SFMTA
Municipal
Transportation
Agency

Bayshore Boulevard/Cesar Chavez Street/ Potrero Avenue Intersection (The Hairball): Key Segment Improvements

November 2016

San Francisco Municipal Transportation Agency | San Francisco Public Works
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Background

In the project area, Cesar Chavez Street, Bayshore Boulevard and Potrero Avenue change from city streets to a complex arrangement of bridges and ramps linking with Highway 101 (Figure 1). The intersection is built in three levels, with pedestrian and bicycle circulation generally restricted to the middle and ground levels, while motor vehicles use all three levels. Because many paths intersect in this area known as “The Hairball”, the interchange is challenging to navigate and there are points of conflict between vehicles, pedestrians and bicycles. However, though limited in some respects, the pedestrian and bicycle circulation network allows connections between Cesar Chavez Street, Bayshore Boulevard and Potrero Avenue that are not possible by vehicle and provides a high level of connectivity to non-motorized users within the framework of the existing highly complex intersection structure.

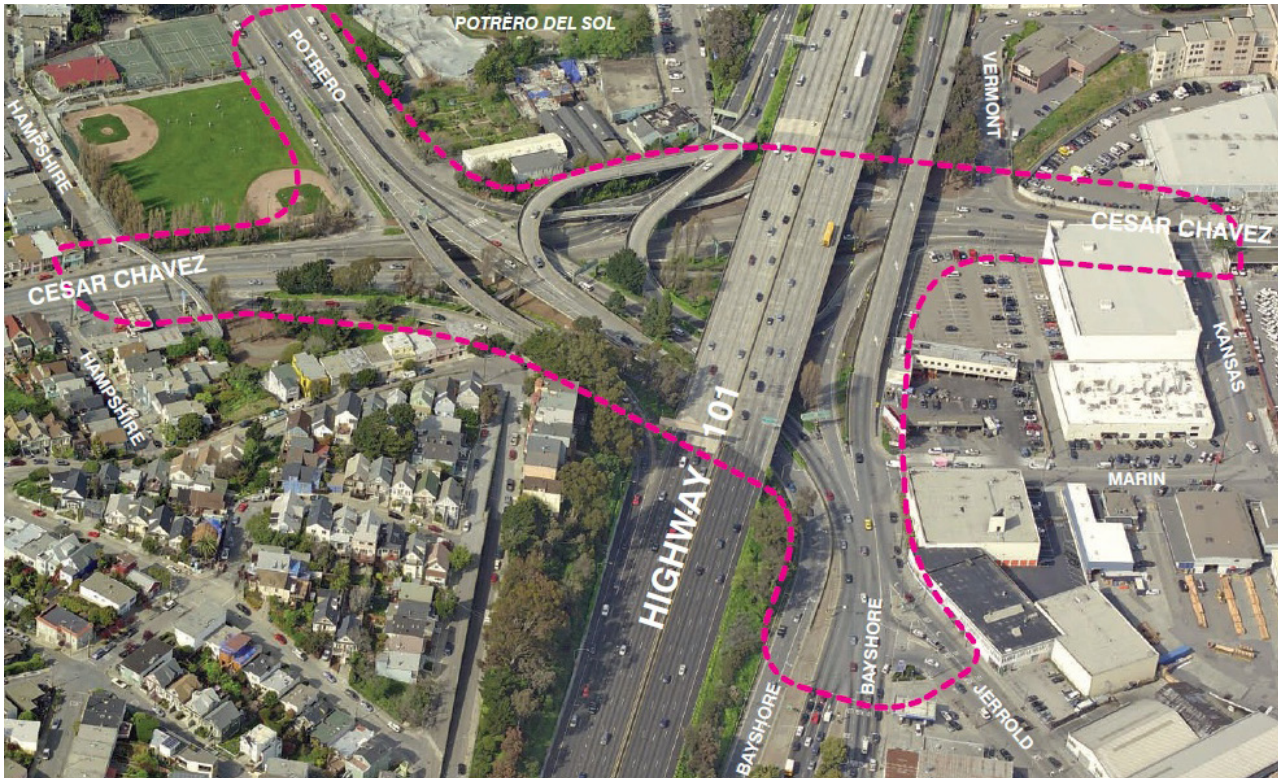


Figure 1: Cesar Chavez Street, Bayshore Boulevard and Potrero Avenue (The Hairball) Project Area

In 2010, the San Francisco Planning Department began a community outreach process to develop a community-supported vision and design for a safe, comfortable and accessible Cesar Chavez Street for all users. This outreach process culminated in the Cesar Chavez East Community Design Plan, which was finalized in early 2012 and incorporates the Bayshore Boulevard/Cesar Chavez Street/Potrero Avenue intersection (known as the Hairball). The Plan separates the larger Hairball area into a series of segments (see Figure 2) and includes safety improvement recommendations for each segment. Drawing upon the plan’s recommendations, the San Francisco Municipal Transportation Agency (SFMTA) held a Bike Spot Improvement Workshop in early 2014 with representatives from the San Francisco Bicycle Advisory Committee and the San Francisco Bicycle Coalition that prioritized segments of the Hairball for implementation.

In fall 2015, the SFMTA and San Francisco Public Works (Public Works) received $100,000 in Neighborhood Transportation Improvement Program Prop K funds to develop recommendations for safety improvements at five of the prioritized segments- Segment F and G at the western entry to the Hairball, and Segments M, N, and O at the southeastern entry to the Hairball (see Figure 2). This report presents project goals, existing conditions, key issues, and

preliminary designs for these five key segments as well as a conceptual lighting plan for the entire Hairball area. The report also outlines an implementation strategy for moving the project forward through construction.

Project Goals

The major goal of this project is to make key portions of the Hairball paths safer and easier to use for pedestrians and bicyclists, with the intent to build on these changes to implement improvements in the remaining segments of the Hairball. The project also aims to support citywide efforts such as WalkFirst, Vision Zero, and the SFMTA 2012 Bicycle Strategy to improve non-motorized safety and mobility in San Francisco.

