

TABLE OF CONTENT

FINAL PROJECT	i
ENDORSEMENT	ii
DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENT	vii
LIST OF TABLES	xi
LIST OF FIGURES	xiii
ABSTRACT.....	xvii
INTISARI.....	xviii
CHAPTER 1 INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	4
1.3 Design Objectives.....	4
1.4 Design Scopes	5
1.5 Design Benefits	5
CHAPTER 2 LITERATURE REVIEW	6
2.1 Port.....	6
2.2 Coal Terminal for Self-Importance (<i>Terminal untuk Kepentingan Sendiri</i>). 7	
2.3 Coal Loading System	8
2.4 Coal Unloading System.....	15
2.5 Integrated Coal Port Main Plan.....	20
2.6 Coal Transshipment	20
2.7 Mother Vessel	24
2.8 Vessel Traffic Service (VTS).....	27
2.9 Jetty	28
2.10 PLAXIS.....	32
CHAPTER 3 THEORETICAL BASIS	33
3.1 Entrance Channel Depth	33
3.2 Entrance Channel Width	34

3.3 Port Basin	36
3.3.1 Turning basin	36
3.3.2 Port basin depth.....	37
3.3.3 Port basin calmness	37
3.4 Dock	38
3.4.1 Jetty elevation.....	38
3.4.2 Loads	39
3.4.3 Fender design	46
3.4.5 Pile of jetty	51
3.4.6 Slope stability analysis using PLAXIS	58
3.5 Coal Loading and Unloading Facility	61
3.5.1 Belt conveyor	61
3.5.2 Barge	65
3.5.3 Floating crane.....	66
3.6 Coal Yard	67
CHAPTER 4 DESIGN METHODOLOGY	71
4.1 Design Location	71
4.2 Flowchart	75
4.3 Data Collection.....	76
4.3.1 Coal loading and unloading activity	76
4.3.2 Bathymetry map	76
4.3.3 Soil data.....	76
4.3.4 Tidal data.....	77
4.3.5 Ship characteristic	77
4.4 Data Analysis	77
4.4.1 Coal loading and unloading	77
4.4.2 Bathymetry map	81
4.4.3 Soil data.....	82
4.4.4 Tidal data.....	85
4.4.5 Ship characteristic	86
4.5 Analytical Methodology.....	88

4.5.1 Main coal port criteria	88
4.5.2 Port location determination	89
4.5.3 Port facility	91
4.6 Coal Port Main Planning on Land.....	92
4.6.1 Coal transportation	92
4.6.2 Ship specifications	94
4.6.3 Loads	94
4.6.4 Entrance channel depth	104
4.6.5 Entrance channel width	105
4.6.6 Port basin.....	105
4.6.7 Jetty head.....	106
4.6.8 Jetty elevation.....	107
4.6.9 Fender design	108
4.6.10 Pile of jetty design.....	109
4.6.11 Coal yard	114
4.6.12 Coal loading productivity.....	116
4.7 Slope Stability Using PLAXIS	117
4.7.1 Modeling input in PLAXIS	117
4.7.2 Slope stability analysis	120
4.7.3 Result of slope stability analysis	125
4.8 Ship to Ship Transfer System.....	126
4.8.1 Coal transportation	126
4.8.2 Transshipment working area	127
4.8.3 Coal loading productivity.....	128
CHAPTER 5 RESULT AND DISCUSSION	129
5.1 Integrated Coal Port of South Kalimantan Planning.....	129
5.2 Slope Stability Analysis	129
5.3 Integrated Coal Port on Land	131
5.3.1 Entrance channel depth	133
5.3.2 Entrance channel width	133
5.3.3 Port basin.....	134

5.3.4 Jetty head and mooring facility	135
5.3.5 Jetty elevation.....	136
5.3.6 Pile of jetty	137
5.3.7 Coal yard	137
5.3.8 Coal loading productivity.....	138
5.4 Ship to Ship Transfer (STS).....	138
5.4.1 Transshipment point.....	138
5.4.2 Coal loading productivity.....	140
5.5 Investment Cost Analysis.....	140
5.5.1 Ship to ship transfer system	140
5.5.1 Coal port on land.....	140
5.6 Comparison Between Coal Port on Land and Using STS System.....	141
CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS.....	146
6.1 Conclusions	146
6.2 Recommendations	147
BIBLIOGRAPHY	148
APPENDIX	152