SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1970 TEST PROGRAM

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SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1970 TEST PROGRAM

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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

OL = outer lane (traffic lane)

CL = center lane

IL = inner lane (passing lane)

LT = left turn lane

D = deceleration lane

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

SUMMARIES OF MICHIGAN PAVEMENT SKID RESISTANCE 1970 TEST PROGRAM

INTRODUCTION

During the 1970 calendar year, over 6,500 skid tests were conducted throughout Michigan. These tests are summarized in this report according to the annual reporting procedure initiated in 1965. Skid levels for five basic categories are included:

I 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 I summarizes skid tests representing over 1,100 lane miles of trunkline surfaces tested during 1970.

Table 1— Concrete Pavements Constructed in 1969 and 1970

1969 Construction

Initial skid tests were conducted on 113.124 lane miles of concrete pavement after a one-year service period. Wet sliding friction (wsf) values ranged from 0.21 to 0.65 and averaged 0.48. Fourteen of the 71 lanes, representing 14.6 percent of the total lane mileage tested, yielded average wsf values below the Departmental Safety Standard of 0.40. All four lanes of Project M 23072-004, M 100 south of the Grand River in Grand Ledge, had friction levels of 0.34 or lower.

1970 Construction

During the initial service year, 24 lanes of concrete (79.838 lane miles) were tested. Coefficients ranged from 0.37 to 0.64 and averaged 0.54. The only lane which had an average wsf value below 0.40 was the NB#2 lane of US 24 near 15 Mile Rd (Project Ms 63031-020). This lane represents 1.6 percent of the lane mileage tested.

Table 2— Bituminous Concrete (4.12) Constructed in 1969 and 1970

1969 Construction

After a one-year service period, 122.354 lane miles of bituminous concrete were tested. Friction levels ranged from 0.30 to 0.64 and averaged 0.47. Four of the 46 lanes tested (2.1 percent of the total mileage) were below the Departmental Safety Standard. All four of these lanes were on Project Mb 12021-006.

1970 Construction

Initial service-year skid tests were conducted on 444.002 lane miles of bituminous concrete during test year 1970. Only one lane, on Project Mb 67051-002, located on M 115 northwest of M 66, yielded a friction level

below 0.40. This particular lane had an average wsf value of 0.39 and represents only 2.2 percent of the 1970 construction bituminous concrete tested this year.

Table 3— Bituminous Aggregate (4.11) Constructed in 1969 and 1970

1969 Construction

Skid tests were performed after a one-year service period on 72.700 lane miles of bituminous aggregate. The 12 lanes tested yielded coefficients ranging from 0.36 to 0.70 and averaging 0.53. None of the lanes had average wsf values below 0.40.

1970 Construction

During the initial year of service, 40 lanes (220.642 lane miles) of bituminous aggregate surface course 4.11 were skid tested in 1970. Fifteen of the forty lanes, representing 12.4 percent of the lane miles tested, yielded average wsf values below the Departmental Safety Standard. Additional testing of low friction lanes was conducted on 11 of the 15 lanes and the updated wsf values reported as special requests 4, 6, 7, 8, and 13 (Table 27). Wsf values on four of the 11 lanes retested improved enough to exceed the 0.40 mark.

Table 4— Miscellaneous Bituminous Surfaces Constructed in 1969 and 1970

NON-SKID SURFACE TREATMENT

1969 Construction

Only one NSST project (5.6 lane miles) was tested this year. Coefficients ranged from 0.53 to 0.59 after a one-year service period, and averaged 0.56.

STONE-FILLED SAND-ASPHALT AND SIMILAR SURFACES

1969 Construction

Wet sliding friction coefficients were determined on four stone-filled sand-asphalt surfaces during their first service year. Coefficients ranged from 0.28 to 0.69 and averaged 0.48. Six of the 16 lanes tested, 13.5 percent of the lane miles, yielded average wsf values below 0.40. All six lanes were on US 24 (Telegraph Rd) at Warren Rd, Project Ms 82053-045.

1970 Construction

All 12 lanes of stone-filled sand-asphalt checked in 1970, during the initial service year, had average wsf values above the Departmental Safety Standard. Coefficients ranged from 0.40 to 0.64 and averaged 0.52 on the 86.002 lane miles tested.

Table 5— Conventional Concrete and Bituminous Pavement Summary

During test year 1970, the average of the average coefficients for each surface type was above the Departmental Safety Standard. Outstanding friction level characteristics (coefficients of 0.50 or higher) were determined for initial year concrete, one-year bituminous aggregate, one-year non-skid surface treatment, and initial year stone-filled sand-asphalt.

TABLE 1
CONCRETE PAVEMENTS CONSTRUCTED IN 1969 and 1970

	Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1969	U 11031-004	M 139 from I 94 N'ly to Ox Creek and Pennsylvania Central RR	Carl Goodwin & Sons, Inc.	75-5	14-45	NBOL	0.30	0.34	0.31
						NBIL	0.38	0.40	0.39
						SBOL	0.44	0.48	0.46
						SBIL	0.33	0.37	0.36
	M 23072-004	M 100 from N of Franklin St N intermittently to a point 600-ft NE of the Grand River	Kegle Construction Co.	19-18	19-18	NBOL	0.31	0.38	0.34
						NBIL	0.31	0.36	0.34
						SBOL	0.30	0.38	0.34
						SBIL	0.21	0.30	0.26
	F 25042-015	M 78 relocation from E of Bristol Rd E'ly to W City Limits of Flint	Cooke Contracting Co.	63-54	63-54	EBOL	0.52	0.54	0.53
						EBCL	0.48	0.53	0.51
						EBIL	0.59	0.61	0.60
						WBOL	0.41	0.46	0.44
						WBCL	0.42	0.46	0.44
						WBIL	0.53	0.56	0.55
	F 25084-015	M 78 from approximately 500-ft W of Howe Rd E'ly to Vassar Rd	Denton Construction Co.	63-56 & 63-54	63-56 & 63-54	EBOL	0.51	0.53	0.52
						EBCL	0.49	0.51	0.50
						EBIL	0.48	0.52	0.50
						WBOL	0.55	0.57	0.56
						WBCL	0.54	0.60	0.56
						WBIL	0.59	0.64	0.62
	F 25084-016 (part)[1]	M 78 (extended) from Vassar Rd E to M 15 (Station 888+00 to 933+63 Only)	Denton Construction Co.	63-54	63-54	EBOL	0.46	0.49	0.47
						EBCL	0.52	0.54	0.53
						EBIL	0.54	0.58	0.56
						WBOL	0.42	0.44	0.43
						WBCL	0.51	0.55	0.52
						WBIL	0.54	0.59	0.56
	F 25084-016 (part)[2]	M 78 (extended) from Vassar Rd E to M 15 (Station 933+63 to 1078+00 Only)	Sargent Construction Co.	63-56	63-56	EBOL	0.41	0.44	0.43
						EBIL	0.49	0.55	0.52
						WBOL	0.40	0.42	0.41
						WBIL	0.46	0.50	0.47
	SS 25101-012	M 57 from E City Limits of Clio E'ly to M 54	W. F. McNally Co.	17-66	25-8	EBOL	0.36	0.41	0.38
						EBIL	0.40	0.44	0.42
						WBOL	0.36	0.42	0.38
						WBIL	0.38	0.44	0.40

[1] Conventional paver used.

[2] Slip-form paver used.

1969 CONT.

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

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
			Coarse	Fine		Low	High	Avg
U 31051-014	US 41 relocation from 280-ft W of Division St W'ly to 270-ft W of Pearl St, City of Houghton	Proksch Construction Co.	31-45	31-45	NBOL	0.44	0.47	0.45
					NBIL	0.49	0.51	0.50
					SBOL	0.50	0.53	0.52
					SBIL	0.49	0.50	0.49
U 38083-017	I 94 BL - US 27 BR - M 50 (Michigan Ave) from W of Lydia St NE'ly to W of intersection of Clinton St & Jackson St	Denton Construction Co.	30-35	30-35	EBOL	0.37	0.40	0.38
					EBCL	0.39	0.43	0.41
					EBIL	0.38	0.43	0.41
					WBOL	0.33	0.41	0.37
					WBCL	0.39	0.42	0.40
					WBIL	0.41	0.43	0.42
F 41132-022 [3]	US 131 from S of 10 Mile Rd N to Station 925+00	L. W. Edison	41-46 & 41-48	41-46	NBOL	0.55	0.60	0.57
					NBIL	0.54	0.56	0.55
					SBOL	0.57	0.60	0.59
					SBIL	0.52	0.57	0.55
F 41132-022	US 131 from Station 925-00 N to 14 Mile Rd	Carl Goodwin & Sons, Inc.	41-46 & 41-48	41-46	NBOL	0.42	0.45	0.44
					NBIL	0.58	0.64	0.61
					SBOL	0.41	0.44	0.43
					SBIL	0.60	0.63	0.61
I 73101-022	I 675 from I 75 W'ly to Saginaw City Limits	Sargent Construction Co.	71-47	73-73	EBOL	0.42	0.45	0.43
					EBIL	0.52	0.56	0.53
					WBOL	0.48	0.51	0.50
					WBIL	0.47	0.53	0.50
F 73131-001	M 83 from 300-ft N of Townline Rd NW'ly to 488-ft N of N City Limits of Frankenmuth omitting from 800-ft N of Cass River Bridge N to Genesee St	Titus Construction Co.	17-66	63-54	NBOL	0.27	0.53	0.41
					NBIL	0.33	0.41	0.37
					SBOL	0.29	0.43	0.35
					SBIL	0.37	0.41	0.39
U 82081-021	M 153 (Ford Rd) from 620-ft E of M 39 (Southfield Rd) E'ly to 600-ft W of Greenfield Rd	T. Angelo Cement Const. Co.	E. C. Levy (Dix)	63-7	EBOL	0.48	0.50	0.49
					EB#3	0.38	0.44	0.40
					EB#2	0.41	0.44	0.42
					EBIL	0.48	0.52	0.50

[3] Skid tests were conducted and reported with 1969 test year data.

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

	Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1969 CONT.	BU 82104-023 BI 82252-185	On Davison Freeway from Goddard to Charest	Cooke Contracting Co.	E. C. Levy (Dix)	63-7 & 63-55	EBOL EB#3 EB#2 EBIL WBOL WBCL WBIL	0.59 0.57 0.57 0.59 0.55 0.60 0.57	0.64 0.65 0.60 0.62 0.58 0.62 0.64	0.61 0.61 0.58 0.60 0.56 0.61 0.61
1970	F 32092-004(1)	US 25 from M 53 E'ly to Huron City	Sargent Construction Co.	32-4	79-73	EB WB	0.52 0.57	0.56 0.59	0.54 0.58
	F 44043-001(1)	M 78 relocation from Genesee-Lapeer Co. Line (Washburn Rd) E'ly to 1253-ft E of Golf Rd	L. W. Edison Co.	63-4	63-4	EBOL EBIL WBOL WBIL	0.58 0.58 0.59 0.58	0.64 0.60 0.62 0.62	0.60 0.59 0.60 0.60
	Ms 63031-020	US 24 (Telegraph Rd) from approximately 1400-ft N of 14 Mile Rd N'ly to approximately 2670-ft N of 15 Mile Rd (Maple Rd)	Anderson & Ruzzin, Inc.	E. C. Levy (Dix)	63-55	NBOL NB#3 NB#2 NBIL SBOL SB#3 SB#2 SBIL	0.46 0.43 0.37 0.45 0.48 0.46 0.47 0.53	0.50 0.47 0.40 0.48 0.53 0.48 0.55 0.56	0.48 0.44 0.39 0.47 0.51 0.47 0.51 0.54
	F 65033-001	I 75 BL from Cooke Rd, at I 75 interchange, NE'ly to M 76	Eisenhour Construction Co.	65-7	65-7	NB SB	0.58 0.57	0.62 0.60	0.60 0.58
	I 65041-002(1)	I 75 from S Ogemaw Co. Line NW'ly to SE of Cooke Rd	Eisenhour Construction Co.	65-7	65-7	NBOL NBIL SBOL SBIL	0.52 0.58 0.65 0.60	0.56 0.61 0.68 0.64	0.54 0.59 0.66 0.62
	Mtb 82144-018	M 29 from Sunningdale Ave E'ly to E Limits of Grosse Pointe Woods	T. Angelo Cement Const. Co.	E. C. Levy (Dix)	63-88	EBOL EBIL WBOL WBIL	0.56 0.51 0.40 0.40	0.58 0.56 0.44 0.46	0.57 0.54 0.42 0.43

(1) Slip-form paver used.

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

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 04032-007	US 23 from State Rd to Bridge over Thunder Bay River	Alpena Paving Co.	79-21	04-29	NB	0.54	0.55	0.55
					SB	0.55	0.56	0.56
Mb 12021-006	US 12 from Wright St to Avery Dr., City of Coldwater	John Yerington Co.	Material Services Corp. Chicago, Ill.	12-35	EBOL	0.36	0.37	0.37
					EBIL	0.36	0.37	0.37
					WBOL	0.30	0.32	0.31
					WBIL	0.36	0.37	0.37
Ms 25072-011	M 21 - M 54 (Dort Hwy) from 521-ft S of M 21 (Court St) N'ly to 100-ft N of M 21 (Davison Rd)	Flint Asphalt & Paving Co.	47-3	63-54	NBOL	0.39	0.42	0.40
					NBIL	0.42	0.44	0.43
					SBOL	0.41	0.42	0.41
					SBIL	0.46	0.46	0.46
Mb 25072-013	M 54 (Dort Hwy) from Carpenter Rd N'ly to 510-ft N of Mt. Morris Rd omitting 1185-ft at Carpenter Rd	Spartan Asphalt Paving Co.	47-3	63-54	NBOL	0.49	0.53	0.50
					NBIL	0.58	0.59	0.58
					SBOL	0.49	0.53	0.51
					SBIL	0.57	0.60	0.59
U 41012-006	US 131 (Plainfield Ave) from I 96 NE'ly to Airway St, City of Grand Rapids	Rieth-Riley Const. Co., Inc.	41-46	41-113	NBOL	0.53	0.56	0.55
					NBIL	0.61	0.64	0.62
					SBOL	0.53	0.56	0.55
					SBIL	0.55	0.58	0.57
F 41122-006	M 57 from US 131 relocation E'ly to Teft Ave	Rieth-Riley Const. Co., Inc.	41-46	41-113	EB	0.54	0.58	0.56
					WB	0.55	0.58	0.57
Mtb 50071-008	M 29 from N to S City Limits of St. Clair Shores	Cooke Contracting Co.	50-35	50-35	NBOL	0.41	0.43	0.42
					NBIL	0.46	0.50	0.48
					SBOL	0.40	0.45	0.43
					SBIL	0.47	0.49	0.48
Ms 61022-006	M 46 (Miller Ave & Apple Ave) from US 31 BR (Muskegon Ave) E'ly to Getty St, City of Muskegon	Rieth-Riley Const. Co., Inc.	70-9	70-9	EBOL	0.56	0.58	0.57
					EBIL	0.55	0.59	0.58
					WBOL	0.55	0.56	0.55
					WBIL	0.59	0.60	0.59
Mb 63051-031 Ms 63051-032	US 10 (Woodward Ave) from 290-ft SE of I 75 BL (Square Lake Rd) SE'ly to 75-ft SE of Oakland Ave	Ajax Asphalt Paving, Inc.	63-4	63-4	SBOL	0.42	0.47	0.45
					SB#3	0.44	0.48	0.46
					SB#2	0.53	0.55	0.54
					SBIL	0.54	0.58	0.57

