0.43
					EB#3	0.44	0.44
					EB#2	0.46	0.46
					EBIL	0.44	0.43
					WBOL	0.44	0.45
					WB#3	0.42	0.45
					WB#2	0.46	0.50
					WBIL	0.42	0.50
Mb 82101-012	M 14 from Greenfield Rd W to Auburn Rd	Detroit Asphalt Paving Co.	47-3	47-3	EBOL	0.38	0.46
					EBIL	0.41	0.48
					WBOL	0.37	0.42
					WBIL	0.40	0.46
Mb 82121-010	I 96 BS from Washington Ave to W Chicago Ave	Detroit Asphalt Paving Co.	47-3	50-41	EBOL	0.37	0.38
					EBIL	0.35	0.39
					WBOL	0.36	0.39
					WBIL	0.40	0.40

TABLE 12

BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1966 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1971
SS 15071B, C4	M 75 relocation from 0.14 mi E of Boyne City NE to existing M 75	Hodgkiss & Douma, Inc.	Pit 15-43	None	EB WB	0.41 0.40	0.49 0.50
SS 20031A, C2	M 93 relocation from 800 ft N of Weber Rd., N and E to intersection with existing M 93-M 72	Hodgkiss & Douma, Inc.	Pit 20-28	None	NB SB	0.32 0.36	0.52 0.54
Mb 20031C, C3	M 93 from 344 ft S of Military Rd., N and E 1.13 mi	Hodgkiss & Douma, Inc.	Pit 20-28	None	EB WB	0.38 0.43	0.52 0.54
Mb 31031-3	M 203 W limits of Calumet W 1.587 mi.	George Hocking Construction Co.	Pit 31-65	None	EB WB	0.41 0.43	0.40 0.45

TABLE 13
BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1967 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1971
F 01052A, C2 F 04031C, C1	US 23 from a point 0.947 mi SE of the Alcona-Alpena County Line thence NW 8.878 miles	Saginaw Asphalt Paving Co.	Pit 04-47	Pit 04-47	NB SB	0.42 0.46	0.59 0.60
Mb 05011A, C8 Mb 28013E, C3	US 31 from M 72 thence N to a point 0.92 mi N of the Antrim-Grand Traverse County Line	Peninsula Asphalt & Constr. Co.	Pit 45-13	Pit 45-13	NB SB	0.37 0.37	0.47 0.47
F 10041-2 (Part)	M 115 (Forest Ave) from M 22 (Lake St) in the city of Frankfort E 4400-ft	Hodgkiss & Douma, Inc.	Pit 10-21	None	EB WB	0.35 0.42	0.50 0.54
F 10041-2 (Part)	M 115 from 3480-ft NW of the village limits of Beulah SE to US 31 (Mich. Ave) in the village of Benzonia	Hodgkiss & Douma, Inc.	Pit 10-21	None	EB WB	0.38 0.36	0.55 0.51
SS 21032B, C3	M 35 from W of Gladstone W and N to County Road G-16	Payne & Dolan of Wisconsin, Inc.	Pit 21-62	None	NB SB	0.54 0.53	0.58 0.54
Mb 28012C, C2	US 31 - M 37 from 2824-ft S of Silver Pines Rd N a distance of 1.04 mi	Peninsula Asphalt & Constr. Co.	Pit 45-13	Pit 45-13	SBOL	0.40	0.46
Mb 45072C, C2	M 22 from Race St in village of Suttons Bay N to State Rd	Hodgkiss & Douma, Inc.	Pit 45-31	None	NB SB	0.46 0.48	0.52 0.50
F 72023C, C2 Mb 72023C, C3	M 55 from 550-ft E of M 18 E to M 76	Lake & Howell Construction Co.	Pit 72-40	None	EB WB	0.53 0.54	0.66 0.64
SS 72071C, C1	M 157 from M 18 S to M 55	Lake & Howell Construction Co.	Pit 72-40	None	NB SB	0.61 0.62	0.76 0.71
Mm 6BA - 3C	US 131 from a point S of Reed City N intermittently a distance of 1.19 miles	Rieth-Riley Construction Co.	Pit 54-21	None	NB SB	0.29 0.29	0.51 0.51

TABLE 14
BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1968 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1971
SS 30031A, C4	M 99 from Frontier Rd N to M 34	Ayling-Cunningham Asphalt Paving Co.	30-54	30-54	NB SB	0.65 0.66	0.63 0.62

TABLE 15
SPECIAL HOT-EMULSION SURFACE TESTED DURING 1966 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1971
Mb 13072-4	US 27 from "G Drive N" to S Limits of Olivet	Rieth-Riley Construction Co., Inc.	None	Pits 13-38 & 13-47	NB SB	0.38 0.40	0.37 0.37

TABLE 16
BITUMINOUS AGGREGATE (4.09) TESTED DURING 1967 and 1971

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1971
Mb 52032-008	M 35 from end of dual roadway in village of Gwinn W to S limits of Palmer omitting thru the village of Austin	Payne & Dolan of Wisconsin, Inc.	Pit 52-70	None	NB SB	0.59 0.60	0.67 0.61

TABLE 17
PORTLAND CEMENT CONCRETE PAVEMENTS
CONSTRUCTED DURING 1966

Test Year	Number of Projects	Number of Lanes	Average WSF Values			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1966	9	16	0.44	0.51	0.46	0.38	0.54
1967	26	79	0.50	0.52	0.46	0.32	0.66
1968	15	67	0.52	0.58	0.47	0.27	0.66
1971[1]	9	16	0.38	0.39	0.38	0.28	0.51
1971[2]	26	79	0.46	0.53	0.43	0.34	0.63
1971[3]	15	67	0.38	0.48	0.43	0.27	0.63

(1) Initial tests conducted in 1966.
(2) Initial tests conducted in 1967.
(3) Initial tests conducted in 1968.

TABLE 18
BITUMINOUS CONCRETE PAVEMENTS
CONSTRUCTED DURING 1966

Test Year	Number of Projects	Number of Lanes	Average WSF Values			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1966	6	18	0.46	0.46	0.46	0.40	0.53
1967	11	22	0.43	0.43	0.43	0.31	0.56
1968	9	33	0.45	0.48	0.45	0.35	0.59
1971[1]	6	18	0.57	0.58	0.57	0.47	0.75
1971[2]	11	22	0.56	0.53	0.56	0.49	0.70
1971[3]	9	33	0.49	0.51	0.48	0.38	0.61

(1) Initial tests conducted in 1966.
(2) Initial tests conducted in 1967.
(3) Initial tests conducted in 1968.

TABLE 19
BITUMINOUS AGGREGATE PAVEMENTS
CONSTRUCTED DURING 1966

Test Year	Number of Projects	Number of Lanes	Average WSF Values			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1966	4	8	0.39	----	0.39	0.32	0.43
1967	13	19	0.44	----	0.44	0.29	0.62
1971[1]	4	8	0.50	----	0.50	0.40	0.54
1971[2]	13	19	0.56	----	0.56	0.46	0.76

(1) Initial tests conducted in 1966.
(2) Initial tests conducted in 1967.

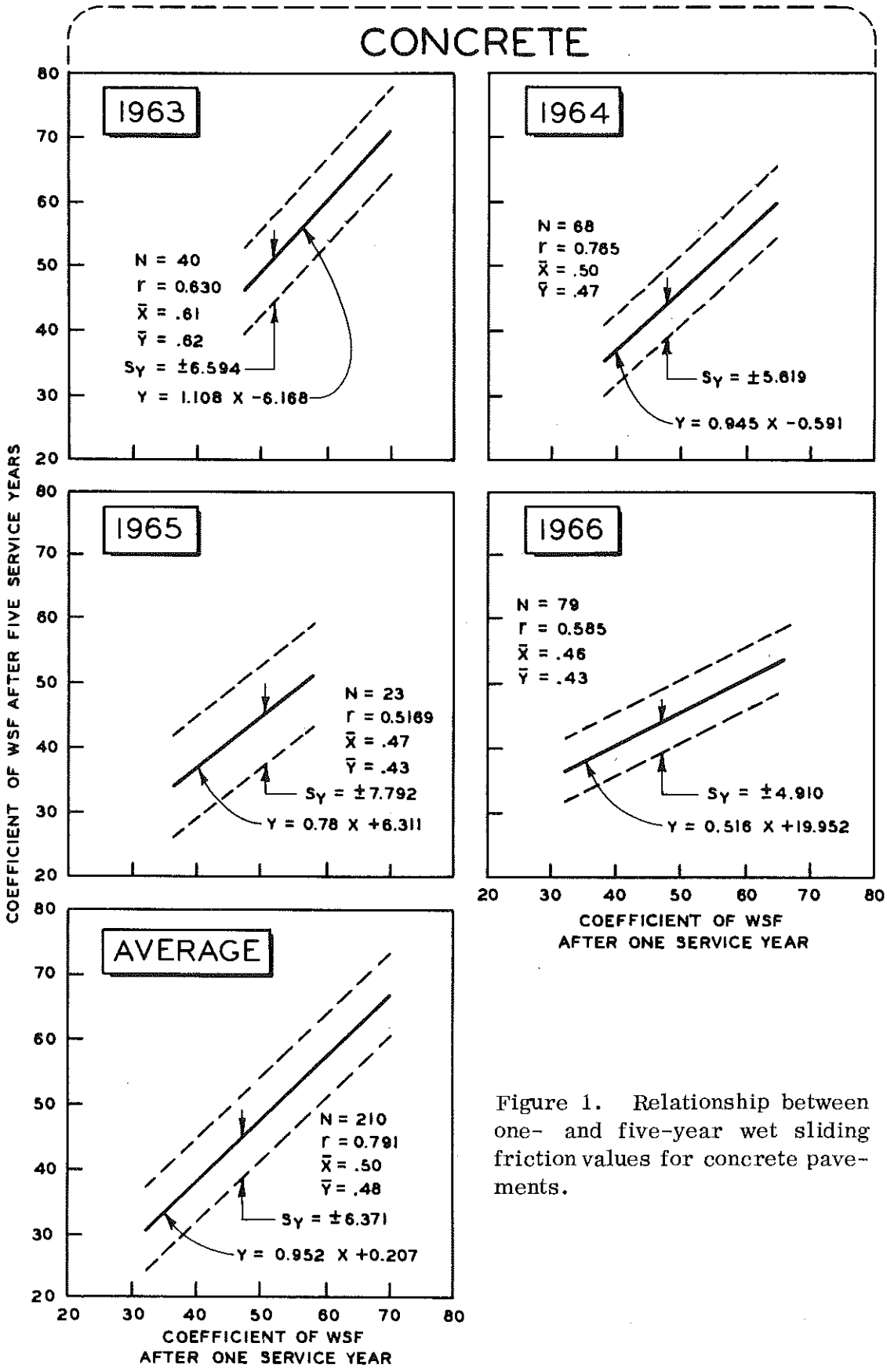

Figure 1. Relationship between one- and five-year wet sliding friction values for concrete pavements.

