



STREET IMPROVEMENT PROJECTS

at

BERKELEY MARINA

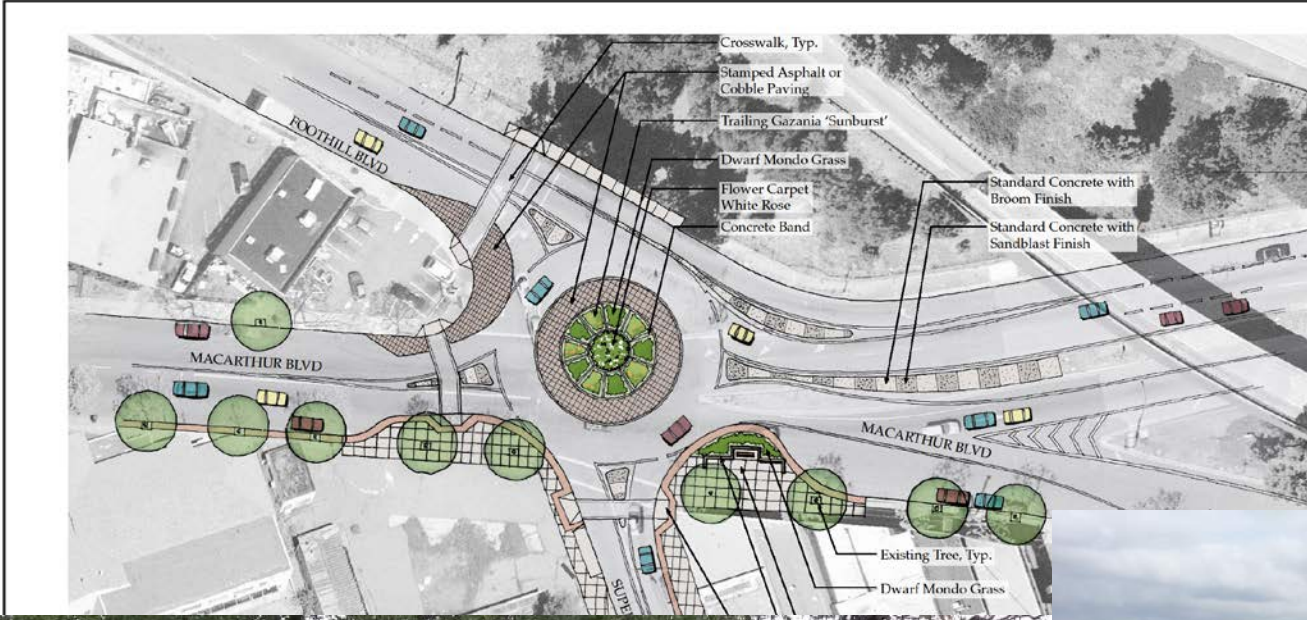
Nelson Lam, PE, QSD
Associate Civil Engineer
Department of Parks, Recreation & Waterfront

PUBLIC INFORMATION MEETING

April 28, 2018



Parks, Recreation & Waterfront





PROPOSED STREET IMPROVEMENTS

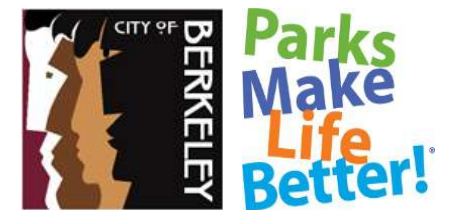
1. University Avenue Lane Reconfiguration
2. Spinnaker Way Pavement Rehabilitation & Drainage Improvements
3. Marina Boulevard Pavement Rehabilitation



Street	Length	Lane Mile
University	1,850'(4)	1.4
Spinnaker	1,500'(2)	0.57
Marina	2,250'(2)	<u>0.89</u>
Project Total		2.86

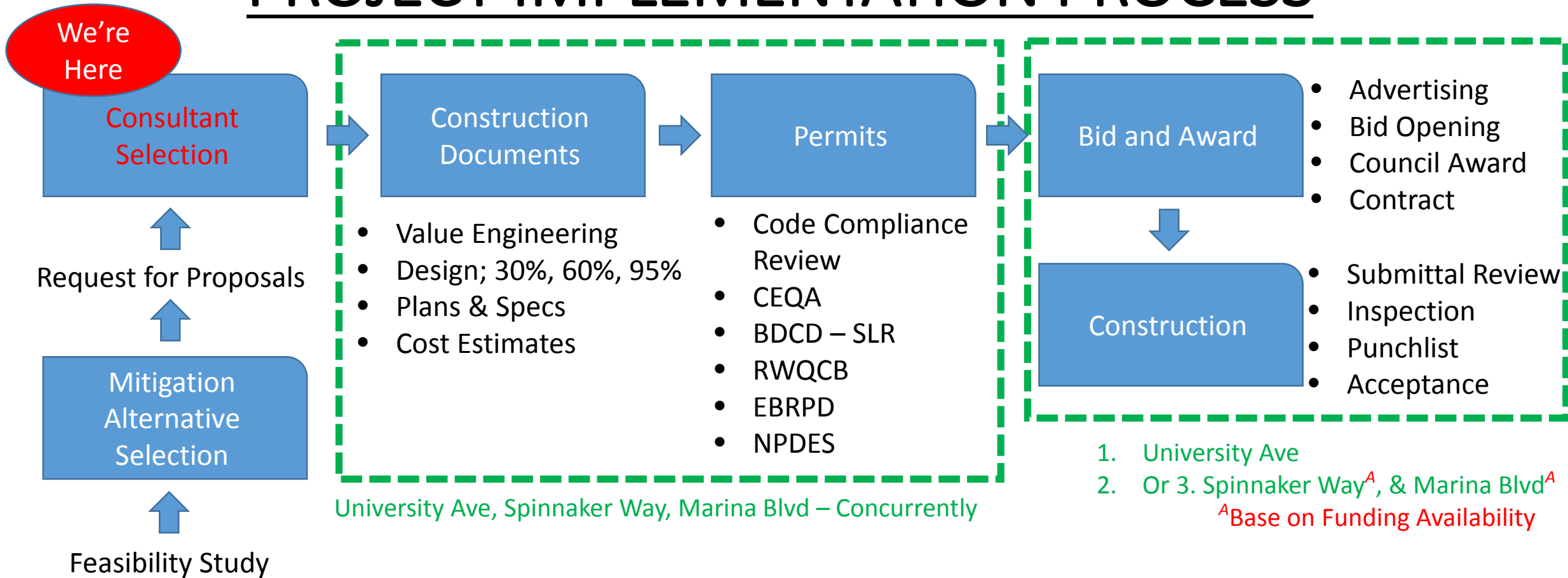
Total Area: 253,950 sq-ft; 5.83 acre

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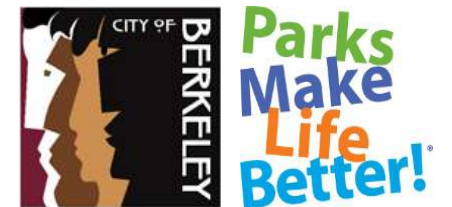


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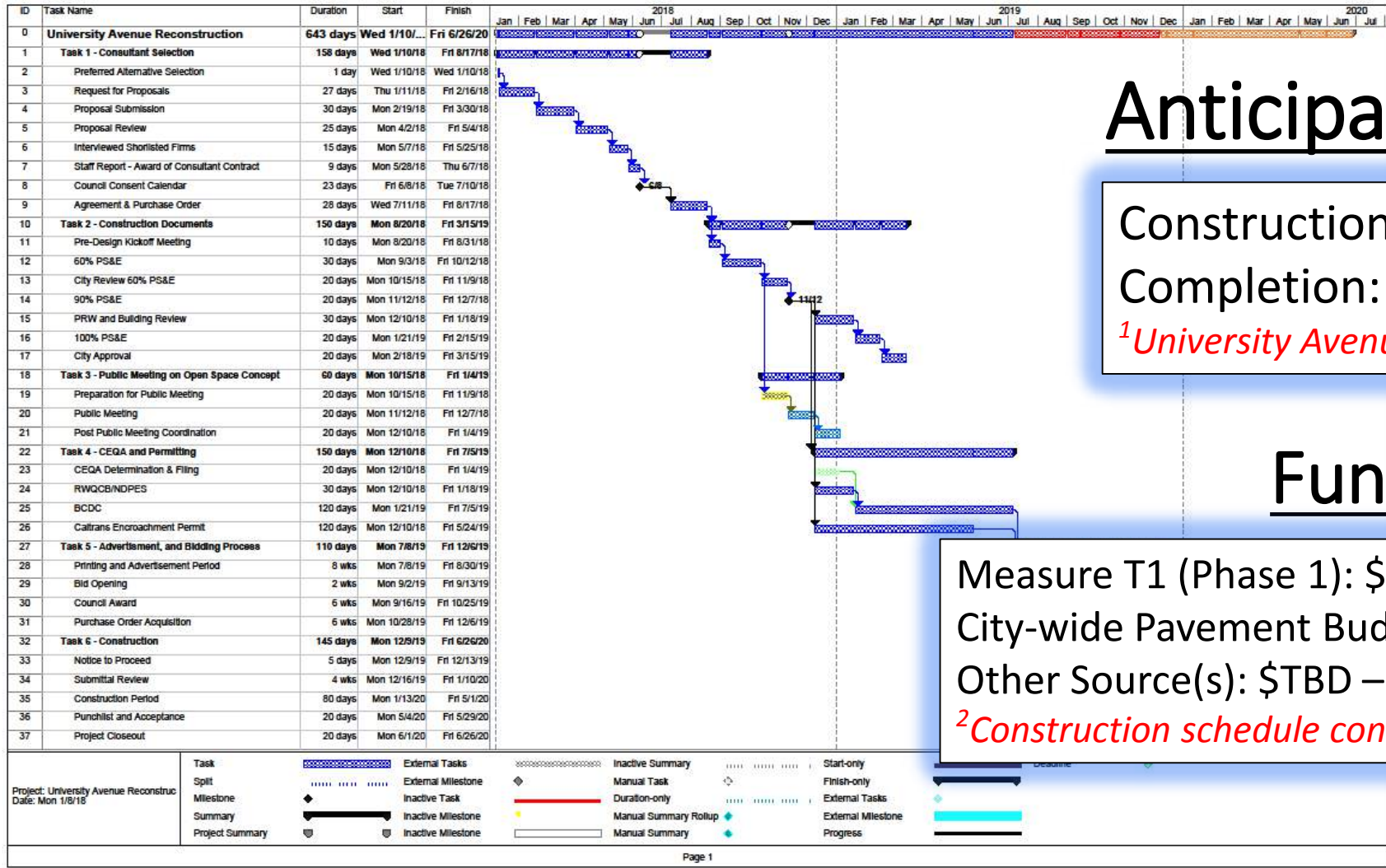
PROJECT IMPLEMENTATION PROCESS



