



City of Lafayette

FINAL

Feasibility & Options Study for a Pedestrian & Bicycle Pathway Along the EBMUD Aqueduct ROW

PREPARED BY:

Alta Planning + Design

IN ASSOCIATION WITH:

Fehr & Peers

Mark Thomas & Company

PREPARED FOR:

City of Lafayette



Feasibility & Options Study for a Pedestrian & Bicycle Pathway Along the EBMUD Aqueduct ROW

FINAL

February 2012

Prepared by:

Alta Planning and Design

In Partnership with:

Fehr & Peers

Mark Thomas & Company

Prepared for:

City of Lafayette

This Study is funded by a Caltrans Community-Based Transportation Planning Grant.



Acknowledgements

Mayor and City Council

Carl Anduri, Mayor
Carol Federighi, Vice Mayor
Mike Anderson, Council Member
Brandt Andersson, Council Member
DonTatzin, Council Member

Technical Advisory Group

Chuck DeLeuw, Traffic Engineering Consultant
Leah Greenblat, City of Lafayette, Engineering
Tony Coe, City of Lafayette, Engineering
Keith Wayne, Caltrans
Beth Thomas, Caltrans
Sergio Ruiz, Caltrans
Deidre Heitman, BART
Jim Townsend, EBRPD
Andy Enos, EBMUD
Roberto Cortez, EBMUD
Lindy Chan, City of Lafayette, Planning
Ron Lefler, City of Lafayette, Public Works
Donna Feehan, City of Lafayette, Public Works
Jennifer Russell, City of Lafayette, Parks, Recreation
& Trails
Mike Hubbard, Lafayette Police Chief

Citizen Advisory Committee

Avon Wilson, Homeowners Council
Brian Smith, Homeowners Council
Bradley Crane, BPAC
Bruce Allan, BPAC
Sherrie Foley, Senior Services Commission
Carol Federighi, City Council
Larry Blodgett, Chamber of Commerce
Polly Bernson, Chamber of Commerce
Cindy Sevilla, Circulation Commission
Jeanne Atelivich, Planning Commission
Bob Cleaver, Design Review Commission
Mary-Jane Wood, Circulation Commission

Consultant Team

Alta Planning and Design Staff

Brett Hondorp, Principal
Lauren Ledbetter, Project Manager
Kristin Maravilla, Planner/Designer
Tony Salomone, GIS Analyst

Fehr and Peers Staff

Robb Rees, Principal
Ian Moore, Senior Associate
Brooke Dubose, Transportation Planner

Mark Thomas and Company Staff

Sasha Dansky, Principal
Shawn O'Keefe, Senior Engineer

This page intentionally left blank.

Table of Contents

1. Executive Summary	1-1
1.1 Study Area	1-1
1.2 Policy Context	1-1
1.3 Opportunities and Constraints	1-2
1.4 Preferred Pathway Design	1-4
1.5 Phasing	1-8
1.6 Construction and Maintenance Costs	1-9
1.7 Benefit-Cost Analysis	1-10
1.8 Funding Options	1-10
1.9 Next Steps	1-11
2. Introduction	2-1
2.1 Goals	2-2
2.2 Agency Coordination	2-5
2.3 Public Outreach	2-5
2.4 Study Organization	2-7
3. Policy Context and Design Standards	3-1
3.1 Policy Summary	3-1
3.2 Design Standards	3-4
4. Existing Conditions, Opportunities, and Constraints	4-1
4.1 Surrounding Land Uses	4-1
4.2 EBMUD Property Ownership and Associated Requirements	4-5
4.3 Impact to EBMUD Aqueduct ROW Access	4-7
4.4 Physical Site Conditions	4-7
4.5 Topographic and ROW Constraints	4-10
4.6 Roadway Crossings	4-13
4.7 Pathway Relationship to Adjacent Land Uses	4-30
4.8 Safety & Security Considerations	4-33
4.9 Environmental Constraints	4-36
5. Options Evaluation and Preferred Options	5-1
5.1 Project Alternatives	5-1
5.2 Study Area Pathway Segments	5-3
5.3 Summary of Pathway Design Options and Preferred Options	5-5
5.4 Segment 1: Risa Road to BART	5-12
5.5 Segment 2: BART to Oak Hill Road	5-34
5.6 Segment 3: Oak Hill Road to First Street	5-52
5.7 Segment 4: First Street to Brown Avenue	5-71
6. Funding and Maintenance Strategy and Benefit-Cost Analysis	6-1
6.1 Construction Cost Estimates	6-1
6.2 Maintenance and Operations Requirements and Costs	6-3
6.3 Benefit-Cost Analysis	6-9
6.4 Funding Sources	6-16