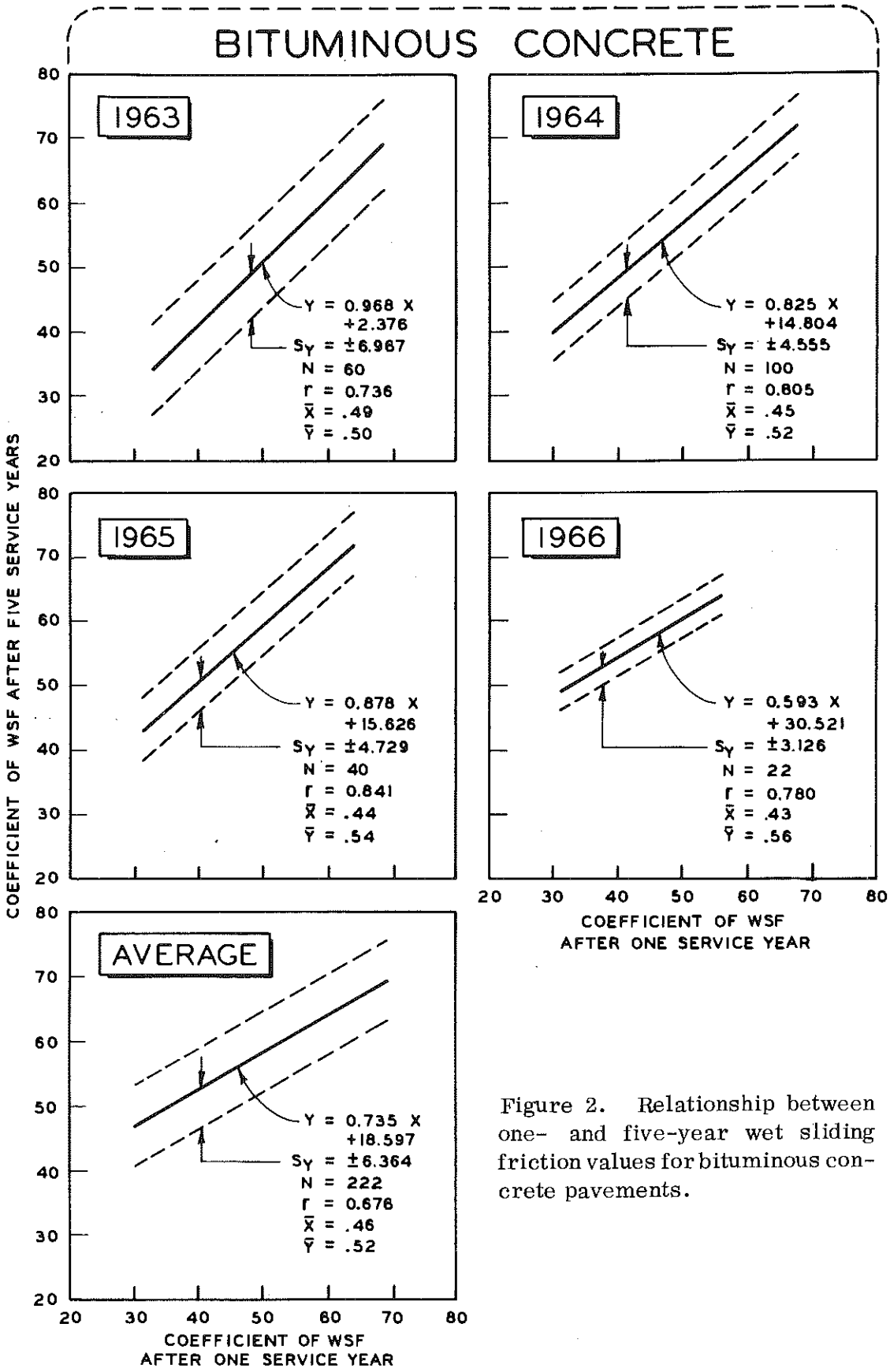

Figure 2. Relationship between one- and five-year wet sliding friction values for bituminous concrete pavements.

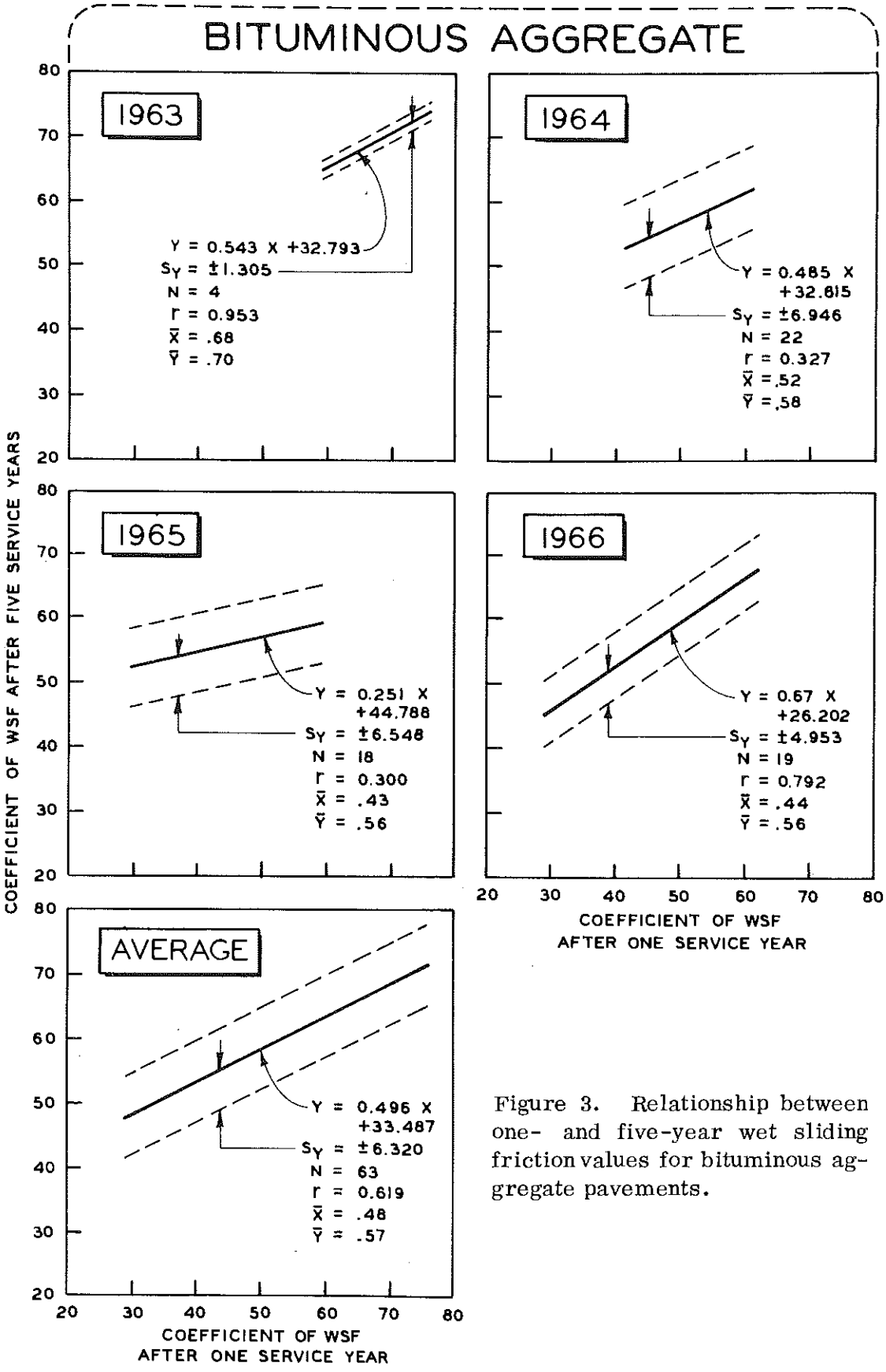

Figure 3. Relationship between one- and five-year wet sliding friction values for bituminous aggregate pavements.

SECTION III

EXPERIMENTAL FEATURES IN PAVEMENT SURFACES

EXPERIMENTAL FEATURES IN PAVEMENT SURFACES

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

Skid tests, with the exception of 1962, have been conducted annually on this rubberized sand-asphalt surface which was placed on US 31 in the fall of 1960. Table 20 summarizes the history of these tests. The last four years of tests (1968-1971) have yielded friction levels above 0.50. This past year indicated an increase of 0.04 in skid resistance to a level averaging 0.55 with the friction level ranging from 0.51 to 0.58. Outstanding coefficients continue to exist on this 12-year old surface.

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

Outstanding skid resistance qualities continue with the 1971 tests, on this seven-year old 3BC Sand-Asphalt surface. The 1971 coefficients ranged from 0.55 to 0.61 and averaged 0.58. No significant difference in 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.

Table 22 - Bituminous Concrete Interstate Projects

Table 22 summarizes skid tests conducted on a representative sample of Interstate bituminous concrete projects constructed during 1961 and 1962. Particular attention has been given to differences in performance between inside (passing) and outside (traffic) lanes during the past 10 years of this study. The 1971 tests yielded friction levels ranging from 0.44 to 0.66 and averaging 0.58 in the outside lanes and friction levels ranging from 0.54 to 0.79 and averaging 0.66 in the inside lanes. The previously established trends continued this year, as the inside lanes yield an average friction level 14 percent higher than the outside lanes with all values above the 0.40 Departmental Safety Standard.

Table 23 - Bridge Deck Surface Coatings

This table summarizes the skid test history for five types of bridge deck surface coatings on eighteen structures. One structure, S04 of 33083, was added to the study during 1971. S04 of 33083, I 96 over Cedar St - Pennsylvania Ave Access Rd, had a 1971 epoxy mortar surface applied to a spalled and cracked concrete deck.

1. Coal-Tar Epoxy Coatings

B02 of 61151, NB I 96 BS - US 31 BR over Black Creek is the only structure currently being tested under this surface type. Skid resistance properties have deteriorated rapidly since the initial tests were conducted in 1968. The most recent skid tests yield a friction level averaging 0.23 for the NBOL and 0.28 for the NBIL. These values are insignificantly higher than the 1970 tests.

2. Rubberized Bituminous Concrete

A five-year history of skid coefficients is now available on five bridge structures which were resurfaced with rubberized bituminous concrete in 1967. Average friction levels determined in 1971, at the five-year service level, ranged from 0.36 to 0.61 and averaged 0.50. This average is 0.005 higher than the four-year average of these same five structures and continues to exhibit good skid resistance.

Six structures were tested again this year after a four-year service period. Average wsf values on these ranged from 0.38 to 0.57 and averaged 0.47. This year's friction levels average the highest since surfaces were initially placed in 1968. 1971 tests averaged 0.02 higher than the 1968 tests and 0.03 higher than last year's tests.

Performing the poorest of all eleven bridges is S17 of 82023 with three of six lanes yielding average wsf values below the 0.40 level.

3. Asbestos Mixtures

Two structures coated in 1967 with bituminous mixtures containing asbestos were tested again during 1971, after a five-year service period. S05 of 58152 has a rubberized asbestos and bituminous concrete mixture applied to its deck. Five-year wsf values averaged 0.475, 0.03 lower than last year but 0.01 higher than the initial wsf values obtained in 1967. The northbound lanes of X01 of 81075 were coated in 1967 with a mix comprised of asbestos and sand-asphalt, while the southbound had a rubberized bituminous concrete and sand-asphalt mixture applied. In contrast to last years test results, coefficients determined this year show increased skid resistance on all lanes.

4. Polyurethane Coating

S18 of 82025 has a 1968 special thin coating of polyurethane on its deck. Surfacing on the outside lanes continue to perform well with friction levels averaging 0.535 after a four-year service period. The inside lanes, however, have friction levels of 0.26.