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Anticipated Schedule

Construction: Beginning of 2020¹
 Completion: Before 4th of July, 2020¹
¹University Avenue Lane Reconfiguration

Funding

Measure T1 (Phase 1): \$3.5M – University Ave
 City-wide Pavement Budget: \$TBD – Spinnaker Way²
 Other Source(s): \$TBD – Marina Blvd²
²Construction schedule contingent upon funding availability



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BERKELEY MARINA

- 1,100 Boat Slips – 10% Liveaboard Residents
- DoubleTree Hotel – 378 Rooms/13,000 sq-ft of meeting spaces
- Parks: Cesar Chavez, Shorebird Horseshoe, Adventure Playground, Nature Center, McLaughlin Eastshore State Park
- Clubs: Cal Adventures, Cal Sailing, Berkeley Yacht
- Restaurants: Skates, HS Lordship, Hana Japan, The Hornblower Cruises & Event
- Ferry Services – Tideline, Prop SF/Genentech
- Special Events – 4th of July, Bay Festival, Kite Festival...
- Compost Program

University Ave - the only corridor for the Marina

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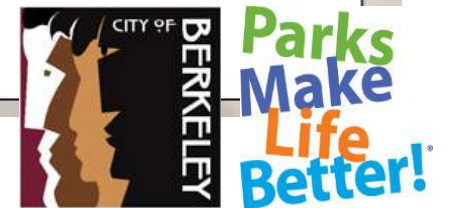


UNIVERSITY AVENUE LANE RECONFIGURATION



University Ave - the only corridor for the Marina

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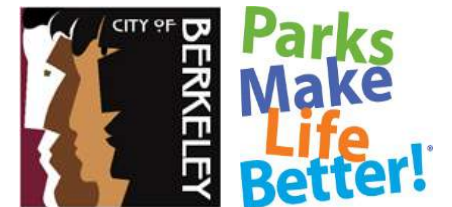
UNIVERSITY AVENUE LANE RECONFIGURATION



University Avenue

CALTRANS

\$39.8 million (SB1) project will raise or replace bridge to meet vertical clearance standards.



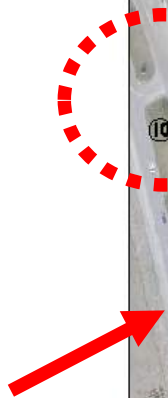
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UNIVERSITY AVENUE LANE RECONFIGURATION



EBRPD
Brickyad Development



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UNIVERSITY AVENUE LANE RECONFIGURATION



Pavement Condition Index = **9** (FAILED); New AC PCI= 100)
*Average PCI for all streets in Marina is at **28** (VERY POOR)*

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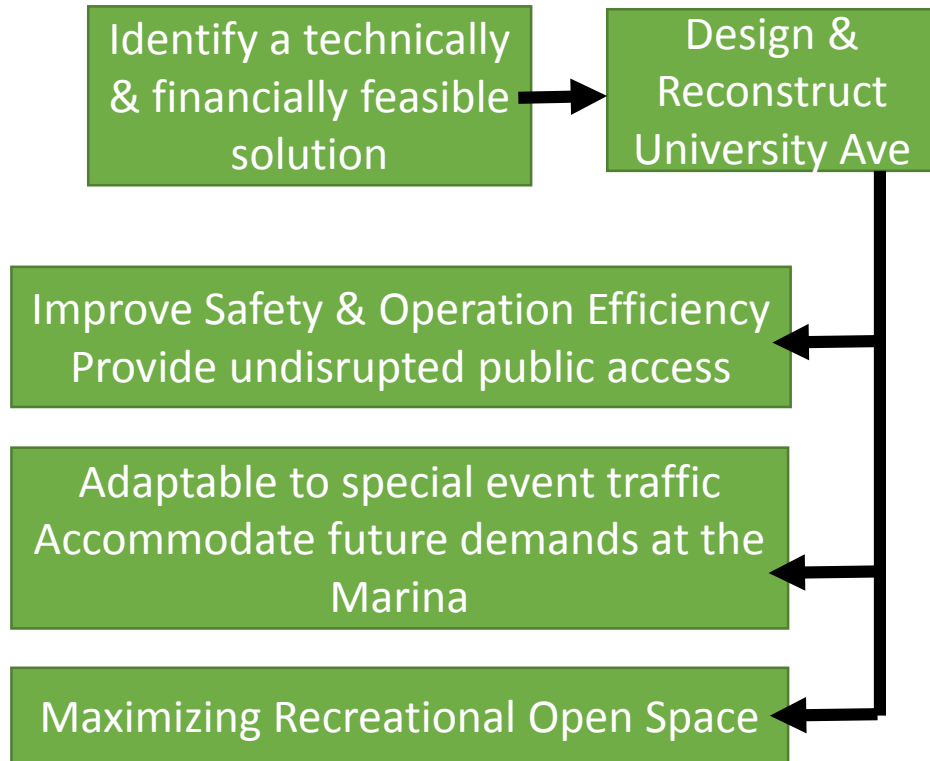


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UNIVERSITY AVENUE LANE RECONFIGURATION

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE

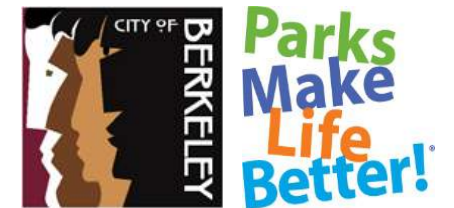
Goal of the Study



Design Criteria

- Traffic Study Recommendation (Year 2030 Projection)
- Pavement Evaluation
(Full Depth Reclamation vs. Conventional)
- Minimize Utility Impacts (Sewer Lift Station)
- Compliance with design standards (Caltrans, AASHTO)
- Design Tidal Elevation (BCDC Sea Level Rise, ACFCD)
- Stormwater Quality Requirements (C3)

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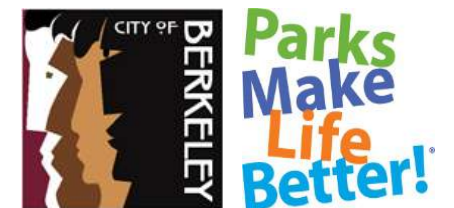
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UNIVERSITY AVENUE LANE RECONFIGURATION

