

part of HR-199

TL
295
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1983

FRICITION TESTING
of
SPRINKLE TREATMENT

STORY COUNTY
P-930-0(14)--30-85

JULY, 1983

IOWA DEPARTMENT OF TRANSPORTATION

To Office Materials - Administration

Date July 6, 1983

Attention C. L. Huisman

Ref. No. 435.20411

From C. J. Potter *CJP*

Office Materials - Special Investigations

Subject Friction Testing of Sprinkle Treatment in Story County,
Project No. P-930-0(14)--30-85

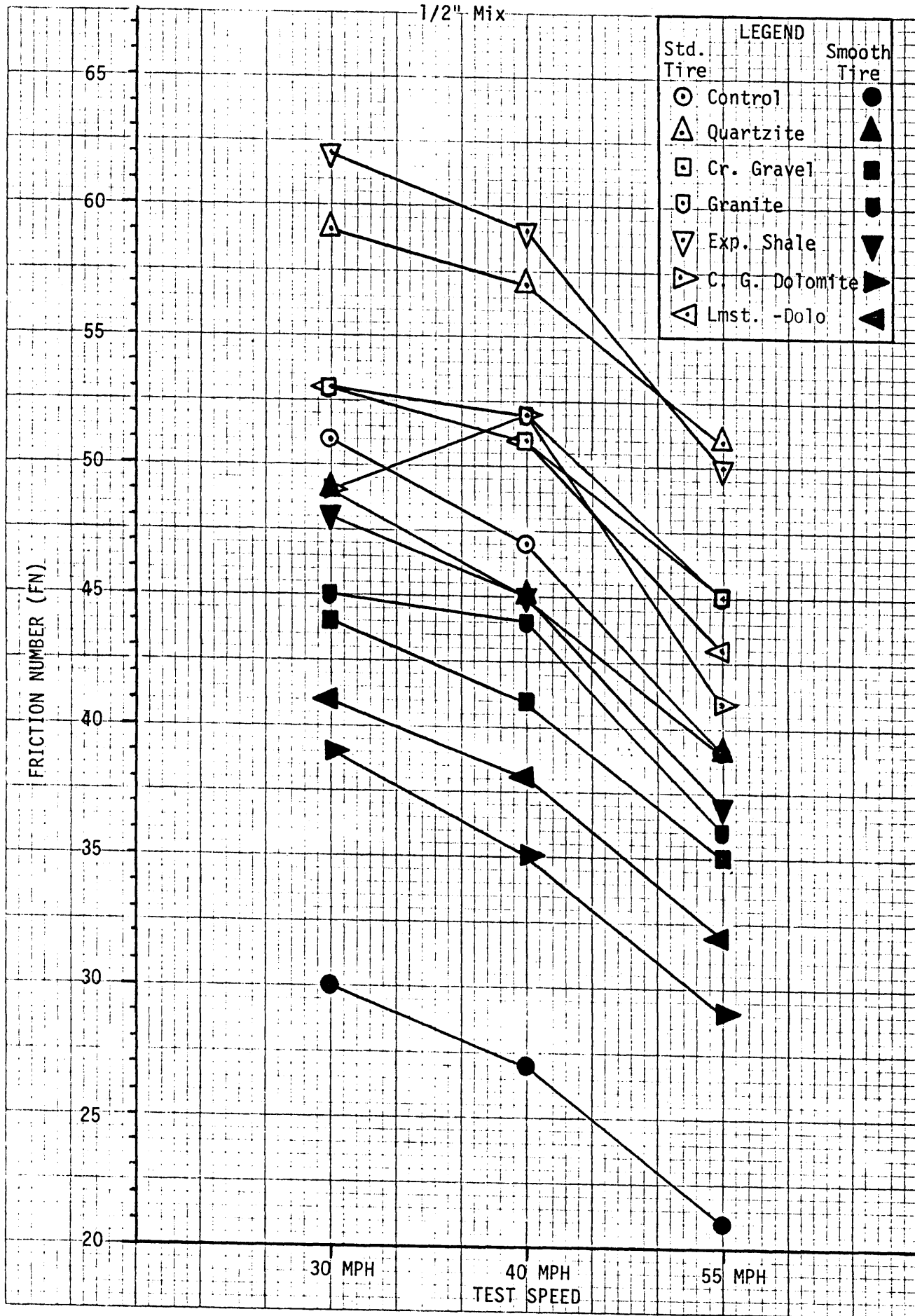
Find attached both tabular and graphical displays of special friction testing results conducted June 1, 1983. This testing was performed with both smooth tread (ASTM E-524-76) and Standard tread (ASTM E-501-76) test tires.

