West Oakland BART TOD Access Study Phase 2

Prepared for:
Strategic Urban Development Alliance

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Purpose

The purpose of the Phase 2 Access Study (Study) is to identify infrastructure and service improvements to enhance walking, bicycling, and bus transit access to the West Oakland BART Station. The project has undertaken this study to identify enhancements to pedestrian and bicycle infrastructure as well as bus and shuttle service to benefit everyone coming to and from the station. This Study is focused on identifying bicycle and pedestrian improvements within 1/2 mile of the station as well as transit and shuttle service and stop enhancements that may improve BART station access. BART intends to work with the City of Oakland and other agency partners to identify grants and other funds that may be used to further develop and implement the improvements identified in the study.

A Phase 1 Access Study, which focused on station access at and immediately adjacent to the station site, was completed in 2018 and is included in **Appendix A**. It outlined existing conditions at the station, including ridership, physical infrastructure, and current access patterns.

How This Study Was Prepared

This study was prepared in partnership with the Strategic Urban Development Alliance and BART, and the recommendations are informed by many community and technical stakeholder discussions through the West Oakland BART TOD process (Phase 1 and Phase 2) and the City of Oakland's related plans. This study incorporates the following plans and studies for future improvements and access needs in the greater West Oakland BART station area:

- Oakland Walks! – City of Oakland Pedestrian Plan (2017)
- Let's Bike Oakland – City of Oakland Bike Plan (2019)
- City of Oakland High Injury Network Maps (2018)
- West Oakland Specific Plan (2014)
- West Oakland Truck Management Plan (2019)

Stakeholder Engagement

The focus of the Phase 2 stakeholder engagement was bringing technical stakeholders together, specifically BART, AC Transit, City of Oakland Planning, and City of Oakland Department of Transportation (DOT). A meeting with each of these groups was held on May 22, 2019 to review and discuss potential improvements to be included in the Phase 2 Access Study.

In addition, AC Transit provided bus service and infrastructure improvements that would enhance access to the West Oakland BART Station. Emery Go Round provided information on the potential extension of their service to West Oakland BART.

In addition to this work, the project has a Community Advisory Committee (CAC) that meets monthly on a wide range of topics include BART station access.

Transit Access

AC Transit provides service to the West Oakland BART Station through four main lines:

- Line 14 has 270 average daily boardings and 197 alightings. It serves the West Oakland Station and Fruitvale Station via Wood Street, 14th Street, E. 18th Street, E. 21st Street, School Street, MacArthur Boulevard, and High Street.
- Line 29 has 69 average daily boardings and 63 alightings. It runs from Public Market Emeryville to Lakeshore Avenue & Mandana Boulevard via 65th Street, Hollis Street, Peralta Street, West Oakland BART, 10th Street, and 11th/12th streets;
- Line 36 has 129 average daily boardings and 156 alightings. It runs from Downtown Berkeley to the West Oakland Station via Bancroft Way/Durant Avenue, Shattuck Avenue, Dwight Way, 7th Street, Public Market Emeryville, Shellmound Street, 40th Street, and Adeline Street;
- Line 62 has 185 average daily boardings and 176 alightings. It serves the West Oakland Station, Lake Merritt Station, and Fruitvale Station via 7th Street, E. 10th Street, 8th Avenue, Highland Hospital and 23rd Avenue.

Weekday headways for the four AC Transit routes range from 15 to 30 minutes and weekend headways range from 20 to 30 minutes. In addition, lines 14, 36, and 62 require a 10-20 minute layover at the West Oakland BART station. Line 14 has the most weekday boardings/alightings, followed by routes 62, 36, and 29. In addition to AC Transit, two privately owned intercity buses (FlixBus and Megabus) currently operates at the station as well as a private commuter shuttle. FlixBus operates 12 buses a day through the station with connections across California, and Megabus operates 6 buses a day to Southern California. Bauer operates a commuter shuttle which has three runs during the peak periods.

Recommendations

The recommendations for transit improvements can be grouped into three categories:

- AC Transit bus re-routing and frequency improvements,
- AC Transit infrastructure and equipment upgrades, and
- Other transit improvements.

Table 1 summarizes the transit recommendations and **Figure 1** presents a map of key transit improvements. More information about the recommendations are included in subsequent sections.

Figure 1: Transit Improvements

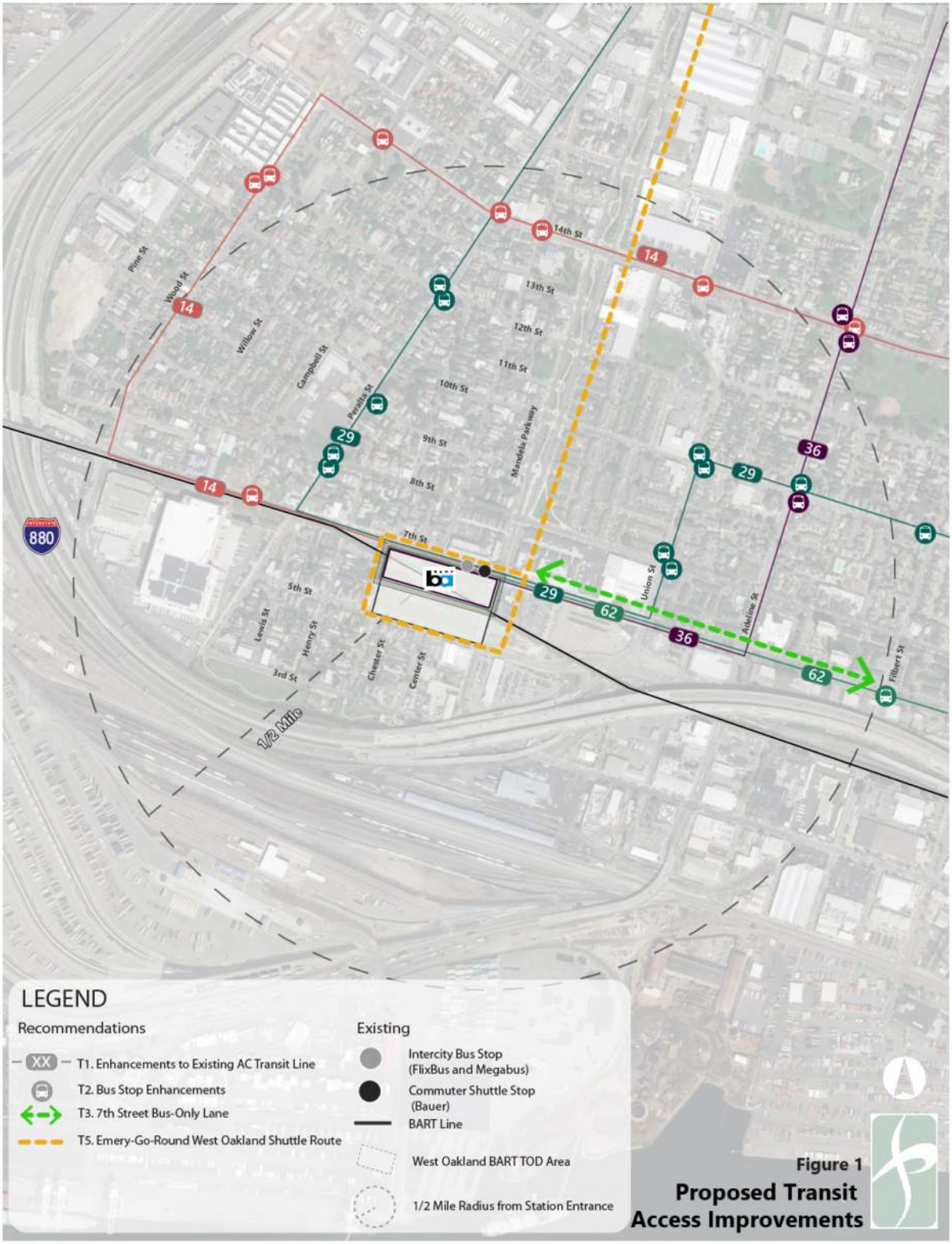


Table 1: Transit Recommendations

#	Description	Source	Location	Cost Estimate[1]	Timeline[2]	Cost Assumptions
AC Transit Re-Routing and Frequency Improvements						
T1	Increase frequencies on lines 14, 29, 36, and 62 on weekday peak, weekday off-peak, and weekend hours.	AC Transit	Line 14	$10,264,000 - $10,446,000	Near Term	Costs provided by AC Transit, 2019. Includes operating costs and new capital costs.
			Line 29	$7,268,000 - $11,088,000		
			Line 36	$8,116,000 - $12,102,000		
			Line 62	$6,742,000 - $7,077,000		
AC Transit Infrastructure and Equipment Improvements						
T2	Improve bus stop operations with bus bulbs, bus pads, stop removal, and/or far side relocation for lines 14, 29, and 36. See stop locations in **Table 4** and on **Figure 1.**	AC Transit	Line 14	$66,000 - $343,000	Near to Medium Term	See **Table 4** for more information.
			Line 29	$104,000 - $488,000		
			Line 36	$69,000 - $240,000		
			Line 62	$2,000 - $11,000		
T3	Enhance the passenger waiting environment at bus stops to make it secure and comfortable for people waiting to take transit	Charrette	Study Area	$1,374,000 - $4,121,000	Near to Medium Term	Range given for enhanced bus stops with no shelter (low) and with shelter (high) at the bus stops AC Transit identified for improvements within the study area. Cost per the AC Transit Multimodal Corridor Study
T4	Install red transit-only lanes on 7th Street between Mandela Parkway and Union Street.	Charette	7th Street between Mandela Parkway and Union Street	$677,000	Near Term	Assumes red transit lane and three minor signal modifications.
T5	Improve pedestrian safety at bus stops, such as high visibility crosswalks and ADA upgrades.	Charette	See **Figure 2**	See **Table 6** for pedestrian projects	Near Term	-
	Other Transit Improvements					

Table 1: Transit Recommendations

#	Description	Source	Location	Cost Estimate[1]	Timeline[2]	Cost Assumptions
T6	Improve north-south access with a new Emery Go Round West Oakland Shuttle connecting to BART	Emeryville Transportation Management Association	Mandela Parkway/ West Oakland Station	$544,200	Medium Term	Costs provided by Emeryville Transportation Management Association, 2019.
T7	Increase station capacity and access at the West Oakland BART Station through infrastructure upgrades, nighttime on-demand van services, and improved lighting.	West Oakland Specific Plan	West Oakland BART Station	$-	Medium to Long Term	Cost dependent on scope of improvements.

1. Construction costs are adjusted to 2024 dollars using the Highway & Street Construction Cost Index.
2. Near Term is defined as 0-5 years, Medium Term as 5-10 years, Long Term as 10+ years.

AC Transit Re-Routing and Frequency Improvements

The full scope of AC Transit's vision has not been completed with Measure BB (2014). Some of the planned improvements, including increased frequency and bus re-routing, are recommended in this report. The following improvements for transit are proposed:

T1. Currently, the four lines run at 15-30 minute frequencies on weekday peak hours and 30 minute frequencies on weekend hours. AC Transit recommends increasing frequencies to 15 minutes on weekday peak and off-peak hours and to 20 minutes on weekends. **Table 2** presents the current bus frequencies and two future scenarios for increased bus frequencies: ACgo Full Implementation and ACgo Plus. **Table 3** summarizes the capital and operations costs for the three scenarios. **Appendix C** includes the documentation provided by AC Transit.

Table 2: AC Transit Frequency Recommendations

Line	Weekday Peak (min)	Weekday Off-Peak (min)	Frequency			Service Statistics		Additional Capital Costs
			Weekend (min)	Vehicle Count (#)	Hours/year	Miles/year	Dollars/year[1]	
Current Service								
14	15	15	30	11	44,861	422,577	$8,074,980	-
29	20	20	30	6	27,131	236,947	$4,883,526	-
36	30	30	30	5	26,220	226,355	$4,719,546	-
62	15	20	30	8	35,078	317,676	$6,313,968	-
			Total	*30*	*133,289*	*1,203,555*	*$23,992,020*	-
Proposed Service Option 1: ACgo (Full Implementation)								
14	15	15	20	12	50,356	478,796	$9,064,000	$1,200,000
29	20	20	20	7	33,710	296,096	$6,068,000	$1,200,000
36	20	20	20	6	38,423	336,474	$6,916,000	$1,200,000
62	15	20	20	8	37,454	338,809	$6,742,000	-
			Total	*33*	*159,943*	*1,450,174*	*$28,790,000*	*$3,600,000*
Proposed Service Option 2: ACgo Plus								
14	15	15	20	12	51,365	489,769	$9,246,000	$1,200,000
29	15	15	20	9	41,600	364,620	$7,488,000	$3,600,000
36	15	15	20	8	47,236	413,406	$8,502,000	$3,600,000
62	15	15	20	8	39,316	357,665	$7,077,000	-
			Total	*37*	*179,517*	*1,625,459*	*$32,313,000*	*$8,400,000*

Source: AC Transit email, 2019 (in 2019 dollars).

Table 3: AC Transit Frequency Recommendations Cost Summary

Cost Summary	Buses	Capital (one-time)	Annual Hours	Operations (annual)
Current	30	$36,000,000	133,289	$23,992,000
ACgo[1]	3	$3,600,000	26,654	$4,798,000
ACgo Plus[1]	7	$8,400,000	46,228	$8,321,000

Source: AC Transit email, 2019 (in 2019 dollars).
1. Cost is additive to the current costs for the ACgo and ACgo Plus service cost estimates.

Infrastructure Improvements

AC Transit has recommended improvements to bus stop facilities and other infrastructure upgrades. In addition, the West Oakland Specific Plan and the charette identified opportunities to improve physical infrastructure within ½ mile of the station.

T2. AC Transit has proposed a number of changes to bus stops serving lines 14, 29, 36, and 62. These include building bus bulbs, relocating stops to the far side of the intersection, and/or eliminating stops. **Table 4** presents recommendations within the study area.

Table 4: AC Transit Bus Stop Recommendations

Direction	Stop #	Existing Ridership[1]	Stop Name	Recommendation	Cost Estimate[2]	
					Low	High
Line 14						
Eastbound	5	48 (62)	Wood St & 12th St	Build bus bulb	$23,000	$80,000
Eastbound	7	54 (7)	14th St & Center St	Move back to far-side Peralta for connections with Line 29	$-	$34,000
Eastbound	9	17 (2)	14th St & Poplar St	Eliminate for stop-spacing.	$2,000	$11,000
Westbound	50	11 (55)	14th St & Adeline St	Move far-side	$-	$34,000
Westbound	51	2 (18)	14th St & Poplar St	Eliminate for stop-spacing.	$2,000	$11,000
Westbound	53	4 (58)	14th St & Peralta St	Move far-side	$-	$34,000
Westbound	54	4 (32)	14th St & Willow St	Move far-side	$-	$34,000
Westbound	55	61 (42)	Wood St & 12th St	Build bus bulb	$23,000	$80,000
Westbound	57	2 (21)	7th St & Campbell St	Eliminate	$2,000	$11,000
Line 29						
Eastbound	15	11 (6)	Peralta St & 12th St	Eliminate or move to 14th street far-side	$2,000	$11,000
Eastbound	17	10 (6)	Peralta St & 8th St	Build bus bulb	$23,000	$80,000
Eastbound	20	3 (1)	Union St & 8th St	Eliminate	$2,000	$11,000

Table 4: AC Transit Bus Stop Recommendations

Direction	Stop #	Existing Ridership[1]	Stop Name	Recommendation	Cost Estimate[2]	
					Low	High
Eastbound	21	17 (4)	10th St & Union St	Eliminate	$2,000	$11,000
Eastbound	23	4 (4)	10th St & Filbert St	Eliminate	$2,000	$11,000
Westbound	30	8 (15)	10th St & Market St	Move far-side	$-	$34,000
Westbound	31	7 (15)	10th St & Filbert St	Eliminate	$2,000	$11,000
Westbound	32	10 (17)	10th St & Adeline St	Move far-side, widen sidewalk or add bus bulb[2]	$23,000	$80,000
Westbound	33	4 (28)	Union St & 10th St	Eliminate	$2,000	$11,000
Westbound	34	2 (9)	Union St & 8th St	Eliminate	$2,000	$11,000
Westbound	38	2 (2)	Peralta St & 8th St	Move far-side	$-	$34,000
Westbound	39	8 (31)	Peralta St & 9th St	Build bus bulb	$23,000	$80,000
Westbound	40	4 (7)	Peralta St & 12th St	Eliminate, move to 14th street far-side[2]	$-	$34,000
Line 36						
Northbound	4	17 (5)	Adeline St & 10th St	Move far-side, bus bulb/bikeway[2]	$23,000	$80,000
Northbound	5	14 (4)	Adeline St & 14th St	Move far-side, bus bulb/ bikeway[2]	$23,000	$80,000
Southbound	41	2 (16)	Adeline St & 14th St	Move far-side, bus bulb/ bikeway[2]	$23,000	$80,000
Line 62						
Eastbound	5	23 (7)	7th St & Filbert St	Eliminate	$2,000	$11,000

Source: AC Transit recommendations, 2019. Unit costs developed based on Transit Multimodal Corridor Study Appendix, 2016 and Pedestrian Bicycle Information Center bus bulb information.
1. Existing ridership is the average daily boardings and (alightings), 2019.
2. Adjusted to 2024 dollars using the Highway & Street Construction Cost Index.

T3. Upgrade the passenger waiting environment at bus stops incoordination with AC Transit. Install bus shelters on AC Transit-designated Major Corridors where feasible. Refer to the Oakland Great Streets

Design Guidelines for more information on sidewalk widths, accessibility, and other design considerations with bus shelters. At enhanced bus stops or other major bus stops, include real time information about bus arrivals. Prioritize bus stop improvements on the 14 and 62 given those provides the most frequent service today and under the ACgo proposed service changes. There are 23 bus stops on those two lines within the West Oakland BART study area.

T4. A red transit-only lane, as well as a queue jump lane, on 7th Street between Union Street and Mandela Parkway is recommended. The transit lane could be a time-of-day lane. According to the Oakland Great Streets Design Guidelines, High-Frequency (buses every 3 minutes or less) and Medium-Frequency (buses every 3 to 6 minutes) Transit streets are candidates for dedicated and peak-only transit lanes. Current service is approximately every 7 minutes.

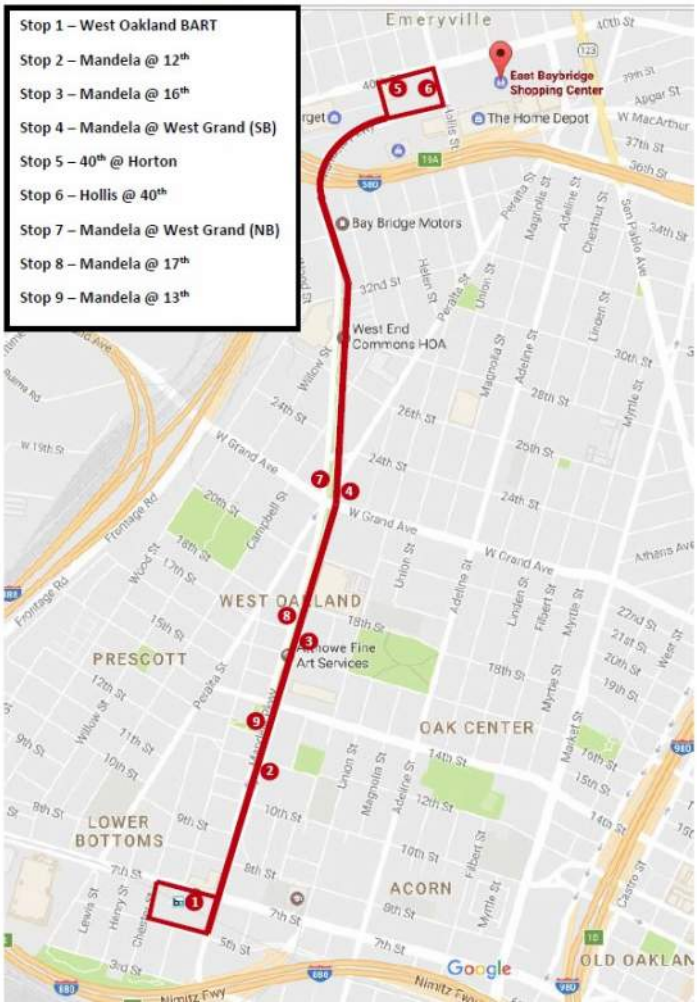
T5. Pedestrian safety enhancements, such as high visibility crosswalks and flashing beacons, should be installed near bus stops, consistent with City of Oakland's crosswalk policy and best practices. Accessibility for people of all abilities should also be provided. See **Table 6** for more information about pedestrian improvements.

Other Transit Improvements

Other vehicular services like commuter shuttles, privately-owned bus companies, and the Emery Go-Round Shuttle are important to station and neighborhood access. Opportunities for integration with possible West Oakland Shuttle Service should be explored.

T6. Emery Go-Round, in conjunction with West Oakland businesses, has explored the potential for a West Oakland shuttle program. Informal cost estimates and routing are presented in **Table 5**. Effort should be made to conduct a formal service analysis and integrate Emery Go-Round's efforts with the West Oakland BART station area. The following services were evaluated:

- Commute service: 12-15 minute frequencies, with 2 buses operating from 6:30 AM to 9 AM and 4 PM to 7 PM on weekdays (5.5 hours)
- Non-commute service: 30 minute frequencies, with 1 bus operating from 9 AM to 4 PM and 7 PM to 10 PM on weekdays (10 hours)



Proposed Emery-Go-Round West Oakland Shuttle Route
Source: Emeryville Transportation Management Association

Weekend service: 30 minute frequencies, with 1 bus operating from 10 AM to 9 PM on Saturdays and Sundays (11 hours)Table 5: Emery Go-Round West Oakland Shuttle Estimates

Service Type	Estimated Annual Service Hours	Estimated Cost per Service Hour ($)	Total Estimated Annual Cost ($)
Commute	2,794	84	$234,700
Non-Commute	2,540	84	$213,400
Weekend	1,144	84	$96,100

Total	6,478	84	$544,200

Source: Emeryville Transportation Management Association, 2019 (in 2019 dollars).

T7. The West Oakland Specific Plan recommends strategies to increase station capacity and access at the West Oakland BART Station. BART is embarking on a Station Modernization Planning Process in 2019/2020 to identify improvements to the station itself, including:

- Assessing the need for wider train platforms;
- Assessing the need for additional vertical circulation, including pedestrian access to the station platform at the station and the possibility of a second access point;
- Assessing the need for additional fare gates and platform screen doors;
- Implement wayfinding

Pedestrian Access

As 41% of trips to the West Oakland BART station are made on foot, there is significant demand for safe, comfortable, and convenient pedestrian routes through the area. This is also consistent with the City of Oakland's classification of 7th Street between Peralta Street and Mandela parkway as a "transit district", which led to enhanced pedestrian and bicycle facilities. The primary pedestrian generators within the study area are the surrounding West Oakland residential neighborhoods: Prescott to the northwest, South Prescott to the southwest, and Acorn to the north. The U.S. Postal Service Center to the west and the Port of Oakland to the south are the main commercial and industrial areas surrounding the station and may produce a more limited number of walk trips.

Recommendations

The recommendations for pedestrian improvements can be grouped into three categories:

- A system of safe walking routes on major corridors
- Pedestrian facility enhancement
- Innovative and quick measures to improve pedestrian quality.

Table 6 summarizes the pedestrian recommendations and **Figure 2** presents a map of key pedestrian improvements. More information about the recommendations are included in subsequent sections.