1969

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

	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 CONT.	Mtb 77022-009	Old M 21 from 80-ft W of 24th St E'ly to US 25 (Military St)	Blue Water Asphalt Co., Inc.	75-5	74-4	EBOL	0.40	0.44	0.43
						EBIL	0.43	0.44	0.43
						WBOL	0.41	0.45	0.43
						WBIL	0.41	0.45	0.42
	Mb 78021-001	US 12 from Mann Rd E'ly to 200-ft E of Penn Central RR Crossing, omitting from US 131 E'ly to 430-ft E of E Village Limits of White Pigeon	Rieth-Riley Const. Co., Inc.	39-1	78-25	EB	0.44	0.52	0.48
						WB	0.46	0.52	0.50
	U 82081-021	M 153 (Ford Rd) from 620-ft E of M 39 (Southfield Rd) E'ly to 600-ft W of Greenfield Rd	Cooke Contracting Co.	50-35	50-35	WBOL	0.59	0.62	0.60
						WB#3	0.54	0.58	0.55
						WB#2	0.56	0.59	0.58
						WBIL	0.57	0.60	0.59
	Mtb 82144-017	M 29 from E City Limits of Grosse Pointe Woods SE'ly on M 29 (Vernier Rd) & NE'ly & NW'ly on M 29 (Lake Shore Rd) to E City Limits of St. Clair Shores	Cooke Contracting Co.	50-35 & 63-4	50-35 & 63-4	NBOL	0.50	0.52	0.51
						NBIL	0.55	0.59	0.57
						SBOL	0.49	0.55	0.52
						SBIL	0.52	0.54	0.53
1970	RF 01051-001	US 23 from Iosco-Alcona Co. Line N'ly to N of the S Limits of Harrisville	Central Paving Co.	71-15	71-15	NB	0.53	0.56	0.54
						SB	0.54	0.56	0.55
	Mb 03072-006	M 40 from Sherman St in City of Allegan NW'ly to City Limits of Holland, omitting from 125th Ave to 136th Ave and from 3715-ft SE of Holland City Limits NW'ly 2700-ft	Rieth-Riley Const. Co., Inc.	39-1	03-76	NB	0.40	0.54	0.47
						SB	0.41	0.54	0.48
	Mb 11021-012 (01714A)	US 12 from 1.75 miles E of Galien E'ly 8.35 miles to W of US 12 BR	John Yerington Co.	41-38	14-36	EB	0.54	0.60	0.57
						WB	0.50	0.57	0.54
	Mb 13031-018	M 66 from 100-ft S of "L" Drive N'ly to 350-ft N of "E" Drive	Rieth-Riley Const. Co., Inc.	39-1	13-38	NB	0.46	0.47	0.46
						SB	0.49	0.52	0.50
	Mb 13071-011	Kalamazoo Ave (old US 27) from 0.5 mile S of Hughes Rd N'ly to US 27 BR - I 94 BL (Michigan Ave)	Rieth-Riley Const. Co., Inc.	39-1	13-38	NB	0.42	0.43	0.42
						SB	0.52	0.54	0.52
	Mb 13072-005	US 27 BR (Kalamazoo Ave & Brewer St) from US 27 BR - I 94 BL (Michigan Ave) N'ly to I 94 interchange	Rieth-Riley Const. Co., Inc.	39-1	13-38	NB	0.48	0.52	0.50
						SB	0.49	0.51	0.50

1970 CONT.

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

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 14041 (01707A)	US 12 from E Village Limits of Edwardsburg E'ly 6.88 miles to 275-ft W of M 205 intersection	Rieth-Riley Const. Co., Inc.	39-1	14-36	EB	0.36	0.47	0.42
					WB	0.42	0.47	0.44
Mb 19031-008	US 27 from 1350-ft S of Herbison Rd N'ly to 3125-ft N of Round Lake Rd	Spartan Asphalt Paving Co.	47-3	47-43	NBOL	0.49	0.50	0.50
					NBIL	0.57	0.58	0.58
					SBOL	0.48	0.50	0.49
					SBIL	0.54	0.57	0.55
I 20052-001 (1)	I 75 from Roscommon-Crawford Co. Line (M 18 - M 76) N'ly to 4 Mile Rd	Lake & Howell Const. Co.	72-5	72-5	NBOL	0.58	0.62	0.60
					NBIL	0.56	0.60	0.58
					SBOL	0.58	0.62	0.60
					SBIL	0.58	0.64	0.61
Mb 23052-002 (part) (2) (00290A)	M 50 from M 43 SE to M 78 in Charlotte	Spartan Asphalt Paving Co.	41-38	34-49	NWB	0.28	0.56	0.45
					SEB	0.22	0.52	0.43
Mb 23052-002 (part) (2) (00290A)	M 50 from Flanders Rd, E of Charlotte, SE'ly to M 99 in Eaton Rapids	Spartan Asphalt Paving Co.	41-38	34-49	NWB	0.44	0.52	0.48
					SEB	0.45	0.48	0.46
Mb 33042-011 (part)	EB M 43 (Saginaw St) from W of Logan St E'ly to E of Capitol Ave, City of Lansing	Rieth-Riley Const. Co., Inc.	47-3	23-92	EBOL	0.49	0.51	0.50
					EB#3	0.50	0.53	0.51
					EB#2	0.51	0.51	0.51
					EBIL	0.47	0.51	0.49
Mb 33042-011 (part)	EB M 43 - M 78 BR from Pennsylvania Ave E'ly to WB M 43 - M 78 BR (Grand River Ave), City of Lansing	Rieth-Riley Const. Co., Inc.	47-3	23-92	EBOL	0.42	0.46	0.44
					EB#3	0.40	0.44	0.42
					EB#2	0.44	0.45	0.44
					EBIL	0.41	0.45	0.43
SS 39081-010	M 43 from 0.2 mile W of US 131 E'ly to Sage St in Kalamazoo	Rieth-Riley Const. Co., Inc.	39-1	39-1	EBOL	0.49	0.50	0.50
					EBIL	0.48	0.52	0.50
					WBOL	0.42	0.44	0.43
					WBIL	0.47	0.48	0.47
Mb 41031-005 (part) (00576A)	M 37 from Kraft Rd NW'ly to 1000-ft S of M 11 (28th St)	Woodland Paving Co.	41-38	41-27	NB	0.54	0.58	0.56
					SB	0.47	0.50	0.48

(1) Leveling course only - no wearing course contracted for

(2) For additional test data see Bituminous Aggregate Surfaces and 1970 Special Requests 7, 8, and 13.

1970 CONT.

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

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 41031-005 (part) (00675A)	M 44 from 1700-ft S of Burton St N'ly to 514-ft S of Lake Drive	Woodland Paving Co.	41-38	41-27	NB	0.55	0.57	0.56
					SB	0.50	0.52	0.51
Mb 41031-005 (part) (00675A)	M 45 from W City Limits of Grand Rapids E'ly to Bridge St	Woodland Paving Co.	41-38	41-27	EBOL	0.50	0.54	0.52
					EBIL	0.56	0.58	0.57
					WBOL	0.52	0.55	0.53
					WBIL	0.58	0.61	0.59
SS 41101-002	M 44 (Belding Rd) from Ramsdell Dr E'ly to 217-ft E of Lincoln Lake Ave	Rieth-Riley Const. Co., Inc.	41-69	41-113	EB	0.49	0.52	0.51
					WB	0.52	0.53	0.52
U 44011-003	M 24 (Lapeer Rd) from Turrill Rd N'ly to N of Pearl St	Cooke Contracting Co.	50-35	50-35	NBOL	0.48	0.49	0.49
					NBIL	0.55	0.60	0.58
					SBOL	0.42	0.46	0.44
					SBIL	0.52	0.54	0.53
Mtb 44041-004	M 21 (Genesee St) from Millville Rd (W City Limits of Lapeer) E'ly to M 24 (Main St)	Ajax Asphalt Paving, Inc.	63-4	63-4	EBOL	0.46	0.48	0.47
					EBIL	0.48	0.54	0.51
					WBOL	0.44	0.48	0.45
					WBIL	0.46	0.50	0.47
Mb 44042-003	M 21 from 110-ft E of Dorrow Rd E'ly to 220-ft E of Cade Rd	Molesworth Contracting Co.	63-4	74-51	EB	0.48	0.49	0.49
					WB	0.43	0.49	0.45
Mb 44042-004	M 21 at E City Limits of Lapeer E'ly to Dorrow Rd	Williams Bro's Asphalt Paving Co.	63-4	63-4	EB	0.55	0.62	0.58
					WB	0.54	0.60	0.57
Mb 50051-033	US 25 (Gratiot Ave) from 14 Mile Rd NE'ly to Sunnyview St	Detroit Asphalt Paving Co.	47-3	50-41	SBOL	0.43	0.43	0.43
					SB#3	0.44	0.48	0.46
					SB#2	0.45	0.48	0.47
					SBIL	0.50	0.51	0.50
Mb 56021-005	M 20 from 61-ft W of Isabella-Midland Co. Line E'ly to 76-ft E of Castor Rd	The Hicks Co.	37-26	37-26	EB	0.44	0.46	0.46
					WB	0.44	0.48	0.45
Mb 58053-003[1]	US 24 from 50-ft S of Stoney Creek Bridge in Monroe Co. NE'ly to Carter Rd in Wayne Co. omitting at Huron River Bridge, in Flatrock and at West Rd intersection	Ayling-Cunningham Asphalt Paving Co. & Detroit Asphalt Paving Co.	E. C. Levy (Dix) & 47-3	E. C. Levy (Dix) & 47-3	NBOL	0.54	0.59	0.56
					NBIL	0.58	0.62	0.60
					SBOL	0.53	0.56	0.54
					SBIL	0.55	0.60	0.57
F 61012-002	M 120 from Village Limits of Holton NE'ly to M 82 Junction	Paul C. Miller	70-9	70-9	NB	0.42	0.46	0.44
					SB	0.41	0.43	0.42

(1) For additional test data see 1970 Special Request 14.

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

1970 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 63051-033	SB US 10 (Woodward Ave) from Webster Rd (Royal Oak-Berkley City Limits) SE'ly to Fielding Ave, omitting from Harrison St to Oakland Park Blvd	A. & A. Asphalt Paving Co., Inc.	63-4	63-4	SBOL	0.47	0.52	0.49
					SB#3	0.51	0.53	0.52
					SB#2	0.49	0.52	0.51
					SBIL	0.57	0.58	0.58
Mb 67051-002 (01613A)	M 115 from 1.51 miles NW of M 61 SE'ly to M 66	Hodgkiss & Douma, Inc.	67-2	67-2	EB	0.38	0.40	0.39
					WB	0.39	0.41	0.40
Mb 73051-003 (part) (01004A)	M 13 from 150-ft S of East St - Washington St intersection thence N'ly to 5th Ave, City of Saginaw	Saginaw Asphalt Paving Co.	47-3	63-54	NBOL	0.48	0.51	0.49
					NBIL	0.51	0.53	0.52
					SBOL	0.48	0.49	0.48
					SBIL	0.49	0.51	0.50
Mb 73051-003 (part) (01004A)	M 13 from 538-ft N of WB M 81 N'ly to N City Limits of Saginaw	Saginaw Asphalt Paving Co.	47-3	63-54	NBOL	0.48	0.51	0.49
					NBIL	0.51	0.54	0.53
					SBOL	0.46	0.47	0.47
					SBIL	0.45	0.50	0.48
Mb 73051-003 (part) (01004A)	M 81 from 28th St E'ly to 261-ft E of Outer Drive	Saginaw Asphalt Paving Co.	47-3	63-54	EB	0.42	0.46	0.44
					WB	0.44	0.45	0.44
Mb 77021-001	M 21 from E of Lapeer-St. Clair Co. Line E'ly to E of Sheridan Rd, omitting from 130-ft W of M 21 - Imlay City Drive to 190-ft E of Conners Rd	Molesworth Contracting Co.	50-35	74-51	EB	0.52	0.58	0.56
					WB	0.54	0.57	0.55
U 82081-023	M 153 (Ford Rd) from 299-ft E of Appoline St E'ly to Wyoming, Cities of Detroit & Dearborn	Ajax Asphalt Paving, Inc.	E. C. Levy (Dix)	E. C. Levy (Dix)	EBOL	0.49	0.55	0.52
					EBCL	0.51	0.58	0.55
					EBIL	0.59	0.60	0.59
					WBOL	0.62	0.66	0.64
					WBCL	0.59	0.61	0.60
					WBIL	0.61	0.62	0.62
Mtb 82144-018	M 29 from Sunningdale Ave E'ly to E Limits of Grosse Pointe Woods	Detroit Asphalt Paving Co.	47-3 & 50-41	47-15 & 50-41	EBOL	0.50	0.52	0.51
					EBIL	0.50	0.55	0.53
					WBOL	0.48	0.48	0.48
					WBIL	0.46	0.51	0.49
Mb 82211-027	M 85 (Fort St) from 150-ft S of LeRoy St in Trenton, N'ly to Peters St, City of Detroit	Asphalt Products Corp.	E. C. Levy (Dix)	E. C. Levy (Dix)	NBOL	0.43	0.56	0.51
					NBCL	0.57	0.58	0.58
					NBIL	0.51	0.60	0.55
					SBOL	0.41	0.56	0.48
					SBCL	0.54	0.55	0.54
					SBIL	0.48	0.62	0.55

TABLE 3
BITUMINOUS AGGREGATE (4.11) CONSTRUCTED IN 1969 and 1970

	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	Mtb 06011-003	M 76 from Wheeler Rd NW'ly to 250-ft S of Maple Ridge Rd	Central Paving Co.	65-46	----	EB WB	0.40 0.36	0.52 0.54	0.47 0.46
	Mb 41071-001	M 50 (Alden Nash Rd) from 84th St N'ly to 1770-ft S of I 96	Rieth-Riley Const. Co., Inc.	41-46	----	NB SB	0.56 0.58	0.58 0.61	0.57 0.60
	Mtb 41122-009	Old M 57 (14 Mile Rd) from US 131 E'ly 0.89 mile	Rieth-Riley Const. Co., Inc.	41-101	----	EB WB	0.66 0.64	0.70 0.64	0.68 0.64
	SS 45041-003	M 204 from M 22 E'ly to County Rd 641	Peninsula Asphalt Corp.	45-19	----	EB WB	0.41 0.40	0.44 0.42	0.42 0.42
	Mb 65052-005	M 33 from 210-ft N of M 55 N'ly to 503-ft N of S City Limits of Rose City	Central Paving Co.	65-46 & 65-52	----	NB SB	0.56 0.58	0.58 0.62	0.57 0.61
	Mb 68011-004	M 33 from 1894-ft S of Ogemaw-Oscoda Co. Line, N'ly 10 miles to Mio	Central Paving Co.	65-52	----	NB SB	0.64 0.62	0.67 0.64	0.65 0.63
1970	Mb 11074-004	M 140 from US 31 - US 33 N'ly to M 62	Rieth-Riley Const. Co., Inc.	14-55	----	NB SB	0.45 0.45	0.50 0.52	0.46 0.49
	Mb 16023-003	M 27 in Village of Topinabee	Lake & Howell Const. Co.	16-69	----	NB SB	0.36 0.32	0.46 0.47	0.40 0.40
	Mtb 20051-002 (1)	M 18 - M 76 from US 27 - Proposed I 75 E'ly to Proposed I 75 at Crawford-Roscommon Line	Lake & Howell Const. Co.	20-33	----	NB SB	0.35 0.39	0.45 0.50	0.41 0.44
	Mb 23052-002 (2) (part) (00290A)	M 50 at Fawn Lane Rd (1st patch W of US 127)	Spartan Asphalt Paving Co.	23-91	----	NWB SEB	0.20 0.16	0.24 0.29	0.22 0.22
	Mb 23052-002 (2) (part) (00290A)	M 50 at Blackman Rd (2nd patch W of US 127)	Spartan Asphalt Paving Co.	23-91	----	NWB SEB	0.22 0.27	0.28 0.31	0.25 0.29
	Mb 23052-002 (2) (part) (00290A)	M 50 at Woodard Rd (3rd patch W of US 127)	Spartan Asphalt Paving Co.	23-91	----	NWB SEB	0.40 0.34	0.44 0.39	0.43 0.37
	Mb 23052-002 (2) (part) (00290A)	M 50 through Thompkins Center (4th patch W of US 127)	Spartan Asphalt Paving Co.	23-91	----	NWB SEB	0.18 0.29	0.38 0.40	0.30 0.35
	Mb 32092-010 (01565A)	US 25 from Lytle St, in Village of Harbor Beach, N'ly to Main St in Village of Port Hope	Rieth-Riley Const. Co., Inc.	32-48	----	NB SB	0.47 0.48	0.51 0.51	0.49 0.49

(1) For additional test data see 1970 Special Request 5

(2) For additional test data see Bituminous Concrete Surfaces and 1970 Special Requests 7, 8, and 13.

TABLE 3 (Cont.)
BITUMINOUS AGGREGATE (4.11) CONSTRUCTED IN 1969 and 1970

1970 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 48032-005	M 123 from S Village Limits of Newberry N to Helen St	George Hocking Const. Co.	48-6	----	NB SB	0.37 0.36	0.39 0.37	0.38 0.37
Mb 62014-006	Proposed M 20 (One Mile Rd) from Croswell Ave E'ly to Tulip St	Rieth-Riley Const. Co., Inc.	62-34	----	EB WB	0.40 0.38	0.46 0.45	0.43 0.40
Mb 62021-002	M 82 from 647-ft N of M 120 (Muskegon-Oceana Co. Line) N'ly to 360-ft S of Church St, in Hesperia	Paul C. Miller	64-41 & 64-46	----	NB SB	0.36 0.31	0.40 0.36	0.37 0.33
Mb 66051-001 (part)[1]	M 26 from US 45, in Ontonagon Co., NE'ly to 160-ft E of Copper Range RR Crossing in Houghton Co.	George Hocking Const. Co.	66-77 & 66-78	Isle Royal Stamp Sand	NB SB	0.42 0.51	0.55 0.54	0.48 0.52
Mb 66051-001 (part)[1]	M 28 from 1.2 miles W of Kenton E'ly intermittently 5.4 miles	George Hocking Const. Co.	66-78	Isle Royal Stamp Sand	EB WB	0.48 0.51	0.52 0.51	0.50 0.51
Mb 72093-002	M 18 - M 76 from Proposed I 75 at Crawford-Roscommon Co. Line E'ly to E of Billman Rd	Lake & Howell Const. Co.	20-33	----	NB SB	0.34 0.38	0.47 0.49	0.42 0.45
Mb 74062-002	M 46 from E Limits of Carsonville E'ly to 280-ft W of US 25 omitting from W Limits to Church St in Port Sanilac	Frank Strausberg & Son, Co.	74-10	----	EB WB	0.60 0.49	0.61 0.51	0.60 0.50
Mb 77041-002	M 136 from 325-ft E of M 19 E'ly to 950-ft E of Black River Bridge	Blue Water Asphalt Co., Inc.	17-40	74-4	EB WB	0.54 0.53	0.56 0.58	0.55 0.56
Mb 80071-005 (part)[2]	M 43 from 0.7 mile W of M 40 W'ly, intermittently 5.7 miles	John Yerington Co.	80-20	----	EB WB	0.24 0.16	0.38 0.37	0.32 0.26
Mb 80071-005 (part)[2]	M 40, five patches SW of Decatur	John Yerington Co.	80-20	----	NB SB	0.16 0.17	0.39 0.42	0.25 0.31
Mb 80071-005 (part)[2]	M 119 from M 216 S the entire length of the curb and gutter section in Marcellus	John Yerington Con.	80-20	----	NB SB	0.45 0.48	0.53 0.53	0.49 0.50
Mm OBA-1A	M 28 from Soo Line RR Crossing, 0.3 mi. SW of Tula in Gogebic Co. E'ly to Merriweather Creek Bridge, 300-ft E of M 64 in Ontonagon Co.	Mathy Construction Co.	66-63	----	EB WB	0.52 0.54	0.58 0.59	0.54 0.56

[1] For additional test data see Miscellaneous Bituminous Surfaces.