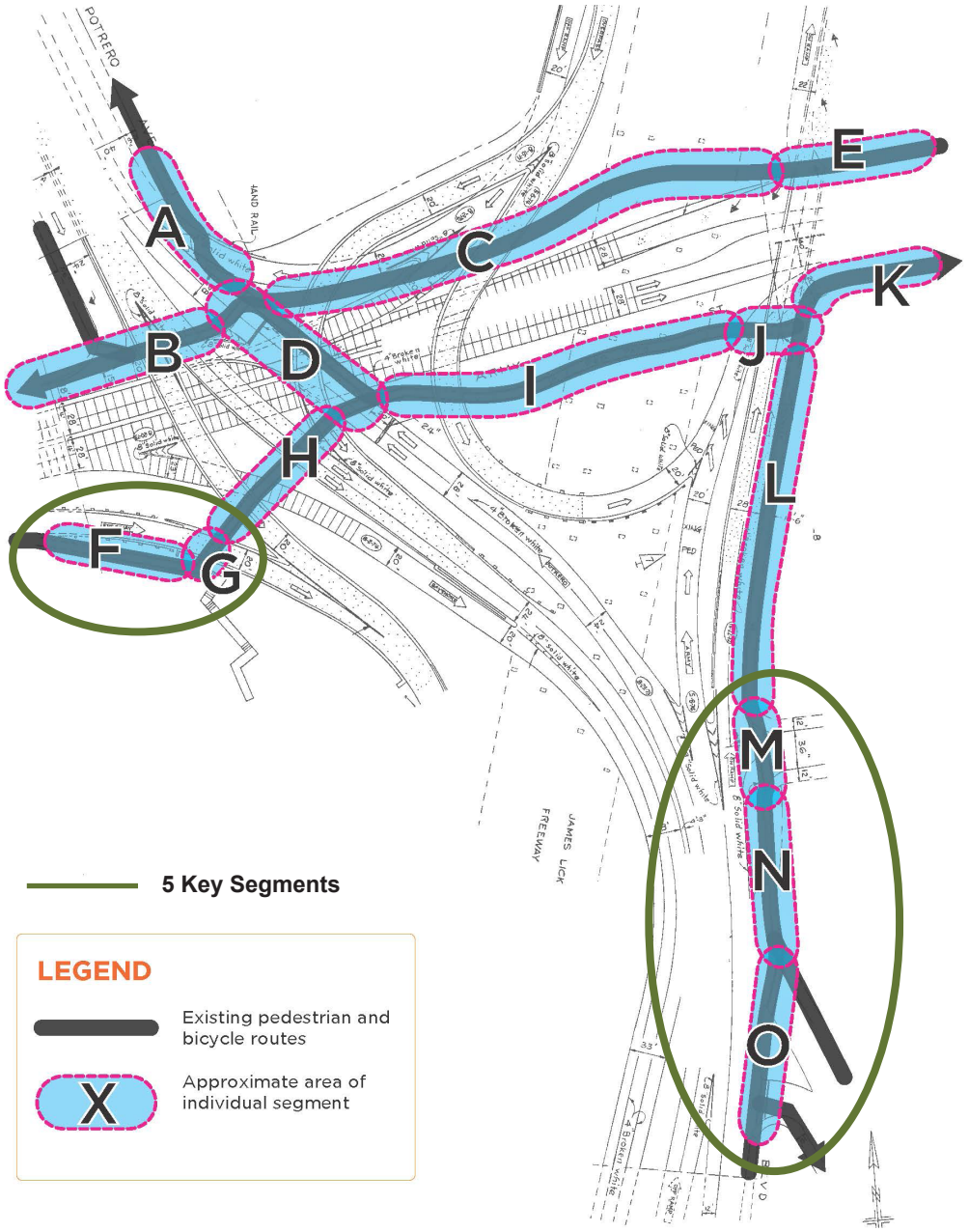


Figure 2: The Hairball Segment Map with Five Key Segments Identified

Existing Conditions

As part of this effort, existing conditions information for each of the five key segments was collected to better understand pertinent issues and potential opportunities. The physical conditions of Segments F, G, M, N, and O are described in detail below.

Segments F and G

Segments F and G are located at the western entrance of the Hairball adjacent to westbound Cesar Chavez Street. These segments do not include city streets but consist of a shared bicycle/pedestrian path on City right-of-way.

Segment F (see Figure 3) is a shared pedestrian (two-way east and westbound) and bicycle (one-way eastbound) path through an undeveloped city-owned lot. The existing path is approximately six feet wide, constrained for one-way bicycle and two-way pedestrian traffic.

Segment G is an eastbound pathway that travels down a steep grade under the Highway-101 southbound on-ramp (Figure 4). The path descends a flight of stairs while a parallel ramp, accommodating people on bicycles, is potentially too steep for some users. The grade is currently 30 percent and according to the Federal Highway Association guidelines, the grade should be 10 percent.[1] The overhead on-ramp structure provides low vertical clearance,

Figure 3: Segment F

Figure 4: Segment G

1 AASHTO A Policy on Geometric Design of Highways and Streets (Green Book, 2011 edition)

approximately eight feet high.

Segments M, N, and O

Segments M, N, and O are located at the southeastern entrance of the Hairball and include portions of north Bayshore Boulevard and the intersections of Bayshore Boulevard with both Marin Street and Jerrold Avenue. Bayshore Boulevard, Jerrold Avenue, and Marin Street are all city-owned streets and connect to the Caltrans 101 north on-ramp.

Segment M includes the area where Marin Street crosses Bayshore Boulevard. Pedestrians and two-way bicycle traffic cross Marin Street at an unsignalized crosswalk (Figure 5). This is a potential issue since motorists turning right from Marin Street onto the Highway 101 northbound on-ramp often travel at high speeds and do not expect two-way bicycle traffic in the crosswalk. Additionally, there is little clear space for pedestrians and bicyclists waiting to cross, and visibility is an issue.

Segment N is a shared pedestrian and two-way bicycle path between Marin Street and Jerrold Avenue (Figure 6). Southbound bicyclists currently share the sidewalk with pedestrians while northbound cyclists use the adjacent bike lane. The existing sidewalk on the east side of the street is six feet wide, with approximately three foot wide pinch points at the two utility poles in place in this segment. The sidewalk is obstructed by street light poles, utility poles, and a fire hydrant.

Figure 5: Segment M
(Looking North at Marin St. and Bayshore Blvd.)

Figure 6: Segment N
(Looking South at Marin St. and Bayshore Blvd.)

Segment O includes a crossing where pedestrians and southbound cyclists cross Jerrold Avenue (Figure 7). The existing crossing includes two crosswalks joined by a pork chop island. The northern crossing is not signalized. Since the rightmost lane of westbound Jerrold Avenue meets northbound Bayshore Boulevard at a very shallow angle, vehicles can ignore the yield sign and turn right at high speeds.

Figure 7: Segment O
(Looking South at Jerrold Ave. and Bayshore Blvd.)

Outreach

Due to a limited budget and the previous outreach efforts of the Cesar Chavez East Design Plan, outreach for the preliminary designs focused on gathering feedback from the main stakeholders for the project including staff from District 10, District 9, the Bicycle and Pedestrian group of Caltrans District 4, and the San Francisco Bike Coalition. SFMTA coordinated two stakeholder walkthroughs of the site to gather feedback prior to developing the draft preliminary designs. Individual briefings were then conducted with the stakeholders as well as the SFMTA Bicycle Advisory Committee to gain feedback on the preliminary designs. The draft conceptual designs in Section 6 were then shared with the stakeholders.

Additional outreach will be conducted in later phases of the project and is discussed in Section 10: Implementation Strategy.

Key Issues

As described in the Existing Conditions section of this report, the five segments, while important connectors, have a number of key issues.

The western segments (Segments F and G) are generally too narrow to support shared uses, are steep in some areas, and have insufficient vertical clearance and low visibility at the highway overpass. This creates conflict for pedestrians and cyclists using the pathway, especially if going in opposite directions. The area also experience drainage issues and water accumulation.

