PROFILOMETER MEASUREMENT OF BRIDGE ROUGHNESS Fifth Progress Report

Research Laboratory Division Office of Testing and Research Research Project R-61 F-65 Research Report No. R-469



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

PROFILOMETER MEASUREMENT OF BRIDGE ROUGHNESS Fifth Progress Report

This is the fifth publication in a continuing 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 handfinished and transverse machine-finished bridge decks. The fourth (Research Report No. R-450) reported results for 35 more bridge projects and included an analysis of the effect of the deck beam type used in a bridge's construction on its roughness value.

This fifth progress report presents results for a new group of 20 bridge projects (23 separate structures), 10 each finished by hand and

transverse machine methods. In reporting riding quality, the following tentative roughness classification is used again in this report, expressed in terms of accumulated inches-per mile:

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

Using these categories, the 107 "span-run" values (see Glossary), and the 23 "structure" values (see Glossary), measured for the 20 bridge projects for which test result forms are presented in this report, may be classified as follows:

		Riding Quality										
Finishing Method	Span Runs				Structures							
Method	Good	Average	Poor	Total	Good	Average	Poor	Total				
Hand	26	39	7	72	5	8	0	13				
Machine	8	24	3	35	2	8	0	10				
Total	34	63	10	107	7	16	0	23				

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: average of wheel path roughness measurements for all lanes of 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 computed from individual span run roughness values, weighted according to span length.

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

ridge No. <u>B01 of 3317</u>	1 Location	1 496 NE	over Red	<u>Cedar River</u>			
ate Measured <u>5-26-64</u>	Number	of Spans	4 Le	ngth (includi	ng approach	es) <u>490.6</u>	
ual Structures (separate	for each road	lway) Y	es 🔲	No X			
ingle Structure Yes	No 🔲	Method o	of Finishing	<u>Hand</u>		<u></u>	
N Bound Roadw	/ay						
MODIFICATION AND AND THE REPORT OF THE PROPERTY OF THE PROPERT		Profile	meter Rou	ghness Value	- R inches	per mile	
Item	Length	Traffic	Traffic Lane		: Lane	- Average	
		O.W.P.	I.W.P.	O.W.P.	I, W, P.	Average	
Span 1	58.3	97	145	132	109		
2	78.3	72	67	118	78		
3	85.3	143	146	82	84	<u> </u>	
4	38.7	219	194	121	167		
5							
6			.,				
Weighted Average fo	r Bridge	123	129	110	100		
S Approach	100.0	122	97	91	69		
N Approach	100.0	98	109	119	96		
Weighted Average fo and Approache	_	117	118	108	92		
and Approach		1 11/	1 110	1 100	J UH		
N Bound Roady	way						
		Profilometer Roughness Value - R inches per mile					
Item	Length	Traffi	Traffic Lane		Passing Lane		
		O,W,P.	I.W.P.	O.W.P.	I.W.P.	Average	
Span 1	58.3	·		108	154	124	
2	78.3			130	119	97	
3	85.3			105	86	108	
· 4	38.7			207	163	178	
5							
6							
Weighted Average fo	r Bridge			128	123	119	
S Approach	100.0			89	116	97	
N Approach	100.0		<u> </u>	Did not ru	n - Gravel	106	
Weighted Average fo and Approach				117	120	112	
	***************************************			Joint #1, 2, $\frac{1}{2}$			
	ate numbarad i	rrom South t	o North .	JOINT #1, 2, 3	o, o, and 9	டxpansion;	
emarks <u>Spans and join</u> #3 and 7 Construction				te Approache		approach in	

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

Bridge No. S12 of 33045						353 9			
Date Measured $12-4-63$ Dual Structures (separate Single Structure Yes X	for each road	way) Y		No 🔲		les)			
N Bound Roadwa				,					
, menniples (statistics) y en seus services i e e e e e e e e e e e e e e e e e e		Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffic	c Lane	Passin	g Lane				
		O.W.P.	I. W. P.	O.W.P.	I.W.P.	Average			
Span 1	40.3	171	176	108	139	148			
2	75.6	143	130	154	139	142			
3	38.0	118	93	96	91	100			
4									
5									
6									
Weighted Average for	Bridge	144	112	128	127	128			
s Approach	100.0	91	93	106	100	98			
N Approach	100.0	141	96	122	138	124			
Weighted Average for Bridge and Approaches		128	112	124	123	122			
Bound Roadwa	ау								
		Profilometer Roughness Value - R inches per mile							
Item	Length	Traffic Lane		Passin	g Lane	The black belong the track to the Bullion black bearing as a month of the TOTO of a better			
60		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1				·					
2									
3									
4									
5									
6									
Weighted Average for	Bridge			no-market-market-market-market-market-					
Approach									
Approach									
Weighted Average for and Approaches	-								
Remarks <u>Joints and span</u> Expansion; #4 - Constructi Cantilevered structu	on; #5 - Stee re.			foint #1, 2, 3	3, 8, 9, 10				
Concrete Approaches	5.		-5- —						

