

TABLE OF CONTENTS

APPROVAL SHEET	i
INTELLECTUAL PROPERTY STATEMENT FORM	ii
ABSTRACT.....	iii
PREFACE	iv
TABLE OF CONTENTS	v
LIST OF FIGURE.....	viii
LIST OF TABLE	ix
LIST OF APPENDIX	xi
TERMINOLOGY	xii
CHAPTER I INTRODUCTION	1
I. 1 Research Background	1
I. 2 Problems Identification.....	3
I. 3 Research Objectives.....	3
I. 4 Research Limitations	3
I. 5 Benefits of Research	4
I. 6 Writing Systematics	4
CHAPTER II LITERATURE REVIEW.....	6
II.1 Lean Manufacturing.....	6
II.2 Types of Waste	6
II.3 Flow Map	7
II.4 Operation Process Chart	7
II.5 Value Stream Mapping	7
II.6 Process Activity Mapping.....	11
II.7 Fishbone Diagram.....	12
II.8 Plant Layout Planning.....	12

II.9	Layout Types Based on Material Flow System	12
II.10	Spaghetti Diagram.....	13
II.11	Distance Measurement	14
II.12	Activity Relationship Chart.....	15
II.13	Area Allocation Diagram	15
	CHAPTER III RESEARCH METHODOLOGY	16
III.1	Conceptual Model.....	16
III.2	Problem Solving Systematic	18
III.2.1	Data Collecting and Processing Stage.....	18
III.2.2	Proposal and Analysis of Proposal.....	19
	CHAPTER IV COLLECTING AND PROCESSING DATA	20
IV.1	Collecting Data	20
IV.1.1	Research Object.....	20
IV.1.2	Description of Assembly Process	20
IV.1.3	Operators' Working Time	28
IV.1.4	Existing Layout and Spaghetti Diagram.....	28
IV.1.5	Data of Transportation Time	29
IV.2	Data Processing	29
IV.2.1	Value Stream Map (Current State)	29
IV.2.2	Process Activity Map (Current State).....	30
IV.3	Identify the Causes of Waste Transportation Using a Fishbone Diagram.....	32
IV.4	Designing Improvement	33
IV.4.1	Proposed Improvement to the Root Causes of Transportation Waste	33
IV.4.2	Calculating Distance of Material Movement between Workstations .	33
IV.4.3	Activity Relationship Chart.....	34

IV.4.4 Area Allocation Diagram.....	35
IV.4.5 Specification and Allowance of Material Handling Equipment.....	36
IV.4.6 Area Requirement.....	37
IV.4.7 Matrix Element Layout.....	38
IV.4.8 Addition of Facilities	39
IV.4.9 Proposed Layout and Spaghetti Diagram of Proposed Layout.....	42
IV.4.10 Material Travel Distance	43
IV.4.11 Value Stream Mapping Future State	43
IV.4.12 Process Activity Mapping Future State	43
CHAPTER V ANALYSIS.....	45
V.1 Analysis of Value Stream Map	45
V.2 Analysis of Process Activity Map.....	46
V.3 Analysis of Proposed Layout	46
V.4 Advantages and Disadvantages of Proposal	48
CHAPTER VI CONCLUSION AND SUGGESTION.....	49
VI.1 Conclusion	49
VI.2 Suggestions	49
REFERENCE.....	50
APPENDIX.....	52