The eastern segments (Segments M, N, and O) are all in close proximity to the 101 highway and other major arterials, placing pedestrians and cyclists adjacent to vehicles moving at high speeds. Segment M, or where Marin Street crosses Bayshore Boulevard, pedestrian/cyclist visibility is poor, the crossing is unsignalized and curb ramps are positioned poorly. Segment N, or the shared sidewalk for pedestrians and southbound cyclists that runs adjacent to northbound Bayshore Boulevard, is very narrow and obstructed by existing infrastructure. In addition, there are many pedestrians with shopping carts using this sidewalk because of nearby recycling centers. These pedestrians and shopping carts often block the sidewalk or travel in the roadway. Segment O, or the area where Jerrold Avenue and Bayshore Boulevard intersect, is a long crossing with high vehicle volumes on both Jerrold Avenue and Bayshore Boulevard and an unsignalized right turn lane from Jerrold Avenue onto northbound Bayshore Boulevard. All of these issues create unsafe conditions for both pedestrians and cyclists traveling to and from the Hairball.

In addition to the specific problems described above, there are maintenance and lighting issues throughout the Hairball area, with ongoing problems with the accumulation of refuse/litter and missing and/or broken lighting fixtures. Lighting conditions are described in Section 7 and Attachment B.

All of these issues were considered in the preliminary designs and safety recommendations for the key segments.

Design Alternatives

Understanding key issues and opportunities from previous planning efforts, stakeholder outreach, and through field observation, Public Works and the SFMTA developed preliminary designs for the five key segments. The designs are described below and are detailed in the figures following this section.

Segments F and G

Preliminary designs for Segments F and G at the western entrance to the Hairball aim to create a wider, regraded path with adequate clearance at the highway overpass. These designs create a more comfortable and safe shared path for bikes and pedestrians and minimize conflicts between users. See Figures 8 and 9 for Segment F and G existing and proposed site plans.

Specific design changes include:

- Entry ramp widened and resurfaced at eastbound Cesar Chavez Street.
- Eastbound shared bike/pedestrian path widened from 6 feet to10 feet for shared/flexible uses.
- New landscaped buffer installed to setback pathway from the road/highway on-ramp.
- New retaining walls and abutment installed.
- Pathway regraded to allow for sufficient clearance at highway overpass.

Segments M, N, and O

Preliminary designs for Segments M, N, and O at the southeastern entrance to the Hairball were separated into to two categories, near-term improvements and the full proposed project. SFMTA staff proposes a set of paint-only improvements that can be implemented in the near term following environmental clearance and agency approvals of the changes. The longer term hardscape changes included in the proposed project will take longer to implement and require coordination with partner agencies to address major changes on northbound Bayshore Boulevard. Proposed changes include redesigning the median at Jerrold Avenue, possibly regrading parts of the street, relocating utility poles, and relocating a high pressure hydrant. See Figures 10,11, and 12 for Segment M, N, and O existing, near-term, and proposed site plans.

Near-term specific design changes include:

- Southbound Bayshore Boulevard bicyclists continue to share sidewalk, but northbound bike path widened from 6 feet to12 feet for shared/flexible uses.
- Install continental crosswalks at Marin Street, Jerrold Avenue and Barneveld Street.
- Install bike lane on eastbound Jerrold Avenue.
- Install new bike lane on westbound Jerrold Avenue.
- Install greenback sharrows and other markings at intersections where appropriate.

Proposed project specific design changes include:

- Widen sidewalk to create shared two-way bike path/sidewalk on northbound Bayshore Boulevard.
- Redesign pork chop island into bulb-out at Jerrold Avenue and Bayshore Boulevard. Converts right turn slip lane on Jerrold Avenue to bike lane/diverter and allows for a double right signalized turn from Jerrold Avenue onto northbound Bayshore Boulevard.
- Relocate three utility poles, two street lamps, and one traffic signal pole.
- Reconfigure curb ramps at Marin Street and Jerrold Avenue at Bayshore Boulevard.
- Install greenback sharrows at intersections where appropriate.
- Supplement or replace near-term project striping as needed.

The SFMTA and Public Works will refine these concepts in the next phase and will assess the feasibility of the proposed changes, any necessary connections to nearby bike routes, and maintenance issues.

Figure 8: Segment F and G - Existing Conditions

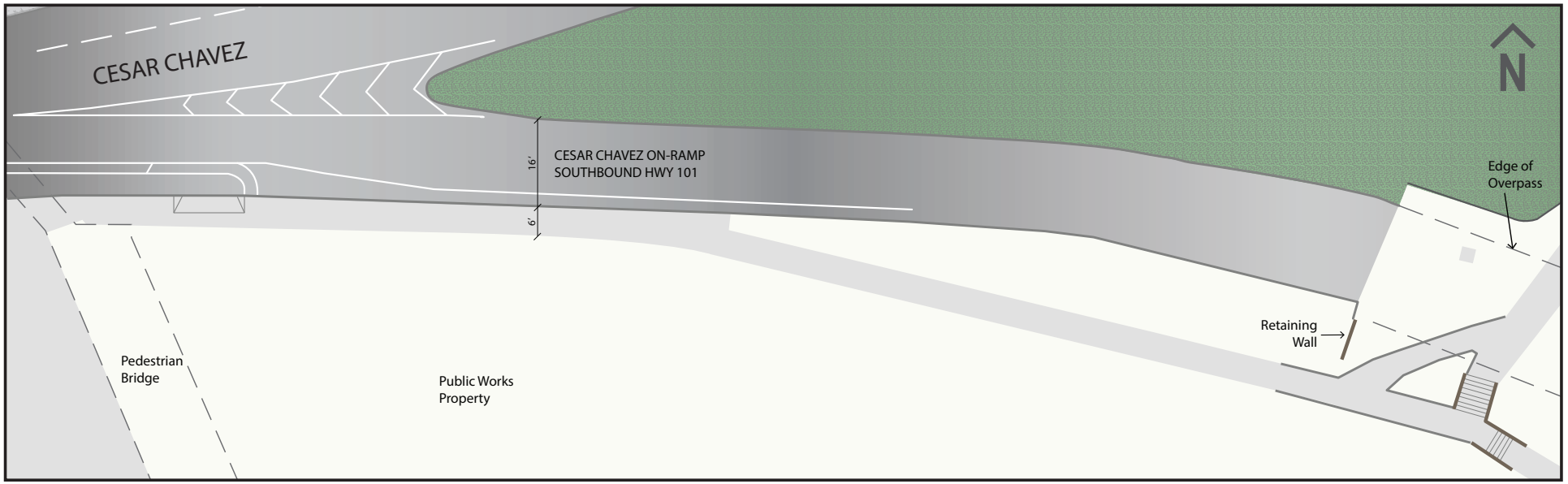
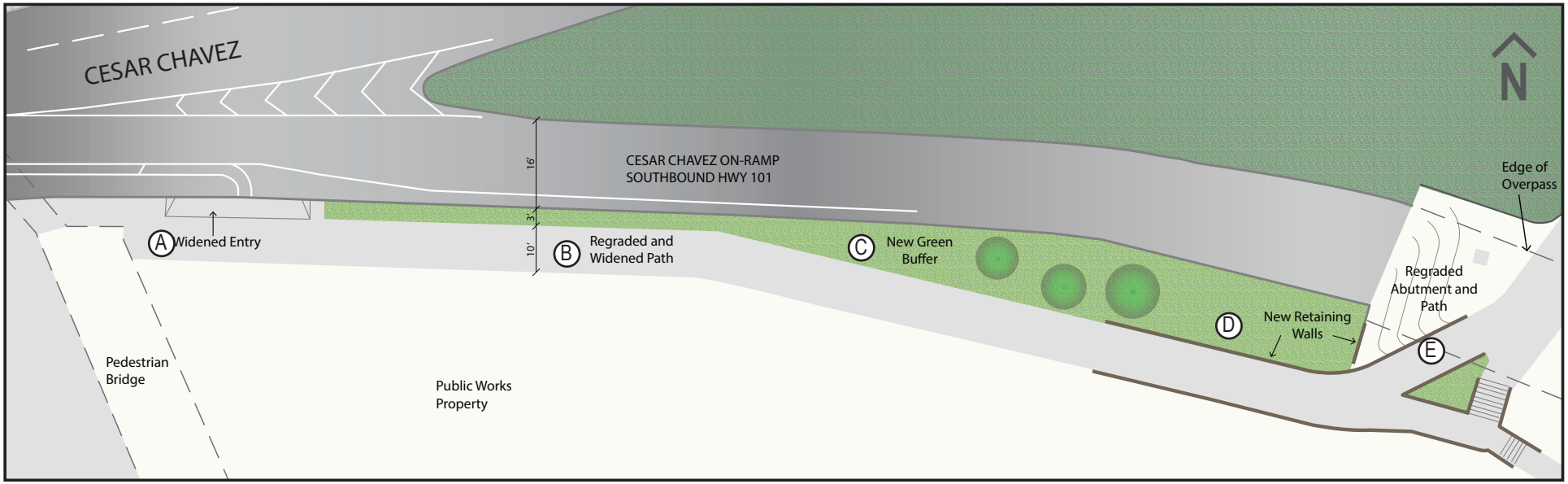