Figure 2: Pedestrian Improvements

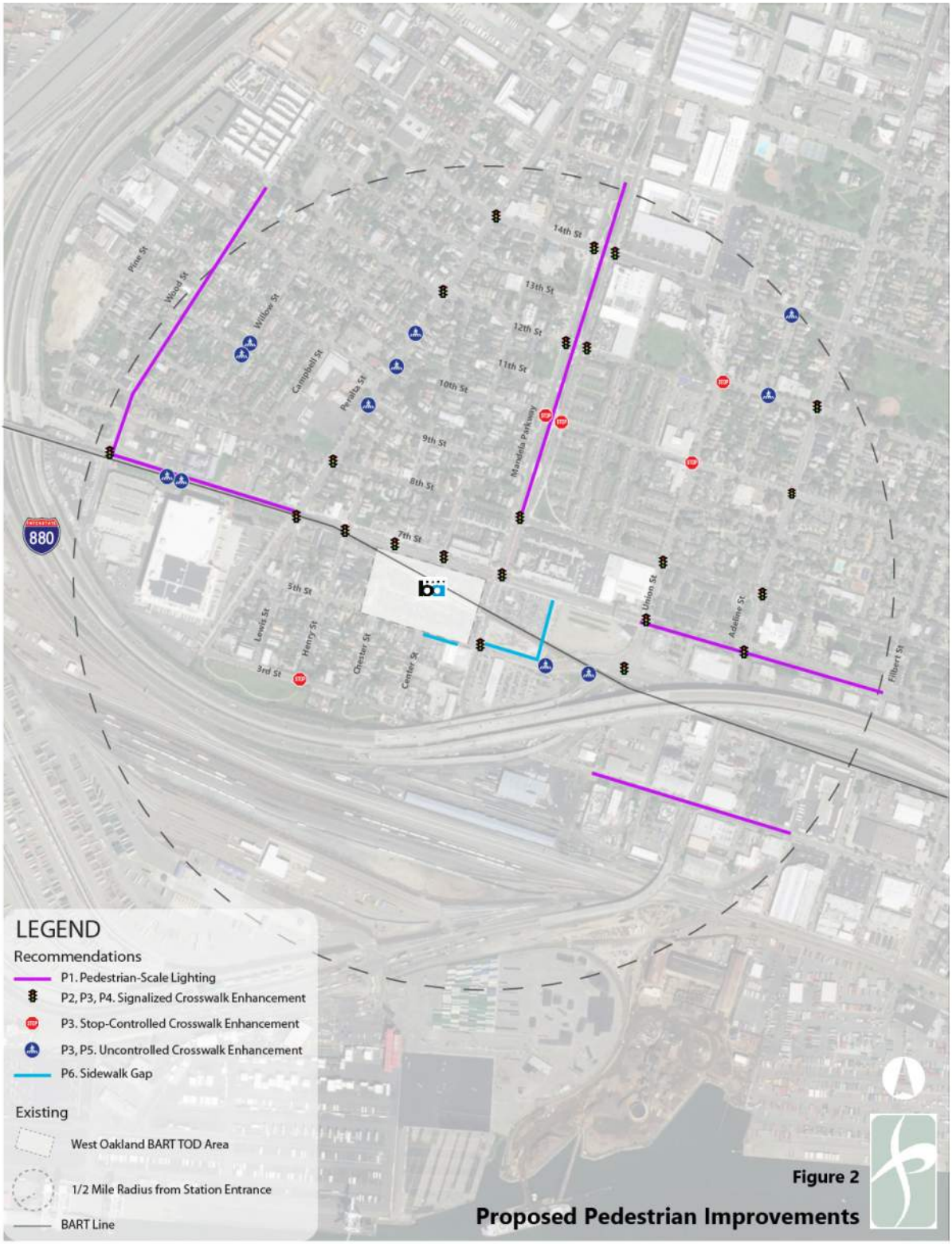


Table 6: Pedestrian Recommendations

#	Description	Source	Location	Cost Estimate, Low[1]	Cost Estimate, High[1]	Timeline[2]	Cost Assumptions
P1	Enhance security and comfort for nighttime/early morning travel to BART with pedestrian-scale lighting.	Charette	Study Area	$6,834,000	$9,222,000	Medium to Long Term	Assumes $1,000,000 per mile.
P2	Ensure that pedestrian countdown signals and accessible pedestrian signals are installed at each traffic signal.	Pedestrian Plan, Oakland Great Streets Design Guidelines	Study Area	$391,000[3]	$9,787,000[3]	Near Term to Medium Term	7th Street at Chester Street, Center Street, and Mandela Parkway will be completed through development
P3	Restripe all crosswalk as high-visibility crosswalks, consistent with the City's latest standards.	Pedestrian Plan, Oakland Great Streets Design Guidelines	Study Area	$897,000	$1,035,000	Near Term	Assumes 118 crosswalks.
P4	Adjust signal timings to add Leading Pedestrian Intervals (LPIs) and pedestrian recall phases at signals near BART and transit routes where pedestrian demand is highest.	Pedestrian Plan, Oakland Great Streets Design Guidelines	Study Area	$46,000	$-	Near Term	
P5	Enhance all uncontrolled crosswalks per the FHWA Guide for Improving Pedestrian Safety at Uncontrolled Locations and Oakland' Great Streets Design Guidelines crosswalk policy.	Pedestrian Plan, Oakland Great Streets Design Guidelines	Study Area	$693,000	$1,939,000	Near Term to Medium Term	
P6	Implement sidewalk gap closure projects and related Pedestrian Plan projects	2017 Oakland Pedestrian Plan	Study Area	$591,000	$1,015,000	Medium to Long Term	Cost for remaining sidewalk gap closures

1. Adjusted to 2024 dollars using the Highway & Street Construction Cost Index.
2. Near Term is defined as 0-5 years, Medium Term as 5-10 years, Long Term as 10+ years.

Safe Walking Routes

A system of high-quality, safe routes should be established in the study area to provide access to transit, residential areas, and nearby amenities. These routes and major corridors are proposed to be the priority targets for lighting, sidewalk, wayfinding, and maintenance efforts.

P1. Enhance the personal security and comfort of walking to BART through expanding the pedestrian-scale lighting. Portions of Mandela Parkway, 7th Street, Peralta Street, Wood Street, and 3rd Street already have pedestrian-scale lighting. This project would expand the system to better connect residential areas and transit streets to BART. Install pedestrian-scale lighting on 7th Street between Wood and Peralta Street and between Union and Filbert Streets; Mandela Parkway between 8th and 14th Street; and 3rd Street between Union and Linden Streets.

P2. Installation of pedestrian countdown signals and accessible pedestrian signals at all signals where they are missing today.

P3. Restriping all crosswalks as high-visibility, consistent with the City's latest standards.

P4. Adjusting signal timings to:

- Install Leading Pedestrian Intervals at key intersections with conflict movements, such as near the BART Station on 7th Street. Install consistent with the Oakland Great Streets Design Guidelines crosswalk policy.
- Put pedestrian phase on recall at least during the AM/PM peak to people walking to/from BART. Set to recall for other times of day if demand is high. Install consistent with the Oakland Great Streets Design Guidelines crosswalk policy.

P5. Enhancing all uncontrolled crosswalks per the FHWA Guide for Improving Pedestrian Safety at Uncontrolled Locations. Enhancements may include installing median refuge, flashing beacons (such as RRFBs or PHBs), advanced yield markings, in-roadway paddle signs, and similar improvements in addition high visibility crosswalks and bulb outs.

P6. The West Oakland Specific Plan recommends several pedestrian infrastructure and paving improvements in the study area, including closing sidewalk gaps. See **Appendix D** for more information. These include:

- Additional streetlight and sidewalk improvements on the pedestrian connection from Mandela Parkway to the West Oakland BART station;
- The installation of ADA ramps between all major transportation hubs in West Oakland, as well as improving intersections currently lacking accessible curb ramps as a part of any streetscape or paving project;
- Installing curbs, gutters, and striping for parallel parking throughout West Oakland where these street sections do not exist;
- Pavement repair on high priority streets, including on Adeline Street from I-880 to 3rd Street and on 3rd Street from Union Street to Martin Luther King Jr. Way;
- Safe, secure, and well-lighted pedestrian corridors, especially surrounding the West Oakland BART Station; and

Installation of curb, gutter, and sidewalks where missing, including perpendicular parking in certain sections on Wood Street.

Bicycle Access

The West Oakland BART Station is connected to the citywide bicycle network via 7th Street and Mandela Parkway. The Mandela Parkway bicycle lanes connect to bicycle lanes on 3rd Street, 8th Street, and 14th Street. The majority of these facilities are classified as bicycle lanes (Class II) and routes (Class III), though the City of Oakland proposed upgrading these facilities to protected/buffered lanes.

Recommendations

The recommendations for bicycle improvements can be grouped into two categories:

- Bicycle intersection improvements
- Bikeway improvements on the West Oakland bicycle network.

The bicycle improvements noted here are also benefit those using e-scooters. **Table 7** summarizes the bicycle recommendations, and **Figure 3** presents a map of key bicycle improvements.

Table 7: Bicycle Recommendations

Number	Description	Source	Location	Cost Estimate[1]	Timeline[2]	Cost Assumptions
B1	Implement Let's Bike Oakland 2019's system of new and upgraded bikeways.	Let's Bike Oakland	Study Area	$10,621,000 - $15,512,000	Near Term to Long Term	See **Table 8**.
B2	Implement intersection improvements where the bikeway network intersects and at key community locations.	Let's Bike Oakland	Various intersections in Study Area	$777,000 - $10,843,000	Near Term to Long Term	See **Table 9**.
B3	Identify candidate streets for decommissioning of train tracks.	Charette, West Oakland Specific Plan	Railroad tracks on Union Street, Wood Street, Study Area	$-	Long Term	-

1. Adjusted to 2024 dollars using the Highway & Street Construction Cost Index.
2. Near Term is defined as 0-5 years, Medium Term as 5-10 years, Long Term as 10+ years.

Bikeway Improvements

Key routes have been identified as bicycle network connectors. These should be prioritized for upgrades in bicycle class in accordance to the Let's Bike Oakland 2019 bicycle plan update. Intersection and bikeway improvements should proactively address potential safety issues, support bicyclists turning onto and off of the bikeway network, and serve people of a wide range of ages and abilities.

B1. Let's Bike Oakland recommends specific bikeway improvements in West Oakland, including neighborhood routes, buffered lanes, and protected lanes. **Table 8** summarizes the recommendations, which would create a connected bikeway network for people of a wide range of ages and abilities once completed. **Appendix E** includes a complete map of the Let's Bike Oakland proposed network for West Oakland.

B2. Let's Bike Oakland defines a variety of intersection improvements that are typically needed along the bikeway network. Intersection improvements should always be included at the intersections of the bikeway network (e.g. a protected intersection where two separated bikeways intersect) and are typically also needed at other intersections along a bikeway. In addition, the High Injury Network Map identifies priority intersections and corridors, based on density of fatal and severe crashes. These corridors should be prioritized for investment. The intersection of Adeline Street and 7th Street was identified in the 2019 Oakland Bike Plan as a priority intersection. **Table 9** provides more information about intersection recommendations. **Appendix E** includes information about design assumptions for each type of intersection improvement.

B3. The presence of train tracks can present a safety challenges for people biking. It can also make crosswalks difficult for people with wheelchairs or strollers. Problematic tracks should be identified and studied as candidates for decommissioning. The charrette and the West Oakland Specific Plan identified the following priorities:

- Resurfacing streets with rail spurs until long-term rail repair or removal can be implemented (West Oakland Specific Plan);
- Removing all rail lines east of Mandela Parkway, such as Union Street (West Oakland Specific Plan); and
- Removing track on Wood Street for safety on the proposed Neighborhood Bicycle Route (charette).

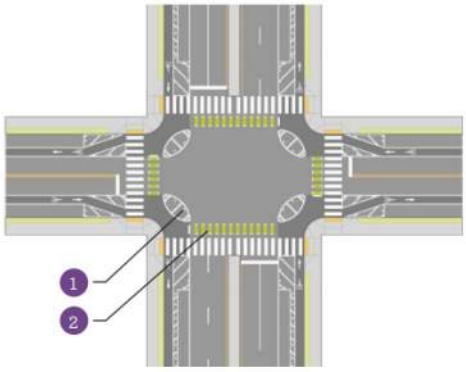
SUPPORTING INFRASTRUCTURE

TYPICAL INTERSECTION TREATMENTS

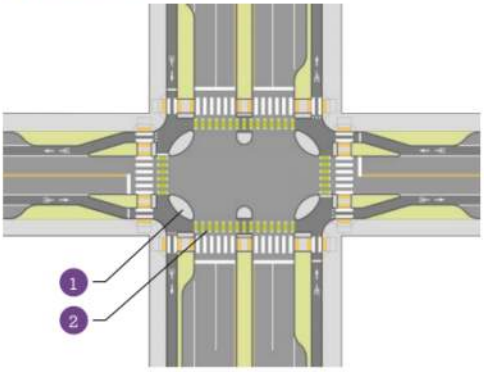
Street intersections create conflict points between different modes of travel. Intersection design is important because it affects how pedestrians, bicycles, and motor vehicles interact. There is no single intersection design that can be applied everywhere. Variations in each location's context need different design features. The best approach is to create predictable interactions between pedestrians, bicycles, and motor vehicles. This increases safety and comfort for everyone. The following graphics illustrate some common design methods.

OakDOT consults the NACTO Urban Bikeway Design Guide, AASHTO Guide for the Development of Bicycle Facilities, California Manual on Uniform Traffic Control Devices (MUTCD), Caltrans Highway Design Manual (HDM), AC Transit Multimodal Corridor Guidelines, City standards, and engineering judgment to make context sensitive design decisions.

PROTECTED INTERSECTION
Short Term/Lower Cost



PROTECTED INTERSECTION -
Long Term/Higher Cost



Key Features:

1. **Bike lane buffer** – install bike lane buffer treatments that extend into the intersection and include protection islands at corners. The extension of the protection buffer provides a safer and more intuitive crossing through the intersection, and allows bicycles to wait for red lights in a position that is more visible to motor vehicle traffic.
2. **Marked bicycle crossings** – install to enhance awareness of bicycles crossing roadway and define dedicated space to make those crossings.

Optional Features:

- **Buffers** – can be semi-permanent (e.g., flex posts, painted buffer) or permanent (e.g., raised curb)
- **Bicycle signals** – use for separate bicycle-specific signal phasing.
- **Pedestrian and median refuge islands** – can provide additional safety for pedestrians crossing arterial roadway.

The Let's Bike Oakland (2019) recommends protected intersections as typical intersection treatments of intersecting bikeways.

Table 8: Project B1 Bikeway Corridor Improvements

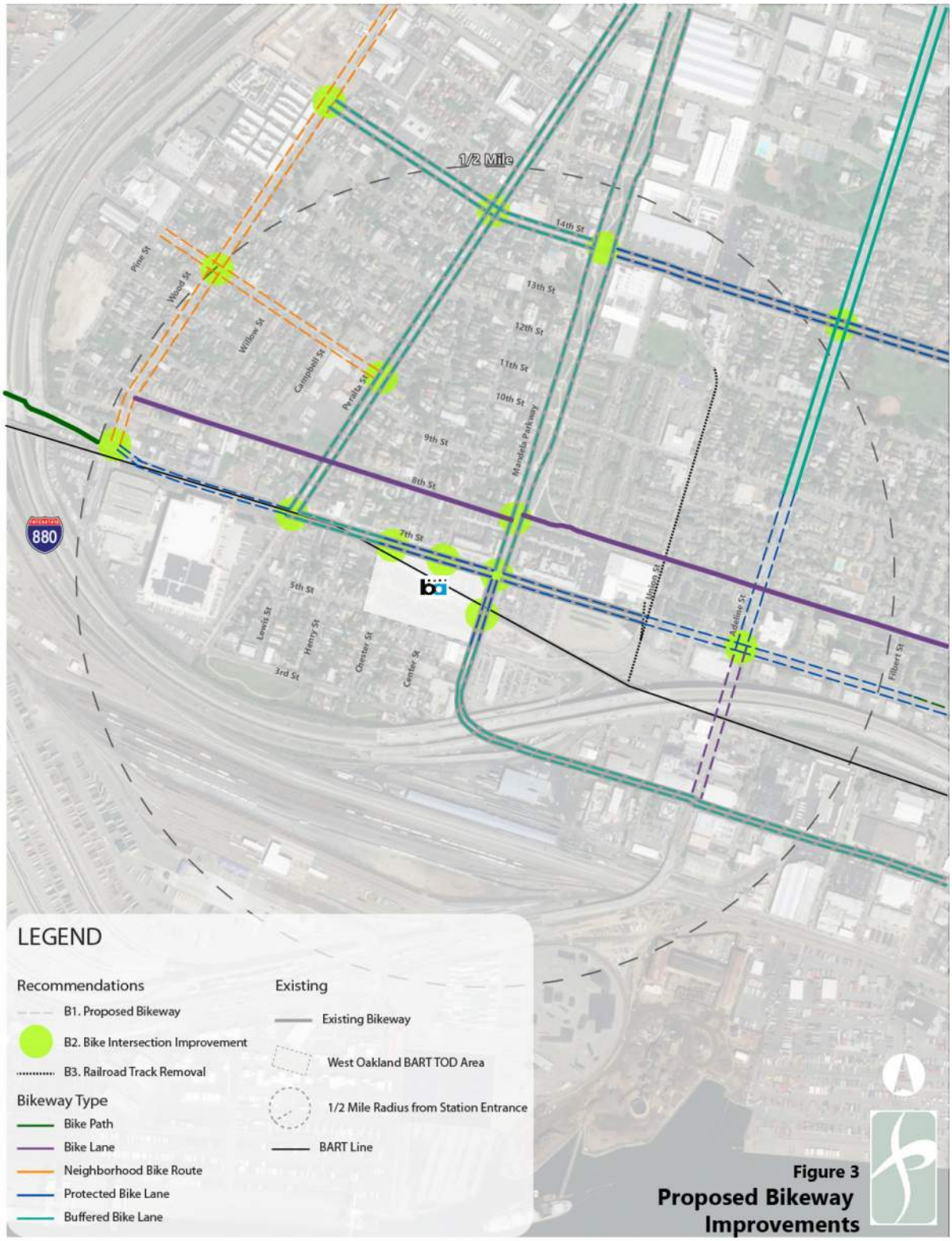
Roadway	Beginning	Ending	Bikeway		Miles	Let's Bike Oakland		Cost Estimate[3]	
			Existing	Proposed		Timeline[1]	Priority	Low	High
7th Street	Wood Street	Peralta Street	None	Protected Bicycle Lanes	0.2	Short Term	Yes	$33,000	$564,000
7th Street	Union Street	Adeline Street	None	Protected Bicycle Lanes	0.1	Long Term	Yes	$17,000	$282,000
10th Street	Wood Street	Peralta Street	None	Neighborhood Bikeway	0.3	Short Term	No	$218,744	$48,076
14th Street	Wood Street	Mandela Parkway	Bicycle Lanes	Buffered Bicycle Lanes	0.3	Short Term	Yes	$58,020	$-
14th Street	Mandela Parkway	Street	Bicycle Lanes	Protected Bicycle Lanes	0.4	Short Term	Yes	$846,371	$49,582
Adeline Street	10th Street	7th Street	None	Protected Bicycle Lanes	0.2	Long Term	Yes	$33,000	$564,000
Mandela Parkway	8th Street	34th Street	Bicycle Lanes	Buffered Bicycle Lanes	1.5	Short Term	No	$-	$219,000
Middle Harbor Road Path	Adeline Street	Market Street	None	Shared-Use Path	0.3	Long Term	No	$1,226,000	$1,451,000
Peralta Street	7th Street	20th Street	Bicycle Lanes	Buffered Bicycle Lanes	0.8	Short Term	No	$116,041	$-
Peralta Street	20th Street	Mandela Parkway	Bicycle Lanes	Bicycle Boulevard	0.1	Short Term	No	$16,000	$73,000
Peralta Street	Mandela Parkway	24th Street	Bicycle Lanes	Buffered Bicycle Lanes	0.1	Short Term	No	$-	$15,000
Wood Street	7th Street	32nd Street	None	Bicycle Boulevard	1.3	Short Term	No	$208,000	$948,000
							Total	*$10,215,000*	*$15,512,000*

Source: Let's Bike Oakland, 2019; costs Fehr & Peers, 2019.
1. Long term timeline typically refers to the feasibility of projects related to the space available in the public right of way.
2. Adjusted to 2024 dollars using the Highway & Street Construction Cost Index.

Table 9: Project B2 Bikeway Intersection Improvements

Intersection	Recommendation	Timeline[1]	Cost Estimate[3]	
			Low	High
7th Street & Wood Street	Protected Intersection	Short Term	$177,000	$3,434,000
7th Street & Peralta Street	Bike Lane Crossing Arterial	Short Term	$25,000	$71,000
7th Street & Chester Street	Protected Intersection	Short Term	Included in development project	
7th Street & Center Street	Protected Intersection	Short Term		
7th Street & Mandela Parkway	Protected Intersection	Short Term		
BART Access & Mandela Parkway	Neighborhood Bike Street Crossing	Short Term	Included in development project	
7th Street & Adeline Street	Protected Intersection	Short Term	$177,000	$3,434,000
8th Street & Mandela Parkway	Neighborhood Bike Street Crossing	Short Term	$41,000	$82,000
10th Street & Wood Street	Neighborhood Bike Street Crossing	Short Term	$41,000	$82,000
10th Street & Peralta Street	Neighborhood Bike Street Crossing	Short Term	$41,000	$82,000
14th Street & Wood Street	Neighborhood Bike Street Crossing	Short Term	$41,000	$82,000
14th Street & Peralta Street	Bike Lanes Crossing at Arterials	Short Term	$25,000	$71,000
14th Street & Mandela Parkway	Bike Lanes Crossing at Arterials	Short Term	$25,000	$71,000
14th Street & Adeline Street	Protected Intersection	Short Term	$177,000	$3,434,000
		Total	*$770,000*	*$10,843,000*

Figure 3: Bicycle Improvements



Other Access Considerations

In addition to the transit, biking, and walking access improvements described in the previous section, there are a variety of truck-related recommendations for the area. These are important for creating safe and complete streets, because better organizing goods movement can improve safety for everyone who uses the street. Trucks are prohibited in most streets in West Oakland, particularly residential streets.

Recommendations

The recommendations for bicycle improvements can be grouped into two categories:

- Multimodal safety improvements
- Truck Safety Improvements

Table 10 summarizes the access recommendations.

Table 10: Other Complete Streets Access Recommendations

#	Description	Source	Location	Cost[1]	Timeline[2]	Cost Assumptions
Multimodal Safety Enhancements						
C1	Implement vehicular safety measures at locations on the motor vehicle high injury network	Oakland Bicycle Plan and Oakland Pedestrian Plan	Various intersections in Study Area	$1,295,000	Near to Medium Term	Assumes road diet on Mandela Parkway (bus only lane in #1 lane) and 14th Street (4 to 3 road diet, 3 minor signal modifications).
Multimodal Safety Enhancements through Goods Movement Improvements						
C2	Support proposed truck route improvements, such as reclassifying 7th Street as a Truck Prohibited street.	West Oakland Specific Plan and West Oakland Truck Management Plan.	Study Area	$23,000	Near Term	Assumes sign costs, no administration/program costs
C3	Establish a truck parking program to solve current circulation problems associated with truck parking on Adeline Street.	West Oakland Specific Plan	Adeline Street	$40,000	Near Term	Assumes sign costs, no administration/program costs
C4	Improve signage and increase pedestrian safety at intersections heavily used by commercial trucks.	West Oakland Truck Management Plan Truck Movement and Safety Technical Memorandum	Union Street between 5th and 7th Streets, Adeline Street between 3rd and 7th Streets, and 7th Street west of Wood Street.	$10,302,000[3]	Near term to Medium Term	Cost does not include recommended railroad removal.

1. Adjusted to 2024 dollars using the Highway & Street Construction Cost Index.
2. Near Term is defined as 0-5 years, Medium Term as 5-10 years, Long Term as 10+ years.

Multimodal Safety Improvements

Specific intersections with safety concerns should be prioritized as candidates for intersection improvements. These intersection improvements would offer benefits for bicyclist and pedestrians. In addition, unused train tracks should be decommissioned on select streets.

C1. The citywide Motor Vehicle High Injury Network (HIN) map identifies Mandela Parkway between 12th Street and Grand Avenue as high injury. 14th Street through the study area is also on the HIN. A road diet, other speed reduction measures, and other safety countermeasures should be studied on both streets to improve safety for everyone who uses the street. Other safety improvements should be identified and implemented with the projects, including considerations of sight distance, pedestrian and bicycle safety, traffic control, and behavioral factors.

Multimodal Safety Enhancements through Goods Movement Improvements

The study area is adjacent to the Port of Oakland, leading to a system of truck routes and facilities necessary for Port activity. The Port and the City, specifically through the West Oakland Truck Management Plan, are developing strategies to enhance pedestrian safety while maintaining necessary routes.

C2. The West Oakland Specific Plan (2014) and West Oakland Truck Management Plan (2019) call for the maintenance of necessary truck routes for Port of Oakland activity, but recommend prohibiting encroachment of truck routes into other West Oakland neighborhoods. In addition, the West Oakland Truck Management Plan presents the following recommendations in the study area:

- Reclassifying 7th Street between Union Street and Wood Street as a Truck Prohibited Street; and
- Reclassifying I-880 from 7th Street to West Grand Avenue as a Truck Route.

