## PROFILOMETER MEASUREMENT OF BRIDGE ROUGHNESS Fourth Progress Report

Research Laboratory Division Office of Testing and Research Research Project R-61 F-65 Research Report No. R-450



Michigan State Highway Department John C. Mackie, Commissioner Lansing, February 1964

#### PROFILOMETER MEASUREMENT OF BRIDGE ROUGHNESS Fourth Progress Report

This is the fourth publication in a series on profilometer measurement of the roughness of bridge decks. The first (Research Report No. R-421) described the profilometer equipment, gave procedures for testing and data analysis, and included measurements for 35 bridge projects. The second (Research Report No. R-430) reported measurements for an additional 22 bridge projects, including one structure of a project partially reported in the first report. The third (Research Report No. R-433) reported results for another 34 bridge projects and gave an updated analysis and evaluation of all bridge projects analyzed through November 1963, in this research program. In that report, it was observed that as more project data became available, it was increasingly clear that no significant differences in surface roughness exist between hand-finished and transverse machine-finished bridge decks.

This fourth progress report presents results for a new group of 35 bridge projects (42 separate structures), 28 of which were hand-finished and 7 machine-finished. In reporting riding quality, the following tentative roughness classification system is being used based on "span-runs" (see Glossary), and expressed in terms of accumulated inches-per-mile:

"Good" = less than 100
"Average" = 100 to 160
"Poor" = over 160

Using these categories, the 668 span-runs measured for the 35 bridge projects for which test result forms are presented in this report may be classified as follows:

	Finiahing Mathad	R	Total		
	Finishing Method	Good	Average	Poor	Total
1.	Hand	160	318	112	590
2.	Transverse machine	18	39	21	78
	Total Span-Runs	178	357	133	668

### Design and Construction Factors in Bridge Deck Roughness

In a memorandum dated July 2, 1963, R. L. Greenman requested that roughness data be evaluated to determine: a) whether deck roughness between expansion joints can be determined, and b) whether structural type affects roughness, particularly with regard to the type of beam supporting the deck. The first of these questions was answered in a memorandum from E. A. Finney dated August 1, 1963, which stated that:

...In this analysis the profile trace 12 feet each way from all joints was omitted...so that the profile at the center or measuring wheel would not be influenced by any roughness occurring as an end, or profile support wheel, passed over a joint. As shown by the analysis the center portion of the span on the average is approximately 25 percent smoother than the entire span, and that this difference is approximately the same for transverse or longitudinal machine finishing or hand finishing methods. Measuring the roughness of the entire span does not unduly bias the roughness results for any one method of finishing. In addition, the roughness which a motorist experiences while passing over a bridge is due to the roughness of the entire bridge length, and therefore, it appears reasonable to continue the present practice of measuring the roughness over the entire bridge, including a small section of "approach" and "leaving" pavement.

Solution of the second problem, however, was delayed until enough data had been accumulated from bridges built with each of at least three important beam types used in Michigan. By December 1963, it was possible to analyze data from 117 structures, including a minimum representative sample for each of the following types:

- 1. Deck plate girders (14 structures)
- 2. Prestressed concrete I-beams (13 structures)
- 3. Steel I-beams (80 structures)

In the analysis, the evident disparity in the number of structures for each beam type was compensated for, and a quantitatively unbiased comparison was obtained. Statistical examination of the data, using the analysis-of-variance technique, indicated that only tentative inferences may be drawn at this time regarding possible influence of beam type on deck roughness, since not all necessary assumptions can be strictly met. Based on the minimum representative data sample available, however, it appears that a significant difference in mean structural roughness value does exist

for the three beam types. Frequency distributions of roughness values plotted in Fig. 1 permit the following observations:

1. On the average, prestressed concrete I-beam decks (with a mean value of 112.7 in. per mi), and deck plate girder decks (with 115.8), are somewhat smoother than those built using steel I-beams (129.8). It may also be noted that a greater percentage of steel I-beam decks appear in the "poor" category of riding quality, the actual percentages illustrated in Fig. 1 being as follows:

	Riding Q	uality Catego	ory, percent
Deck Support	Good (0-100)	Average (100-160)	Poor (over 160)
Deck Plate Girder	7.1	85.8	7.1
Prestressed Concrete I-Beam	15.4	76.9	7.7
Steel I-Beam	12.4	71.5	16.1

- 2. However, all three types of deck have mean roughness values within a range of only 17 in. per mi, and this range in turn should be considered within the larger context of the 100- to 160-in. per mi category of "average" riding quality.
- 3. While a 17-in. range of roughness means is statistically significant, and while the average motorist might possibly note a difference between a deck with 112 in. per mile roughness and one with 129, nevertheless decks within this range may be considered quite adequate in riding quality.

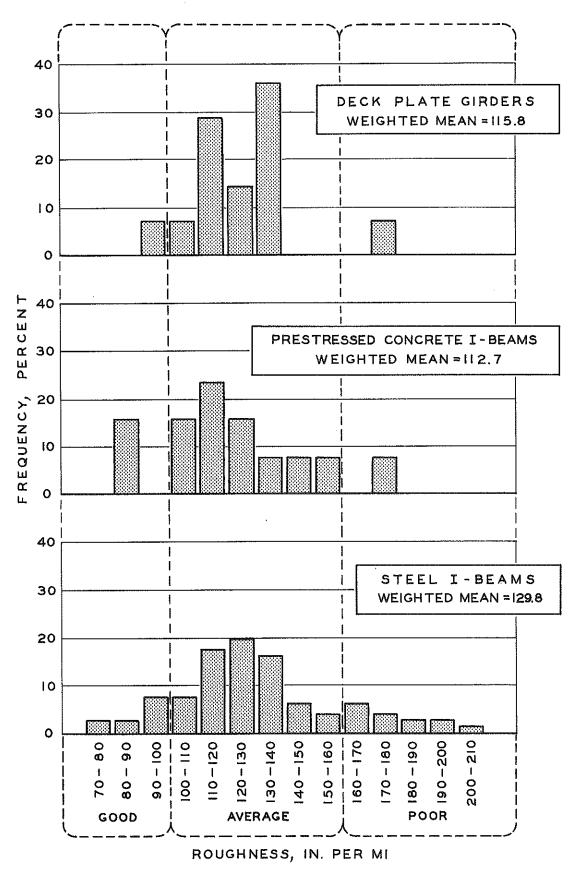


Figure 1. Frequency distributions of structure roughness for bridge decks supported by one of three types of beam.

#### GLOSSARY

BRIDGE PROJECT: used in this report series to refer to the Department's standard identification by construction project number, sometimes involving more than one structure. It should be noted that roughness is analyzed and reported in terms of "span run" or "structure" values.

IWP: inner wheel path, in relation to the structure's centerline.

OWP: outer wheel path, in relation to the structure's centerline.

ROUGHNESS: riding quality of the deck lane surfaces, measured in accumulated inches and converted or prorated to inches per mile (in. per mi).

SPAN RUN VALUE: roughness measurement for one wheel path on a given span.

STRUCTURE VALUE: roughness measurement (weighted mean) computed from values obtained from all spans and all wheel paths for a particular structure.

WEIGHTED MEAN: for this study, the arithmetic mean including consideration of variable span lengths.

**MICHIGAN** STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION Research Project 61 F-65

Form 511

Bridge Number S08	of 17033	, Locati	ion $M_2$	8 over I 7	5		Form 511
Dual Structures (sep		h roadway)	<u> </u>	Yes 🔲	No X	X	
Single Structure	Yes 🔯	No [				<del> </del>	paramous
Number of Spans	4	<del>127=</del>	Machine	Finished		Yes xx	No 🗌
W Bound Roady	way				Date M	easured 9-1	1-63
***************************************		Drofil	lometer Re	oughness '	Value - Ri	nches per mi	le
	_			T	· · · · · · · · · · · · · · · · · · ·	nenes per in	···
Item	Length	Traffic	I		ng Lane	Average	э
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	_	
W_ Approach	100.0	72.8	77.2			75.0	
Span 1	38.6	98.1	72.5			85.3	
2	79.3	115.8	108.4			112.1	
3	77.2	175.6	142.0			158.8	
4	35.4	98.7	147.6			123.2	
5							
6							
E Approach	100.0	103.1	105.8			104.4	
Average	430.5	110.6	106.6			108.6	
teranic relation to the term of the term o				***************************************			
E Bound Road	way						
		Profi	lometer R	oughness	Value - R	inches per m	ile
Item	Length	Traffic		T -	ng Lane		
Treitt	Lengu	O.W.P.	I.W.P.	<del></del>	I.W.P.	Averag	е
W Approach	100.0	85.8	85.1			85.4	
Span' 1	38.6	110.2	99.7			105.0	
2	79.3	129.9	129.0			129.4	
3	77.2	150.6	172.0			161.3	
4	35.4	151.0	182.0	]		166.5	
5							
6						<u> </u>	
E Approach	100.0	100.4	123.2			111.8	
Average	430.5	116.5	126.9			121.7	
		<u> </u>	<u></u>				
Remarks Spans an Expansion; #3 - Exp							
Expansion; #8 - Con							
Expansion.	DOT GOODOIL'S HO				,		
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MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

	of 16091	<u> </u> ,  Locat	ion <u>US 2</u>	7 (SB) Rel	<u>. over exi</u>	sting US 27 Ref. 511
Dual Structures (sep	arate for eac	h roadway	)	Yes XX	No 🗀	
Single Structure	Yes [	No No	<del></del>	- 7344-13		, m
Number of Spans	3		Machine	e Finished		Yes No xx
S Bound Road	way				Date M	easured <u>9-11-63</u>
		Profi	lometer R	oughness \	Value - R	inches per mile
Item	Length	Traffic		Passin		
100111	Dongen	O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average
S Approach	100.0					
Span 1	100.0 62.7	67.7 98.8	65.2	49.2	56.4	59,6
2	93.9	123.2	107.6 106.6	134.2	116.5	114.3
3	71.3	129.4		88.9	91.6	102.6
4	11.0	140,4	159.7	126.6	114.6	132.6
5						
6						
N Approach						
	100.0	81.6	65.0	55.5	72.2	68.6
Average	427.9	98.0	96.2	84.7	86.3	91.3
						,,,
Bound Road	way					
		Profi	lometer R	oughness '	Value – R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Approach						
Span'1				٠.		
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2						
3						
3 4	·					
3 4 5						
3 4 5 6						
3 4 5 6 Approach						
3 4 5 6						
3 4 5 6 Approach	nd joints numl	per from S	outh to No	orth. Join	: #1, 2, 3,	6, 8, 9, & 10 -
3 4 5 6 Approach Average Remarks Spans ar					: #1, 2, 3,	6, 8, 9, & 10 -
3 4 5 6 Approach Average Remarks Spans ar Expansion; #4, & 7	- Construction				t #1, 2, 3,	6, 8, 9, & 10 -
3 4 5 6 Approach Average Remarks Spans ar	- Construction				: #1, 2, 3,	6, 8, 9, & 10 -
3 4 5 6 Approach Average Remarks Spans ar Expansion; #4, & 7	- Construction				: #1, 2, 3,	6, 8, 9, & 10 -
3 4 5 6 Approach Average Remarks Spans ar Expansion; #4, & 7	- Construction				t #1, 2, 3,	6, 8, 9, & 10 -
3 4 5 6 Approach Average Remarks Spans ar Expansion; #4, & 7	- Construction				: #1, 2, 3,	6, 8, 9, & 10 -

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Research Laboratory Division

Bridge Number X02	of 37014	, Locat	ion <u>US 27</u>	Relocatio	n over C&	O RR and US 15 orm 511	
Dual Structures (sep	arate for eac	h roadway)	-	Yes xx	No 🗆	<b>-</b> l	
Single Structure Number of Spans		T NO I	<del></del>	Finished		Yes No XX	
Number or Spans	J		Macillin	o i implica		100 [	
N Bound Roady	way				Date M	easured <u>10-10-63</u>	
		Profil	lometer R	oughness V	Value - R i	nches per mile	
Item	Length	Traffic	Lane	Passin	g Lane		
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average	
S Approach	100.0	94.3	101.2	104,3	102.4	100.6	
Span 1	50.4	124.0	132.2	117.2	137.1	127.6	
2	60.0	111.3	110.2	98.8	91.0	102.8	
3	60.8	104.2	110,6	89.8	84.6	97.3	
4	60.3	150.7	135.2	110.1	94.1	122,5	
5	52.5	117.0	135.1	92.0	97.8	110.5	
6							
N Approach	100.0	88.8	85.4	79.0	75.0	82, 0	
Average	484.0	109.0	111.4	97.4	95. 2	103.2	
S Bound Road	way						
		Profi	lometer R	oughness	Value - R	inches per mile	
Item	Length	Traffic	Lane	Passing Lane			
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average	
S Approach	100.0	88.4	90.4	56.3	64, 2	74.8	
Span'1	50.4	119.0	123.9	121.0	126.4	122.6	
2	60.0	109.2	101.0	129.7	107.6	118.9	
3	60.8	136.0	132.3	97.0	89.7	113, 8	
4	60.3	108.1	96.7	95.6	111.2	102.9	
5	52. 5	134.9	117.2	88.1	114.3	113.6	
6							
<u>N</u> Approach	100.0	95.4	100.4	122.0	111.0	107.2	
Average	484.0	109.1	106. 2	99.2	100.2	103. 2	
Remarks Spans and and 12 - Expansion;				•		3, 5, 7, 8, 10, 11,	
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Concrete approx	aches.						
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# District 5

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PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS
TEST RESULT TABULATION
Research Project 61 F-65