Figure 9: Segment F and G - Proposed Project



A. Entry ramp widened and resurfaced at Cesar Chavez St.

B. EB shared bike/pedestrian path widened from 6 ft to10 ft for shared/flexible uses

C. New green buffer installed to set back pathway from the road/highway on-ramp

D. New retaining walls and abutment installed

E. Pathway regraded to allow for sufficient clearance at highway overpass

Figure 10: Segments M,N, and O - Existing Conditions

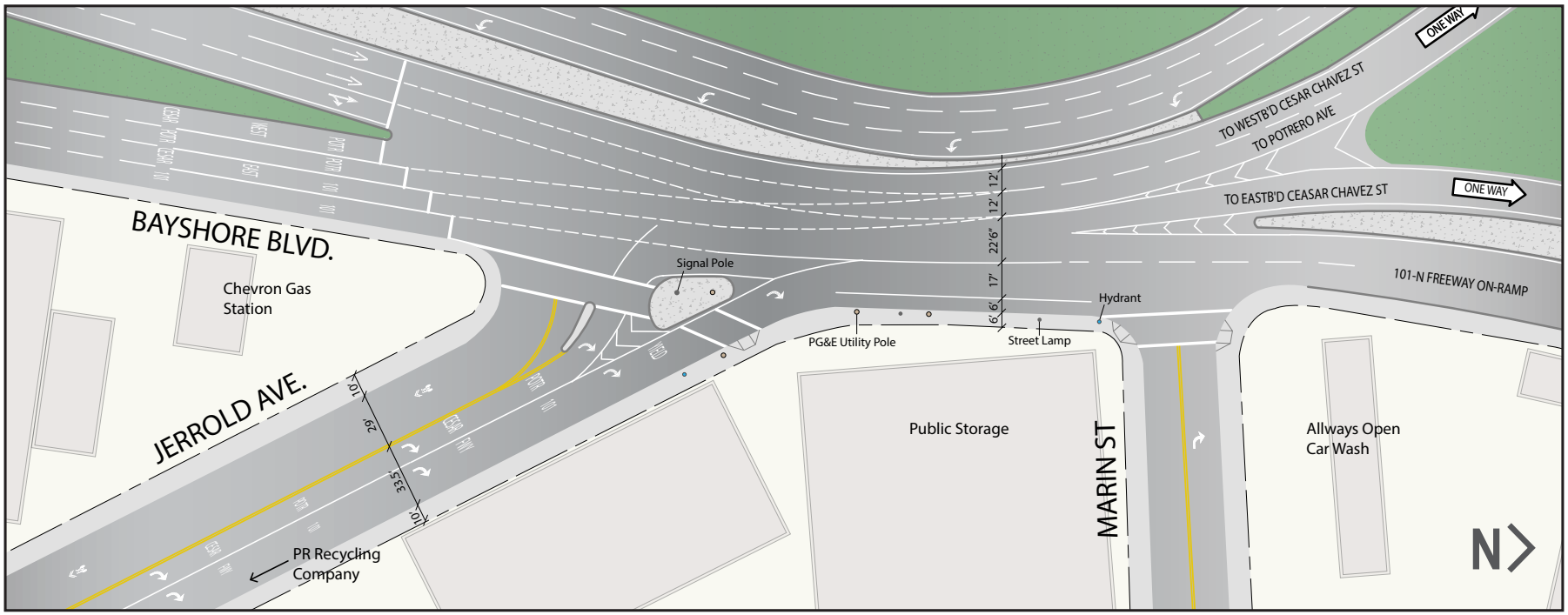
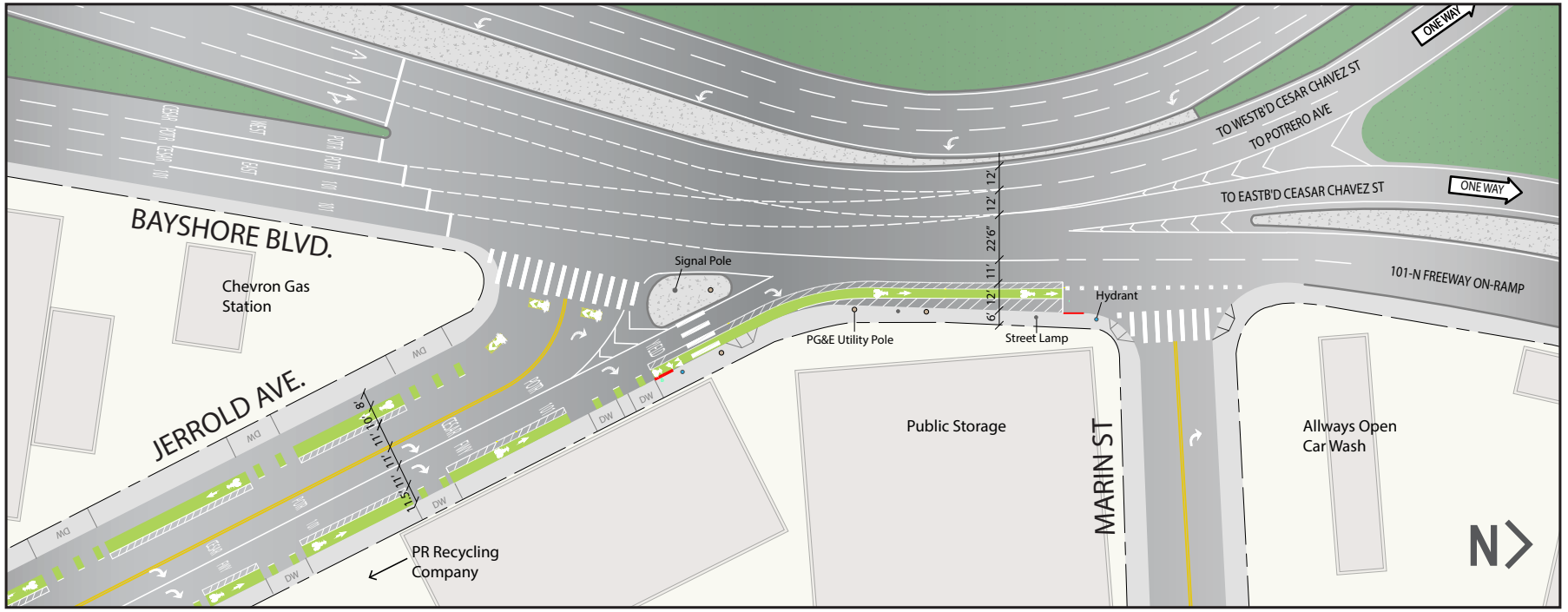
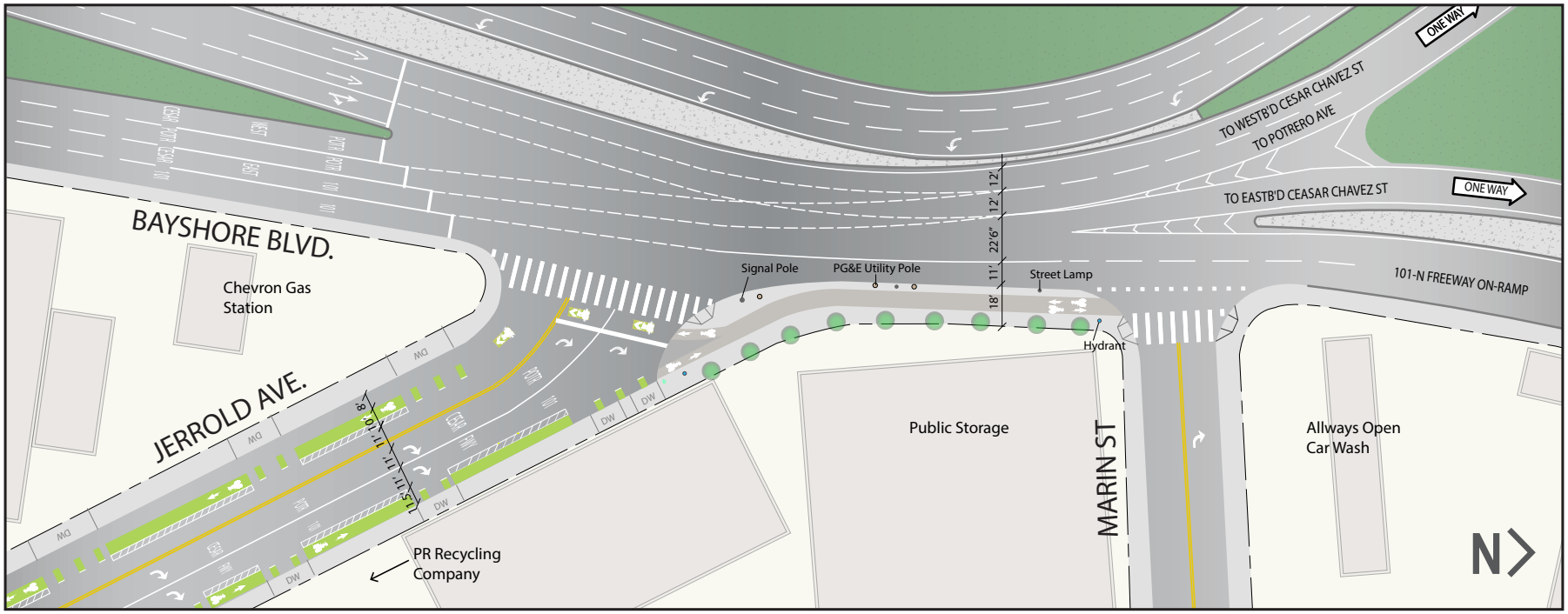