C3. The West Oakland Truck Management Plan Truck Movement and Safety Technical Memorandum identifies safety concerns at several street locations. The Memorandum recommends improving signage, performing a Truck Route and Truck Prohibited Street sign inventory, and improving pedestrian safety at intersections heavily used by commercial trucks. Specific corridors with safety conflicts between trucks and pedestrians/bicyclists include:

- Union Street between 5th and 7th Streets;
- Adeline Street between 3rd and 7th Streets; and
- 7th Street west of Wood Street.

Appendix A: Phase 1 Access Study

West Oakland BART Station Access Study

Prepared for:
Strategic Urban Development Alliance

February 2018

OK17-0179.00

FEHR PEERS

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EXECUTIVE SUMMARY

This study provides an initial analysis of and recommendations for multimodal station access and circulation for the West Oakland BART Station in response to a proposed transit-oriented development (TOD) project that would create a medium- to high-density mix of office, retail and residential uses on approximately 5.5 acres of land owned by BART at the West Oakland Station. This area is currently occupied by 441 BART parking spaces as well as internal roadways that serve as AC Transit bus stops and layovers, and passenger loading areas. It is expected that the access and circulation concepts presented in this study will continue to evolve and be refined as part of TOD project development, and that future phases will include more detailed access and circulation design, engineering analyses and recommendations.

The project (shown in **Figure 10**) is in the early stages of development, and the exact land use and site plan are not yet finalized. For purposes of this study, the following project land uses were assumed:

- 900,000 square feet office space
- 75,000 square feet of retail space
- 150 residential dwelling units

BART's Replacement Parking Analysis spreadsheet tool was used to estimate the number of BART passengers generated by the TOD project and the potential loss of riders and revenue from eliminating (and not replacing) the 441 parking spaces at the station. The TOD project is estimated to generate approximately 2,500 daily riders. An estimated 330 daily riders would no longer use the station with the elimination of BART parking. Because the ridership gains resulting from the TOD project significantly offset the estimated ridership losses due to the removal of parking, the TOD project is estimated to result in an annual net revenue to BART of approximately $841,000. This does not include any ground lease revenue that BART would earn from the proposed project.

Major circulation changes resulting from the TOD project include the removal of all on-site vehicle circulation, with the exception of vehicles for BART systems maintenance, systems service, cash handling, BART Police, and paramedics, as well as emergency vehicles. On-site circulation would be focused on active modes of transportation, with a proposed pedestrian plaza along 7th Street at Center Street and a Bike Station under the BART tracks to the east of the station entrance via Mandela Parkway. Kiss-and-ride activities (including private vehicles, taxis, and transportation network company (TNC) services such as Uber and Lyft), transit stops, and transit layovers would be relocated to existing public rights-of-way on adjacent roadways.

Significant improvements to bicycle access are proposed along 7th Street and Mandela Parkway, and pedestrian access improvements are proposed at all of the intersections along 5th Street on the south side of the station property. A new high-visibility, mid-block pedestrian crossing is proposed on Mandela Parkway between 7th and 5th Streets.

New passenger loading areas are proposed on westbound 5th Street and eastbound 7th Street, and new bus stops are proposed on westbound 7th Street and westbound 5th Street. **Figure 11** and **Figure 12** illustrate the proposed pedestrian and bicycle and bus and vehicle access improvements, respectively.

Recommended parking management strategies focus on minimizing the amount of on-site parking for the TOD project and effectively pricing and managing its use so as to discourage automobile trips that could otherwise be made by transit, bicycling or walking. Recommended TDM measures focus on supporting the TOD project's location adjacent to major transit services by providing transit subsidies and facilitating the use of active transportation modes, carsharing and ridesharing.

INTRODUCTION

This study provides an initial analysis of multimodal station access and circulation at the West Oakland Bay Area Rapid Transit (BART) Station (West Oakland BART Station) and presents preliminary access and circulation concepts for pedestrians, bicycles, bus and shuttle transit, and vehicles in conjunction with the proposed Transit-Oriented Development (TOD) project on BART property. Although the TOD project is currently in the Pre-Application phase with the City of Oakland and is likely to evolve over the course of project development and approval, identifying overall access and circulation needs and concepts at this early stage can help ensure that multimodal access to the BART station is fully considered and incorporated as part of the final TOD project. It is expected that the access and circulation concepts presented in this study will continue to evolve and be refined as part of TOD project development, and that future phases will include more detailed access and circulation design, engineering analyses and recommendations.

This study addresses the following key topics:

- **Overview of Relevant Plans, Policies and Programs:** The study reviews the plans, policies, and programs that are relevant to the development of access and circulation concepts for the BART Station and the proposed TOD project.
- **Existing Conditions:** The study describes the station area's existing conditions, incorporating previously-published data from 2008 and 2015, as well as station area data and observations that were collected in February 2017.
- **Future Conditions:** The study provides an overview of the conceptual design for the TOD project and a description of the land use program. The study also presents preliminary estimates of future BART ridership and revenue impacts resulting from the TOD project.
- **Proposed Access Improvements:** Based on the preliminary estimates described under future conditions and changes to the immediate station area resulting from the TOD project, the study describes the infrastructure necessary to support future ridership and access for all modes of travel with the TOD project. The study also identifies planned improvements beyond the immediate station area, and notes those that should be prioritized to improve connectivity to the station area.
- **Parking and Transportation Demand Management Strategies:** Lastly, the study presents recommendations for parking and programmatic transportation demand management (TDM) measures.

STATION CONTEXT

The West Oakland BART Station is bordered by residential neighborhoods to the north and west, the Port of Oakland to the south, and commercial uses to the east. Interstate 880 (I-880) acts as a geographic barrier in the area, separating the commercial and industrial uses to the north and south from the residential uses immediately adjacent to the station. **Figure 1** shows the station location and setting within Oakland and the inner East Bay.

The station's short headways, location one stop from Downtown San Francisco (at Embarcadero), proximity to major freeways, and the high cost of tolls and parking in San Francisco has historically made the West Oakland BART Station an attractive station for park-and-ride passengers from around the region. However, since 2008, the station experienced a substantial shift towards becoming a more local-serving station, and in 2015 86 percent of passengers boarding at West Oakland were Oakland residents.[1]

The West Oakland BART Station is the first stop on the west side of the Transbay Tube and provides connections to all transbay lines, as represented in **Table 1**. In addition to the lines shown, BART provides limited service trains along some lines to increase frequency in the morning and evening peak periods. The confluence of lines means that the station experiences transbay headways as short as three to four minutes during peak periods. As of September 2017, the West Oakland BART Station averaged 8,038 weekday boardings, 4,658 Saturday boardings, and 3,592 Sunday boardings.

[1] 2008 and 2015 BART Station Profile Studies, https://www.bart.gov/about/reports/profile.

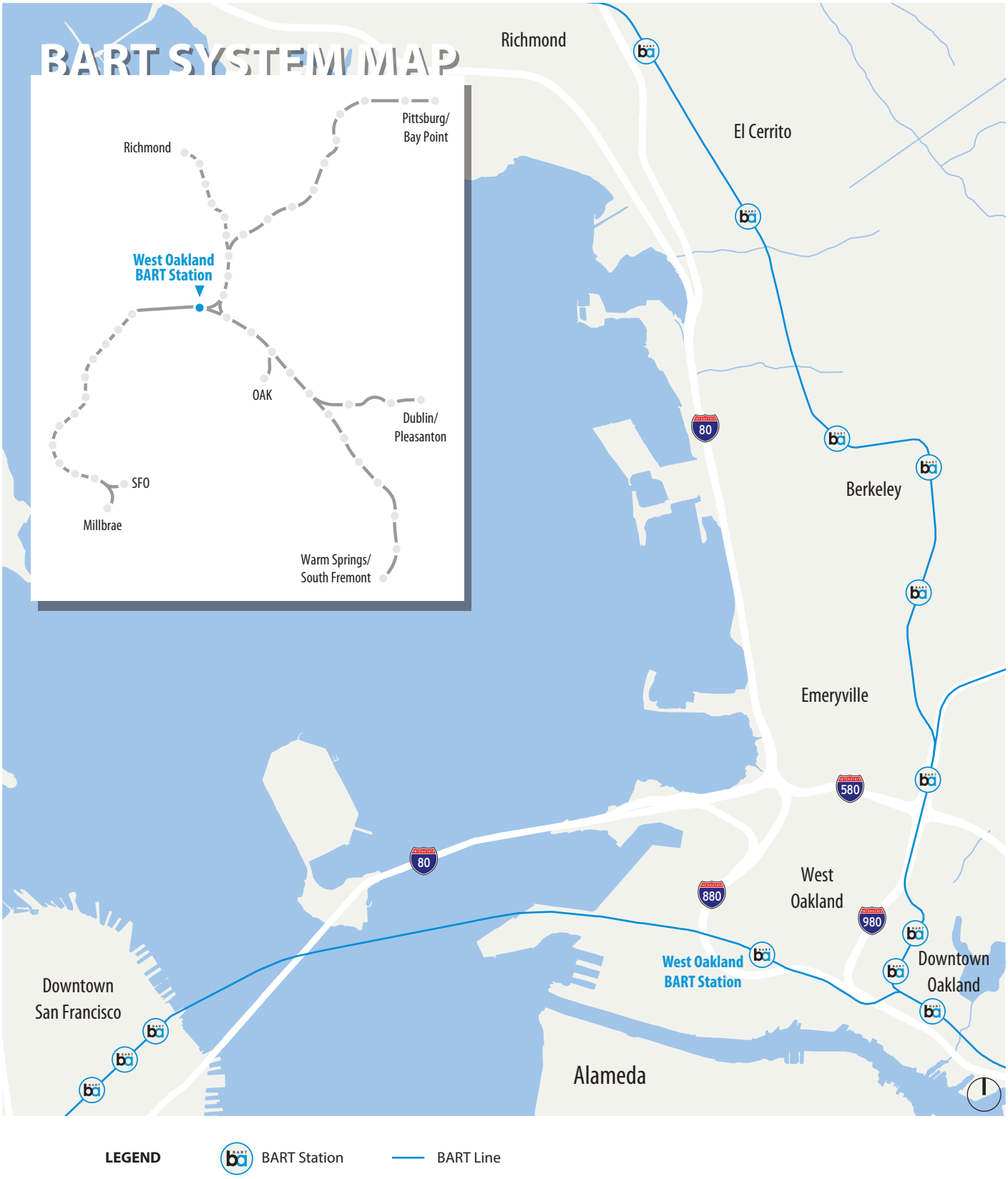


Figure 1

West Oakland BART Station Location and Setting

TABLE 1: WEST OAKLAND BART SCHEDULE

Line	Headway (Minutes)		
	Weekday before 8:00 PM	**Weekday after 8:00 PM**	**Weekend**
Dublin/Pleasanton – Daly City	15	20	20
Pittsburg/Bay Point – SFO – Millbrae	15[1,2]	20	20
Warm Springs/South Fremont – Daly City	15	No Service	20[3,5]
Richmond – Daly City – Millbrae	15	20	20[4,5]

Notes:

1. Additional Pittsburg/Bay Point Limited Service trains run in the weekday peak hours between 6:45 AM and 9:45 AM and 3:30 PM and 7:30 PM.
2. Service ends at SFO.
3. Service ends at Fremont.
4. Service ends at Daly City.
5. Service is only provided on Saturdays. No Sunday/Holiday service is provided.

Source: BART, 2017.

STUDY APPROACH

The study approach consisted of three main components: a review of existing plans and policies, data collection and analysis, and consultation with partner agency staff and the community. As a first step, Fehr & Peers reviewed relevant plans and policies from BART, the City of Oakland, and AC Transit to determine how the proposed project would fit into the planning context and how it might need to be adjusted to align with existing goals and strategies.

Next, existing datasets and new field observations were collected and analyzed to provide further insight into the existing and projected future demands on access in the West Oakland BART Station area. Data used for trip generation, ridership projections, and revenue calculations was taken from a variety of sources, including BART, the City of Oakland, and the Institute of Transportation Engineers (ITE). Specific methodologies for calculations are discussed in the sections in which they are presented.

In May 2017, Fehr & Peers conducted observations of West Oakland BART Station access for one day, Wednesday, May 3rd, from 6:00 AM to 10:30 AM and 3:00 PM to 6:30 PM. Observers counted the approximate number of parking vehicles, shuttle vehicles and passengers, buses and passengers, pedestrians, and drop-off/pick-up passengers entering or exiting the station. The observations provided a qualitative understanding of station access/egress, and provided data on the volume and type (private vehicles v. Uber/Lyft) of passenger loading at the curb adjacent to the station entrance.

BART, the City of Oakland, and AC Transit staff have all been part of an ongoing process of consultation and review to assess needs and desires for a reconfigured station area. In addition, the project team met with the West Oakland TOD Community Advisory Committee twice during the course of the study, and their feedback and concerns directly informed recommendations for the study area.

1. RELEVANT PLANS, POLICIES, AND PROGRAMS

This chapter provides a brief summary of the primary BART, City of Oakland, and AC Transit policies and guidelines that informed this study. Both BART and City of Oakland policies prioritize improvements to pedestrian, transit, and bicycle access.

BART PLANS AND POLICIES

BART's ***Transit-Oriented Development Policy*** (2016) sets goals for transit-oriented development on BART real estate and outlines strategies to reach those goals. The TOD policy seeks to increase ridership and promote non-auto transportation use, create and capture land values to enhance BART's financial stability and reinvest in the program, and help the region and individual communities achieve a higher quality of life for households of all income levels. Developing a TOD project on the West Oakland BART Station parking lot is a direct implementation of this policy by replacing an automobile-centric use with one that puts more jobs and residents near transit, provides affordable housing, creates a more vital neighborhood, and increases BART ridership and revenues.

In response to BART's new *Transit-Oriented Development Policy* and its adoption of new performance targets in December 2016, BART developed the ***Transit-Oriented Development Guidelines*** (2017) to provide a clear framework of how to achieve its targets and to help communicate BART's expectations around planning and development at BART stations. These guidelines include specifications for site and building design, street patterns and circulation, equity and sustainability, and other considerations to increase the use and efficiency of transit at the site.

Parking is also considered in the guidelines, which designate the West Oakland BART Station as an Urban Neighborhood/City Center place type. This indicates an expectation of no parking minimums and parking maximums of 0.5 parking spaces per residential unit and 1.6 spaces per 1000 square feet of office. Development at the station would be expected to have a density of at least seventy-five dwelling units per acre and buildings at least seven stories tall.

The ***BART Station Access Policy*** (2016) sets system-wide goals and strategies to guide access practices and investments through 2025. These goals are similar to those set in the *Transit-Oriented Development Policy* and include improving public health and reducing emissions, increasing ridership, and improving efficiency while providing better and more equitable services. Each goal is accompanied by quantitative performance measures like access mode share, parking space productivity, and elevator availability. To help achieve those goals, the Policy defines a general station access design hierarchy shown in **Figure 2**, as well as access investment priorities based on each station's typology on a suburban-to-urban spectrum.

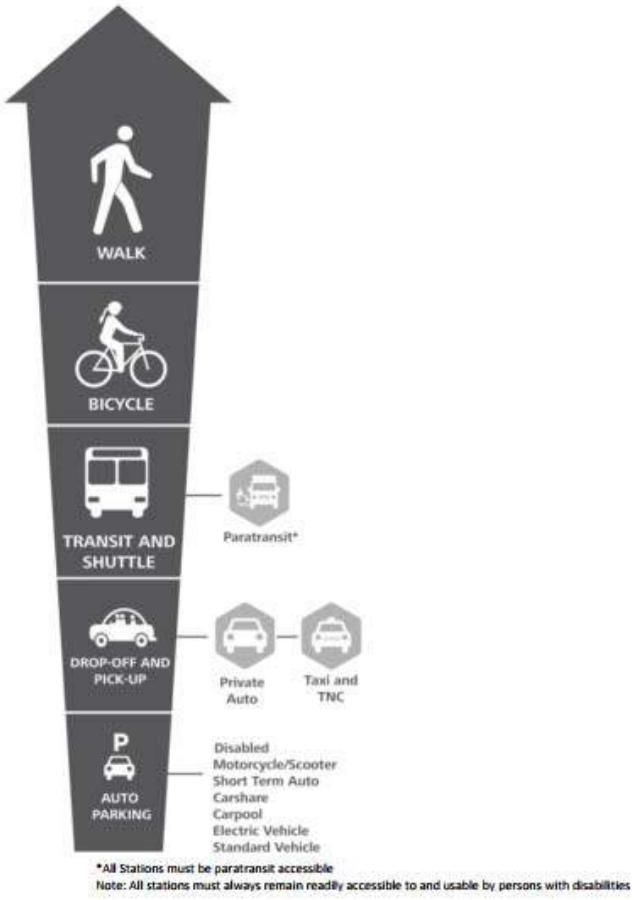


Figure 2: BART Station Access Design Hierarchy

The West Oakland BART Station is currently classified as Balanced Intermodal. However, it has an aspirational classification as Urban, two steps higher on the suburban-to-urban scale. An Urban classification would deprioritize pick-up/drop-off infrastructure from a secondary investment priority to simply being accommodated, while auto parking would change from being accommodated to being not encouraged.

The ***BART Bicycle Plan: Modeling Access to Transit*** (2012) defines system-wide strategies to encourage bicycling to BART stations and introduces a Bicycle Investment Tool to aid in selecting bicycle improvements that will generate the largest increase in bicycle trips. Its primary goal is to increase BART's bicycle access mode share to eight percent by 2022 through strategies that include improvements to bicycle circulation, parking, and local bicycle route connections, as well as allowing bicycles on board during peak periods (implemented July 2013).

Specific improvements to bicycle access at the West Oakland BART Station are recommended in the ***BART Bicycle Program Capital Plan*** (2017). The plan calls for an additional 330 secure bicycle parking spaces at the station in order to meet a goal of sixty percent of bicycling passengers to park their bikes at the station by 2022. As the proposed new bike station will only be able to house 150 bikes, the plan calls for a second bike station to be incorporated into the TOD project, preferably with valet parking.

The ***BART Multimodal Access Design Guidelines*** (2017) will be incorporated into the Passenger Station Sites section of the *BART Facilities Standards* and are referenced in BART's *Transit-Oriented Design Guidelines* to ensure BART performance targets and goals are met at both new and existing stations. The *BART Multimodal Access Design Guidelines* provide a clear framework for designing optimal facilities at both new and existing stations, presenting access guidelines for wayfinding, walking, transit, bicycles, drop-off/pick-up, and park-and-ride.

BART is currently developing specific **Curb Use Guidelines** to provide a framework for the delineation and prioritization of curb space between modes of transportation. In general, curb uses that facilitate bicycle and pedestrian connections to BART or otherwise contribute to increasing BART ridership are prioritized. The TOD project at the West Oakland BART Station will use both of these sets of guidelines to optimize multimodal access to the station.

BART's ***Replacement Parking for Joint Development: An Access Policy Methodology*** (2005) defines BART's methodology in determining parking replacement strategies based on station context, joint development strategies, and BART system objectives. It relies heavily on the collaboration between BART staff and key stakeholders to develop and evaluate alternative access and parking replacement plans for recommendation to the BART Board. The methodology uses performance-based principles to develop a more context-based solution to station access and parking replacement, and these principles serve as the basis for this TOD project study.

CITY OF OAKLAND PLANS AND POLICIES

The ***West Oakland Specific Plan*** (WOSP, 2014) is the primary planning document governing the area surrounding the West Oakland BART Station. It was created in collaboration with key stakeholders, including community members, City staff, the Planning Commission, and the City Council, to develop a long-term vision for future development and investment in West Oakland. The WOSP developed community-based goals and objectives that act as the framework for any strategies or implementation actions discussed throughout the document. The Plan focuses on land use, circulation, and economic development and serves as a planning tool to ensure its goals are met.

The West Oakland BART Station TOD project is highlighted in the document as an important land use concept to increase regional transit ridership, as well as to provide much needed local-serving retail, high-density housing, and office space.

The ***Oakland Bicycle Master Plan*** (2007) presents a vision for the City of Oakland as a city with bicycling fully integrated into daily life, providing a safe and convenient active mode of transportation and recreation.

The remainder of the document acts as a long-range policy document to fulfill this vision through goals, objectives, and a proposed bikeway network. The network is specifically oriented towards providing access to major transit stations (including the West Oakland BART Station) and proposes connections in all four directions from each station. The Plan also includes design guidelines for new bicycle infrastructure, which will guide further improvements to bicycle access in the streets surrounding the station. An update to the Bike Plan is currently underway.

The ***Oakland Pedestrian Master Plan Update*** (2017) presents a vision for the City of Oakland as a place with vibrant, safe, and attractive streets, where everyone has the opportunity to safely and conveniently walk to their destinations. The Plan then provides goals, desired outcomes, and recommended actions to fulfill this vision, including adopting a Vision Zero Policy that would increase safety and reduce automobile speeds, closing sidewalk gaps (of which it identifies West Oakland as having a major need), and enacting a Safe Routes to Transit program to focus investment on improving pedestrian safety and accessibility to major transit hubs. All recommended actions are meant to be attainable within five years of the Plan's implementation.

The ***City of Oakland Transportation Impact Review Guidelines*** (TIRG, 2017) were developed to provide direction on the level of analysis needed for land use development projects within the City of Oakland. TIRG discusses the issues the City must analyze and evaluate based on City of Oakland thresholds developed under the California Environmental Quality Act (CEQA) and provides recommendations for appropriate mitigations for transportation impacts caused by a proposed development.

The TIRG provides guidance on how to perform and what to include in transportation analyses, including how best to approach project trip generation, providing set reductions to the ITE *Trip Generation Handbook* to account for mode splits that best represent the City of Oakland's urban environment. This study utilizes these methodologies. The TIRG also outlines recommended and required Transportation Demand Management strategies and guidance for CEQA analyses, which would be part of the development process for the West Oakland BART Station TOD project.

CITY OF OAKLAND TDM REQUIREMENTS

The City of Oakland has a robust set of TDM requirements for large development projects that generate a significant number of peak hour trips. These TDM plans are intended to reduce vehicle traffic and parking demand generated by the project to the maximum extent practicable, consistent with the potential traffic and parking impacts of the project.

Projects that generate fifty to ninety-nine net new AM or PM peak hour vehicle trips must achieve a ten percent vehicle trip reduction (VTR), while projects that generate one hundred or more net new AM or PM

peak hour vehicle trips must achieve a twenty percent VTR. Additional TDM strategies are required to be included in the plan if the project has certain location-specific characteristics (see **Appendix A**), though these strategies still count towards VTR reduction. Other components of the TDM plan should aim to increase pedestrian, bicycle, transit, and carpool/vanpool modes of travel associated with the development project and enhance the city's overall transportation system, consistent with City policies and programs. The estimated VTR for each strategy proposed in the TDM plan must be based on published research or guidelines, and ongoing operational strategies must include a monitoring and enforcement program.

AC TRANSIT PLANS AND POLICIES

AC Transit's ***Designing with Transit*** (2010) was developed to recognize and build off the resurgence of interest in transit and linking transit to development. It provides a toolkit for local governments, city staff, and other stakeholders highlighting key policies and best practices for transit-oriented and transit-supportive land use decisions, designing safe routes to transit, and transit-friendly street design. These policies and practices help guide planning to best facilitate intermodal transfers between AC Transit buses, the West Oakland BART Station, and the proposed TOD project.

GREENTRIP CERTIFICATION PROGRAM

The GreenTRIP certification program was launched by Transform in 2008 to assess how multifamily residential and mixed-use developments in the nine-county San Francisco Bay Area apply strategies to reduce traffic and excessive parking. There are three levels of certification—Standard, Platinum, and Zero Parking Building.

GreenTRIP requirements for each of these certification levels are based on place type definitions derived from the Metropolitan Transportation Commission's (MTC) Station Area Planning Manual. The West Oakland BART Station development site would likely be considered an Urban Neighborhood.

Minimum eligibility requirements for GreenTRIP certification include the following:

- Multi-family housing, with some mixed-use.
- Project density: at least 20 units/acre.
- Resident bike parking: at least one space per unit.
- Guest bike parking for 20% of units.
- Annual transportation and parking survey administered.

- Within urban growth boundaries.
- Within the nine-county San Francisco Bay Area: Defined as San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Napa, Solano, Sonoma, and Marin Counties.