Bridge Number S05	of 37014	, Locat	ion Rosel	oush Road	over US 2'	7	Form 511
Dual Structures (sep				Yes 🗀	No x	$\overline{\mathbf{x}}$	
Single Structure	Yes 🔀						
Number of Spans	4		Machine	Finished		Yes	No XX
W Bound Road	way	-			Date M	easured <u>10</u> -	<u>-14-63</u>
		Profil	lometer R	oughness	Value - R i	inches per mi	ile
Item	Length	Traffic	Lane	Passin	ıg Lane		
100111	20641	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average	Э
W Approach	50.0	241.8	194.2			218.0	
Span 1	34.5	186.2	194.9		<u> </u>	190.6	
2	71.7	82.0	87.4			84.7	
3	70.4	118.0	130.4	······································		124.2	
4	34.4	141.4	145.1		1	143.2	
5	<u> </u>						
6							
E Approach	50.0	147.0	171.9			159.4	
Average		144.4	146.2			145.3	
· · · · · · · · · · · · · · · · · · ·				4			······································
E Bound Road	wav						
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			<del></del>	T		inches per m	116
Item	Length	Traffic	τ		g Lane	   Averag	· <u>a</u>
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	11/01/45	<del></del>
W Approach	50.0	106.8	80.8			93.8	
Span'1	34.5	140.6	113.8			127,2	
2	71.7	98.8	99.4			99.1	
3	70.4	116.4	133.0			124.7	
4	34.4	136.4	165,2			150.8	
5							
6							
E Approach	50.0	148.3	93.3			120.8	
Average		120.8	112.0			116.4	
Remarks <u>Joints a</u>	and spans nun	nbered fro	m West to	East. Jo	oint #1 - Co	onstruction; †	<del>‡</del> 2 –
Expansion; #3 - Stee	el Expansion;	#4 - Expa	nsion; #5	- Construc	ction.		
Bituminous app		7					
Ditummous app	roaches.			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
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MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

Bridge Number S09						
Dual Structures (sep				Yes 🗀	No 🗓	X
Single Structure		X No		Finished		Yes No xx
Number of Spans	3		Macilin	ringhed	•	Tes No ma
N Bound Road	vay				Date M	easured <u>10-10-63</u>
		Profi	lometer R	oughness	Value - R i	nches per mile
Item	Length	Traffic	c Lane	Passin	ıg Lane	
100 III	Longui	O.W.P.	I.W.P.		I.W.P.	Average
_s Approach	100.0	165.8	139,6			152.7
Span 1	63.5	125.4	132.3			128.8
2	100.5	114.8	108.1			111.4
3	54.0	174.1	205.4			189.8
4				<u></u>	<b> </b>	
5						
6				<u> </u>		
N Approach	100.0	201.0	184.4			192.7
Average	418.0	156.9	150.2			153.6
Bound Road	way					·
	-	Profi	ilometer B	oughness	Value - R	inches per mile
		Profilometer Roughness Value - R  Traffic Lane Passing Lane				
Itam	Longth	Traffic	c Lane	Passin	ng Lane	
Item	Length	O.W.P.		Passin O.W.P.	I.W.P.	Average
ItemSApproach	Length 100.0			<del> </del>	<del></del>	Average 123.7
S Approach	_	O.W.P.	I.W.P.	<del> </del>	<del></del>	
S Approach Span'1	100.0 63.5	O.W.P. 130.3 127.2	I.W.P. 117.1 161.4	<del> </del>	<del></del>	123.7 144.3
S Approach Span'1 2	100.0 63.5 100.5	O.W.P. 130.3 127.2 96.7	1.W.P. 117.1 161.4 140.8	<del> </del>	<del></del>	123.7 144.3 118.8
S Approach Span' 1 2 3	100.0 63.5	O.W.P. 130.3 127.2	I.W.P. 117.1 161.4	<del> </del>	<del></del>	123.7 144.3
S Approach Span'1 2	100.0 63.5 100.5	O.W.P. 130.3 127.2 96.7	1.W.P. 117.1 161.4 140.8	<del> </del>	<del></del>	123.7 144.3 118.8
S Approach Span 1 2 3 4	100.0 63.5 100.5	O.W.P. 130.3 127.2 96.7	1.W.P. 117.1 161.4 140.8	<del> </del>	<del></del>	123.7 144.3 118.8
S Approach Span'1 2 3 4 5	100.0 63.5 100.5	O.W.P. 130.3 127.2 96.7	1.W.P. 117.1 161.4 140.8	<del> </del>	<del></del>	123.7 144.3 118.8
S Approach Span 1 2 3 4 5 6	100.0 63.5 100.5 54.0	O.W.P. 130.3 127.2 96.7 190.2	I.W.P. 117.1 161.4 140.8 192.8	<del> </del>	<del></del>	123.7 144.3 118.8 191.5
S Approach  Span 1 2 3 4 5 6 N Approach  Average  Remarks Joints a	100.0 63.5 100.5 54.0 100.0 418.0	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from	1.W.P.  117.1  161.4  140.8  192.8  193.6  157.6  m South to	O.W.P.	I.W.P.	123.7 144.3 118.8 191.5
S Approach Span 1 2 3 4 5 6 N Approach Average Remarks Joints a Expansion; #4, 7 - 6	100.0 63.5 100.5 54.0 100.0 418.0 nd spans num	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from #5 - Steel	1.W.P.  117.1  161.4  140.8  192.8  193.6  157.6  m South to	O.W.P.	I.W.P.	123.7 144.3 118.8 191.5
S Approach Span 1 2 3 4 5 6 N Approach Average Remarks Joints a Expansion; #4, 7 - 0 All joints open a	100.0 63.5 100.5 54.0 100.0 418.0 nd spans num Construction;	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from #5 - Steel	1.W.P.  117.1  161.4  140.8  192.8  193.6  157.6  m South to	O.W.P.	I.W.P.	123.7 144.3 118.8 191.5
S Approach Span 1 2 3 4 5 6 N Approach Average Remarks Joints a Expansion; #4, 7 - 6	100.0 63.5 100.5 54.0 100.0 418.0 nd spans num Construction;	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from #5 - Steel	1.W.P.  117.1  161.4  140.8  192.8  193.6  157.6  m South to	O.W.P.	I.W.P.	123.7 144.3 118.8 191.5
S Approach Span 1 2 3 4 5 6 N Approach Average Remarks Joints a Expansion; #4, 7 - 0 All joints open a	100.0 63.5 100.5 54.0 100.0 418.0 nd spans num Construction;	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from #5 - Steel	1.W.P.  117.1  161.4  140.8  192.8  193.6  157.6  m South to	O.W.P.	I.W.P.	123.7 144.3 118.8 191.5
S Approach Span 1 2 3 4 5 6 N Approach Average Remarks Joints a Expansion; #4, 7 - 0 All joints open a	100.0 63.5 100.5 54.0 100.0 418.0 nd spans num Construction;	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from #5 - Steel	1.W.P.  117.1  161.4  140.8  192.8  193.6  157.6  m South to	O.W.P.	I.W.P.	123.7 144.3 118.8 191.5
S Approach Span 1 2 3 4 5 6 N Approach Average Remarks Joints a Expansion; #4, 7 - 0 All joints open a	100.0 63.5 100.5 54.0 100.0 418.0 nd spans num Construction;	O.W.P.  130.3  127.2  96.7  190.2  172.4  139.6  abered from #5 - Steel	1. W. P.  117. 1  161. 4  140. 8  192. 8  193. 6  157. 6  m South to  Expansion	North. J	I.W.P.	123.7 144.3 118.8 191.5

MICHIGAN
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Bridge Number S05	of 69013	, Locat	ion <u>US 2'</u>	7 over I 75	, 2.5 mi S	6. of Gaylord Form 511
Dual Structures (sep				Yes 🗀	No 🗵	X
Single Structure		x No [				
Number of Spans	4	aun-	Machine	e Finished		Yes No xx
S Bound Road	way				Date M	easured 9-12-63
**************************************		Profil	lometer R	oughness V	Value - R	inches per mile
Item	Length	Traffic		Passin		
Item	Trengm	O.W.P.	I.W.P.	O. W. P.	1	Average <sup>,</sup>
				O. W. 1	1. 77 . 1	
S Approach	50.0	101.1	80.9			91.0
Span 1	39.5	217, 2	225.6			221.4
2	89.9	139.6	124.6			132.1
3	91.9	115.8	109.3			112.6
4	44,6	115.4	99.4			107.4
5						
6						
N Approach	50.0	229,2	205.8			217.5
Average	365.9	146.0	133.7			139.8
N Bound Road	way					
		Drofi	lomoton D		(7-1 T)	. 1
		Pron	minerer F	ougnness	value - R	inches per mile
Item	Length	Traffic	.,	Passin		
Item	Length	:	Lane	1		Average
Item S Approach	Length	Traffic	Lane	Passin	g Lane	
	50.0	Traffic O.W.P.	I.W.P.	Passin	g Lane	Average
S Approach Span'1	50.0 39.5	Traffic O.W.P. 151.8 163.8	Lane I.W.P.  166.4  161.8	Passin	g Lane	Average 159.1 162.8
S Approach Span'1 2	50.0 39.5 89.9	Traffic O.W.P. 151.8 163.8 117.4	Lane 1.W.P. 166.4 161.8 111.6	Passin	g Lane	Average  159.1  162.8  114.5
S Approach Span' 1 2 3	50.0 39.5 89.9 91.9	Traffic O.W.P. 151.8 163.8 117.4 98.2	Lane I.W.P.  166.4  161.8  111.6  104.8	Passin	g Lane	Average  159.1  162.8  114.5  101.5
S Approach Span'1 2 3 4	50.0 39.5 89.9	Traffic O.W.P. 151.8 163.8 117.4	Lane 1.W.P. 166.4 161.8 111.6	Passin	g Lane	Average  159.1  162.8  114.5
S Approach Span'1 2 3 4 5	50.0 39.5 89.9 91.9	Traffic O.W.P. 151.8 163.8 117.4 98.2	Lane I.W.P.  166.4  161.8  111.6  104.8	Passin	g Lane	Average  159.1  162.8  114.5  101.5
S Approach Span' 1 2 3 4 5 6	50.0 39.5 89.9 91.9 44.6	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8	Passin	g Lane	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach	50.0 39.5 89.9 91.9 44.6	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8	Passin	g Lane	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6	50.0 39.5 89.9 91.9 44.6	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8	Passin	g Lane	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span'1 2 3 4 5 6 N Approach Average	50.0 39.5 89.9 91.9 44.6 50.0	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2	Passin O.W.P.	g Lane I.W.P.	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span'1 2 3 4 5 6 N Approach Average Remarks Spans a	50.0 39.5 89.9 91.9 44.6 50.0 365.9	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Spans a Expansion; #3 - Stee	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span'1 2 3 4 5 6 N Approach Average Remarks Spans a	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Spans a Expansion; #3 - Stee	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Spans a Expansion; #3 - Stee	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Spans a Expansion; #3 - Stee	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Spans a Expansion; #3 - Stee	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to	Passin O.W.P.	g Lane I.W.P.  oint #1 - C	Average  159.1  162.8  114.5  101.5  192.2
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Spans a Expansion; #3 - Stee	50.0 39.5 89.9 91.9 44.6 50.0 365.9 nd joints num	Traffic O.W.P. 151.8 163.8 117.4 98.2 165.6	Lane I.W.P.  166.4  161.8  111.6  104.8  218.8  121.8  137.2  m South to asion; #5	Passin O.W.P.  North. J. Construct	g Lane I.W.P.  oint #1 - Ction.	Average  159.1  162.8  114.5  101.5  192.2

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS	
TEST RESULT TABULATION	
Research Project 61 F-65	

Bridge Number B01	of 56044	. Locat	ion US 1	0 crossing	Bluff Cre	eek Form 511
Dual Structures (sep				Yes 🔯	No [	
Single Structure						
Number of Spans	3		Machine	e Finished		Yes No 🔯
W Bound Road	way				Date M	easured <u>9-27-63</u>
		Dwafi	lomoton D	ovelnoga I		
	·		· · · · · · · · · · · · · · · · · · ·	T		inches per mile
Item	Length	Traffic		†	g Lane	Average
·		O.W.P.	I.W.P.	O.W.P.	I.W.P.	11102460
Approach	100.0	132,6	117.6	116.0	108.2	118.6
Span 1	76.7	114.9	106.4	107.0	104.9	108.3
2	63.9	92.2	73,8	66.0	84.1	79.0
3	76.0	100.4	107.4	103,8	115.4	106.8
4				· · · · · · · · · · · · · · · · · · ·		
5						
6						
E Approach	100.0	80.8	71.2	80.2	123.9	89.0
Average	416.6	104.8	95.8	95.8	109.0	101.4
E Bound Road	way					
<del> </del>		Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
	Ü	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	100.0	59.4	70.7	95.0	86.7	78.0
Span'1	76.3	89.6	116.0	112.0	111.4	107.2
2	63.6	92,6	87.7	136.1	138.4	113.7
3	76.0	126.7	121.2	96.0	102.0	111.5
4	10.0	120.1	121.4	00.0	104.0	111,0
5				· · · · · · · · · · · · · · · · · · ·		
6						
E Approach	100.0	77.4	72.1	73.0	103.8	81.6
Average	415.9	86.7	91.2	99.2	106.0	95.8
Remarks Spans a	nd joints num	ber from \	West to Ea	ast. Joint	#1 - Expa	nsion; #2 -
Expansion; #3 - Exp						
Construction; #8 - #	†10 – Expansi	on.				
Concrete approa	ohoo					
	enes.					
	cnes.				·····	
	cnes.					
	cnes.					
	ciles.					ort - February 1964