[2] For additional test data see 1970 Special Requests 4 and 6.

TABLE 4
MISCELLANEOUS BITUMINOUS SURFACES CONSTRUCTED IN 1969 and 1970

	Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Coefficient of Wet Sliding Friction		
				Coarse	Fine		Low	High	Avg
1969	**NON-SKID SURFACE TREATMENT**								
	Mm OSC-7A	M 89 from 27th St E'ly to M 43	Rieth-Riley Const. Co., Inc.	03-34	----	EB WB	0.53 0.53	0.59 0.56	0.56 0.55
	STONE-FILLED SAND-ASPHALT AND SIMILAR SURFACES								
	Mb 38071-010	M 50 from 2400-ft E of Hand Rd in Lenawee Co., W'ly & N'ly to Stoney Lake Rd, in Jackson Co., omitting at US 12 and at divided roadway in Village of Brooklyn	Rieth-Riley Const. Co., Inc.	47-3	42-28	NB SB	0.62 0.65	0.65 0.69	0.64 0.67
	Ms 63052-021	US 10 (Southbound outside lane only) from 2361-ft NW of, to 784-ft SE of Bataan Rd	Lake & Howell Const. Co.	47-3	47-26	SBOL	0.50	0.55	0.53
	Ms 82053-045 (part)[1]	US 24 (Telegraph Rd) at Joy Rd	Asphalt Products, Corp.	E. C. Levy (Dix)	E. C. Levy (Dix)	NBOL NB#3 NB#2 NBIL	0.52 0.45 0.40 0.47	0.57 0.47 0.45 0.49	0.54 0.46 0.42 0.48
	Ms 82053-045 (part)[1]	US 24 (Telegraph Rd) at Warren Rd	Asphalt Products, Corp.	----	E. C. Levy (Dix)	NBOL NB#3 NB#2 NBIL SBOL SBCL SBIL	0.33 0.30 0.31 0.37 0.28 0.34 0.37	0.39 0.31 0.33 0.41 0.32 0.37 0.43	0.36 0.30 0.32 0.39 0.30 0.35 0.40
1970	Mb 21021-003	US 2 - US 41 from end of curb & gutter section in Escanaba W'ly to Delta-Menominee County Line	Payne & Dolan of Wisc., Inc.	21-53	21-45	EB WB	0.52 0.52	0.57 0.56	0.55 0.54
	Mb 21024-011	US 2 from Big Fishdam River, in Delta Co., E'ly to M 149 in Schoolcraft Co.	Mathy Construction Co.	75-5	70-9	EB WB	0.40 0.42	0.48 0.46	0.44 0.44
	Mb 66051-001 (part)[2]	M 26 from US 45, in Ontonagon Co., NE'ly to 160-ft E of Copper Range RR Crossing in Houghton Co.	Hocking Const. Co.	66-78	Isle Royal Stamp Sand	NB SB	0.62 0.60	0.64 0.64	0.63 0.62
	Ms 77032-008	US 25 from Court St NE'ly to Glenwood Ave, City of Port Huron	Blue Water Asphalt Co., Inc.	17-40	74-4	NBOL NBIL SBOL SBIL	0.45 0.51 0.47 0.51	0.47 0.53 0.49 0.53	0.46 0.52 0.47 0.52
	Mb 80071-005 (part)[3]	M 40, S from 40th Ave, 2.2 miles N of Paw-Paw	John Yerington Co.	41-38	80-20	NB SB	0.53 0.51	0.56 0.55	0.54 0.53

(1) For additional test data see 1970 Special Request 3.

(2) For additional test data see Bituminous Aggregate Surfaces.

(3) For additional test data see 1970 Special Requests 4 and 6.

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	24	79.838	0.50
Concrete	1	71	113.124	0.43
Bituminous Concrete	Initial	106	442.302	0.44
Bituminous Concrete	1	46	122.354	0.47
Bituminous Aggregate	Initial	40	168.642	0.42
Bituminous Aggregate	1	12	72.700	0.53
NSST	1	2	5.600	0.56
Stone-filled Sand-asphalt	Initial	12	86.002	0.52
Stone-filled Sand-asphalt	1	14	22.163	0.48

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 9 contain skid test results from 35 portland cement concrete projects consisting of 94 lanes (220.576 lane miles) which were constructed during 1965. Initial-year skid tests were conducted on 13 of these projects and resulting wsf values averaged 0.53. Nine of these projects, tested in 1966 after one year's service, had an average coefficient of 0.47. Twelve projects were first tested during their second service year (1967) and, at that time, had an average friction level of 0.45. The remaining 1965 construction project was not tested until 1968, the third year of service, and it had an average coefficient of 0.49. After five years of service, these same 35 projects were retested and 19 of the 94 lanes, representing 18.8 percent of the total lane mileage, showed average coefficients below the Departmental Safety Standard. Projects U 30032A, C1; F 50022A, C5; U 13121G, C6; U 73073B, C9; and U 70012B, C2 had average five-year values below 0.40 on all lanes tested.

Tables 10 through 12 list skid test results of 37 bituminous concrete projects constructed during 1965. In all, 95 lanes (419.579 lane miles) were tested. Average coefficients of wsf determined in the initial and after the first and second service years averaged 0.48, 0.44, and 0.35, respectively. Eight of the 37 lanes produced average five-year friction levels below 0.40. These eight lanes represent 8.0 percent of the total lane mileage tested.

Four of the bituminous aggregate projects, shown in Tables 13 and 14, were skid-tested during their initial service year and 9 were tested after a one-year service period. Average wsf values were 0.48 and 0.43, respectively. Excellent friction levels were determined on these projects after a five-year service period. Average coefficients on all 158.152 lane miles tested were above the 0.40 mark, ranging from 0.49 to 0.73.

Seven non-skid surface treatments constructed during 1965 and shown in Table 15 were first tested after a one-year service period. At this time, although the average NSST friction level was 0.45, five of the 20 lanes (31.6 percent of the total lane mileage) exhibited friction levels below 0.40. Skid tests conducted after the fifth service year averaged 0.52. All five lanes which were below the Departmental Safety Standard at the one-year service

level tested above 0.40 at the five-year level. However, average coefficients on the M 131 portion of Project Mm 6SC-4B, located between Middle Village Rd and a point north of Robinson Rd in Emmet County, decreased from 0.61 to 0.38 and from 0.59 to 0.38 on the north and southbound lanes, respectively.

Portland cement concrete, bituminous concrete, bituminous aggregate, and non-skid surface course pavements which were constructed in 1963, 1964, and 1965, and which had skid tests conducted at the one- and five-year service level, were 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. The following is a summary of determinations made from 395 lanes studied.

Portland Cement Concrete

One hundred thirty-one portland cement concrete lanes yielded an average one-year wsf value of 0.53. The average five-year coefficient was 0.51 or 0.02 lower.

Bituminous Concrete

The average one-year friction level determined on 200 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 0.50 and 0.58, respectively, were determined on 44 lanes of bituminous aggregate pavements.

Non-Skid Surface Treatments

To date, only 20 lanes of non-skid surface treatment projects have had one- and five-year skid tests conducted. Test results show an average increase of 0.07 after five years of service. The one- and five-year coefficients averaged 0.45 and 0.52, respectively.

Linear regressions relating one- and five-year wsf values were computed for concrete, bituminous concrete, bituminous aggregate, and non-skid surface treatment pavements which were constructed during 1963, 1964, or 1965. Graphs shown in Figure 1 have the following information for each surface type.

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.

Trends noted in last year's report, "Summaries of Michigan Pavement Skid Resistance— 1969 Test Program," are continued with the addition of 1970 test data. Traffic tends to polish portland cement concrete surfaces and slightly reduce the skid resistance qualities after five years of service. Bituminous pavements have surface oils flushed away and, in general, show an increase in skid resistance at the five-year level. Extrapolating friction levels beyond the fifth service year, one might expect skid coefficients to level off and gradually decline as exposed aggregates become polished.

TABLE 6
CONCRETE PAVEMENTS TESTED DURING 1965 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1965	1970
I 11016A, C17	I 94 from US 31 - US 33 N to I 196	L. W. Lamb Co.	Pits 70-9 & 75-5	Pits 14-45, 14-55, & 80-20	EBIL WBIL	0.62 0.62	0.53 0.53
U 30032A, C1	M 99 from Spring St NW & N to S of Hillsdale	Titus Construction Co.	Pit 30-35	Pit 30-35	NBOL SBOL	0.47 0.47	0.32 0.31
USS 33011A, C5	M 99 from Eaton-Ingham Co. Line NE to I 96	Eisenhour Construction Co., Inc.	Pit 34-45	Pit 33-79	NBOL SBOL	0.52 0.56	0.42 0.46
I 39022C, C11	I 94 from Penn RR E to Sprinkle Rd	Carl Goodwin & Sons, Inc.	Pit 3-44	Pit 3-44	EBOL EBIL WBOL WBIL	0.48 0.55 0.42 0.50	0.40 0.46 0.40 0.51
I 39022C, C12	I 94 from S Westnedge Ave E to Lovers Lane	Carl Goodwin & Sons, Inc.	Pit 3-44	Pit 3-44	EBOL EBIL WBOL WBIL	0.40 0.42 0.43 0.56	0.39 0.44 0.46 0.47
F 50011F, C12	M 53 from 17 1/2 Mile Rd N to N of M 59, E of Utica	Sargent Construction Co.	Pit 63-4	Pit 63-4	NBOL NBIL SBOL SBIL	0.63 0.63 0.62 0.60	0.38 0.49 0.40 0.46
F 50013A, C1	M 53 from S of 21 Mile Rd N to S of 25 Mile Rd	Sargent Construction Co.	Pit 63-4	Pit 63-4	NBOL NBIL SBOL SBIL	0.58 0.61 0.65 0.64	0.39 0.52 0.36 0.50
F 50022A, C5	M 59 from existing M 53 in Utica E to M 53 relocation	Holloway Construction Co.	Pit 63-4	Pit 63-47	EBOL WBOL	0.50 0.49	0.31 0.32
Mb 58021A, C1	M 151 from E of US 23 E to US 25	L. W. Edison	Maumee Stone Co., Maumee, Ohio	Pit 46-16	EB WB	0.53 0.53	0.44 0.46
U 63043B, C2 U 63043F, C3 BI 63172A, C13	M 59 from GTW RR Grade Separation E to Mott Rd	L. W. Edison	Pit 63-4	Pit 63-4	EBOL EBIL WBOL WBIL	0.57 0.53 0.56 0.55	0.36 0.43 0.38 0.47
U 82061E, C7	US 12 EB (Michigan Ave) from Heywood St E to 4th St	L. A. Davidson	E. C. Levy (Dix Yd)	Pit 82-10	EBOL EB#3 EB#2 EBIL	0.50 0.51 0.52 0.55	0.42 0.43 0.44 0.46

TABLE 7
CONCRETE PAVEMENTS TESTED DURING 1966 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1970
I 11015B, C36	I 94 from US 31 - US 33 S 4 mi. to bituminous concrete	Denton Construction Co.	Pits 70-9 & 75-5	Pits 14-58 & 80-20	NBIL SBIL	0.54 0.56	0.53 0.51
U 13121G, C6	I 94 from near Capital Ave E to "E" St in Battle Creek	Carl Goodwin & Sons, Inc.	Pit 8-80	Pit 8-80	NBOL NBIL SBOL SBIL	0.38 0.45 0.42 0.44	0.33 0.39 0.35 0.39
SS 22051A, C2	US 8 relocation from interstate bridge over Menominee River N to existing US 8	Bacco Construction Co.	Pit 22-4	Pit 22-4	NB SB	0.52 0.47	0.56 0.50
F 50013A, C2	M 53 relocation from N of 24 Mile Rd N to existing M 53	Sargent Construction Co.	Pit 63-4	Pit 63-4	NBOL NBIL SBOL SBIL	0.53 0.58 0.43 0.55	0.38 0.43 0.30 0.43
U 73073B, C9	M 81 (Davenport St) from Carolina St E to Schaefer St in Saginaw	W. F. McNally Co.	Pit 71-47	Pits 63-54 & 79-63	WBOL WBCL WBIL	0.36 0.36 0.40	0.28 0.31 0.30
SS 77052A, C3	M 29 relocation from 2550 ft S of Marysville N to 250 ft S of Bunce Ave on existing M 29	Anderson & Ruzzin, Inc.	Pit 75-5	Pit 74-51	NBOL NBIL SBOL SBIL	0.49 0.50 0.49 0.43	0.40 0.44 0.43 0.44
U 81104A, C18 U 81105A, C1 U 81105B, C2	M 14 relocation from 0.83 mi W of Wagner Rd NE to US 23 at the Huron River	Sargent Construction Co.	Pit 47-3	Pit 47-3	EBOL EBIL WBOL WBIL	0.46 0.46 0.46 0.47	0.48 0.60 0.47 0.59

TABLE 8
CONCRETE PAVEMENTS TESTED DURING 1967 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1970
F 33035B, C1 BI 33084A, C21	US 127 relocation from S of Holt Rd to I 96	Sargent Construction Co.	Pit 33-79	Pit 47-3	NBOL NBIL SBOL SBIL	0.53 0.57 0.51 0.55	0.54 0.66 0.52 0.67
U 63031A, C15	US 24 from 1287 ft N of M 102 N'ly 2.717 mi., Oakland Co.	Cooke Contracting Co.			NBOL NB#3 NB#2 NBIL SBOL SB#3 SB#2 SBIL	0.41 0.45 0.37 0.39 0.38 0.41 0.43 0.42	0.38 0.41 0.47 0.42 0.35 0.40 0.45 0.42
U 70012B, C2	M 21 - US 31 BR from Fairbanks Ave E and NE to Clover St	Neil and Al Construction Co.	Pit 70-9	Pit 70-9	EBOL EBIL WBOL WBIL	0.38 0.42 0.45 0.45	0.32 0.35 0.35 0.35
BI 82191E, C17 I 82191F, C18	I 75 (Seaway Freeway) from N of Pennsylvania Rd NE to S of Allen Rd	Denton Construction Co.	Pit 63-4 & E. C. Levy	Pits 47-3, 63-4, 63-7, & 82-10	NBOL NBCL NBIL SBOL SBCL SBIL	0.43 0.47 0.49 0.41 0.48 0.48	0.40 0.45 0.52 0.41 0.46 0.49
I 82191G, C20 I 82191H, C21	I 75 (Seaway Freeway) from S of Allen Rd NE to S of Goddard Rd	Denton Construction Co.	Pit 63-64 & E. C. Levy	Pits 47-3, 63-4, 63-7, & 82-10	NBOL NBCL NBIL SBOL SBCL SBIL	0.42 0.46 0.46 0.41 0.47 0.47	0.39 0.44 0.48 0.41 0.44 0.47
I 82191J, C25 I 82191H, C26 I 82191I, C27 I 82191J, C28	I 75 (Seaway Freeway) from S of Goddard Rd NE to W of US 25 (Toledo Rd)	The Kutchins Co.	E. C. Levy (Trenton)	Pits 63-7, 63-55, & 82-10	NBOL NBCL NBIL SBOL SBCL SBIL	0.39 0.46 0.49 0.38 0.44 0.46	0.39 0.46 0.47 0.39 0.45 0.46

TABLE 9
CONCRETE PAVEMENTS TESTED DURING 1968 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1968	1970
U 77023D, C10	M 21 relocation (EB) from M 146 E'ly to US 25 (Military St) in Port Huron	Eisenhour Construction Co.	Pit 75-5	Pit 50-26	EBCL	0.50	0.38
					EBIL	0.47	0.40
					EBOL*	----	0.55