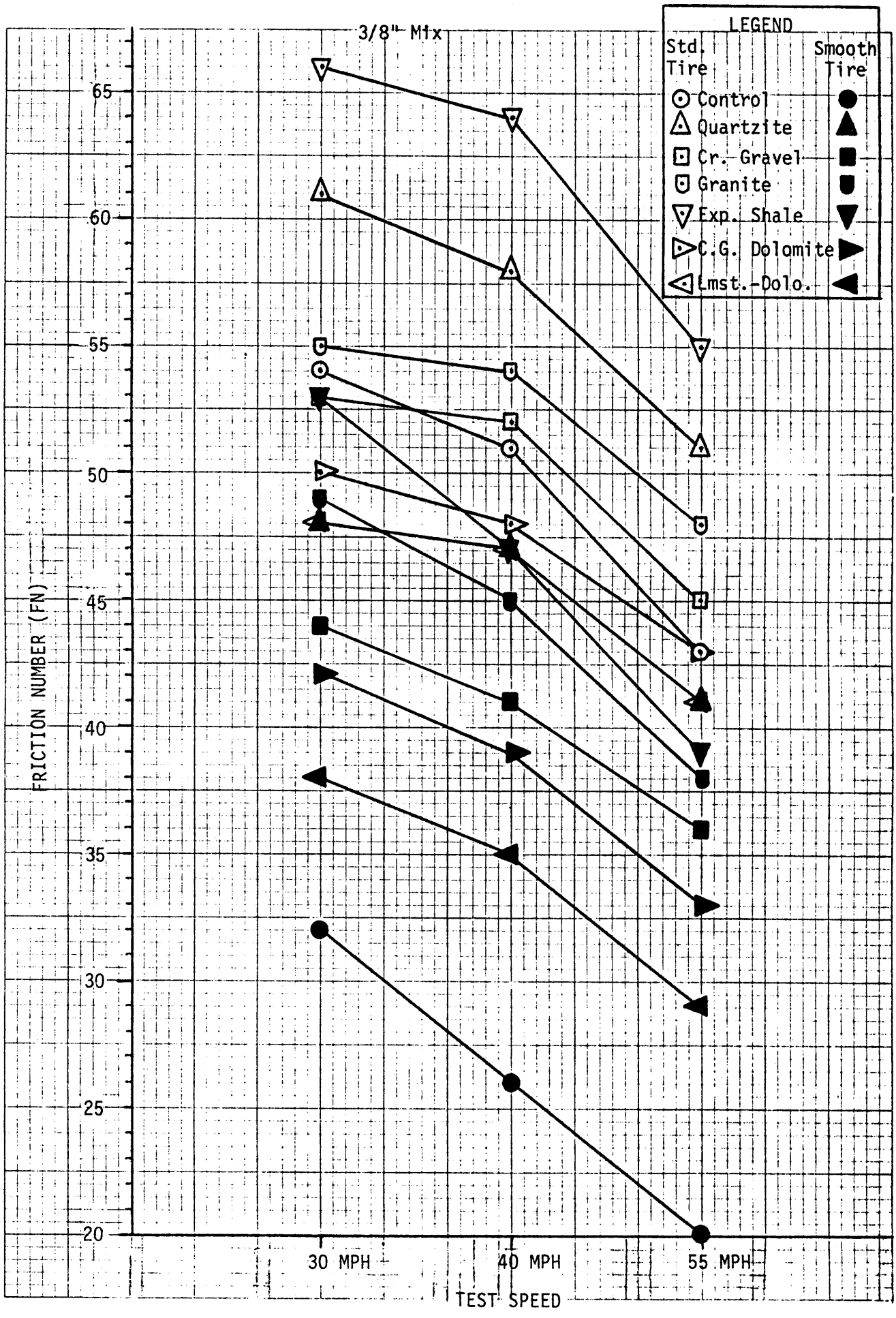
The expanded shale and quartzite are performing best to date from a frictional standpoint.