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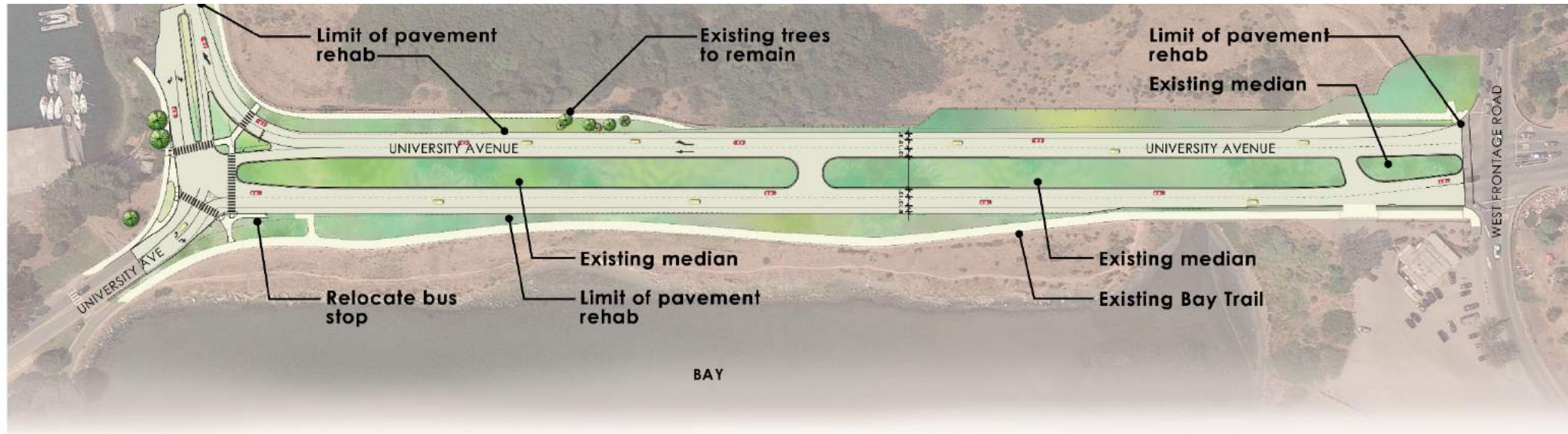
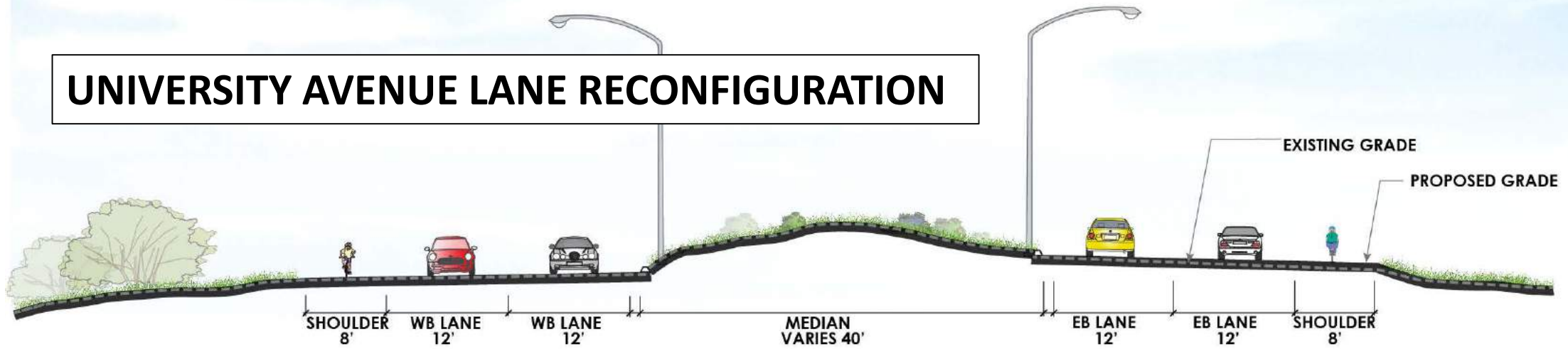
Consideration	Alternative A	Alternative B	Alternative C	Alternative D
Description	Rehabilitate in current alignment	Rehabilitate and realign EB and WB lanes to northerly side of right-of-way	Rehabilitate and realign EB and WB lanes to the north side of right-of-way	Rehabilitate and realign EB and WB lanes to the north side of right-of-way
Number of Lanes (total)	4	2 (shldr used for events)	4	3 (median lane for events)
Paved Surface Area to Maintain (SY)	15,040	11,744	15,047	14,457
Potential Recreational Space Created (Acres)	0	1.0	0.7	0.7
Ongoing Maintenance Cost	High	Low	Low	Low
Special Event Flexibility	Excellent	Poor	Excellent	Fair
Emergency Vehicle Access	Excellent	Poor	Excellent	Fair

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UNIVERSITY AVENUE LANE RECONFIGURATION



Plan

Rehab pavement per current roadway alignment.

FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVENUE ALTERNATIVE A

BERKELEY, CA.

UNIVERSITY AVENUE LANE RECONFIGURATION

PREFERRED DESIGN ALTERNATIVE

Project Scope

- Relocate eastbound lanes north to existing medians 4-lanes total (2 eastbound, 2 westbound)

- Construct Roundabout at Marina Boulevard

- Full-Depth Reclamation Asphalt Pavement Method



Estimated Project Cost: \$4.05M

Construction + Design/Inspection/PM Costs + Contingency

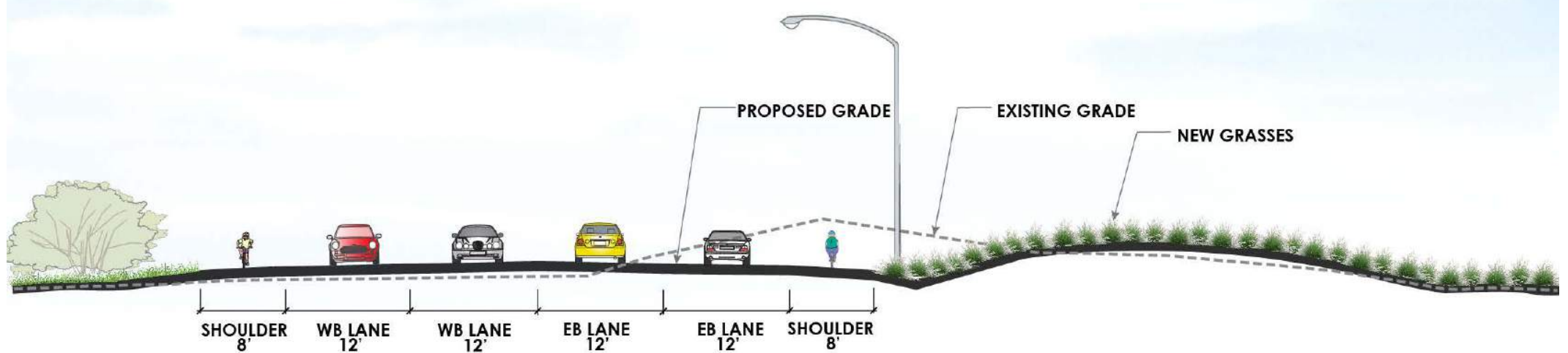
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UNIVERSITY AVENUE LANE RECONFIGURATION

Benefits of the Preferred Design Alternative



Re-aligned 4-Lanes

- Eliminating the need to remove the existing pier pile caps in the eastbound lanes
- Elimination of the median reduces the cost of landscaping and ongoing maintenance
- Creates an open space/ buffer between the roadway & Bay Trail occupied by the current eastbound lanes
- Provides highest level of flexibility for traffic control during special events
- Easily adaptable to the future improvements at University Avenue and West Frontage Road as a part of Caltrans and East Bay Regional Park District's upcoming projects

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UNIVERSITY AVENUE LANE RECONFIGURATION

Benefits of the Preferred Design Alternative



Modern Roundabout

- Opportunity to provide entry signage, and landscaping
- Improved traffic safety; better level of service; reduced delays
- Facilitates U-turns efficiently
- Traffic calming
- Better accommodation for bicyclists and pedestrians

Full-Depth Reclamation Pavement Rehabilitation

- Recycling of existing in-situ aggregate
- Reduction in trucking of material out and back into the project site
- Significant reduction in carbon footprint
- Reduction in construction costs of approximately 30% over conventional reconstruction