Standard GreenTRIP certification requires the project have no more than one residential parking space per dwelling unit and two of three traffic reduction strategies: free transit passes, free carshare memberships, or unbundled parking. To achieve platinum GreenTRIP certification, the project would be allowed no more than 0.5 residential parking spaces per dwelling unit and must implement all three traffic reduction strategies, plus spend an additional $3,001-$5,000 per dwelling unit on platinum strategies (see **Appendix A**). For either certification level, the estimated daily vehicle miles traveled (VMT) per household cannot exceed twenty-five miles per dwelling unit.

2. EXISTING CONDITIONS

This chapter describes existing access infrastructure, provides an analysis of station access patterns and issues, and presents a summary of BART ridership at the station as well as key findings from the BART Station Profile Surveys.

ACCESS INFRASTRUCTURE AND SERVICES

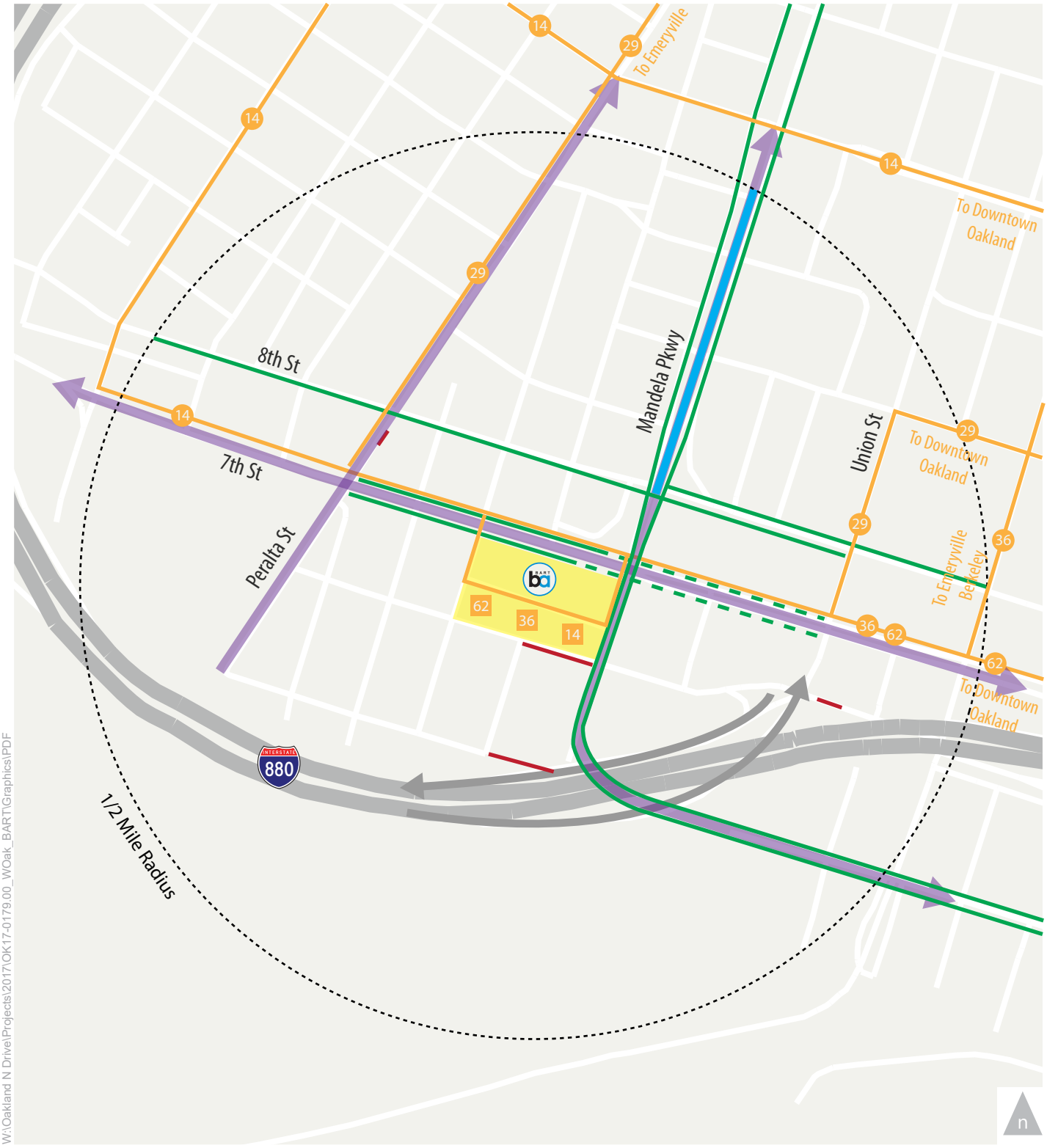
Access infrastructure and services for the West Oakland BART Station were analyzed for both the station property and surrounding streets. **Figure 3** provides an overview of existing station access facilities and services within one-half mile of the West Oakland Station.

STATION LAYOUT AND CONFIGURATION

The free area of West Oakland BART Station is open to the south and the north and houses BART ticket machines and posted system information. One fare gate array and one station agent both face west. Station maintenance facilities are located on the east side of the station structure.

The station has a split-platform configuration where separate platforms serve the southbound (East Bay) and northbound (San Francisco, SFO, Daly City, Millbrae) directions. To cross between platforms, patrons must go down to the concourse level and then back up to the opposite platform. Each platform is accessible by two sets of stairs, one escalator, and one elevator. Platform canopies cover the middle third of the platform length.

West Oakland Station entrance and plaza; the white curb for passenger loading is located directly in front of the station entrance.



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LEGEND

- West Oakland BART Station
- Major Roadways as Defined by the West Oakland Specific Plan
- 1/2 Mile Radius from Station Entrance
- Freeway Ramp
- Sidewalk Gaps
- Class 2 Existing Bicycle Lane
- Class 3 Existing Bicycle Route
- Mandela Parkway Path
- AC Transit Lines
- AC Transit Line Terminus
- TOD Project Site

Figure 3

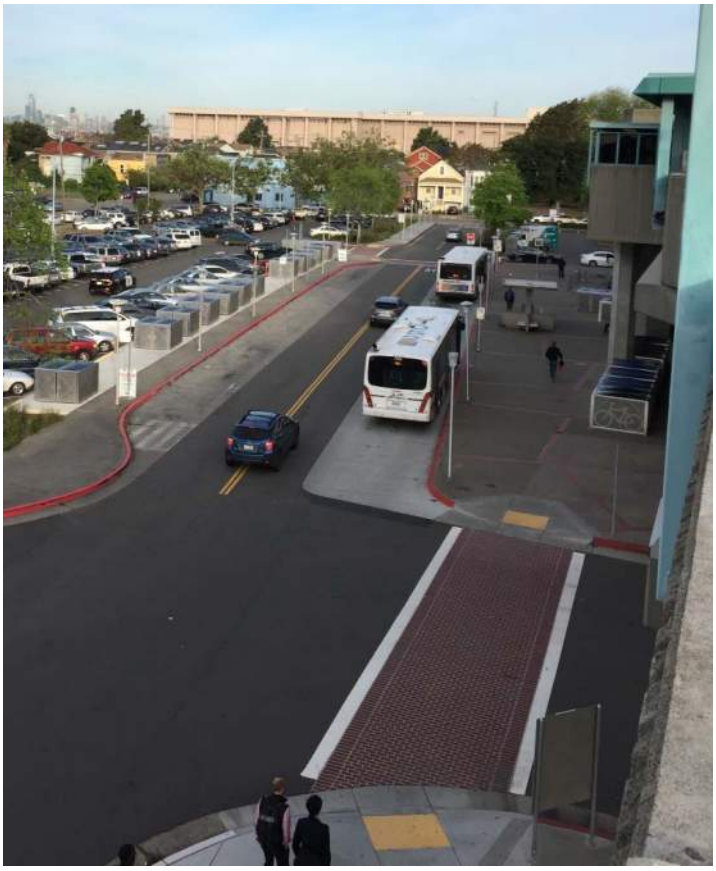
Overview of Existing Station Access and Circulation within One-half Mile of the Station

ACCESS FACILITIES AND SERVICES ON STATION PROPERTY

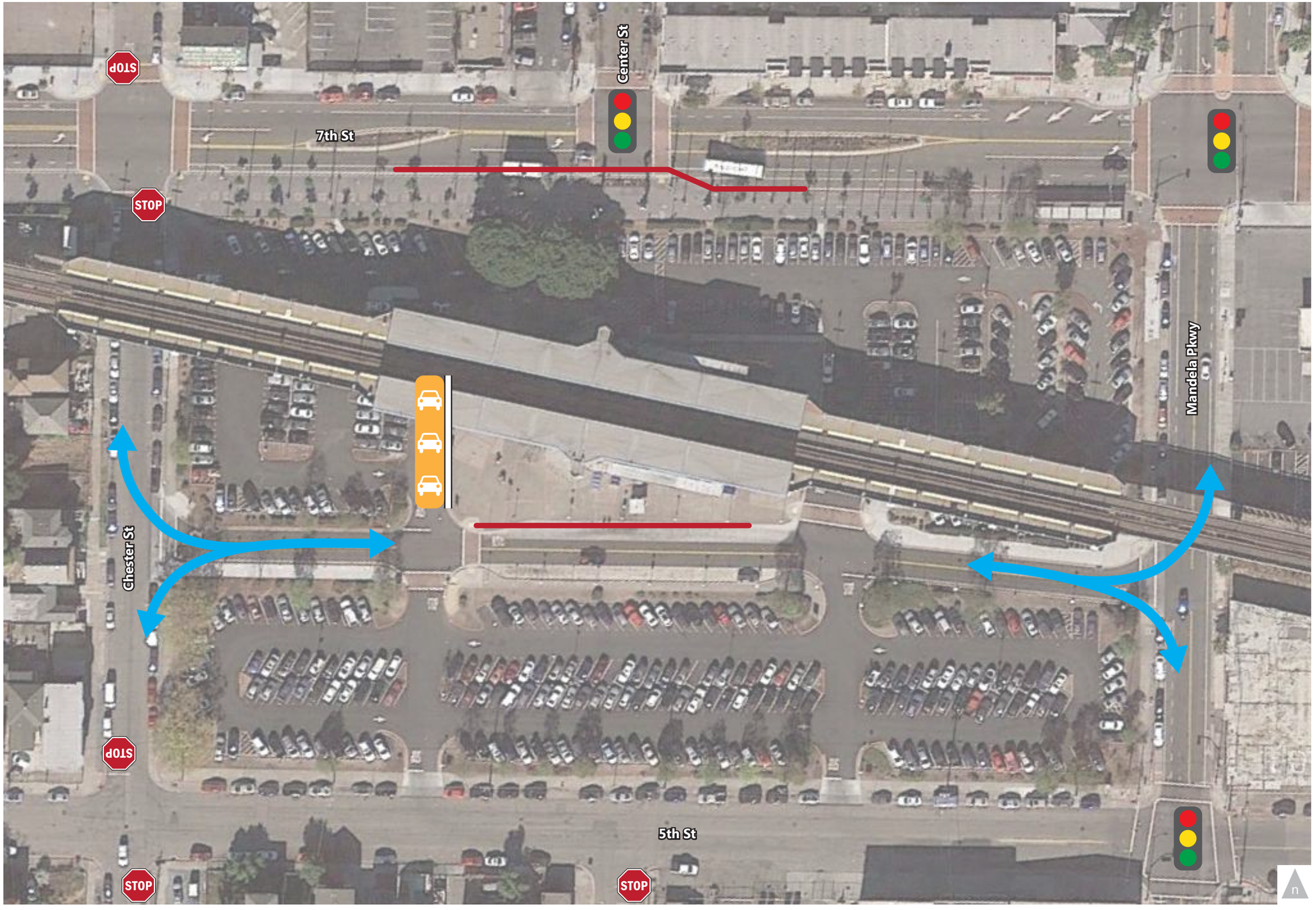
A two-way internal roadway with entrances on Chester Street and Mandela Parkway provides automobile access to the pickup/drop-off curb, as well as to the station parking lots. AC Transit buses utilize the internal roadway and associated entrances on Chester Street and Mandela Parkway. Four bus bays are provided on the internal roadway directly south of the station. The dedicated passenger loading curb is approximately 100 feet long and is located immediately west of the station entrance.

Figure 4 illustrates vehicular access at the station and **Figure 5** shows the locations of existing bus stops and layover areas for all AC Transit, commuter shuttle, and intercity bus services.

AC Transit is the only bus operator authorized to utilize the internal station roadway for pick-up and drop-off activity, which allows AC Transit to better accommodate the lines travelling to and from the station. Because the West Oakland BART Station provides space for buses to idle and restrooms for operators, AC Transit uses the facility as an end-of-line and layover location for three bus lines (Lines 14, 36 and 62). **Table 2** summarizes AC Transit lines and headways serving the station.



AC Transit bus loading and layover zone at the West Oakland BART Station, looking west toward Chester Street

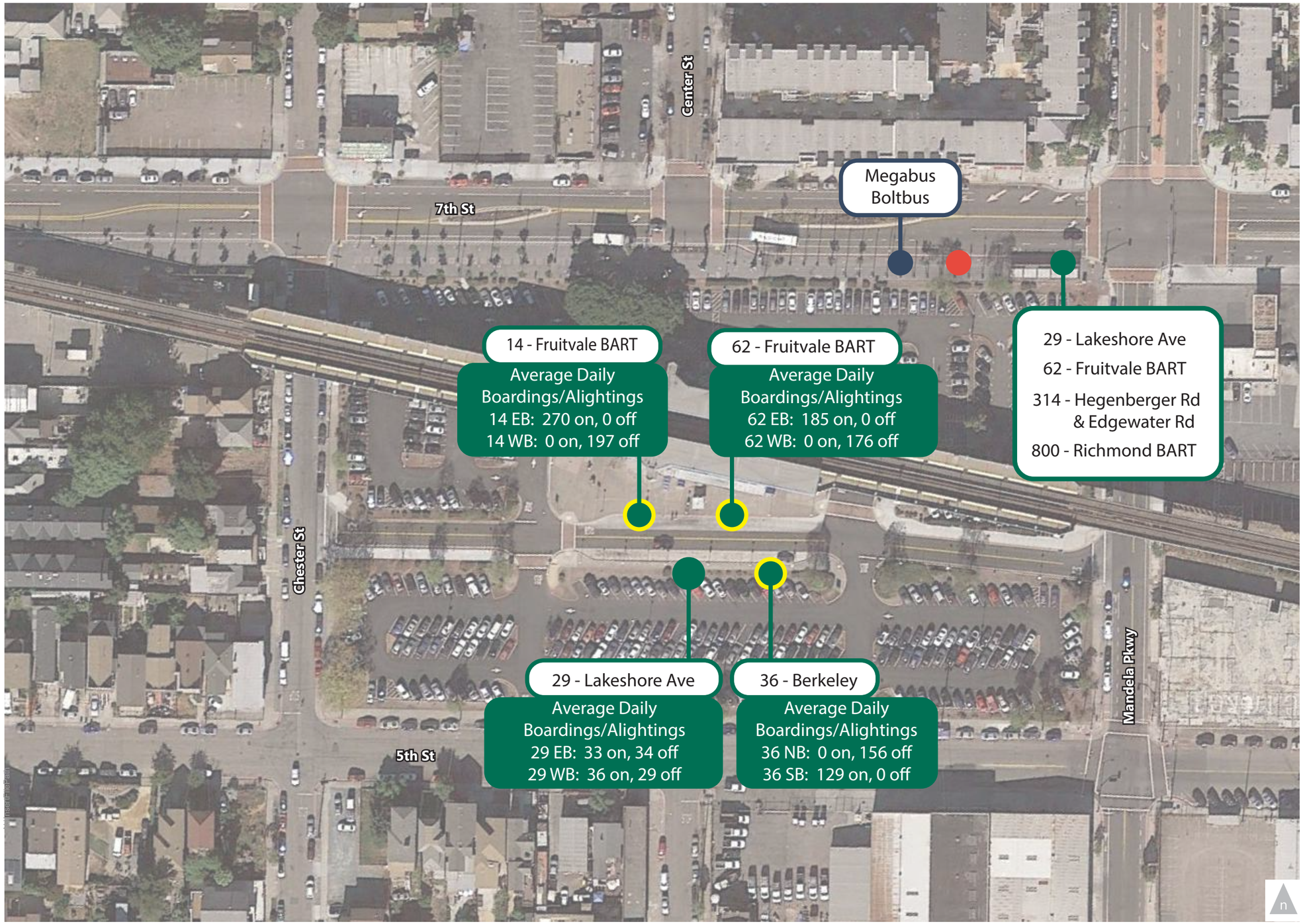


Legend

- Primary access points for vehicles
- Designated passenger pick-up/ drop-off zone and disabled access for loading/unloading
- Long queues and double/triple parking occuring in the peak hours along the loading curb
  Max AM Queue: 7 Autos
  Max PM Queue: 14 Autos
- Illegal passenger pick-up/drop-off occuring along these cubs
- Signalized Intersection
- Side Street Stop Controlled

Figure 4

Vehicular Circulation and Pick-up/Drop-off Access



Legend

- AC Transit Stop with Layover
- AC Transit Stop
- Intercity Bus Stop
  Bolt Bus and Megabus stop at this location three times a day
- Commuter Shuttle Stop
  The Bauer shuttle stops at this location six times a day (x3 in the morning, x3 in the evening)

Figure 5

Bus and Shuttle Service and Facilities

TABLE 2 : AC TRANSIT ROUTES AND HEADWAYS

Line	Description	Layover at West Oakland BART	Weekday Hours of Operation	Weekday Headways[1]	Weekend Hours of Operation	Weekend Headways[1]
14	Fruitvale BART to West Oakland BART via 14th Street	10-20 min	5:00 AM – 11:00 PM	15 min	6:30 AM – 11:15 PM	30 min
29	Emeryville Public Market to Lakeshore via Peralta Street and 10th Street	n/a	6:00 AM – 10:45 PM	20 (30) min	6:00 AM – 10:45 PM	30 min
36	UC Berkeley to West Oakland BART via Adeline Street	10-20 min	6:00 AM – 12:45 AM	30 min	6:00 AM – 12:45 AM	30 min
62	Fruitvale BART to West Oakland BART via 7th Street	10-20 min	5:45 AM – 12:45 AM	15 (20) min	6:15 AM – 12:45 AM	20 (30) min

Notes:

1. Headways in parentheses show off-peak headways if different from peak headways.

Source: AC Transit and Fehr & Peers, 2017.

Table 3 outlines average daily boardings and alightings at the West Oakland BART Station for each line. Note the data does not indicate the number of AC Transit passengers who transferred to or from BART.

TABLE 3 : AC TRANSIT AVERAGE DAILY BUS BOARDINGS AND ALIGHTINGS AT THE WEST OAKLAND BART STATION

Line	Destination	Weekday Boardings[1]	Weekday Alightings[1]	Total Weekday Boardings and Alightings
14	Fruitvale BART	270	-	270
14	West Oakland BART	-	197	197
29	Lakeshore	33	34	67
29	Emeryville Public Market	36	29	65
36	UC Berkeley	156	-	156
36	West Oakland BART	-	129	129
62	Fruitvale BART	185	-	185
62	West Oakland BART	-	176	176

Notes:

1. Blanks are due to the end-of-line of Lines 14, 36, and 62.

Source: AC Transit, 2017.

A total of 441 parking spaces are provided on the West Oakland BART Station property. The north side of the lot reserves 115 spaces for monthly permit holders and 55 spaces for single-day permits until 10:00 AM, at which point it converts to daily fee operation like the rest of the lot. Two additional automobile entrances along 5th Street provide direct access to the southern section of the parking lot and connect with the internal roadway. Several parking spaces are reserved for carsharing vehicles in the northwest station parking lot closest to the station entrance. Station parking facilities are shown in **Figure 6**.

Emergency vehicles, as well as cash collection trucks, have direct access to the station entrance via the internal roadway directly south of the station. Maintenance vehicles are able to access all sides of the station via internal roadways and parking lots.

A maintenance vehicle parked on the northeast side of the station, and an ambulance parked on the station plaza adjacent to the station entrance and passenger loading zone.

Sidewalks are provided along at least one side of the entirety of the station's internal roadway. Marked crosswalks are provided at the station area entrances on Chester Street and Mandela Parkway, and colored marked crosswalks are provided at pedestrian crossing locations along and across the internal roadway. A pedestrian plaza surrounding the station entrance allows riders to comfortably wait at the loading/unloading curb, park their bikes, and access the station.

There are no bicycle facilities along the internal roadway, and no special accommodations are made to facilitate bicycle access into the station. Bicycle parking is located near the station entrance and under the tracks on the east side of the station, totaling 151 standard rack spaces and 136 electronic eLocker spaces.

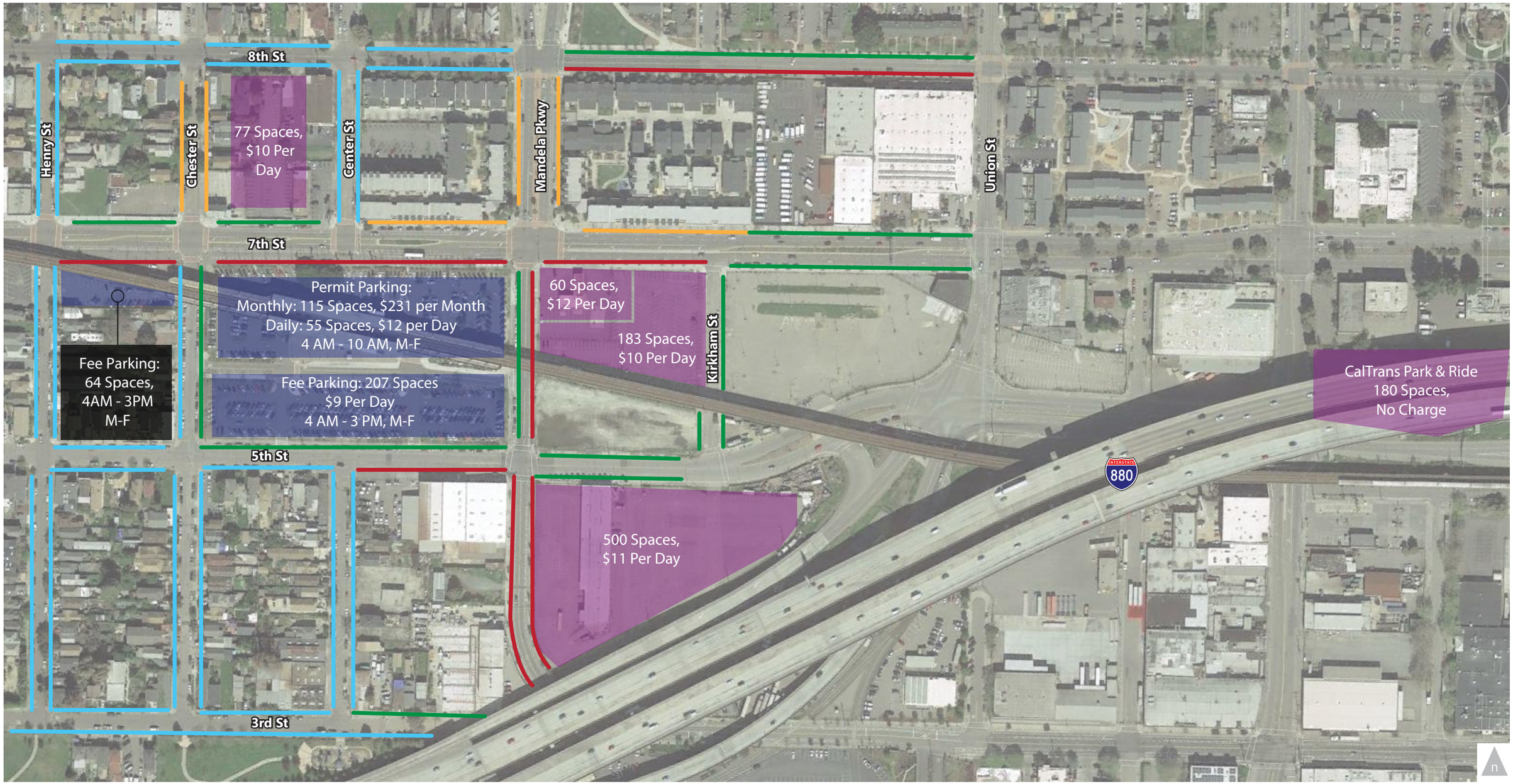
ACCESS FACILITIES AND SERVICES IN THE STATION AREA

Most streets near the station have one travel lane in each direction, except for Mandela Parkway north of 7th Street and 7th Street east of Mandela Parkway, both of which have two travel lanes in each direction. Freeway access is provided via Interstate 880, which has a nearby on/off-ramp accessible via 5th Street.