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S0	3 01 56044	, Locat	ion <u>M</u> 30	over us.	LU	Form 311
Dual Structures (sep	arate for eac	h roadway)	)	Yes 🗀	No 🗵	X
Single Structure	Yes 🗓					
Number of Spans			Machine	Finished		Yes 🚃 No 🗌
N Bound Road	way	<b>Q</b> CO			Date M	easured <u>10-11-63</u>
		Profil	lometer R	oughness V	Value - Ri	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
item	Tengu	O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average
		U.W.F.	1. 77	U. W. F.	1. 77	
S Approach	50.0	217.6	224.2			220.9
Span 1	33. 3	203.0	235.0			219.0
2	67.0	137.3	189.8			163.6
3	66, 8	124.6	141.0			132.8
4	33. 3	267.7	303.8			285.8
5						
6						
N Approach	50.0	202.2	201.2			201.7
Average	300.4	180.4	204. 2			192. 3
S Bound Road	way					
		Profi	lometer B	oughness '	Value - R	inches per mile
Itam	Length	Traffic	Lane	Passin	g Lane	
Item	Length	Traffic	Lane I.W.P.	Passin O.W.P.	g Lane I.W.P.	Average
	Length	· · · · · · · · · · · · · · · · · · ·	T	<del></del>	Ţ	Average 191, 2
S Approach	50.0	O.W.P. 214.5	I.W.P. 167.8	<del></del>	Ţ	191. 2
S Approach Span'1	50.0	O.W.P. 214.5 248.2	I.W.P. 167.8 223.5	<del></del>	Ţ	191, 2 235, 8
S Approach Span'1 2	50.0 33.3 67.0	O.W.P. 214.5 248.2 133.9	I.W.P. 167.8 223.5 185.9	<del></del>	Ţ	191, 2 235, 8 159, 9
S Approach Span' 1 2 3	50.0 33.3 67.0 66.8	O.W.P. 214.5 248.2 133.9 132.8	I.W.P. 167.8 223.5 185.9 119.0	<del></del>	Ţ	191, 2 235, 8 159, 9 125, 9
S Approach Span' 1 2 3 4	50.0 33.3 67.0	O.W.P. 214.5 248.2 133.9	I.W.P. 167.8 223.5 185.9	<del></del>	Ţ	191, 2 235, 8 159, 9
S Approach Span' 1 2 3	50.0 33.3 67.0 66.8	O.W.P. 214.5 248.2 133.9 132.8	I.W.P. 167.8 223.5 185.9 119.0	<del></del>	Ţ	191, 2 235, 8 159, 9 125, 9
S Approach Span'1 2 3 4 5	50.0 33.3 67.0 66.8	O.W.P. 214.5 248.2 133.9 132.8	I.W.P. 167.8 223.5 185.9 119.0	<del></del>	Ţ	191, 2 235, 8 159, 9 125, 9
S Approach Span' 1 2 3 4 5 6	50.0 33.3 67.0 66.8 33.3	O.W.P. 214.5 248.2 133.9 132.8 202.8	I.W.P. 167.8 223.5 185.9 119.0 265.4	<del></del>	Ţ	191, 2 235, 8 159, 9 125, 9 234, 1
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Joints as	50.0 33.3 67.0 66.8 33.3 50.0 300.4	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
S Approach Span'1 2 3 4 5 6 N Approach Average	50.0 33.3 67.0 66.8 33.3 50.0 300.4	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
S Approach Span' 1 2 3 4 5 6 N Approach Average Remarks Joints as	50.0 33.3 67.0 66.8 33.3 50.0 300.4 and spans numon.	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
SApproach Span'1 2 3 4 5 6 NApproach Average Remarks _Joints as #2, 3, 4, - Expansion	50.0 33.3 67.0 66.8 33.3 50.0 300.4 and spans numon.	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
SApproach Span'1 2 3 4 5 6 NApproach Average Remarks _Joints as #2, 3, 4, - Expansion	50.0 33.3 67.0 66.8 33.3 50.0 300.4 and spans numon.	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
SApproach Span'1 2 3 4 5 6 NApproach Average Remarks _Joints as #2, 3, 4, - Expansion	50.0 33.3 67.0 66.8 33.3 50.0 300.4 and spans numon.	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
SApproach Span'1 2 3 4 5 6 NApproach Average Remarks _Joints as #2, 3, 4, - Expansion	50.0 33.3 67.0 66.8 33.3 50.0 300.4 and spans numon.	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P. 167.8 223.5 185.9 119.0 265.4 127.3 171.2	O.W.P.	I.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5
SApproach Span'1 2 3 4 5 6 NApproach Average Remarks _Joints as #2, 3, 4, - Expansion	50.0 33.3 67.0 66.8 33.3 50.0 300.4 and spans numon.	O.W.P.  214.5  248.2  133.9  132.8  202.8  184.6  175.8	I.W.P.  167.8  223.5  185.9  119.0  265.4  127.3  171.2  m South to	North. Jo	i.W.P.	191. 2 235. 8 159. 9 125. 9 234. 1 156. 0 173. 5

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge Number S04	4 of 56044	, Locati	ion <u>Hop</u>	e Road ov	er US 10	Form 511
Dual Structures (sep				Yes 🗀	No 🗓	X
Single Structure	Yes X					<del></del>
Number of Spans	4		Machine	e Finished		Yes xx No
N Bound Road	way				Date M	easured 10-9-63_
	I	_ 0.7				
	ŀ		····	T		nches per mile
Item	Length	Traffic	Lane	Passi	ng Lane	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
S Approach	50.0	104.0	83.8			93.9
Span 1	42.0	191.8	160.8			176,3
2	92.9	121.4	113.4			117.4
3	92.0	155.6	141.3			148.4
4	43.0	149.8	140.6		<u></u>	145, 2
5						
6						
N Approach	50.0	133.8	70.4			102.1
Average	369.9	140.6	119.0		·	129.8
SBound Road	way					
		Profi	lometer R	Roughness	Value - R	inches per mile
Item	Length	Traffic		<del></del>	ng Lane	
Item	Tougui	O.W.P.	I.W.P.	<del> </del>	I.W.P.	Average
S Approach	50.0	211.6	155.4			183.5
Span' 1	42.0	89.4	133.6			111.5
2	92.9	146.1	141.4			143.8
3	92.0	161.4	174.4	1		167.9
4	43.0	163, 6	210.6			187.1
5	70.0	100.0	410.0	-	-	101,11
6						
N Approach	50.0	88,6	99.7			94.2
Average	369.9	146.6	153.0			149.8
Remarks Joints a						
			n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans	sion; #3 - Exp		n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans Cantilevered co	sion; #3 - Exponstruction.		n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans	sion; #3 - Exponstruction.		n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans	sion; #3 - Exponstruction.		n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans Cantilevered co	sion; #3 - Exponstruction.		n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans Cantilevered co	sion; #3 - Exponstruction.		n South to	North. J	oint #1, 5	- Construction;
#2, 4 - Steel Expans Cantilevered co	sion; #3 - Exponstruction.					- Construction; ort - February 1964

### District 6

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS
TEST RESULT TABULATION

Research Project 61 F-65

Bridge NumberS0	1 of 56045	, Locat	ion <u>Col</u>	eman Road	l over US 1	.0 Form 511
Dual Structures (sep				Yes 🗀	No X	
Single Structure	Yes 🗓					
Number of Spans	4		Machine	e Finished		Yes 🔯 No 🗌
S Bound Road	37 9 37				Doto M	easured 10-9-63
Double Hotel	w ay	1				
		Profi	lometer R	oughness	Value - Ri	nches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
	3	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
S Approach	50.0	180.3	205.0			192.6
Span 1	34.0	185.6	113.4			149.5
2	71,0	130.2	100,5			115,4
3	70,0	84.0	87,3			85, 6
4	33.5	115.6	92.0			103.8
5						
6						
N Approach	50.0	191.6	135.2			163.4
Average	308,5	142.3	120.6			131.4
	<u> </u>		<del></del>			<u> </u>
N Bound Road	way					
		Profi	lometer F	loughness	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
S Approach	50.0	172.0	116.3	,		144. 2
Span'1	34,0	108.0	126.8			117.4
2	71.0	119.4	106.8			113.1
3	70.0	104.1	96.4			100.2
4	33.5	166.2	174.4			170.3
5	00.0	20012				
6						
N Approach	50.0	136.6	189.1			162.8
Average	308.5	131.0	128.8			129.9
Remarks Joints	and spans nur	nbered fro	m South to	o North. J	Toint #1 - 9	5 - Construction;
#2, 4 - Expansion;	#3 - Steel Ex	oansion.				
Bituminous app	roaches.					
ELIM/F-in						
		.,				

Bridge Number S02	of 56045	. Locat	ion Sha	affer Road	over US 1	0 Form 511
Dual Structures (sep					No 🗵	
Single Structure						
Number of Spans	4	-	Machine	Finished		Yes 🔯 No 🗌
W Bound Roads	vay				Date M	easured
		Profi	lometer R	oughness V	/alue - R i	nches per mile
T40	Length	Traffic		Passin		
Item	rengm	O.W.P.	I.W.P.	O.W.P.		Average
W Approach	50.0	112.2	136.4			124. 3
Span 1	49.8	157.9	122.1			140.0
2	102.6	63.8	92, 2	<del> </del>		78.0
3	105.0	75.2	75.4			75.3
4	46.3	123.6	117.6	<u> </u>		120.6
5						
6			<u> </u>			7777
E Approach	50.0	62.9	128.0			95.4
Average	353.7	91.1	104.4			97.8
_						
E Bound Road	way	·	·			
		Dwafi	1		TT - 1 TO 1	• • • • • • • • • • • • • •
		Pron	nometer k	lougnness	vaiue - R	inches per mile
Item	Length	Traffic	Lane	Passin		
Item	Length	Traffic		T		Average
Item  W Approach	Length	Traffic	Lane	Passin	g Lane	
		Traffic O.W.P.	Lane I.W.P.	Passin	g Lane	Average
W Approach	50.0	Traffic O.W.P.	I.W.P. 96.6	Passin	g Lane	Average
W Approach Span'1	50.0 49.8	Traffic O.W.P. 149.0 115.0	1.W.P. 96.6 99.9	Passin	g Lane	Average 122.8 107.4
W Approach Span'1 2	50.0 49.8 102.6	Traffic O.W.P. 149.0 115.0 90.4	Fig. 1. W. P. 96. 6 99. 9 87. 8	Passin	g Lane	Average  122.8  107.4  89.1
W Approach Span'1 2 3	50.0 49.8 102.6 105.0	Traffic O.W.P. 149.0 115.0 90.4 66.0	96.6 99.9 87.8 66.8	Passin	g Lane	Average  122.8  107.4  89.1  66.8
W Approach Span'1 2 3 4	50.0 49.8 102.6 105.0	Traffic O.W.P. 149.0 115.0 90.4 66.0	96.6 99.9 87.8 66.8	Passin	g Lane	Average  122.8  107.4  89.1  66.8
W Approach Span'1 2 3 4 5	50.0 49.8 102.6 105.0	Traffic O.W.P. 149.0 115.0 90.4 66.0	96.6 99.9 87.8 66.8	Passin	g Lane	Average  122.8  107.4  89.1  66.8
W Approach Span'1 2 3 4 5	50.0 49.8 102.6 105.0 46.3	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2	96.6 99.9 87.8 66.8 114.6	Passin	g Lane	Average  122.8  107.4  89.1  66.8  149.4
W Approach Span'1 2 3 4 5 6 E Approach	50. 0 49. 8 102. 6 105. 0 46. 3  50. 0 353. 7	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2 141.8 111.7	Fig. 1. W. P.  96. 6  99. 9  87. 8  66. 8  114. 6  134. 4  93. 8  West to 1	Passin O.W.P.	g Lane I.W.P.	Average  122.8  107.4  89.1  66.8  149.4  138.1  102.8
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Spans an #2, 4 - Steel Expans	50. 0 49, 8 102. 6 105. 0 46, 3 50. 0 353. 7 d joints numbration; #3 - Cor	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2 141.8 111.7	Fig. 1. W. P.  96. 6  99. 9  87. 8  66. 8  114. 6  134. 4  93. 8  West to 1	Passin O.W.P.	g Lane I.W.P.	Average  122.8  107.4  89.1  66.8  149.4  138.1  102.8
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Spans an #2, 4 - Steel Expans Cantilevered str	50. 0  49. 8  102. 6  105. 0  46. 3  50. 0  353. 7  d joints numble sion; #3 - Contracture.	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2 141.8 111.7	Fig. 1. W. P.  96. 6  99. 9  87. 8  66. 8  114. 6  134. 4  93. 8  West to 1	Passin O.W.P.	g Lane I.W.P.	Average  122.8  107.4  89.1  66.8  149.4  138.1  102.8
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Spans an #2, 4 - Steel Expans	50. 0  49. 8  102. 6  105. 0  46. 3  50. 0  353. 7  d joints numble sion; #3 - Contracture.	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2 141.8 111.7	Fig. 1. W. P.  96. 6  99. 9  87. 8  66. 8  114. 6  134. 4  93. 8  West to 1	Passin O.W.P.	g Lane I.W.P.	Average  122.8  107.4  89.1  66.8  149.4  138.1  102.8
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Spans an #2, 4 - Steel Expans Cantilevered str	50. 0  49. 8  102. 6  105. 0  46. 3  50. 0  353. 7  d joints numble sion; #3 - Contracture.	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2 141.8 111.7	Fig. 1. W. P.  96. 6  99. 9  87. 8  66. 8  114. 6  134. 4  93. 8  West to 1	Passin O.W.P.	g Lane I.W.P.	Average  122.8  107.4  89.1  66.8  149.4  138.1  102.8
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Spans an #2, 4 - Steel Expans Cantilevered str	50. 0  49. 8  102. 6  105. 0  46. 3  50. 0  353. 7  d joints numble sion; #3 - Contracture.	Traffic O.W.P. 149.0 115.0 90.4 66.0 184.2 141.8 111.7	Fig. 1. W. P.  96. 6  99. 9  87. 8  66. 8  114. 6  134. 4  93. 8  West to 1	Passin O.W.P.	g Lane I.W.P.	Average  122.8  107.4  89.1  66.8  149.4  138.1  102.8