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SPINNAKER WAY PAVEMENT REHABILITATION & DRAINAGE IMPROVEMENTS

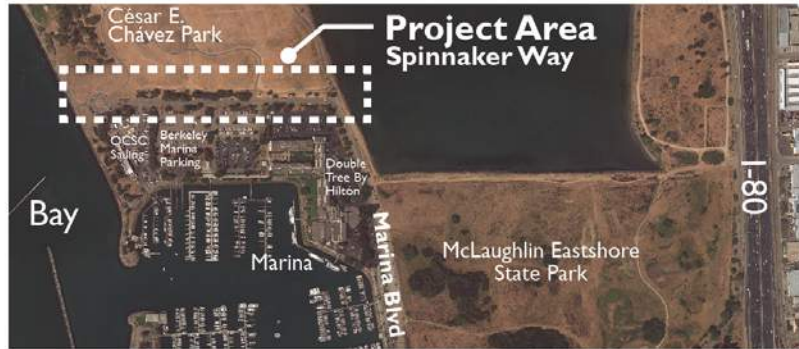


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SPINNAKER WAY PAVEMENT REHABILITATION & DRAINAGE IMPROVEMENTS



Site Context

Project Scope

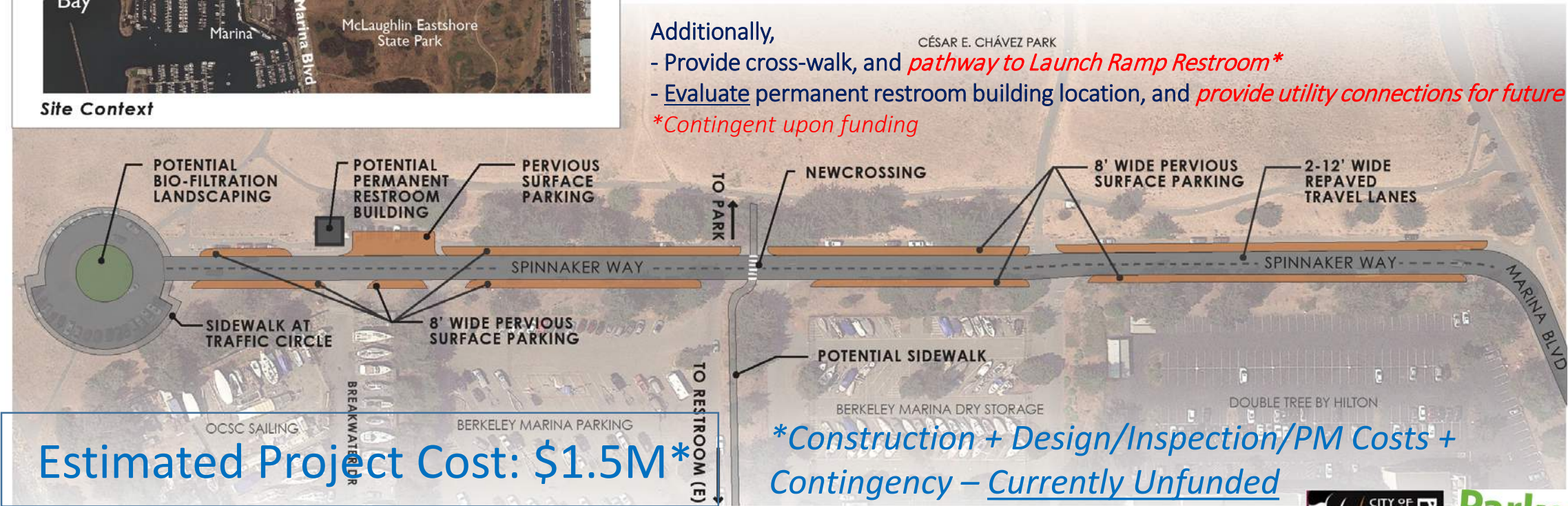
- Pavement Reconstruction
- Reconstruct Traffic Circle at End of Spinnaker Way
- Full-Depth Reclamation Asphalt Pavement Method
- Drainage Improvements including bio-infiltrations

Conceptual Layout

Additionally,

- Provide cross-walk, and *pathway to Launch Ramp Restroom**
- Evaluate permanent restroom building location, and *provide utility connections for future use**

**Contingent upon funding*



Estimated Project Cost: \$1.5M*

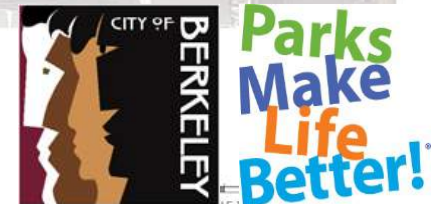
**Construction + Design/Inspection/PM Costs + Contingency – Currently Unfunded*

Plan

Rehab pavement per current roadway alignment and pervious paved parking lanes.

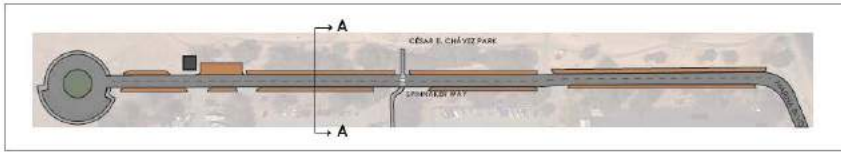


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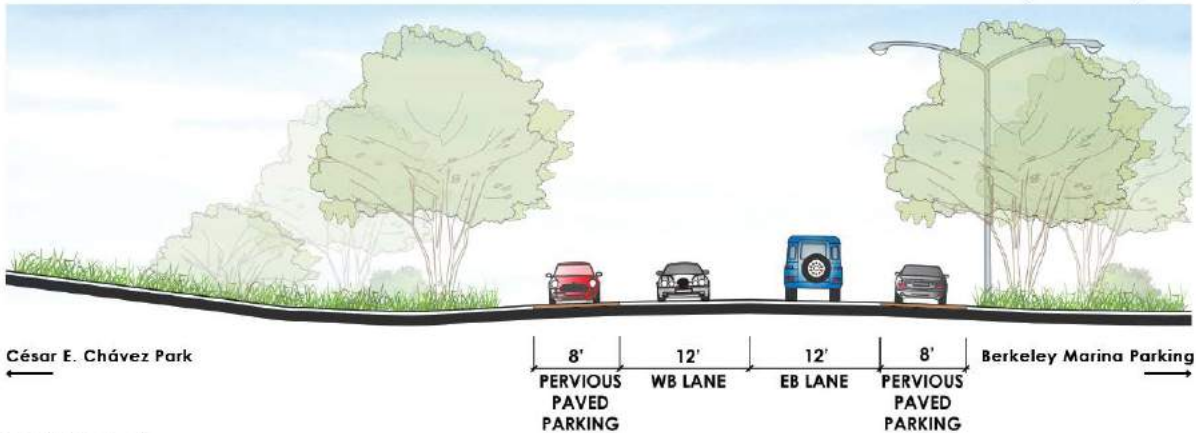
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SPINNAKER WAY PAVEMENT REHABILITATION & DRAINAGE IMPROVEMENTS

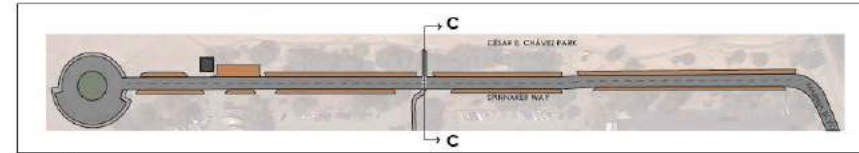


Key Map

Conceptual Layout

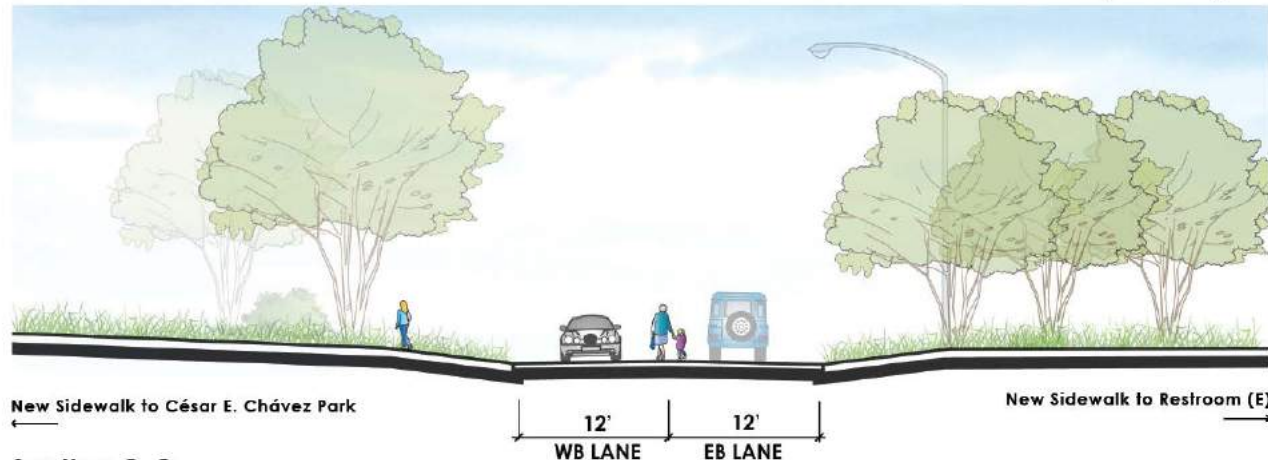


Section A-A
Rehab pavement per current roadway alignment and pervious paved parking lanes.



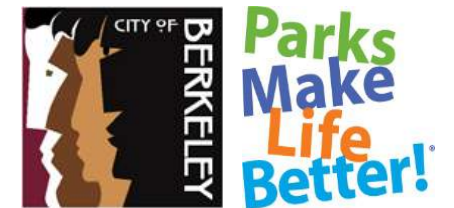
Key Map

Conceptual Layout



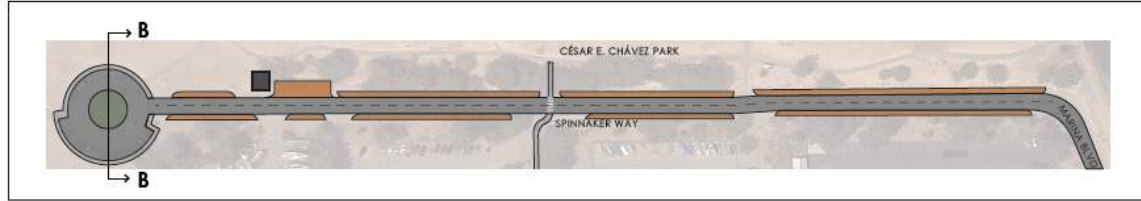
Section C-C
Rehab pavement per current roadway alignment and pervious paved parking lanes.