* parking lane

TABLE 10
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1965 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1965	1970
MB 13033C, C14	M 78 (Capitol Ave) from N of Columbia Ave N and NE, intermittently, to Jackson St	Rieth-Riley Construction Co., Inc.	Pit 39-1	Pit 13-38	NB SBOL SBIL	0.41 0.40 0.44	0.45 0.45 0.44
Mb 18031C, C4	US 27 BR from S of Schoolcrest Rd N and E to Wilcox Parkway	The Hicks Co.	Pit 37-26	Pit 37-26	SBOL	0.57	0.45
F 27023B, C3	US 2 from Gogebic Station SE 8.416 mi.	Mathy Construction Co.	Pit 27-66	Pit 27-66	EB WB	0.53 0.55	0.70 0.71
F 27023D, C4	US 2 from 8.416 mi. SE of Gogebic Station E to 1.250 mi. W of Watersmeet	Mathy Construction Co.	Pit 27-66	Pit 27-66	EB WB	0.54 0.52	0.70 0.70
F 28012A, C1 F 28051B, C2	M 37 from M 113 (Miller Rd) N to 4030 ft N of Silver Lake Shore Rd	Penninsula Asphalt & Construction Co.	Pit 45-19	Pit 45-19	NB SB	0.50 0.49	0.44 0.47
Mb 28021C, C2	M 113 from 1100 ft W of Knight & Townline Rd E to 1000 ft E of Knight & Townline Rd	Penninsula Asphalt & Construction Co.	Pit 45-19	Pit 45-19	EB WB	0.49 0.47	0.60 0.57
U 30032A, C1	M 99 from Spring St NW and N to S of N limits of Hillsdale	Ayling-Cunningham Asphalt Paving Co.	France Stone Waterfield, Ohio	Pit 30-35	NBIL SBIL	0.55 0.59	0.48 0.50
U 30041A, C2	M 34 from S of N limits of Hillsdale N to Bacon St	Ayling-Cunningham Asphalt Paving Co.	Pit 47-3	Pit 30-35	EBOL EBIL WBOL WBIL	0.58 0.55 0.55 0.57	0.48 0.48 0.47 0.47
USS 33011A, C5	M 99 from Eaton-Ingham Co. Line NE to I 96	Rieth-Riley Construction Co., Inc.	Pit 47-3	Pit 33-6	NBIL SBIL	0.59 0.60	0.56 0.62
F 34033A, C3 F 59051B, C3 F 59051A, C4	M 66 from M 44 N to Main St (Co. Rd. 522) in Stanton	Spartan Asphalt Paving Co.	Pit 34-53	Pits 34-26	NB SB	0.55 0.51	0.65 0.64

TABLE 10 (Cont.)
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1965 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1965	1970
U 37011C, C7	US 27 BL from Broomfield Rd N to 940 ft N of Preston Rd in Mt. Pleasant	The Hicks Co.	Pit 37-26	Pit 37-26	NBOL	0.48	0.49
					NBIL	0.44	0.43
					SBOL	0.42	0.37
					SBIL	0.41	0.42
F 50022A, C5	M 59 from existing M 53 in Utica E to M 53 relocation	Thompson-McCully Co.	Pit 63-4	Pit 50-35	EBIL	0.52	0.45
					WBIL	0.51	0.49
Mb 58021A, C1	M 151 from E of US 24 E to US 25	Ayling-Cunningham Asphalt Paving Co.	Pit 47-3	Pit 46-20	EB	0.46	0.51
					WB	0.49	0.53
BU 61153A, C1 BU 61153B, C2	US 31 BR from Spring St NE to proposed US 31 relocation	Reith-Riley Construction Co., Inc.	Pit 75-5	Pit 70-9	NBOL	0.41	0.38
					NB#3	0.43	0.40
					NB#2	0.37	0.38
					NBIL	0.47	0.47
					SBOL	0.47	0.44
					SB#3	0.46	0.37
					SB#2	0.53	0.37
					SBIL	0.58	0.49
SS 78054A, C2	M 78 from Wasepi Rd N to M 60	Reith-Riley Construction Co., Inc.	Pit 39-1 & Stone Street Pit, Brighton Indiana	Pit 12-35	NB	0.57	0.71
					SB	0.57	0.67
I 82022A, C24	I 94 WB (D.I.E.) from W of Beech-Daly Rd E to US 24	Thompson-McCully Co.	Pit 47-3	Pit 63-7	WBOL	0.44	0.47
					WBCL	0.44	0.49
					WBIL	0.47	0.51
Mb 82121C, C7	I 96 BR (Grand River Ave) from 6 Mile Rd (McNichols Rd) SE to Freeland Rd	Detroit Asphalt Paving Co.	Pit 47-3	Pit 47-3	NWBOL	0.44	0.42
					NWBIL	0.46	0.44
					SEBOL	0.41	0.43
					SEBIL	0.45	0.45
Mb 82131C, C9	US 10 (Woodward Ave) from E Grand Blvd NW to Clairmont St	Cooke Contracting Co.	Pit 63-4	Pit 63-4	NBOL	0.42	0.41
					NBIL	0.41	0.44
					SBOL	0.39	0.41
					SBIL	0.44	0.46

TABLE 11
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1966 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1970
I 11014B, C9 I 11015A, C35	I 94 from La Porte Rd NE to S limits of Bridgman	Rieth-Riley Construction Co., Inc.	US Steel Gary, Ind.	Pits 11-36 & 14-36	EBOL	0.40	0.42
					EBCL	0.50	0.63
					EBIL	0.56	0.70
					WBOL	0.39	0.48
					WBCL	0.52	0.61
					WBIL	0.64	0.72
I 11015B, C36	I 94 from concrete pavement, 4 mi. S of US 31 - US 33, S to Bridgman	Rieth-Riley Construction Co., Inc.	US Steel Gary, Ind.	Pit 11-36	EBOL	0.38	0.36
					EBCL	0.55	0.59
					EBIL	0.61	0.71
					WBOL	0.39	0.38
					WBCL	0.51	0.60
					WBIL	0.62	0.71
Mb 13121D, C12	I 94 BL (Dickman Rd) from GTW RR E to 20th St in Springfield	Rieth-Riley Construction Co., Inc.	Pit 13-30	Pit 13-30	EBOL	0.36	0.52
					EBIL	0.39	0.56
					WBOL	0.34	0.49
					WBIL	0.42	0.58
F 21024B, C4	US 2 from Sturgeon River E to Big Fishdam	Thornton Construction Co., Inc.	Pit 75-43	Local Pits	EB	0.50	0.61
					WB	0.51	0.54
F 24031A, C2 U 24031A, C3	US 131 from 1500 ft S of State Police Post, S of Petoskey, N to US 31 (Charlevoix St)	Hodgkiss & Douma, Inc.	Pit 17-20	Pit 15-32	NBOL	0.44	0.55
					NBIL	0.44	0.52
					SBOL	0.48	0.53
					SBIL	0.51	0.54
SS 29021A, C2	M 57 from Gratiot-Montcalm Co. Line E of Carson City, E to S limits of Perrington (Luce Rd)	The Hicks Co.	Pit 63-4	Pit 59-48	EB	0.46	0.64
					WB	0.49	0.66
U 44012C, C2	M 24 from Second St N to N limits of Lapeer	Flint Asphalt & Paving Co.	Pits 32-4 & 63-4	Pit 63-54	NBOL	0.38	0.53
					NBIL	0.38	0.56
					SBOL	0.42	0.52
					SBIL	0.39	0.53
SS 73031C C7 USS 76012A, C1 SS 76012B, C2	M 47 from M 21 in Owosso, N to 5th St in Oakley	Saginaw Asphalt Paving Co.	Pit 47-3	Local Pits	NBOL	0.44	0.54
					NBIL	0.41	0.51
					SBOL	0.46	0.56
					SBIL	0.41	0.50
U 78042A, C5	M 60 - US 131 BR from US 131 E to Rocky River in Three Rivers	Globe Construction Co.	Material Services Corp., Chicago, Ill.	Pit 78-25	EBOL	0.37	0.47
					EBIL	0.38	0.48
					WBOL	0.34	0.47
					WBIL	0.35	0.46
Mns 82041C, C11	M 17 from Monroe Blvd to Pelham Rd	Detroit Asphalt Paving Co.	Pit 47-3	Pit 47-3	EBOL	0.31	0.44
					EBIL	0.32	0.46
					WBOL	0.34	0.42
					WBIL	0.33	0.46

TABLE 12
BITUMINOUS CONCRETE PAVEMENTS (4.12) TESTED DURING 1967 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1967	1970
Mb 41062C, C7	M 11 from Clyde Park E to Division St., omitting from SB US 131 off-ramp to Buchanan Ave., City of Wyoming	Grand Rapids Asphalt Paving Co.	Pit 41-16	Pit 41-38	EBOL	0.33	0.39
					EBIL	0.34	0.41
					WBOL	0.35	0.41
					WBIL	0.37	0.45

TABLE 13
BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1965 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1965	1970
FFH 01023C, C4	M 72 from 11 mi. E of M 65 E to Co. Rd. #171	S. D. Solomon & Sons	Pit 01-57	None	EB	0.46	0.64
					WB	0.48	0.65
F 04021A, C4 F 04021B, C5 Mb 60022A, C2	M 32 from Hillman E to Bean Creek Rd	Lake & Howell Construction Co.	Pit 04-42	None	EB	0.45	0.54
					WB	0.51	0.57

TABLE 14
BITUMINOUS AGGREGATE PAVEMENTS (4.11) TESTED DURING 1966 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1970
SS 05051A, C1	M 66 from US 131 N to Co. Rd. #620	Hodgkiss & Douma, Inc.	Pit 05-70	None	NB SB	0.48 0.49	0.49 0.49
F 16032C, C5	M 27 from N limits of Topinabee NE to NYCRR	Lake & Howell Construction Co.	Pit 16-64	None	NB SB	0.47 0.46	0.54 0.60
Mb 17043C, C3	M 48 from Co. Rd. intersection in Goetzville S to Caribou Lake Rd	Hodgkiss & Douma, Inc.	Pit 17-69	None	NB SB	0.48 0.47	0.73 0.72
F 32032C, C2	M 53 from 480 ft S of M 142 N to US 25 in Port Austin	Saginaw Asphalt Paving Co.	Pits 32-9, 32-10, 32-15 32-48, 32-51, 32-59, 32-60, & 74-10	None	NB SB	0.43 0.43	0.55 0.56
Mb 52032C, C7	M 35 from S limits of Palmer N 0.906 mi.	Payne & Dolan of Wisconsin, Inc.	Pit 52-9	None	NB SB	0.41 0.39	0.51 0.50
F 66021D, C5	M 28 - M 64 from Merriweather Creek NE to M 28 - M 64 junction W of Bergland	Mathy Construction Co.	Pit 66-63	None	NEB SWB	0.58 0.59	0.60 0.56
F 66022B, C3	M 28 from W of Ewen to 0.7 mi. E of Baltimore	Thornton Construction Co., Inc.	Pit 66-33	None	EB WB	0.34 0.33	0.58 0.53
F 66022A, C4	M 28 from M 64 (E Jct.) E to W branch of Ontonagon River	Thornton Construction Co., Inc.	Pits 27-27 & 66-63	None	EB WB	0.29 0.29	0.52 0.53
Mm 6BA-3B	US 31 N from 7 mi N of Scottville in Mason County	Laman Asphalt & Paving Co.	Pit 64-41	None	NB SB	0.42 0.40	0.50 0.50

TABLE 15
MISCELLANEOUS BITUMINOUS SURFACES TESTED DURING 1966 AND 1970

Project No.	Location	Paving Contractor	Aggregate Sources		Direction and Lane	Avg. Coefficient of Wet Sliding Friction	
			Coarse	Fine		1966	1970
Non-Skid Surface Treatments (4.06)							
Mm 5SC-5B	M 57 from Greenville E to M 66	Klett Construction Co.	Pit 34-51	None	EB WB	0.37 0.38	0.52 0.54
Mm 5SC-5C (part)	M 20 from E limits of White Cloud E to Newaygo-Mecosta Co. line	Rieth-Riley Construction Co., Inc.	Pit 54-27	None	NB SB	0.55 0.55	0.66 0.68
Mm 5SC-5C (part)	M 37 from N of White Cloud E to Newaygo-Lake Co. line	Rieth-Riley Construction Co., Inc.	Pit 54-27	None	NB SB	0.26 0.27	0.50 0.47
Mm 5SC-6B	M 18 from Gladwin-Roscommon Co. line S 17 mi.	Gilliland Construction and Equipment Co.	Pit 67-2	None	NB SB	0.45 0.48	0.48 0.46
Mm 5SC-6C	M 90 from Brown City E to M 19	Thompson-McCully Asphalt Paving Co.	Pit 50-35	None	EB WB	0.54 0.55	0.60 0.61
Mm 5SC-7A	M 37 from N limits of Middleville N to Barry-Kent Co. line	Bekman Co.	Pit 8-58	None	NB SB	0.46 0.43	0.63 0.61
Mm 6SC-4A	M 144 from W of AuSable River in Roscommon, E in Roscommon Co.	Comstock Construction Co.	Pit 71-15	None	EB WB	0.43 0.42	0.46 0.43
Mm 6SC-4B (part)	M 33 from 4 mi. N of M 68 N 5.8 mi.	Gilliland Construction and Equipment Co.	Pit 16-17	None	NB SB	0.47 0.45	0.48 0.55
Mm 6SC-4B (part)	M 33 from 12.3 mi. N of M 68 N 1.4 mi.	Gilliland Construction and Equipment Co.	Pit 16-17	None	NB SB	0.43 0.34	0.52 0.52
Mm 6SC-4B (part)	M 131 from 300 ft S of Middle Village Rd N to 1.5 mi. N of Robinson Rd	Gilliland Construction and Equipment Co.	Pit 16-17	None	NB SB	0.61 0.59	0.38 0.38
Sheet Asphalt (4.13)							
Mns 04031C, C2	US 23 at Werth Rd, 0.5 mi. SW of Alpena	Hodgkiss & Douma, Inc.	Pit 17-40	Pit 71-15	NB SB EB	0.38 0.39 0.37	0.65 0.58 0.62
Mm 6BC-7B	M 60 from M 66 (formerly M 78) NE to US 27, omitting Burlington	Rieth-Riley Construction Co., Inc.	None	Pit 12-35 & Local Pit	EB WB	0.52 0.54	0.63 0.64

TABLE 16
PORTLAND CEMENT CONCRETE PAVEMENTS CONSTRUCTED DURING 1965

Test Year	Number of Projects	Number of Lanes	Average WSF Value			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1965	13	34	0.52	0.52	0.53	0.42	0.65
1966	9	23	0.45	0.49	0.47	0.36	0.58
1967	12	34	0.43	0.47	0.45	0.37	0.57
1968	1	2	----	----	0.49	0.47	0.50
1970[1]	13	34	0.38	0.48	0.42	0.31	0.53
1970[2]	9	23	0.38	0.46	0.43	0.28	0.60
1970[3]	12	34	0.40	0.48	0.44	0.32	0.67
1970[4]	1	3	----	----	0.44	0.38	0.55

(1) Initial tests conducted in 1965.
(2) Initial tests conducted in 1966.
(3) Initial tests conducted in 1967.
(4) Initial tests conducted in 1968.

TABLE 17
BITUMINOUS CONCRETE PAVEMENTS CONSTRUCTED DURING 1965

Test Year	Number of Projects	Number of Lanes	Average WSF Value			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1965	22	51	0.46	0.50	0.48	0.37	0.60
1966	14	40	0.39	0.45	0.44	0.31	0.64
1967	1	4	0.34	0.36	0.35	0.33	0.37
1970[1]	22	51	0.44	0.48	0.50	0.37	0.71
1970[2]	14	40	0.48	0.56	0.54	0.36	0.72
1970[3]	1	4	0.40	0.43	0.42	0.39	0.45

(1) Initial tests conducted in 1965.
(2) Initial tests conducted in 1966.
(3) Initial tests conducted in 1967.

TABLE 18
BITUMINOUS AGGREGATE PAVEMENTS CONSTRUCTED
DURING 1965

Test Year	Number of Projects	Number of Lanes	Average WSF Value			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1965	4	4	----	----	0.48	0.45	0.51
1966	9	18	----	----	0.43	0.29	0.59
1970[1]	4	4	----	----	0.60	0.54	0.65
1970[2]	9	18	----	----	0.56	0.49	0.73

(1) Initial tests conducted in 1965.
(2) Initial tests conducted in 1966.

TABLE 19
NON-SKID SURFACE TREATMENT PAVEMENTS CONSTRUCTED
DURING 1965

Test Year	Number of Projects	Number of Lanes	Average WSF Value			Range of WSF Values	
			OL	IL	All Lanes	Low	High
1966	7	20	----	----	0.45	0.26	0.61
1970[1]	7	20	----	----	0.52	0.38	0.68

(1) Initial tests conducted in 1966.