Form 511

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

Bridge Number S04	of 73171	, Locat	ion <u>Bus</u>	ch Road ov	er I 75	Form 511
Dual Structures (sep				Yes 🗀	No 🖫	X
Single Structure	Yes x	x No				
Number of Spans	4	-	Machine	Finished		Yes No XX
E Bound Road	way				Date M	easured <u>10-4-63</u>
		Profi	lometer R	oughness \	Value - R	inches per mile
<b>7</b> ±0	Tamath	Traffic	······································	7	g Lane	
Item	Length	O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average
W Approach	50.0	101. 6	39.0	0. W. 1.	1. 77 . 1	70.3
Span 1	44, 3	191.1	152.3			171.7
2	103.9	109.2	128.0			118,6
3	103.9	94.5	131.1			112.8
4	45.9	122.4	138.7	<u> </u>		130.6
5	10,0					
6						
Approach		710.0				4.000
11pp100011	50.0	113.0	101.4			107.2
Average	398.0	115.5	118.2			116.8
W Bound Road	way					
		Profi	lometer R	oughness	Value - R	inches per mile
		Traffic		T		1
Item	Length				g Lane	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	
W Approach	50.0	173.4	183.5			178.4
A	<del></del>		3			
Span 1	44.3	193.6	149.3			171.4
Span 1	44.3 103.9	193,6 105.6	149.3 $120.0$			171.4 112.8
2	103.9	105.6 109.9	120.0 119.4			112,8
2 3	103.9 103.9	105.6	120.0			112, 8 114, 6
2 3 4	103.9 103.9	105.6 109.9	120.0 119.4			112, 8 114, 6
2 3 4 5	103.9 103.9	105.6 109.9	120.0 119.4			112, 8 114, 6
2 3 4 5 6	103.9 103.9 45.9	105.6 109.9 120.7	120.0 119.4 169.6			112, 8 114, 6 145, 2
2 3 4 5 6 Approach	103.9 103.9 45.9 50.0	105.6 109.9 120.7 104.2 126.6	120.0 119.4 169.6 60.7 129.3	East Joi	nt #1 - Co	112.8 114.6 145.2 82.4 128.0
2 3 4 5 6 Approach Average Remarks Spans a	103.9 103.9 45.9 50.0 398.0	105.6 109.9 120.7 104.2 126.6 bered from	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach	103.9 103.9 45.9 50.0 398.0	105.6 109.9 120.7 104.2 126.6 bered from	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach Average Remarks Spans a	103.9 103.9 45.9 50.0 398.0 nd joints num	105.6 109.9 120.7 104.2 126.6 bered from #4 - Steel	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach Average  Remarks Spans a Steel Expansion; #3	103.9 103.9 45.9 50.0 398.0 and joints num - Expansion; scaled in Spar	105.6 109.9 120.7 104.2 126.6 bered from #4 - Steel	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach Average Remarks Spans a Steel Expansion; #3 EBTL - OWT: 8	103.9 103.9 45.9 50.0 398.0 and joints num - Expansion; scaled in Spar	105.6 109.9 120.7 104.2 126.6 bered from #4 - Steel	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach Average Remarks Spans a Steel Expansion; #3 EBTL - OWT: 8	103.9 103.9 45.9 50.0 398.0 and joints num - Expansion; scaled in Spar	105.6 109.9 120.7 104.2 126.6 bered from #4 - Steel	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach Average Remarks Spans a Steel Expansion; #3 EBTL - OWT: 8	103.9 103.9 45.9 50.0 398.0 and joints num - Expansion; scaled in Spar	105.6 109.9 120.7 104.2 126.6 bered from #4 - Steel	120.0 119.4 169.6 60.7 129.3			112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -
2 3 4 5 6 Approach Average Remarks Spans a Steel Expansion; #3 EBTL - OWT: 8	103.9 103.9 45.9 50.0 398.0 and joints num - Expansion; scaled in Spar	105.6 109.9 120.7 104.2 126.6 bered from #4 - Steel	120.0 119.4 169.6 60.7 129.3 West to Expansion	n; #5 – Coi	nstruction	112, 8 114, 6 145, 2 82, 4 128, 0 instruction; #2 -

## MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research

# District 6 PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION Research Project 61 E-65

Research Laboratory Divisi	on		Researc	ch Project	61 F-65	
Bridge Number S05	of 73171	, Locat	ion Tow	nline Road	d over I 75	Form 511
Dual Structures (sep				Yes 🔲		
Single Structure	Yes x					
Number of Spans	4	<del></del>	Machin	e Finished		Yes No XX
E Bound Road	way				Date M	leasured <u>10-11-63</u>
		Profi	lometer R	oughness	Value - R	inches per mile
Thoma	Longth	Traffic	· · · · · · · · · · · · · · · · · · ·		g Lane	I
Item	Length	O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average
		0. W.F.	1. W.F.	O. W. F.	1. W.F.	
W Approach	50.0	117.6	102.8			110.2
Span 1	43.0	190.7	120.9			155.8
2	89.6	144.8	109.1			127.0
3	90,6	164.5	136.1	····		150.3
4	42.4	178.4	174.9			176.6
<u>5</u>		<u> </u>	<u> </u>	<u> </u>	,	
<del></del>			1-1-			
E Approach	50.0	150.6	174.2			162.4
Average	365.6	156.0	132.8			144.4
•						
W Bound Road	way	O				
		Profi	lometer F	Coughness	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
The state of the s		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
WApproach	50.0	92.1	142.1	,		117.1
Span'1	43.0	128.4	104.5		•	116.4
2	89.6	129.2	80.8			105.0
3	90.6	141.8	122.2			132.0
4	42.4	150.2	198.2			174, 2
5						
6						
E Approach	50.0	126, 2	57.4			91.8
Average	365.6	129.2	112.6			120.9
Remarks Joints a	nd spans num	ber from V	Vest to Ea	ıst. Joint	#1, 5 ~ Co	onstruction; #2, 4 -
Expansion; #3 - Stee	el Expansion.					
Tar on desk - S			 3.			
Bituminous app						

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## MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research

# District 6 PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION Page 27th Project 61 F 65

Form 51
3
Yes No xx
easured 10-4-63
nches per mile
Average
133,0
155,0
120.0
112.8
162.0
93.6
125.1
T-0. T
nches per mile
nches per mile
nches per mile  Average  79.3
Average 79.3 117.8
Average 79.3 117.8 123.4
Average 79.3 117.8 123.4 139.2
Average 79.3 117.8 123.4
Average 79.3 117.8 123.4 139.2
Average 79.3 117.8 123.4 139.2
79.3 117.8 123.4 139.2 170.7
Average 79.3 117.8 123.4 139.2 170.7
79.3 117.8 123.4 139.2 170.7
79.3 117.8 123.4 139.2 170.7
79.3 117.8 123.4 139.2 170.7
•

# District 7 PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Laboratory Divisi	on		Researc	h Project	61 F-65	
Bridge Number <u>S03</u>	R of 11015	. Locat	ion Krus	ger Road o	ver I 94	Form 511
Dual Structures (sep				Yes 🔲	No 5	7.
Single Structure	Yes 🔯	x No [			и. — ра	<del>5.42.</del>
Number of Spans	4	and		Finished		Yes No XX
W Bound Road	way				Date M	easured <u>8-21-63</u>
		Profi	lometer R	oughness '	Value - R	inches per mile
Item	Length	Traffic	······································	1	g Lane	<u> </u>
ivem	Dengar	O.W.P.	I.W.P.	O.W.P.	7	Average
W Approach	50.0	128.7	108.5			118.6
Span 1	39.4	166.0	112.4			139.2
2	70.2	114.7	110.2			112.4
3	69.0	100.0	81.4			90.7
4	71.0	141.1	150.3			145.7
5	43.0	183.9	153.8			168.8
6						
E Approach	50.0	227.2	148.0			187.6
Average	392.6	145.8	122.0			133.9
E Bound Road	way					
		Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
WApproach	50.0	221.0	166.3			193.6
Span'1	39.4	221.4	236.4			228.9
2	70.2	95.8	102.1			99,0
3	69.0	93.0	104.2			98.6
4	71.0	87.4	93.7			90.6
5	43.0	233.2	201.2			217.2
6						
_E Approach	50.0	188.4	186.5			187.4
Average	392.6	149.2	144.2			146.7
Remarks Spans and Expansion; #3 - Steel						
	<del> </del>					
Sharp drop from	CODUCTETE DY	uge deck to	o niminiuc	us approa	on at norn	cuus.
Bituminous appr						
Bituminous appr						

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## MICHIGAN

STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

# District 7 PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Laboratory Division	on		Researce	ch Project	61 F-65		
Bridge Number S0	4 of 11015	. Locat	ion Unic	n Pier Ro	ad over I	94	Form 511
Dual Structures (sep				Yes 🔲			
Single Structure	Yes						
Number of Spans	4		Machine	e Finished		Yes 🔲	No XX
E Bound Road	way				Date M	leasured 8	-21-63
		Profi	lometer R	oughness	Value - R	inches per n	nile
Item	Length	Traffic	Lane	Passin	g Lane		
100111	200.8,00	O.W.P.	I.W.P.	O. W. P.		Avera	ge
W Approach	50.0	101.3	103.5			102.4	_
Span 1	78.0	146.9	134.8		<u> </u>	140.8	
2	116.6	111.2	83.1			97.2	
3	116.6	88.6	86.5			87.6	
4	81.3	138.7	125.6			132.2	
5							
6							
E Approach	50.0	164.2	156.3			160,2	
Average	492.5	120.4	108.6			114.5	
W Bound Road	way		······································			*	
		Profi	lometer R	oughness	Value - R	inches per r	nile
Item	Length	Traffic	Lane	Passin	g Lane		
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Avera	ge
W Approach	50.0	112.7	135.6	,		124.2	
Span'1	78.0	122.5	93.8			108.2	
2	116.6	103.4	111.0			107.2	
3	116.6	83.6	77.5			80,6	-
4	81.3	142.1	93.4			117.8	
5							
6							
E Approach	50.0	135.2	150.0			142.6	
Average	492.5	112.3	103.9			108.1	
Remarks Spans as Steel Expansion; #4 -					nts #1 - C	onstruction;	#2 -
Cantilevered brid	lge.						
Bituminous appro	<del></del>						
			··········				

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Bridge Number S06	of 11015	, Locat	<sub>ion</sub> War	ren Woods	Road over	r I 94 Form 511
Dual Structures (sep				Yes 🔲	No 🗴	
Single Structure						
Number of Spans	4		Machine	e Finished		Yes No KX
E Bound Road	way				Date M	easured 8-21-63
		Profil	lometer P	Olighnagg I	/alua – Ri	nches per mile
				T		menes per mne
Item	Length	Traffic	· · · · · · · · · · · · · · · · · · ·	Passin	T	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	
W Approach	50.0	96.0	131.4			113.7
Span 1	61.6	146.6	112.4			129.5
2	131,0	119.9	95.0			107.4
3	131.6	101.0	72.2			86.6
4	54.6	143.0	117.4			130.2
5						
6						
E Approach	50.0	91.4	77.8			84.6
Average	478.8	115.2	95.6			105.4
			<del>1</del>		<u> </u>	
W Bound Road	way					
	, , , , , , , , , , , , , , , , , , , ,	Profi	lometer R	loughness	Value - R	inches per mile
				_		
Item	Length	Traffic	Lane	Passin		
Item	Length	Traffic	Lane I.W.P.	T		Average
		O.W.P.	I.W.P.	Passin	g Lane	Average
W Approach	50.0	O.W.P. 163.6	I.W.P. 196.4	Passin	g Lane	Average
W Approach Span'1	50.0 61.6	O.W.P. 163.6 136.8	I.W.P. 196.4 131.3	Passin	g Lane	Average 180.0 134.0
W Approach Span'1 2	50.0 61.6 131.0	O.W.P. 163.6 136.8 111.0	I.W.P. 196.4 131.3 91.4	Passin	g Lane	Average 180.0 134.0 101.2
W Approach Span'1 2 3	50.0 61.6 131.0 131.6	O.W.P. 163.6 136.8 111.0 121.2	I.W.P. 196.4 131.3 91.4 98.8	Passin	g Lane	Average  180.0  134.0  101.2  110.0
W Approach Span'1 2 3 4	50.0 61.6 131.0	O.W.P. 163.6 136.8 111.0	I.W.P. 196.4 131.3 91.4	Passin	g Lane	Average 180.0 134.0 101.2
W Approach Span' 1 2 3 4 5	50.0 61.6 131.0 131.6	O.W.P. 163.6 136.8 111.0 121.2	I.W.P. 196.4 131.3 91.4 98.8	Passin	g Lane	Average  180.0  134.0  101.2  110.0
W Approach Span'1 2 3 4	50.0 61.6 131.0 131.6 54.6	O.W.P. 163.6 136.8 111.0 121.2 148.4	I.W.P. 196.4 131.3 91.4 98.8 114.0	Passin	g Lane	Average  180.0  134.0  101.2  110.0
W Approach Span 1 2 3 4 5 6 E Approach	50.0 61.6 131.0 131.6 54.6	O.W.P. 163.6 136.8 111.0 121.2 148.4	1.W.P. 196.4 131.3 91.4 98.8 114.0	Passin	g Lane	Average  180.0  134.0  101.2  110.0  131.2
W Approach Span 1 2 3 4 5 6 E Approach Average	50.0 61.6 131.0 131.6 54.6 50.0	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0	I.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8	Passin O.W.P.	g Lane I.W.P.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9
W   Approach	50.0 61.6 131.0 131.6 54.6 50.0 478.8	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from	I.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Co	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3	50.0 61.6 131.0 131.6 54.6 50.0 478.8 d joints numb	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from  #4 - Steel	1.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Costruction.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9  instruction; #2 -
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Tar in wheel tra	50.0 61.6 131.0 131.6 54.6 50.0 478.8 d joints numb Expansion;	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from  #4 - Steel	1.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Costruction.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9  instruction; #2 -
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3	50.0 61.6 131.0 131.6 54.6 50.0 478.8 d joints numb Expansion;	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from  #4 - Steel	1.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Costruction.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9  instruction; #2 -
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Tar in wheel tra	50.0 61.6 131.0 131.6 54.6 50.0 478.8 d joints numb Expansion;	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from  #4 - Steel	1.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Costruction.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9  instruction; #2 -
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Tar in wheel tra	50.0 61.6 131.0 131.6 54.6 50.0 478.8 d joints numb Expansion;	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from  #4 - Steel	1.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Costruction.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9  instruction; #2 -
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Tar in wheel tra	50.0 61.6 131.0 131.6 54.6 50.0 478.8 d joints numb Expansion;	O.W.P.  163.6  136.8  111.0  121.2  148.4  141.8  130.0  ered from  #4 - Steel	1.W.P.  196.4  131.3  91.4  98.8  114.0  108.1  113.8  West to F	Passin O.W.P.	g Lane I.W.P.  ts #1 - Costruction.	Average  180.0  134.0  101.2  110.0  131.2  125.0  121.9  instruction; #2 -