Figure 11: Segments M,N, and O - Proposed Near Term Improvements



- SB Bayshore cyclists continue to share sidewalk, but NB bike path widened from 6ft to12ft for shared/flexible uses
- Install continental crosswalks at Marin St., Jerrold Ave. and Barneveld St.
- Install curbside bike lane on EB Jerrold Ave.
- Install new bike lane on WB Jerrold Ave.
- Install greenback sharrows and markings at intersections where appropriate

Figure 12: Segments M,N, and O - Proposed Project



- Widen sidewalk to create shared two-way bike path/sidewalk on NB Bayshore
- Redesign median into bulb-out at Jerrold Ave. and Bayshore; converts right turn slip lane on Jerrold Ave. to bike lane/diverter and allows for a double right signalized turn from Jerrold Ave. onto NB Bayshore Blvd.
- Relocate 3 Utility Poles, 2 Street Lamps, and 1 Traffic Signal Poles
- Reconfigure curb ramps at Marin St. and Jerrold Ave. at Bayshore Blvd.
- Install greenback sharrows at intersections where appropriate
- Supplement or replace near-term project striping as needed

Lighting Plan

Lighting is an important factor in perceived and actual safety, and many users of this area consider the lighting of pedestrian and bicycling paths inadequate. Paths often appear shadowy and unsafe, particularly where they diverge from the roadway or are overshadowed by bridges and ramps. Public Works developed a conceptual lighting plan for the interchange area that addresses the specific needs of pedestrians, bicyclists and motorists based on current guidelines and standards.

See Appendix A: Lighting Plan Matrix, for existing conditions and recommendations for lighting by segment.

Spot Improvements

Some spot improvements for the Hairball area are planned for implementation in 2016. These include a series of wayfinding signs and improvements to the western driveway entrance. A typical wayfinding sign is shown in Figure 13. The signs will help users navigate the pathways and will include information on time and distance to major nearby destinations.

Improvements to the western driveway include replacing part of the driveway to fix a one inch lip that may be dangerous to bicyclists entering the shared path from the eastbound Cesar Chavez street bike lane. This entry point will also be upgraded with new striping and safe-hit posts.