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

Bridge No. <u>S13 of 33045</u> Date Measured <u>12-4163</u>						es) <u>433.6</u>		
Dual Structures (separate Single Structure Yes X	No 🗌		es of Finishing	No X Machine				
N Bound Roadwa	ay I		- manuscriptor and the second			programmy or <u>reserve to the second of the s</u>		
				ghness Value		per mile		
Item	Length	Traffic Lane		Passin	g Lane	Average		
· Barenarrakanan kanan kan		O.W.P.	I.W.P.	O. W. P.	I.W.P.			
Span 1	59.0	143	118	138	129	132		
2	104.0	128	125	111	111	119		
3	70.6	93	66	99	136	98		
4								
5								
6								
Weighted Average for	Bridge	121	105	114	123	116		
S Approach	100.0	75	104	93	100	93		
N Approach	100.0	81	118	99	95	98		
Weighted Average for Bridge and Approaches		101	108	106	111	107		
Bound Roadw	ay							
		Profilometer Roughness Value - R inches per mile						
Item	Length	Traffic Lane		Passir	g Lane			
	_	O.W.P.	I.W.P.	O.W.P.	I. W. P.	Average		
Span 1								
2								
3								
4								
5								
6								
Weighted Average for	Bridge							
Approach								
Approach								
Weighted Average for and Approaches			The state of the s					
Remarks Joints and spa Expansion; #4, 7 - Consti				Joint #1, 2,	3, .5, 8, 9,	10 •		
Bridge tar spotted. Concrete approaches	S.	400	-6-	· · · · · · · · · · · · · · · · · · ·				

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

Bridge No. <u>S14 of 33045</u>	Location	<u>I 496 SE</u>	over Jolly	Road				
Date Measured 12-5-63					ng approach	es) 347.2		
Dual Structures (separate				No X		,		
Single Structure Yes X		, ,	()	Machine	•			
S Bound Roadwa		Memod	or rumannig	,				
Bound Today		Profile	meter Rou	ghness Value	e - R inches	per mile		
Item	Length		c Lane	_	r Lane			
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average		
Span 1	37.6	160	226	154	121			
2	71.6	139	136	128	157			
3	38.0	160	112	160	134			
4								
5								
6								
Weighted Average for	Bridge	150	153	143	142			
s Approach	100.0	118	109	110	105	CONTRACTOR AND ADDRESS OF THE STATE OF THE S		
N Approach	100.0	126	120	122	108			
Weighted Average for Bridge and Approaches		134	131	128	121	·		
S Bound Roadw	ay		Советского постанова и под на под него советского под него советского советского советского советского советск Советского советского советского советского советского советского советского советского советского советского	от Сот Ментон и в се и метон по подат п	nder a semina de transcria de semina de novembre esta del semina de se			
Approximation of the second se		Profilometer Roughness 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		
Span 1	37.6			133	156	158		
2	71.6			172	186	153		
3	38,0			119	118	134		
4								
5	_							
6					Ì			
Weighted Average for	Bridge			148	161	150		
S Approach	100.0			114	132	115		
N Approach	100.0			107	100	114		
Weighted Average for and Approaches	_			127	135	129		
Remarks Joints and span #4, 7 - Construction; #5 - Cantilevered Structu Concrete Approache	Steel Expans re.				3, 8, 9, 10	- Expansion:		

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

Bridge No. <u>\$15 of 33045</u> Date Measured <u>12-5-63</u>	Number	of Spans	4 Lei	ngth (includi	ng approach	nes) <u>459.3</u>			
Dual Structures (separate Single Structure Yes X Bound Roadwa	No []			No X Machir	ne				
, management of the second of	0.0000000000000000000000000000000000000	Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffic	Traffic Lane		g Lane				
	:	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1	52.6	132	94			113			
2	72.0	148	141			144			
3	81.7	146	126		<u></u>	136			
4	53.0	185	209			197			
5									
6									
Weighted Average for	Bridge	152	141			146			
E Approach	100.0	81	84			82			
W Approach	100.0	114	79			97			
Weighted Average for Bridge and Approaches		128	115			122			
WBound Roadw	ay			mmonano minina manganganganganganganganganganganganganga					
		Profile	Profilometer Roughness Value - R inches per n						
Item	Length	Traffic Lane		Passin	g Lane	Arramama			
		O.W.P.	I.W.P.	O, W. P.	I. W. P.	Average			
Span 1	52.6	104	119			111 .			
2	72.0	102	109			105			
3	81.7	148	112			130			
4	53.0	113	93			103			
5									
6									
Weighted Average for	Bridge	119	109			114			
E Approach	100.0	64	77			70			
W Approach	100.0	89	117			103			
Weighted Average for and Approaches	_	100	104			102			
Remarks Joints and span Expansion; #4, 8 - Steel E		rom West to	East. Joi	int #1, 2, 3,	6, 9, 10, 1	1			
Cantilevered Struct	re. Concre			ne in the eas	t approach.	A. C. C. A. C.			

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

Bridge No. X01 of 33084	Location	I 96 (EB)	over NYC F	RRS of Lans	ing	PERSONAL NEEDANGS AND SECURITIES AND			
Date Measured 5-21-64	Number	of Spans	3 Le	ngth (includi	ng approach	es) 340.7			
Dual Structures (separate			THE PARTY OF THE P	No X		,			
Single Structure Yes X	No 🔙	Method	of Finishing	Hand					
E Bound Roadwa	ıy								
		Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffi	c Lane	Passir	g Lane	() The second se			
-Clarkettercoopenytyte: Clarkettersterpengterggregggggggggggggggggggggggggggggg		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1	47.0	167	133	127	107	134			
2	46.7	98	85	174	148	126			
3	47.0	103	132	88	95	104			
4									
5									
6			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	CENTE DECEMBER STORE OF STATE					
Weighted Average for	Bridge	123	117	130	117	122			
E Approach	100	90	109	116	93	102			
W Approach	100	94	109	137	122	116			
Weighted Average for Bridge and Approaches		105	112	128	111	114			
Bound Roadwa	y								
		Profilometer Roughness Value - R inches per mile							
Item	Length	Traffic Lane		Passin	g Lane	elik kenara II dia tahun an errepembepapping persampan persampan seria senambah berara			
	:	O.W.P.	I.W.P.	O.W.P.	I. W. P.	Average			
Span 1									
2									
3									
4									
5									
6				_					
Weighted Average for	Bridge								
Approach						TO SEE THE POST OF			
Approach									
Weighted Average for and Approaches	Bridge								
Remarks All Spans and Joi Expansion; #4 & 7 - Const		d from West	to East. 3	Joint #1, 2,	3, 5, 6, 8,	9, & 10 -			
Concrete approache				77.000/444	ECETOIALE AND				
			9						