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge NumberS	807 of 11015	, Locat	ion East	Road over	· I 94	Form 511
Dual Structures (sep				Yes 🗀	No k	x]
Single Structure	Yes 🗵	X No				
Number of Spans	4	<del></del>	Machine	e Finished		Yes No XX
E Bound Road	way				Date M	easured 8-22-63
		Drofi	lometen D	oughnoss I		inches per mile
				1 · · · · · · · · · · · · · · · · · · ·	<del></del>	inches per mile
Item	Length	Traffic	I	Passin	1	Average
	<del></del>	O.W.P.	I.W.P.	O.W.P.	I.W.P.	
W Approach	50.0	113.0	129.6			121.3
Span 1	51.0	147.8	138.5			143.2
2	118.4	107.0	105,6			106.3
3	119.0	96.7	92.0			94.4
4	52.6	193.2	162.4			177.8
5						
6						
E Approach	50.0	185.0	98.2			141.6
Average	441.0	128.8	114.4			121.6
				Annual transfer of the section of th		
W Bound Road	way					
######################################		Drofi	lometer B	oughness !	Value D	inches per mile
		T-1011	TOINETEL T	oagunoss	varue - n	mones bet unne
<b>_</b> ,		Timo ffi	Tama	Doggin	~ T ~~	
Item	Length	Traffic		Passin		Average
Item	Length	Traffic O.W.P.	Lane I.W.P.	Passin O.W.P.	g Lane	Average
Item Approach	Length 50.0					
		O.W.P.	I.W.P.			80.7
W Approach	50.0	O.W.P. 101.2	I.W.P. 60.2			80.7 188.9
W Approach Span'1	50, 0 51, 0	O.W.P. 101.2 182.2	I.W.P. 60.2 195.6			80.7
W Approach Span 1 2	50.0 51.0 118.4	O.W.P. 101.2 182.2 128.3	1.W.P. 60.2 195.6 97.6			80.7 188.9 113.0
W Approach Span'1 2 3 4 5	50.0 51.0 118.4 119.0	O.W.P. 101.2 182.2 128.3 129.1	1.W.P. 60.2 195.6 97.6 102.8			80.7 188.9 113.0 116.0
W Approach Span' 1 2 3 4 5 6	50.0 51.0 118.4 119.0	O.W.P. 101.2 182.2 128.3 129.1	1.W.P. 60.2 195.6 97.6 102.8			80.7 188.9 113.0 116.0
W Approach Span'1 2 3 4 5	50.0 51.0 118.4 119.0	O.W.P. 101.2 182.2 128.3 129.1	1.W.P. 60.2 195.6 97.6 102.8			80.7 188.9 113.0 116.0
W Approach Span' 1 2 3 4 5 6	50. 0 51. 0 118. 4 119. 0 52. 6	O.W.P. 101.2 182.2 128.3 129.1 169.6	I.W.P. 60.2 195.6 97.6 102.8 227.3			80.7 188.9 113.0 116.0 198.4
W Approach Span' 1 2 3 4 5 6 E Approach	50.0 51.0 118.4 119.0 52.6 50.0 441.0	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4	1.W.P. 60.2 195.6 97.6 102.8 227.3 178.8 130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span'1 2 3 4 5 6 E Approach Average	50.0 51.0 118.4 119.0 52.6 50.0 441.0	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from	I.W.P.  60.2  195.6  97.6  102.8  227.3  178.8  130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Spans and	50.0 51.0 118.4 119.0 52.6 50.0 441.0 ad joints num - Expansion;	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from #4 - Steel	I.W.P.  60.2  195.6  97.6  102.8  227.3  178.8  130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Sharp drop from	50.0 51.0 118.4 119.0 52.6 50.0 441.0 ad joints num - Expansion; a deck to appr	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from #4 - Steel	I.W.P.  60.2  195.6  97.6  102.8  227.3  178.8  130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3	50.0 51.0 118.4 119.0 52.6 50.0 441.0 ad joints num - Expansion; a deck to appr	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from #4 - Steel	I.W.P.  60.2  195.6  97.6  102.8  227.3  178.8  130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Sharp drop from	50.0 51.0 118.4 119.0 52.6 50.0 441.0 ad joints num - Expansion; a deck to appr	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from #4 - Steel	I.W.P.  60.2  195.6  97.6  102.8  227.3  178.8  130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Sharp drop from	50.0 51.0 118.4 119.0 52.6 50.0 441.0 ad joints num - Expansion; a deck to appr	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from #4 - Steel	I.W.P.  60.2  195.6  97.6  102.8  227.3  178.8  130.8	O.W.P.	I.W.P.	80.7 188.9 113.0 116.0 198.4 174.6 136.1
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Spans an Steel Expansion; #3 Sharp drop from	50.0 51.0 118.4 119.0 52.6 50.0 441.0 ad joints num - Expansion; a deck to appr	O.W.P.  101.2 182.2 128.3 129.1 169.6  170.3 141.4 bered from #4 - Steel	I.W.P.  60. 2  195. 6  97. 6  102. 8  227. 3  178. 8  130. 8  West to  Expansion	C.W.P.  East. Join  1; #5 - Cor	nt #1 - Construction.	80.7 188.9 113.0 116.0 198.4 174.6 136.1

# District 7

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS
TEST RESULT TABULATION
Research Project 61 F-65

Bridge Number S1	0 of 11015	, Locat	ion <u>I</u>	94 over Sa	wyer Road	Form 511
Dual Structures (sep	arate for eac	h roadway	)	Yes XX	No [	
Single Structure	Yes [	No				
Number of Spans	3		Machine	e Finished		Yes No 🔀
E Bound Road	way				Date M	easured <u>8-20-63</u>
		Profi	lometer R	oughness	Value - R i	nches per mile
Item	Length	Traffic			ıg Lane	-
16em	Tengui	O. W. P.	<del></del>	O. W. P.		Average
		U.W.P.	I.W.P.	U. W. P.	I.W.P.	
WApproach	50.0	120.8	118.0	90.6	122.2	112.9
Span 1	42.4	160.6	165.0	170.2	106.2	150.5
2	64.4	77.6	112.2	119.3	126.0	108.8
3	41.2	72.2	83.6	80.0	113.6	87.4
4						
5						
6						
E Approach	50.0	126.8	111.2	103.0	104.2	111.3
Average	248.0	109.6	117.5	101.6	115.4	111.0
<del></del>			<u> </u>	<u> </u>		
W Bound Road	vav					
W Dound Hoad	way	1			· · · · · · · · · · · · · · · · · · ·	
		Profi	lometer R	oughness	Value - R i	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	50.0	93.4	105.9	82.4	77.0	89.7
Span 1	42.4	142.3	160.8	127.2	109.8	135.0
2	64.4	101.5	101.8	137.3	124.0	116.2
3	41.2	196.0	189.5	119.2	201.4	176.5
4				•		
5			<b>5</b>			
6						
E Approach	50.0	81.2	79.8	79.6	94.0	83.6
					1	
Average	248.0	118.4	122.8	109.9	119.0	117.5
	· · · · · · · · · · · · · · · · · · ·	I	<u> </u>		<u></u>	
Remarks Spans	and joints nur	nbered fro	om West to		<u></u>	117.5 onstruction; #2 - Steel
Remarks Spans : Expansion; #3 - Expa	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	
Remarks Spans	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	
Remarks Spans : Expansion; #3 - Expa	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	
Remarks Spans : Expansion; #3 - Expa	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	
Remarks Spans : Expansion; #3 - Expa	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	
Remarks Spans : Expansion; #3 - Expa	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	
Remarks Spans : Expansion; #3 - Expa	and joints nur nsion; #4 - C	nbered fro	om West to		<u></u>	

Bridge Number S12	of 11015	, Locat	ion <u>I94</u>	over exis	ting US 12	Form 511
Dual Structures (sep				Yes XX	No [	
Single Structure Number of Spans	Yes [	] No		e Finished		Yes No XX
,		<del></del>	4,444			100 110 110
E Bound Road	way				Date M	easured <u>8-22-63</u>
		Profi	lometer R	oughness '	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	50.0	53.9	50.0	90.4	74.4	67.2
Span 1	55.0	118.0	86.0	123.6	159.9	121.9
2	79.6	92.4	75.4	101.8	147.0	104.2
3	77.8	78.2	102.5	88.6	124.4	98.4
4	51.2	136.7	107.2	143.0	116.9	126.0
5						
6						
E Approach	50.0	99.8	76.8	79.4	91.8	87.0
Average	363.6	95.2	84.0	103.4	122.3	101.2
777					<del>7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - </del>	
W Bound Road	way					
		Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic Lane Passing			g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
WApproach	50.0	67.4	81.4	90.2	75.8	78.7
Span'1	54.6	139.8	107.8	110.2	154.9	128.2
2	80.2	145.4	127.6	110.2	121.4	126.2
3	79.0	83.2	81.6	112.4	138.7	104.0
4	51.6	113.9	98.6	149.1	168.5	132.5
5	02.0	110.0	00.0	140.1	100.0	132.0
6						
E Approach	50.0	98.3	82.6	88.0	81.2	87.5
Average	365.4	109.6	98.0	110.4	125.0	110.8
Remarks Spans ar Expansion; #3 - Steel						nstruction; #2 -
Tar spots in both	lanes in Spa	n #4 EB				
Bituminous appro						
		·				
			Fo	ourth Prog	ress Repo	rt - February 1964

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge Number S1:	3 of 11015	, Locat	ion I 94	over Sha	wnee Road	Form 511
Dual Structures (sep	arate for eac	h roadway	)	Yes 🔯	No [	
Single Structure	Yes 🗌	] No				
Number of Spans	3	ovjeste	Machine	e Finished		Yes No xx
E Bound Road	way				Date M	easured 8-23-63
				4		
						inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	Axionomo
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
<u>W</u> Approach	50.0	72.0	86.9	100.0	93,8	88.2
Span 1	57.0	141.8	161.7	106.4	129.7	134, 9
2	56.5	121.0	129.8	103.0	118.4	118.0
3	56,6	117.4	168.0	151.7	127.4	141.1
4						
5				:		
6						
E Approach	50.0	164.8	150.8	78.2	64.5	114.6
Average	270.1	123.6	140.4	108.8	108.2	120. 2
W Bound Roads	way					
	·	Profi	lometer R	oughness '	Value - R	inches per mile
<b>~.</b>						monos por mine
Item	Length	Traffic	· · · · · · · · · · · · · · · · · · ·		g Lane	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Avorage
WApproach	50.0	87.4	90.8	82.8	95.9	89.2
Span' 1	57.0	134.9	161,6	120.0	133.4	137.5
2	56.5	152.8	144.9	110.8	98.4	126.7
3	56.6	141.4	133.6	102,6	124.9	125.6
4						
5						
6						
E Approach	50.0	135.7	117.4	116.4	146.4	129.0
Average	270.1	131.3	131.0	105.3	119.8	121.8
Remarks Spans an	d joints numb	ered from	West to I	est Join	rt. #1 - Con	struction: #2 -
·				10001		5024002011, 115
Steel Expansion; #3 -						
Tar in both whee	l tracks of E	BTL for o	ver half th	e length o	f bridge fr	om west end
approach.			wa			
Bridge deck finis	shed with ride	ges in plac	es from 1	2 in. to 20	in. apart	
Bituminous appr	oaches.					
			To.	numbh Dass	mode Dese	nt Fohmsom 1004
			F	rator LLOS	repo ucho	rt – February 1964

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S15	01 11019	, Locat	ion <u>Gra</u>	<u>ndmere R</u>	<u>oad over I</u>	94	Form 311
Dual Structures (sep	arate for eac	h roadway	)	Yes 🔲	No 🗵	X	
Single Structure	Yes X	X No					
Number of Spans	4		Machin	e Finished		Yes 🔲	No xx
W Bound Road	way				Date M	easured _	9-5-63
		Profi	lometer R	oughness '	Value - R	inches per	mile
Item	Length	Traffic	<del></del>	T	g Lane		
item	Tengu	O.W.P.	I.W.P.	O.W.P.	<del></del>	Aver	rage
W Approach	50.0	173.8	231.3			202	, 6
Span 1	33,0	255.7	246.0			250	. 8
2	70.6	152.9	132.0			142	. 4
3	71.3	183.0	131.4			157	. 2
4	44.0	207.1	196.6			201	. 8
5							
6							
E Approach	50.0	96.8	117.8			107	. 3
Average	368,9	172.2	166.0			169	.1
E Bound Road	way						
		Profi	lometer R	oughness	Value - R	inches per	mile
		Traffic Lane		Passing Lane			والمرادا والمستحد والمستحد والمستحد والمستحد والمستحدد والمستحد والمستحدد والمستحدد والمستحدد والمستحدد والمستحدد
Item	Length	Traffic	Lane	Passin	g Lane		
Item	Length	Traffic	Lane I.W.P.	Passin O.W.P.	g Lane I.W.P.	Ave	rage
ItemW Approach	Length		T			Ave:	
		O.W.P.	I.W.P.				. 5
WApproach	50.0	O.W.P. 224.0	I.W.P. 163.0			193	. 5
WApproach Span'1	50.0 33.0	O.W.P. 224.0 283.8	I.W.P. 163.0 285.6			193 284	.5
W Approach Span 1 2	50.0 33.0 70.6	O.W.P. 224.0 283.8 166.4	I.W.P. 163.0 285.6 143.5			193 284 155	. 5 . 7
W Approach Span'1 2 3	50.0 33.0 70.6 71.3	O.W.P. 224.0 283.8 166.4 161.8	I.W.P. 163.0 285.6 143.5 151.4			193 284 155 156	. 5 . 7
W Approach Span 1 2 3 4	50.0 33.0 70.6 71.3	O.W.P. 224.0 283.8 166.4 161.8	I.W.P. 163.0 285.6 143.5 151.4			193 284 155 156	. 5 . 7
<u>W</u> Approach Span'1 2 3 4 5	50.0 33.0 70.6 71.3	O.W.P. 224.0 283.8 166.4 161.8	I.W.P. 163.0 285.6 143.5 151.4			193 284 155 156	.5 .7 .0 .6 .1
	50.0 33.0 70.6 71.3 44.0	O.W.P. 224.0 283.8 166.4 161.8 205.0	I.W.P. 163.0 285.6 143.5 151.4 231.2			193 284 155 156 218	.5 .7 .0 .6 .1
	50.0 33.0 70.6 71.3 44.0 50.0 368.9	O.W.P.  224.0  283.8  166.4  161.8  205.0  136.6  187.2  bered from	I.W.P.  163.0  285.6  143.5  151.4  231.2  133.8  173.6  West to	O.W.P.	I.W.P.	193 284 155 156 218 135	.5 .7 .0 .6 .1
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans at Expansion; #3 - Exp	50.0 33.0 70.6 71.3 44.0 50.0 368.9 and joints numansion; #4 - 8	O.W.P.  224.0  283.8  166.4  161.8  205.0  136.6  187.2  bered from	I.W.P.  163.0  285.6  143.5  151.4  231.2  133.8  173.6  West to	O.W.P.	I.W.P.	193 284 155 156 218 135	.5 .7 .0 .6 .1
	50.0 33.0 70.6 71.3 44.0 50.0 368.9 and joints numansion; #4 - 8	O.W.P.  224.0  283.8  166.4  161.8  205.0  136.6  187.2  bered from	I.W.P.  163.0  285.6  143.5  151.4  231.2  133.8  173.6  West to	O.W.P.	I.W.P.	193 284 155 156 218 135	.5 .7 .0 .6 .1
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans at Expansion; #3 - Exp	50.0 33.0 70.6 71.3 44.0 50.0 368.9 and joints numansion; #4 - 8	O.W.P.  224.0  283.8  166.4  161.8  205.0  136.6  187.2  bered from	I.W.P.  163.0  285.6  143.5  151.4  231.2  133.8  173.6  West to	O.W.P.	I.W.P.	193 284 155 156 218 135	.5 .7 .0 .6 .1
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans at Expansion; #3 - Exp	50.0 33.0 70.6 71.3 44.0 50.0 368.9 and joints numansion; #4 - 8	O.W.P.  224.0  283.8  166.4  161.8  205.0  136.6  187.2  bered from	I.W.P.  163.0  285.6  143.5  151.4  231.2  133.8  173.6  West to	O.W.P.	I.W.P.	193 284 155 156 218 135	.5 .7 .0 .6 .1
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Spans at Expansion; #3 - Exp	50.0 33.0 70.6 71.3 44.0 50.0 368.9 and joints numansion; #4 - 8	O.W.P.  224.0  283.8  166.4  161.8  205.0  136.6  187.2  bered from	I.W.P.  163.0  285.6  143.5  151.4  231.2  133.8  173.6  West to	O.W.P.	I.W.P.	193 284 155 156 218 135	.5 .7 .0 .6 .1