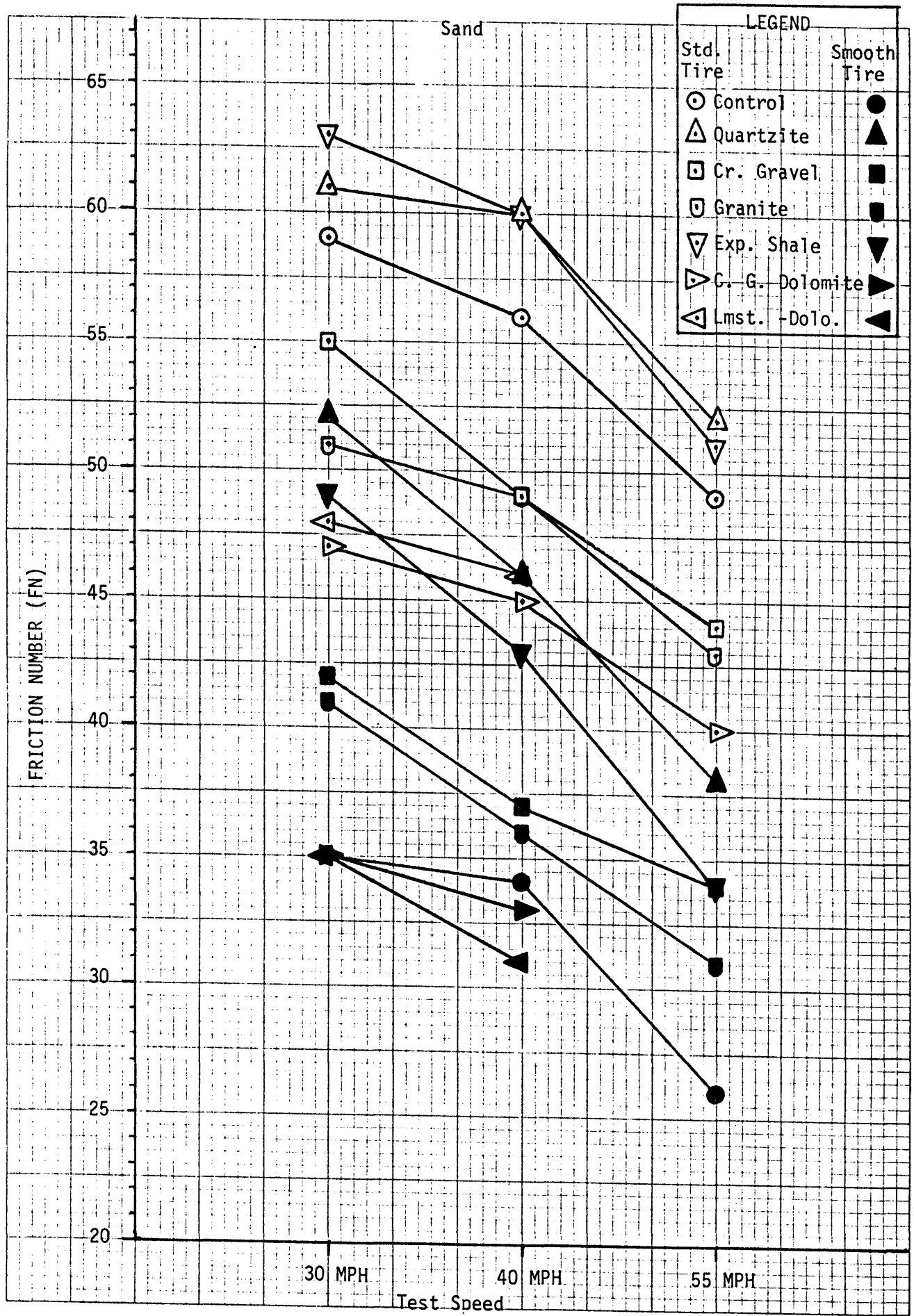
CJP/jm

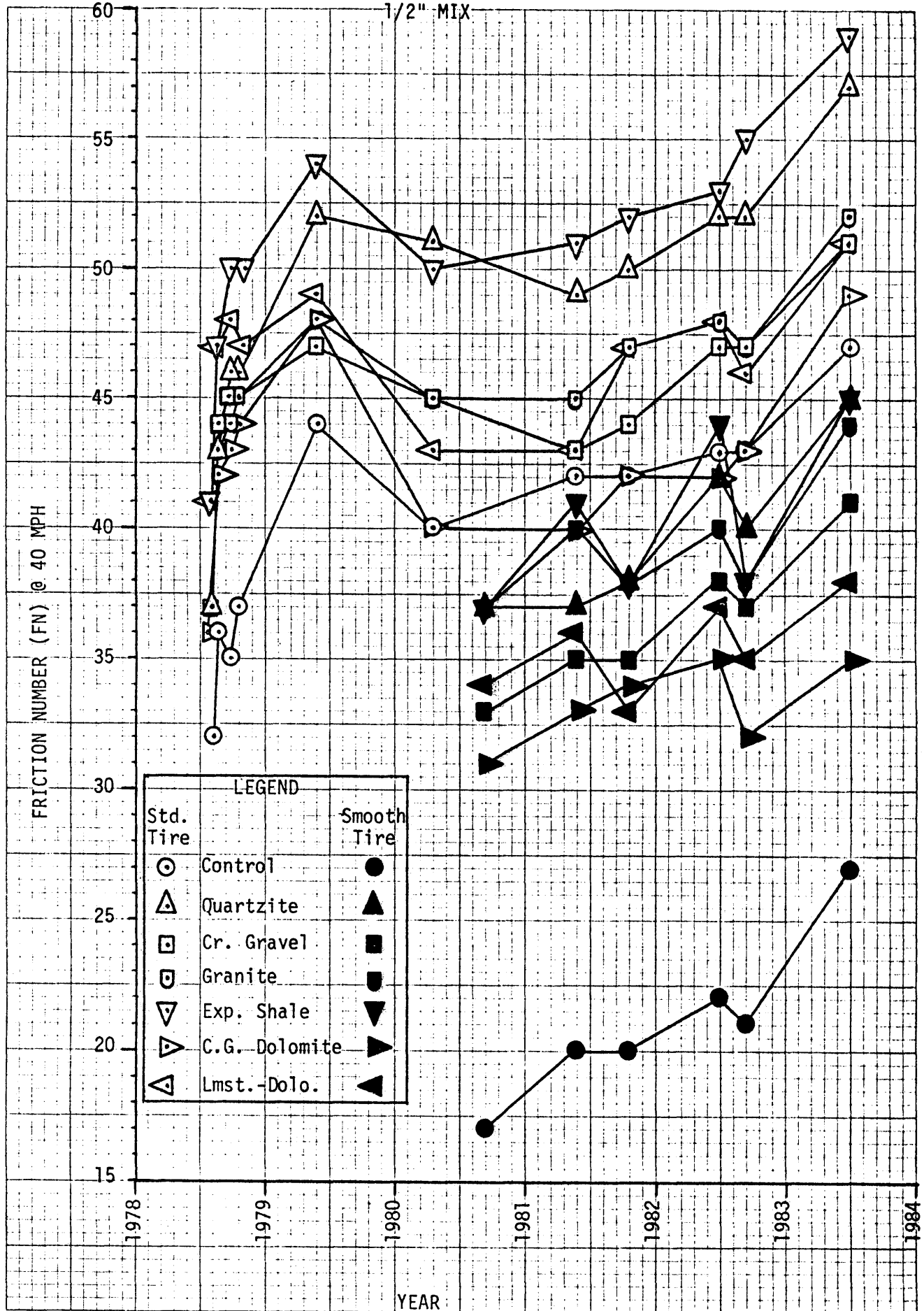
cc: B. C. Brown
V. J. Marks
R. A. Shelquist
L. J. Zearley
Don Jordison
B. Humphrey