7. Phasing Plan and Next Steps7-1

 7.1 Phasing Plan..... 7-1

 7.2 Next Steps 7-4

Appendix A. Existing Plan Summary A-1

Appendix B. Property Ownership B-1

Appendix C. Roadway Improvement Measures.....C-1

Appendix D. Funding Sources D-1

Appendix E. Consolidated Comments on the Public Review Draft of the Feasibility StudyE-1

Table of Figures

Figure 1-1: Preferred Option1-5

Figure 1-2: Preferred Pathway Design Standard 1-6

Figure 2-1: Pathway Study Area 2-3

Figure 4-1: Surrounding Land Uses..... 4-3

Figure 4-2: Slopes along the EBMUD Aqueduct ROW within the Pathway Study Area 4-9

Figure 4-3: Potential Encroachment into Caltrans’ ROW West of Oak Hill Road.....4-13

Figure 4-4: Existing Volumes and Lane Configurations.....4-17

Figure 4-5: Future Volumes and Lane Configuration 4-18

Figure 4-6: Potential Access Points and Locations for Improved Security/Privacy from the EBMUD Aqueduct ROW4-31

Figure 5-1: Pathway Segments5-4

Figure 5-2: Preferred Pathway Design Standard..... 5-6

Figure 5-3: The Preferred Option: A Class I Bikeway/ADA-Accessible Pathway (Includes Roadway Crossing Improvements)..... 5-9

Figure 5-4: Pathway Segment 1 - Class I Bikeway/ADA-Accessible Pathway Alignment 5-17

Figure 5-5: Risa Road and Mt. Diablo Boulevard Crossing Improvements5-21

Figure 5-6: Private Drive Crossing Improvements.....5-24

Figure 5-7: Dolores Drive Crossing Improvements 5-27

Figure 5-8: Happy Valley Road Bicycle and Pedestrian Overcrossing5-31

Figure 5-9: Photo Simulation of Happy Valley Road Overcrossing (At-Grade Improvements by Others) 5-33

Figure 5-10: Pathway Segment 2 - Class I Bikeway/ADA-Accessible Pathway Alignment..... 5-39

Figure 5-11: Oak Hill Road Crossing Option 2 Along the State Route 24 Oak Hill Road Off-R5-40

Figure 5-12: Transition point from EBMUD ROW to Caltrans ROW along the SR 24 eastbound off-ramp at Oak Hill Road..... 5-41

Figure 5-13: Oak Hill Road Crossing Improvements5-43

Figure 5-14: Oak Hill Road North of SR 24: Existing and Proposed Cross Sections 5-44

Figure 5-15: Oak Hill Road South of SR 24: Existing and Proposed Cross Sections5-45

Figure 5-16: Plan View of Oak Hill Road at SR 24: Option 3.....5-46

Figure 5-17: Photo Simulation of Pathway Along the State Route 24 Oak Hill Road Off-Ramp.....5-51

Figure 5-18: Pathway Segment 3 - Class I Bikeway/ ADA-Accessible Pathway Alignment.....	5-55
Figure 5-19: First Street Crossing Improvements: Options 2, 3 and 4.....	5-58
Figure 5-20: First Street/SR 24 On-Ramp intersection showing Crossing Options 3 and 4.....	5-59
Figure 5-21: Constraints associated with construction of a Pedestrian/Bicycle Overcrossing at First Street	5-60
Figure 5-22: Pathway Segment 4 - Class I Bikeway/ ADA-Accessible Pathway Alignment.....	5-73
Table 7-1 Cost Estimates by Phase	7-2
Figure B-1: Study Area 1 Property Ownership (As of April 2010).....	B-3
Figure B-2: Study Area 2 Property Ownership (As of April 2010).....	B-4
Figure B-3: Study Area 3 Property Ownership (As of April 2010).....	B-5
Figure B-4: Study Area 4 Property Ownership (As of April 2010).....	B-6
Figure B-5: Study Area 5 Property Ownership (As of April 2010).....	B-7