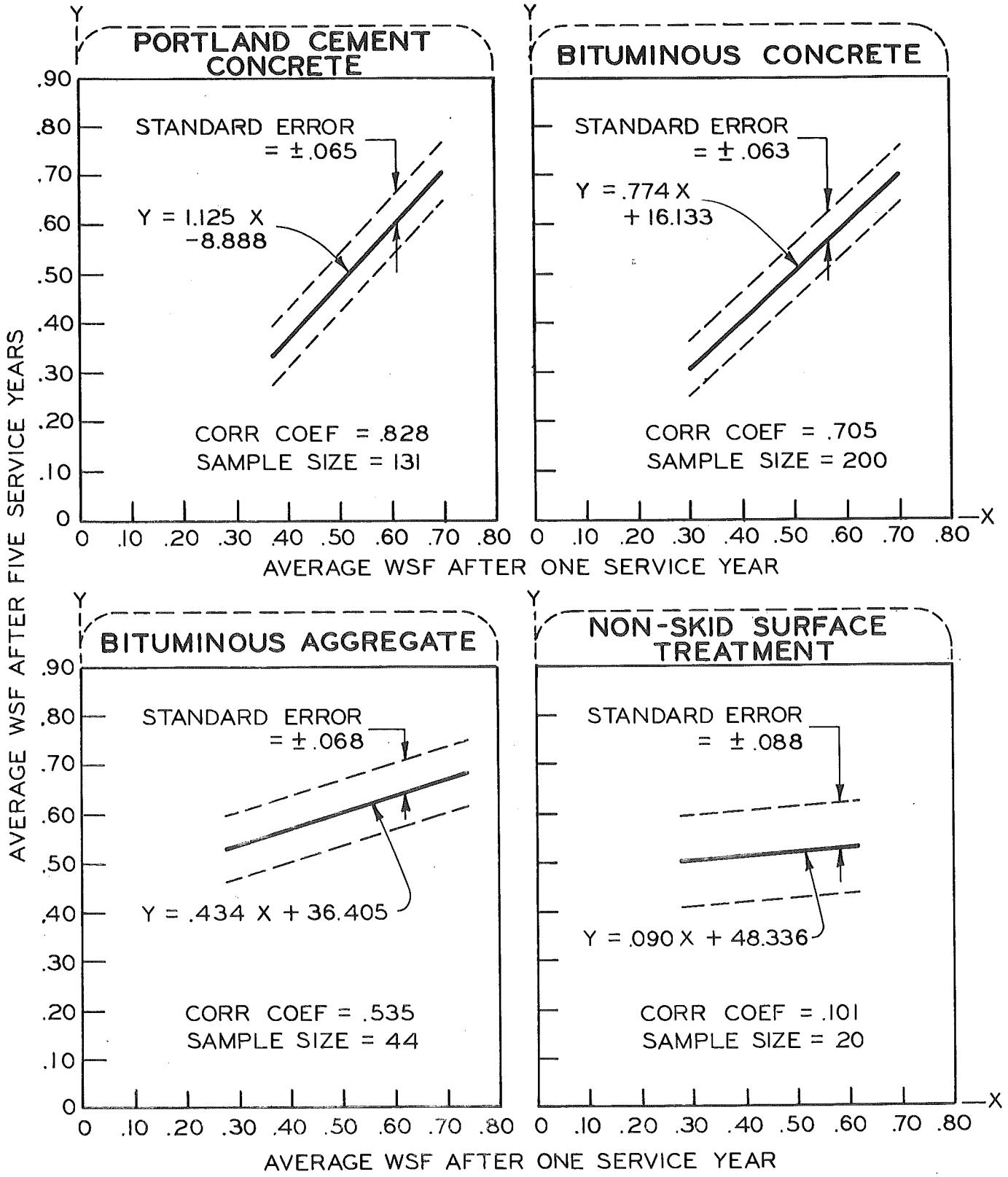

Figure 1. Relationship between one and five-year wet sliding friction values.

SECTION III

EXPERIMENTAL FEATURES IN PAVEMENT SURFACES

EXPERIMENTAL FEATURES IN PAVEMENT SURFACES

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

Except for 1962, skid tests have been conducted annually on the rubberized sand-asphalt surface which was placed on US 31 in October of 1960. Table 20 summarizes these tests. The 1968 coefficients indicated an increased friction level over the 1967 values. During 1969, the friction level dropped 0.05 to a level identical to that determined initially in 1960. The 1970 friction level decreased insignificantly by 0.01 and this project continues to exhibit good skid resistance qualities.

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

Good skid resistance qualities have existed on this project since the 3 BC sand-asphalt surface was placed in 1964 and these qualities continued during the 1970 tests. Average wsf values, determined after six years of service, ranged from 0.57 to 0.60. Friction levels still do not indicate a 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; both have performed well.

Table 22— Bituminous Concrete Interstate Projects

This table presents the results of skid tests taken on a representative sample of Interstate bituminous projects which were constructed during 1961 and 1962. The 1970 average wsf values range from 0.55 to 0.74 and average 0.65 for the inside (passing) lanes and from 0.41 to 0.66, averaging 0.56, for the outside (traffic) lanes. Previously established trends were continued this year as the inside lanes yield average friction levels 16.1 percent higher than the outside lanes with all values above the Departmental Safety Standard.

Table 23— Bridge Deck Surface Coatings

Table 23 summarizes skid tests for five types of bridge deck surface coatings placed on seventeen structures. Four structures (X01 of 11016, B01 of 45041, B01 of 35032, and B04 of 06073) tested and reported last year comparing types of coal-tar epoxy coatings have been deleted from this study.

1. Coal-Tar Epoxy Coatings

The single structure currently being tested under this surface type is B02 of 61151 carrying the northbound lanes of I 96BS and US 31BR over Black Creek. While initial test values in 1968 exhibited good skid resistance qualities, the surface condition and frictional properties on this project have deteriorated rapidly. After one year's service, average friction levels had dropped 41 percent to 0.34. The average friction level determined in 1970 of 0.22 is 62 percent lower than the initial values and 35 percent lower than last year's values.

2. Rubberized Bituminous Concrete

Five structures which were surfaced with rubberized bituminous concrete in 1967 were tested again in 1970 and yielded an average wsf value of 0.50. This figure is 3.8 percent lower than the average coefficient determined last year. Friction levels after the third service year have decreased on all but two of the 16 lanes tested. Friction level decreases ranged from 0.01 to 0.07 while the two lanes with increased skid resistance average a 0.025 rise in friction level.

Six structures surfaced in 1968 were skid tested again in 1970. Initially, friction levels ranged from 0.42 to 0.52 and averaged 0.45. After being subjected to weathering and traffic for two years, wsf values ranged from 0.34 to 0.50 and averaged 0.44. Average coefficients at the initial, one-, and two-year service level are similar, but by separating the structures into two categories based on traffic volume a difference is apparent. Structures in Category 1 bear an average daily traffic volume 20-percent lower than Category 2 structures. Category 1 (B01 of 61076, B02 of 61076, B03 of 61076, and S04 of 61072) yield average wsf values 6.7 percent higher at the two-year service level and Category 2 (S16 of 82111 and S17 of 82023) yield average wsf values 13.3 percent lower at the two-year service level.

3. Asbestos Mixtures

Two structures coated with bituminous mixtures containing asbestos were tested for the fourth consecutive year in 1970; both structures were coated in 1967. Bridge B05 of 58152 had a rubberized asbestos and bituminous concrete mixture applied to its deck. Wsf values obtained this year averaged 0.50, continuing to maintain good friction levels after the third service year. The northbound lanes of X01 of 81075 have been coated with a mix comprised of asbestos and sand asphalt, while the southbound has a mixture of rubberized bituminous concrete and sand-asphalt. Lanes in both

directions have slightly decreased friction levels this year. Average wsf values determined in 1970 were 0.57 and 0.58, respectively, for the northbound and southbound lanes of X01 of 81075.

4. Polyurethane Coating

Bridge S18 of 82025 was coated with a special thin coating of polyurethane in 1968. Outside lanes averaged 0.49 after one year of service but inside lanes had dropped to a dangerously low average friction level of 0.18. Between the one- and two-year service levels, corrective treatment (maintenance repairs) has improved friction levels for this structure. Outside lanes as tested in 1970 average 0.53, 20 percent higher than 1969; inside lanes average 0.34, 88 percent higher than in 1969. Although the inside lane friction level of 0.34 is less than the Departmental Safety Standard, it is likely adequate for this location due to low traffic speeds necessitated by right-angle roadway alignment at the west end of the structure.

5. Epoxy Coatings

Skid tests were continued at the one-year service level on S05 of 23081. Friction levels for the north one-half, surfaced with E15-Versamid 140, average 0.54, 18.2 percent lower than initial levels. Friction levels for the south one-half, surfaced with Guardkote 250, average 0.50, 30.6 percent lower than initial levels. Following one year's service, although dropping considerably, friction levels remain adequate on both surfaces.

Added to this study in 1970 is the M 83 bridge over the Cass River, B02 of 73131, in Frankenmuth. This bridge was surfaced with epoxy mortar in August of 1969 and initial testing was conducted at the one-year service level in 1970. Average wsf values for 1970 range from 0.52 to 0.60 indicating good skid resistance qualities.

Table 24— Experimental Skid-Resistant Resurfacing

Skid tests were continued this year at 16 experimental skid-resistant resurfacing locations which were constructed in 1965. Five-year friction levels were below 0.40 on 12 percent of the 90 lanes tested in 1970. Fifty-two percent of the lanes exhibited average friction levels between 0.40 and 0.49, and 36 percent were 0.50 or higher.

For the fourth consecutive year, four of the experimental surface types exhibit outstanding friction levels with average wsf values on all lanes 0.50 or higher. Included in this outstanding performance category are:

1) 80-lb/sq yd sandstone plus asphalt: Control Sections 09033 and 09042.

2) 50-lb/sq yd quartzite plus asphalt: Control Sections 25072 and 25073.

3) 50-lb/sq yd 3BC sand plus hot asphalt emulsion: Control Section 81031.

4) 50-lb/sq yd 2MS sand plus hot asphalt emulsion: Control Section 81031.

Average wsf values for each of the other seven mixture types range from 0.40 to 0.50. Performing the poorest is the 50-lb 3BC plus asbestos fiber and asphalt experimental mixtures located in Control Sections 82052 and 82053. Here, eight of the 23 lanes tested have average five-year wsf values below the Departmental Safety Standard.

The 80-lb crushed fine aggregate mixture applied to the northbound lanes of US 24 in August of 1968 continued to show a decay in skid resistance for the second service year. Coefficients for all lanes of this surface type, however, averaged above 0.40.

Table 25— Textured Concrete Pavement Surfaces; Northbound I 69

Three special textured surface sites were constructed as part of Project I 13074-001 to investigate different methods of texturing concrete pavement surfaces and to evaluate their performance. These sites are located on the northbound lanes of I 69, north of I 94 between Stations 2241+50 and 2289+50 and were specially textured in three ways: 1) transverse finish using nylon brushes; 2) transverse finish using metal combs; and, 3) longitudinal finish using nylon brushes. Total length of these special textures was about 4,700 lineal ft of 24-ft roadway. The remainder of the project was finished with a conventional burlap drag. Table 25 summarizes various texturing methods, locations, and their initial skid resistance values.

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

* 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
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
				SBIL/NB*	0.68	0.66	0.68	0.62	0.65	0.63	0.59	0.60
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
				SBIL/NB*	0.63	0.68	0.68	0.64	0.67	0.62	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
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
						OL	0.51[2]	----	----	----	0.47	0.48	0.41	0.42	0.46	0.53	0.44
72014, C4 20016, C1	6.273	0.6 mi. S of Roscommon-Crawford Co. Line to M 18 - M 76	May-June 1962	Thornton Construction	Pickett, Schreur (Merrit Pit)	IL	----	0.51	----	0.58	0.68	0.63	0.56	0.64	0.64	0.72	0.72
						OL	----	0.48	----	0.53	0.59	0.53	0.49	0.54	0.59	0.66	0.63
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
						OL	0.56	0.52	0.56	0.51	0.63	0.59	0.52	0.54	0.60	0.70	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
						OL	----	----	0.49	0.54	0.54	0.44	0.36	0.40	0.41	0.48	0.41
		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
						OL	----	----	0.47	0.47	0.48	0.44	0.35	0.37	0.42	0.48	0.46
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
						OL	----	----	0.54	0.57	0.62	0.57	0.50	0.56	0.58	0.67	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
						OL	----	0.58	----	0.56	0.58	0.60	0.52	0.52[3]	0.58	0.62	0.63

[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
B02 of61151	I 96 BS, US 31 BR over Black Creek	1968	Flexible coal tar epoxy & sand	NBOL	----	0.57	0.26	0.19
				NBIL	----	0.59	0.42	0.24
B01 of 09042	I 75 BL over Saginaw River in Bay City	1967	Rubberized bituminous concrete	EBOL	*	0.45	0.49	0.44
				EBIL	*	0.50	0.56	0.51
				WBOL	0.48	0.43	0.41	0.44
				WBIL	0.51	0.49	0.54	0.48
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
				SB	0.43	0.36	0.43	0.37
X01 of 19032	US 27 over GTWRR in St. Johns	1967	Rubberized bituminous concrete	NBOL	0.53	0.44	0.50	0.47
				NBIL	0.56	0.50	0.55	0.52
				SBOL	0.53	0.48	0.51	0.49
				SBIL	0.60	0.56	0.57	0.56
X01 of 38101	I 94 over Grand River and NYCRR, Jackson	1967	Rubberized bituminous concrete	EBOL	0.52	0.49	0.55	0.51
				EBIL	0.59	0.55	0.63	0.61
				WBOL	0.54	0.43	0.51	0.50
				WBIL	0.55	0.53	0.56	0.58
B01 of 79051	M 24 over Cass River in Caro	1967	Rubberized bituminous concrete	NB	0.53	0.48	0.56	0.51
				SB	0.50	0.48	0.55	0.53
B01 of 61076	M 20 over Muskegon River	1968	Rubberized bituminous concrete	NBOL	----	0.46	0.49	0.49
				NBIL	----	0.48	0.53	0.50
				SBOL	----	0.44	0.49	0.46
				SBIL	----	0.44	0.52	0.49
B02 of 61076	M 20 SB over Cedar Creek	1968	Rubberized bituminous concrete	SBOL	----	0.44	0.50	0.48
				SBIL	----	0.44	0.55	0.50
B03 of 61076	M 20 NB over Cedar Creek	1968	Rubberized bituminous concrete	NBOL	----	0.46	0.52	0.49
				NBIL	----	0.45	0.54	0.53
S04 of 61072	M 46 over US 131	1968	Rubberized bituminous concrete	EBOL	----	0.45	0.45	0.43
				EBCL	----	0.43	0.49	0.49
				EBIL	----	0.45	0.54	0.50
				WBOL	----	0.42	0.48	0.43
				WBCL	----	0.43	0.49	0.47
				WBIL	----	0.50	0.55	0.50
S16 of 82111	Grand River Ave (I 96 BS) over I 696 BS	1968	Rubberized bituminous concrete	EBOL	----	0.52	0.47	0.46
				EBCL	----	0.44	0.43	0.40
				EBIL	----	0.43	0.41	0.41
				WBOL	----	0.49	0.49	0.47
				WBCL	----	0.42	0.39	0.40
				WBIL	----	0.43	0.41	0.41
S17 of 82023	Grand River Ave (I 96 BS) over I 94	1968	Rubberized bituminous concrete	EBOL	----	0.44	0.38	0.35
				EBCL	----	0.44	0.37	0.34
				EBIL	----	0.45	0.40	0.36
				WBOL	----	0.50	0.43	0.40
				WBCL	----	0.44	0.37	0.36
				WBIL	----	0.44	0.39	0.35
S05 of 58152	I 75 over Newport Rd, Newport	1967	Rubberized asbestos and bituminous concrete	EB	0.46	0.50	0.51	0.49
				WB	0.47	0.50	0.51	0.52
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
				NBCL	0.58	0.53	0.57	0.56
				NBIL	0.60	0.56	0.66	0.62
		1967	Rubberized bituminous concrete plus sand asphalt	SBOL	0.61	0.50	0.57	0.54
				SBCL	0.59	0.55	0.64	0.59
				SBIL	0.58	0.58	0.64	0.62
S18 of 82025	Allard Ave over I 94	1968	Special thin polyurethane coating	EBOL	----	0.46	0.42	0.52
				EBIL	----	0.40	0.16	0.34
				WBOL	----	0.56	0.45	0.54
				WBIL	----	0.44	0.20	0.35
S05 of 23081	Crietz Rd over I 496	1969	North half of deck only E 15 Versamid 140	NB	----	----	0.67	0.54**
				SB	----	----	0.66	0.54**
			South half of deck only Guard Kote 250	NB	----	----	0.75	0.52**
				SB	----	----	0.69	0.49**
B02 of 73131	M 83 over Cass River, Frankenmuth	Aug 1969	Epoxy Mortar	NBOL	----	----	----	0.57
				NBIL	----	----	----	0.52
				SBOL	----	----	----	0.60
				SBIL	----	----	----	0.56