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

Bridge No. X04 of 33045	Location	<u>I 496 NB c</u>	ver C & O	RR and Trov	vbridge Roa	d			
Date Measured 5-26-64	Number	of Spans	3 Lei	ngth (includi	ng approach	es) <u>517.4</u>			
Dual Structures (separate:				No X					
Single Structure Yes X	No	- •	Bearing?	Machine					
N Bound Roadwa				,					
		Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffic Lane		Passing Lane		Arronaga			
	A-A-11-	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1	107.0	113	119	131	119	120			
2	104.2	126	89	123	150	122			
3	106.2	135	141	145	108	132			
4						Allana Cara Cara Cara Cara Cara Cara Cara C			
5									
6									
Weighted Average for	Bridge	125	117	133	126	125			
S Approach_	100.0	68	84	82	69	76			
N Approach	100.0	80	74	79	93	82			
Weighted Average for Bridge and Approaches		105	102	113	108	107			
Bound Roadwa			· · · · · · · · · · · · · · · · · · ·		Particular de la companya de la comp	THE CONTRACTOR ASSESSMENT OF THE CONTRACTOR OF THE CONTRACTOR ASSESSMENT O			
		Profile	meter Roug	ghness Value	nness Value - R inches per mile				
Item	Length	Traffic Lane		Passing Lane					
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1									
2									
3					American districts				
4					National Control of the Control of t				
5									
6									
Weighted Average for	Bridge								
Approach									
Approach									
Weighted Average for and Approaches	_								
Remarks <u>Joint #1 Cons</u> #5 Expansion - #6 E Approaches.				Steel Expan red from Sou					
			10						

Bridge No. X05 of 33045 Location I 496 SB over GTW RR

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

Form 1011

te Measured <u>5-25-64</u> al Structures (separate		_	čes 🔲	No X			
gle Structure Yes X		Method	of Finishing	g <u>Machine</u>			
and the second of the second or deposit galley bit, any purple and the second of the s		Profile	Profilometer Roughness Value - R inches per mile				
Item	Length	Traffi	Traffic Lane		r Lane	Arramaga	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average	
Span 1	55.1	141	174	96	142		
2	83,8	94	73	86	- 89		
3	56.9	137	101	113	108		
4							
5					,		
6							
Weighted Average for	r Bridge	120	110	97	109		
S Approach	100.0	104	86	85	60	STATE OF THE PROPERTY OF THE P	
N Approach	100.0	160	130	136	74		
Weighted Average for Bridge and Approaches		126	109	104	88		
S Bound Roadv	vay		and the second s			Centrolisis 2 Indiana (CO Presidential Activity Wood	
		Profilometer Roughness Value - R inches per mile					
Item	Length	Traffi	c Lane	Passing Lane		Common services and comment for the server services, the server services and the s	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Averag	
Span 1	55.1			72	102	121	
2	83.8			84	104	88	
3	56.9			100	90	108	
4							
5							
6							
Weighted Average for	r Bridge			85	99	103	
_S Approach	100.0			117	82	- 89	
N Approach	100.0			133	98	122	
Weighted Average for and Approache	r Bridge			105	95	104	
and Approache marks Spans and join	its are measu			. Joint No.	and Type:	#1 Exp	

Concrete Approaches.

-11-

3 span contilevered bridge.

and #8 Contraction.

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

Bridge No. X06 of 33045	Location	I 496 (N	NB) over G7	W RR		
Date Measured 12-9-63					ng approach	es) <u>390.4</u>
Dual Structures (separate		_		No X		•
Single Structure Yes X	400000m			<u>Machine</u>		
N Bound Roadwa	<u> </u>			,		
, three control of the control of th		Profile	meter Roug	ghness Value	- R inches	per mile
Item	Length	Traffic	c Lane	Passin	g Lane	
		O.W.P.	I. W. P.	O.W.P.	I.W.P.	Average
Span 1	54.0	113	103	89	130	109
2	84.2	121	99	116	96	108
3	52.2	100	123	136	147	126
4						
5						
6						
Weighted Average for	Bridge	113	107	114	120	114
S Approach	100.0	94	86	84	91	89
N Approach	100.0	76	80	75	69	75
Weighted Average for Bridge and Approaches		98	95	96	100	97
Bound Roadwa	ay					
Cities and an experience of the control of the cont		Profilometer Roughness Value - R inches per m				
Item	Length	Traffic Lane		Passin	g Lane	
	-	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Span 1						
2						
3					THE THEORY OF THE PROPERTY OF	
4			-			
5						
6					, , , , , , , , , , , , , , , , , , , ,	
Weighted Average for	Bridge					
Approach						
Approach						
Weighted Average for and Approaches	-					
Remarks Spans and joints #3, 6 - Construction; #4 -			North, J	oint #1, 2, 5	, '7 - Expan	sion;
Cantilevered structur						
Concrete approaches	•		12- —			