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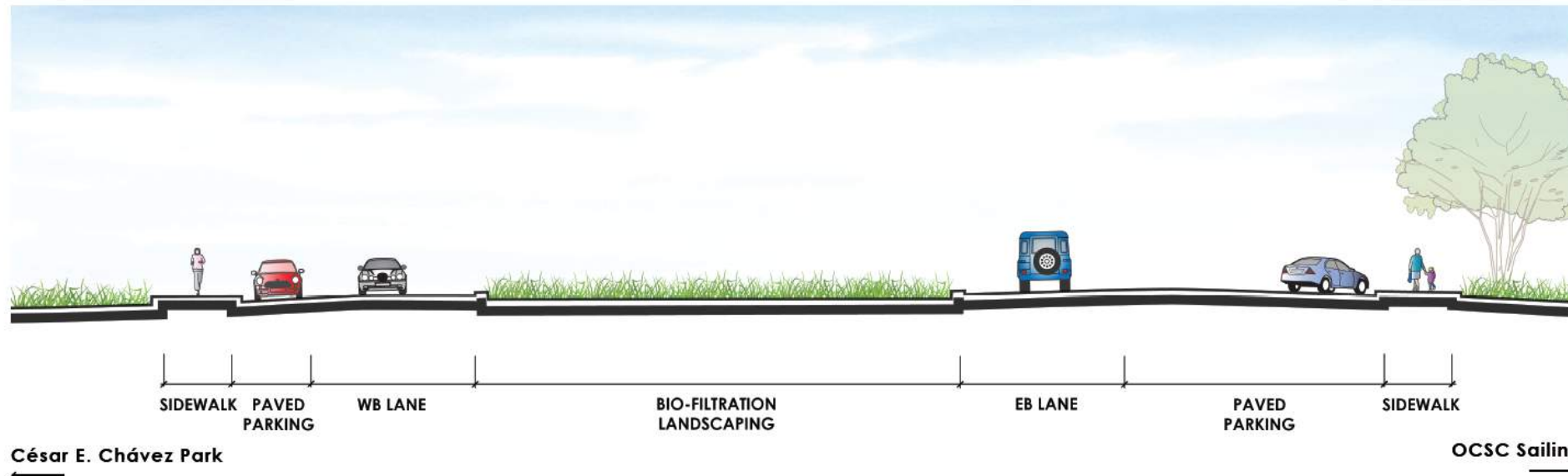
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SPINNAKER WAY PAVEMENT REHABILITATION & DRAINAGE IMPROVEMENTS



Key Map

Conceptual Layout



Section B-B

Rehab pavement per current roadway alignment and pervious paved parking lanes.

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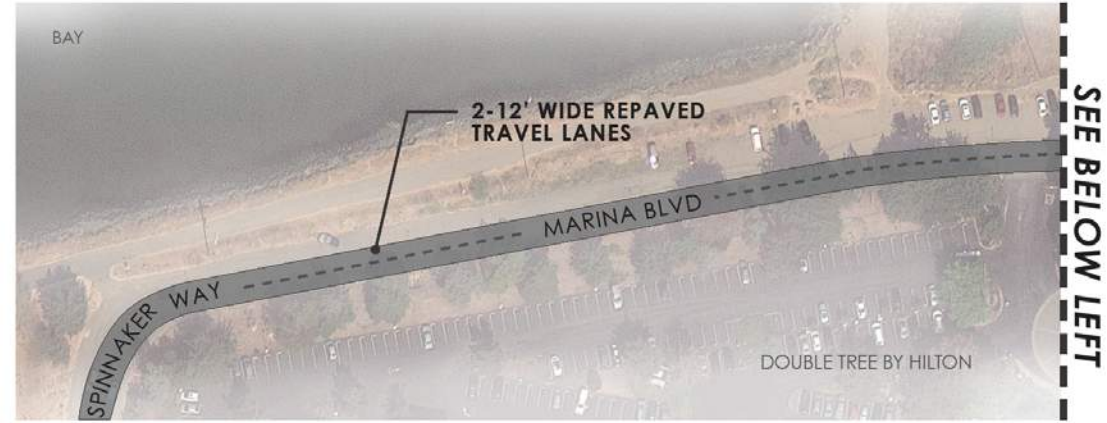
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MARINA BOULEVARD PAVEMENT REHABILITATION



Project Scope

- Pavement Overlay
- Mill-and-Fill Asphalt Pavement Method



Conceptual Layout

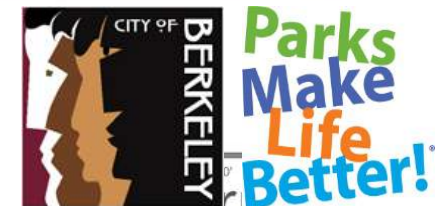


Plan - Area B

Rehab pavement per current roadway alignment.



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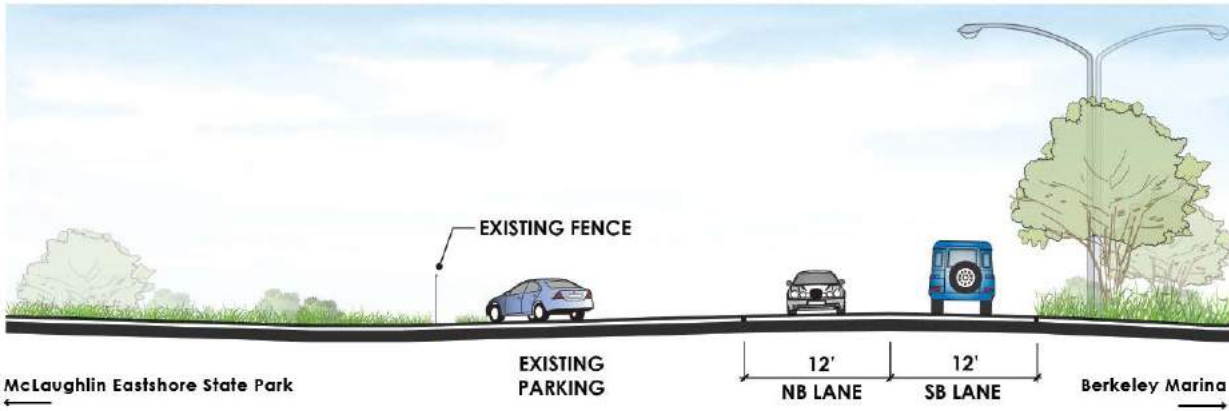
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MARINA BOULEVARD PAVEMENT REHABILITATION



Key Map

Conceptual Layout



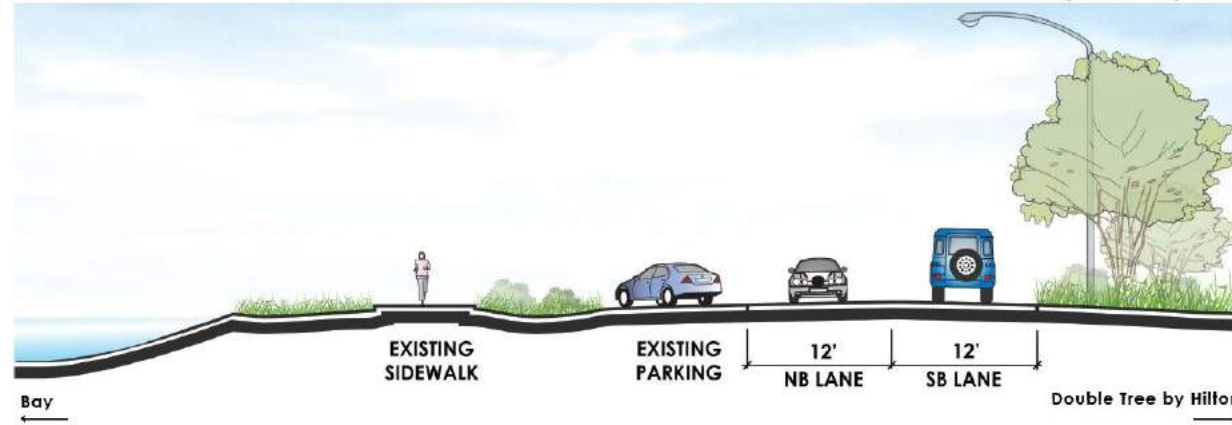
Section A-A

Rehab pavement per current roadway alignment.



Key Map

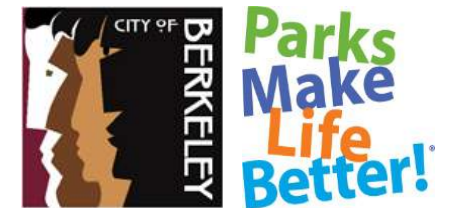
Conceptual Layout



Section B-B

Rehab pavement per current roadway alignment.