On-street parking is provided on all streets in the vicinity of the station, with the exception of the southern side of 7th Street west of Kirkham Street, for a total of approximately 130 spaces. There are four private parking lots within 0.3 miles of the station entrance, providing a total of 820 spaces. The lots are directly to the east of the West Oakland BART Station between Mandela Parkway and Kirkham Street, as well as one to the southeast bounded by Mandela Parkway and 5th Street. Caltrans operates a free, 180-space Park & Ride lot a half-mile from the station. These facilities are shown in **Figure 6**.

Sidewalks exist on most streets in the area except for the southern side of 5th Street between Center Street and Mandela Parkway and the western side of Kirkham Street. Additionally, the sidewalk on the northern side of 5th Street east of Mandela Parkway is in significant disrepair. Direct pedestrian access to the station is provided on the west and east sides of the station at the Chester Street and Mandela Parkway entrances to the internal roadway, as well as on the north side of the station from 7th Street. Pedestrian routes to the station are illustrated in **Figure 7**.

Sidewalks on the north and south sides of 5th Street (between Mandela Parkway and Center Street) adjacent to the BART Station property.



Legend

On-Street Parking

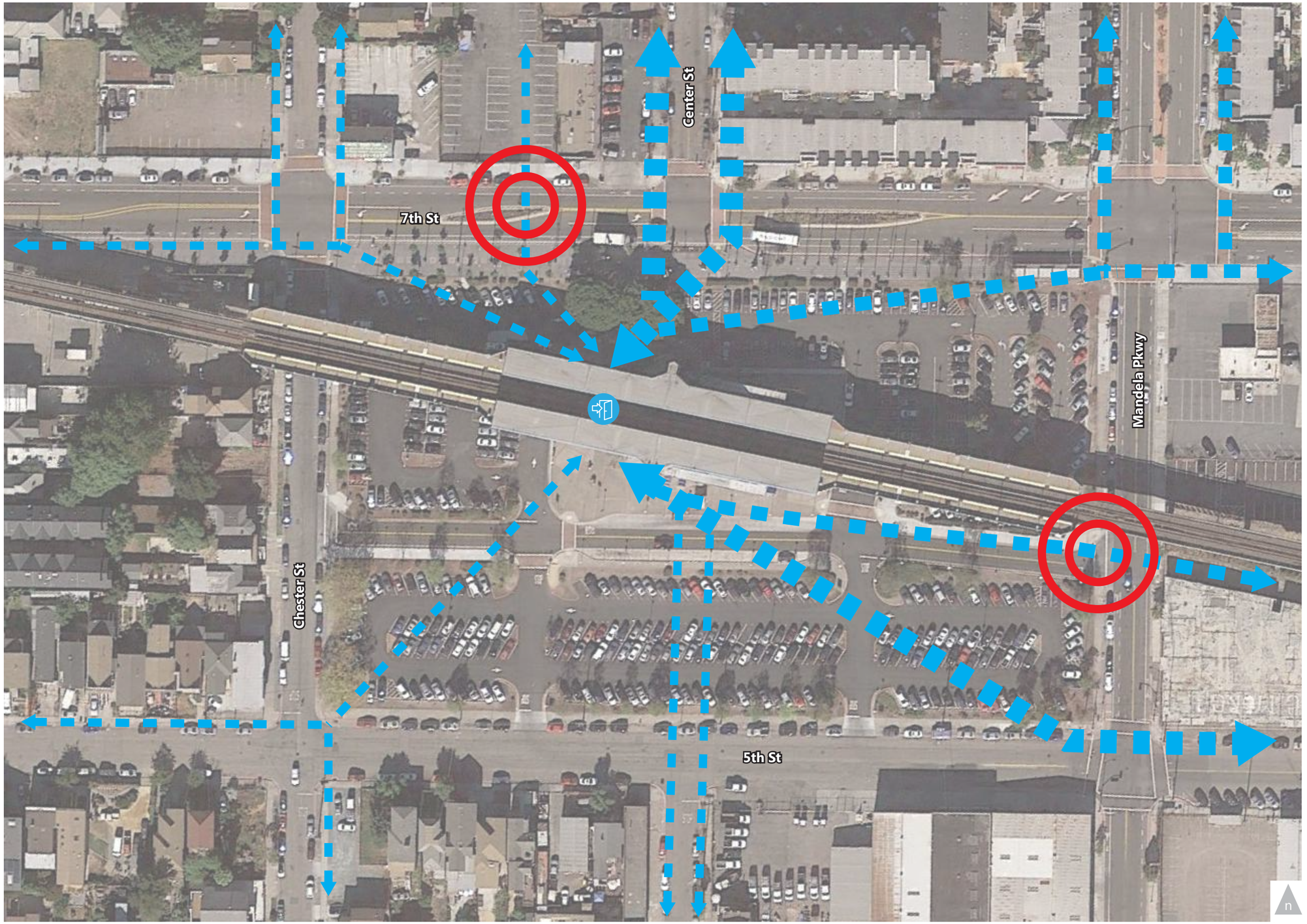
- Residential Permit/Two Hour
- Unrestricted
- No Parking
- Two Hour

Off-Street Parking

- Off-Street Lot
- BART Parking

Figure 6

Parking Facilities



Legend

- BART Station Entrance
- **Area of Concern** Pedestrian Mid-block Crossings at Unmarked Locations

Pedestrian Paths of Travel

- Light Traffic
- Moderate Traffic
- Heavy Traffic

Figure 7

Pedestrian Circulation and Station Access

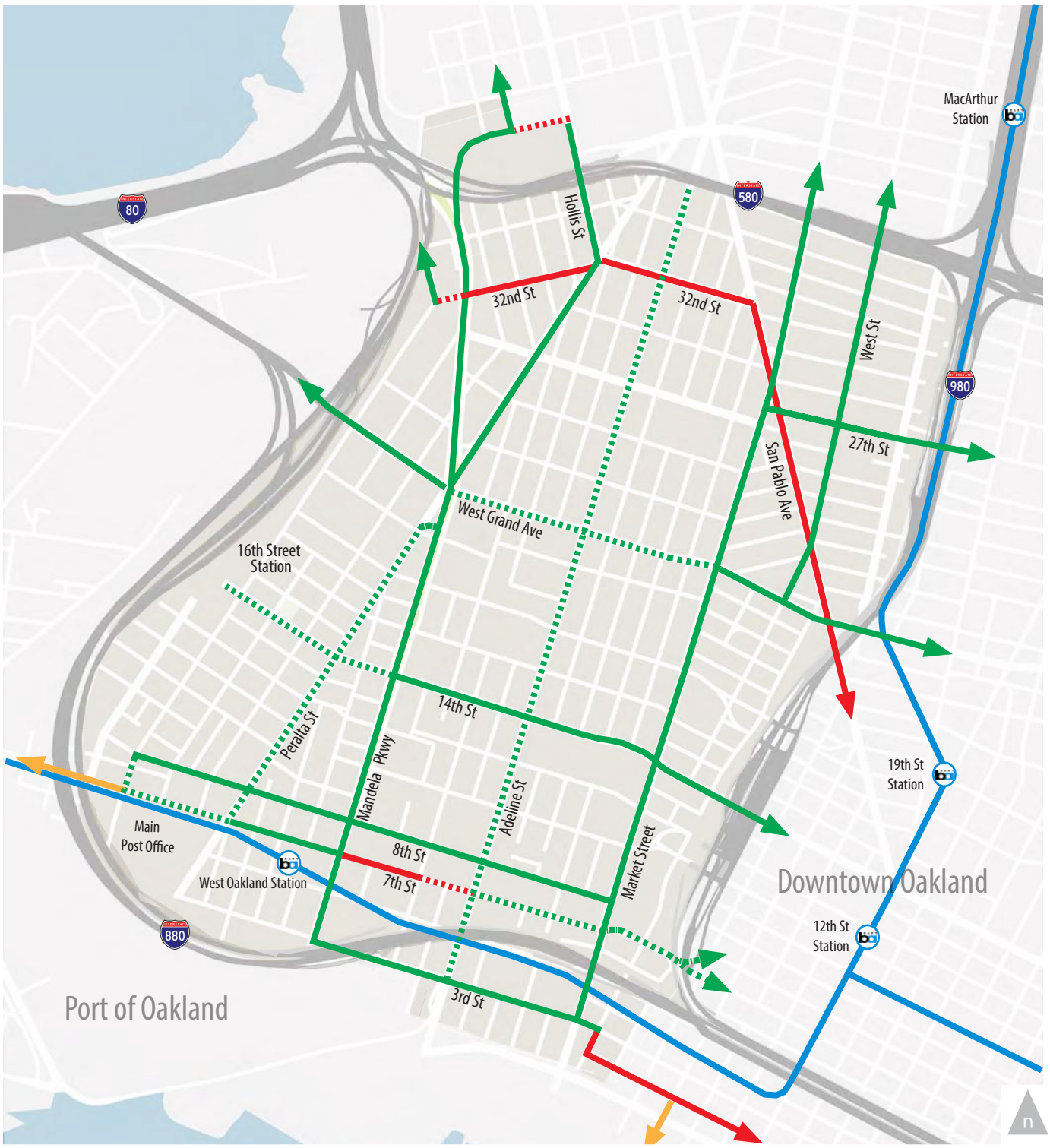
View of 7th Street and its intersection with Mandela Parkway from the West Oakland BART Station.

The City of Oakland classifies 7th Street between Peralta Street and Mandela Parkway as a "transit district," which has led to the installation of enhanced pedestrian and bicycle facilities. This portion of 7th Street has widened sidewalks on both sides of the street and colored crosswalks with ADA-compliant ramps at all intersection crossings. Sidewalks widths are twenty-nine feet on the south side of 7th Street between Henry and Center Streets and twenty-one feet between Center Street and Mandela Parkway. The West Oakland BART Station frontage along 7th Street has also been redesigned to include enhanced pedestrian-scale lighting and a pedestrian plaza. Curb bulbs are provided on the southern side of 7th street for commuter shuttles and intercity bus services, and the signalized intersection at 7th Street and Mandela Parkway has recall buttons and pedestrian signal heads.

The station is connected to the surrounding bicycle network through Class II facilities on 7th Street between Peralta Street and Mandela Parkway and on the entire length of Mandela Parkway. The Class II facility on Mandela Parkway connects with several other significant bicycle facilities, including Class II facilities on 3rd Street, 8th Street, and 14th Street.

The *City of Oakland Bicycle* Plan calls for the extension of the 7th Street Class II facilities west of Peralta Street and east of Mandela Parkway to Downtown Oakland. Additional Class II facilities are also planned on Peralta Street between 7th Street and 32nd Street and on Adeline Street between 3rd Street and Emeryville, which will significantly enhance bicycle access to the station from the surrounding residential neighborhoods. **Figure 8** shows the existing and proposed bicycle facilities in the vicinity of the West Oakland BART Station, and **Figure 9** illustrates the primary travel paths and the location of bicycle parking at the station.

Bicycle parking at the West Oakland BART Station near the station entrance.

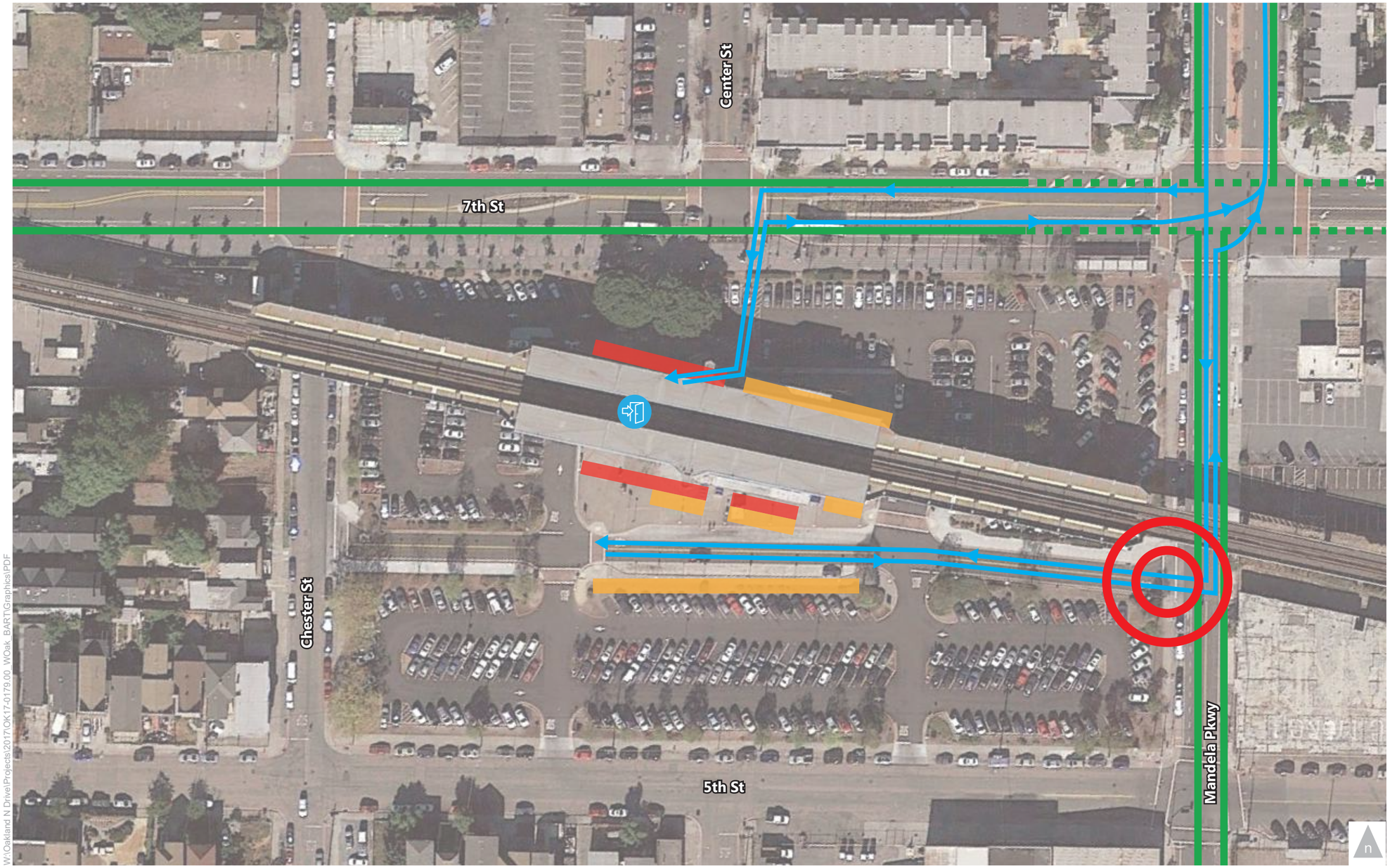


LEGEND

- SF Bay Trail Connection
- Existing Class 2 Bike Path
- Existing Class 3A Bike Route
- BART Stations
- Planned Class 2 Bike Path
- Planned Class 3A Arterial Bike Route

Figure 8

Existing & Proposed Bikeway Network



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Legend

- BART Station Entrance
- **Area of Concern**
  Conflict zone between bicyclists and vehicles
- Bicycle Racks
- Bicycle Lockers
- Primary Bicycle Path of Travel

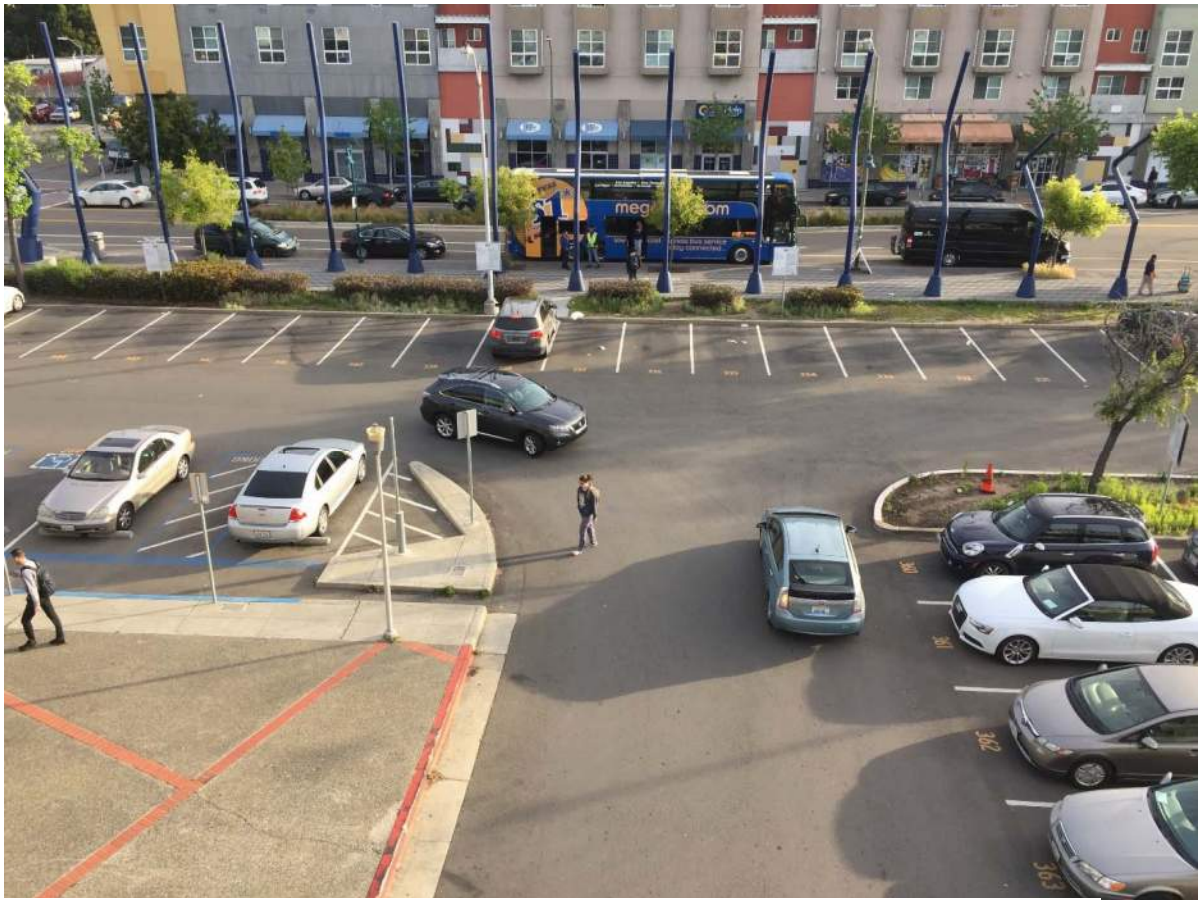
Bicycle Facilities

- Class 2 - Bicycle Lane
- Class 3A - Arterial Bike Route

Figure 9

Commuter shuttles also operate in the station area, typically transporting commuters from BART stations to employers in the mornings and the reverse in the evenings. Three commuter shuttles operated by Bauer were observed utilizing the curb on the eastbound side of 7th Street during both the morning and evening peak hours.

Privately-owned intercity bus companies Bolt and Megabus also use the eastbound curb on 7th Street for passenger loading and unloading. These companies offer bus service to Southern California, with three trips per day from each company. Passengers line up along the south side of 7th Street to wait for their buses, and around thirty passengers were observed boarding or alighting during the morning peak. Based on field observation, more passengers use these buses in the morning than the afternoon.



A Megabus and Bauer shuttle depart from stops on 7th Street adjacent to the station.

RIDERSHIP AND STATION ACCESS

As shown in **Table 4,** the average daily ridership at West Oakland BART Station has grown by 70 percent over the past ten years, more than twice the rate of system-wide BART ridership growth during that time. However, the West Oakland BART Station's ridership is still less than two-thirds of the Downtown Berkeley, 12th Street, and 19th Street BART Stations, the East Bay stations classified as "Urban" in BART's Station Access Policy. As vacant parcels and surface parking lots at and around the station are redeveloped, future ridership is likely to be similar to that of the other urban East Bay stations.

TABLE 4: AVERAGE DAILY RIDERSHIP

Year	West Oakland	12th Street	19th Street	Downtown Berkeley	System-wide
2006-2007	4,706	12,215	8,871	10,436	330,227
2016-2017	7,979	14,421	14,248	12,858	441,215
Growth	70%	18%	61%	23%	34%

Source: BART, 2017.

Table 5 shows the access mode share at the West Oakland BART Station for 2008 and 2015. While the percentage of riders who bike, walk, and use public transit to access the station have all increased during that time, the proportion of riders driving to park at or near the station decreased significantly, from 60 percent in 2008 to only 23 percent in 2015.

TABLE 5: ACCESS MODE SHARE AT WEST OAKLAND STATION IN 2008 AND 2015

Access Mode	2008 Mode Share	2015 Mode Share
Drive Alone / Carpool	60%	23%
Drop-off / Taxi / Other	18%	19%
Public Transit	1%	5%
Bicycle	5%	12%
Walk	16%	41%

Source: 2008 BART Station Profile Study, 2015 BART Station Profile Study.

Consistent with these station access trends, the median distance that riders traveled from their homes to the West Oakland BART Station decreased between 2008 and 2015, as shown in **Table 6**. Median distance traveled not only decreased overall—as would be expected from a large mode share shift from driving to walking—but also decreased among those arriving by car, meaning that those who drove to the station from home came from closer home locations than they did in 2008.

TABLE 6: MEDIAN DISTANCE TRAVELED TO WEST OAKLAND BART STATION BY ACCESS MODE, 2008 AND 2015

	2008		2015	
Access Mode	**Access Mode Share**	**Median Distance Traveled[1]**	**Access Mode Share**	**Median Distance Traveled[1]**
Drive Alone / Carpool	60%	4.15 miles[2]	23%	3.22 miles
Drop-off / Taxi / Other	18%	4.15 miles[2]	19%	1.92 miles
Public Transit	1%	-	5%	-
Bicycle	5%	-	12%	-
Walk	16%	-	41%	0.45 miles
All	-	3.41 miles	-	0.76 miles

Notes:

1. For home-origin trips. Data for some modes not listed separately due to small sample sizes.
2. Data source grouped all car trips into one category.

Source: 2008 BART Station Profile Study, 2015 BART Station Profile Study.

Approximately 56 percent of average weekday entries into West Oakland Station are before 10 AM, and remaining entries are nearly evenly divided between 10 AM – 3 PM and after 3 PM, about 20 percent and 23 percent, respectively.[2] As shown in **Table 7**, walking is the primary mode choice during both the morning and midday periods. However, after 3:00 PM, automobile uses become the primary access mode, with fifty-eight percent of riders accessing the station via driving and parking or being dropped off. This shift may occur due to a combination of free parking, available parking spaces later in the evening, and perceptions of safety in the surrounding area after dark.

[2] Based on daily weekday ridership at the West Oakland Station between October 24, 2016 and November 13, 2016.

TABLE 7: ACCESS MODE SHARE BY TIME OF DAY

Access mode	Station Entry Time Period		
	4-9:59 AM	10 AM - 2:59 PM	3 PM or Later
Walked all the way to BART (includes wheelchair, skateboard)	42%	48%	27%
Bicycled	12%	10%	14%
Bus, train, or other public transit (includes ferry, paratransit, shuttle)	4%	9%	1%
Drove/carpooled	24%	13%	32%
Drop off / taxi / other	18%	19%	26%

Source: 2015 BART Station Profile Study.

ANALYSIS OF STATION ACCESS PATTERNS AND ISSUES

PEDESTRIAN ACCESS

The primary pedestrian generators within the West Oakland BART Station area are the surrounding residential areas: Prescott to the northwest, South Prescott to the southwest, and Acorn to the north. The U.S. Postal Service Center to the west and the Port of Oakland to the south are the main commercial and industrial areas surrounding the station and may produce a more limited number of walk trips.

Pedestrians entering from the north originate from private parking facilities along 7th Street, the Prescott or Acorn neighborhoods, or the retail uses between Center Street and Mandela Parkway. While there are marked crosswalks at all intersections along 7th Street, many informal crossings were observed due to the midblock location of the private parking facilities and retail uses. In addition, those approaching the station from the intersection of 7th Street and Mandela Parkway frequently cut through the station parking lot, as it is the most direct line to the station entrance.