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

Bridge No. X07 of 33045	Location	<u>I 496_NB</u>	off ramp to	Trowbridge	e Rd & C&O	RR			
Date Measured 12-9-63	Number	of Spans _5	Le	ngth (includi	ng approach	es) <u>266.7</u>			
Dual Structures (separate	for each road	way) Y	les 🔲	No X		•			
Single Structure Yes X	No 🗌	Method	of Finishing	<u>Machine</u>)				
N Bound Roadwa	ıy*								
, 4694-06000000000000000000000000000000000	A CONTRACTOR OF THE PARTY OF TH	Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffi	Traffic Lane		g Lane	Å			
— Blick help hopey regularization and the same constraints are constraints and the same constraints and the same constraints are constraints and the same constraints and the same constraints are constraints and the same constraints are constraints and the same constraints and the same constraints are constraints are constraints are constraints and the same constraints are constraints and the same constraints are constraints are constraints and the same constraints are constraints and the same constraints are constraints are constraints and the same constraints are constraints are constraints are constraints are constraints are constraints are c	O COMMUNICATION CONTRACTOR CONTRA	O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1	57.7	113				113			
2	66.0	127				127			
3	13.0	191				191			
4	65.0	159				159			
5	65.0	152				152			
6									
Weighted Average for	Bridge	141		-	2	141			
Approach									
Approach									
Weighted Average for and Approaches	_			AND THE COLUMN TO THE COLUMN T					
N Bound Roadwa	ay*								
		Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffic Lane		Passin	g Lane				
- PRESSENTATION OF THE PROPERTY OF THE PROPERT		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1	56.6		124			124			
2	64.6		136			136			
3	28.6		85			85			
4	64.6		184			184			
5	65.0		177			177			
6									
Weighted Average for	Bridge		149	***		149			
Approach									
Approach				W. C.	AND DESCRIPTION OF THE PARTY.				
Weighted Average for and Approaches	_			o constant	·				
Remarks <u>Spans and joint</u>	s numbered fi	rom South to	North.	oint #1, 6 -	Constructio	n: #2.			
5 - Steel Expansion; #3, 4	- Expansion	<u>. </u>							
* Pridro built or current	because of c	urve; also c	lay and gra	vel on each	approach.				
* Bridge built on curve m	aking wheel p		ent lengths. 13-	The state of the s					

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

Bridge No. <u>S03 of 47014</u>	Location	US 23 (NF	3) over M-5	9					
Date Measured 5-21-64	Number	of Spans3	Ler	ngth (includi	ng approach	es) <u>339.4</u>			
Dual Structures (separate i	or each road	way) Y	es 📗	No X					
Single Structure Yes X	No		of Finishing	_Hand					
NB Bound Roadwa	y								
- CO-video montre de construir de la frança de la video de la frança de la construir de la frança de la franç	an en	Profile	Profilometer Roughness Value - R inches per mile						
Item	Length	Traffic	Traffic Lane		Passing Lane				
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1	32.2	159	220	205	158	186			
2	72.5	171	208	165	172	179			
3	34.7	214	235	193	168	202			
4									
5									
6									
Weighted Average for	Bridge	179	217	181	168	186			
S Approach	100.0	106	110	92	109	104			
N Approach	100.0	86	94	66	124	92			
Weighted Average for Bridge and Approaches		130	149	121	141	135			
Bound Roadwa	ıy								
· · ·		Profilometer Roughness Value - R inches per mile							
Item	Length	Traffic	c Lane	Passin	g Lane				
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average			
Span 1									
2									
3									
4									
5		<u> </u>							
6	•								
Weighted Average for	Bridge		· · · · · · · · · · · · · · · · · · ·		gardandralis (Dakto Charles and Charles and Charles (All Spinness, Copy of the Charles and Spinness, Copy of the Charles and C	Company of the state of the sta			
Approach									
Approach									
Weighted Average for and Approaches									
Remarks All Spans and Expansion; #4, 7 - Co Concrete Ap	nstruction; #			rth. Joint #	1, 2, 3, 5,	8, 9, 10 -			

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

Bridge No. <u>B03 of 50111</u>	Location		over Clinton	River		······································
Date Measured 6-3-64	Number	of Spans	6 Ler	ngth (includi	ng approach	es) <u>559.5</u>
Dual Structures (separate	for each road	way) Y	es	No X		
Single Structure Yes X	No 🗌	Method o	of Finishing	Hand		
S Bound Roadwa			_			
TO THE RESIDENCE OF THE PARTY O		Profile	meter Roug	ghness Value	e - R inches	per mile
Item	Length	Traffic	c Lane	Passin	g Lane	Average
		O.W.P.	I. W. P.	O.W.P.	I.W.P.	Average
Span 1	55,7	153	136	52	67	
2	61.2	87	54	93	105	
3	61.8	96	92	99	48	
4	62.0	81	91	63	65	
5	62.8	93	74	50	65	
6	56.0	114	100	134	78	
Weighted Average for	Bridge	103	90	81	71	
S Approach	100.0	91	134	89	62	
N Approach	100.0	94	82	147	113	
Weighted Average for and Approaches	-	101	98	94	77	
S Bound Roadw	ay					
		Profile	meter Roug	ghness Value	- R inches	per mile
Item	Length	Ramp	Lane	Center	Lane	
WITTEN FOR THE		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Span 1	55.7	83	91	119	121	103
2	61,2	75	110	54	91	84
3	61.8	36	74	103	125	84
4	62.0	63	71	88	54	72
5	62.8	93	89	70	49	73
<u>6</u> ·	56.0	137	108	85	104	108
Weighted Average for	Bridge	80	90	86	90	86
S Approach	100.0	104	137	97	95	101
N Approach	100.0	115	108	62	76	100
Weighted Average for and Approaches	~	91	102	84	88	92
Remarks Spans and joint Expansion; #1, 4, 10 - Co				oints #2, 3,	5, 6, 8, 9,	11, 12 -
Concrete Approa				· · · · · · · · · · · · · · · · · · ·		

Expansion.

on old pavement.