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End Result – Overall PCI Improvement

PAVEMENT CONDITION INDEX							PHASE 1 - T1					
Street	Segment	Length [ft]	Width [ft]	Area [sq-ft]	PCI (Sept '16)	Treatment Type	Street #1: University Ave		Street #2: Marina Blvd		Street #3: Spinnaker Way	
							Post Construction PCI	Cost ²	Post Construction PCI	Cost ¹	Post Construction PCI	Cost ¹
University Avenue	Seawall Dr to Marina Blvd	1,850	40	74,000	30	NONE	30	-	30	-	30	-
University Avenue	Marina Blvd to W Frontage Rd	1,600	72	115,200	9	Full Reconstruction	100	\$3,500,000	100	Completed	100	Completed
Marina Boulevard	Spinnaker Way to University Ave	2,250	27	60,750	62	Full Reconstruction	62	-	100	\$660,000	100	Completed
Seawall Drive	North End to University Ave	1,350	28	37,800	23	NONE	23	-	23	-	23	-
Seawall Drive	University Ave to South End	850	31	26,350	33	NONE	33	-	33	-	33	-
Spinnaker Way	Breakwater Dr to Marina Blvd	1,500	40	60,000	29	Full Reconstruction	29	-	29	-	100	\$1,500,000
Total:		9,400		374,100								
					PCI (Weighted Average)		56	28	62	6	74	11

PCI	Rating
86 - 100	Excellent
71 - 85	Very Good
56 - 70	Good
41 - 55	Fair
26 - 40	Poor
11 - 25	Very Poor
0 - 10	Failed

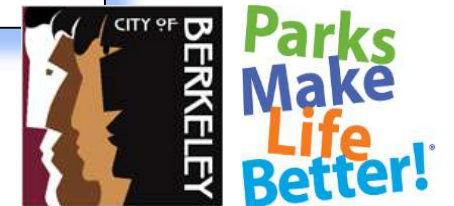
1: Per PRW CIP Scoping and Estimating, Dated Nov, '16

2: Per PRW CIP Scoping and Estimating, Dated Aug, '17 referencing University Ave Study

Prepared by NL 12/21/17

At completion of the University Ave, Marina Blvd, Spinnaker Way project:
Averaged PCI at Marina = 74 (currently at 28)

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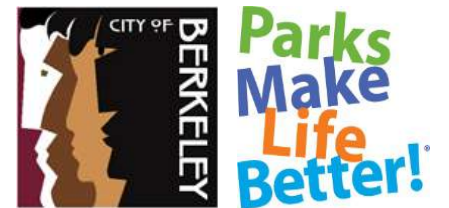


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Questions?

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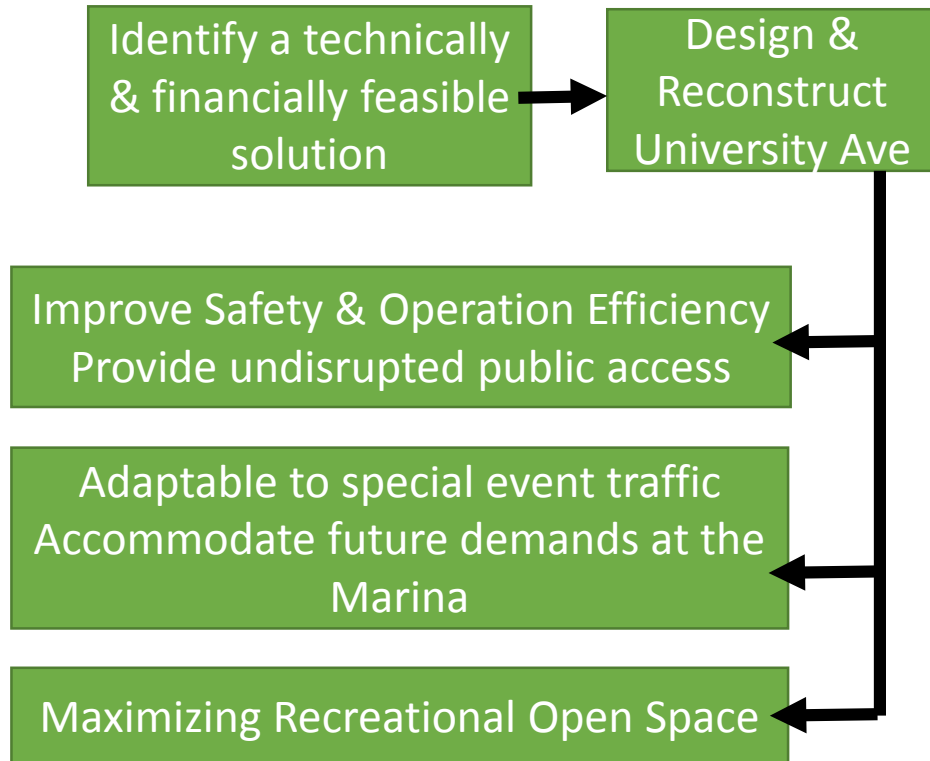


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UNIVERSITY AVENUE LANE RECONFIGURATION

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE

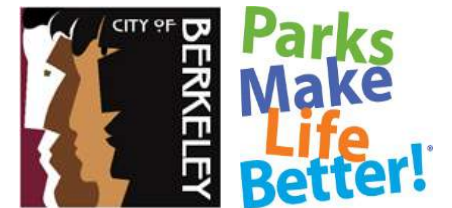
Goal of the Study



Design Criteria

- Traffic Study Recommendation(Year 2030 Projection)
- Pavement Evaluation
(Full Depth Reclamation vs. Conventional)
- Minimize Utility Impacts (Sewer Lift Station)
- Compliance with design standards (Caltrans, AASHTO)
- Design Tidal Elevation (BCDC Sea Level Rise, ACFCD)
- Stormwater Quality Requirements (C3)

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UNIVERSITY AVENUE LANE RECONFIGURATION

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE

Design Alternative Development Intersection Improvements (Year 2030 Traffic Demand)

- West Frontage Road: Caltrans R/W, Minor Operational Improvements
- Marina Boulevard: Operational Improvements vs. Roundabout

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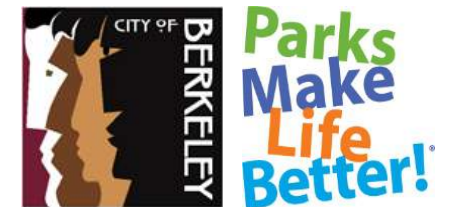
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UNIVERSITY AVENUE LANE RECONFIGURATION

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE

Consideration	Alternative A	Alternative B	Alternative C	Alternative D
Description	Rehabilitate in current alignment	Rehabilitate and realign EB and WB lanes to northerly side of right-of-way	Rehabilitate and realign EB and WB lanes to the north side of right-of-way	Rehabilitate and realign EB and WB lanes to the north side of right-of-way
Number of Lanes (total)	4	2 (shldr used for events)	4	3 (median lane for events)
Paved Surface Area to Maintain (SY)	15,040	11,744	15,047	14,457
Potential Recreational Space Created (Acres)	0	1.0	0.7	0.7
Ongoing Maintenance Cost	High	Low	Low	Low
Special Event Flexibility	Excellent	Poor	Excellent	Fair
Emergency Vehicle Access	Excellent	Poor	Excellent	Fair
Anticipated Construction Cost (FDR Method)	\$ 2.09M	\$ 2.30M	\$ 2.62M	\$ 2.51M
Construction Cost (Conventional Reconstruction)	\$ 3.64M	\$ 3.70M	\$ 4.12M	\$ 4.23M

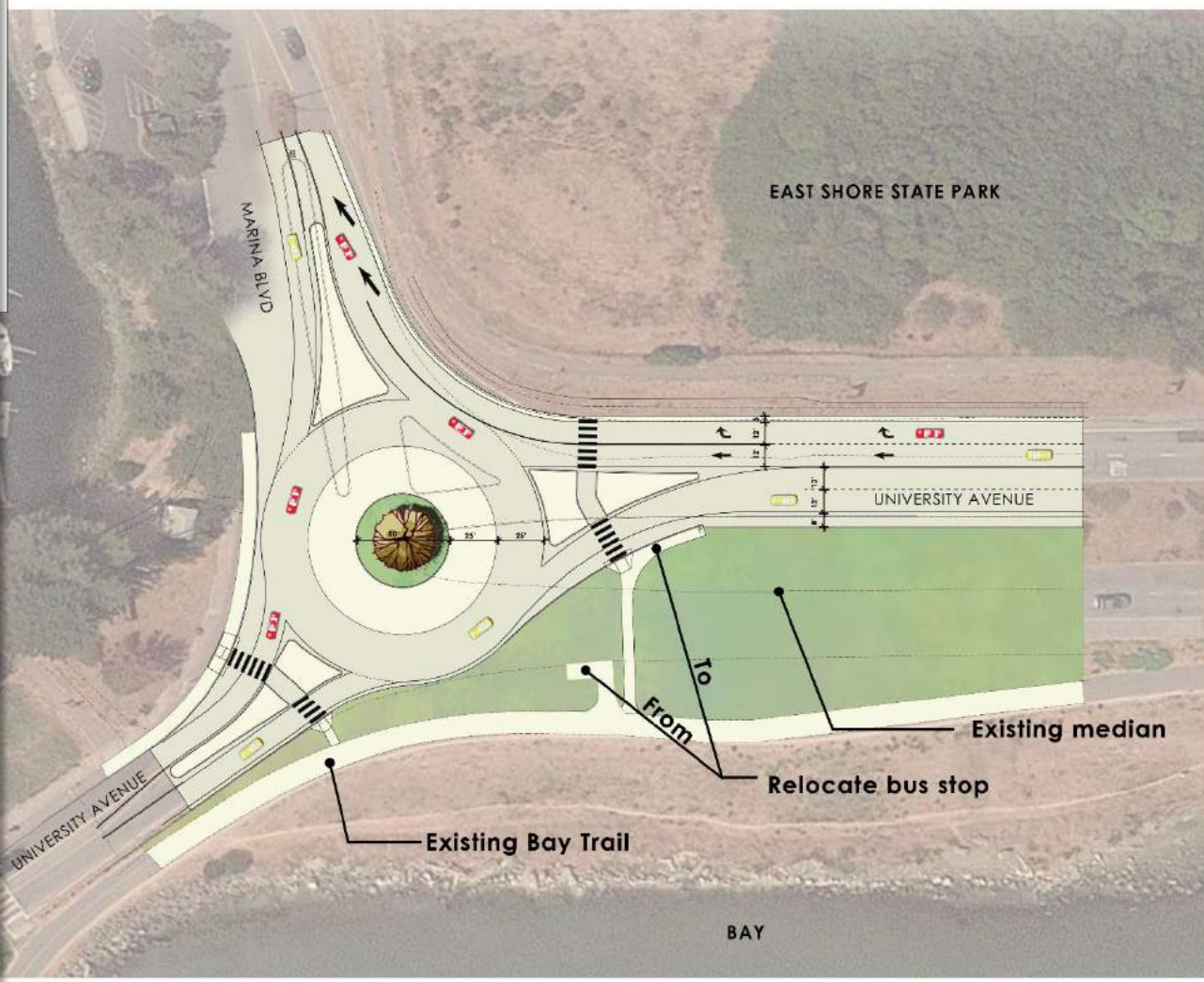
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PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE

