

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	APPRECIATION	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENT	vii
	LIST OF TABLES	xi
	LIST OF FIGURES	xii
	LIST OF ABBREVIATIONS	xiii
	LIST OF APPENDICES	xiv
1	INTRODUCTION	1
	1.1 Background of the Study	1
	1.2 Problem Statement	2
	1.3 Objective of Research	3
	1.4 Scope of Research	3
	1.5 Significant of Study	4

2	LITERATURE REVIEW	5
2.1	Introduction	5
2.2	Asphalt Concrete	6
2.3	Pavement Roughness	6
2.3.1	International Roughness Index (IRI)	7
2.4	Pavement Serviceability	8
2.4.1	Slope Variance	9
2.5	Distress in Flexible Pavement	11
2.5.1	Deformation	11
2.5.1.1	Corrugation	11
2.5.1.2	Depressions	12
2.5.1.3	Rutting	12
2.5.1.4	Shoving	13
2.5.2	Cracks	14
2.5.2.1	Crocodile Cracks	14
2.5.2.2	Longitudinal Cracks	15
2.5.2.3	Transverse Cracks	16
2.5.2.4	Block Cracks	17
2.5.2.5	Diagonal Cracks	18
2.5.3	Surface Defect	18
2.5.3.1	Delamination	19
2.5.3.2	Flushing or Bleeding	19
2.5.3.3	Polishing	20
2.5.3.4	Raveling	21

	2.5.3.5	Stripping	22
	2.5.3.6	Pothole	23
	2.6	Relationship between Serviceability and Roughness	24
	2.7	Previous Study on Relationship between PSI and IRI	25
3		METHODOLOGY	27
	3.1	Introduction	27
	3.2	Site Location	27
	3.3	Operational Framework	29
	3.4	Test Method and Instrument	29
	3.4.1	Surface Roughness Measurement	30
	3.4.2	Pavement Serviceability Measurement	33
	3.4.2.1	Rutting Depth Measurement	33
	3.4.2.2	Patching Area Measurement	34
	3.4.2.3	Cracking Measurement	34
4		RESULTS AND ANALYSIS	35
	4.1	Introduction	35
	4.2	Test Data and Results	36
	4.2.1	Surface Roughness Data	36
	4.2.2	Present Serviceability Index Data	38
	4.2.2.1	Rutting Depth	38
	4.2.2.2	Patching Area	40
	4.2.2.3	Cracking	42

4.2.2.4	Slope Variance	44
4.2.2.5	Calculation of PSI	44
4.3	Relationship Between International Roughness Index (IRI) and Present Serviceability Index (PSI)	45
5	CONCLUSION AND RECOMMENDATION	49
5.1	Introduction	49
5.2	Conclusion	49
5.3	Recommendations	50
	REFERENCES	51
	APPENDICES A-D	53-100

LIST OF TABLES

TABLE NO.	TITLE	PAGE
4.1	International Roughness Index (IRI)	37
4.2	Rutting Depth Data	39
4.3	Patching Area Data	41
4.4	Length of Cracking Data	43
4.5	Calculated of IRI and PSI Data	46

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
2.1	IRI Scale	8
2.2	Pavement Serviceability versus time or Traffic	10
2.3	Depression in Flexible Pavement	12
2.4	Rutting in Flexible Pavement	13
2.5	Shoving in Flexible Pavement	13
2.6	The Pattern of Crocodile Cracks	15
2.7	Longitudinal Cracks	16
2.8	Transverse Cracks	17
2.9	Block Cracks	18
2.10	Flushing or Bleeding	20
2.11	Polishing	21
2.12	Raveling	22
2.13	Stripping	23
2.14	Pothole	24
3.1	Methodology Outline	28
3.2	Walking Profilometer	32
4.1	Scattered Data of IRI and PSI	47
4.2	Linear Relationship of IRI and PSI	48

LIST OF ABBREVIATIONS

IRI	International Roughness Index
PSI	Present Serviceability Index
Rd	Rutting Depth
C1	Crack Length
Sv	Slope Variance
Pa	Patching Area

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Photo During the Test	53
B	Apparatus of IRI Measurement	54
C	Surface Profile Obtained from Walking Profiler	56
D	IRI Report	71