5. Epoxy Coatings

Skid tests were continued for the third year on S05 of 23081. No significant differences in skid resistance are apparent at the three-year service level between the north half, coated with E15 Versamid 140, and the south half, coated with Guard-Kote 250, of this structure's deck. Friction levels on both epoxy coatings average 0.41 in 1971, a decrease of 0.11 since last years tests.

S04 of 33083 was added to this study during 1971, when an epoxy mortar surface was applied. Initial tests indicated outstanding friction levels as friction levels on the five lanes tested averaged 0.64. Another structure, B02 of 73131, also has an epoxy mortar surface and after a three-year service period has wsf values averaging 0.60, well above the Departmental Safety Standard.

Table 24 - Experimental Skid-Resistant Resurfacing

Skid tests were continued this year at 14 experimental skid-resistant resurfacing locations which were constructed during 1965. After a six-year service period 41 percent of 71 lanes tested yield wsf values averaging 0.50 or higher; 51 percent are between 0.40 and 0.49 and 8 percent are below the Departmental Safety Standard. All average wsf values below 0.40 were encountered on the 50-lb 3BC, asbestos fiber, and asphalt surface located on US 24 at Fenkell Rd in Control Section 82053.

All lanes of four experimental surface types yield six-year average friction levels of 0.50 or higher. Included in this outstanding performance category are:

1) 80-lb Sandstone + Asphalt; Control Sections 09033 and 09042.
2) 50-lb Quartzite + Asphalt + Additive; Control Section 25073.
3) 50-lb 2MS + Hot Asphalt Emulsion; Control Section 81031.
4) 80-lb 3NS (P-4) + Asphalt; Control Section 11031.

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 three-year service period, average wsf values range from 0.42 to 0.46, and average 0.44.

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

Skid tests taken on the northbound I 69 textured concrete pavement surfaces in the second service year are shown in Table 25. Decreases in skid

resistance since initial tests were significantly larger in the traffic lanes of all four texture types. However, all types had average wsf values above 0.50 after a one-year service period.

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

* 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 4BC-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
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
				SBIL/NB*	0.68	0.66	0.68	0.62	0.65	0.63	0.59	0.60	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
				SBIL/NB*	0.63	0.68	0.68	0.64	0.67	0.62	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
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
						OL	0.51[2]	----	----	----	0.47	0.48	0.41	0.42	0.46	0.53	0.44	0.51
72014, C4	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
20016, C1						OL	----	0.48	----	0.53	0.59	0.53	0.49	0.54	0.59	0.66	0.63	0.65
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
						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
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
						OL	----	----	0.49	0.54	0.54	0.44	0.36	0.40	0.41	0.48	0.41	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
						OL	----	----	0.47	0.47	0.48	0.44	0.35	0.37	0.42	0.48	0.46	0.44
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
						OL	----	----	0.54	0.57	0.62	0.57	0.50	0.56	0.58	0.67	0.66	0.66
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
						OL	----	0.58	----	0.56	0.58	0.60	0.52	0.52[3]	0.58	0.62	0.63	0.66

[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
B02 of61151	I 96 BS, US 31 BR over Black Creek	1968	Flexible coal tar epoxy & sand	NBOL	----	0.57	0.26	0.19	0.23
				NBIL	----	0.59	0.42	0.24	0.28
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
				EBIL	*	0.50	0.56	0.51	0.47
				WBOL	0.48	0.43	0.41	0.44	0.44
				WBIL	0.51	0.49	0.54	0.48	0.49
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
				SB	0.43	0.36	0.43	0.37	0.36
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
				NBIL	0.56	0.50	0.55	0.52	0.55
				SBOL	0.53	0.48	0.51	0.49	0.50
				SBIL	0.60	0.56	0.57	0.56	0.61
X01 of 38101	I 94 over Grand River and NYCRR, Jackson	1967	Rubberized bituminous concrete	EBOL	0.52	0.49	0.55	0.51	0.50
				EBIL	0.59	0.55	0.63	0.61	0.58
				WBOL	0.54	0.43	0.51	0.50	0.51
				WBIL	0.55	0.53	0.56	0.58	0.54
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
				SB	0.50	0.48	0.55	0.53	0.55
B01 of 61076	M 20 over Muskegon River	1968	Rubberized bituminous concrete	NBOL	----	0.46	0.49	0.49	0.51
				NBIL	----	0.48	0.53	0.50	0.55
				SBOL	----	0.44	0.49	0.46	0.48
				SBIL	----	0.44	0.52	0.49	0.49
B02 of 61076	M 20 SB over Cedar Creek	1968	Rubberized bituminous concrete	SBOL	----	0.44	0.50	0.48	0.46
				SBIL	----	0.44	0.55	0.50	0.53
B03 of 61076	M 20 NB over Cedar Creek	1968	Rubberized bituminous concrete	NBOL	----	0.46	0.52	0.49	0.51
				NBIL	----	0.45	0.54	0.53	0.52
S04 of 61072	M 46 over US 131	1968	Rubberized bituminous concrete	EBOL	----	0.45	0.45	0.43	0.49
				EBCL	----	0.43	0.49	0.49	0.52
				EBIL	----	0.45	0.54	0.50	0.54
				WBOL	----	0.42	0.48	0.43	0.49
				WBCL	----	0.43	0.49	0.47	0.54
				WBIL	----	0.50	0.55	0.50	0.57
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
				EBCL	----	0.44	0.43	0.40	0.43
				EBIL	----	0.43	0.41	0.41	0.43
				WBOL	----	0.49	0.49	0.47	0.46
				WBCL	----	0.42	0.39	0.40	0.42
				WBIL	----	0.43	0.41	0.41	0.44

* 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
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
				EBCL	----	0.44	0.37	0.34	0.39
				EBIL	----	0.45	0.40	0.36	0.38
				WBOL	----	0.50	0.43	0.40	0.44
				WBCL	----	0.44	0.37	0.36	0.40
				WBIL	----	0.44	0.39	0.35	0.39
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
				WB	0.47	0.50	0.51	0.52	0.49
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
				NBCL	0.58	0.53	0.57	0.56	0.66
				NBIL	0.60	0.56	0.66	0.62	0.68
		1967	Rubberized bituminous concrete plus sand asphalt	SBOL	0.61	0.50	0.57	0.54	0.64
				SBCL	0.59	0.55	0.64	0.59	0.69
				SBIL	0.58	0.58	0.64	0.62	0.73
S18 of 82025	Allard Ave over I 94	1968	Special thin polyurethane coating	EBOL	----	0.46	0.42	0.52	0.54
				EBIL	----	0.40	0.16	0.34	0.26
				WBOL	----	0.55	0.45	0.54	0.53
				WBIL	----	0.44	0.20	0.35	0.26
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**
				SB	----	----	0.66	0.54**	0.44**
			South half of deck only Guard Kote 250	NB	----	----	0.75	0.52**	0.46**
				SB	----	----	0.69	0.49**	0.36**
S04 of 33083	I 96 over Cedar St - Penn Ave. Access Rd	1971	Epoxy Mortar	EBOL	----	----	----	----	0.63
				EBIL	----	----	----	----	0.68
				EBRT	----	----	----	----	0.68
				WBOL	----	----	----	----	0.63
				WBIL	----	----	----	----	0.57
B02 of 73131	M 83 over Cass River, Frankenmuth	Aug 1969	Epoxy Mortar	NBOL	----	----	----	0.57	0.57
				NBIL	----	----	----	0.52	0.58
				SBOL	----	----	----	0.60	0.63
				SBIL	----	----	----	0.56	0.60

** Averaged of spring and fall tests

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		1967	1968	1969	1970	1971
							Spring	Fall					
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
				M 13	NBIL	0.72	0.52	0.46	0.57	0.59	0.60	0.58	0.59
				M 13	SBOL	0.73	0.49	0.45	0.54	0.54	0.53	0.55	0.51
				M 13	SBIL	0.74	0.58	0.49	0.62	0.63	0.63	0.58	0.59
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
				M 13	NBIL	0.76	0.61	0.56	0.66	0.62	0.66	0.67	0.66
				M 13	SBOL	0.75	0.51	0.44	0.40	*	0.43(1)	0.52(1)	0.45(1)
				M 13	SBIL	0.76	0.55	0.51	0.42	*	0.44(1)	0.55(1)	0.50(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
				M 25	WB	0.74	0.54	0.47	0.53	0.55	0.66	0.60	0.57
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
				M 54	NBIL	0.77	0.54	0.52	0.61	0.62	0.61	0.63	0.66
				M 54	SBOL	0.70	0.51	0.51	0.55	0.57	0.58	0.53	0.49
				M 54	SBIL	0.76	0.53	0.53	0.60	0.60	0.63	0.62	0.64
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
				M 54BR	NBIL	0.71	0.53	0.47	0.55	0.58	0.61	0.59	0.64
				M 54BR	SBOL	0.65	0.50	0.44	0.52	0.55	(2)	0.54	0.60
				M 54BR	SBIL	0.71	0.52	0.49	0.58	0.61	(2)	0.61	0.66
				M 57	EB	0.70	0.51	0.45	0.55	0.56	0.55	(3)	----
				M 57	WB	0.72	0.53	0.48	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
				M 54	NBIL	0.66	0.47	0.41	0.44	0.45	0.52	0.49	0.52
				M 54BR	SBOL	0.62	0.47	0.46	0.40	0.44	0.48	0.38	0.45
				M 54BR	SBIL	0.66	0.47	0.41	0.41	0.48	0.54	0.48	0.54
				M 54 (Dort)	WBOL	0.62	0.45	0.45	0.46	0.50	0.54	0.52	0.61
				M 54 (Dort)	WBIL	0.62	0.45	0.47	0.48	0.52	0.55	0.50	0.56
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
				US 12	WB	0.62	0.47	0.45	0.49	0.55	0.52	0.50	0.47
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
				US 12	WB	0.60	0.49	0.47	0.54	0.54	0.57	0.55	0.51
82053	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
				US 24	NB#3	0.53	0.36	0.34	0.41	0.40	0.41	0.38	0.37
				US 24	NB#2	0.57	0.36	0.34	0.40	0.41	0.43	0.41	0.37
				US 24	NBIL	0.60	*	*	*	*	*	*	*
				US 24	SBOL	0.52	0.38	0.37	0.41	0.39	0.43	0.38	0.40
				US 24	SBCL	0.60	0.37	0.35	0.42	0.42	0.43	0.40	0.42
				US 24	SBIL	0.59	0.35	0.34	0.44	0.40	0.42	0.40	0.43
				Five Mile Rd	EBOL	0.51	0.37	0.31	0.36	0.38	0.37	0.37	0.38
				Five Mile Rd	EBIL	0.55	0.39	0.33	0.41	0.40	0.42	0.41	0.39
				Five Mile Rd	WBOL	0.55	0.37	0.33	0.39	0.40	0.44	0.41	0.39
				Five Mile Rd	WBIL	0.60	0.39	0.33	0.43	0.44	0.44	0.42	0.42