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

Form 1011

Joints blown and broken

Concrete Approaches.

Bridge No. <u>B04 of 50111</u>	L Location	1 1 94 NB	<u>over Clintor</u>	i River		·
Date Measured 6-10-64	Number	of Spans _6	Lei	ngth (includi:	ng approach	es) <u>556.6</u>
Dual Structures (separate	for each road	łway) Y	Zes	No X		
Single Structure Yes X	No 🗌	Method	of Finishing	Hand Hand		
N Bound Roadwa	ay					
, military y layed may be an executive interested to the executive manufacture of the executive manufac		Profile	ometer Rou	ghness Value	e - R inches	per mile
Item	Length	Traffi	c Lane	Center	r Lane	A
		O.W.P.	I.W.P.	O.W.P.	I. W. P.	Average
Span 1	55.8	240	169	146	124	
2	61.2	161	116	176	140	
3	61.7	159	130	113	135	
4	60.9	143	92	142	116	
5	61.4	196	159	127	137	
6	55.6	210	188	128	166	
Weighted Average for	Bridge	184	141	139	136	
S Approach	100.0	144	123	171	143	
N Approach	100.0	169	148	130	137	
Weighted Average for and Approaches	-	174	139	143	138	
N Bound Roadw	ay	•				
400 Market and a suppopulation of the control of th		Profile	meter Rou	ghness Value	- R inches	per mile
Item	Length	Traffi	c Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Span 1	55.8			125	116	153
2	61.2			78	83	126
3	61.7		<u> </u>	103	70	118
4	60,9			90	112	116
5	61.4			80	75	129
6	55.6			134	107	156
Weighted Average for	Bridge			101	93	132
S Approach	100.0			126	135	140
N Approach	100.0	<u> </u>		119	127	138
Weighted Average for and Approaches	_		CONNICTION COLOR	109	107	135

-16-

Remarks Joints #1, 2, 3, 5, 6, 8, 9, 11, 12, and 13 Expansion; #4 and 10 Construction; #7 Steel

Traffic and center lanes old pavement - passing lane new.

Joints and spans numbered from South to North.

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

G 1011

Bridge No. <u>S26 of 50111</u>	Location	<u> 194 (N</u>	B) over Met	ro, Beach P	arkway	1 07III 1011
Date Measured 6-4-64	Number	of Spans	Lei	ngth (includi	ng approach	es) 403.0
Dual Structures (separate			-	No		,
Single Structure Yes		Method	MORE CONTRACTOR OF THE PARTY OF	السسيسطا		
N Bound Roadwa	-			,		
		Profile	meter Rou	ghness Value	e - R inches	per mile
Item	Length	**************************************	c Lane		g Lane	
nem	nengm	O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average
Span 1	32.2	58	51	93	93	
2	66.2	66	76	64	72	
3	66.6	73	82	66	97	
4	38.0	100	131	127	166	
5						
6				,		
Weighted Average for	Bridge	73	. 84	81	101	
s Approach	100.0	80	66	85	105	
N Approach	100.0	88	80	81	57	
Weighted Average for and Approaches	-	79	79	82	91	
N Bound Roadwa	ay		O			ill an aidealath airm airm gàr ghig i Beagann ann agus airm aide ann agus ann airm an ann an deann airm ann an
		Profile	meter Roug	hness Value	- R inches	per mile
Item	Length	Ramp	Lane	Center	· Lane	
	_	O.W.P.	I.W.P.	O.W.P.	I. W. P.	Average
Span 1	32.2	80	111	66	90	80
2	66,2	85	98	82	85	78
3	66,6	122	99	78	63	85
4	38.0	103	82	141	7 3	115
5	:			·		
6						
Weighted Average for	Bridge	100	97	89	76	88
S Approach	100.0	99	110	88	71	88
N Approach	100.0	88	. 99	65	64	7 8
Weighted Average for and Approaches	. –	97	101	83	72	86
Remarks Spans and joint	s numbered f	rom South t	o North.	Joint No. & '	Туре: #1 -	Expansion;
#2 - Expansion: #3 - Const						
Construction: #8 - Expansi	on; #9 - Exp					
Concrete approaches	•		m		-	

-17-

Concrete Approaches.

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Laboratory Division Research Project 61 F-65 Form 1011 Bridge No. S26 of 50111 Location I 94 (SB) over Metro. Beach Parkway Date Measured 6-4-64 Number of Spans 4 Length (including approaches) 403.0 Dual Structures (separate for each roadway) Yes X No Method of Finishing Hand No X Yes Single Structure Bound Roadway Profilometer Roughness Value - R inches per mile Center Lane Passing Lane Length Item Average I. W. P. O.W.P. I.W.P. O.W.P. Span 1 69 86 32.2 113 64 100 2 104 93 96 66.2109 79 3 104 66.6 95 106 88 126 4 79 86 113 78 38.0 73 5 6 Weighted Average for Bridge 106 84 93 97 95 94 84 Approach 93 100.0 61 88 Approach 83 100.0 .82 71 74 105 N Weighted Average for Bridge 89 89 82 88 98 and Approaches Bound Roadway Profilometer Roughness Value - R inches per mile Length Traffic Lane Passing Lane Item Average O.W.P. I.W.P. O.W.P. I.W.P. Span 1 3 4 5 6 Weighted Average for Bridge Approach Approach Weighted Average for Bridge and Approaches Remarks Spans and joints numbered from South to North. Joint #1, 2, 4, 6, 8, 9 - Expansion; #3. 7 - Construction: #5 - Steel Expansion. Ramp and traffic lanes were not run because of tar on the surface.