Table of Tables

Table 1-1: Cost Estimates by Phase.....	1-8
Table 1-2: Estimated Construction and Maintenance Costs by Phase.....	1-10
Table 3-1: Class I Bikeway Design Standards.....	3-6
Table 3-2: Multi-Use Pathway Design Standards	3-7
Table 3-3: ADA-Accessible Pathway Design Standards	3-8
Table 4-1: Stopping Sight Distance for Vehicles	4-13
Table 4-2: Police-Reported Pedestrian or Bicyclist-Related Collisions in Pathway Study Area (2005-2009).....	4-28
Table 4-3: Existing and Future LOS and Delays	4-29
Table 5-1: Cost Summary for Preferred and Other Considered Options for Segment 1 Risa Road to BART	5-13
Table 5-2: Segment 1 Cost Estimate for an Unpaved Multi-Use Pathway.....	5-14
Table 5-3: Segment 1 Cost Estimate for a Class I Bike Path/ADA-Accessible Pathway	5-15
Table 5-4: Cost Estimate for Risa Road and Mt. Diablo Boulevard Improvements.....	5-22
Table 5-5: Cost Estimate for Private Drive Improvements.....	5-25
Table 5-6: Cost Estimate for Dolores Drive Improvements.....	5-28
Table 5-7: Cost Estimate for Happy Valley Road At-Grade Crossing Improvements	5-29
Table 5-8: Cost Estimate for Pedestrian/Bicycle Overcrossing at Happy Valley Road.....	5-30
Table 5-9: Cost Summary for Preferred and Other Considered Options for Segment 2 BART to Oak Hill Road	5-34
Table 5-10: Segment 2 Cost Estimate for an Unpaved Multi-Use Pathway.....	5-36
Table 5-11: Segment 2 Cost Estimate for a Class I Bikeway/ADA-Accessible Pathway along the SR 24 Off-Ramp (without the BART Flyover).....	5-37
Table 5-12: Cost Estimate for BART Flyover	5-38
Table 5-13: Oak Hill Road/SR 24 Eastbound Off-Ramp Cumulative PM Peak Hour Analysis	5-49
Table 5-14: Cost Estimate for Oak Hill Road Crossing Improvements.....	5-50

FINAL

Table 5-15: Cost Summary for Preferred and Other Considered Options for Segment 3 Oak Hill Road to First Street 5-52

Table 5-16: Segment 3 Cost Estimate for an Unpaved Multi-Use Pathway 5-53

Table 5-17: Segment 3 Cost Estimate for a Class I Bikeway/ADA-Accessible Pathway 5-53

Table 5-18: First Street Traffic Analysis Under Existing Conditions 5-67

Table 5-19: First Street Traffic Analysis Under Cumulative Conditions..... 5-68

Table 5-20: Cost Estimate for the First Street Crossing Improvements..... 5-69

Table 5-21: Cost Summary for Preferred and Other Considered Options for Segment 4 First Street to Brown Avenue..... 5-71

Table 5-22: Segment 4 Cost Estimate for an Unpaved Multi-Use Pathway 5-72

Table 5-23: Segment 4 Cost Estimate for a Class I Bikeway/ ADA-Accessible Pathway 5-72

Table 6-1: Summary of Construction Cost Estimates for the Preferred Options 6-2

Table 6-2: Maintenance Requirements Required by EBMUD Revocable Landscaping License Agreement 6-5

Table 6-3: Other Maintenance Requirements 6-6

Table 6-4: Maximum Estimated Maintenance Costs..... 6-8

Table 6-5: Daily Bicycle Commuters and Daily Adult Cyclists Under Existing Conditions 6-13

Table 6-6: New Daily Bicycle Commuters, Daily Adult Cyclists, and Daily Pedestrians Attributed to the Pathway..... 6-13

Table 6-7: Benefit-Cost Analysis; Total Annual Benefits for Pedestrian and Bicyclists..... 6-14

Table 6-8: Net Present Value Benefit-Cost Results 6-15

Table B-1: Property Ownership (As of April 2010) B-1

Table C-1: Roadway Improvement Measures for Pathway Crossings..... C-1

Table D-1: Funding Acronyms and Resources D-1

Table D-2: Funding Sources..... D-2