* Not tested

** Average 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
							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
				M 13	NBIL	0.72	0.52	0.46	0.57	0.59	0.60	0.58
				M 13	SBOL	0.73	0.49	0.45	0.54	0.54	0.53	0.55
				M 13	SBIL	0.74	0.58	0.49	0.62	0.63	0.63	0.58
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
				M 13	NBIL	0.76	0.61	0.56	0.66	0.62	0.66	0.67
				M 13	SBOL	0.75	0.51	0.44	0.40	*	0.43(1)	0.52(1)
				M 13	SBIL	0.76	0.55	0.51	0.42	*	0.44(1)	0.55(1)
09042	M 25 at Wagner Rd, E of Bay City	Sept. 1965	80-lb Sandstone + asphalt	M 25	EB	0.77	0.53	0.47	0.51	0.54	0.64	0.62
				M 25	WB	0.74	0.54	0.47	0.53	0.55	0.66	0.60
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
				M 54	NBIL	0.77	0.54	0.52	0.61	0.62	0.61	0.63
				M 54	SBOL	0.70	0.51	0.51	0.55	0.57	0.58	0.53
				M 54	SBIL	0.76	0.53	0.53	0.60	0.60	0.63	0.62
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
				M 54BR	NBIL	0.71	0.53	0.47	0.55	0.58	0.61	0.59
				M 54BR	SBOL	0.65	0.50	0.44	0.52	0.55	(3)	0.54
				M 54BR	SBIL	0.71	0.52	0.49	0.58	0.61	(3)	0.61
				M 57	EB	0.70	0.51	0.45	0.55	0.56	0.55	(4)
				M 57	WB	0.72	0.53	0.48	0.55	0.56	0.57	(4)
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
				M 54	NBIL	0.66	0.47	0.41	0.44	0.45	0.52	0.49
				M 54BR	SBOL	0.62	0.47	0.46	0.40	0.44	0.48	0.38
				M 54BR	SBIL	0.66	0.47	0.41	0.41	0.48	0.54	0.48
				M 54 (Dort)	WBOL	0.62	0.45	0.45	0.46	0.50	0.54	0.52
				M 54 (Dort)	WBIL	0.62	0.45	0.47	0.48	0.52	0.55	0.50
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
				US 12	WB	0.62	0.47	0.45	0.49	0.55	0.52	0.50
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
				US 12	WB	0.60	0.49	0.47	0.54	0.54	0.57	0.55
82052	US 24 at Fenkell Rd, (Five Mile Rd), Detroit	Sept. 1965	50-lb 3BC + asbestos fiber + asphalt	US 24	NBOL	0.56	0.36	0.34	0.37	0.38	0.42	0.35
				US 24	NB#3	0.53	0.36	0.34	0.41	0.40	0.41	0.38
				US 24	NB#2	0.57	0.36	0.34	0.40	0.41	0.43	0.41
				US 24	NBIL	0.60	*	*	*	*	*	*
				US 24	SBOL	0.52	0.38	0.37	0.41	0.39	0.43	0.38
				US 24	SBCL	0.60	0.37	0.35	0.42	0.42	0.43	0.40
				US 24	SBIL	0.59	0.35	0.34	0.44	0.40	0.42	0.40
				Five Mile Rd	EBOL	0.51	0.37	0.31	0.36	0.38	0.37	0.37
				Five Mile Rd	EBIL	0.55	0.39	0.33	0.41	0.40	0.42	0.41
				Five Mile Rd	WBOL	0.55	0.37	0.33	0.39	0.40	0.44	0.41
				Five Mile Rd	WBIL	0.60	0.39	0.33	0.43	0.44	0.44	0.42

* Not tested

(1) Bituminous Concrete - non-experimental

(2) NBOL IWT (entire pad) and stopping area worn to original surface

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

(4) 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
							Spring	Fall				
82053	US 24 at Schoolcraft Rd, Detroit	Sept. 1965	50-lb 3BC + asbestos fiber + asphalt	US 24	NBOL	0.54	0.38	0.33	0.39	0.40	0.43	0.39
				US 24	NBCL	0.53	0.40	0.35	0.41	0.43	0.43	0.40
				US 24	NBIL	0.55	0.37	0.34	0.42	0.42	0.45	0.41
				US 24	SBOL	0.48	0.34	0.33	0.41	0.39	0.43	0.38
				US 24	SBCL	0.51	0.37	0.33	0.40	0.41	0.43	0.40
				US 24	SBIL	0.52	0.37	0.33	0.41	0.43	0.44	0.41
				Schoolcraft Rd	EBRT	0.55	0.41	0.35	0.44	0.41	0.44	0.41
				Schoolcraft Rd	EB#3	0.52	0.38	0.36	0.44	0.41	0.43	0.39
				Schoolcraft Rd	EB#2	0.54	0.38	0.34	0.45	0.43	0.46	0.43
				Schoolcraft Rd	EBIL	0.56	0.43	0.39	0.49	0.49	0.47	0.48
				Schoolcraft Rd	WB#3	0.55	0.43	0.34	0.45	0.41	0.42	0.38
				Schoolcraft Rd	WB#2	0.51	0.39	0.34	0.45	0.41	0.42	0.41
				Schoolcraft Rd	WBIL	0.55	0.46	0.36	0.47	0.47	0.47	0.48
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
				US 24	NB#3	0.59	0.37	0.36	0.41	0.43	0.45	0.42
				US 24	NB#2	0.62	0.40	0.36	0.44	0.47	0.48	0.51
				US 24	NBIL	0.62	0.40	0.38	0.45	0.45	0.46	0.55
				US 24	SBOL	0.60	0.37	0.35	0.42	0.40	0.44	0.40
				US 24	SB#3	0.62	0.39	0.35	0.43	0.43	0.46	0.42
				US 24	SB#2	0.61	0.39	0.36	0.45	0.47	0.46	0.45
				US 24	SBIL	0.64	0.42	0.37	0.50	0.52	0.46	0.59
				Plymouth Rd	EBOL	0.62	0.40	0.36	0.41	0.41	0.46	0.48
				Plymouth Rd	EBCL	0.63	0.39	0.36	0.41	0.43	0.44	0.44
				Plymouth Rd	EBIL	0.64	0.39	0.37	0.41	0.44	0.44	0.51
				Plymouth Rd	WBOL	0.63	0.40	0.38	0.46	0.47	0.46	0.49
				Plymouth Rd	WBCL	0.61	0.41	0.37	0.44	0.44	0.46	0.45
				Plymouth Rd	WBIL	0.60	0.40	0.38	0.46	0.48	0.45	0.53
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
				US 24	NB#3	0.58	0.40	0.37	0.43	0.45	0.46	0.43
				US 24	NB#2	0.61	0.41	0.36	0.43	0.47	0.46	0.45
				US 24	NBIL	0.62	0.40	0.37	0.42	0.49	0.46	0.45
				US 24	NBLT	0.62	*	*	*	*	*	*
				US 24	SBOL	0.56	0.42	0.41	0.44	0.41	0.45	0.42
				US 24	SBCL	0.57	0.41	0.40	0.43	0.46	0.45	0.44
				US 24	SBIL	0.59	0.41	0.40	0.43	0.47	0.46	0.43
				W. Chicago Rd	EBRT	0.63	0.45	0.44	0.48	0.50	0.45	0.45
				W. Chicago Rd	EBIL	0.63	0.44	0.40	0.42	0.46	0.45	0.45
				W. Chicago Rd	WBRT	0.63	0.43	0.41	0.47	0.50	0.46	0.48
				W. Chicago Rd	WBIL	0.63	0.41	0.37	0.47	0.47	0.45	0.45
82071	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
				US 24	NBIL	0.52	0.42	0.38	0.47	0.47	0.50	0.48
				US 24	SBOL	0.51	0.43	0.39	0.46	0.47	0.52	0.50
				US 24	SBIL	0.51	0.42	0.38	0.46	0.46	0.50	0.48
				Sibley Rd	EB	0.54	0.39	0.36	0.42	0.43	0.45	0.48(a)
				Sibley Rd	WB	0.52	0.41	0.39	0.45	0.44	0.44	0.43
11031	M 139 NB at Empire Rd, Benton Harbor	Oct. 1965	80-lb 3NS (P-4) + Synopal + asphalt	M 139	NBOL	0.44	0.40	0.39	0.56	0.42	0.45	0.45
				M 139	NBIL	0.50	0.42	0.38	0.51	0.52	0.52	0.55
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
				M 139	SBIL	0.48	0.44	0.41	0.52	0.51	0.50	0.52
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
				US 24	NB#3	----	----	----	----	0.60	0.48	0.41
				US 24	NB#2	----	----	----	----	0.61	0.46	0.42
				US 24	NBIL	----	----	----	----	0.61	0.45	0.42

(a) Tested slightly out of wheel track because of gravel graded onto pavement

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

Texture Method	Test Limits (Sta. to Sta.)	Direction and Lane	Average WSF 1970
Conventional Burlap	2232+00 to 2238+00	NBOL	0.61
		NBIL	0.65
Longitudinal Brooming	2242+00 to 2248+00	NBOL	0.69
		NBIL	0.72
Transverse Combing	2253+00 to 2259+00	NBOL	0.86
		NBIL	0.87
Transverse Brooming	2272+00 to 2278+00	NBOL	0.76
		NBIL	0.79

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 1969 accident data. Skid tests yielded average wsf values below 0.40 at 59 percent of the 371 lanes tested in 1970. Friction levels for 5 percent of the lanes averaged below 0.30. None of the 627 high-accident lanes tested this year yielded coefficients below 0.20.

During 1970, skid tests were conducted on 29 major highway routes. Testing was dispersed throughout nine Districts, 21 Counties, and 72 separate locations. Table 26 summarizes the high-accident skid tests.

TABLE 26
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 2 THROUGH 10

	Location	1969 Accidents % Wet Surface	1969 Accidents Total	Test Location	Surface Type	Average Coefficient
DISTRICT 2	Chippewa County					
	BS 75 (Ashmun) from Leroy St to Dawson St (3.140 to 3.330) City of Sault Ste. Marie (Control Section 17032)	41	32	North of Bridge		
				NBOL	BIT	0.45
				NBIL	BIT	0.44
				SBOL	BIT	0.51
				SBIL	BIT	0.43
				On Bridge		
				NBOL	CONC	0.38
				NBIL	CONC	0.35
				SBOL	CONC	0.36
				SBIL	CONC	0.35
				South of Bridge		
				NBOL	BIT	0.52
				NBCL	BIT	0.44
				SBOL	BIT	0.50
				SBIL	BIT	0.44
DISTRICT 3	Clare County					
	US 10 - M 115 from 7.010 to 7.190, City of Clare (Control Section 18022)	41	27	US 10 - M 115 @ Beech St East		
				EB	BIT	0.34
				WB	BIT	0.34
				US 10 - M 115 @ US 27 BR West		
				EB	BIT	0.35
				WB	BIT	0.36
	US 27 BR (Mission) from 0.730 to 0.920 (S of Schoolcrest Rd to S of Brookwood Dr), City of Clare (Control Section 18031)	44	16	NBOL	BIT	0.38
				NBCL	BIT	0.31
				NBIL	BIT	0.27
				SBOL	BIT	0.50
				SBCL	BIT	0.44
				SBIL	BIT	0.32
	Grand Traverse County					
	US 31 - M 72 (Munson) from Airport Access Rd to Avenue B (3.100 to 3.300) City of Traverse City (Control Section 28013)	50	20	EBOL	CONC	0.31
				EBIL	CONC	0.29
				WBOL	CONC	0.33
				WBIL	CONC	0.31
	Manistee County					
	US 31 (Cypress) from Fifth St to Second St (4.680 to 4.880) City of Manistee (Control Section 51011)	41	17	NBOL	CONC	0.27
				NBIL	CONC	0.30
				SBOL	CONC	0.32
				SBIL	CONC	0.30

	Location	1969 Accidents % Wet Surface	1969 Accidents Total	Test Location	Surface Type	Average Coefficient
DISTRICT 4	Emmet County					
	US 31 @ Penn RR crossing just E of E City Limits of Petoskey (8.260 to 8.470) (Control Section 24011)	17	14	NB	BIT	0.33
				SB	BIT	0.34
DISTRICT 5	Clinton County					
	US 27 (Whitmore) from Cass St to M 21 (16.020 to 16.112), City of St. Johns (Control Section 19031)	43	21	NBOL	CONC	0.32
				NBIL	CONC	0.34
				SBOL	CONC	0.33
				SBIL	CONC	0.33
	Kent County					
	US 131, N and S of 44th St (8.000 to 8.200), City of Wyoming (Control Section 41131)	39	33	NBOL	CONC	0.41
				NBIL	CONC	0.44
				SBOL	CONC	0.41
				SBIL	CONC	0.46
	US 131 @ M 11 (28th St) (10.150 to 10.350), City of Wyoming (Control Section 41131)	45	20	NBOL	CONC	0.39
				NBCL	CONC	0.41
				NBIL	CONC	0.48
				SBOL	CONC	0.41
				SBIL	CONC	0.44
	US 131 @ Burton St (11.150 to 11.350), City of Grand Rapids (Control Section 41131)	38	34	NBOL	CONC	0.39
				NBCL	CONC	0.44
				NBIL	CONC	0.47
				SBOL	CONC	0.40
				SBCL	CONC	0.42
				SBIL	CONC	0.46
	US 131 S of Hall St (11.850 to 12.050), City of Grand Rapids (Control Section 41131)	36	22	NBOL	CONC	0.41
				NBCL	CONC	0.40
				NBIL	CONC	0.44
				SBOL	CONC	0.43
				SBCL	CONC	0.42
				SBIL	CONC	0.49
	US 131 @ Wealthy St (13.140 to 13.340), City of Grand Rapids (Control Section 41131)	40	60	NBOL	CONC	0.38
				NBCL	CONC	0.40
				NBIL	CONC	0.36
				SBOL	CONC	0.36
				SBCL	CONC	0.39
				SBIL	CONC	0.39
	US 131 @ NB Jct US 131 BR Exit (13.350 to 13.550), City of Grand Rapids (Control Section 41131)	55	29	NBOL	CONC	0.29
				NBCL	CONC	0.32
				NBIL	CONC	0.34
				SBOL	CONC	0.29
				SBCL	CONC	0.30
				SBIL	CONC	0.32

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 2 THROUGH 10

DISTRICT 5 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Kent County Cont.					
US 131 @ Grandville St (13.570 to 13.760), City of Grand Rapids (Control Section 41131)	56	25	NBOL	CONC	0.34
			NBCL	CONC	0.34
			NBIL	CONC	0.31
			SBOL	CONC	0.30
			SBCL	CONC	0.34
			SBIL	CONC	0.36
US 131 S from Pearl St (13.980 to 14.180), City of Grand Rapids (Control Section 41131)	45	20	NBOL	CONC	0.38
			NBCL	CONC	0.40
			NBIL	CONC	0.39
			SBOL	CONC	0.39
			SBCL	CONC	0.39
			SBIL	CONC	0.44
Ottawa County					
US 31 (Beacon Blvd) from Grant St to Franklin St (6.310 to 6.480), City of Grand Haven (Control Section 70015)	50	20	NBOL	CONC	0.32
			NBIL	CONC	0.36
			SBOL	CONC	0.31
			SBIL	CONC	0.37

DISTRICT 6

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Genesee County					
M 121 (Bristol) from 2.640 to 2.840 (E & W of I 75 - US 23) Control Section 25061	45	20	EBOL	CONC	0.30
			EBIL	CONC	0.32
			EB merging lane from SB I 75 (Ramp)	CONC	0.35
			WBOL	CONC	0.27
			WBCL	CONC	0.30
			WBIL	CONC	0.35
M 54 (Dort Hwy) from West Blvd (08.110) to Pierson Rd (08.330), City of Flint Control Section 25072	45	20	West Blvd to N of Stewart		
			NBOL	CONC	0.36
			NBIL	BIT	0.45
			SBOL	CONC	0.33
			SBIL	BIT	0.45
			N of Stewart to Pierson Rd		
			NBOL	BIT	0.33
			NBIL	BIT	0.39
			SBOL	BIT	0.33
			SBIL	BIT	0.38
Midland County					
US 10 BR - M 20 EB (Buttles) & WB (Indian) from Ashman (80.180 to Townsend St (80.360), City of Midland Control Section 56023	48	25	EBOL	CONC	0.32
			EBCL	CONC	0.32
			EBIL	CONC	0.34
			WBOL	BIT	0.39
			WBCL	BIT	0.42
			WBIL	BIT	0.41

DISTRICT 6 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Saginaw County					
M 46 (Rust) from 8.500 to 8.660 (Newton St to E of Fordney St), City of Saginaw Control Section 73062	45	20	EBOL	CONC	0.37
			EBIL	CONC	0.36
			WBOL	CONC	0.34
			WBIL	CONC	0.38
M 81 (State) from 4.810 to 4.970 (E & W of Brockway Rd) Control Section 73073	42	33	EBOL	CONC	0.33
			EBCL	CONC	0.34
			EBIL	BIT	0.40
			WBOL	CONC	0.31
			WBCL	CONC	0.34
			WBIL	BIT	0.44
M 81 EB (Genesee) from Niagara St to Water St (72.770 to 72.960 includes Saginaw River Bridge) City of Saginaw Control Section 73073	43	23	W of Bascule (Steel Deck)		
			EBOL	BIT	0.34
			EBCL	BIT	0.36
			EBIL	BIT	0.37
			WB	BIT	0.35
			E of Bascule (Steel Deck)		
			EBOL	BIT	0.31
			EBCL	BIT	0.35
			EBIL	BIT	0.34
			WB	BIT	0.33