-18-

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge No. S27 of 50111	Location	I 94 (NI	3) over Cro	cker Road		Form 1011
Date Measured 6-10-64					ng approach	es) 579.3
Dual Structures (separate f				No T	ng upprouen	
	-					
Single Structure Yes N Bound Roadway		Method o	or rimsming			
Dound Roadwa	<i>y</i>	D 611		-d	Dinahaa	mon mile
			-AR	ghness Value		per mile
Item	Length	Traffic	c Lane	Center	***************************************	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	
Span 1	69.5	106	74	68	65	
2	72.0	107	92	104	80	
3	99.3	84	100	93	88	
4	69.5	92	85	79	65	
5	69.0	147	110	105	98	
6						
Weighted Average for	Bridge	105	93	90	80	
s Approach	100.0	111	108	98	97	
N Approach	100.0	1,17	114	100	94	
Weighted Average for and Approaches	_	108	99	93	851	
the space of the state of the s			A		entral de la company de la com	
N Bound Roadwa	У					
		Profile	meter Rou	ghness Value	- R inches	per mile
Item	Length	Traffic	c Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Span 1	69.5			96	115	87
2	72.0			77	79	90
3	99.3			59	94	86
4	69.5			64	91	79
5	69.0			98	105	110
6			1 22 27 17 18 18 1	·		
Weighted Average for	Bridge			77	96	90
S Approach	100.0		,	94	71	96
N Approach	100.0			80	75	97
Weighted Average for and Approaches	_			81	88	92
Remarks Spans and joints #3, 8 - Construction; #6 - 8 Cantilevered structure Concrete approaches.	Steel Expansi	on.	North, Jo	oint #1, 2, 4	, 5, 7, 9, 1	.0 - Expansion

-19-

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

er mile Average
Vannetine de Van de
Average
Average
PETATRON TEXT TOTAL STATE OF THE STATE OF TH
er mile
Average
102
84
83
76
94
87
92
109
92

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

ngle Structure Yes X N Bound Roadwa	ay					
		Profile	ometer Rou	ghness Valu	e - R inches	per mile
Item	Length	Traffi	c Lane	Passir	ng Lane	Arranama
A STATE OF THE STA		O.W.P.	I. W. P.	O, W. P.	I.W.P.	Average
Span 1	48.0	102	- 88			95
2	71.7	68	38			53
3	71.7	85	81			83
4	48.0	61	66			64
5		·				
6						
Weighted Average for	Bridge	79	66			72
Approach						
	<u> </u>		 	. 	 	
Approach						
Approach Weighted Average for and Approaches	-					
Weighted Average for	5					
Weighted Average for and Approaches	5	Profile	ometer Roug	ghness Value	e - R inches	per mile
Weighted Average for and Approaches	5		ometer Roug	······································	e - R inches	
Weighted Average for and Approaches S Bound Roadwa	ay			······································	· · · · · · · · · · · · · · · · · · ·	per mile
Weighted Average for and Approaches S Bound Roadwa	ay	Traffi	c Lane	Passin	g Lane	
Weighted Average for and Approaches S Bound Roadwa Item	ay Length	Traffi	c Lane	Passin	g Lane	Average
Weighted Average for and Approaches S Bound Roadwa Item Span 1	Length	Traffi O.W.P.	I.W.P.	Passin	g Lane	Average
Weighted Average for and Approaches S Bound Roadwa Item Span 1	Length 48.0 71.7	Traffi O.W.P. 63 53	I.W.P. 77 59	Passin	g Lane	Average 70 56
Weighted Average for and Approaches S Bound Roadwa Item Span 1 2 3	Length 48.0 71.7	Traffi O.W.P. 63 53 83	I.W.P. 77 59 85	Passin	g Lane	Average 70 56 84
Weighted Average for and Approaches S Bound Roadwa Item Span 1 2 3 4	Length 48.0 71.7	Traffi O.W.P. 63 53 83	I.W.P. 77 59 85	Passin	g Lane	Average 70 56 84
Weighted Average for and Approaches S Bound Roadwa Item Span 1 2 3 4 5	Length 48.0 71.7 71.7 48.0	Traffi O.W.P. 63 53 83	I.W.P. 77 59 85	Passin	g Lane	Average 70 56 84
Weighted Average for and Approaches S Bound Roadwa Item Span 1 2 3 4 5 6	Length 48.0 71.7 71.7 48.0	Traffi O.W.P. 63 53 83 83	I.W.P. 77 59 85 93	Passin	g Lane	70 56 84 88
Weighted Average for and Approaches S Bound Roadwa Item Span 1 2 3 4 5 6 Weighted Average for	Length 48.0 71.7 71.7 48.0	Traffi O.W.P. 63 53 83 83	I.W.P. 77 59 85 93	Passin	g Lane	70 56 84 88