Most riders entering by foot on the east side are park-and-ride users from the private parking lots. The main entrances of the private parking lots are located midblock, causing many users to cross at unmarked locations across Mandela Parkway. Mandela Parkway had a particularly large number of observed pedestrian/vehicle conflicts, as it provides vehicle access to the station and is a primary truck route to and from the Port of Oakland. From the southeastern lots, pedestrians mainly travel along 5th Street to access the station at the entrance on Mandela Parkway or cut through the BART parking lot at the intersection of 5th Street and Mandela Parkway.

However, the private parking lots to the east and southeast of the station have been classified in the West Oakland Specific Plan as opportunity sites for future development. Specific access patterns from these locations are therefore temporary and will change once the lots are developed.

BICYCLE ACCESS

While the station area is well-connected with bicycle facilities, station access points for bicyclists can be difficult to navigate, and no special accommodations are made to facilitate bicycle access into the station. Additionally, bicyclists were observed riding on the walkway adjacent to the station, presumably to avoid conflicts with automobiles and buses along the station's internal roadway.

Bicycle trips to the station primarily originate from the residential neighborhoods to the north of the station, which is also where most bicycle facilities in the area are located. Accordingly, most cyclists enter the station

from entrances on 7th Street and Mandela Parkway. Despite the presence of bicycle facilities on both of these streets, however, bicycle connectivity to the station can be challenging and uncomfortable due to conflicts with vehicles turning into the station from Mandela Parkway and truck traffic along adjacent roadways.

Mandela Parkway has high vehicle turning volumes, and the right turn into the station driveway quickly merges bicycle facilities and vehicle travel lanes into a narrow shared road. Because of this, several bicycle/vehicle conflicts were observed at the eastern station entrance off of Mandela Parkway. The 7th Street station entrance is also inhospitable to bicyclists, as bicyclists must dismount to cross the pedestrian plaza and gain access to the station and bicycle parking. Also, several bicyclists were observed bicycling against traffic along 7th Street and riding on the sidewalk within the vicinity of the station.

Relatively few bicyclists were observed using the southern or western entrances to the station area. Bicyclists entering from the south must navigate an internal roadway through the parking lot, and those entering from the west must weave through a pick-up/drop-off area with heavy vehicle activity during peak periods.

TRANSIT VEHICLE ACCESS

Four AC Transit lines serve the West Oakland BART Station, with three utilizing the station for layovers. Two lines connect the station to Emeryville and Berkeley, and two travel through Downtown Oakland to East Oakland. Although AC Transit now utilizes both directions of the internal roadway—increasing the number of bus bays from two to four—buses still frequently arrive with no available bus bay. When that happens, the bus operator must navigate the narrow internal roadway to find open curb space, causing conflicts with bicycles and automobiles.

Additionally, AC Transit staff noted that it is difficult for buses to turn right from northbound Chester Street onto westbound 7th Street. Operators must position their vehicles toward the center of Chester Street in order to complete the turn.

PASSENGER LOADING

The West Oakland BART Station experiences a high volume of passenger drop-offs and pick-ups during the morning and evening peak hours, respectively. Both kiss-and-ride and TNC pick-ups and drop-offs occur in personal vehicles. These two modes are differentiated by whether the passenger knows the driver beforehand (kiss-and-ride) or uses a ride-hailing app-based service (TNC). About half of the observed drop-offs and pick-ups were kiss-and-ride and half were TNCs, primarily Uber and Lyft.

While both morning and evening peak periods experience a high volume of passenger loading and unloading, significant queueing occurs during the evening peak period. This is due to the fact that the length of white curb is relatively short (about 100 feet) and that vehicles must often wait for passengers to arrive for pick-up in the afternoon and evenings. Disabled passenger loading and unloading is located immediately in front of general passenger loading, and this area is often blocked and inaccessible due to the fact that it is only long enough to accommodate one vehicle at a time.

PARKING

Although walking has become a predominant access mode at the West Oakland Station, the demand for parking at the station has remained very high. The West Oakland BART Station provides BART-operated fee and permit-only surface lots. Additional parking demand is served by private and public lots surrounding the station, as well as free, unrestricted street parking. Currently, BART-operated parking lots account for less than thirty percent of parking available to park-and-ride passengers at the West Oakland BART Station.

The rate of fill for each of the parking facilities corresponds with its associated cost. Street parking, which is free and unrestricted near the station, fills first, followed by the BART-operated fee and permit lots. The surrounding lots, with daily rates ranging from $10 to $12, fill last.

The BART fee lot is filled by 6:40 AM on the weekdays, the earliest fill time of any BART-operated parking lot. Between 4:00 AM and 3:00 PM, users must pay the daily fee rate of $9.50. Between 3:00 PM and 4:00 AM and during the weekends, parking is free and the lot is operated on a first-come, first-serve basis.

The permit lot is reserved for monthly permit holders, or for those who purchase a daily permit in advance. A monthly permit at West Oakland BART Station costs $231 per month, compared to rates of $30 to $115 per month at other BART Stations. The permitted spaces are usually filled by 9:30 AM, although spaces that remain unfilled after 10:00 AM are made available to the public for the daily fee rate of $9.50. Similar to the fee lot, parking is free between 3:00 PM and 4:00 AM.

3. FUTURE CONDITIONS

This chapter describes the anticipated future access and circulation needs of the proposed West Oakland TOD project. It begins with a description of the project's design, estimates multi-modal trip generation and projected future ridership and access modes for the BART station, and outlines future access and circulation needs.

PROPOSED PROJECT

The proposed TOD project, (site plan shown in **Figure 10**), is a mixed-use development on approximately 5.5 acres of land owned by BART and currently used as BART parking, the station's primary pick-up/drop-off zone, and AC Transit bus stops and layovers. The development would remove 441 surface-level BART parking spaces and include office, retail, and high- to medium-density multi-family residential uses.

Major circulation changes include the removal of all on-site vehicle circulation, with the exception of vehicles for BART systems maintenance, systems service, cash handling, BART Police, and paramedics, as well as emergency vehicles. On-site circulation would be focused on active modes of transportation, with a proposed pedestrian plaza along 7th Street at Center Street and a Bike Station under the BART tracks to the east of the station entrance via Mandela Parkway. Kiss-and-ride activities (including private vehicles, taxis, and transportation network company (TNC) services such as Uber and Lyft), transit stops, and transit layovers would be relocated to existing public right-of-way on adjacent roadways.

The project is in the early stages of development, and the exact land use and site plan are not yet finalized. For purposes of this study, the following project land uses were assumed[3]:

- 900,000 square feet office space
- 75,000 square feet of retail space
- 150 residential dwelling units

[3] Land uses based on most recent information from SUDA, provided May 23, 2017.

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Figure 10

Proposed TOD Project Site Plan

PROJECT TRIP GENERATION

Fehr & Peers estimated weekday trip generation using the most recent City of Oakland Transportation Impact Review Guidelines[4] (TIRG) and the land use program described previously. The guidelines require the use of the Institute for Transportation Engineers (ITE) Trip Generation Manual, 9th Edition for trip generation. The project is expected to generate 11,220 daily weekday trips, with 1,260 trips in the AM peak hour and 1,466 trips in the PM peak hour, as shown in **Table 8**.

TABLE 8: ESTIMATED PROJECT WEEKDAY UNADJUSTED TRIP GENERATION

Land Use	*Units[1]*	*ITE Code*	*Daily*	*AM Peak Hour*			*PM Peak Hour*		
				In	*Out*	*Total*	*In*	*Out*	*Total*
Office	900 ksf	710	6,980	977	133	1,110	185	902	1,087
Residential, Apartment	150 DU	220	1,040	16	62	78	66	35	101
Retail	75 ksf	820	3,200	45	27	72	133	145	278
Project Weekday Trips Generated			**11,220**	**1,038**	**222**	**1,260**	**384**	**1,082**	**1,466**

Notes:

1. DU = dwelling units; ksf = 1000 square feet
2. ITE Trip Generation land use category (710) - General Office Building (Pk Hr, AM & PM)
   - Daily: Ln(T) = 0.76 * ln(X) + 3.68
   - AM Peak Hour: Ln(T) = 0.80 * ln(X) + 1.57 (88% in, 12% out)
   - PM Peak Hour: T = 1.12(X) + 78.45 (17% in, 83% out)
3. ITE Trip Generation land use category (220) - Apartment (Adj Streets, 7-9A, 4-6P)
   - Daily: T = 6.06(X) + 123.56
   - AM Peak Hour: T = 0.49(X) + 3.73 (20% in, 80% out)
   - PM Peak Hour: T = 0.55(X) + 17.65 (65% in, 35% out)
4. ITE Trip Generation land use category (820) - Shopping Center (Adj Streets, 7-9A, 4-6P)
   - Daily: T = 42.70(X)
   - AM Peak Hour: T = 0.96(X) (62% in, 38% out)
   - PM Peak Hour: T = 3.71(X) (48% in, 52% out)
5. Sources:
   - JRDV, May 2017
   - ITE Trip Generation Manual, 9th Edition
   - Fehr and Peers, 2017

Because this project is located in an urban area immediately adjacent to a BART station with high-frequency service to San Francisco, the trip generation estimates presented in Table 8 are for all trips, not just motor vehicle trips. To estimate the proportion of these trips that will be made via BART, Fehr & Peers utilized BART's Replacement Parking Analysis spreadsheet tool. The tool includes estimates of BART capture rates for different types of TOD land uses based on data collected from various TOD projects. **Table 9** shows the factors used in the Replacement Parking Analysis tool and the estimated number of BART trips that the TOD

[4] City of Oakland Transportation Impact Review Guidelines (April 14, 2017)

project will generate. It is estimated that the TOD project will generate nearly 2,500 daily (weekday) BART trips.

TABLE 9: ESTIMATED BART TRIP GENERATION FROM THE TOD PROJECT

Type of Development	Amount of Development	Total Trips	Trip Split	Disaggre-gated Trips	Percent BART Capture	# of Trips
Residential	150 units	1,040				
Res. work trips			25%	260	40.5	105
Res. non-work trips			75%	780	8.55	67
Office	900,000 ksf	6,980			27.85	1,944
Retail	75,000 ksf	3,200			11.7	374
Total Rail Trips						**2,490**

Source: BART Replacement Parking Analysis Tool, 2017.

EFFECT OF PARKING REMOVAL ON BART RIDERSHIP AND REVENUE

The Replacement Parking Analysis tool also estimates the impact on ridership, fare and parking revenue from replacing existing BART parking with TOD. For the proposed West Oakland TOD project, no BART replacement parking is proposed.

The proposed TOD project is estimated to generate an annual net fare revenue of approximately $840,000. The significant increase in BART ridership resulting from the TOD project offsets the loss of parking and ridership revenue resulting from the elimination of 441 station parking spaces. **Table 10** and **Table 11** show the inputs, assumptions and calculations used in the Replacement Parking Analysis tool to determine the annual revenue impact of replacing BART parking with the proposed TOD project at the West Oakland Station.

TABLE 10: REPLACEMENT PARKING ANALYSIS INPUTS

Number of BART parking spaces reduced below existing demand	441
Space turnover (cars parked per day)[1]	1.5
Number of people per car	1.1
Number of auto access boardings reduced	728
Percent that find another access mode and continue to use BART	77%
BART boardings retained, change to another access mode	564
Net boardings loss	164
Ridership loss @ 2 trips per station boarding	328

Notes:

1. The parking space turnover for the West Oakland BART Station is assumed to be higher than 1.1, which is the value typically used in the Replacement Parking Analysis tool.

Source: BART Replacement Parking Analysis Tool, 2017.

TABLE 11: ANNUAL REVENUE IMPACT OF REPLACING BART PARKING WITH TOD

Fare Revenue	
Ridership impact of joint development (new riders)	2,490
Ridership impact of change in parking supply	-328
Net new riders	2,162
Average one-way fare	$3.00
Annual fare revenue from net new riders	**$1,727,897**
Parking Revenue	
Change in number of spaces under reserved parking	-170
Monthly cost of reserved parking	$231
Cost of collection	10%
Net annual revenue change from reserved parking	-$424,116
Number of spaces under paid (daily fee) parking	-271
Daily parking price	$10
Cost of collection	30%
Annualized capital cost of parking charge equipment	$5,996
Net annual revenue from daily parking charges	-$462,563
Combined annual parking revenue (or loss)	**-$886,679**
Total annual revenue impact (fare revenue less lost parking revenue)	**$841,218**

Notes: All inputs are taken from the BART Replacement Parking Analysis Tool. The tool assumes an annual operations cost per surface parking space of $416.

Source: BART Replacement Parking Analysis Tool, 2017.

4. PROPOSED ACCESS IMPROVEMENTS

The proposed West Oakland TOD project is estimated to generate over 2,100 net new BART riders at the West Oakland Station. Currently, another 1,200 residential units are proposed for the site located at 0 Kirkham Street, and an additional 424 residential units are proposed at 500 Kirkham Street just east of the station.[5] These and other development projects in the station area will generate additional new BART riders who will walk, bicycle, or take transit to the West Oakland Station.

This chapter presents the access and circulation concepts for pedestrians, bicycles, bus and shuttle transit, and vehicles in conjunction with the proposed TOD project. Because the TOD project is still in the Pre-Application phase with the City of Oakland, it is expected that the access and circulation concepts presented in this study will continue to evolve and be refined as part of TOD project development, and that future phases will include more detailed access and circulation design, engineering analyses and recommendations. BART's *Multimodal Access Design Guidelines* (https://www.bart.gov/sites/default/files/docs/BART%20MADG_FINAL_08-31.pdf), as well as other guidance documents described in Chapter 1, should be utilized to inform design decisions as the TOD project moves forward.

PEDESTRIAN AND BICYCLE ACCESS

The pedestrian and bicycle access and circulation concepts for the project are shown in **Figure 11**, and are discussed below. Overall, the TOD project seeks to prioritize pedestrian and bicycle access to the project site and BART station by providing a comfortable, safe and inviting environment for walking and by creating dedicated bicycle facilities along 7th Street and Mandela Parkway that connect to existing bicycle facilities and provide direct access to an on-site bicycle station (located directly east of the station building under the trackway) with secure bicycle parking and repair and maintenance services.

The following access and circulation improvements for bicyclists and pedestrians are proposed:

- Along ***5th Street, between Mandela Parkway and Center Street***, the sidewalk width should be 10 to 15 feet wide in order to accommodate the needs of pedestrians, bus passengers, and curbside passenger loading. The sidewalk on the south side of 5th Street (along the eastbound side of the street) is currently used for parking. The City of Oakland should work with adjacent

[5] City of Oakland List of Active Major Development Project Proposals/Summer 2017, http://www2.oaklandnet.com/oakca1/groups/ceda/documents/agenda/oak065129.pdf

property owners to close this sidewalk gap which is identified in the City's 2017 Pedestrian Plan Update.

- Along **5th Street between Center Street and Chester Street and along Chester Street between 5th Street and 7th Street**, sidewalks adjacent to the project site should be a minimum of eight feet wide. The sidewalk should be buffered from adjacent parking and street traffic by a street furnishings zone including pedestrian-scale lighting and street trees and/or other plantings. Furthermore, parking and truck loading entrances for the project should be designed to provide clear sight lines, should include ADA features such as tactile warning strips, and should provide audible warnings for when vehicles cross the pedestrian path of travel.

- At the ***intersections of 5th Street and Center Street and 5th Street and Chester Street***, high-visibility crosswalks should be installed along with directional, ADA compliant curb ramps, and pedestrian refuges on 5th Street.

- A new traffic signal may be required at the ***intersection of Chester Street and 7th Street*** to facilitate safe pedestrian, bicycle and vehicle movements. This element will require further and engineering analysis to determine whether future pedestrian, bicycle and vehicles volumes and movements at the intersection warrant the installation of a traffic signal.

- To facilitate bicycle access in conjunction with passenger loading from vehicles and buses along ***eastbound 7th Street between Henry Street and Mandela Parkway***, a raised, one-way cycle track is recommended with a minimum width of five feet.[6]

    - Between Henry and Center Streets, the existing sidewalk is approximately 28 feet wide. It is recommended that this be reconfigured to provide an 8- to 10-foot wide bus or passenger loading zone from the curb face to the cycle track. Another 10- to 15-foot sidewalk could then be

An example of a two-way raised cycle track adjacent to a bus stop and shelter in the City of Albany along San Pablo Avenue.

[6] The National Association of City and Transportation Officials (NACTO) Urban Bikeway Design Guide recommends that the travel surface for a one-way raised cycle track be 6.5 feet to allow side-by-side riding or passing. The desired

installed on the opposite side of the cycle track, adjacent to building frontages. Depending on the results of additional design and engineering analyses for reconfiguring 7th Street in this area, it may be necessary to widen the roadway on eastbound 7th street to provide a place for transit vehicles to pull in to the curb (and out of the travel lane) between Henry and Chester Streets and for other passenger vehicles to pull in to the curb between Chester and Center Streets. This would likely consist of an 8-foot wide area for vehicles to pull in to the curb with an 8- to 10-foot wide passenger loading area. The one-way cycle track could be narrowed to a minimum width of 5 feet. Buildings would need to be configured to then allow 10 to 15 feet of additional sidewalk width between the edge of the cycle track and building frontages.

  - Between Center Street and Mandela Parkway, the sidewalk narrows to 20 feet. A 10-foot wide bus loading zone and minimum 5-foot wide cycle track are also recommended for this portion of 7th Street. The currently proposed building design along this portion of 7th street includes a pedestrian arcade. This should be configured such that a minimum of 10 feet is provided between the edge of the cycle track and building entrances/frontages.

  - Further design work will be required to transition bicyclists from the raised cycle track through the intersection with Mandela Parkway to the shared vehicle lane on 7th Street east of Mandela Parkway.

- On ***westbound 7th Street between Mandela Parkway and Chester Street***, a parking-protected bicycle lane is recommended. Further design and engineering analysis is required to determine how the roadway may need to be reconfigured in order to accommodate a parking protected bicycle lane and a potential new bus stop on westbound 7th Street between Mandela Parkway and Center Street.

- To facilitate bicycle access from the bicycle lanes on Mandela Parkway north of 7th Street and south of 5th Street, a raised, two-way cycle track is recommended along the west side (southbound direction) of ***Mandela Parkway between 7th and 5th Streets***. The recommended width for a two-way cycle track travel surface is 12 feet, and a three-foot buffer from the face of curb to the edge of the cycle track is also recommended. In addition to the cycle track and buffer, sidewalks with a minimum width of eight feet should also be provided.

  - Parking and loading entries/exits for the building along Mandela Parkway between 7th and 5th Streets should be designed so as to ensure pedestrian and bicyclist safety. Cycle track and driveway design should follow the latest guidance and best practices so as to ensure pedestrian and bicyclist safety and comfort.

- The ***intersection of Mandela Parkway and 7th Street*** would likely require installation of a dedicated bicycle signal phase to enable cyclists to safely transition from the bicycle lanes on Mandela Parkway north of 7th Street to the two-way cycle track on the southbound side of

minimum width is 5 feet at intersections and pinch points. (https://nacto.org/publication/urban-bikeway-design-guide/cycle-tracks/raised-cycle-tracks/)

Mandela Parkway between 7th and 5th Streets. Further design and engineering analyses will be required for this intersection.

- Similarly, the ***intersection of Mandela Parkway and 5th Street*** would also require installation of a dedicated bicycle signal phase or construction of a protected bicycle intersection. Additionally, crosswalks at this intersection should be straightened in order to minimize pedestrian crossing distances and ADA-compliant, directional curb ramps should be installed.
- Parking or stopping of vehicles should be prohibited on both sides of ***Mandela Parkway between 7th and 5th Streets***, and the City of Oakland should consider banning through truck traffic on this portion of the roadway as well.
- A high-visibility, mid-block pedestrian crossing is recommended on ***Mandela Parkway between 7th and 5th Streets***. Currently, there are a relatively large number of pedestrians crossing Mandela Parkway at this location because it is the most direct path of travel from parking locations east of the station to the station entrance. It is expected that this will continue to be a preferred pedestrian path of travel once the surface parking lots to the east of the station are redeveloped. The crossing design will need to be coordinated with the design of the two-way cycle track to facilitate safe pedestrian crossing of both the roadway and the cycle track.
- Wayfinding signage, lighting, and installation of other pedestrian amenities (e.g., seating, trash receptacles, trees and other landscaping) is recommended along all public roadways bordering the project site.
- As West Oakland residents have expressed safety concerns about walking to and from the station at night, safety improvements that incorporate crime prevention through environmental design (CPTED), should be prioritized on all major pedestrian routes to and from the station. Pedestrian routes should extend up to one mile from the station, representing a fifteen- to twenty-minute walk.
- **Bicycle parking improvements:** BART has established a goal that 60 percent of BART riders bicycling to the West Oakland Station park their bikes at the station, with three-quarters of those parked in secure spaces.
    - To help BART achieve this goal, the TOD project should include an enhanced bicycle station located on the east side of the station structure that provides both valet and 24-hour secure bicycle parking to accommodate up to 500 bicycles.
    - The bike station should also include a retail and repair facility (both self-service and a bike shop). Additional bicycle parking for BART and commercial patrons should be provided throughout the site in the form of bicycle racks. Bicycle parking for the TOD's commercial and residential tenants should also be provided in accordance with City of Oakland requirements.

While the focus of recommendations for access and circulation improvements is for the immediate TOD project area and adjacent public streets, the following bicycle and pedestrian improvements are identified

for the broader station area. These improvements have been identified from existing City of Oakland plans and studies (described in Chapter 1).

- The City of Oakland should prioritize implementation of streetscape improvements identified in the West Oakland Specific Plan, including those for 3rd Street, Adeline Street, and Market Street.
- The City of Oakland should work with developers and other agency partners to provide high-quality, pedestrian-scale lighting and incorporate CPTED approaches on primary pedestrian routes up to one mile from the station.
- A number of bicycle facilities are planned that would better connect the West Oakland Station to existing and future parks and recreational areas and other Oakland destinations, including Jack London Square and Downtown Oakland (see Figure 8). The City of Oakland should prioritize completion of these facilities in order to facilitate safe, convenient bicycle routes to and from the West Oakland BART Station.
- The City of Oakland should consider upgrading the existing bicycle facilities on Mandela Parkway, 7th Street, and 3rd Street to further enhance safe and comfortable bicycling routes to and from West Oakland Station.
- The City of Oakland should develop and implement options for improving the intersection of Union and 5th Streets to facilitate safer and more efficient vehicle, pedestrian and bicycle movements.