1/2" Mix

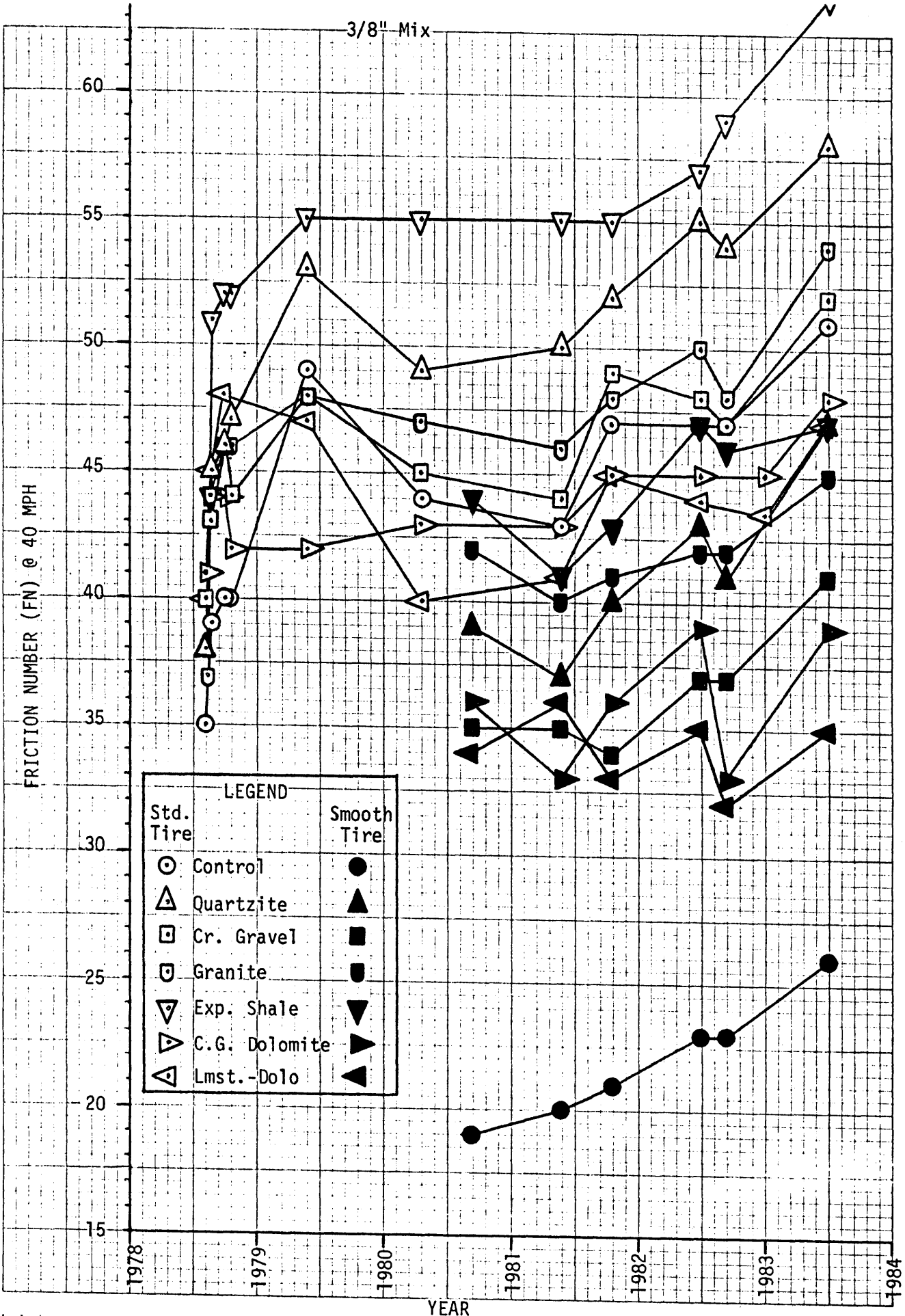






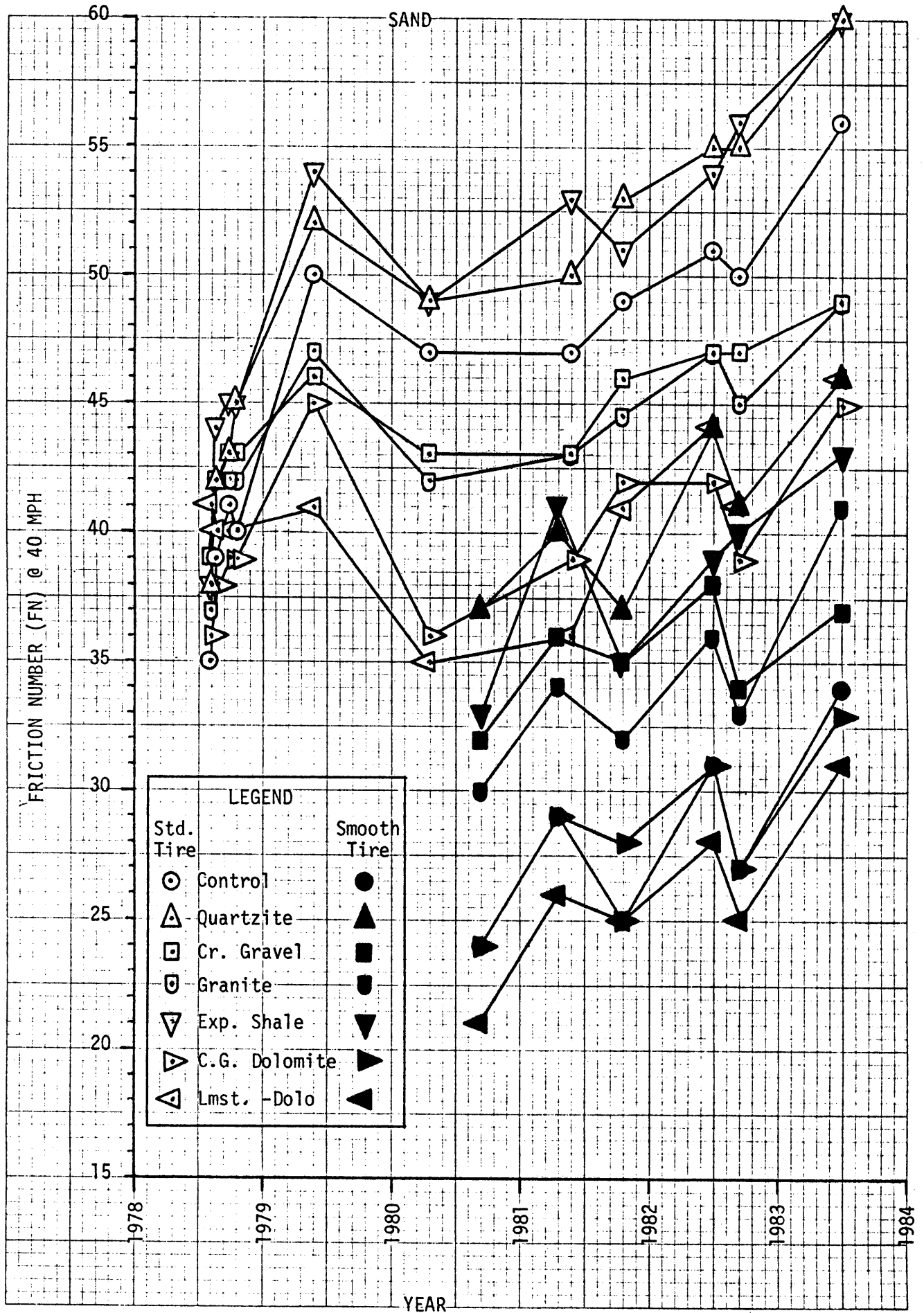


3/8" Mix



LEGEND

Std. Tire	Smooth Tire
○ Control	● Control
△ Quartzite	▲ Quartzite
□ Cr. Gravel	■ Cr. Gravel
⊠ Granite	⬤ Granite
▽ Exp. Shale	▼ Exp. Shale
◁ C.G. Dolomite	▾ C.G. Dolomite
▷ Lmst.-Dolo	▴ Lmst.-Dolo



FRICTION TESTING

Story County, P-930-0(14)-30-85
HR-199

Date Tested 6-1-83

Smooth Tire

Station	to	Station	1/2"	Asphalt Mix	Sprinkle Aggregate	Direction	FN Avg.	Speed MPH	Direction	FN Ave.
104+50		116+00			None	EB	30 26 20	30 40 55	WB	31 28 22
116+00		128+00			Quartzite	EB	51 45 41	30 40 55	WB	48 45 38
128+00		139+00			Crushed Stone	EB	44 43 38	30 40 55	WB	44 40 33
139+00		151+00			Granite	EB	47 44 39	30 40 55	WB	44 44 34
151+00		162+32.2			Expanded Shale	EB	48 46 40	30 40 55	WB	48 44 34
162+32.2		176+00			Course Grained Dolomite	EB	37 32 26	30 40 55	WB	42 39 32
176+00		189+00			Limestone/Dolomite	EB	41 36 33	30 40 55	WB	42 40 32

.FRICTION TESTING
 Story County, P-930-0(14)-30-85
 HR-199

Date Tested 6-1-83

Smooth Tire

Station	to	Station 3/8"	Asphalt Mix	Sprinkle Aggregate	Direction	FN Avg.	Speed MPH	Direction	FN Ave.
189+00		202+00		None	EB	30 25 21	30 40 55	WB	34 27 20
202+00		215+20.4		Quartzite	EB	50 49 46	30 40 55	WB	47 46 37
215+20.4		229+00		Crushed Stone	EB	45 41 39	30 40 55	WB	44 42 33
229+00		242+00		Granite	EB	50 46 38	30 40 55	WB	48 44 38
242+00		255+00		Expanded Shale	EB	53 47 40	30 40 55	WB	54 48 39
255+00		268+30.7		Course Grained Dolomite	EB	46 43 37	30 40 55	WB	38 36 30
268+30		282+00		Limestone/ Dolomite	EB	35 34 28	30 40 55	WB	41 36 30