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Bridge No. S08 of 81103 Location Vorhies Road over M 14 Relocation Date Measured 6-30-64 Number of Spans 4 Length (including approaches) 244. Dual Structures (separate for each roadway) Yes No X Single Structure Yes X No Method of Finishing Bid-Well Finishing Machine N Bound Roadway Profilometer Roughness Value - R inches per mile	5
Dual Structures (separate for each roadway) Single Structure Yes X No Method of Finishing Bid-Well Finishing Machine N Bound Roadway Profilometer Roughness Value - R inches per mile	
Single Structure Yes X No Method of Finishing Bid-Well Finishing Machine N Bound Roadway Profilometer Roughness Value - R inches per mile	
NBound RoadwayProfilometer Roughness Value - R inches per mile	
	T. T
Item Length Traffic Lane Passing Lane	
O.W.P. I.W.P. O.W.P. I.W.P.	,е ——
Span 1 45.7 197 173 185	
2 72.1 147 169 158	
<u>3</u> 72,0 116 64 90	
4 54.7 111 91 101	
5	
6	······
Weighted Average for Bridge 138 120 129	
Approach	·····
Approach	
Weighted Average for Bridge and Approaches	
S Bound Roadway	
Profilometer Roughness Value - R inches per mile	
Item Length Traffic Lane Passing Lane	
O.W.P. I.W.P. O.W.P. I.W.P. Avera	ξe
Span 1 45.7 118 162 140	
- +0.1 110 102 140	
- +0.1 110 102 140	esheliar anni emilih
2 72.1 220 168 194	
2 72.1 220 168 194 3 72.0 85 98 91	
2 72.1 220 168 194 3 72.0 85 98 91 4 54.7 71 83 77	
2 72.1 220 168 194 3 72.0 85 98 91 4 54.7 71 83 77 5 77	
2 72.1 220 168 194 3 72.0 85 98 91 4 54.7 71 83 77 5 6.	
2 72.1 220 168 194 3 72.0 85 98 91 4 54.7 71 83 77 5 5 5 5 5 Weighted Average for Bridge 131 128 129	
2 72.1 220 168 194 3 72.0 85 98 91 4 54.7 71 83 77 5 5 5 5 6 Weighted Average for Bridge 131 128 129 Approach 131 128 129	
140 2 72.1 220 168 194 194 194 194 194 195	
194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 195	

Bridge No. S08 of 82251

Approach

Approach

Weighted Average for Bridge

and Approaches

W

 \mathbf{E}

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

Number of Spans _____ Length (including approaches) ...

Form 1011

150

154

110

Date Measured 6-25-64	Number	of Spans	Len	gth (includia	ng approach	es) 457. 5
Dual Structures (separate	for each road	way) Y	es X	No 🔲		
Single Structure Yes		Method o	of Finishing	Hand		
W Bound Roadwa	у					
ANTI- 1800 III YARA III III III III III III III III III		Profile	meter Roug	hness Value	- R inches	per mile
Item	Length	Traffic	c Lane	Passin	g Lane	Average
		O.W.P.	I, W, P.	O.W.P.	I.W,P.	11101.060
Span 1	29.6	151	150	147	137	146
22	45,7	108	113	128	66	104
3	44.8	145	147	140	169	150
4	78.7	93	89	117	84	96
5	67.8	118	117	93	151	120
6/7	56.8/34.0	54/83	80/92	78/107	98/161	78/111
Weighted Average for	Bridge	104	109	112	119	111
W Approach	50.0	204	269	148	137	190
E Approach	50.0	152	136	103	110	125
Weighted Average for and Approaches	_	120	129	115	120	121
E Bound Roadwa	ıy					
		Profile	meter Roug	hness Value	- R inches	per mile
Item	Length	Traffi	c Lane	Passin	g Lane	Average
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Span 1	29.6	155	131	131	148	141
2	45.7	86	92	95	123	99
3	44.8	122	119	134	132	127
4	78.7	87	100	85	94	92
5	67.8	78	82	92	69	80
6/7	56.8/34.0	112/114	93/83	91/87	79/72	94/89
Weighted Average for	Bridge	102	98	99	98	99

Location <u>I 75 over I 375</u>

Remarks Spans and joints numbered from West to East. Joint No. and Type: #1 - Expansion; #2 - Expansion; #3 - Construction; #4 - Expansion; #5 - Expansion; #6 - Steel Expansion; #7 - Expansion; #8 - Steel Expansion: #9 - Expansion; #10 - Construction; #11 - Expansion; Bituminous Approaches. #12 - Expansion.

130

177

113

50.0

153

147

109

159

136

109

158

154

110

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION

Research Project 61 F-65

ridge No. <u>S25 of 82251</u> te Measured <u>6-23-64</u> tal Structures (separate tagle Structure Yes X	Number for each road	of Spans <u>9</u> way) Y		ngth (includi No X	ng approach	es) 994.6
N Bound Roadw	ay T			T - 1	77 3	* T
				ghness Value		per mile
İtem	Length		c Lane		g Lane	Average
		O.W.P.	I.W.P.	O. W. P.	I.W.P.	
Span 1	96.8		154			154
2	99.0		174			174
3	112,7		148			148
4	107.6		129			129
5	101.0		117			117
6	84.6		110			110
Weighted Average for	r Bridge	,				
Approach						
Approach						
Weighted Average for and Approache						PIPELIPALA PADEN DOMINIO COPIDA
N Bound Roady	vay			ominimization seattore at our experies only—the		
		Profile	meter Rou	ghness Value	e - R inches	per mile
Item	Length	Traffic	c Lane	Passin	g Lane	Average
- Control of the Cont		O.W.P.	I.W.P.	O.W.P.	I.W.P.	<u> </u>
Span 7	43.6		161	·		161
8	93.6		146			146
9	55.7		169			169
Weighted Average fo	r Bridge		143			143
S Approach	100.0		170			170
N Approach	100.0		158			158
Weighted Average for and Approache			147			147
emarks					and remove considerable that will be desired as a second and a second as a second as a second as a second as a	