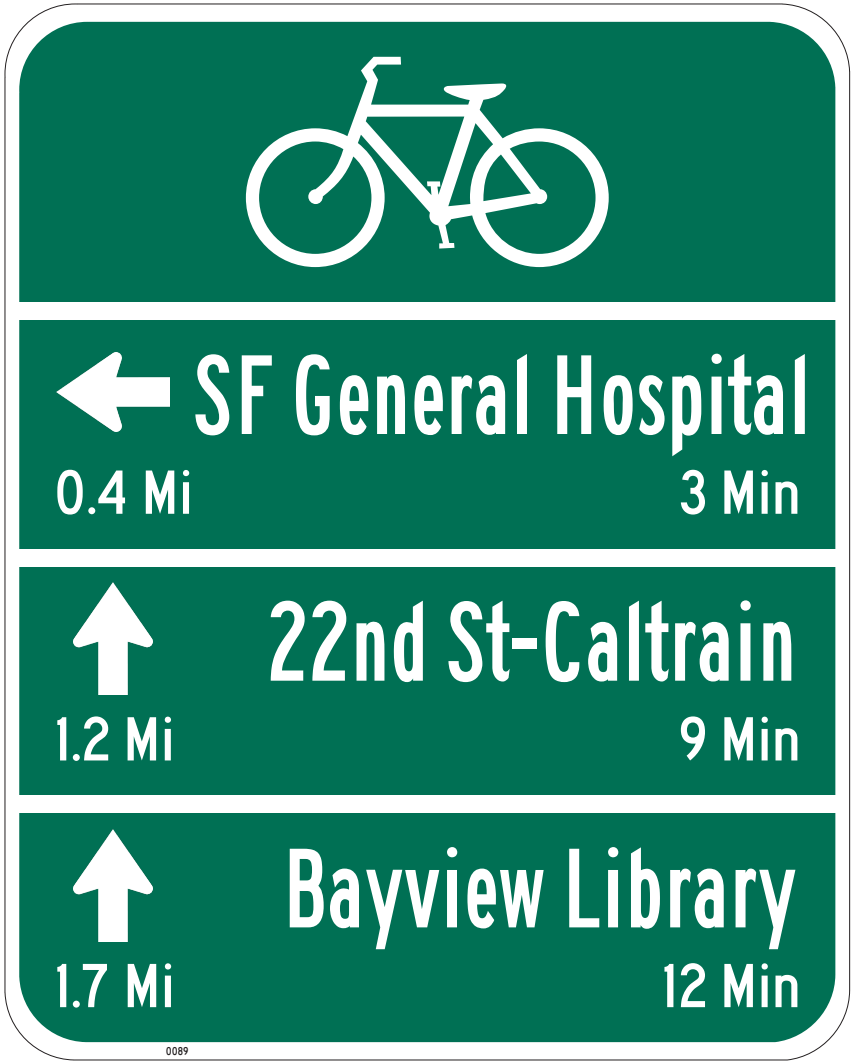


Figure 13: Typical Hairball Wayfinding Sign

Cost Estimates

As part of this phase of the project, Public Works and the SFMTA estimated project costs for the five key segments. Project costs for Segments F and G are estimated at approximately $454,019. Segments M, N, and O are estimated at approximately $694,192, bringing total project construction costs for the five key segments to approximately $1,148,211. Cost estimates are detailed in Appendix B and a breakdown of costs, available funding, and funding gaps are shown in Table 1. Please note these are planning level estimates that will be refined during the detailed design phase.

A cost estimate was also prepared for the conceptual lighting plan for the entire Hairball area and is estimated at $1 to $1.5 million dollars. These lighting costs are detailed in Appendix C.

Implementation Strategy

This section of the report outlines funding of improvements for the key segments, funding gaps, and a strategy for implementation.

The SFMTA has identified $590,000 in the agency's FY17-FY21 Capital Improvements Plan (CIP) for the implementation of key segments of the Hairball. See Table 1 for a summary of funding and project cost information for the five key segments.

Table 1: Project Costs, Available Funding, and Funding Gaps

	Planning/ Detailed Design Costs	Construction Costs	Total Project Costs	Available Funding	Balance/Gap
Segments F and G	$52,387	$401,633	$454,019	**TBD**	**($454,019)**
Segments M,N, and O	$190,000	$504,192	$694,192	**$590,000**	**($104,192)**
Lighting Improvements (entire Hairball area)	-	-	$1-1,500,000	-	**($1-1,500,000)**

Table 2: Segment M,N and O Improvements: Project Scope and Timeline

Phase	Timeline	Responsible Party
Preliminary Engineering		
Conduct remaining outreach	Fall 2016/Winter 2017	SFMTA
Feasibility studies/final conceptual design	Fall 2016/Winter 2017	SFMTA/Public Works
Environmental clearance	Spring 2017	SFMTA/SF Planning
Legislation and agency approvals	Spring 2017	SFMTA
Near-Term Improvements		
Install paint-only improvements	Summer 2017	SFMTA
Detailed Design		
Prepare final design drawings for bid	Spring 2017	Public Works
Construction		
Bid project out to contractor	Construction start in early 2018	Public Works/SFMTA

In addition to these costs, lighting upgrades for the entire Hairball area are estimated to be $1 to $1.5 million dollars. No funds have been identified to further refine and implement the lighting plan.

Recognizing both the funding gaps and the need to keep the project moving forward, the current implementation strategy is to utilize the $590,000 in funding to continue with the detailed design and construction phases for the southeastern key segments (Segments M, N, and O). Concurrently, the SFMTA and Public Works will seek alternative funding sources for the design and construction of the western key segments (Segments F and G).

The remaining phases of work needed to implement the Segments M, N, and O are listed in Table 2. If additional funding is secured, the scope and timeline will be updated to include Segments F and G.

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Appendix A:
Lighting Plan Matrix

Appendix A: Lighting Plan Matrix

Segment	Boundaries	Photograph	Findings	Recommendations
Segment A	- North boundary: Potrero Ave. (NB), right after the merge from Cesar Chavez St. - South boundary: Exit of the bikeway bridge from E Cesar Chavez St.		- High potential for vehicle, bike and pedestrian conflict due to non-visible corner - Overgrown tree canopy and that could potential impact existing lighting	- Provide flashing beacon to assist pedestrian crossing. - Install additional lighting as required per lighting analysis.
Segment B	- East boundary: Crosswalk at northbound Potrero Ave. - West boundary: Southbound Potrero Ave. crosswalk		Overgrown trees with broken fixture	Prune existing overgrown canopy and provide additional lighting as required.
Segment C	- East boundary: Entrance the bikeway bridge - West boundary:Exit of the bikeway bridge		- Segment has pedestrian scale lighting along the path and bridge - Lighting level on the underpass is dark	- Replace existing pedestrian lighting with vandal resistant fixture and sustainable LED light source. - Provide additional lighting as required.

Appendix A: Lighting Plan Matrix

Segment	Boundaries	Photograph	Findings	Recommendations
Segment D	- North boundary: Crosswalk at northbound Potrero Ave. - South boundary: Crosswalk at off ramp/Bayshore Blvd., before roadway splits to either WCesar Chavez St. or N. Potrero Ave.		Insufficient lighting in this location for the crosswalk and pedestrian sidewalk	Additional lighting and flashing beacon is needed to improve the crosswalk and the pedestrian path.
Segment E	- East boundary: The gap between the north sidewalk of Cesar Chavez St. east of Vermont St. - West: Entrance to the bicycle bridge		Existing vehicular roadway lighting seems adequate, however might need to improve the lighting on the shared bike/ped pathway	Provide lighting analysis and photometric calculation to determine if additional lighting is required.
Segment F	- East boundary: Stairway and ramp underneath 101-S on-ramp - West boundary: Pedestrian stairs/ramp beneath overpass		Additional lighting might be needed to improve the lighting level at vehicle on-ramp	Provide lighting analysis and photometric calculation to determine if additional lighting is required.