DISTRICT 7

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Calhoun County					
M 89 (Michigan) from Everett to Miller (3.420 to 3.620), City of Battle Creek (Control Section 13061)	41	22	EBOL	(1)	0.34
			EBIL	BIT	0.37
			WBOL	CONC	0.32
			WBIL	BIT	0.43
M 37 (VanBuren--formerly BL 94) @ Washington (6.240), City of Battle Creek (Control Section 13061)	NA	NA	WB#3	BIT	0.48
			WB#2	BIT	0.45
			WBIL	BIT	0.48
BL 94 (Dickman) @ Washington (7.280 to 7.440), City of Battle Creek (Control Section 13121)	50	30	EBOL	BIT	0.42
			EBIL	BIT	0.45
			WBOL	BIT	0.38
			WBIL	BIT	0.43
BL 94 EB (Main) from Michigan to Westnedge (3.820 to 4.090), City of Kalamazoo (Control Section 39041)	60	40	EB#5	BIT	0.32
			EB#4	BIT	0.33
			EB#3	BIT	0.35
			EB#2	BIT	0.40
			EBIL	BIT	0.34
M 43 (W. Main) from Cherokee to Nichols (7.00 to 7.230) (Control Section 39081)	42	26	EBOL	CONC	0.31
			EBIL	CONC	0.29
			WBOL	CONC	0.27
			WBIL	CONC	0.31

(1) Outside wheeltrack - CONC and inside wheeltrack - BIT

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 2 THROUGH 10

DISTRICT 7 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Calhoun County Cont.					
M 43 (W. Main) from Cherry Hill Rd to Coolidge Rd (7.250 to 7.440) (Control Section 39081)	50	30	EBOL	CONC	0.28
			EBIL	CONC	0.32
			WBOL	CONC	0.32
			WBIL	CONC	0.30
M 43 (W. Main) from Pinehurst to Claredon (7.760 to 7.960) (Control Section 39081)	45	20	EBOL	CONC	0.30
			EBIL	CONC	0.30
			WBOL	CONC	0.31
			WBIL	CONC	0.31

DISTRICT 8

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Eaton County					
M 43 (Saginaw) from Bretton Wood to Harriet (6.430 to 6.590) Control Section 23042	50	26	EBOL	CONC	0.37
			EBIL	BIT	0.42
			WBOL	CONC	0.31
			WBIL	BIT	0.42
Ingham County					
M 99 (Logan) from Berten to Britten, (4.850 to 5.050), City of Lansing Control Section 33011	41	37	NBOL	BIT	0.41
			NBIL	BIT	0.34
			SBOL	BIT	0.32
			SBIL	BIT	0.33
M 99 (Logan) from Alsdorf to the Grand River Bridge (5.060 to 5.240), City of Lansing Control Section 33011	47	30	NBOL	BIT	0.44
			NBIL	BIT	0.37
			SBOL	BIT	0.31
			SBIL	BIT	0.32
US 27 - M 78 BR SB (Cedar) at Michigan (60.540 to 60.570), City of Lansing Control Section 33033	21	31	SBOL	BIT	0.39
			SBCL	BIT	0.37
			SBIL	BIT	0.39
US 27 NB (Larch) at Grand River Ave (00.330 to 00.450) City of Lansing Control Section 33034	22	31	NBOL	BIT	0.43
			NB#3	BIT	0.39
			NB#2	BIT	0.38
			NBIL	BIT	0.41
US 27 (North East St.) from Thomas to Banghart St (1.200 to 1.380), City of Lansing Control Section 33034	42	31	NBOL	BIT	0.41
			NBIL	BIT	0.46
			SBOL	BIT	0.41
			SBIL	BIT	0.47
US 27 SB (Cedar) at Grand River Ave (60.450 to 60.570), City of Lansing Control Section 33034	35	36	SBOL	CONC	0.31
			SBCL	CONC	0.32
			SBIL	CONC	0.33
M 43 (Grand River) from Wood to Fairview (80.910 to 81.100), City of Lansing Control Section 33042	42	26	WBOL	BIT	0.28
			WB#3	BIT	0.35
			WB#2	BIT	0.33
			WBIL	BIT	0.34

DISTRICT 8 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Ingham County Cont.					
M 43 (Oakland) from Sycamore to N Chestnut (82.060 to 82.220), City of Lansing Control Section 33061	48	21	WBOL	CONC	0.34
			WBCL	CONC	0.35
			WBIL	CONC	0.35
Jackson County					
US 127 BR - M 50 (Clinton and West) from Commonwealth to Dewey (0.230 to 0.430), City of Jackson Control Section 38072	52	23	NBOL	CONC	0.34
			NBIL	CONC	0.40
			SBOL	CONC	0.31
			SBOL	BIT	0.40
			SBIL	BIT	0.43
US 127 BR - M 50 (West) from Argyle to North (0.710 to 0.910), City of Jackson Control Section 38072	41	22	NBOL	CONC	0.27
			NBIL	BIT	0.43
			SBOL	CONC	0.30
			SBIL	BIT	0.41
BL 94 (Washington) from Milwaukee to Perrien (1.340 to 1.540), City of Jackson Control Section 38083	43	40	EBOL	BIT	0.34
			EBIL	BIT	0.33
			WBOL	BIT	0.34
			WBIL	BIT	0.32
BL 94 (Michigan) from State to East (1.580 to 1.780), City of Jackson Control Section 38083	42	38	EBOL	BIT	0.47
			EBIL	BIT	0.49
			WBOL	BIT	0.47
			WBIL	BIT	0.47
			EBOL	BIT	0.30 [a]
			EBIL	BIT	0.30 [a]
			WBOL	BIT	0.32 [a]
			WBIL	BIT	0.31 [a]
BL 94 (Washington) from Mechanic to Otsego (70.440 to 70.640), City of Jackson Control Section 38083	41	22	Mechanic to Francis		
			EBOL	CONC	0.34
			EBCL	CONC	0.28
			EBIL	CONC	0.33
			Francis to Otsego		
			EBOL	CONC	0.33
			EBCL	CONC	0.29
			EBIL	CONC	0.36
Washtenaw County					
M 17 (Washtenaw) from Roosevelt Blvd to Fairview Circle (2.560 to 2.760), City of Ypsilanti Control Section 81081	55	20	EB	BIT	0.40
			WB	BIT	0.38

[a] Only 1 test conducted in stopping area at East St.

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 2 THROUGH 10

DISTRICT 9

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Macomb County					
M 59 (Hall) from VanDyke to Grant Park Blvd (0.000 to 0.200), City of Utica Control Section 50022	40	42	EBOL	CONC	0.30
			EBIL	BIT	0.39
			WBOL	CONC	0.31
			WBIL	BIT	0.42
M 97 (Groesbeck) at Frazho Rd (3.020 to 3.210) City of Warren Control Section 50031	36	36	NBOL	CONC	0.33
			NBIL	CONC	0.33
			SBOL	CONC	0.32
			SBIL	CONC	0.32
M 97 (Groesbeck) from Hayes Rd NE 0.2 mi, (3.670 to 3.880), City of Roseville Control Section 50031	40	40	NBOL	CONC	0.31
			NBIL	CONC	0.32
			SBOL	CONC	0.31
			SBIL	CONC	0.32
M 97 (Groesbeck) at Martin Rd (3.970 to 4.170), City of Roseville Control Section 50031	42	43	NBOL	CONC	0.30
			NBIL	CONC	0.32
			SBOL	CONC	0.30
			SBIL	CONC	0.32
M 97 (Groesbeck) from Garfield to Thirteen Mile Rd (5.700 to 5.920), City of Roseville Control Section 50031	39	57	NBOL	CONC	0.31
			NBIL	CONC	0.30
			NBOL	BIT	0.40
			NBIL	BIT	0.42
			SBOL	BIT	0.39
			SBIL	BIT	0.42
			SBOL	CONC	0.32
			SBIL	CONC	0.33
M 97 (Groesbeck) at Sixteen Mile Rd (9.370 to 9.570) Clinton Twp Control Section 50031	36	39	NBOL	BIT	0.41
			NBIL	BIT	0.46
			SBOL	BIT	0.46
			SBIL	BIT	0.44
			NBOL	BIT	0.30[a]
			NBIL	BIT	0.40[a]
			SBOL	BIT	0.37[a]
			SBIL	BIT	0.42[a]
US 25 (Gratiot) from Ash to Park (0.810 to 1.250), City of East Detroit Control Section 50051	35	131	NBOL	BIT	0.42
			NBCL	BIT	0.46
			NBIL	BIT	0.45
			NBIL	CONC	0.41
			SBOL	CONC	0.36
			SBCL	CONC	0.38
			SBIL	CONC	0.35
US 25 SB from Wellington to Harrington Blvd (62.240 to 62.440), City of Mt. Clemens Control Section 50051	38	37	SBOL	CONC	0.36
			SB#2	CONC	0.33
			SB#3	CONC	0.32
			SBIL	CONC	0.34
			SB#2	BIT	0.44
			SB#3	BIT	0.44

[a] Single test conducted at stopping area between the median dividing EB and WB 16 Mile Rd.

DISTRICT 9 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Oakland County					
M 59 (Huron) from 11.140 to 11.340 (curve W of Fisk Rd), Control Section 63041	38	34	EB	BIT	0.39
			WB	BIT	0.47
M 59 (Huron) from Seba Dr (16.000) to Pontiac Lake Rd (16.230) Control Section 63041	35	48	EBOL	BIT	0.44
			EBIL	BIT	0.49
			WBOL	BIT	0.43
			WBIL	BIT	0.52
			EBOL	CONC	0.30
			EBIL	CONC	0.34
			WBOL	CONC	0.32
			WBIL	CONC	0.31
M 59 (Huron) from Genesee to Waldo & Chippewa (19.500 to 19.700), City of Pontiac Control Section 63041	41	41	EBOL	CONC	0.36
			EBIL	CONC	0.37
			WBOL	CONC	0.36
			WBCL	CONC	0.37
			WBIL	CONC	0.36
M 59 (Huron) from Franklin Blvd to State St (20.480 to 20.700), City of Pontiac Control Section 63041	47	30	EBOL	BIT	0.44
			EBIL	BIT	0.44
			WBOL	BIT	0.43
			WBIL	BIT	0.42
US 10 (Hunter Blvd) from Oak to Woodward (3.950 to 4.150), City of Birmingham Control Section 63051	39	38	NBOL	BIT	0.51
			NB#3	BIT	0.52
			NB#2	BIT	0.51
			NBIL	BIT	0.54
			SBOL	BIT	0.60
			SB#3	BIT	0.51
			SB#2	BIT	0.58
			SBIL	BIT	0.57
US 10 (Telegraph) from Ruth to Menominee (2.640 to 2.840), City of Pontiac Control Section 63052	37	35	NBOL	BIT	0.41
			NBCL	BIT	0.41
			NBIL	BIT	0.45
			SBOL	BIT	0.43
			SBCL	BIT	0.41
			SBIL	BIT	0.47
BL 75 - M 24 BR (Perry) from Fairgrove to Eddy Ct (0.090 to 0.290), City of Pontiac Control Section 63091	40	30	NBOL	BIT	0.44
			NBIL	BIT	0.43
			SBOL	BIT	0.44
			SBIL	BIT	0.44
BL 75 - M 24 BR (Perry) from Parkwood to Scottwood (1.710 to 1.880), City of Pontiac Control Section 63091	45	31	NBOL	BIT	0.46
			NBIL	BIT	0.47
			SBOL	CONC	0.38
			SBIL	CONC	0.41
M 24 (Lapeer Rd) at Clarkston Rd (6.010 to 6.210) Control Section 63112	45	38	NBOL	BIT	0.31
			NBIL	BIT	0.33
			SBOL	BIT	0.29
			SBIL	BIT	0.28

TABLE 26 (Cont.)
HIGH-ACCIDENT LOCATIONS FOR DISTRICTS 2 THROUGH 10

DISTRICT 9 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Oakland County Cont.					
BL 75 - US 10 BR (Woodward) from Raeburn to Turk, (1.820 to 2.000), City of Pontiac Control Section 63151	46	37	NBOL	BIT	0.46
			NBCL	BIT	0.42
			NBIL	BIT	0.44
			SBOL	BIT	0.44
			SBCL	BIT	0.45
			SBIL	BIT	0.41
M 39 (Southfield) through BS 696 Interchange (0.850 to 1.030), City of Southfield Control Section 63171	38	40	EB 696 BS to SB M 39 Ramp		
			SBOL	CONC	0.37
			SBIL	CONC	0.43
			M 39 through BS 696 Interchange		
			NBOL	CONC	0.38
			NBCL	CONC	0.37
			NBIL	CONC	0.36
			SBOL	CONC	0.38
			SBIL	CONC	0.42
			NB M 39 to WB 696 BS Ramp		
			WBOL	CONC	0.32
			WBIL	CONC	0.27
I 75 from John R. to Nine Mile Rd (1.060 to 1.270), City of Hazel Park Control Section 63174	47	34	NBOL	CONC	0.41
			NB#3	CONC	0.34
			NB#2	CONC	0.42
			NBIL	CONC	0.41
			SBOL	CONC	0.35
			SB#3	CONC	0.31
			SB#2	CONC	0.37
			SBIL	CONC	0.38
I 75 from Maple Rd to M 150 (Rochester Rd) (7.530 to 8.712), City of Troy Control Section 63174	22	52	NBOL	CONC	0.43
			NBCL	CONC	0.47
			NBIL	CONC	0.50
			SBOL	CONC	0.40
			SBCL	CONC	0.44
			SBIL	CONC	0.46
I 75 from Livernois Rd to the N limits of the Big Beaver Rd interchange (9.640 to 10.550), City of Troy Control Section 63174	55	48	NBOL	CONC	0.40
			NBCL	CONC	0.43
			NBIL	CONC	0.53
			SBOL	CONC	0.41
			SBCL	CONC	0.43
			SBIL	CONC	0.46
I 75 from East Long Lake Rd to 0.25 mile W of Crooks Rd (12.250 to 13.700), City of Troy Control Section 63174	36	29	NBOL	CONC	0.40
			NBCL	CONC	0.47
			NBIL	CONC	0.54
			SBOL	CONC	0.46
			SBCL	CONC	0.48
			SBIL	CONC	0.51

DISTRICT 9 (CONT.)

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
St. Clair County					
US 25 BR (Pine Grove) from McPherson to 10th and Scott (0.170 to 0.370) City of Port Huron Control Section 77091	35	37	NBOL	BIT	0.41
			NBIL	BIT	0.44
			SBOL	BIT	0.43
			SBIL	BIT	0.42
			SBOL	BIT	0.33(4)
			SBIL	BIT	0.38(4)

DISTRICT 10

Location	1969 Accidents		Test Location	Surface Type	Average Coefficient
	% Wet Surface	Total			
Monroe County					
US 25 (Monroe) from Third To Front (14.580 to 14.780), City of Monroe (Control Section 58071)	46	35	NBOL	BIT	0.29
			NBIL	BIT	0.32
			SBOL	BIT	0.33
			SBIL	BIT	0.29
Wayne County					
US 12 (Michigan Ave) at M 153 (Wyoming Ave) (6.100 to 6.250), Cities of Dearborn and Detroit (Control Section 82062)	39	36	EBOL	BIT	0.37
			EBCL	BIT	0.40
			EBIL	BIT	0.40
			WBOL	BIT	0.41
			WBCL	BIT	0.38
			WBIL	BIT	0.40
I 75 from Northline Rd to Goddard Rd (10.546 to 11.900), City of Southgate (Control Section 82191)	50	51	NBOL	CONC	0.35
			NBCL	CONC	0.45
			NBIL	CONC	0.39
			SBOL	CONC	0.37
			SBCL	CONC	0.48
			SBIL	CONC	0.45
M 39 (Southfield) from I 75 to Abbott (0.210 to 0.370), City of Lincoln Park (Control Section 82192)	36	53	NBOL	CONC	0.34
			NBCL	CONC	0.34
			NBIL	CONC	0.33
			SBOL	CONC	0.32
			SBCL	CONC	0.33
			SBIL	CONC	0.34

(4) Only 1 test conducted in stopping area between 10th and Scott Sts.

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 Divisions. These requests receive priority considerations during scheduling of skid tests. Friction data are forwarded to the person or agency initiating the request as soon as possible after completion of field measurements. Table 27 contains skid test data resulting from special requests received during 1970.