PROFILOMETER BRIDGE ROUGHNESS MEASUREMENTS TEST RESULT TABULATION Page 20 Mea Project 61 Fe65

Research Project 61 F-65

Bridge No. <u>S25 of 82251</u> Date Measured <u>6-23-64</u>					ng approach	nes) <u>973.9</u>
Dual Structures (separate	for each roa	dway)	čes 🔲	No X		
Single Structure Yes X	No 🗌	Method	of Finishing	g <u>Hand</u>		
N Bound Roadw	ay					ander kannen er
		Profile	ometer Rou	ghness Value	e - R inches	per mile
Item	Length	Traffi	c Lane	Passir	g Lane	A
		O.W.P.	I. W. P.	O. W. P.	I.W.P.	Average
Span 1	96.0	128				128
2	99.3	182				182
3	110.0	162				162
4	99.3	142				142
5	95.2	109				109
6	82.2	106				106
Weighted Average for	Bridge					
Approach						
Approach						
Weighted Average for and Approache						
Bound Roadw	/ay					
		Profile	meter Rou	ghness Value	- R inches	per mile
Item	Length	Traffi	c Lane	Passin	g Lane	
		O.W.P.	I.W.P.	O.W.P.	I.W.P.	Average
Span 7	43.2	116				116
8	90.8	144				144
9	57.9	195				195
					<u> </u>	
Weighted Average for	Bridge	143			THE CONTROL OF THE CO	143
S Approach	100.0	172		mye mano-ashermbemoccamantemesmennesme		172
N Approach	100.0	173	<u> </u>			173
Weighted Average for and Approache	Bridge	149			The state of the s	149
Remarks Spans and join #1, 3, 12 - Constru					7, 9, 11, 1	3 - Expansion
Bridge built or	n a curve mak	ing wheel pa	ths differer	nt lengths.		
Concrete Appr	oaches.		P. continue 25-	d on next pag	ge)	

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

Bridge No. <u>\$26 of 82251</u>	Location	<u> 175 ramp</u>	over NB I	75 to WB I 9	94 ramp	
Date Measured 6-23-64	Number	of Spans <u>9</u>	Lei	ngth (includi	ng approach	es) <u>782.3</u>
Dual Structures (separate	for each road	way) Y	es 🔲	No X		
Single Structure Yes X	No 🔲	Method o	of Finishing	g Hand		
NBound Roadwa	У					
COLLAND AND MANAGEMENT AND		Profile	meter Rou	ghness Value	e - R inches	per mile
Item	Length	Traffic	Lane	Passin	g Lane	Arrongero
		O.W.P.	I.W.P.	O. W. P.	I.W.P.	Average
Span 1	53.6		105			105
2	52.0		155			155
3	54.3		109			109
4	64.3		129			129
5	64.2		118			118
6	64.2		90			90
Weighted Average for	Bridge					
Approach						
Approach						
Weighted Average for and Approaches	_					
N Bound Roadwa	y	•			<u> </u>	
		Profile	meter Rou	ghness 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
Span 7	60.7		153			153
8	85.3		130			130
9	70, 3		151			151
					·	
Weighted Average for	Bridge	. ,34,02.004.00.00	127		,	127
S Approach	100.0		145	_		145
N Approach	100.0		175			175
Weighted Average for and Approaches	_		136	**************************************		136
Remarks Spans and join	ts numbered 1	rom South t		Joints #1,2,		
Expansion: #3 - Constru						g wheel paths
different lengths. No co					ch is part o	f S30 of 82251.
Concrete Approaches.	(O, W	.P. continu	ed on next	page)	·	

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

	101011	Over NP I	<u>75 to WB I 9</u>	<u>4 ramp</u>	
Number					nes) 782.3
			No X		·
No 🗌	Method (of Finishing			
ay					
	Profile	meter Rou	ghness Value	- R inches	per mile
Length	Traffi	c Lane	Passin	g Lane	
	O.W.P.	I. W. P.	O.W.P.	I.W.P.	Average
53,4	138				138
54.1	164				164
54.3	151				151
62.8	131		·		131
62.7	106				106
62.8	120				120
Bridge					
_					
937					
ay I					
ay	Profile	meter Roug	ghness Value	e - R inches	per mile
Length	Profile Traffic			e - R inches	
	<u></u>			***************************************	per mile Average
	Traffic	Lane	Passin	g Lane	
Length	Traffic	Lane	Passin	g Lane	Average
Length	Traffic O.W.P.	Lane	Passin	g Lane	Average
Length 62.2 100.4	Traffic O.W.P. 87 140	Lane	Passin	g Lane	Average 87 140
Length 62.2 100.4	Traffic O.W.P. 87 140	Lane	Passin	g Lane	Average 87 140
Length 62.2 100.4 69.6	Traffic O.W.P. 87 140 159	Lane	Passin	g Lane	Average 87 140 159
Length 62.2 100.4 69.6 Bridge	Traffic O.W.P. 87 140 159	Lane	Passin	g Lane	Average 87 140 159
Length 62.2 100.4 69.6 Bridge 100.0	Traffic O.W.P. 87 140 159	Lane	Passin	g Lane	Average 87 140 159 133 170
Length 62.2 100.4 69.6 Bridge 100.0 100.0	Traffic O.W.P. 87 140 159	Lane	Passin	g Lane	Average 87 140 159
Length 62.2 100.4 69.6 Bridge 100.0	Traffic O.W.P. 87 140 159	Lane	Passin	g Lane	Average 87 140 159 133 170
Length 62.2 100.4 69.6 Bridge 100.0 100.0 Bridge	Traffic O.W.P. 87 140 159 133 170 120	Lane	Passin	g Lane	Average 87 140 159 133 170 120
Length 62.2 100.4 69.6 Bridge 100.0 100.0 Bridge	Traffic O.W.P. 87 140 159 133 170 120	Lane	Passin	g Lane	Average 87 140 159 133 170 120
	Length 53,4 54,1 54,3 62,8 62,7 62,8 Bridge	for each roadway) Y No Method of ay Profile Traffic O.W.P. 53,4 138 54,1 164 54,3 151 62,8 131 62,7 106 62,8 120 Bridge Bridge	for each roadway) Yes	No Method of Finishing Hand	No