Appendix A: Lighting Plan Matrix

Segment	Boundaries	Photograph	Findings	Recommendations
Segment G	- East boundary: Narrow bridge structure which carries pedestrians and eastbound cyclists under several highway ramp - West boundary: Start of the steep grade under the 101-S on-ramp		Existing luminaries are missing	Provide lighting analysis and photometric calculation to determine if additional lighting is required.
Segment H	- East boundary: Eastern end of narrow bridge structure - West boundary: Western end of narrow bridge structure.		Pedestrian/bike bridge is not properly lit	Provide lighting analysis and photometric calculation to determine if additional lighting is required.
Segment I	- East boundary: Crosswalk at northbound Bayshore Blvd. - West boundary: Crosswalk at Potrero Ave.		Insufficient lighting in this pedestrian/bike path and in the areas in the underpass	- Replace existing street light with pedestrian lighting to improve the lighting level and conform to the landscape plan to provide uniform and consistent lighting. - Underpass and pedestrian bridges may require different requirement due to the application. Security and facial recognition is a primary concern in this area due to potential hostile environment. - Provide lighting analysis and photometric calculation to determine if additional lighting is required.

Appendix A: Lighting Plan Matrix

Segment	Boundaries	Photograph	Findings	Recommendations
Segment J	- East boundary: East end of crosswalk at northbound Bayshore Blvd./City-Owned Parking Lot on E. Cesar Chavez St. - West boundary: West end of crosswalk at northbound Bayshore Blvd.		- Potential high pedestrian conflict due to on-ramp - Lighting level might not be sufficient for pedestrian crossing	Flashing Beacon and additional pedestrian scale lighting is needed for the crosswalk.
Segment K	- East boundary: Intersection of Cesar Chavez and Kansas Sts. - West boundary: East end of crosswalk at northbound Bayshore Blvd.		Existing vehicular roadway lighting may be adequate, but might need to improve the lighting on the shared bike/pedestrian path	Provide lighting analysis and photometric calculation to determine if additional lighting is required.
Segment L	- North boundary: City-owned parking lot at E. Cesar Chavez - South boundary: entrance to the 101 N Highway on-ramp/Intersection of Marin St. and NB Bayshore Blvd		Existing luminaires are in the middle of the pathway, which may be a source of bike and pedestrian conflict	Relocate and replace existing luminaire with sustainable pedestrian scale lighting. Provide additional lighting as required per lighting analysis.

Appendix A: Lighting Plan Matrix

Segment	Boundaries	Photograph	Findings	Recommendations
Segment M	- North boundary: North end of Marin St/NB Bayshore Blvd. intersection (also 101N on-ramp) - South boundary: South end of Marin St/NB Bayshore Blvd. intersection		Existing vehicular roadway lighting may be adequate, but might need to improve the lighting on the shared bike/pedestrian path	Provide lighting analysis and photometric calculation to determine if additional lighting is required.
Segment N	- North boundary: South end of Marin St/NB Bayshore Blvd. intersection - South boundary: North end of Jerrold Ave./NB Bayshore Blvd. intersection		Existing vehicular roadway lighting may be adequate, but might need to improve the lighting on the shared bike/pedestrian path	Provide lighting analysis and photometric calculation to determine if additional lighting is required.
Segment O	- North boundary: North end of Jerrold St/NB Bayshore Blvd. intersection - South boundary: South end of Jerrold St/NB Bayshore Blvd. intersection		Existing vehicular roadway lighting may be adequate, but might need to improve the lighting on the shared bike/pedestrian path	Provide lighting analysis and photometric calculation to determine if additional lighting is required.

Appendix B:
Key Segment Cost Estimates

Appendix B: Key Segment Improvements-Cost Estimates

Segments F and G Planning Level Cost Estimates

Item	Quantity	Unit	Unit Cost	Total
Sidewalk and Asphalt Demolition	2,750	*SF*	$1.00	$2,750
New Concrete Curb	42	*LF*	$100.00	$4,200
New Concrete Paving, CCSF Standard	3,735	*SF*	$16.00	$59,760
Concrete retaining walls	200	*LF*	$230.00	$46,000
Concrete Stairway, including Cheekwalls and Footings	7	*LF*	$160.00	$1,120
Metal Handrails at Stairs	20	*LF*	$180.00	$3,600
Vehicle/Bike Buffer	800	*LF*	$50.00	$40,000
Striping and Green Thermoplastic Paint	200	*SF*	$35.00	$7,000
Site Grading	3250	*SF*	$3.00	$9,750
Site drainage, including perforated drain line and sewer connection	120	*LF*	$45.00	$5,400
Shrub and Groundcover Planting	2000	*SF*	$25.00	$50,000
Irrigation	1	*LS*	$10,000.00	$10,000
Water Meter and Backflow Preventer	1		$15,000.00	$15,000
Long term plant establishment period, 1 year	1	*LS*	$10,000.00	$10,000
			Subtotal	**$264,580**
			Design Contingency @ 10%	$26,458
			Mobilization @ 5%	$13,229
			Traffic Control @ 5%	$13,229
			Subtotal Construction Estimate	**$317,496**
			Construction Contingency @ 10%	$31,750
			Total Construction Cost	**$349,246**
			Design and Engineering @ 15%	$52,387
			Construction Support @15%	$52,387
			TOTAL F and G Project Cost	**$454,019**

Appendix B: Key Segment Improvements-Cost Estimates

Segments M, N, and O Planning Level Cost Estimates

Planning and Design Costs			
Item			**Total**
Preliminary Engineering and Detailed Design*			$190,000
		TOTAL Preliminary Engineering and Detailed Design	**$190,000**

Near Term Improvements Construction Costs				
Item	**Cost**	**Unit**	**Quantity**	**Total**
Greenback Sharrows	$175	each	8	$1,400
Continental Crosswalk at Marin St.	$1,500	each	1	$1,500
Continental Crosswalk at Jerrold Ave.	$3,500	each	1	$3,500
Continental Crosswalks Barneveld St.	$1,800	each	3	$5,400
Buffered Green Bike Lanes - Jerrold to Barneveld St.	$27	ft	350	$9,450
Near Term Wide Buffered Bike Lane on Bayshore Blvd.	$27	ft	250	$6,750
Pavement Markings	$9	ft	160	$1,440
			Subtotal	**$29,440**
			Construction Support @15%	$4,416
			SUBTOTAL Near Term Improvements Construction Estimate	**$33,856**
			Contingency @10%	$3,386
			TOTAL Near-Term Improvements Construction Cost	**$37,242**

Proposed Project Construction Costs				
Item	**Cost**	**Unit**	**Quantity**	**Total**
Land Surveys	$10,500		1	$10,500
Median Redesign/Bulb-out/Sidewalk Extension	$100,000	each	1	$100,000
Curb Ramps at Marin St.	$7,500	each	2	$15,000
Curb Ramps at Jerrold Ave.	$7,500	each	2	$15,000
Street Light Relocation or New Street Light	$2,500	each	2	$5,000
New Street Light Foundation/Base	$3,300	each	2	$6,600
Signal Pole Relocation or New Signal Pole	$1,500	each	1	$1,500
PG&E Wooden Pole Relocation	$12,000	block	3	$36,000
High Pressure Hydrant Relocation	$50,000 to $150,000	each	1	$150,000
			Subtotal	**$339,600**
			Construction Support @ 15%	$50,940
			Mobilization @ 5%	$16,980
			Traffic Control @ 5%	$16,980
			SUBTOTAL Proposed Project Construction Estimate	**$424,500**
			Construction Contingency @ 10%	$42,450
			TOTAL Proposed Project Construction Cost	**$466,950**
			TOTAL M,N, and O Project Cost	**$694,192**