* Not tested

(1) Bituminous Concrete - non-experimental

(2) Work being done at intersection--SB too dirty to test

(3) Deleted by new construction

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		1967	1968	1969	1970	1971
							Spring	Fall					
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
				US 24	NB#3	0.59	0.37	0.36	0.41	0.43	0.45	0.42	0.47
				US 24	NB#2	0.62	0.40	0.36	0.44	0.47	0.48	0.51	0.51
				US 24	NBIL	0.62	0.40	0.38	0.45	0.45	0.46	0.55	0.51
				US 24	SBOL	0.60	0.37	0.35	0.42	0.40	0.44	0.40	0.44
				US 24	SB#3	0.62	0.39	0.35	0.43	0.43	0.46	0.42	0.45
				US 24	SB#2	0.61	0.39	0.36	0.45	0.47	0.46	0.45	0.48
				US 24	SBIL	0.64	0.42	0.37	0.50	0.52	0.46	0.59	0.51
				Plymouth Rd	EBOL	0.62	0.40	0.36	0.41	0.41	0.46	0.48	0.45
				Plymouth Rd	EBCL	0.63	0.39	0.36	0.41	0.43	0.44	0.44	0.42
				Plymouth Rd	EBIL	0.64	0.39	0.37	0.41	0.44	0.44	0.51	0.48
				Plymouth Rd	WBOL	0.63	0.40	0.38	0.46	0.47	0.46	0.49	0.49
				Plymouth Rd	WBCL	0.61	0.41	0.37	0.44	0.44	0.46	0.45	0.42
				Plymouth Rd	WBIL	0.60	0.40	0.38	0.46	0.48	0.45	0.53	0.49
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
				US 24	NB#3	0.58	0.40	0.37	0.43	0.45	0.46	0.43	0.44
				US 24	NB#2	0.61	0.41	0.38	0.43	0.47	0.46	0.45	0.47
				US 24	NBIL	0.62	0.40	0.37	0.42	0.49	0.46	0.45	0.46
				US 24	NBLT	0.62	*	*	*	*	*	*	*
				US 24	SBOL	0.56	0.42	0.41	0.44	0.41	0.45	0.42	0.44
				US 24	SBCL	0.57	0.41	0.40	0.43	0.46	0.45	0.44	0.44
				US 24	SBIL	0.59	0.41	0.40	0.43	0.47	0.46	0.43	0.47
				W. Chicago Rd	EBRT	0.63	0.45	0.44	0.48	0.50	0.45	0.45	0.51
				W. Chicago Rd	EBIL	0.63	0.44	0.40	0.42	0.46	0.45	0.45	0.47
				W. Chicago Rd	WBRT	0.63	0.43	0.41	0.47	0.50	0.46	0.48	0.46
				W. Chicago Rd	WBIL	0.63	0.41	0.37	0.47	0.47	0.45	0.45	0.48
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
				US 24	NBIL	0.52	0.42	0.38	0.47	0.47	0.50	0.48	0.49
				US 24	SBOL	0.51	0.43	0.39	0.46	0.47	0.52	0.50	0.47
				US 24	SBIL	0.51	0.42	0.38	0.46	0.46	0.50	0.48	0.50
				Sibley Rd	EB	0.54	0.39	0.36	0.42	0.43	0.45	0.48(4)	0.47
				Sibley Rd	WB	0.52	0.41	0.39	0.45	0.44	0.44	0.43	0.49
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
				M 139	NBIL	0.50	0.42	0.38	0.51	0.52	0.52	0.55	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	0.46	0.50
				M 139	SBIL	0.48	0.44	0.41	0.52	0.51	0.50	0.52	0.57
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
				US 24	NB#3	----	----	----	----	0.60	0.48	0.41	0.42
				US 24	NB#2	----	----	----	----	0.61	0.46	0.42	0.44
				US 24	NBIL	----	----	----	----	0.61	0.45	0.42	0.46

(4) 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 WSF	
			1970	1971
Conventional Burlap	2232+00 to 2238+00	NBOL	0.61	0.51
		NBIL	0.65	0.63
Longitudinal Brooming	2242+00 to 2248+00	NBOL	0.69	0.56
		NBIL	0.72	0.68
Transverse Combing	2253+00 to 2259+00	NBOL	0.86	0.70
		NBIL	0.87	0.86
Transverse Brooming	2272+00 to 2278+00	NBOL	0.76	0.56
		NBIL	0.79	0.74

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 Division and is based on 1970 accident data. Skid tests yielded average wsf values below 0.40 at 49 percent of the 569 lanes tested in 1971. Friction levels for 6 percent of the lanes averaged below 0.30. One of the 569 high-accident lanes tested this year yielded an average coefficient of 0.19.

During 1971, skid tests were conducted on 42 major highway routes. Testing was dispersed throughout all nine districts, 28 counties, and 105 separate locations. Table 26 summarizes the high-accident skid tests.

TABLE 26
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

	Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
		% Wet Surface	Total			
DISTRICT 1	Dickinson County					
	*US 141 from 0.00 to 1.20 from State Line, northerly (Control Section 22031)	33	7	NB SB	BIT BIT	0.50 0.50
	Marquette County					
	M 95 @ US 41 - M 28 All legs (Control Sections 52011 and 52041)	50	4	M 95 (Control Section 52011) NB US 41 - M 28 (Control Section 52041) EB WB	BIT CONC CONC	0.59 0.32 0.29
	BR 41 from 1.29 to 1.47 (Sixth St, 1.36) City of Marquette (Control Section 52044)	50	24	EB WB	BIT BIT	0.29 0.30
	BR 41 from 1.50 to 1.70 (Fourth St, 1.58) City of Marquette (Control Section 52044)	48	34	EB WB WB	BIT BIT SA	0.29 0.29 0.41
	US 41 from 5.82 to 6.02 (US 41 BR, 5.93) City of Marquette (Control Sections 52042 and 52044)	40	24	US 41 (Control Section 52042) EBOL EBIL EBLT WBOL WBIL BR 41 (Control Section 52044) WBOL WBIL	 CONC CONC CONC CONC CONC BIT CONC	 0.36 0.37 0.39 0.43 0.52 0.49 0.36
DISTRICT 2	Delta County					
	US 2 from 0.00 to 0.16 (M 35, 0.00) City of Escanaba (Control Sections 21022 and 21031)	44	34	EBOL EBIL WBOL WBIL	CONC BIT CONC BIT	0.40 0.40 0.37 0.36
	US 2 from 0.23 to 0.42 (Third, 0.24) City of Escanaba (Control Section 21022)	39	16	EBOL EBIL WBOL WBIL	CONC BIT CONC BIT	0.39 0.44 0.37 0.46
	US 2 from 0.44 to 0.59 (Sixth, 0.56) City of Escanaba (Control Section 21022)	50	15	EBOL EBIL WBOL WBIL	CONC BIT CONC BIT	0.39 0.40 0.34 0.44
DISTRICT 2 (CONT.)	Delta County cont.					
	US 2 from 1.25 to 1.37 (Fifteenth, 1.32) City of Escanaba (Control Section 21022)	38	22	EBOL EBIL WBOL WBIL	CONC CONC CONC CONC	0.36 0.41 0.41 0.39
	US 2 from 20th Ave (1.83) to Lake Shore Dr (6.80) (County Rd 426, 3.13) (Control Section 21022)	45	24	EBOL EBOL EBIL EBIL WBOL WBOL WBIL WBIL	CONC BIT CONC BIT CONC BIT CONC BIT	0.41 0.41 0.49 0.58 0.42 0.43 0.48 0.62
	Mackinac County					
	M 117 from 400 ft N to 350 ft S of County Rd 1041 (Mile Rd, 4.50) (Control Section 49023)	100	2	NB SB	BIT sandblasted BIT	0.55 0.51
DISTRICT 3	Benzie County					
	*M 22 on curve at River Rd (8.89) City of Frankfort (Control Section 10011)	40	6	NB SB	BIT BIT	0.43 0.44
	Grand Traverse County					
	US 31 from 0.23 to 0.43 (Oak St, 0.31) City of Traverse City (Control Section 28013)	50	13	NBOL NBIL SBOL SBIL	CONC CONC CONC CONC	0.32 0.35 0.35 0.35
	US 31 from 1.28 to 1.48 (Front St, 1.28) City of Traverse City (Control Section 28013)	54	20	NBOL NBIL SBOL SBIL	CONC CONC CONC CONC	0.35 0.37 0.33 0.34
	US 31 from 2.18 to 2.36 (Munson St, 2.26) City of Traverse City (Control Section 28013)	50	30	NBOL NBIL SBOL 5BIL	CONC CONC CONC CONC	0.33 0.35 0.34 0.35
	Kalkaska County					
	US 131 1,500 ft north and south of Boardman Rd (3.95) Village of South Boardman (Control Section 40011)	38	10	N of Boardman Rd NB SB S of Boardman Rd NB SB	 NSST BIT BIT BIT	 0.50 0.50 0.41 0.34

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 3 (CONT.)

Location	1970 Accidents % Wet Surface	1970 Accidents Total	Test Location	Surface Type	Average Coefficient
Wexford County					
US 131 @ M 55, City of Cadillac (Control Sections 83022, 83031, and 83032)	43	63**	M 55 (Control Section 83022) WB	BIT	0.47
			US 131 (Control Section 83031) From 6.43 to 6.58 (M55, 6.58) NBOL	BIT	0.35
			NBIL	BIT	0.42
			US 131 (Control Section 83032) From 0.00 to 0.25 (M55, 0.00, Harris St, 0.08, Pine St, 0.23) SBOL	BIT	0.36
			SBIL	BIT	0.39
US 131 from 0.64 to 0.84 (Simmons St, 0.74) City of Cadillac (Control Section 83032)	43	15	NBOL	BIT	0.51
			NBIL	BIT	0.51
			SBOL	BIT	0.49
			SBIL	BIT	0.51

DISTRICT 4

Location	1970 Accidents % Wet Surface	1970 Accidents Total	Test Location	Surface Type	Average Coefficient
Iosco County					
US 23 from 15.52 to 15.71 (Evergreen, 15.62) (Control Section 35032)	42	28	NBOL	CONC	0.29
			NBOL	BIT	0.35
			NBIL	BIT	0.37
			SBOL	CONC	0.29
			SBOL	BIT	0.37
			SBIL	BIT	0.35
Montmorency County					
*M 32 from 4.00 to 10.00 west of Atlanta (Control Section 60021)	22	13**	EB	ST	0.28
			WB	ST	0.19

DISTRICT 5

Location	1970 Accidents % Wet Surface	1970 Accidents Total	Test Location	Surface Type	Average Coefficient
Isabella County					
BR 27 from 2.82 to 3.02 (N. Fairfield, 2.95) City of Mt. Pleasant (Control Section 37011)	48	21	NBOL	BIT	0.48
			NBIL	BIT	0.51
			SBOL	BIT	0.47
			SBIL	BIT	0.43

DISTRICT 5 (CONT.)