Bridge Number S0:				on Center	Road over	I 96	Form 311
Dual Structures (sep	arate for eac	h roadway	)	Yes 🔲	No 🖸	X	
Single Structure	Yes X	X No					
Number of Spans	4	parinte.	Machine	e Finished		Yes XX	No 🗌
E Bound Road	way				Date M	easured 9-	5-63
		Profi	lometer P	oughness I	Value - P	inches per m	ilo
·			-'	1		liches per in	ITTE
Item	Length	Traffic	1	<del> </del>	g Lane	Averag	re
		O.W.P.	I.W.P.	O.W.P.	I.W.P.		, <del>-</del>
Approach			•				
Span 1	36.2	83.2	107.8			95.5	
2	70.6	97.6	82.0			89.8	
3	70.6	135.8	108.6			122.2	
4	36.0	129.9	165.2			147.6	
5							
6							
Approach							
Average	213.0	114.0	106.4			110.2	
W Bound Road	way						
		Profi	lometer R	oughness	Value - R	inches per n	nile
Item	Length	Traffic	c Lane	Passin	g Lane		
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Averag	ge
<del>(                                    </del>							
Approach				,			
Span'1	36.2	68.6	97.2			82.9	
2	70.6	108.7	86.2			97.4	
3	70.6	102.2	111.6			106.9	
4	36.0	103.6	103.8			103.7	
5				· · · · · · · · · · · · · · · · · · ·			
6							
Approach							
Average	213.0	100.2	99.3			99.8	
Remarks Spans a	nd joints num	bered fron	n West to	East. Joi	nt #1 - Co	nstruction; #	2 -
Expansion; #3 - Expa	ansion #4 - E	xpansion;	#5 – Const	ruction.			
Tar and chip app	oroaches.						
L TYP					<del> </del>		
				7			
				· · · · · · · · · · · · · · · · · · ·	<del> </del>	· · ·	
			-			ort – Februa	1001

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S07				···			rorm Jii
Dual Structures (sep			<u> </u>	Yes 🗀	No 2	X.	
Single Structure	Yes 🔯	No l					
Number of Spans	4		Machin	e Finished		Yes xx	No 🗀
W Bound Road	way				Date M	leasured 9	-6-63
·		Profi	lometer R	oughness '	Value - Ri	inches per n	nile
<b>7</b> 4	T	Traffic		1	g Lane	l Por I	
Item	Length	O.W.P.	T*****		1	Avera	ge
		U. W. P.	I.W.P.	O.W.P.	1. W.P.		
W Approach	50.0	166.5	179.4			173.0	•
Span 1	36.5	187.6	142.4			165.0	
2	66.2	104.0	86.9			95.4	:
3	75.2	115.4	99.3			107.4	
4	36,6	135.2	85.8			110.5	
5							
6		<u> </u>					
E Approach	50.0	142.5	116.8			129.6	
Average	314.5	136.2	115.6			125.9	
					•		
E Bound Road	way						
CONTROL OF THE PROPERTY OF THE		Profi	lometer R	oughness	Value - R	inches per r	nile
Item	Length	Traffic		1	g Lane		
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Avera	ge
W Approach	50.0	213,6	145.1			179.4	
Span' 1	36,5	106.6	116.8			111.7	
2	66.2	130.5	132.6			131.6	
3	75.2	92.4	99.4			95.9	
4	36.6	161.4	155.2	<u> </u>		158,3	
5							
6			,				
E Approach	50.0	139.0	105.6			122.3	
Average	314.5	136.8	123.2			130.0	
Remarks Spans an Expansion; #3 - Stee						nstruction; $ extit{f}$	‡2 –
Bituminous appro	paches.						
			· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	γ.,
					<del> </del>		
	· · · · · · · · · · · · · · · · · · ·		T.1	anath Dece		ort – Februa	1004

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge Number S01	of 39013	, Locati	ion <u>''Q''</u>	Avenue (Ce	enter Stree	et) over US 131Form 511
Dual Structures (sep	arate for eacl	n roadway)	1	Yes 🔲	No 🗵	X
Single Structure		No [		**************************************		77 NT. 1272
Number of Spans	4	o***	Machine	Finished		Yes No XX
W Bound Roady	vay				Date Me	easured <u>8-14-63</u>
		Profil	lometer R	oughness \	/alue - R i	nches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
rem	Tought	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	50.0	178,6	146.0			162. 3
Span 1	35.0	286.8	220.5			253.6
2	74.8	165.8	122.4			144.1
3	75.0	100.4	142.0			121.2
4	35, 0	183.8	200.2			192.0
5						
6						
E Approach	50.0	96.8	74.7			85.8
Average	319.8	156.8	142.5			149.6
E Bound Road	way					
eCOC-GROWN-MAN GOOD Cocket with the section of the sec		Profi	lometer R	oughness	Value - R	inches per mile
						ration bor mirro
Item	T.enoth	Traffic	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	1		por IIII
Item	Length	Traffic	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	Passin		Average
VXV	Length		Lane	Passin	g Lane	
W Approach	50.0	O.W.P. 143.0	I.W.P. 154.8	Passin O.W.P.	g Lane	Average
W Approach Span' 1	50.0 35.0	O.W.P. 143.0 216.3	Lane I.W.P.  154.8  257.4	Passin O.W.P.	g Lane	Average 148.9 236.8
W Approach Span'1 2	50.0 35.0 74.8	O.W.P. 143.0 216.3 128.9	Lane I.W.P. 154.8 257.4 122.2	Passin O.W.P.	g Lane	Average 148.9 236.8 125.6
W Approach Span'1 2 3	50.0 35.0 74.8 75.0	O.W.P. 143.0 216.3 128.9 144.6	Lane 1. W. P. 154. 8 257. 4 122. 2 153. 6	Passin O.W.P.	g Lane	Average  148.9  236.8  125.6  149.1
W Approach Span'1 2 3 4	50.0 35.0 74.8	O.W.P. 143.0 216.3 128.9	Lane I.W.P. 154.8 257.4 122.2	Passin O.W.P.	g Lane	Average 148.9 236.8 125.6
W Approach Span'1 2 3 4 5	50.0 35.0 74.8 75.0	O.W.P. 143.0 216.3 128.9 144.6	Lane 1. W. P. 154. 8 257. 4 122. 2 153. 6	Passin O.W.P.	g Lane	Average  148.9  236.8  125.6  149.1
W Approach Span'1 2 3 4	50.0 35.0 74.8 75.0 35.0	O.W.P. 143.0 216.3 128.9 144.6 293.8	Lane 1. W. P. 154. 8 257. 4 122. 2 153. 6 190. 6	Passin O.W.P.	g Lane	Average  148.9  236.8  125.6  149.1  242.2
W Approach Span 1 2 3 4 5 6 E Approach	50.0 35.0 74.8 75.0 35.0	O.W.P. 143.0 216.3 128.9 144.6	Lane 1. W. P. 154. 8 257. 4 122. 2 153. 6	Passin O.W.P.	g Lane	Average  148.9  236.8  125.6  149.1
W Approach Span 1 2 3 4 5 6 E Approach Average	50.0 35.0 74.8 75.0 35.0 50.0	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4
W Approach Span 1 2 3 4 5 6 E Approach	50.0 35.0 74.8 75.0 35.0 50.0 319.8 and Spans num	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8  bered from	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and	50.0 35.0 74.8 75.0 35.0 50.0 319.8 and Spans num #5 - Construction	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8  bered from	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion;	50.0 35.0 74.8 75.0 35.0 50.0 319.8 ad Spans num #5 - Construction	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8  bered from	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion; Bituminous appr	50.0 35.0 74.8 75.0 35.0 50.0 319.8 ad Spans num #5 - Construction	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8  bered from	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion; Bituminous appr	50.0 35.0 74.8 75.0 35.0 50.0 319.8 ad Spans num #5 - Construction	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8  bered from	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion; Bituminous appr	50.0 35.0 74.8 75.0 35.0 50.0 319.8 ad Spans num #5 - Construction	O.W.P.  143.0  216.3  128.9  144.6  293.8  202.4  173.8  bered from	Lane I.W.P.  154.8  257.4  122.2  153.6  190.6  160.1  162.9	Passin O.W.P.	g Lane I.W.P.	Average  148.9  236.8  125.6  149.1  242.2  181.2  168.4

Bridge Number <u>S03</u> Dual Structures (sep Single Structure	arate for eac	h roadway	)	venue (Mil Yes □□	ham Road No 🕏	
Number of Spans				e Finished		Yes No xx
W Bound Road	way				Date M	easured 8-15-63
		Profi	lometer R	oughness V	/alue - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	50.0	168.8	123.6			146.2
Span 1	32, 3	163, 2	217.0			190, 1
2	72.5	131.5	103.8			117.6
3	72.5	153.8	129.6			141.7
4	32.3	171.0	164.6			167.8
5						
6					, , , , , , , , , , , , , , , , , , , ,	
E Approach	50.0	215.7	143.2			179.4
Average	309.6	163.8	137.6			150.7
EBound Road	way					
<del></del>		Profi	lometer B	oughnogg I	Zoluc D	inches per mile
		11011	TOTILCTCI I	ougnness	varue - n	inches per mile
Item	Length	Traffic		Passin		
Item	Length					Average
Item  W Approach	Length 50.0	Traffic	Lane	Passin	g Lane	
		Traffic	Lane I.W.P.	Passin	g Lane	Average
W Approach	50.0 32.3	Traffic O.W.P. 138.8	Lane I.W.P. 211.6	Passin	g Lane	Average
W Approach Span'1	50.0 32.3 72.5	Traffic O.W.P. 138.8 154.8 125.2	I.W.P. 211.6	Passin	g Lane	Average 175, 2 164, 2 131, 6
W Approach Span'1 2	50.0 32.3 72.5 72.5	Traffic O.W.P. 138.8 154.8 125.2 87.6	Lane 1.W.P. 211.6 173.6 138.0 102.6	Passin	g Lane	Average  175. 2  164. 2  131. 6  95. 1
W Approach Span' 1 2 3	50.0 32.3 72.5	Traffic O.W.P. 138.8 154.8 125.2	Lane I.W.P. 211.6 173.6 138.0	Passin	g Lane	Average 175, 2 164, 2 131, 6
W Approach Span' 1 2 3 4	50.0 32.3 72.5 72.5	Traffic O.W.P. 138.8 154.8 125.2 87.6	Lane 1.W.P. 211.6 173.6 138.0 102.6	Passin	g Lane	Average  175. 2  164. 2  131. 6  95. 1
W Approach Span 1 2 3 4 5	50.0 32.3 72.5 72.5	Traffic O.W.P. 138.8 154.8 125.2 87.6	Lane 1.W.P. 211.6 173.6 138.0 102.6	Passin	g Lane	Average  175. 2  164. 2  131. 6  95. 1
W Approach Span' 1 2 3 4 5 6	50.0 32.3 72.5 72.5 32.3	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4	Lane 1.W.P. 211.6 173.6 138.0 102.6 155.4	Passin	g Lane	Average  175. 2  164. 2  131. 6  95. 1  180. 4
W Approach Span' 1 2 3 4 5 6 E Approach	50.0 32.3 72.5 72.5 32.3 50.0 309.6 and spans num	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4 184.5 139.6	Lane I.W.P.  211.6 173.6 138.0 102.6 155.4  157.7	Passin O.W.P.	g Lane I.W.P.	Average  175. 2  164. 2  131. 6  95. 1  180. 4  171. 1  145. 0
W Approach Span' 1 2 3 4 5 6 E Approach Average Remarks Joints and	50.0 32.3 72.5 72.5 32.3 50.0 309.6 ad spans num #5 - Construc	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4 184.5 139.6 bered from	Lane I.W.P.  211.6 173.6 138.0 102.6 155.4  157.7 150.4  West to	Passin O.W.P.	g Lane I.W.P.	Average  175. 2  164. 2  131. 6  95. 1  180. 4  171. 1  145. 0
W Approach Span' 1 2 3 4 5 6 E Approach Average  Remarks Joints an and #4 - Expansion;	50.0 32.3 72.5 72.5 32.3 50.0 309.6 ad spans num #5 - Construction	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4 184.5 139.6 bered from	Lane I.W.P.  211.6 173.6 138.0 102.6 155.4  157.7 150.4  West to	Passin O.W.P.	g Lane I.W.P.	Average  175. 2  164. 2  131. 6  95. 1  180. 4  171. 1  145. 0
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion; Sharp rise in ap	50.0 32.3 72.5 72.5 32.3 50.0 309.6 ad spans num #5 - Construction	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4 184.5 139.6 bered from	Lane I.W.P.  211.6 173.6 138.0 102.6 155.4  157.7 150.4  West to	Passin O.W.P.	g Lane I.W.P.	Average  175. 2  164. 2  131. 6  95. 1  180. 4  171. 1  145. 0
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion; Sharp rise in ap	50.0 32.3 72.5 72.5 32.3 50.0 309.6 ad spans num #5 - Construction	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4 184.5 139.6 bered from	Lane I.W.P.  211.6 173.6 138.0 102.6 155.4  157.7 150.4  West to	Passin O.W.P.	g Lane I.W.P.	Average  175. 2  164. 2  131. 6  95. 1  180. 4  171. 1  145. 0
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints and #4 - Expansion; Sharp rise in ap	50.0 32.3 72.5 72.5 32.3 50.0 309.6 ad spans num #5 - Construction	Traffic O.W.P. 138.8 154.8 125.2 87.6 205.4 184.5 139.6 bered from	Lane I.W.P.  211.6 173.6 138.0 102.6 155.4  157.7 150.4  West to	Passin O.W.P.	g Lane I.W.P.	Average  175. 2  164. 2  131. 6  95. 1  180. 4  171. 1  145. 0

