

GEOTECHNICAL ENGINEERING EXPLORATION
SEISMIC RETROFIT OF KAHOLO BRIDGE
HAWAII BELT ROAD, PROJECT NO. BR-19-2(072)
DISTRICT OF HAMAKUA, ISLAND OF HAWAII
W.O. 8063-00 JULY 12, 2024

TABLE OF CONTENTS

	Page
SUMMARY OF FINDINGS AND RECOMMENDATIONS.....	iii
1. GENERAL.....	1
1.1 Project Considerations.....	1
1.2 Purpose and Scope	2
2. SITE CHARACTERIZATION.....	4
2.1 Regional Geology	4
2.2 Site Description.....	5
2.3 Subsurface Conditions.....	5
2.4 Seismic Design Considerations	6
2.4.1 Earthquakes and Seismicity	7
2.4.2 Liquefaction Potential.....	8
2.4.3 Soil Profile.....	9
3. DISCUSSION AND RECOMMENDATIONS	11
3.1 Stiffness Modeling Analysis	12
3.2 Micropiles.....	14
3.2.1 Lateral Load Resistance	15
3.2.2 Micropile Load Test Program	15
3.2.3 Micropile Construction Considerations.....	17
3.3 Soil Nails.....	17
3.3.1 Soil Nailed Wall.....	18
3.3.2 Soil Nail Installation.....	18
3.3.3 Soil Nail Testing	19
3.3.4 Shotcrete Facing	19
3.3.5 Drainage	19
3.4 Site Preparation	20
3.5 Cut and Fill Slopes.....	21
3.6 Design Review.....	21
3.7 Post-Design Services/ Services During Construction	22
4. LIMITATIONS.....	23
CLOSURE.....	25
PLATES	
Project Location Map.....	Plate 1
Site Plan	Plate 2

TABLE OF CONTENTS

	Page
APPENDIX A	
Field Exploration.....	Pages A-1 and A-2
Soil Log Legend.....	Plate A-0.1
Soil Classification Log Key	Plate A-0.2
Rock Log Legend	Plate A-0.3
Logs of Borings.....	Plates A-1.1 thru A-4.3
APPENDIX B	
Seismic Shear Wave Velocity Test.....	Page B-1
Shear Wave Velocity Test Data.....	Plates B-1.1 thru B-1.4
APPENDIX C	
Laboratory Tests.....	Page C-1
Laboratory Test Data.....	Plates C-1 thru C-12
APPENDIX D	
Photographs of Core Samples.....	Plates D-1 thru D-8