Location	1970 Accidents % Wet Surface	1970 Accidents Total	Test Location	Surface Type	Average Coefficient
Kent County					
M 44 from 0.41 to 0.61 (W. River Dr, 0.62) (Control Section 41013)	47	22	S. of Grand River Bridge NBOL	CONC	0.44
			NBOL	BIT	0.48
			NBIL	CONC	0.45
			NBIL	BIT	0.57
			SBOL	CONC	0.37
			SBOL	BIT	0.49
			SBIL	CONC	0.44
			SBIL	BIT	0.58
			On Grand River Bridge Deck NBOL	CONC	0.36
			NBIL	CONC	0.32
			SBOL	CONC	0.34
			SBIL	CONC	0.39
US 131 BR from 2.14 (Monroe Ave) to 2.69 (Scribner Ave) City of Grand Rapids (Control Section 41014)	27	36	EBOL	BIT	0.45
			EBIL	BIT	0.43
			WBOL	BIT	0.42
			WBIL	BIT	0.46
I 196 from 1.00 to 1.19 (College, 1.13) City of Grand Rapids (Control Section 41027)	53	20	EBOL	CONC	0.46
			EBIL	CONC	0.50
			WBOL	CONC	0.43
			WBIL	CONC	0.48
M 11 from 2.16 to 2.36 (Burlingame, 2.15) City of Wyoming (Control Section 41062)	53	30	EBOL	CONC	0.28
			EBIL	CONC	0.30
			WBOL	CONC	0.29
			WBIL	BIT	0.40
M 11 from 2.38 to 2.57 (Hook, 2.45) City of Wyoming (Control Section 41062)	43	25	EBOL	CONC	0.33
			EBIL	CONC	0.29
			WBOL	CONC	0.28
			WBIL	BIT	0.41
M 11 from 2.59 to 2.77 (Michael, 2.63) City of Wyoming (Control Section 41062)	43	43	EBOL	CONC	0.27
			EBIL	CONC	0.30
			WBOL	CONC	0.34
			WBIL	BIT	0.44
M 11 from 2.87 to 3.05 (Riley Blvd, 3.01) City of Wyoming (Control Section 41062)	46	31	EBOL	CONC	0.24
			EBIL	CONC	0.28
			WBOL	CONC	0.30
			WBIL	BIT	0.41
M 11 from 3.71 to 3.91 (Buchanan, 3.91) City of Wyoming (Control Section 41062)	42	46	EBOL	BIT	0.37
			EBIL	BIT	0.36
			WBOL	BIT	0.39
			WBIL	BIT	0.48
M 11 from 0.75 to 0.95 (Eastern, 0.95) Cities of Wyoming and Grand Rapids (Control Section 41063)	42	44	EBOL	BIT	0.35
			EBIL	BIT	0.38
			WBOL	BIT	0.36
			WBIL	BIT	0.47

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 5 (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Kent County cont.					
M 11 from 1.83 to 2.01 (Kalamazoo St, 1.93) City of Grand Rapids (Control Section 41063)	49	68	EBOL	BIT	0.39
			EBIL	BIT	0.33
			WBOL	BIT	0.36
			WBIL	BIT	0.41
US 131 @ 44th St (8.10) City of Wyoming (Control Section 41131)	41	29	NBOL	CONC	0.45
			NBIL	CONC	0.48
			SBOL	CONC	0.45
			SBIL	CONC	0.51
US 131 from 8.99 to 9.17 (36th St, 9.11) City of Wyoming (Control Section 41131)	51	44	NBOL	CONC	0.43
			NBIL	CONC	0.48
			SBOL	CONC	0.43
			SBIL	CONC	0.48
US 131 from 10.27 to 10.45 (M 11, 10.15) City of Wyoming (Control Section 41131)	48	30	NBOL	CONC	0.45
			NBCL	CONC	0.46
			NBIL	CONC	0.52
			SBOL	CONC	0.46
			SBCL	CONC	0.48
			SBIL	CONC	0.50
US 131 from 11.98 to 12.14 (Hall, 12.00) City of Grand Rapids (Control Section 41131)	67	25	NBOL	CONC	0.43
			NBCL	CONC	0.43
			NBIL	CONC	0.48
			SBOL	CONC	0.41
			SBCL	CONC	0.42
			SBIL	CONC	0.51
US 131 from 14.21 to 14.62 (I 196, 14.60) City of Grand Rapids (Control Section 41131)	48	41	NBOL	CONC	0.48
			NBCL	CONC	0.41
			NBIL	CONC	0.51
			SBOL	CONC	0.37
			SBCL	CONC	0.46
			SBIL	CONC	0.43
Mecosta County					
US 131 from 1.60 to 1.77 (Pere Marquette, 1.68) City of Big Rapids (Control Section 54012)	50	20	NBOL	CONC	0.29
			NBIL	CONC	0.30
			SBOL	CONC	0.34
			SBIL	CONC	0.32
Muskegon County					
M 46 from 1.58 to 1.77 (Oakgrove, 1.64) City of Muskegon (Control Section 61022)	64	20	EBOL	CONC	0.40
			EBIL	CONC	0.39
			WBOL	CONC	0.41
			WBIL	CONC	0.40
M 46 from 1.88 to 2.08 (Evart, 1.90; Creston, 2.04) City of Muskegon (Control Section 61022)	59	26	EBOL	CONC	0.39
			EBIL	CONC	0.39
			WBOL	CONC	0.37
			WBIL	CONC	0.39

DISTRICT 5 (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Muskegon County cont.					
BS 96 from 1.75 to 1.90 (Sherman, 1.89) Cities of Muskegon and Norton Shores (Control Section 61151)	44	44	NBOL	CONC	0.44
			NBIL	CONC	0.42
			SBOL	CONC	0.41
			SBIL	CONC	0.36
BR 31 from 0.69 to 0.89 (Pine, 0.69) City of Muskegon (Control Section 61153)	52	26	S of Pine St.		
			NBOL	CONC	0.35
			NBCL	CONC	0.35
			NBIL	CONC	0.36
			SBOL	CONC	0.39
			SBCL	CONC	0.36
			SBIL	CONC	0.35
			N of Pine St.		
			NBOL	BIT	0.35
			NB#3	BIT	0.33
			NB#2	BIT	0.31
			NBIL	BIT	0.34
			SBOL	BIT	0.34
			SB#3	BIT	0.33
			SB#2	BIT	0.29
			SBIL	BIT	Not tested*
BR 31 SB from 60.21 to 60.39 (2nd St, 60.36) City of Muskegon (Control Section 61153)	42	29	SBOL	CONC	0.40
			SBCL	CONC	0.38
			SBIL	CONC	0.40
Ottawa County					
US 31 BR (River Ave) @ 16th St, 1.09 City of Holland (Control Section 70011)	29	17	NBOL	BIT	0.27
			NBIL	BIT	0.36
			SBOL	BIT	0.39
			SBIL	BIT	0.40
US 31 from 7.18 to 7.38 (Grand River, 7.22) City of Grand Haven (Control Section 70014)	52	25	NBOL	CONC	0.39
			NBCL	CONC	0.35
			NBIL	CONC	0.38
			SBOL	CONC	0.45
			SBCL	CONC	0.40
			SBIL	CONC	0.44

DISTRICT 6

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Bay County					
EB M 25 from 0.65 to 1.26 (Two Mile Rd, 0.650; end of Freeway, 1.26) Bangor Township (Control Section 09042)	29	8	EBOL	CONC	0.40
			EBIL	CONC	0.47
			WBOL	CONC	0.40
			WBIL	CONC	0.40
BL 75 from 3.22 to 3.40 (7th St, 3.26) City of Bay City (Control Section 09042)	39	26	NBOL	CONC	0.31
			NBIL	CONC	0.33

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 6 (CONT.)

Location	1970 Accidents % Wet Surface	1970 Accidents Total	Test Location	Surface Type	Average Coefficient
Bay County cont.					
BL 75 from 82.92 to 83.11 (Water St, 82.94) City of Bay City (Control Section 09042)	43	43	EBOL	CONC	0.36
			EBCL	CONC	0.36
			EBIL	CONC	0.34
			WBOL	CONC	0.37
			WBCL	CONC	0.36
			WBIL	CONC	0.34
Genesee County					
M 21 from 11.76 to 11.96 (C & O RR bridge, 11.88) City of Flint (Control Section 25081)	43	23*	East of RR bridge		
			EBOL	BIT	0.33
			EBIL	BIT	0.39
			WBOL	BIT	0.35
			WBIL	BIT	0.38
			On RR bridge		
			EBOL	CONC	0.34
			EBIL	CONC	0.25
			WBOL	CONC	0.32
			WBIL	CONC	0.36
			West of RR bridge		
			EBOL	BIT	0.41
			EBIL	BIT	0.49
			WBOL	BIT	0.41
			WBIL	BIT	0.45
Saginaw County					
M 84 from 0.00 to 0.18 (E. Jct. M 81, 0.00) City of Saginaw (Control Section 73033)	57	21	M 84, S nf WB M 81		
			NBOL	BIT	0.31
			NBIL	BIT	0.34
			M 84, N of WB M 81		
			SBOL	BIT	0.32
			SBIL	BIT	0.39
			M 84, N of EB M 81		
			SB	BIT	0.35
			M 81 @ M 84		
			EBOL	BIT	0.31
			EBIL	BIT	0.32
			WBOL	CONC	0.30
			WBCL	CONC	0.30
			WBIL	CONC	0.28
M 46 from 6.93 to 7.12 (Superior, 6.98) City of Saginaw (Control Section 73062)	44	32	EBOL	CONC	0.25
			EBIL	CONC	0.28
			WBOL	CONC	0.28
			WBIL	CONC	0.30
M 46 from 7.76 to 7.96 (Stephens, 7.93) City of Saginaw (Control Section 73062)	42	33	EBOL	BIT	0.30
			EBIL	BIT	0.30
			WBOL	BIT	0.27
			WBIL	BIT	0.34
M 81 from 70.29 to 70.47 (Court, 70.41) City of Saginaw (Control Section 73073)	58	33	EBOL	BIT	0.31
			EBCL	BIT	0.34
			EBIL	BIT	0.32
			WBOL	CONC	0.30
			WBCL	CONC	0.29
			WBIL	CONC	0.31

DISTRICT 7

Location	1970 Accidents % Wet Surface	1970 Accidents Total	Test Location	Surface Type	Average Coefficient
Berrien County					
BL 94 from 1.13 to 1.33 (9th St, 1.21) City of Benton Harbor (Control Section 11013)	45	26	EBOL	BIT	0.26
			EBIL	BIT	0.30
			WBOL	BIT	0.26
			WBIL	BIT	0.27
US 33 from 0.00 to 0.18 (BL 94, 0.00) City of St. Joseph (Control Section 11053)	61	22	NBOL	CONC	0.26
			NBIL	CONC	0.32
			SBOL	CONC	0.33
			SBIL	CONC	0.30
Calhoun County					
EB M37 from 6.51 to 6.71 (McCambly, 6.67) City of Battle Creek (Control Section 13061)	50	21	EBOL	BIT	0.54
			EBCL	BIT	0.50
			EBIL	BIT	0.58
BL 94 from 7.24 to 7.41 (Washington, 7.38) City of Battle Creek (Control Section 13121)	60	22	EBOL	BIT	0.50
			EBIL	BIT	0.49
			WBOL	BIT	0.47
			WBIL	BIT	0.55
BL 94 from 7.80 to 8.00 (Fountain, 7.81) City of Battle Creek (Control Section 13121)	44	25*	EBOL	CONC	0.36
			EBIL	CONC	0.42
			WBOL	CONC	0.36
			WBIL	CONC	0.42
Kalamazoo County					
BL 94 from 0.35 to 0.51 (12th St, 0.45) City of Kalamazoo (Control Section 39041)	52	23*	EBOL	CONC	0.50
			EBIL	CONC	0.46
			EBIL	BIT	0.60
			WBOL	CONC	0.43
			WBIL	CONC	0.50
			WBIL	BIT	0.84
BL 94 @ SB BR 131 (Westnedge) from 3.86 to 4.00 and from 80.00 to 80.20 City of Kalamazoo (Control Sections 39041 and 39042)	46	87	BL 94 (Control Section 39041)		
			EBOL	BIT	0.33
			EB#4	BIT	0.39
			EB#3	BIT	0.39
			EB#2	BIT	0.31
			EBIL	BIT	0.34
			BL 94 (Control Section 39042)		
			WBOL	BIT	0.36
			WBCL	BIT	0.47
			WBIL	BIT	0.45
			US 131 N of WB BL 94		
			SBOL	BIT	0.45
			SBIL	BIT	0.39
			US 131 N of EB BL 94		
			SBOL	BIT	0.54
			SBCL	BIT	0.49
			SBIL	BIT	0.48