.FRICTION TESTING
 Story County, P-930-0(14)-30-85
 HR-199

Date Tested 6-1-83

Smooth Tire

Station	to	Station	Sand	Asphalt Mix	Sprinkle Aggregate	Direction	FN Avg.	Speed MPH	Direction	FN Ave.
282+00		295+00			None	EB	40 35 28	30 40 55	WB	30 33 25
295+00		308+00			Quartzite	EB	54 46 38	30 40 55	WB	50 46 38
308+00		321+72			Crushed Gravel	EB	45 44 37	30 40 55	WB	40 30 32
321+72		335+00			Granite	EB	41 42 31	30 40 55	WB	42 31 31
335+00		348+00			Expanded Shale	EB	50 46 36	30 40 55	WB	49 41 32
348+00		359+20			Course Grained Dolomite	EB	37 36	30 40 55	WB	33 30
360+30		374+54			Limestone Dolomite	EB	38 34	30 40 55	WB	32 28
374+54		384+50	No Testing In This Section Due To Speed Limit							

.FRICTION TESTING
 Story County, P-930-0(14)-30-85
 HR-199

Date Tested 6-1-83

							Standard Tire		
tation	to	Station 1/2"	Asphalt Mix	Sprinkle Aggregate	Direction	FN Avg.	Speed MPH	Direction	FN Ave.
14+50		116+00		None	EB	50 46 38	30 40 55	WB	52 49 40
6+00		128+00		Quartzite	EB	59 57 52	30 40 55	WB	60 58 50
8+00		139+00		Crushed Stone	EB	54 52 46	30 40 55	WB	52 51 44
9+00		151+00		Granite	EB	55 54 46	30 40 55	WB	52 50 44
1+00		162+32.2		Expanded Shale	EB	65 61 53	30 40 55	WB	59 58 48
2+32.2		176+00		Course Grained Dolomite	EB	46 46 39	30 40 55	WB	52 59 43
6+00		189+00		Limestone/ Dolomite	EB	52 51 43	30 40 55	WB	54 52 44

. FRICTION TESTING
 Story County, P-930-0(14)-30-85
 HR-199

Date Tested 6-1-83

							Standard Tire		
Station	to	Station 3/8"	Asphalt Mix	Sprinkle Aggregate	Direction	FN Avg.	Speed MPH	Direction	FN Ave.
189+00		202+00		None	EB	54 51 43	30 40 55	WB	55 52 43
202+00		215+20.4		Quartzite	EB	62 58 53	30 40 55	WB	60 58 49
215+20.4		229+00		Crushed Stone	EB	53 52 46	30 40 55	WB	54 52 45
229+00		242+00		Granite	EB	56 55 48	30 40 55	WB	55 53 48
242+00		255+00		Expanded Shale	EB	66 64 56	30 40 55	WB	66 64 54
255+00		268+30.7		Course Grained Dolomite	EB	54 52 48	30 40 55	WB	46 45 38
268+30.7		282+00		Limestone/ Dolomite	EB	45 44 40	30 40 55	WB	52 50 43

. FRICTION TESTING
 Story County, P-930-0(14)-30-85
 HR-199

Date Tested 6-1-83

							Standard Tire		
Station	to	Station	Sand Mix	Asphalt Sprinkle Aggregate	Direction	FN Avg.	Speed MPH	Direction	FN Ave.
32+00		295+00		None	EB	60 58 48	30 40 55	WB	58 55 50
35+00		308+00		Quartzite	EB	62 61 53	30 40 55	WB	61 59 51
38+00		321+72		Crushed Gravel	EB	52 52 46	30 40 55	WB	59 47 43
41+72		335+00		Granite	EB	50 48 43	30 40 55	WB	52 51 44
45+00		348+00		Expanded Shale	EB	64 62 53	30 40 55	WB	62 58 50
48+00		359+20		Course Grained Dolomite	EB	51 48 42	30 40 55	WB	44 43 38
50+30		374+54		Limestone/ Dolomite	EB	52 48	30 40 55	WB	45 44
54+54		384+50	No Testing In This Section Due To Speed Limit						