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Proj	ect 61	F-65
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Form 511

Bridge Number S03	of 39014	, Locat	ion <u>Stad</u>	ium Drive	over US 1	31 Form 511
Dual Structures (sep	arate for eac	h roadway)	)	Yes XX	No [	
Single Structure	Yes	No	xx			
Number of Spans	4	por ·	Machine	e Finished		Yes No 🔀
W Bound Road	way				Date M	easured <u>8-14-63</u>
		Profi	lometer R	oughness \	Value - R	inches per mile
T4 0	Tonoth	Traffic			g Lane	
Item	Length			**************************************	1	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	
W Approach	100.0	93, 9	91.7	87.6	106.6	95.0
Span 1	41.2	80.8	88.2	108.4	87.1	91.1
2	81.5	99.3	71.4	67.4	74.6	78.2
3	81.2	79.5	87.5	82.4	69.9	79.8
4	39.2	121.4	83.6	116.4	90.8	103.0
5						
6						
E Approach	100.0	117.6	117.1	115.6	137.4	121.9
Average	443.1	98.8	91.9	93.4	97.8	95.5
			I	I	<u> </u>	
E Bound Road	vav					
		Prom	Iometer H	oughness	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
	***	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	100.0	<b>143.2</b>	203.1	221.4	180.8	187.1
Span'1	41.2	99.1	102.0	91.8	73.4	91.6
2	81.5	78.8	78.3	108.2	108.6	93.5
3	81.2	82.1	72.0	89.2	135.8	94.8
4	39.2	109.8	100.5	130.4	65.2	101.5
5						
6				1		
E Approach	100.0	171.0	160.0	169.4	136.2	159.2
Average	443.1	119.4	128.0	144.6	129.0	130.2
				Down Toda	-1.11.11.0	and #9. Throughout
Remarks Joints ar	a spans num	pered from	west to	East. Jon	nt #1, #4,	and #3;- Expansion;
#5 - Construction; #5	- Steel Expa	insion; #6	- Expansi	on; #7 – St	eel Expans	sion; #8 - Construct-
ion; #9, #10, and #11	- Expansion	•				
Cantilever Bridg	e.					
Concrete approa		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
control approa			·			
			<u> </u>		•	
· · · · · · · · · · · · · · · · · · ·			F	ourth Prop	ress Repo	ort - February 1964

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge Number S06	of 39014	, Locat	ion <u>M 43</u>	over US 1	31	Form 511
Dual Structures (sep	arate for eac	h roadway)	)	Yes 🔯	No 🗀	
Single Structure	Yes 🗆	No	•			
Number of Spans	4		Machine	e Finished		Yes No xx
W Bound Road	way				Date M	easured <u>8-14-63</u>
		Profil	ometer R	oughness V	/alue - Ri	nches per mile
	-	Traffic		Passin		
Item	Length				·	Average
<u></u>		O.W.P.	I.W.P.	O.W.P.	I.W.P.	
W Approach	100.0	74.8	72, 2	78.6	80.2	76.4
Span 1	34.3	121.6	119.2	86.0	71.4	99.6
2	80.4	73,7	77,2	63.2	100.2	78.6
3	80.8	98.5	100.0	112.0	102.8	103,3
4	34.0	118,8	99, 2	94.3	88.7	100.2
5						
6						
E Approach	100.0	84.8	116.4	103.3	93.5	99.5
Average	429.5	88.6	94.6	89.6	91.2	91.0
	* · · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		<del> </del>		<del></del>
E Bound Road	way					
		Profi	lometer R	oughness	Value - R	inches per mile
<b>T</b> 4 .	7	Traffic	· · · · · · · · · · · · · · · · · · ·	Passin		F
Item	Length	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
		U. W. P.	1.W.P.	O.W.P.	1.W.P.	
<u>Ŵ</u> Approach	100.0	57.6	61.4	70.2	72.8	65.5
Span 1	34.3	53.5	67.0	77.8	1 4444	
2		<u> </u>	0.0	1	114.4	78.2
<del>_</del>	80.4	87.8	68.4	82.8	80.4	78.2 79.8
3	**************************************			1		
	80.8	87.8 80.8	68.4	82.8	80.4 87.3	79.8
3	**************************************	87.8	68.4 75.6	82.8 72.8	80.4	79.8 79.1
3 4	80.8	87.8 80.8	68.4 75.6	82.8 72.8	80.4 87.3	79.8 79.1
3 4 5	80.8	87.8 80.8	68.4 75.6	82.8 72.8	80.4 87.3	79.8 79.1
3 4 5 6	80.8	87.8 80.8 192.7	68.4 75.6 112.2	82.8 72.8 77.9	80,4 87,3 147,4	79.8 79.1 132.6
3 4 5 6 E Approach Average  Remarks Joints ar	80.8 34.0 100.0 429.5 nd spans numl	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -
3 4 5 6 E Approach Average	80.8 34.0 100.0 429.5 nd spans numl	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -
3 4 5 6 E Approach Average  Remarks Joints ar	80.8 34.0 100.0 429.5 nd spans numb	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -
3 4 5 6 E Approach Average  Remarks Joints ar Construction; #3 - 8	80.8 34.0  100.0 429.5  ad spans numl Steel Expansion.	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -
3 4 5 6 E Approach Average  Remarks Joints ar Construction; #3 - 5 # 7 & 8 - Expansion	80.8 34.0  100.0 429.5  ad spans number steel Expansion. ge.	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -
3 4 5 6 E Approach Average  Remarks Joints ar Construction; #3 - 5 # 7 & 8 - Expansion Cantilever bridge	80.8 34.0  100.0 429.5  ad spans number steel Expansion. ge.	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -
3 4 5 6 E Approach Average  Remarks Joints ar Construction; #3 - 5 # 7 & 8 - Expansion Cantilever bridge	80.8 34.0  100.0 429.5  ad spans number steel Expansion. ge.	87.8 80.8 192.7 74.6 81.9	68.4 75.6 112.2 65.7 70.8 West to	82.8 72.8 77.9 64.4 72.9 East, Join	80.4 87.3 147.4 69.1 85.3	79.8 79.1 132.6 68.4 77.7 eansion; #2 -

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S04	of 81074	, Locat	ion <u>Ged</u>	des Road o	ver US 23	Form 511
Dual Structures (sep				Yes 🔲	No 🛚	X
Single Structure		x No				ATTITUTE OF THE PARTY OF THE PA
Number of Spans	4	-	Machine	Finished		Yes No 🔀
W Bound Road	way				Date M	easured <u>11-4-63</u>
		Drofi'	lometer R	oughness I	Jalua – Pi	nches per mile
		<del></del>		I		itches per infite
Item	Length	Traffic	T	Passin		Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	
W Approach	50.0	216.1	207.9			212.0
Span 1	35.6	300.1	287.1			293.6
2	80.3	207.8	216.2			212.0
3	81.3	192.6	221.6			207.1
4	35.6	199.6	180.7			190,2
5						
6						
E Approach	50.0	331.2	231.2		,	281.2
Average	332.8	232.9	222.3		:	227.6
E Bound Road			<del></del>	**************************************	<del>!</del>	
		Profi	lometer R	oughness	Value - Ri	inches per mile
	B .	Contraction of the Contraction o				
Item	Length	Traffic	Lane	Passin	g Lane	
Item	Length	Traffic	Lane I.W.P.	Passin O.W.P.	g Lane I.W.P.	Average
Item Approach	Length		T		·	Average 224.4
***	50.0	O.W.P.	I.W.P.		·	
W Approach	50.0 35.6	O.W.P. 230.7 250.9	I.W.P. 218.2 182.4		·	224. 4 216. 6
W Approach Span'1	50.0 35.6 80.3	O.W.P. 230.7 250.9 217.8	I.W.P. 218.2 182.4 169.6		·	224. 4 216. 6 193. 7
W Approach Span'1 2	50.0 35.6 80.3 81.3	O.W.P. 230.7 250.9 217.8 172.0	I.W.P. 218.2 182.4 169.6 178.4		·	224.4 216.6 193.7 175.2
W Approach Span' 1 2 3	50.0 35.6 80.3	O.W.P. 230.7 250.9 217.8	I.W.P. 218.2 182.4 169.6		·	224. 4 216. 6 193. 7
W Approach Span'1 2 3 4	50.0 35.6 80.3 81.3	O.W.P. 230.7 250.9 217.8 172.0	I.W.P. 218.2 182.4 169.6 178.4		·	224.4 216.6 193.7 175.2
W Approach Span'1 2 3 4 5	50.0 35.6 80.3 81.3	O.W.P. 230.7 250.9 217.8 172.0	I.W.P. 218.2 182.4 169.6 178.4		·	224.4 216.6 193.7 175.2
W Approach Span' 1 2 3 4 5 6	50.0 35.6 80.3 81.3 35.6	O.W.P. 230.7 250.9 217.8 172.0 281.1	I.W.P. 218.2 182.4 169.6 178.4 243.2		·	224. 4 216. 6 193. 7 175. 2 262. 2
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a	50.0 35.6 80.3 81.3 35.6 50.0 332.8	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a #2, 4 - Expansion;	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a #2, 4 - Expansion;	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a #2, 4 - Expansion;	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a #2, 4 - Expansion;	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a #2, 4 - Expansion;	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P. 218.2 182.4 169.6 178.4 243.2 263.7 202.5	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7
W Approach Span'1 2 3 4 5 6 E Approach Average Remarks Joints a #2, 4 - Expansion;	50.0 35.6 80.3 81.3 35.6 50.0 332.8 and spans nur	O.W.P.  230.7  250.9  217.8  172.0  281.1  191.2  214.9  mbered fro	I.W.P.  218.2  182.4  169.6  178.4  243.2  263.7  202.5  m West to	O.W.P.	I.W.P.	224. 4 216. 6 193. 7 175. 2 262. 2 227. 4 208. 7

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

	5 of 81074	, Locai	non <u>Earh</u>	ardt Road	over US 2	3 Form 511
Dual Structures (sep				Yes 🗀	No [2	
Single Structure		x No				
Number of Spans	4		Machin	e Finished		Yes No xx
W Bound Road	way				Date M	leasured 11-4-63
		Describ	lawatan D			
		1				inches per mile
Item	Length	Traffic	c Lane	Passin	g Lane	A *** a ** a ** a
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach						
Span 1	50.0*	160.1	134.0			147.0
2	107.0	145.2	135.4			140.3
3	107.9	188.3	148.3			168.3
4	50.0*	207.5	161.9			184.7
5	·					
6						
E Approach						
Average	314.9	171.4	143.4			157.4
		·d				2011
E Bound Road	way					
		Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic	Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach		1	i			
W Approach Span' 1	50.0*	173.8	144.4			159.1
						159.1
Span' 1	50.0* 107.0 107.9	173.8 168.7 162.4	116.0			142,4
Span' 1 2	107.0	168.7 162.4	116.0 149.9			142. 4 156. 2
Span' 1 2 3	107.0 107.9	168,7	116.0			142,4
Span' 1 2 3 4 5 6	107.0 107.9	168.7 162.4	116.0 149.9			142. 4 156. 2
Span' 1 2 3 4 5	107.0 107.9	168.7 162.4	116.0 149.9			142. 4 156. 2
Span' 1 2 3 4 5 6	107.0 107.9	168.7 162.4	116.0 149.9			142.4 $156.2$
Span' 1  2  3  4  5  6  E Approach	107.0 107.9 50.0*	168.7 162.4 131.2	116.0 149.9 153.0	East. Join	t #1, 5 - (	142. 4 156. 2 142. 1
Span' 1  2 3 4 5 6 E Approach  Average	107.0 107.9 50.0* 314.9 d spans numb	168.7 162.4 131.2	116.0 149.9 153.0	East. Join	t #1, 5 - (	142. 4 156. 2 142. 1
Span'1  2 3 4 5 6 E Approach Average  Remarks Joints an	107.0 107.9 50.0* 314.9 d spans numb	168.7 162.4 131.2	116.0 149.9 153.0	East. Join	t #1, 5 - (	142. 4 156. 2 142. 1
Span'1  2  3  4  5  6  E Approach  Average  Remarks Joints an #2, 4 - Steel Expans  Cantilevered str	107.0 107.9 50.0* 314.9 d spans numb ion; #3 - Exp	168.7 162.4 131.2 162.0 pered from	116.0 149.9 153.0 137.2 West to I	East. Join	t #1, 5 - (	142. 4 156. 2 142. 1
Span'1  2 3 4 5 6 E Approach Average  Remarks Joints an #2, 4 - Steel Expans Cantilevered str	107.0 107.9 50.0* 314.9 d spans numble ion; #3 - Expructure. proaches too	168.7 162.4 131.2 162.0 pered from ansion,	116.0 149.9 153.0 137.2 West to I			142. 4 156. 2 142. 1
Span'1  2 3 4 5 6 E Approach Average  Remarks Joints an #2, 4 - Steel Expans Cantilevered str	107.0 107.9 50.0* 314.9 d spans numble ion; #3 - Expructure. proaches too	168.7 162.4 131.2 162.0 pered from ansion,	116.0 149.9 153.0 137.2 West to I			142. 4 156. 2 142. 1
Span'1  2 3 4 5 6 E Approach Average  Remarks Joints an #2, 4 - Steel Expans Cantilevered str	107.0 107.9 50.0* 314.9 d spans numble ion; #3 - Expructure. proaches too	168.7 162.4 131.2 162.0 pered from ansion,	116.0 149.9 153.0 137.2 West to I			142. 4 156. 2 142. 1
Span'1  2 3 4 5 6 E Approach Average  Remarks Joints an #2, 4 - Steel Expans Cantilevered str	107.0 107.9 50.0* 314.9 d spans numble ion; #3 - Expructure. proaches too	168.7 162.4 131.2 162.0 pered from ansion,	116.0 149.9 153.0 137.2 West to I			142. 4 156. 2 142. 1