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 7 (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Kalamazoo County cont.					
BL 94 from 1.58 to 1.78 (Cross-town, 1.59) City of Kalamazoo (Control Section 39042)	47	32	EBOL	CONC	0.35
			EBOL	BIT	0.44
			EBIL	CONC	0.39
			EBIL	BIT	0.46
			WBOL	CONC	0.35
			WBOL	BIT	0.40
			WBIL	CONC	0.38
			WBIL	BIT	0.43
WB BL 94 from 80.21 to 80.41 (Rose, 80.24) City of Kalamazoo (Control Section 39042)	42	71	WBOL	BIT	0.33
			WBCL	BIT	0.36
			WBIL	BIT	0.39
WB BL 94 from 80.42 to 80.62 (Porter, 80.56) City of Kalamazoo (Control Section 39042)	46	41	E of RR crossing		
			WBOL	BIT	0.41
			WB#3	BIT	0.44
			WB#2	BIT	0.44
			WBIL	BIT	0.48
			W of RR crossing		
			WBOL	BIT	0.36
			WB#3	BIT	0.33
			WB#2	BIT	0.34
			WBIL	BIT	0.38
M 43 from 80.22 to 80.40 (Woodward, 80.31) City of Kalamazoo (Control Section 39081)	45	21	EBOL	BIT	0.47
			EBCL	BIT	0.46
			EBIL	BIT	0.40
			WBOL	BIT	0.46
			WBCL	BIT	0.47
			WBIL	BIT	0.48

DISTRICT 8

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Eaton County					
M 43 from 6.28 to 6.48 (Julian, 6.35) (Control Section 23042)	48	25	EBOL	CONC	0.44
			EBIL	BIT	0.54
			WBOL	CONC	0.41
			WBIL	BIT	0.51
M 43 from 6.49 to 6.69 (Robbins, 6.50) (Control Section 23042)	54	58	EBOL	CONC	0.44
			EBIL	BIT	0.53
			WBOL	CONC	0.42
			WBIL	BIT	0.57
M 43 from 6.70 to 6.90 (Thomas Parkway, 6.75) (Control Section 23042)	46	40	EBOL	CONC	0.44
			EBIL	BIT	0.56
			WBOL	CONC	0.39
			WBIL	BIT	0.54

DISTRICT 8 (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Ingham County					
M 99 from 3.67 to 3.76 (Holmes, 3.66) City of Lansing (Control Section 33011)	52	31	NBOL	CONC	0.41
			NBIL	BIT	0.49
			SBOL	CONC	0.35
			SBIL	BIT	0.45
BL 96 - Cedar St. from 6.23 to 6.43 (Red Cedar River, 6.26) City of Lansing (Control Section 33032)	45	23	NBOL	CONC	0.35
			NBIL	CONC	0.36
			SBOL	CONC	0.36
			SBIL	CONC	0.40
M 43 from 0.13 to 0.33 (Pennsylvania Ave, 0.31) City of Lansing (Control Section 33042)	55	39	Saginaw St		
			EBOL	CONC	0.41
			EB#4	CONC	0.39
			EB#3	CONC	0.46
			EB#2	CONC	0.38
			EBLT	CONC	0.42
			Oakland Ave		
			WBOL	BIT	0.42
			WBCL	BIT	0.44
			WBIL	BIT	0.42
M 43 from 81.42 to 81.62 (Merrill, 81.47) (Control Section 33042)	42	31	Saginaw St		
			EBOL	BIT	0.49
			EB#3	BIT	0.52
			EB#2	BIT	0.55
			EBIL	BIT	0.57
			Grand River Ave		
			WBOL	BIT	0.36
			WB#3	BIT	0.38
			WB#2	BIT	0.43
			WBIL	BIT	0.42
M 78 from 0.57 to 0.71 (Harrison, 0.70) City of East Lansing (Control Section 33043)	46	22	EBOL	BIT	0.49
			EBIL	BIT	0.54
			WBOL	BIT	0.46
			WBIL	BIT	0.52
M 78 from 2.34 to 2.48 (Hagadorn Rd, 2.38) City of East Lansing (Control Section 33043)	43	26**	EBOL	CONC	0.42
			EBIL	CONC	0.43
			WBOL	CONC	0.42
			WBIL	CONC	0.44
M 43 from 0.25 to 0.45 (Morris, 0.32) (Control Section 33061)	43	21	EBOL	CONC	0.44
			EBIL	CONC	0.45
			WBOL	CONC	0.36
			WBIL	CONC	0.44
M 43 from 0.46 to 0.66 (Bryford, 0.59) (Control Section 33061)	42	25	EBOL	CONC	0.40
			EBIL	CONC	0.44
			WBOL	CONC	0.38
			WBIL	CONC	0.44

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

DISTRICT 8 (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Ingham County cont.					
M 43 from 81.82 to 81.98 (Logan St, 81.82) City of Lansing (Control Section 33061)	62	23	Saginaw St		
			EBOL	BIT	0.56
			EB#3	BIT	0.49
			EB#2	BIT	0.45
			EBIL	BIT	0.55
			Oakland Ave		
			WBOL	CONC	0.38
			WBCL	CONC	0.36
			WBIL	CONC	0.37
M 43 from 0.46 to 0.66 (Harrison, 0.61) City of East Lansing (Control Section 33082)	42	22	EBOL	BIT	0.39
			EBIL	BIT	0.50
			WBOL	BIT	0.43
			WBIL	BIT	0.50
M 43 from 0.90 to 1.10 (Michigan Ave, 1.06) City of East Lansing (Control Section 33082)	43	57	EBOL	BIT	0.31
			EBIL	BIT	0.34
			WBOL	BIT	0.43
			WBCL	BIT	0.40
			WBIL	BIT	0.43
M 43 from 1.11 to 1.29 (Abbott, 1.15) City of East Lansing (Control Section 33082)	42	114	EBOL	BIT	0.41
			EB#3	BIT	0.31
			EB#2	BIT	0.34
			EBIL	BIT	0.41
			WBOL	BIT	0.42
			WBCL	BIT	0.40
			WBIL	BIT	0.41
M43 from 1.35 to 1.55 (Division, 1.43) City of East Lansing (Control Section 33082)	42	46	EBOL	BIT	0.41
			EBCL	BIT	0.32
			EBIL	BIT	0.37
			WBOL	BIT	0.42
			WBCL	BIT	0.41
			WBIL	BIT	0.44
Jackson County					
BL 94 from 1.01 to 1.20 (M50-'Otsego', 1.14) City of Jackson (Control Section 38083)	48	21	EBOL	CONC	0.33
			EBCL	CONC	0.34
			EBIL	CONC	0.35
Washtenaw County					
I 94 from 4.51 to 4.71 (Nash, 4.57) (Control Section 81063)	43	31	EBOL	CONC	0.35
			EB#3	CONC	0.40
			EB#2	CONC	0.42
			EBIL	CONC	0.42
			WBOL	CONC	0.45
			WB#3	CONC	0.47
			WB#2	CONC	0.56
			WBIL	CONC	0.47

METROPOLITAN DISTRICT

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Macomb County					
US 25 from 2.05 to 2.25 (Chesterfield, 2.13) City of East Detroit (Control Section 50051)	43	37	NBOL	BIT	0.47
			NBCL	BIT	0.46
			NBIL	CONC	0.41
			SBOL	CONC	0.33
			SBCL	CONC	0.38
			SBIL	CONC	0.37
Oakland County					
US 24 from 1.85 to 2.05 (10 Mile, 2.03) City of Southfield (Control Section 63031)	50	38	NBOL	CONC	0.32
			NB#3	CONC	0.36
			NB#2	CONC	0.40
			NBIL	CONC	0.35
			SBOL	CONC	0.31
			SB#3	CONC	0.38
			SB#2	CONC	0.37
			SBIL	CONC	0.35
US 24 from 4.09 to 4.28 (12 Mile, 4.09) City of Southfield (Control Section 63031)	51	41	NBOL	CONC	0.34
			NBOL	BIT	0.43
			NBIL	CONC	0.38
			NBIL	BIT	0.51
			SBOL	CONC	0.35
			SBIL	CONC	0.34
			SBIL	BIT	0.64
US 10 (Telegraph) from 11.16 to 11.34 (US 10 BR - Square Lake, 11.34) (Control Section 63031)	43	31	US 10 (Telegraph)		
			NBOL	CONC	0.28
			NBIL	CONC	0.33
			SBOL	CONC	0.34
			SBIL	CONC	0.34
			US 10 BR (Square Lake Rd)		
			WBOL	CONC	0.30
			WBCL	CONC	0.30
			WBIL	CONC	0.27
M 59 from 16.02 to 16.21 (Pontiac Lake Rd, 16.20) (Control Section 63041)	47	30	EBOL	CONC	0.33
			EBOL	BIT	0.46
			EBIL	BIT	0.57
			WBOL	CONC	0.34
			WBOL	BIT	0.44
			WBIL	BIT	0.51
M 59 from 19.99 to 20.19 (Cherokee, 20.17) City of Pontiac (Control Section 63041)	55	30	EBOL	CONC	0.39
			EBIL	CONC	0.37
			WBOL	CONC	0.38
			WBIL	CONC	0.39
M 59 from 20.51 to 20.71 (Palmer, 20.65) City of Pontiac (Control Section 63041)	48	32	EBOL	CONC	0.39
			EBIL	CONC	0.42
			WBOL	CONC	0.42
			WBCL	CONC	0.37
			WBIL	CONC	0.37

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

METROPOLITAN DISTRICT (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Oakland County cont.					
M 1 (Woodward) @ US 10 (Square Lake Rd) all legs of intersection, Bloomfield Township (Control Sections 63051, 63052, 63111, and 63151)	30	61*	M 1 (Woodward)		
			NBOL	BIT	0.49
			NB#3	BIT	0.49
			NB#2	BIT	0.48
			NBIL	BIT	0.52
			SBOL	BIT	0.44
			SB#3	BIT	0.52
			SB#2	BIT	0.50
			SBIL	BIT	0.42
			US 10 (Square Lake Rd)		
			EBOL	CONC	0.33
			EBCL	CONC	0.32
			EBIL	CONC	0.33
			WBOL	CONC	0.27
			WBCL	CONC	0.31
			WBIL	CONC	0.33
US 10 (Dixie Hwy) from 2.57 to 2.77 (Walton Blvd, 2.77) (Control Section 63053)	54	30	NBOL	BIT	0.43
			NBOL	SA	0.38
			NBIL	BIT	0.44
			NBIL	SA	0.40
			SBOL	BIT	0.42
			SBOL	SA	0.36
			SBIL	BIT	0.43
			SBIL	SA	0.35
M 1 from 2.51 to 2.70 (10 Mile, 2.56) City of Southfield (Control Section 63081)	62	32	NBOL	BIT	0.38
			NB#3	BIT	0.46
			NB#2	BIT	0.46
			NBIL	BIT	0.48
			SBOL	BIT	0.41
			SB#3	BIT	0.40
			SB#2	BIT	0.44
			SBIL	BIT	0.54
I 75 from 0.98 to 1.16 (John R, 1.06) City of Hazel Park (Control Section 63174)	45	36	NBOL	CONC	0.40
			NB#3	CONC	0.41
			NB#2	CONC	0.40
			NBIL	CONC	0.42
			SBOL	CONC	0.37
			SB#3	CONC	0.35
			SB#2	CONC	0.40
			SBIL	CONC	0.42
I 75 from 2.99 to 3.19 (Andover, 3.09) City of Royal Oak (Control Section 63174)	43	30	NBOL	CONC	0.36
			NBCL	CONC	0.32
			NBIL	CONC	0.34
			SBOL	CONC	0.35
			SBIL	CONC	0.36
I 75 from 10.06 to 10.26 (16 Mile, 10.26) City of Troy (Control Section 63174)	52	31*	NBOL	CONC	0.34
			NBCL	CONC	0.37
			NBIL	CONC	0.39
			SBOL	CONC	0.34
			SBCL	CONC	0.37
			SBIL	CONC	0.43