**Includes remaining public outreach process, and all necessary agency approvals and environmental clearance*

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Appendix C:
Lighting Plan Cost Estimates

Appendix C: Lighting Plan Cost Estimates

Lighting Plan for All Segments – Using both New and Existing Fixtures/Infrastructure

Legend: EA - Each; LF - Linear Feet; LS - Lump Sum; SF - Square Feet; AL - Allowance

Item	Bid Item		Unit	Segment A	*Segment B	Segment C	Segment D	Segment E	Segment F	Segment G	Segment H	Segment I	Segment J	Segment K	Segment L	Segment M	Segment N	Segment O	Total	Total Cost
		Unit	Price																Qty.	
Street Lights																				
E-1	30' Steel Streetlight Pole, 6' Arm and Concrete Foundation	EA	$9,600	2	0	0	2	1	4	0	0	0	0	0	0	0	0	0	9	$86,400
E-2	Luminaire LED with Photocell (Per contract drawing)	EA	$500	2	4	0	2	1	4	0	0	0	1	3	0	1	2	3	23	$11,500
E-3	Refurbished Existing Streetlight Pole	EA	$1,500	0	4	0	0	0	0	0	0	0	1	3	0	1	2	3	14	$21,000
Pedestrian Lights																				
E-4	LED Post Top Fixture with Photocell	EA	$3,000			6				1	2	4			4				17	$51,000
E-5	16' Round Steel Pole and Concrete Foundation	EA	$5,350			6				1	2	4			4				17	$90,950
Conduit																				
E-6	1- 2" GRS Conduit	LF	$85	150	0	600	150	100	350	60	150	400	0	0	350	0	0	0	2,310	$196,350
E-7	1- 3" PVC Schedule 80 Conduit For PG&E Service	LF	$95	20	0	60	20	10	40	10	20	40	0	0	40	0	0	0	260	$24,700
Pull Boxes & Junction Boxes																				
E-8	Pull Box Type I (Concrete box and concrete lid)	EA	$650	2	0	6	2	1	4	1	2	4	0	0	4	0	0	0	26	$16,900
Miscellaneous																**0**				
M-1	Allowance for PG&E services connection	AL	$10,000	$20,000	$0	$60,000	$20,000	$10,000	$40,000	$10,000	$20,000	$40,000	$0	$0	$40,000	$0	$0	$0	---	$260,000
M-2	All wiring work, all miscellaneous electrical work including work to furnish and install wirings, ground rods, fuses, pull tape, pole caps, knockout seals, junction boxes, relocatable and adjustable pull boxes	LS	----	$10,845	$2,400	$33,210	$10,845	$6,060	$22,965	$4,515	$9,795	$22,140	$600	$1,800	$20,865	$600	$1,200	$1,800	---	$149,640
	15% Contingency			$10,049	$1,560	$30,587	$10,049	$5,439	$20,927	$4,435	$9,367	$20,391	$390	$1,170	$19,562	$390	$780	$1,170	**15% Contingency**	$136,266
	Grand Total			**$77,044**	**$11,960**	**$234,497**	**$77,044**	**$41,699**	**$160,442**	**$34,000**	**$71,812**	**$156,331**	**$2,990**	**$8,970**	**$149,977**	**$2,990**	**$5,980**	**$8,970**	**Grand Total**	**$ 1,044,706**

** Consider as standard streetlight pole*

Note: Exlude the following

- Coordination with Bureau of Urban Forestry

- Traffic Routing

- Muni OCS relocation = $400,000

- Spare Poles and Luminaire

Appendix C: Lighting Plan Cost Estimates

Lighting Plan for All Segments – Using only New Fixtures/Infrastructure

Legend: EA - Each; LF - Linear Feet; LS - Lump Sum; SF - Square Feet; AL - Allowance

Item	Bid Item	Unit	Unit Price	Segment A	*Segment B	Segment C	Segment D	Segment E	Segment F	Segment G	Segment H	Segment I	Segment J	Segment K	Segment L	Segment M	Segment N	Segment O	Total Qty.	Total Cost
Street Lights																				
E-1	30' Steel Streetlight Pole, 6' Arm and Concrete Foundation	EA	$9,600	2	4	0	2	1	4	0	0	0	1	3	0	1	2	3	23	$220,800
E-2	Luminaire LED with Photocell (Per contract drawing)	EA	$500	2	4	0	2	1	4	0	0	0	1	3	0	1	2	3	23	$11,500
E-3	Refurbished Existing Streetlight Pole	EA	$1,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0
Pedestrian Lights																				
E-4	LED Post Top Fixture with Photocell	EA	$3,000			6				1	2	4			4				17	$51,000
E-5	16' Round Steel Pole and Concrete Foundation	EA	$5,350			6				1	2	4			4				17	$90,950
Conduit																				
E-6	1- 2" GRS Conduit	LF	$85	150	150	600	150	100	350	60	150	400	50	300	350	100	150	200	3,260	$277,100
E-7	1- 3" PVC Schedule 80 Conduit For PG&E Service	LF	$95	20	40	60	20	10	40	10	20	40	10	30	40	10	20	30	400	$38,000
Pull Boxes & Junction Boxes																				
E-8	Pull Box Type I (Concrete box and concrete lid)	EA	$650	2	4	6	2	1	4	1	2	4	1	3	4	1	2	3	40	$26,000
Miscellaneous																				
M-1	Allowance for PG&E services connection	AL	$10,000	$20,000	$40,000	$60,000	$20,000	$10,000	$40,000	$10,000	$20,000	$40,000	$10,000	$30,000	$40,000	$10,000	$20,000	$30,000	---	$400,000
M-2	All wiring work, all miscellaneous electrical work including work to furnish and install wirings, ground rods, fuses, pull tape, pole caps, knockout seals, junction boxes, relocatable and adjustable pull boxes	LS	----	$10,845	$17,865	$33,210	$10,845	$6,060	$22,965	$4,515	$9,795	$22,140	$4,785	$18,180	$20,865	$6,060	$10,845	$15,630	---	$214,605
	15% Contingency			$10,049	$17,612	$30,587	$10,049	$5,439	$20,927	$4,435	$9,367	$20,391	$4,610	$16,317	$19,562	$5,439	$10,049	$14,660	15% Contingency	$199,493
	Grand Total			**$77,044**	**$135,027**	**$234,497**	**$77,044**	**$41,699**	**$160,442**	**$34,000**	**$71,812**	**$156,331**	**$35,345**	**$125,097**	**$149,977**	**$41,699**	**$77,044**	**$112,390**	**Grand Total**	**$ 1,529,448**

* Consider as standard streetlight pole

Note: Exlude the following

- Coordination with Bureau of Urban Forestry
- Traffic Routing
- Muni OCS relocation = $400,000
- Spare Poles and Luminaire