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	S04 of 81063	Wiard Rd over EB US 12	CONC	NBOL	0.48
			CONC	NBCL	0.40
			CONC	NBIL	0.34
			BIT	NBCL (approach)	0.51
			BIT	NBCL (departure)	0.52
2	S04 of 81063	Wiard Rd over EB US 12	CONC	NBOL	0.40
			CONC	NBCL	0.31
			CONC	NBIL	0.25
3	Ms 25081-006	M 21 from E of Dye Rd E to Media St in Flint	SFSA	EBOL	0.53
			SFSA	EBIL	0.57
			SFSA	WBOL	0.49
			SFSA	WBIL	0.58
3	M 32021-004	M 142 from M 25 E to Pigeon	SFSA	EB	0.67
			SFSA	WB	0.66
3	Mb 79051-007	M 24 from M 46 N to Frank St in Caro	SFSA	NB	0.66
			SFSA	SB	0.65
3	Mb 46061-010	US 12 from E of M 50 E to E of M 124	SFSA	EB	0.60
			SFSA	WB	0.67
3	M 76041-005	M 71 from M 78 N to S limits of Corunna	SFSA	NB	0.63
			SFSA	SB	0.60
3	Ms 77033-008	US 25 (Lake Shore Pike) from Lynburner Rd N to N of Myrtle Rd	SFSA	NB	0.56
			SFSA	SB	0.58
3	Mns 88500-004	US 24 (Telegraph Rd) from Exeter Rd to Long Lake Rd	SFSA	NBOL	0.51
			SFSA	NBIL	0.50
			SFSA	SBOL	0.51
			SFSA	SBIL	0.54
3	Ms 09011-003	M 84 - I 75 BL from SW of Ziegler Rd NE'ly to M 13	SFSA	NB	0.59
			SFSA	SB	0.60
3	Ms 11012-006	I 94 BL (Main St) from State St NE'ly to Jones St in Flint	SFSA	NBOL	0.50
			SFSA	NBIL	0.55
			SFSA	SBOL	0.54
			SFSA	SBIL	0.56
3	Ms 77032-007	US 25 BR from SW of M 29 in Marysville NE'ly to Dove St in Port Huron	SFSA	NBOL	0.52
			SFSA	NBIL	0.57
			SFSA	SBOL	0.48
			SFSA	SBIL	0.54
3	Mb 79062-003	M 81 from SW of Green Rd NE'ly and E'ly to M 53 in Cass City	SFSA	EB	0.64
			SFSA	WB	0.64
3	Ms 11013-010	I 94 (Main St) from M 139 N (Paw-Paw Ave) E'ly to M 139 S (Fair Ave)	SFSA	EBOL	0.47
			SFSA	EBIL	0.47
			SFSA	WBOL	0.43
			SFSA	WBIL	0.46

* Numbered in order requests are received. TR prefix to number indicates a TOPICS request.

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
3	Mb 38071-010	M 50 from E of Hand Rd in Lenawee Co, W'ly & N'ly to Stoney Lake Rd, in Jackson Co, omitting at US 12 and at the divided roadway in Brooklyn	SFSA SFSA	NB SB	0.64 0.67
3	Mb 46061-011	US 223 BR - M 52 from Nelson St to Merrick St in Adrian	SFSA SFSA SFSA SFSA	NBOL NBIL SBOL SBIL	0.56 0.54 0.55 0.58
3	Mb 46061-011	US 223 BR at W limits of Adrian	SFSA SFSA	EB WB	0.58 0.54
3	Mb 46101-007	US 12 from E of Pentacost Hwy E'ly to the Lenawee-Washtenaw Co Line, omitting from 350 ft E of the Raisin River in Clinton, E'ly to the E village limits of Clinton	SFSA SFSA	EB WB	0.56 0.58
3	Ms 63052-021	US 10 (Telegraph Rd) from NW of Bataan Rd to SE of Bataan Rd	SFSA	SBOL	0.53
3	Ms 69014-012	SB I 75 from 2400 ft N of old US 27 N'ly 2800 ft (N of Vanderbilt)	SFSA SFSA	SBOL SBIL	0.60 0.65
3	Mb 76041-006	M 21 (Main St) from W city limits of Owosso (Chestnut St) E'ly to the E city limits of Owosso (Gould St), omitting from Shiawassee River to Ball St	SFSA SFSA SFSA SFSA	EBOL EBIL WBOL WBIL	0.54 0.55 0.57 0.58
3	Mb 79031-007	M 15 (State St) from N of S village limits of Millington, N'ly to N of Ellis Rd	SFSA SFSA	NB SB	0.53 0.51
3	Ms 25071-007	M 54 at M 54 BR	SA SA SA SA SA SA	NBOL NBIL SBOL SBIL WBOL WBIL	0.57 0.62 0.56 0.61 0.61 0.60
3	Mb 38061-008	M 60 from Spring St in Concord, W to Homer Rd	SA SA	EB WB	0.60 0.57
3	Mb 38061-008	M 60 from Homer Rd W to the Calhoun-Jackson Co. line	SA SA	EB WB	0.62 0.62
3	Mb 58042-008	M 50 from US 24 to US 25 in Monroe	SA SA	EB WB	0.46 0.49
3	Mb 38061-008	M 50 from Stoney Lake Rd N & W to South City limits of Jackson, omitting at US 127 interchange	SA SA	EB WB	0.66 0.65
3	Mb 82052-037	US 24 from Pardee Rd S to Carter Rd	SA SA SA SA	NBOL NBIL SBOL SBIL	0.53 0.57 0.54 0.53

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
3	Mb 46062-007	US 223 from bridge over Raisin River in Palmyra SE to SE of North Lane St in Blissfield, omitting from High St to Pearl St in Blissfield	SA	EB	0.59
			SA	WB	0.59
3	Ms 82053-045	US 24 at Warren Rd	SA	NBOL	0.36
			SA	NB#3	0.30
			SA	NB#2	0.32
			SA	NBIL	0.39
			SA	SBOL	0.30
			SA	SBCL	0.35
			SA	SBIL	0.40
3	Ms 82053-045	US 24 at Joy Rd	SA	NBOL	0.54
			SA	NB#3	0.46
			SA	NB#2	0.42
			SA	NBIL	0.48
4	Mb 80071-005	M 40,2.2 mi. N of Paw-Paw; S from 40th Ave	SFSA	NB	0.54
			SFSA	SB	0.53
4	Mb 80071-005	M 43,0.7 mi. W of M 40	BA	EB	0.32
			BA	WB	0.30
4	Mb 80071-005	M 43, 6.0 mi. W of M 40	BA	EB	0.84
			BA	WB	0.31
4	Mb 80071-005	M 43, 6.3 mi. W of M 40	BA	EB	0.32
			BA	WB	0.20
4	Mb 80071-005	M 43, 6.4 mi. W of M 40	BA	EB	0.28
			BA	WB	0.21
4	Mb 80071-005	Five intermittent patches on M 40 SW of Decatur (numbered 1 to 5 from NE to SW)			
		No. 1	BA	NB	0.20
			BA	SB	0.20
		No. 2	BA	NB	0.19
			BA	SB	0.31
		No. 3	BA	NB	0.31
			BA	SB	0.32
		No. 4	BA	NB	0.38
			BA	SB	0.35
		No. 5	BA	NB	0.26
			BA	SB	0.36
4	Mb 80071-005	M 119 from M 216 S, the entire length of the curb and gutter section in Marcellus	BA	NB	0.49
			BA	SB	0.50
5	Mtb 20051-002 Mb 72093-002	M 18 - M 76, S from old US 27	BA	NB	0.43
			BA	SB	0.49
5	Mtb 20051-002 Mb 72092-002	M 18 - M 76, 0.5 mi. N of Fletcher Rd	BA	NB	0.42
			BA	SB	0.39

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	Mtb 20051-002 Mb 72092-002	M 18 - M 76, adjacent to roadside park	BA BA	NB SB	0.40 0.43
5	Mtb 20051-002 Mb 72092-002	M 18 - M 76, 0.5 mi. SE of Johnson Rd	BA BA	NB SB	0.42 0.45
6	Mb 80071-005	M 40, 2.2 mi. N of Paw-Paw, S from 40th Ave	SFSA SFSA	NB SB	0.59 0.56
6	Mb 80071-005	M 43, 0.7 mi. W of M 40	K&S BA K&S BA	EB WB	0.38 0.34
6	Mb 80071-005	M 43, 6.0 mi. W of M 40	K&S BA K&S BA	EB WB	0.38 0.41
6	Mb 80071-005	M 43, 6.3 mi. W of M 40	K&S BA K&S BA	EB WB	0.42 0.41
6	Mb 80071-005	M 43, 6.4 mi. W of M 40	K&S BA K&S BA	EB WB	0.34 0.38
6	Mb 80071-005	Five intermittent patches on M 40 SW of Decatur (Numbered 1 to 5 from NE to SW)			
		No. 1	K&S BA K&S BA	NB SB	0.30 0.24
		No. 2	K&S BA K&S BA	NB SB	0.30 0.29
		No. 3	K&S BA K&S BA	NB SB	0.28 0.29
		No. 4	K&S BA K&S BA	NB SB	0.34 0.30
		No. 5	K&S BA K&S BA	NB SB	0.40 0.33
6	Mb 80071-005	M 119 from M 216 S, the entire length of the curb and gutter section in Marcellus	BA BA	NB SB	0.44 0.46
7	Mb 23052-002	M 50 at Fawn Lane Rd (1st location W of US 127)	BC BC	EB WB	0.22 0.22
7	Mb 23052-002	M 50 at Blackman Rd (2nd location W of US 127)	BC BC	EB WB	0.29 0.25
7	Mb 23052-002	M 50 at Woodard Rd (3rd location W of US 127)	BC BC	EB WB	0.37 0.43
7	Mb 23052-002	M 50 through Tompkins Center (4th location W of US 127)	BC BC	EB WB	0.35 0.30
7	Mb 23052-002	M 50 from M 43 SE to Sanborn Rd	BC BC	EB WB	0.50 0.54
7	Mb 23052-002	M 50 at Round Lake Rd	BC BC	EB WB	0.51 0.53

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
7	Mb 23052-002	M 50 at Gresham Rd	BC	EB	0.50
			BC	WB	0.44
7	Mb 23052-002	M 50 SE from Vermontville Hwy	BC	EB	0.39
			BC	WB	0.45
7	Mb 23052-002	M 50 at "S" curve S of Wheaton Rd	BC	EB	0.41
			BC	WB	0.44
7	Mb 23052-002	M 50, N of Maple St, near N city limits of Charlotte	BC	EB	0.30
			BC	WB	0.30
7	Mb 23052-002	M 50 E from Flanders Rd, E of Charlotte	BC	EB	0.47
			BC	WB	0.51
7	Mb 23052-002	M 50 at Whittum Rd	BA	EB	0.46
			BA	WB	0.45
8	Mb 23052-002	M 50 at Fawn Lane Rd (1st location W of US 127)	K&S BC	EB	0.33
			K&S BC	WB	0.32
8	Mb 23052-002	M 50 at Blackman Rd (2nd location W of US 127)	K&S BC	EB	0.26
			K&S BC	WB	0.33
8	Mb 23052-002	M 50 at Woodard Rd (3rd location W of US 127)	BC	EB	0.40
			BC	WB	0.47
8	Mb 23052-002	M 50 through Tompkins Center (4th location W of US 127)	BC	EB	0.38
			BC	WB	0.31
9	B01 of 09042	I 75 from M 46 N to the Zilwaukee Bridge, 4 locations:			
		No. 1 - M 46 North	CONC	NBOL	0.40
			CONC	NBCL	0.48
			CONC	NBIL	0.57
			CONC	SBOL	0.40
			CONC	SBIL	0.44
		No. 2 - vicinity of I 675 interchange	CONC	NBOL	0.43
			CONC	NBIL	0.47
			CONC	SBOL	0.41
			CONC	SBIL	0.39
		No. 3 - North of C&O RR bridge	CONC	NBOL	0.43
			CONC	NBIL	0.50
			CONC	SBOL	0.44
			CONC	SBIL	0.52
		No. 4 - S of bridge over Saginaw River (Zilwaukee Bridge)	BIT	NBOL	0.45
			BIT	NBIL	0.44
			BIT	SBOL	0.43
			BIT	SBIL	0.48
10	I 33044-057	I 496 from Capitol Ave to W of Grand Ave	CONC	EBOL	0.57
			CONC	EBIL	0.53

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	29011, C2	US 27 SB, at left hand curve area S of Washington Rd, E of Ithaca. Three locations:			
		No. 1 - Washington Rd S to Ann Arbor RR	CONC	SBOL	0.44
			CONC	SBIL	0.56
		No. 2 - Ann Arbor RR S into left hand curve	BIT	SBOL	0.62
			BIT	SBIL	0.63
		No. 3 - S of bit wedge, proceeding out of curve	CONC	SBOL	0.37
			CONC	SBIL	0.48
12	S 04 of 81063	Wiard Rd structure over EB US 12, bridge deck	CONC	NBOL	0.42
			CONC	NBCL	0.30
			CONC	NBIL	0.27
13	Mb 23052-002	M 50 at Fawn Lane Rd (1st location W of US 127)	K&S BIT	EB	0.41
				WB	0.42
13	Mb 23052-002	M 50 at Blackman Rd (2nd location W of US 127)	K&S BIT	EB	0.33
			K&S BIT	WB	0.37
14	Mb 58053-003	US 24 - US 25, 300 ft N of Carleton Rockwood Rd, four locations:			
		No. 1 - US 24 - US 25 300 ft N of Carleton Rockwood Rd	BIT CONC	NBOL	0.45
			BIT CONC	NBIL	0.52
			BIT CONC	SBOL	0.49
			BIT CONC	SBIL	0.49
		No. 2 - US 24 - US 25, S of Newberg Rd	BIT CONC	NBOL	0.56
			BIT CONC	NBIL	0.61
			BIT CONC	SBOL	0.54
				SBIL	0.59
		No. 3 - US 24 - US 25 at Will Carleton Rd and Huron River Drive, Monroe and Wayne Co's.	BIT CONC	NBOL	0.48
			BIT CONC	NBIL	0.53
			BIT CONC	SBOL	0.50
			BIT CONC	SBIL	0.56
		No. 4 - US 24 - US 25 N from Vreeland Rd	BIT CONC	NBOL	0.56
			BIT CONC	NBIL	0.59
			BIT CONC	SBOL	0.55
			BIT CONC	SBIL	0.56
15	River Road	On River Rd from approximately one mile W of Old US 31 (Buys Rd) W to Scenic Drive in Muskegon Co.	BIT CONC	EB	0.53
			BIT CONC	WB	0.53
16	S 04 of 81063	Wiard Rd over EB US 12	CONC	NBOL	0.49
			Sandblasted CONC	NBCL	0.40
			Sandblasted CONC	NBIL	0.35
			BIT	NBCL (approach)	0.50
			BIT	NBCL (departure)	0.51
16	49031	M 117, N of Engadine	NSST	NB	0.69
			Sandblasted NSST	SB	0.78

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
17	78061	M 86, between Centreville and M 66	Single Seal	EB	0.65
			Single Seal	WB	0.68
17	78061	300 ft maintenance patch located on M 86 approximately 1.5 mi. W of Nottawa	BIT	EB	0.26
			BIT	WB	0.27
17	78042	M 60 from Mendon W to Three Rivers	BC	EB	0.59
			BC	WB	0.60
--	41033	M 37, from I 96 N 1.5 mi. to the divided roadway	ST	NBOL	0.15
TR-1	Northline Rd	Northline Rd at Toledo Rd, Wayne County	BIT	NBOL	0.40
			BIT	NBCL	0.39
			BIT	NBIL	0.39
			BIT	SBOL	0.39
			BIT	SBCL	0.40
			BIT	SBIL	0.40
			Cont	EB	0.33
			BIT	WBOL	0.40
			BIT	WBIL	0.41
TR-1	West Rd	West Rd 0.25 mi. E of M 85 at the Penn Central RR overpass in Wayne County	BRICK	EBOL	0.48
			BRICK	EBIL	0.48
			BRICK	WBOL	0.42
			BRICK	WBIL	0.47
TR-2	Monroe Ave	Monroe Ave at Pearl St, Kent Co.	BRICK	EBOL	0.33
			BRICK	EBIL	0.36
			BRICK	WBOL	0.32
			BRICK	WBCL	0.37
			BRICK	WBLT	0.36
TR-2	Monroe Ave	Monroe Ave at Market Ave, Kent Co.	BRICK	EBOL	0.33
			BRICK	EBIL	0.36
			BRICK	WBOL	0.39
			BRICK	WBIL	0.36
TR-2	Monroe Ave	Monroe Ave at Ottawa Ave, Kent Co.	BRICK	EBOL	0.37
			BRICK	EBCL	0.35
			BRICK	EBIL	0.39
			BRICK	WBOL	0.40
			BRICK	WBIL	0.35
TR-2	Monroe Ave	Monroe Ave at Ionia Ave, Kent Co.	BRICK	EBOL	0.34
			BIT	EBOL	0.41
			BIT	NBRT	0.44
			BIT	NBCL	0.44
			BIT	NBIL	0.42
TR-2	Pearl St	Pearl St at Campau Ave, Kent Co.	BIT	EB	0.34
			BIT	WB	0.40
TR-2	41022	M 45 (Fulton St) at Sheldon Ave, Kent Co.	BIT	EBIL	0.40
			BIT	SBOL	0.41
			BIT	SBIL	0.37
TR-2	Ottawa Ave	Ottawa Ave at Michigan St, Kent Co.	BIT	SBRT	0.48
			BIT	SBOL	0.48
			BIT	SB#3	0.47
			BIT	SB#2	0.49
			BIT	SBIL	0.48