METROPOLITAN DISTRICT (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Oakland County cont.					
BL 75 from 0.11 to 0.31 (Whittemore, 0.22) City of Pontiac (Control Section 63201)	46	31	OL	CONC	0.33
			#3	CONC	0.29
			#2	CONC	0.35
			IL	CONC	0.31
BL 75 from 0.25 to 0.38 (M 59, 0.38) City of Pontiac (Control Section 63201)	45	31	OL	CONC	0.38
			#3	CONC	0.35
			#2	CONC	0.34
			IL	CONC	0.40
BL 75 from 0.58 to 0.77 (Pike, 0.60) City of Pontiac (Control Section 63201)	48	34	BL 75 (Control Section 63201)		
			OL	CONC	0.39
			#4	CONC	0.38
			#3	CONC	0.36
			#2	CONC	0.39
			IL	CONC	0.39
			M 59 (Control Section 63041)		
			EBOL	CONC	0.33
			EBIL	CONC	0.34
			WBOL	BIT	0.44
			WBIL	BIT	0.43
Wayne County					
US 24 from 9.02 to 9.10 (Van Born, 9.082) City of Dearborn Heights (Control Section 82052)	24	78	NBOL	BIT	0.40
			NBCL	BIT	0.40
			NBIL	BIT	0.41
			SBOL	BIT	0.38
			SBCL	BIT	0.39
			SBIL	BIT	0.44
US 24 from 2.45 to 2.65 (Richardson, 2.64) City of Dearborn Heights (Control Section 82053)	42	53	NBOL	BIT	0.23
			NB#3	BIT	0.24
			NB#2	BIT	0.31
			NBIL	BIT	0.28
			SBOL	CONC	0.35
			SBCL	CONC	0.40
			SBIL	CONC	0.37
US 12 from 4.46 to 4.66 (Ternes St, 4.54) City of Dearborn (Control Section 82062)	46	34	EBOL	BIT	0.43
			EBIL	BIT	0.40
			WBOL	BIT	0.42
			WBCL	BIT	0.39
			WBIL	BIT	0.41

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 1 THROUGH METROPOLITAN

METROPOLITAN DISTRICT (CONT.)

Location	1970 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Wayne County cont.					
M 102 from 0.15 to 0.35 (Greenfield, 0.16) Cities of Southfield and Oak Park (Control Section 82142)	48	31	M 102 (main roadway)		
			EBOL	CONC	0.45
			EBCL	CONC	0.46
			EBIL	CONC	0.57
			WBOL	CONC	0.41
			WBCL	CONC	0.42
			WBIL	CONC	0.49
			M 102 (service roadway)		
			EBOL	CONC	0.38
			EBCL	CONC	0.35
			EBIL	CONC	0.35
			WBOL	CONC	0.34
			WBCL	CONC	0.34
			WBIL	CONC	0.37
I 75 from US 24 connector (8.20) to Goddard (12.09) Cities of Southgate and Allen Park (Control Section 82191)	NB 56 SB 31	NB 51 SB 56*	NBOL	CONC	0.41
			NBCL	CONC	0.49
			NBIL	CONC	0.52
			SBOL	CONC	0.40
			SBCL	CONC	0.49
			SBIL	CONC	0.50
M 39 from 0.86 to 1.06 (Rosedale, 0.98) City of Lincoln Park (Control Section 82192)	43	38	NBOL	CONC	0.39
			NB#3	CONC	0.39
			NB#2	CONC	0.36
			NBIL	CONC	0.42
			SBOL	CONC	0.34
			SB#3	BIT	0.46
			SB#2	BIT	0.46
			SBIL	CONC	0.41
M 39 from 5.78 to 5.98 (US 12, 5.85) City of Dearborn (Control Section 82192)	52	33	M 39 (mainline)		
			NBOL	CONC	0.42
			NBIL	CONC	0.48
			SBOL	CONC	0.44
			SBIL	CONC	0.49
			M 39 (ramps)		
			NBOL	BIT	0.56
			NBIL	BIT	0.52
			SBOL	BIT	0.62
			SBIL	BIT	0.65
M 85 from 4.82 to 5.01 (West Rd, 4.94) City of Trenton (Control Section 82211)	45	43	NBOL	CONC	0.37
			NBIL	CONC	0.32
			SBOL	CONC	0.34
			SBIL	CONC	0.35

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, or Testing and Research Division. 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. Table 27 contains skid test data resulting from special requests received during 1971.

TABLE 27
SPECIAL REQUEST TESTS

Special Request No. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
1	Ottawa County	128th Ave, from Lincoln St. N'ly several hundred feet	SEAL COAT (Lakelite Agg)	NB SB	0.73 0.71
1	Ottawa County	128th Ave, 0.25 mile N of Lincoln St	SEAL COAT (Conventional Agg)	NB SB	0.68 0.64
1	Ottawa County	120th Ave, Lincoln St. Intersection (in curve area)	SEAL COAT (Lakelite Agg)	NWB	0.71
1	Muskegon County	Mill Iron Rd from Hts. Ravenna N to Evanston	SEAL COAT (Lakelite Agg)	NB SB	0.20[1] 0.20[1]
1	Muskegon County	River Rd from Nestrom E to Peterson	BIT MAT - TYPE F (Conventional Agg)	EB WB	0.60 0.60
1	Muskegon County	River Rd from Peterson E to Weber	BIT MAT - TYPE F (Lakelite Agg)	EB WB	0.63 0.65
1	Muskegon County	River Rd from Weber E to Buys	BIT MAT - TYPE F (Conventional Agg)	EB WB	0.63 0.63
2	63041	M 59 at US 10	BIT	EBOL EBIL WBRT WBCL WBIL	0.42 0.44 0.46 0.45 0.46
2	63052	US 10 at M 59	BIT	NBRT NB #3 NB #2 NBIL SBOL SBCL SBIL	0.48 0.46 0.46 0.43 0.43 0.43 0.44
3	Wayne County	Detroit Metropolitan Airport Runway 3L-21R (Braking Area) Runway 3R-21L (Braking Area)	 CONC BIT		 0.44 0.54
3A	Wayne County	Detroit Metropolitan Airport Runway 3L-21R (Untreated) Runway 3L-21R (Treated)	 CONC CONC		 0.43 0.41[2]
3A	Wayne County	Greenfield Ave from Warren Rd N to Fenkell Rd	BIT		0.44
3A	Wayne County	McNichols Rd from Greenfield Ave W to M 39	BIT		0.43
4	41131	US 131 SB Exit Ramp to M 11 Deceleration Area Stopping Area	 CONC CONC	 SB SB	 0.40 0.35
5	66-16, C7 (66033)	US 45 S of Ontonagon M. P. 7.9 to 8.7	BA	NB, SB	0.64
5	66033, C3	US 45 from Rockland N. to Ontonagon (intermittent) M. P. 3.3 to 11.8	BA	NB, SB	0.32

* Numbered in order requests are received.

[1] Seal coat surface completely worn off

[2] Curing compound chemically removed.

TABLE 27 (Cont.)
SPECIAL REQUEST TESTS

Special Request No. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
5	29011	US 27 (SB) from Ann Arbor RR S, E of Ithaca M. P. 12.0 to 12.02	BIT	SB	0.62
5	34032, C1	M 66 from Gd River Ave N to David Hwy M. P. 0.59 to 3.4	BIT	NB, SB	0.36
5	73112	I 75 approaches to Zilwaukee Bridge M. P. 0.4 to 1.0	BC CONC	NB SB	0.63 0.43
5	78061, C2	M 86 from Centreville E to M 66 M. P. 7.3 to 10.1	ST	EB, WB	0.66
5	78061	M 86 W of Nottawa (Maint Patch) M. P. 9.1	BIT	EB, WB	0.22
5	78-11, C4 (78042)	M 60 from Three Rivers E to Mendon M. P. 2.6 to 12.7	BC	EB, WB	0.60
5	80071-005	M 40 SW of Decatur (5 patches)	K & S BA	NB, SB	0.30
5	30-491, C1 (30011)	M 49 from the Ohio State Line N to Reading M. P. 0.0 to 9.6	ST	NB, SB	0.57
5	30-21, C1 (30011)	M 49 from Reading N to US 12 M. P. 10.6 to 18.6	ST	NB, SB	0.55
5	23052-002 (38073)	M 50 from Murray Rd SE'ly to Cunningham Rd M. P. 13.3 to 14.4	K & S BA	EB, WB	0.33
5	7SC-8A (38051)	M 106 from S of Meridian Rd N to Jackson - Ingham Co Line M. P. 7.1 to 19.0	NSST	NB, SB	0.46
5	4SC-8A (47041)	M 36, intermittent, from Ingham Co Line E to US 23 M. P. 0.0 to 11.5 M. P. 19.0 to 23.7	ST ST	EB, WB EB, WB	0.26 0.52
5	47041-002	M 36 from Pettysville Rd E to Henry Rd M. P. 16.0 to 17.0	BA	EB, WB	0.42
5	81-62, C3 (81104) 81104A, C18	I 94 at curve over BL 94 (Jackson Rd) M. P. 16.5 to 17.9	CONC	EB, WB	0.43
5	63031-020	US 24 from N of 14 Mile Rd to N of 15 Mile Rd M. P. 6.4 to 7.6	CONC	NB, SB	0.42
5	63-21, C11 (63031)	US 24 from N of 15 Mile Rd N to Long Lake Rd M. P. 7.6 to 9.6	BC	NB, SB	0.61
5	63-05, C16 (63053)	US 10 (SB), 3500 ft N of Andersonville Rd M. P. 1.0 to 1.25	BC	SB	0.54
5	58033-003 (58033 & 82051)	US 24 from S of Stoney Creek in Monroe Co N to Carter Rd in Wayne Co M. P. 0.0 to 8.8 (Monroe) M. P. 0.0 to 3.3 (Wayne)	BC	NB, SB	0.57

* Numbered in order requests are received.