FRICION TEST DATA

APPENDIX A-1

40 MPH

Smooth Tread

1/2" Mix	Control		Quartzite		Cr.Gravel		Granite		Exp.Shale		CG Dolomite		Lmst-Dolo.	
	A 1		A 2		A 3		A 4		A 5		A 6		A 7	
DATE	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
8-21-80	15	18	37	37	32	35	37	38	35	40	28	35	33	35
5-05-81	19	21	38	37	36	34	41	39	43	40	31	36	36	37
10-01-81	18	21	40	36	36	34	34	36	39	37	34	35	31	35
06-01-82	20	25	42	42	38	38	41	39	48	41	32	39	36	39
08-19-82	19	22	43	38	38	36	39	37	39	38	26	38	34	37
06-01-83	26	28	45	45	43	40	44	44	46	44	32	39	36	40
3/8" Mix	B1		B2		B3		B4		B5		B6		B7	
Date	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
8-21-80	18	20	42	37	35	36	43	41	42	46	39	34	36	33
5-5-81	19	21	38	37	36	34	41	39	43	40	31	36	36	37
10-1-81	21	21	44	36	34	34	42	40	40	46	37	35	33	34
06-01-82	24	23	44	43	37	37	42	43	46	48	42	36	34	37
08-19-82	23	23	44	38	37	37	43	41	49	44	37	30	33	32
06-01-83	25	27	49	46	41	42	46	44	47	48	43	36	34	36
Sand	C 1		C 2		C 3		C 4		C 5		C 6		C 7	
Date	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
8-21-80	25	23	39	35	36	29	31	30	34	33	26	23	23	20
5-5-81	31	27	44	37	40	33	35	33	46	37	32	27	30	23
10-1-81	26	25	41	33	37	34	32	32	38	32	31	25	27	24
06-01-82	32	31	42	46	40	37	37	36	42	37	34	28	32	25
08-19-82	29	26	47	36	38	31	34	33	45	36	31	23	28	22
06-01-83	35	33	46	46	44	30	42	41	46	41	36	30	34	28

40 MPH

STANDARD TREAD

Control Quartzite Cr.Gravel Granite Exp.Shale CG Dolomite Lmst-Dolo.

4" Mix	A 1		A 2		A 3		A 4		A 5		A 6		A 7	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
8-10-78	30	33	39	35	41	34	38	35	39	43	36	37	45	38
8-28-78	33	39	44	42	46	42	45	41	45	49	41	44	48	46
9-15-78	30	39	47	45	48	43	46	43	49	51	41	45	49	47
10-18-78	33	41	46	46	46	44	46	44	49	51	43	46	48	47
5-15-79	42	46	54	51	48	47	50	46	54	54	48	48	50	47
4-29-80	39	40	51	50	47	43	47	44	53	47	39	41	44	43
5-05-81	37	46	47	51	43	43	44	46	51	52	36	44	42	45
10-1-81	42	42	51	49	46	43	48	46	55	50	40	44	47	48
06-01-82	43	44	51	53	47	47	50	46	55	52	39	46	47	49
08-19-82	41	45	53	52	47	46	47	46	61	50	39	47	44	49
06-01-83	46	49	57	58	52	51	54	50	61	58	46	59	51	50
3/8" Mix	B 1		B 2		B 3		B 4		B 5		B 6		B 7	
Date	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
8-10-78	38	32	42	35	42	38	37	38	45	43	44	39	40	41
8-28-78	41	38	47	44	43	44	44	45	51	51	46	42	45	45
9-15-78	41	40	47	45	46	46	46	47	52	52	46	43	47	49
10-18-78	41	40	49	45	46	43	46	46	53	51	45	40	42	47
5-15-79	50	48	55	51	49	48	49	48	55	56	40	45	47	47
4-29-80	46	43	51	47	46	44	48	46	57	54	49	37	40	40
5-05-81	42	45	51	50	43	46	46	47	54	56	44	42	38	44
10-1-81	42	46	54	50	52	46	50	47	57	54	48	42	44	46
06-01-82	47	47	57	53	49	48	50	51	58	57	48	43	43	46
08-19-82	47	48	56	52	46	49	48	49	60	58	49	42	41	46
06-01-83	51	52	58	58	52	52	55	53	64	64	52	45	44	50
Sand	C 1		C 2		C 3		C 4		C 5		C 6		C 7	
Date	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
8-10-78	36	35	39	37	38	40	37	38	39	37	36	37	39	43
8-28-78	40	38	43	42	42	42	42	42	46	43	39	37	40	41
9-15-78	41	41	45	42	44	43	42	42	47	44	41	38	42	38
10-18-78	40	41	45	45	44	42	42	42	46	45	41	38	41	38
5-15-79	51	49	53	52	46	47	47	47	54	54	48	42	44	38
4-29-80	47	47	52	47	46	40	41	43	51	47	40	33	38	32
5-05-81	47	47	51	50	44	43	42	44	55	51	40	37	39	41
10-1-81	50	49	55	51	49	44	43	45	53	50	46	39	47	36
06-01-82	51	52	56	54	47	47	47	48	54	54	45	40	46	39
08-19-82	51	49	57	54	49	45	44	46	58	55	42	37	44	38
06-01-83	58	55	61	59	52	47	48	51	62	58	48	43	48	44

STATE LIBRARY OF IOWA



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