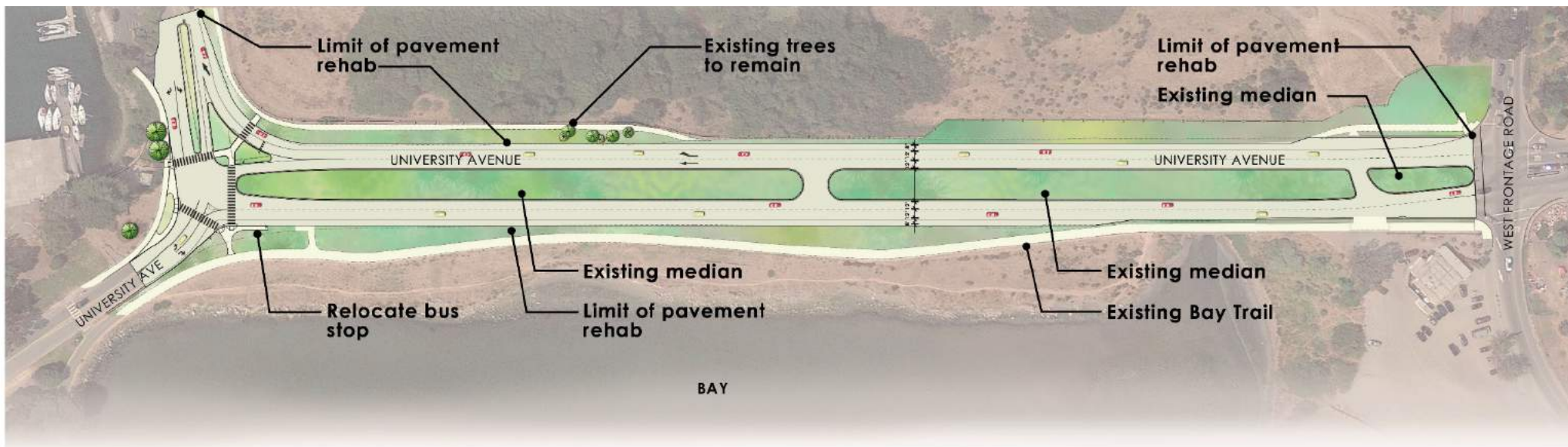
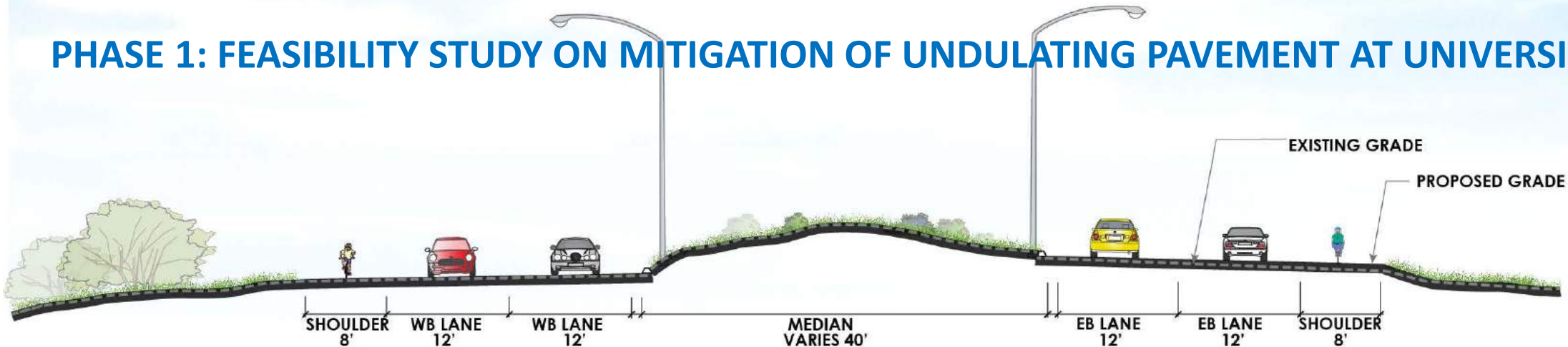
Conceptual Layout



FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVENUE ROUNDBOUT

BERKELEY, CA.

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE



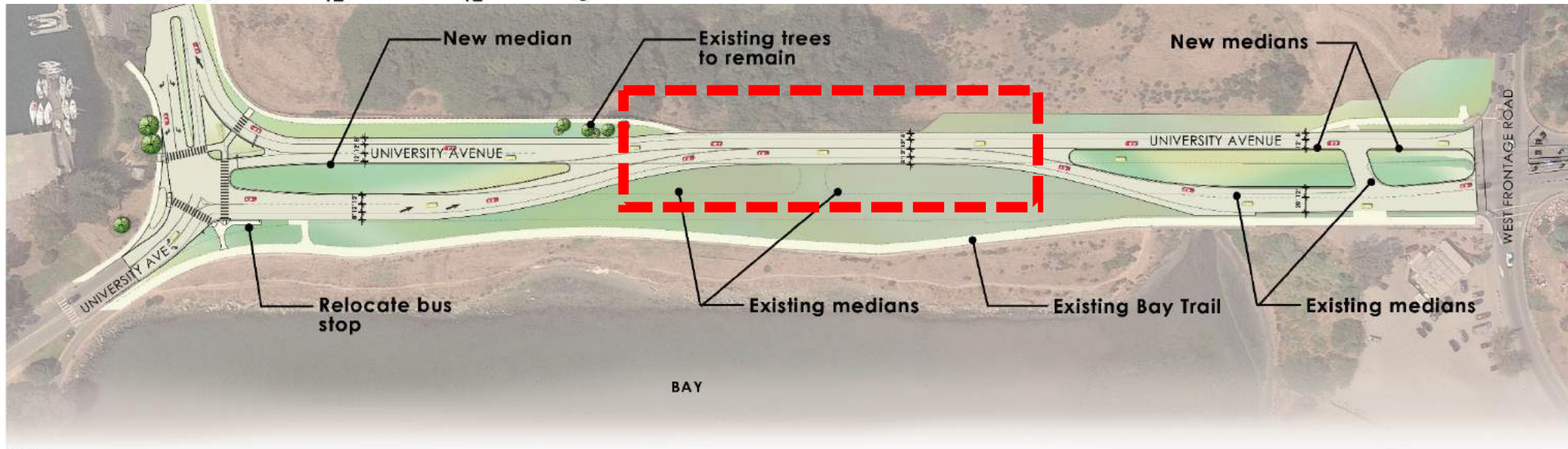
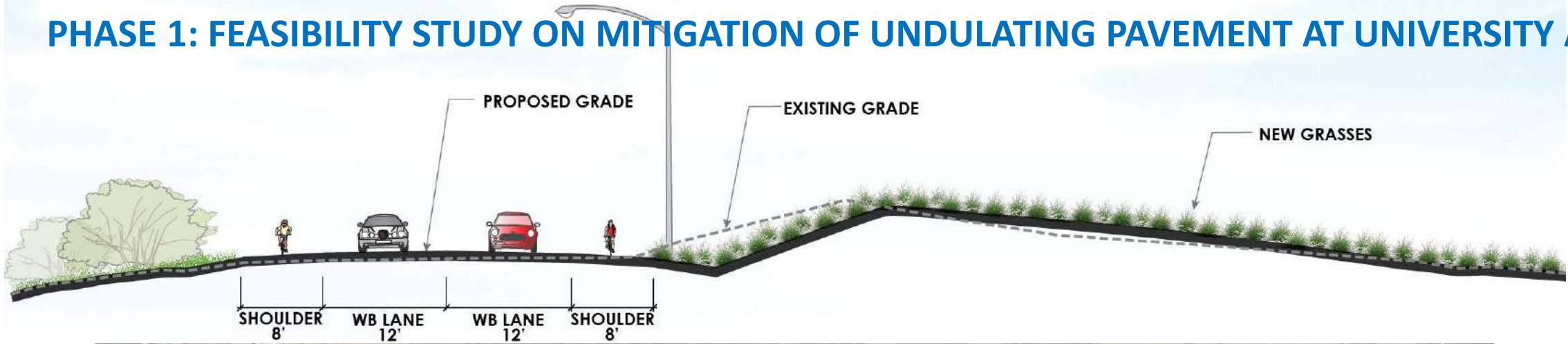
Plan

Rehab pavement per current roadway alignment.

FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVENUE ALTERNATIVE A

BERKELEY, CA.

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE



Plan

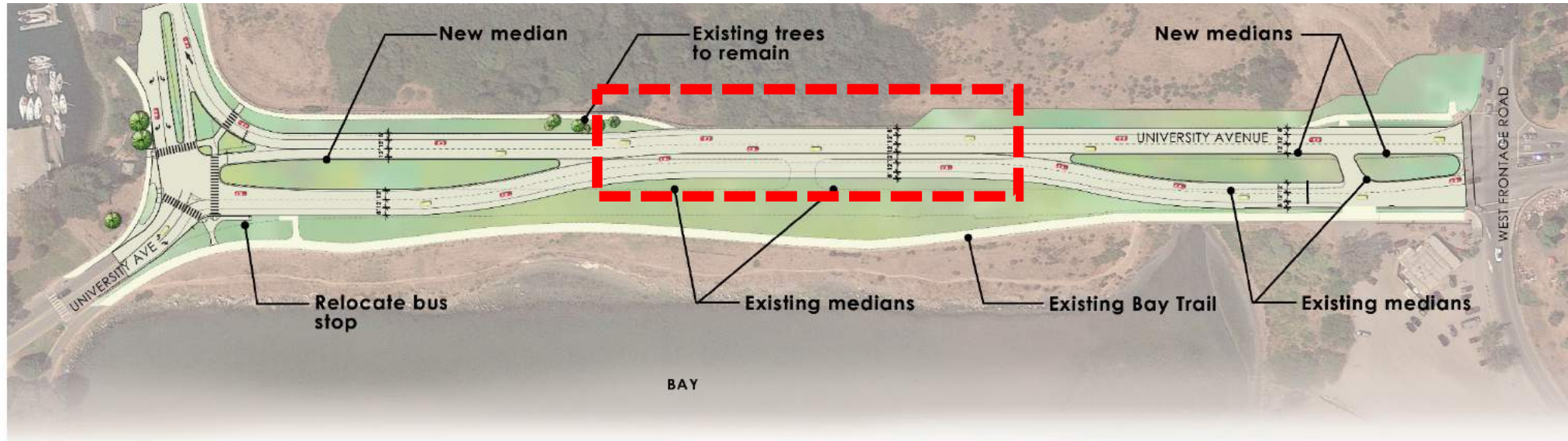
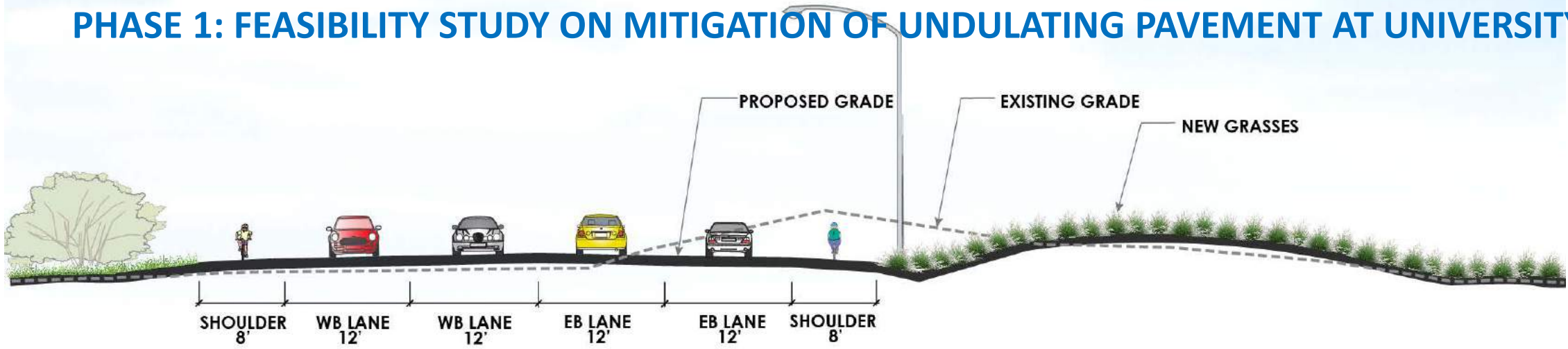
Relocate east bound lanes to the north utilizing existing center median. Total of 2 lanes - 1 eastbound and 1 west bound.



FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVENUE ALTERNATIVE B

BERKELEY, CA.

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE



Plan

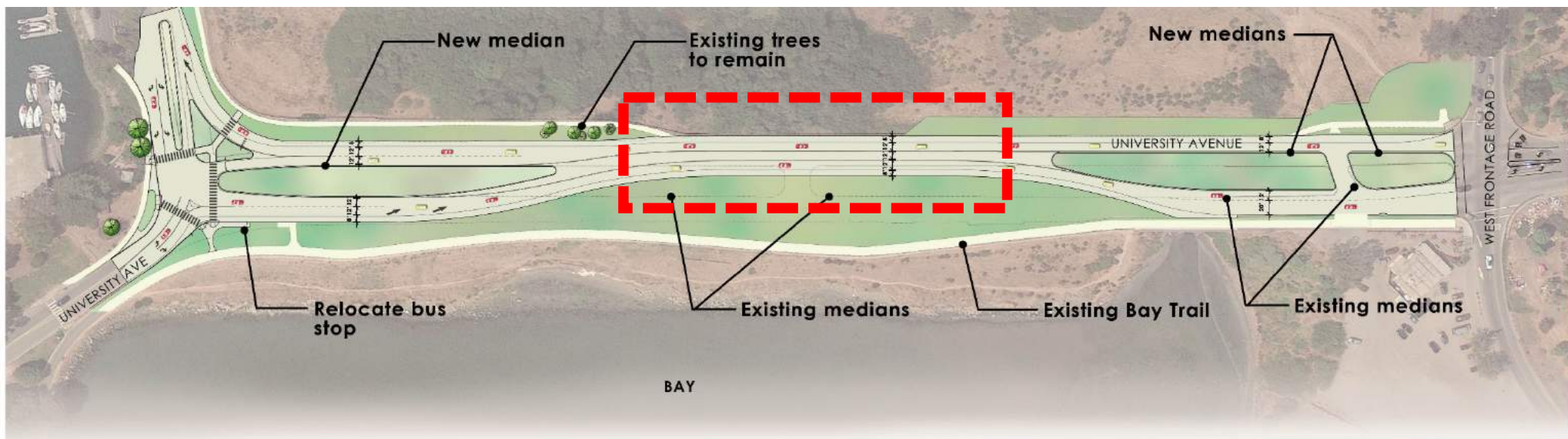
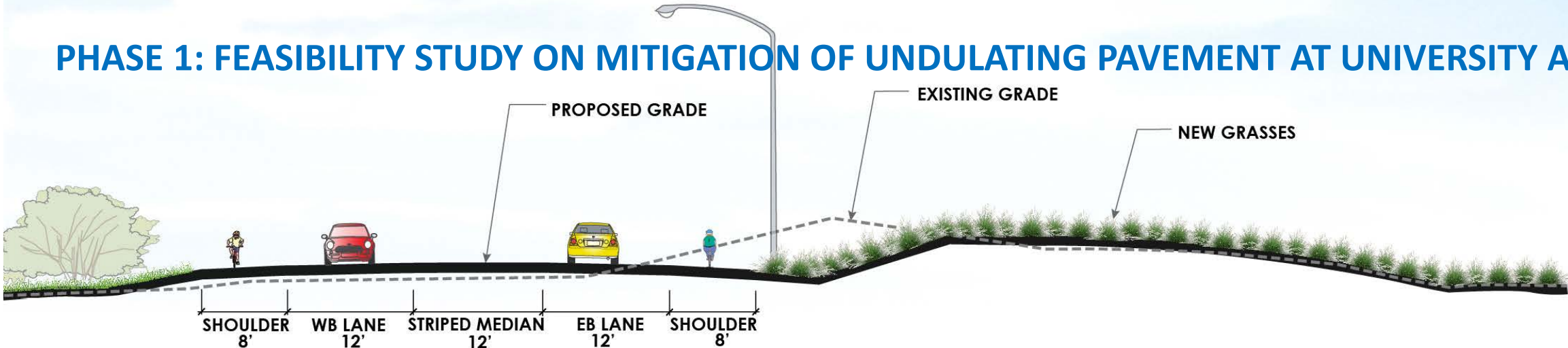
Relocate east bound lanes to the north utilizing existing center median. Total of 4 lanes - 2 eastbound and 2 west bound.



FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVENUE ALTERNATIVE C

BERKELEY, CA.

PHASE 1: FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVE



Plan
Relocate east bound lanes to the north utilizing existing center median. Total of 3 lanes-1 eastbound, 1 west bound, and 1 center lane.



FEASIBILITY STUDY ON MITIGATION OF UNDULATING PAVEMENT AT UNIVERSITY AVENUE ALTERNATIVE D

BERKELEY, CA.