TABLE 27 (Cont.)
SPECIAL REQUEST TESTS

Special Request No. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
5	66033, C1	US 45 from Rockland N to Ontonagon (intermittent) M. P. 2.6 to 11.4	BA	NB, SB	0.67
5	66022B, C3	M 28 from W of Ewen E to W of the Baltimore River M. P. 14.4 to 17.6	BA	EB, WB	0.56
5	66022D, C7	M 28 from W of the Baltimore River E to US 45 M. P. 17.6 to 19.5	BA	EB, WB	0.26
5	22012-002	M 95 from US 2 N to Co. Rd 569 M. P. 0.0 to 10.5	BA	NB, SB	0.46
5	22041, C1	M 69 from Iron - Dickinson Co Line E to M 95 M. P. 0.0 to 1.8	BA	EB, WB	0.68
5	36023, C3	M 69 from Crystal Falls E to Iron - Dickinson Co Line M. P. 1.4 to 10.8	BA	EB, WB	0.42
5	31012	US 41 - M 26 Houghton-Hancock Bridge Area	CONC	NB, SB	0.41
5	Mm 7SC-1A (36052)	US 141 from US 2 N to N of Amasa M. P. 0.0 to 16.2	NSST	NB, SB	0.38
5	49-30, C12 (49022)	US 2 from M 117 E M. P. 5.6 to 6.2	BC	EB, WB	0.45
5	49023, C8	US 2 from the Brevort River E 9.2 miles M. P. 12.8 to 22.0	BC	EB, WB	0.55
5	48-28, C5, C8 (48034)	M 123 from Chippewa-Luce Co Line SW 6.0 miles M. P. 0.8 to 6.0	ST	NB, SB	0.33
5	15-12, C3 (15012)	US 31 from Dixon St N to Petoskey Ave M. P. 0.6 to 0.8	CONC	NB, SB	0.30
5	28-26, C8 (28052)	M 37 from Wilson Rd N to Old Mission Rd M. P. 4.1 to 14.4	ST	NB, SB	0.50
5	28021, C1	M 113 from City Rd E to Bancroft Cr (M. P. 6.9 to 9.7) and from Townline-Knight Rd E to M 186 (M. P. 10.1 to 12.5)	NSST	EB, WB	0.61
5	72-182, C1 (72052)	M 18 from M 55 (E Jct) N to M 157 M. P. 0.1 to 2.0	ST	NB, SB	0.57
5	69014-012	I 75 (SB) N of Vanderbilt M. P. 9.2 to 9.7	SA	SB	0.63
5	35011-003	M 65 from Arenac-Iosco Co Line N to Whittemore M. P. 0.0 to 4.5	BA	NB, SB	0.62
5	62031, C10	M 37 from Bridge St N'ly to River St M. P. 8.7 to 8.9	CONC	NB, SB	0.39
5	61171, C1	M 37 from Muskegon-Kent Co Line N'ly M. P. 0.0 to 0.5	CONC	NB, SB	0.44

* Numbered in order requests are received.

TABLE 27 (Cont.)
SPECIAL REQUEST TESTS

Special Request Nn. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
6	Washtenaw Co	Jackson Rd (WBOL) W of Ann Arbor at 3 locations			
		1) Treated with $CaCl_2$	CONC	WBOL	0.40[3]
		2) Treated with NaCl	CONC	WBOL	0.41[3]
		3) Treated with water	CONC	WBOL	0.43[3]
7	66022B, C3	M 28 from Ewen E to W of the Baltimore River	BA	EB, WB	0.61
7	66022D, C7	M 28 from W of the Baltimore River E to US 45	BA	EB, WB	0.32
7	31012	US 41 - M 26 Houghton-Hancock Bridge Area	CONC	NB, SB	0.35
7	49-30, C12 (49022)	US 2 from M 117 E	BC	EB, WB	0.40
7	49023, C8	US 2 from the Brevort River E 9.2 miles	BC	EB, WB	0.42
7	15-12, C3 (15012)	US 31 from Dixon St N to Petoskey St	CONC	NB, SB	0.28
7	80071-005	M 40 SW of Decatur (5 patches)	K & S BA	NB, SB	0.46
7	23052-002 (38073)	M 50 from Murray Rd SE'ly to Cunningham Rd	SANDBLASTED BA	EB, WB	0.41
8	74071	US 25 at Maple Rd, S of Lexington Heights Wet Tests	BC	NB, SB	0.41
		Dry Tests	BC	NB, SB	0.83
9	34032	M 66 from old US 16 N to Ionia	BIT	NB	0.48
				SB	0.46
10	Ms 15012 (02583A)	US 31 from Dixon St N to Lewis Ave	SFSA	NBOL	0.42
				NBIL	0.42
				SBOL	0.39
				SBIL	0.38
11	28013, C1	US 31 from 5 Mile Rd N to Acme	BC	NB	0.29
				SB	0.30
11	28011, C1	US 31 from the Benzie-Gd Traverse Co Line E'ly to Beitner Rd	BC	NB	0.44
				SB	0.45
11	28051B, C2	M 37 from M 113 N to Beitner Rd	BC	NB	0.48
				SB	0.49
11	51012, C3	US 31 from Fisk Rd N to the S limits of Bear Lake	BC	NB	0.41
				SB	0.42
11	28052, C1	M 37 from N Anderson St N to S of Orchard Dr	BC	NB	0.33
				SB	0.32
11	28052	M 37 from Peninsula St N to POE of M 37	ST	NB	0.54
				SB	0.51

* Numbered in order requests are received.

[3] Wsf values obtained approximately 2 hrs after treatment.

TABLE 27 (Cont.)
SPECIAL REQUEST TESTS

Special Request No. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
11	40011, C2	US 131 from the S Branch of the Boardman River N to the S limits of Kalkaska	BC	NB	0.55
				SB	0.55
11	45021, C4	M 72 from 6 miles E of Empire E to M 22	ST	EB	0.48
				WB	0.47
12	Wayne County	Detroit Metropolitan Airport Runway 9-27	BIT		0.81
13	78061	M 86 W of Nottawa (Maint Patch)	SEAL COAT	EB	0.55
				WB	0.53
14	12033	I 69 from the Indiana-Michigan Line N 0.3 mile	CONC	NBOL	0.36
				NBIL	0.53
				SBOL	0.37
				SBIL	0.62
14	12033	I 69 (SB) from end of I 94 "on ramp" S 0.2 mile	CONC	SBOL	0.42
				SBIL	0.60
15	Mm 2BA-4A (65032)	M 55-M 76 from Roadside Park W of West Branch E to Green Rd	BA	EB	0.23
				WB	0.24
16	86000	I 75 Mackinac Bridge	BC	NB, SB	0.57
			STEEL GRATING	NB, SB	0.49
17	B02 of 70014	US 31 over the Grand River	BIT	NEOL	0.29
				NBCL	0.30
				NBIL	0.35
				SBOL	0.37
				SBCL	0.38
				SBIL	0.38
			STEEL GRATING	NBOL	0.40
				NBCL	0.58
				NBIL	0.48
				SBOL	0.44
				SBCL	0.42
				SBIL	0.48
18	See Research Report No. R-809 for Test Results				
19	60021	M 32 at four locations E of MDSH (Atlanta) Maintenance Garage			
		1) Screenings - 35 min[4]	K & S ST	EB	0.35
		2) 2NS - 5 min[4]	K & S ST	WB	0.42
		3) 2NS - 25 min[4]	K & S ST	WB	0.41
		4) 31A BE Stone - 40 min[4]	K & S ST	WB	0.47
19	60021	M 32 at two locations W of McMurphy Rd			
		1) Bladed Screenings - 30 min[4]	K & S ST	EB	0.35
		2) Bladed & Rolled Screenings - 30 min[4]	K & S ST	EB	0.33
19	Mm 1SC-4B (60021)	M 32 W of MDSH (Atlanta) Maintenance Garage	ST	EB	0.15
				WB	0.17
20	77032	US 25 BR at Oak St (EB M 21)	SA	NB, SB	0.37
		US 25 BR from Griswold St N to Chestnut St	BIT	NB, SB	0.48
		US 25 BR from Chestnut St N to Court St	BIT	NB, SB	0.48

* Numbered in order requests are received.

[4] Elapsed time between kerosene treatment and cover material placement.

TABLE 27 (Cont.)
SPECIAL REQUEST TESTS

Special Request No. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
21	Ms 33043 (00449A)	M 78, M 78-M 43 from Touraine St SW'ly to Homer St	BC	EBOL	0.42
				EBIL	0.44
				WBOL	0.44
				WB#3	0.45
				WB#2	0.47
				WBIL	0.39
21	S08 of 23081	I 496 over Waverly Rd	CONC	EBOL	0.38
				EBIL	0.50
	S07 of 23081		CONC	WBOL	0.38
				WBIL	0.45
21	S01 of 33044	I 496 over US 27, M 78 BR ramp	CONC	EBOL	0.37
				EBIL	0.40
	S17 of 33044		CONC	WBOL	0.34
				WBIL	0.44
21	X01 of 33045 & S01 of 33045	I 496 over the Grand River, US 27, etc.	CONC	EBOL	0.50
				EBIL	0.51
	X02 of 33045		CONC	WBOL	0.44
				WBIL	0.51
21	X09 of 33045	I 496 over Penn-Central RR	CONC	EBOL	0.41
				EBIL	0.49
				WBOL	0.43
				WBIL	0.49
21	X11 of 33045	I 496 over Hosmer St	CONC	EBOL	0.43
				EBIL	0.52
				WBOL	0.46
				WBIL	0.49
21	S02 of 33045	I 496 over Pennsylvania Ave	CONC	EBOL	0.39
				EBIL	0.46
				WBOL	0.44
				WBIL	0.51
21	X12 of 33045	I 496 over C & O RR	CONC	EBOL	0.40
				EBIL	0.51
				WBOL	0.44
				WBIL	0.46
21	B01 of 33045	I 496 over the Red Cedar River	CONC	EBOL	0.49
				EBIL	0.50
	B02 of 33045		CONC	WBOL	0.48
				WBIL	0.46
21	S05 of 33045	I 496 over SB US 127-Trowbridge Rd Ramp	CONC	EBOL	0.49
				EBIL	0.51
	S16 of 33045		CONC	WBOL	0.51
				WBIL	0.50
21	S06 of 33045	I 496 over US 127 (SB)	CONC	WBOL	0.51
				WBIL	0.49
22	28013	US 31, curve W of 3 Mile Rd	CONC	NBOL	0.35
				NBIL	0.39
				SBOL	0.34
				SBIL	0.35

* Numbered in order requests are received.

TABLE 27 (Cont.)
SPECIAL REQUEST TESTS

Special Request No. *	Project or Control Section Number	Location	Surface Type	Direction and Lane	Avg. Coefficient of Wet Sliding Friction
22	28013	US 31, Curve E of 4 Mile Rd	CONC	NBOL	0.32
				NBIL	0.35
				SBOL	0.34
				SBIL	0.36
22	28013	US 31 from 3 Mile Rd N'ly to 4 Mile Rd	CONC	NBOL	0.38
				NBIL	0.39
				SBOL	0.39
				SBIL	0.37
23	60021	M 32 W of Atlanta (3 locations)			
		1) at Lewiston Rd	ST	EB, WB	0.62
		2) at Manier Rd	ST	EB, WB	0.51
		3) at Manier Rd	K & S ST	EB, WB	0.71
23	60021	M 32 E of Atlanta (3 locations)			
		1) 0.6 mile E of MDSH Maint Garage	ST	EB, WB	0.51
		2) 1.0 mile E of Hall Rd	K & S ST	EB, WB	0.56
	60022	3) Curve W of Floodwater Inn	K & S ST	EB, WB	0.49
23	Mm 2BA-4A (65032)	M 55, E from Roadside Park W of West Branch	K & S BA	EB, WB	0.56

* Numbered in order requests are received.