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S06 of 81074 , Location Plymouth Road (M 14) over US 23							
Dual Structures (sep			<u></u>	Yes 🗀	No 🗵	X	
Single Structure	Yes x	No [					
Number of Spans	4		Machine	Finished		Yes No XX	
E Bound Roads	way				Date M	easured <u>11-7-63</u>	
		Profi.	lometer R	oughness V	Value - Ri	inches per mile	
Thoma	Length	Traffic		T	g Lane		
Item	Tengm	O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average	
W Approach	100.0					400.4	
Approach Span 1	100.0	134.4	120.4	73.3	80.4	102.1	
Span 1 2	56.6	91.8	107.4	72.6	121.6	98.4	
3	85.6	117.2	144.6	99.1	109.6	117.6	
4	84.6	111.4	125.7	114.3	76.1	106.9	
5	57.6	122.6	103.2	85.8	101.4	103.2	
6							
E Approach							
Approach	100.0	110.4	121.3	97.9	100.2	107.4	
Average	484.4	116.0	122.2	91.5	96.2	106.5	
		4				3	
W Bound Roady	vay						
		Drofi	lomoton D			·1	
				ougnness	varue - R	inches per mile	
Item	Length	Traffic Lane		Passing Lane			
`		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average	
W Approach	100.0	89.5	93.2	83.4	104.2	92.6	
Span'1	56.6	95.6	82.2	95.4	79.0	88.0	
2	85.6	115.6	94.9	93.4	72.6	94.1	
3	84.6	113.8	104.5	90.6	74.1	95.8	
4	57.6	108.8	119.8	67.1	66, 2	90.5	
5			<del>-</del>				
6							
E Approach	100.0	125.7	101.0	86.6	105.8	104.8	
Average	484.4	108.8	99.0	86.6	86.2	95. 2	
Remarks Joints an	d snans numb	ered from	West to 1	East. Join	nt #1. 2. 5	8 - Expansion:	
#3, 7 - Construction			~		· · · · · · · · · · · · · · · · · · ·		
Cantilever bridge.							
Concrete approa					· · ·		
Concrete approx	CHES.						
				<del></del>	<del> </del>		

MICHIGAN STATE HIGHWAY DEPARTMENT Office of Testing and Research Research Laboratory Division

## PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge Number S0'	7 of 81074	, Locat	ion Ellsy	vorth Road	over US	23 Form 511
Dual Structures (seg	oarate for eac	h roadway	)	Yes 🗀	No 🖸	
Single Structure	Yes x	x No		- Martalania d		77 D 77 D
Number of Spans	4		Macnine	e Finished		Yes No xx
W Bound Road	lway				Date M	easured 10-7-63
		Profi	lometer R	oughness \	Value - R	inches per mile
Item Length		Traffic		Passin		
200111		O.W.P.	I.W.P.	1	I.W.P.	Average
W Approach						
Span 1	72.4	94.9	80.8			87.8
2	70.6	85.6	70.3			78.0
3	70.6	90.0	40.7			65.4
4	72.4	75.6	42.9			59,2
5						
6						
E Approach						
Average	286.0	86.6	58.4			72.5
E Bound Road	lway	•				
		Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic Lane		Passing Lane		
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
WApproach						
Span' 1	72,4	52,0	68.2			60.1
2	70.6	112.8	89.4			101.1
3	70.6	69.5	54.6			62.0
4	72.4	73.6	58.5			66.0
5						
6						
E Approach						
Average	286.0	77.9	68.0			73.0
Remarks Joints a		bered fron	n West to	East. Joi	nt #1, 5 -	Construction;
				<u> </u>		
Tar and chip approaches too rough to run.						
					· · · · · ·	

# District 8

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS
TEST RESULT TABULATION
Research Project 61 F-65

Bridge Number S08 of 81075 , Location 6 Mile Road over US 23 Form 511							
Dual Structures (sep				Yes 🗀	No [3		
Single Structure	Yes 🗓						
Number of Spans	4	_	Machine	e Finished		Yes No 🗴	
E Bound Road	way				Date M	easured <u>11-4-63</u>	
		Profil	lometer R	oughness '	Value - R	inches per mile	
Item	Length	Traffic	Lane				
10em	Tengui	O.W.P.	I.W.P.	O.W.P.	g Lane I.W.P.	Average	
TT Annua ch	FO 0					175 0	
W Approach	50.0	179.4	172.2	<u> </u>		175.8	
Span 1	35.1	119.0	109.8			114.4	
2	77.5	132.9	137.4		<u> </u>	135.2	
3	65.5	124.8	148.0		ļ	136.4	
4	38.0	133.9	160.0			147.0	
5							
6		<b></b>					
E Approach	50.0	181.4	161.4			171.4	
Average	316.1	144.8	148.6		**************************************	146.7	
<del></del>		<del>L</del>	<u> </u>	<u> </u>	<del></del>		
W Bound Road	waw						
Tourid Hoad	way						
		Profi	lometer R	oughness	Value - R	inches per mile	
	1	1		1		l	
Item	Length	Traffic	Lane	Passin	g Lane		
Item	Length	Traffic	Lane I.W.P.	Passin O.W.P.		Average	
Item  W Approach	Length			<del> </del>		Average	
WApproach	50.0	O.W.P. 149.7	I.W.P. 115.9	<del> </del>		132.8	
<u>W</u> Approach Span' 1	50.0 35.1	O.W.P. 149.7 176.8	I.W.P. 115.9 160.6	<del> </del>		132.8	
<u>W</u> Approach Span 1 2	50.0 35.1 77.5	O.W.P. 149.7 176.8 124.9	I.W.P. 115.9 160.6 107.0	<del> </del>		132.8 168.7 116.0	
W Approach Span'1 2 3	50.0 35.1 77.5 65.5	O.W.P. 149.7 176.8 124.9 149.3	I.W.P. 115.9 160.6 107.0 120.2	<del> </del>		132.8 168.7 116.0 134.8	
W Approach Span 1 2 3 4	50.0 35.1 77.5	O.W.P. 149.7 176.8 124.9	I.W.P. 115.9 160.6 107.0	<del> </del>		132.8 168.7 116.0	
<u>W</u> Approach Span' 1 2 3 4 5	50.0 35.1 77.5 65.5	O.W.P. 149.7 176.8 124.9 149.3	I.W.P. 115.9 160.6 107.0 120.2	<del> </del>		132.8 168.7 116.0 134.8	
W ApproachSpan' 12	50.0 35.1 77.5 65.5 38.0	O.W.P. 149.7 176.8 124.9 149.3 123.4	I.W.P. 115.9 160.6 107.0 120.2 147.4	<del> </del>		132.8 168.7 116.0 134.8 135.4	
<u>W</u> Approach Span' 1 2 3 4 5	50.0 35.1 77.5 65.5	O.W.P. 149.7 176.8 124.9 149.3	I.W.P. 115.9 160.6 107.0 120.2	<del> </del>		132.8 168.7 116.0 134.8	
W ApproachSpan' 12	50.0 35.1 77.5 65.5 38.0	O.W.P. 149.7 176.8 124.9 149.3 123.4	I.W.P. 115.9 160.6 107.0 120.2 147.4	<del> </del>		132.8 168.7 116.0 134.8 135.4	
W Approach Span 1 2 3 4 5 6 E Approach	50.0 35.1 77.5 65.5 38.0 50.0 316.1	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and #2, 4 - Expansion; #	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and #2, 4 - Expansion; #	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and #2, 4 - Expansion; #	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	
W Approach Span 1 2 3 4 5 6 E Approach Average Remarks Joints and #2, 4 - Expansion; #	50.0  35.1  77.5  65.5  38.0  50.0  316.1  d spans numb	O.W.P.  149.7  176.8  124.9  149.3  123.4  137.0  141.4  ered from	I.W.P.  115.9  160.6  107.0  120.2  147.4  120.8  124.1	O.W.P.	I.W.P.	132.8 168.7 116.0 134.8 135.4 128.9 132.8	

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S	01 of 81076	, Locat	ion <u>Car</u>	penter Roa	u over us	23
Dual Structures (sep	arate for eac	h roadway	)	Yes 🗀	No 🗵	X
Single Structure	Yes	No No				
Number of Spans	4		Machine	e Finished		Yes No 🔀
N Bound Road	way				Date M	easured 10-8-63
<del></del>		Profi	lometer R	oughness	Value - R	inches per mile
		1		f		l l l l l l l l l l l l l l l l l l l
Item	Length	Traffic			g Lane	Average
		O.W.P.	I.W.P.	O. W. P.	I.W.P.	
S Approach	100.0	92.0	90.5			91.2
Span 1	52.8	98.5	77.4			88,0
2	112.3	66,0	84.9			75.4
3	118.8	77,7	87.5			82.6
4	53.0	101.0	116.6			108.8
5						
6 ·						
N Approach	100.0	122.7	142.8			132.8
Average	536.9	90.6	99.6			95.1
S Bound Roads	wav					
			1			
		Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic Lane		Passing Lane		
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
S Approach	100.0	108.0	110.2			109.1
Span'1	52.8	130, 2	146.0			138.1
2	112.3	82.8	89.2			86.0
3	118.8	121.0	101.0			111.0
4	53.0	191.9	131.8			
5				1		
						161.8
6						
6 <u>N</u> Approach	100.0	153.8	133.4			
	100.0 536.9	153.8 124.6				161.8
N Approach  Average  Remarks Joints a	536.9 nd spans nun	124.6 abered from	133.4 113.8 n South to	North. J	oint #1, 5,	161. 8 143. 6 119. 2
_NApproach Average  Remarks _Joints a #2, 3, 7, 9 - Constr	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 n South to	North. J	oint #1, 5,	161. 8 143. 6 119. 2
N Approach  Average  Remarks Joints a	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 n South to	North. J	oint #1, 5,	161. 8 143. 6 119. 2
_NApproach Average  Remarks _Joints a #2, 3, 7, 9 - Constr	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 n South to	North. J	oint #1, 5,	161. 8 143. 6 119. 2
_NApproach Average  Remarks _Joints a #2, 3, 7, 9 - Constr	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 n South to	North. J	oint #1, 5,	161. 8 143. 6 119. 2
N Approach Average Remarks Joints a #2, 3, 7, 9 - Constr	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 n South to	North, J	oint #1, 5,	161. 8 143. 6 119. 2
_NApproach Average  Remarks _Joints a #2, 3, 7, 9 - Constr	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 n South to	North. J	oint #1, 5,	161. 8 143. 6 119. 2
N Approach Average Remarks Joints a #2, 3, 7, 9 - Constr	536.9 nd spans nun uction; #4, 6	124.6 abered from	133.4 113.8 m South to pansion.			161. 8 143. 6 119. 2

MICHIGAN
STATE HIGHWAY DEPARTMENT
Office of Testing and Research
Research Laboratory Division

Bridge Number S0	2 of 81076	, Locat	ion Wil	llow Road	over US 2:	3 Form 511
Dual Structures (sep	arate for eac	h roadway	)	Yes 🔲	No [	XX
Single Structure	Yes 🗵	X No			-	
Number of Spans	4		Machine	e Finished		Yes No 🔀
						_
W Bound Road	way				Date M	easured <u>10-8-63</u>
vv		Profi	lometer R	oughness '	Value - R	inches per mile
Thorns	Length	Traffic		1	g Lane	
Item		O.W.P.	I.W.P.	O.W.P.	7)	Average
		O. W.F.	1. W.F.	O.W.F.	1. W.P.	
<u>W</u> Approach						
Span 1	33.3*	139.7	111.4			125.6
2	70.7	127.2	75.9			101,6
3	70.7	164.2	138.9			151.6
4	33.3*	85.4	174.8			130.1
5						
6						
E Approach						
Average	208.0	137.6	116.2			126.9
		1	1			1
E Bound Road	wav					•
	1		1 ,			
	****	Profi	lometer R	oughness	Value - R	inches per mile
Item	Length	Traffic Lane		Passing Lane		
<del></del>		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
W Approach	:	,				
Span'1	33, 3*	183.0	96.8			139.9
2	70.7	121.8	111.1			116.4
3	70.7	128.0	129.2			128.6
4	33.3*	207.3	229.4			218.4
5		İ				
6						
E Approach						
Average	208.0	142.2	130.7			136.4
Demonstra Cointa or	nd anona numi	and from	Month to 1	Dook Tolo	. 4. 41. 17	Q
Remarks <u>Joints ar</u> #2, 3, 4 - Expansion		bered from	ı west to 1	cası. Jon	<u>11 #1, 5 - (</u>	Construction;
Tar and chip ap	proaches too	rough to r	un .			
				span #4 al	ll wheel tr	acks EB and WB
but not as bad.	I Carroa WIC	ar over with )	COHO RIBO	Spent HT CO	II MIRCH FI	COND EID AND
	D. 4		11	1 -		1 0
* less than 10.2 ft.	Entire Prof	nometer o	n bridge d	eck at star	rt and finis	sh of run.
				11	<del></del>	
			F,	ourtn Prog	gress Repo	ort - February 1964