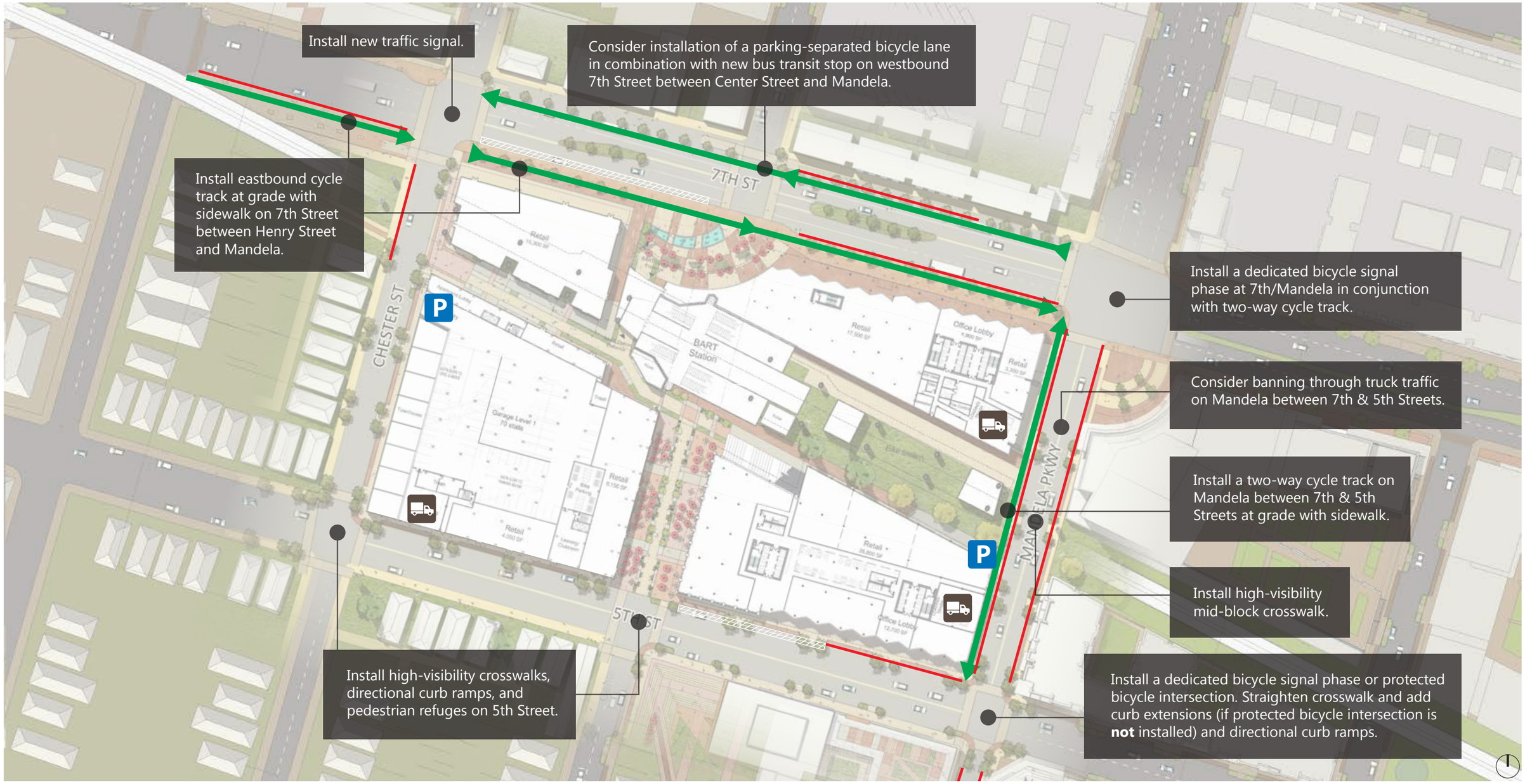

Figure 11

West Oakland BART TOD Proposed Pedestrian and Bicycle Access

BUS AND VEHICLE ACCESS

The proposed TOD project has the greatest impact on bus and vehicle access and circulation at the station due to the fact that the existing internal roadways will be eliminated. Consequently, all bus and other passenger vehicle loading, unloading and stopping will need to occur on the public streets bordering the BART property and TOD project site. **Figure 12** shows the proposed bus and vehicle circulation and access for the TOD project and BART station. The recommendations shown in **Figure 12** and discussed below incorporate review and comments from AC Transit staff; these comments are included in **Appendix C**.

The following access and circulation improvements for buses and vehicles are proposed:

- All bus stops should provide a high level of passenger amenities, including shelters with seating, maps and other information, and real-time bus arrival information; trash receptacles; and lighting. Minimum dimensions for shelters and bus boarding and alighting areas should be designed in accordance with AC Transit guidance provided in Designing with Transit (http://www.actransit.org/wp-content/uploads/designing_with_transit2.pdf).
- The bus stop and layover for lines 36 and 62 could be relocated to westbound 5th Street on the far side of the intersection with Mandela Parkway. At least 170 feet of curb length would be required to accommodate the bus stops and layovers, and a concrete bus pad would need to be installed in the roadway. If this stop is created, AC Transit would re-route these two lines to travel inbound from westbound 7th Street, to southbound Union Street, to westbound 5th Street. In the outbound direction, these lines would travel westbound on 5th street to northbound Chester Street, and then to eastbound 7th Street.
    - The current BART surface parking lot to the west of the station (across Chester Street) may be able to accommodate AC Transit bus layovers. However, further design and engineering analysis and evaluation is required to determine if adequate clearance is available for buses turning into and out of the location via Henry and Chester Streets.
- The existing bus stop on eastbound 7th Street should be retained and extended to the intersection with Center Street for an approximate total length of 270 linear feet. This stop would serve AC Transit Lines 29, 36, and 62 and would serve as both a stop and layover space for AC Transit Line 14. If Emery-Go-Round service is extended to the West Oakland Station, this stop could serve Emery-Go-Round vehicles as well.
- A new bus stop could be installed on westbound 7th Street to serve AC Transit Line 29 and Emery-Go-Round, if the service is extended to the West Oakland Station. A minimum of 126 feet of linear curb is needed at this location to accommodate transit vehicles, as well as a concrete bus pad in the roadway. If a bus stop is installed at this location, AC Transit has requested that a barrier be placed in the median of 7th Street to prevent illegal mid-block pedestrian crossings between the bus stop and the BART station.

- A bus stop for intercity coaches (e.g., Megabus and Bolt) could be installed on 7th Street between Henry and Chester Streets. Private employer shuttle could also utilize this stop. The existing BART surface parking immediately adjacent to this curb could be utilized for bus and shuttle transit passenger pick-up and drop-off (if not utilized as a layover space for AC Transit buses).
- To facilitate buses turning from northbound Chester Street to eastbound 7th Street, Chester Street should be redesigned so that buses are positioned closer to the center line of Chester Street. Due to the tight turning radius of the corner, buses cannot make the turn from Chester to 7th Street when positioned close to the curb on the northbound side of Chester Street.
- The proposed space for passenger loading is significantly greater than the approximately 100 feet of linear white curb currently available at the station. The West Oakland station has one of the highest shares of pick-up/drop-off access modes, and that condition is likely to continue in the future given the removal of parking and the station's location within the BART system and its proximity to I-880.
    - Approximately 130 feet of linear curb is proposed along westbound 5th street on the nearside of the intersection with Center Street, and another 255 feet of linear curb is proposed on eastbound 7th Street on the near side of the intersection with Center Street for passenger loading and unloading.
    - A portion (at least 50 linear feet) of the 7th Street passenger loading area closest to the intersection with Center Street should be designated as a loading space for passengers with disabilities. This area provides the most direct access to the station entrance.
    - Loading zones could be further differentiated between kiss-and-ride and TNC passenger loading with on-the-ground and in-app wayfinding for TNC passengers. Wayfinding signage directing vehicles to loading zones should be provided at key decisions points like the Mandela Parkway and 7th Street intersection and the 5th Street and Kirkham or Union Street intersections. Loading zone locations should also be incorporated into smartphone mapping and TNC apps to facilitate safe and efficient circulation and access.
- As redevelopment of surface parking and vacant sites at and around the station continues, BART, the City of Oakland, and AC Transit should evaluate the need for additional bus transit service (either increased frequencies or new lines) to the north and east, including Jack London Square.

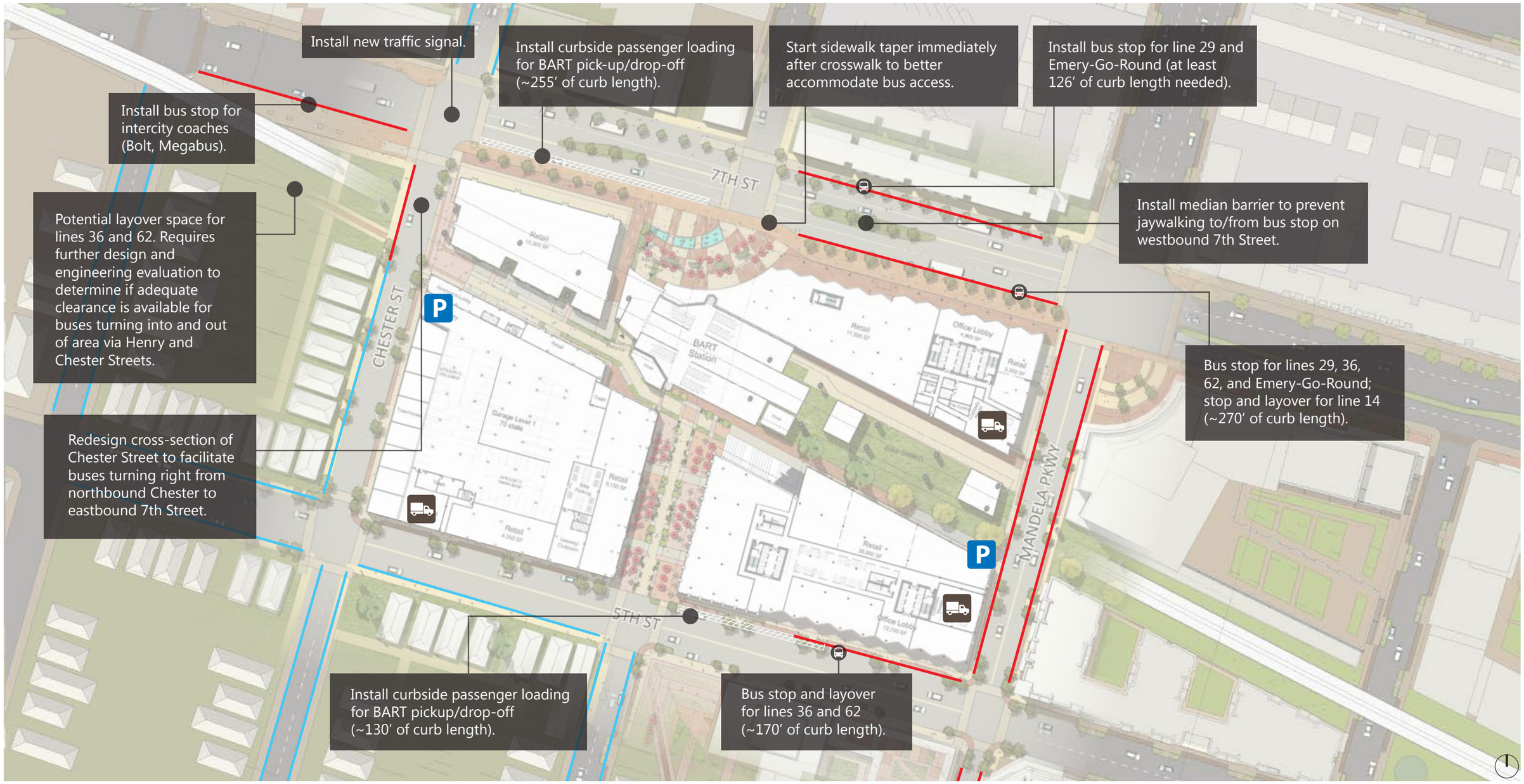

Figure 12

West Oakland BART TOD Proposed Bus and Vehicle Access

5. PARKING AND TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

To further ensure that walking, bicycling and transit trips are prioritized at West Oakland Station and that vehicle access is effectively managed, this chapter outlines a menu of potential TDM and parking management strategies that may be employed by the TOD project. As the TOD project description is finalized, it is expected that a more specific TDM and parking management program will be developed. The TDM strategies build on the infrastructure recommendations from the previous chapter.

PARKING MANAGEMENT

Due to BART's Station Access Policy and desire to transition the West Oakland BART Station to an Urban typology, no replacement parking for BART riders is proposed with the project. This proposition is supported by the finding that the project results in a net ridership increase even without replacement parking because the addition of people living, working, and shopping immediately adjacent to the station adds more riders that than taking away parking subtracts. Forecasted ridership at the station would increase from the project even with the removal of the BART parking currently on the site.

While decisions about the amount of parking that will be provided for the residential and commercial components of the proposed project have not yet been finalized, provided parking should be minimized, however, given the location of the project directly adjacent to a BART station with easy access to Downtown Oakland and San Francisco. Potential additional infill development, innovations in mobility options, and a robust TDM program can help further reduce parking needs.

The City of Oakland recently completed a parking management study and report for Downtown Oakland, and many of the recommendations contained in that report are applicable to the West Oakland BART Station area. The following is a list of the key parking management strategies that should be employed as part of the TOD project, in conjunction with the City of Oakland and BART:

- **Unbundle parking for office, retail, and residential tenants** — all tenants should pay for parking separately from their leases. Required by the City of Oakland when the proposed parking ratio exceeds 1:1.25 (residential) but should be implemented regardless. This strategy would also meet standard or platinum GreenTRIP requirements.
- **No monthly permits and establish minimum price floor for any public parking** — required by the City of Oakland if proposed parking ratio exceeds 1:1000 square feet (commercial) but

should be implemented regardless. Tenants may also be provided a cash incentive or transit pass alternative to a free parking space in commercial properties.

- **Price parking to achieve desired usage goals** — parking should be priced at the market rate at a minimum and ideally set at a level that makes driving more expensive than non-automobile modes of transportation according to the City of Oakland parking management study.

- **Actively manage on-site parking supply and share the supply across multiple land uses** — shared parking enables a smaller number of parking spaces to serve a greater number of users according to the City of Oakland parking management study.

- **Price on-street parking to achieve a desired occupancy target and reinvest a share of parking revenues in the local area** — according to the City of Oakland parking management study, non-monetary parking regulations such as time restrictions should be discouraged, as they are difficult to enforce, do not manage turnover and occupancy levels well, and cannot be adjusted to match shifting demand.

- **Develop and implement a robust residential parking management program in the surrounding neighborhoods, including consideration of a parking benefit district** — new development with limited parking has the potential to cause spillover parking in the surrounding neighborhoods. One program design suggested by the City of Oakland parking management study would be to provide additional metered parking supply in the neighborhoods, and residents would receive a permit to allow them to park for free.[7] Net revenues from the program would be reinvested in the neighborhoods from which they are generated.

TRANSPORTATION DEMAND MANAGEMENT

The TOD project will include a number of pedestrian, bicycle and bus transit infrastructure improvements that will contribute to a reduction in trips. In addition, there are a number of operational TDM measures that the project can implement to further support the goal of vehicle trip reduction. Appendices A and B include the City of Oakland TDM requirements as well as the GreenTRIP certification requirements, and the TDM measures listed here are derived from these requirements.

The TOD project should include a number of operational strategies aimed at further reducing vehicle trips generated by residents, visitors and employees and encourage non-automotive travel, including:

- **Real-time transit information system** – the project must provide electronic transit arrival/departure information in office lobbies and the primary pedestrian plazas on the site.

[7] Downtown Oakland Parking Management Study/Parking Management Plan, pp. 3-12-13, http://www2.oaklandnet.com/oakca1/groups/ceda/documents/agenda/oak057558.pdf

- **Transit Passes** — the project must provide at least one monthly pass per residential unit for forty years and at a fifty-percent (minimum) discount off the retail price to meet mandatory GreenTRIP certification requirements.
- **Carshare Membership** — the project must provide two free carshare memberships per residential unit for forty years and identify an existing carshare pod within a 1/4 mile of the project or provide a car on-site to be used to meet GreenTRIP certification requirements.
- **Travel Concierge** — On-site property managers must be given training and assigned job duties to provide knowledgeable guidance on transportation options available within a ten-minute walk from the site to satisfy GreenTRIP platinum certification requirements.
- **Marketing & Education for Residents** — strategies that satisfy GreenTRIP platinum certification requirements include, but are not limited to:
    - Units marketed towards residents looking for car-free housing.
    - Standardized marketing of transportation, household savings benefits of reduced parking and transit amenities.
    - Providing custom housing and transportation cost comparison reports for future residents.
    - Holding annual transportation fairs or local travel choice tours for residents to get oriented and learn new ways to easily get around.
    - Inviting service providers on site to market directly to residents.

APPENDIX A: CITY OF OAKLAND TDM REQUIREMENTS

APPENDIX A: SUMMARY OF CITY OF OAKLAND TDM REQUIREMENTS

Improvement	Required by code or when…
Bus boarding bulbs or islands	A bus boarding bulb or island does not already exist and a bus stop is located along the project frontage; and/or A bus stop along the project frontage serves a route with 15 minutes or better peak hour service and has a shared bus-bike lane curb
Bus shelter	A stop with no shelter is located within the project frontage, or The project is located within 0.10 miles of a flag stop with 25 or more boardings per day
Concrete bus pad	A bus stop is located along the project frontage and a concrete bus pad does not already exist
Curb extensions or bulb-outs	Identified as an improvement within site analysis
Implementation of a corridor-level bikeway improvement	A buffered Class II or Class IV bikeway facility is in a local or county adopted plan within 0.10 miles of the project location; and The project would generate 500 or more daily bicycle trips
Implementation of a corridor-level transit capital improvement	A high quality transit facility is in a local or county adopted plan within 0.25 miles of the project location; and The project would generate 400 or more peak period transit trips
Installation of amenities such as lighting; pedestrian-oriented, green infrastructure, trees, or other greening landscape; and trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan.	Always required
Installation of safety improvements identified in the Pedestrian Master Plan (such as crosswalk striping, curb ramps, count down signals, bulb outs, etc.)	When improvements are identified in the Pedestrian Master Plan along project frontage or at an adjacent intersection
In-street bicycle corral	A project includes more than 10,000 square feet of ground floor retail, is located along a Tier 1 bikeway, and on-street vehicle parking is provided along the project frontages.
Intersection improvements	Identified as an improvement within site analysis including but not limited to visibility improvements, shortening corner radii, pedestrian safety islands, accounting for pedestrian desire lines.

Improvement	Required by code or when…
New sidewalk, curb ramps, curb and gutter meeting current City and ADA standards	Always required
No monthly permits and establish minimum price floor for public parking	If proposed parking ratio exceeds 1:1000 sf (commercial). May also provide a cash incentive or transit pass alternative to a free parking space in commercial properties.
Parking garage is designed with retrofit capability	Optional if proposed parking ratio exceeds 1:1.25 (residential) or 1:1000 sf (commercial)
Parking space reserved for car share	A project is located within downtown. One car share space preserved for buildings between 50 – 200 units, then one car share space per 200 units
Paving, lane striping or restriping (vehicle and bicycle), and signs to midpoint of street section	Typically required
Pedestrian crossing improvements, pedestrian supportive signal changes	Identified as an improvement within site or operations analysis including but not limited to reducing signal cycle lengths to less than 90 seconds to avoid pedestrian crossings against the signal, providing a leading pedestrian interval, provide a "scramble" signal phase where appropriate.
Real-time transit information system	A project frontage block includes a bus stop or BART station and is along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better
Relocating bus stops to far side	A project is located within 0.10 mile of any active bus stop that is currently near-side
Signal upgrades	Project size exceeds 100 residential units, 80,000 sf of retail, or 100,000 sf of commercial; and Project frontage abuts an intersection with signal infrastructure older than 15 years
Transit queue jumps	Identified as a needed improvement within operations analysis of a project with frontage along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better
Trenching and placement of conduit for providing traffic signal interconnect	Project size exceeds 100 units, 80,000 sf of retail, or 100,000 sf of commercial; and Project frontage block is identified for signal interconnect improvements as part of a planned ITS improvement; and A major transit improvement is identified within operations analysis requiring traffic signal interconnect
Unbundled parking	If proposed parking ratio exceeds 1:1.25 (residential)

Other TDM strategies to consider include, but are not limited to, the following:

- Inclusion of additional long-term and short-term bicycle parking that meets the design standards set forth in chapter five of the Bicycle Master Plan and the Bicycle Parking Ordinance (chapter 17.117 of the Oakland Planning Code), and shower and locker facilities in commercial developments that exceed the requirement.
- Direct on-site sales of transit passes purchased and sold at a bulk group rate (through programs such as AC Transit Easy Pass or a similar program through another transit agency).
- Provision of a transit subsidy to employees or residents, determined by the project applicant and subject to review by the City.
- Provision of an ongoing contribution to transit service to the area between the project and nearest mass transit station prioritized as follows: 1) Contribution to AC Transit bus service; 2) Contribution to an existing area shuttle service; and 3) Establishment of new shuttle service. The amount of contribution (for any of the above scenarios) would be based upon the cost of establishing new shuttle service (Scenario 3).
- Guaranteed ride home program for employees, either through 511.org or through separate program.
- Pre-tax commuter benefits (commuter checks) for employees.
- Free designated parking spaces for on-site car-sharing program (such as City Car Share, Zip Car, etc.) and/or car-share membership for employees or tenants.
- On-site carpooling and/or vanpool program that includes preferential (discounted or free) parking for carpools and vanpools.
- Distribution of information concerning alternative transportation options.
- Requiring tenants to provide opportunities and the ability to work off-site.
- Allow employees or residents to adjust their work schedule in order to complete the basic work requirement of five eight-hour workdays by adjusting their schedule to reduce vehicle trips to the worksite (e.g., working four, ten-hour days; allowing employees to work from home two days per week).
- Provide or require tenants to provide employees with staggered work hours involving a shift in the set work hours of all employees at the workplace or flexible work hours involving individually determined work hours.

APPENDIX B: GREENTRIP REQUIREMENTS

TRAFFIC REDUCTIONS STRATEGY TABLE

This table is our current list of accepted Platinum strategies. For each strategy the description includes an ID, name, type, requirements to meet the standard, cost estimate and example projects where availble.

Cost estimates are rough estimates to implement the strategies, based on a 100 unit project. We included up front and annual maintenance or on-going costs adding up to 40 years to meet GreenTRIP Certification. The final project estimate was then divided by 100 units for a per unit cost estimate.

We will work with applicants to obtain a project specific and up-to-date cost estimate from service providers in preparation for certification.

ID	TRAFFIC REDUCTION STRATEGY	TYPE	STANDARD OR PLATINUM	REQUIREMENT	COST ESTIMATES PER UNIT*	EXAMPLES (PRODUCTS/ LOCATIONS)
1	Free Transit Passes	Transit Subsidy	S	Two (2) free annual transit passes per unit for 40 years. For areas where bulk pass program exists: AC Transit, VTA, SamTrans, Caltrain	$9,600	Most GreenTRIP certified projects, (Gish Apartments, San Jose, FCH)
1.1	Discounted Transit Passes	Transit Subsidy	S	Provide at least a 50% discount off the retail price of a regular monthly bus or transit pass. One (1) pass per unit for 40 years. For areas without a bulk discount for transit passes.	$19,200	
2	Carshare: Free Household or Individual Memberships	Carsharing Subsidy	S	Provide 2 free carshare memberships per unit for 40 years. Identify existing carshare pod within a 1/4 mile of the project or provide on-site.	$3,000	Riviera Family Apartments, Walnut Creek, RCD
2.1	Developer Provided Peer2Peer Carshare	Carsharing Subsidy	S	Requires a driving credit equivalent to Zip/CCS membership cost, if qualifying for GreenTRIP Classic standard. Assuming that Peer2Peer network membership is free. Otherwise cover the cost of membership as described above.	$3,300	Garden Village, Berkeley, Nautilus Group
2.2	Resident Provided Peer2Peer Carshare	Carsharing Subsidy	S/P	Provide P2P $100 annual driving credit per unit, can be in addition to providing carsharing membership to non-P2P carsharing providers.	$5,520	
3	100% Unbundled Parking	Pricing Parking Management	S	Charge the cost of parking separately from rent. Provide clear signage, resident info and enforcement.	Potential Revenue depending on cost per space.	The Overture, Berkeley, Rhoades Planning Group (consultant)
4	Clipper Card Cash	Transit Subsidy	P	Provide Auto-Load Clipper Cash $100 per unit per year as incentive to use transit.	$5,500	The Overture, Berkeley, Rhoades Planning Group (consultant)
5	Shuttle Service	More Transit	P	Provide a shuttle to regional transit hub and local destinations at least 4x a day, if located further than a 10 minute walk of rail transit. Could be much lower cost without purchasing vehicles through participation in a TMA (transportation management authority)	$8,570	EmeryGoRound Shuttles, Mission Bay TMA, San Francisco

*Costs can vary from table estimates.

ID	TRAFFIC REDUCTION STRATEGY	TYPE	STANDARD OR PLATINUM	STANDARD	COST ESTIMATES PER UNIT*	EXAMPLES (PRODUCTS/ LOCATIONS)
7	Contribution to Bike Infrastructure and Streetscape Improvements	 Bike/Ped Upgrades	P	Voluntarily contribute towards closing bike/ped network gaps from site to local destinations that are above minimum existing requirements. Improvements cannot be 100% on site.	Wide range of costs, depends on project	Cost of Pedestrian and Bicyclist Infrastructure Improvements (2013 Report)
8	Bulk Transit Passes to Neighbors	 Transit Subsidy	P	For projects already providing bulk transit passes. Provide additional passes to neighboring property owners within 5-minute walking radius of the closest transit stop. First 5 years only.	$300	
9	Transit Shelters	 Transit Subsidy	P	Provide a transit shelter for the closest bus stop.	$470	
10	Travel Concierge	 Transportation Information	P	Travel concierge service training and job duties required for onsite property managers for projects that have onsite staff. Provide knowledgeable guidance on transportation options available within a 10 minute walk of the site.	$325	
11	Marketing & Education for Residents	 Transportation Information	P	Units marketed towards residents looking for car-free housing. Standardized marketing of transportation, household savings benefits of reduced parking and transit amenities. Provide custom housing and transportation cost comparison reports for future residents. Hold annual transportation fairs or local travel choice tours for residents to get oriented and learn new ways to easily get around. Invite service providers on site to market directly to residents.	$325	AC Transit Easy Pass, Park Alameda User Guide
12	Transit Info Screen	 Real-Time Arrivals	P	Digital travel concierge directory customized to address location with local transit maps of key destinations accessible by transit/bike/walk.	$430	TransitScreen (Park Merced, San Francisco), Four Winds Interactive
13	Smart Walk	 Transportation Information	P	Can be projected onto sidewalk from any location. Digital travel concierge directory customized to address location with local transit maps of key destinations accessible by transit/bike/walk.	$580	SmartWalk near Berkeley BART Station
14	Annual Resident Savings, Health and Climate Benefit Report	 Transportation Information	P	Provide Annual Reports on transit, multi-modal trips, GHG and cost savings for building over-all. Use estimates from annual resident surveys, transit pass or other available data.	$325	

*Costs can vary from table estimates.

ID	TRAFFIC REDUCTION STRATEGY	TYPE	STANDARD OR PLATINUM	STANDARD	COST ESTIMATES PER UNIT*	EXAMPLES (PRODUCTS/ LOCATIONS)
15	Bike Parking Areas or Rooms on each floor of multistory buildings	Bike Parking	P	Provide secured, weather protected bicycle parking rooms/areas. Bike parking in locked resident only locations next to building entries on each floor next to the elevators.	$600	Dero Bike Racks, Saris Bike Racks, Urban Racks
16	In-Unit Bike Storage	Bike Parking	P	Providing space in each unit for bike storage: Configured as hooks with designated floor space, durable surfaces bicycle storage.	$450	Garden Village Berkeley, Nautilus Group Public Bikes Gravity Stand, Racor Bike Storage
17	BikeLink Card - Regional Locker and Bike Station Network	Bike Parking	P	$20 Bike Link Card per unit for bike lockers around the region.	$800	Garden Village, Berkeley, Nautilus Group
18	Bike Share Station Onsite	Bike-Sharing	P	Provide a bike share pod on site with one bike per 20 residents if project is located within 1 mile of an existing or planned bikeshare pod.	$950	Bay Area Bike Share
19	Bike Share Memberships	Bike-Sharing	P	When network is up and running provide free membership to the regional network. Cover membership and registration but not individual use over time.	$880	
20	Pedestrian Trunk (Grocery Cart)	Pedestrian Amenity	P	Provide one pedestrian trunk per unit: streamline durable and functional roller carts that allow for easy carfree movement of large items like groceries and stuff. Print with name of development.	$330	Garden Village, Berkeley, Nautilus Group
21	Travel Choice Amenity Kit	Pedestrian Amenity	P	Resident Transportation Kit with GreenTRIP Logo & Property Name / Logo. High quality, durable, locally made where possible. Sample Contents: water bottle, grocery bag, hat, umbrella, transit pass holder, discounts to local shoe and bike shops, pocket sized waterproof spider maps of local destinations and walking/biking distances, guide to mobile, transit/travel apps. Spider maps show destinations but not actual travel distance to scale.	$560	
22	Shared Cargo Bike	Bike-Sharing	P	Provide one electric assist cargo bike for every 100 units in secured common space.	$500	Metrofiets Cargo Bikes
23	Shared Electric Bikes	Bike-Sharing	P	Provide electric bikes for residents to check-out using credit card identification. 1 bike per 50 units.	$315	City CarShare's eBikeShare Pilot Program

*Costs can vary from table estimates.

APPENDIX C: AC TRANSIT STAFF COMMENTS ON PROPOSED BUS ACCESS CONCEPTS

From: Sean DiestLorgion
To: Kara Vuicich; Michael Eshleman
Subject: RE: West Oakland BART access concepts - updated
Date: Monday, January 08, 2018 11:48:38 AM

Hi Kara

Happy new year to you as well!

After reviewing your draft, we have the following comments:

- We did not agreed to have line 36 and 62 stop on the north side of 7th Street. We were only ok with the 29 stopping there.
- We'd also like a fence placed down the center of 7th Street between Mandela Parkway and Center Street (similar to Coliseum BART) if the bus stop is moved to the north side of 7th Street to eliminate jay-walking.
- The proposed 80' for the westbound bus stop on 7th Street at Mandela is insufficient for Line 29. This should be at least 126' due to our distance requirements for a bus maneuvering around a parked car (100') as well as to avoid the tree located along the sidewalk.
- The proposed 125' for the alternative-routing bus stop along 5th Street is insufficient. It should be at least 170' (5+40+70+40+15) to accommodate two 40-ft buses laying over.

Thanks,

Sean Diest Lorgion
Senior Transportation Planner
Service Development and Planning
Alameda-Contra Costa Transit District
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Oakland, CA 94612
Phone: (510) 891-4750
Cell: (510) 520-5753
Fax: (510) 891-4874
Email: sdiestlo@actransit.org

To: Kara Vuicich, Fehr & Peers
From: Sean Diest Lorgion, AC Transit
Date: 8/16/2017
Re: West Oakland BART Station Access

Thank you for the opportunity to review the *West Oakland BART Station Access/Parking Study Administrative Draft*.

The proposed plan calls for relocating bus functions (layovers/pick-ups/drop offs) along 7th Street between Henry Street and Mandela Parkway. Eastbound bus stops are proposed to use the existing bus stop located between Center Street and Mandela Parkway; westbound bus stops are proposed to use a new bus stop between Center and Chester Street. A new bus layover area would be created off-street on a piece of property just south of 7th Street between Henry Street and Chester Street.

EXISTING PASSENEGER ACCESS

Over 1,200 AC Transit riders either start or end their bus ride within the West Oakland BART Station. Passengers are dropped off at one of four bus stops along an internal roadway. As the report states, AC Transit recently coordinated with BART to optimize the use of the West Oakland BART Station by using both directions of the internal roadway, doubling the amount of bus bays from two to four. The added bays allowed AC Transit to increase frequency to/from the station – up to 13 buses per hour – as well as make West Oakland BART a terminal for two additional lines.

The bus stops are located between 175 and 350 feet from the fare gates allowing for a direct connection between AC Transit and BART services. The internal roadway also allows for a seamless connection between the four bus routes serving the station.

The existing layout reduces the variability in the amount of time it takes to transfer between the various transit options located at West Oakland station. Passengers know how long it takes for them to travel between the bus stop and the station. The time it takes to go from one bus stop to another bus stop or between a bus stop and the train platform is not affected by other factors like traffic.

PROPOSED PASSENEGER ACCESS

While having bus stops located along City streets near BART Stations within Oakland is typical, the increased impacts to passengers being dropped off at West Oakland might not seem apparent. There are eight BART stations within Oakland. Of those eight BART stations, six do not have on-site intermodal facilities (West Oakland and Fruitvale do; Rockridge, 19th Street, 12th Street-City Center, Lake Merritt, Macarthur and Coliseum BART do not). With that said, four of those stations (Rockridge, 19th Street, 12th Street-City Center, Lake Merritt) do provide station access close to where AC Transit bus stops are located. Access to these stations has been provided via either a pedestrian bridge or escalators leading directly

into the station. This infrastructure has reduced the amount of time AC Transit riders need to cross the street to catch a train and has provided passengers with a more convenient and safer access to the BART station.

Coliseum BART and Macarthur BART are the two stations in Oakland where passengers get dropped off across a major roadway from where the station entrance is located. The drop-off at Coliseum BART was changed several years ago as part of a streetscape project along San Leandro Street that moved all operations to the west side of the BART tracks. Previously, AC Transit served both sides of the station which allowed more direct access between BART and AC Transit services. After implementation of the new bus stop setup at Coliseum BART, a fence had to be erected within the median of San Leandro Street to prevent jay-walking.

Macarthur BART does have an internal roadway that connects 40th Street and Macarthur Blvd. This roadway is used by Emery-Go-Round as a way turn buses around. Emery-Go-Round service operates along eastbound 40th Street, then makes the right onto the internal roadway before making a right onto Macarthur Blvd. AC Transit routes that operate along westbound 40th Street do not deviate into the roadway due to the additional 2-3 minutes that it would add to each trip.

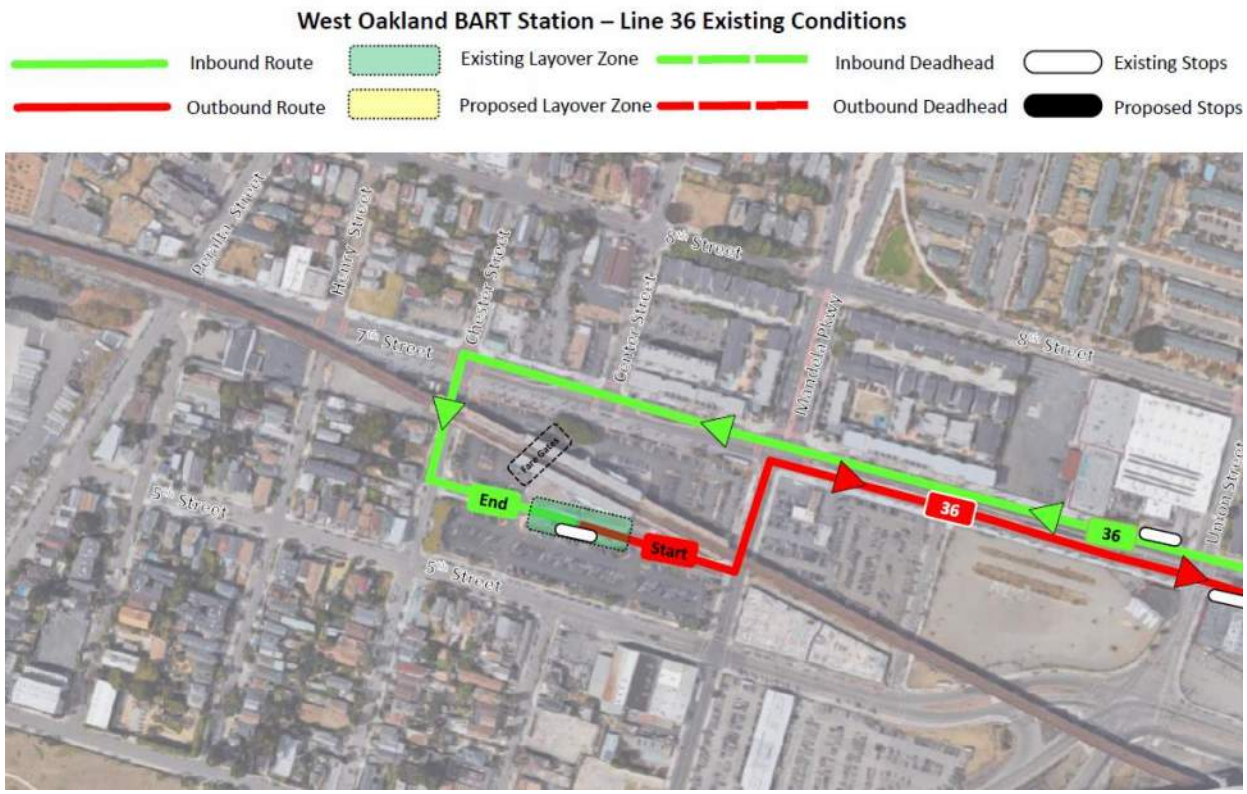
IMPACTS TO BUS SERVICE

The following section details the specific impacts on each of the four lines currently serving West Oakland BART.

Line 36

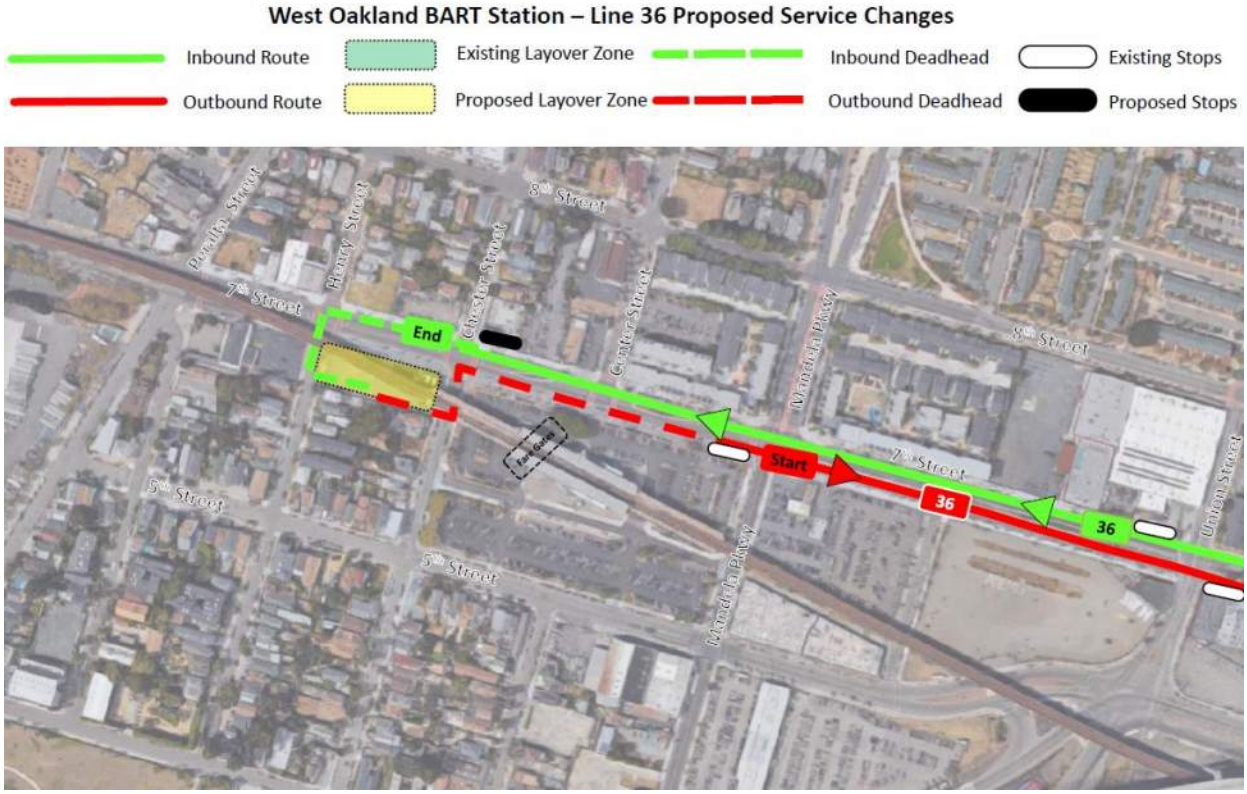
Line 36 approaches the West Oakland BART station from southbound Adeline Street, right 7th Street, left Chester Street and finally a left onto the internal roadway to the station. Heading towards Berkeley, Line 36 operates via the internal roadway, left Mandela Parkway, and then right onto 7th Street. Exhibit 1 below details the existing Line 36 routing to/from West Oakland BART.

Exhibit 1 – Line 36 Existing Route



The proposed configuration would have Line 36 drop off passengers along westbound 7th Street between Center Street and Chester Street. Each weekday, 156 passengers would be forced to get off on the north side of 7th Street and cross 7th Street to get to the West Oakland BART station, adding to delay for customers and making the connection with BART more onerous. Exhibit 2 below details the proposed Line 36 routing to/from West Oakland BART.

Exhibit 2 – Line 36 Proposed Service Change



The proposed bus stop in the westbound direction is located near side of Chester Street. There are currently no stop controls for traffic along 7th Street, making crossing at Chester difficult. While passengers heading to/from BART are likely to use Center Street to cross 7th Street, other passengers living along/north of Chester Street are less likely to walk back towards Center Street. Regardless of the new signal or not, dropping passengers off across the street from the station increases the potential for bus riders jaywalking to get to BART.

The proposed bus stop in the eastbound direction is located near side of Mandela Parkway, a signalized intersection. Passengers getting off BART trying to catch Line 36 will need to walk an additional 200' to catch the bus compared to the existing condition.

Line 36 would layover along the new bus roadway via 7th Street, L/Henry Street, L/ into BART Storage Roadway. To get back to the BART station, buses would operate via L/Chester Street, R/7th Street to bus stop along south side of 7th Street, near side of Mandela Parkway (first stop). Then continue along 7th Street to Adeline Street.

Summary:

- Longer walk to southbound bus stop (~520' from Chester Street to fare gates)
- New signal required at Chester Street
- Increased pedestrian activity across 7th Street (westbound)

- Running time increases (est. at 19 seconds)
- AC Transit does not currently operate along Henry Street

Line 29

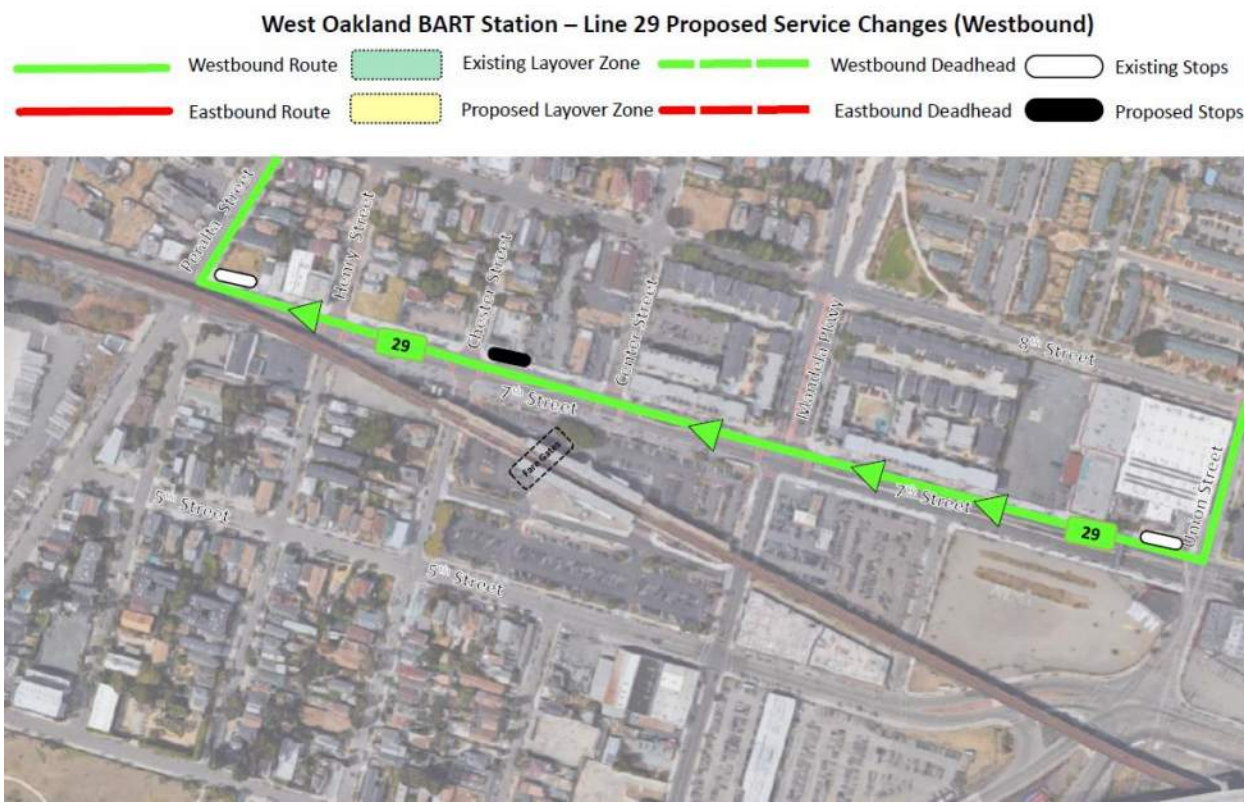
Line 29 operates through the West Oakland BART station BART Station in both directions. Heading toward Downtown Oakland, the route operates on 7th Street, stopping along the south side of 7th, just west of Mandela Parkway. Heading toward Emeryville, buses operate along westbound 7th Street, left Chester Street, left onto the internal roadway to the station. After continuing along the internal roadway, buses make the left onto Mandela Parkway, then left back onto 7th Street. Exhibits 3 and 4 detail the existing eastbound and westbound Line 29 routings, respectfully.

Exhibit 3 – Line 29 Existing Route- Eastbound

Exhibit 4 – Line 29 Existing Route- Westbound

The proposed configuration would have Line 29 to Emeryville drop off passengers along westbound 7th Street between Center Street and Chester Street. Each weekday, 67 passengers would need to use the proposed stop on the north side of 7th Street and would have to cross 7th Street to get to/from the West Oakland BART station, adding to delay for customers and making the connection with BART less reliable. Exhibit 5 below details the proposed Line 29 routing towards Emeryville.

Exhibit 5 – Line 29 Proposed Service Change- Westbound



There are currently no stop controls for traffic along 7th Street, making crossing at Chester difficult. While passengers heading to/from BART are likely to use Center Street to cross 7th Street, other passengers living along/north of Chester Street are less likely to walk back towards Center Street. Regardless of the new signal, dropping off passengers across the street from the station increases the potential for bus riders jaywalking to get to BART in addition to delay for those customers.

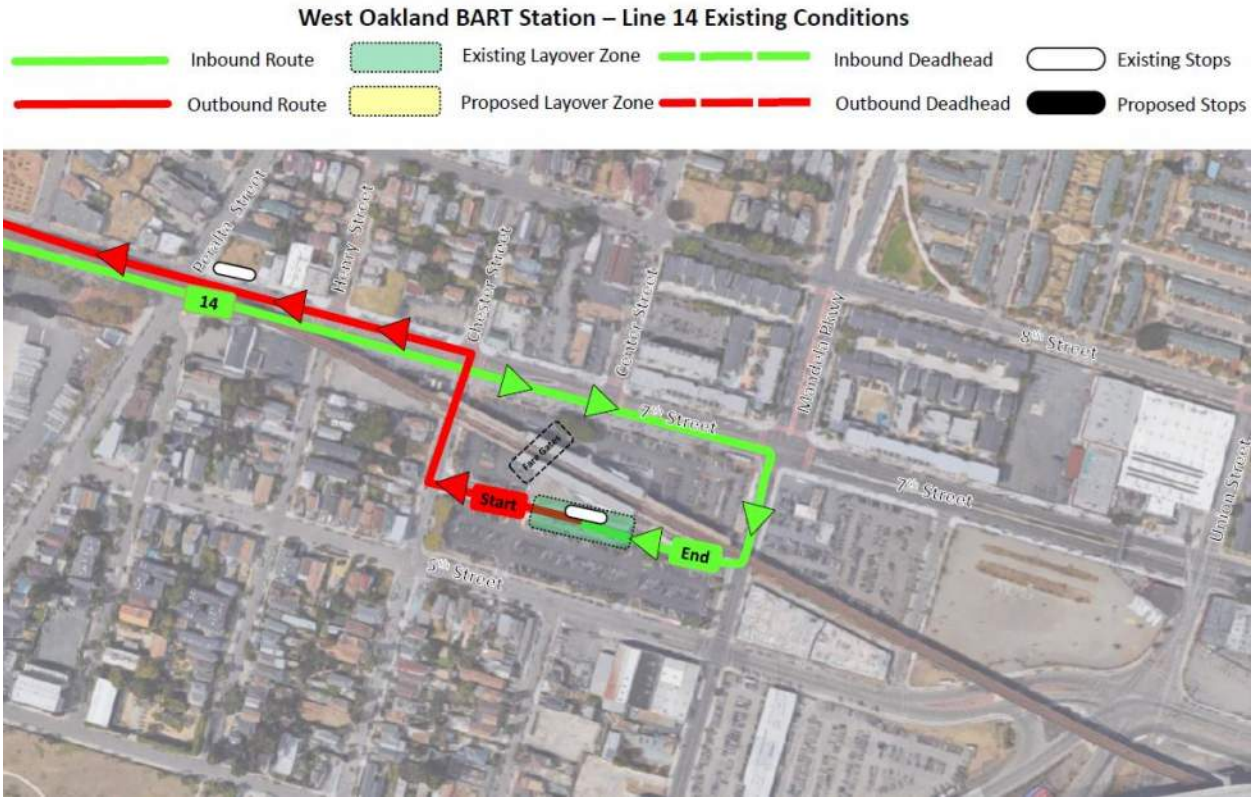
Summary:

- Longer walk from drop-off bus stop (~280')
- Longer walk to pick-up bus stop (~400')
- Increased pedestrian activity across 7th Street (westbound)
- Running time decreases (est. at 1 minute and 40 seconds)

Line 14

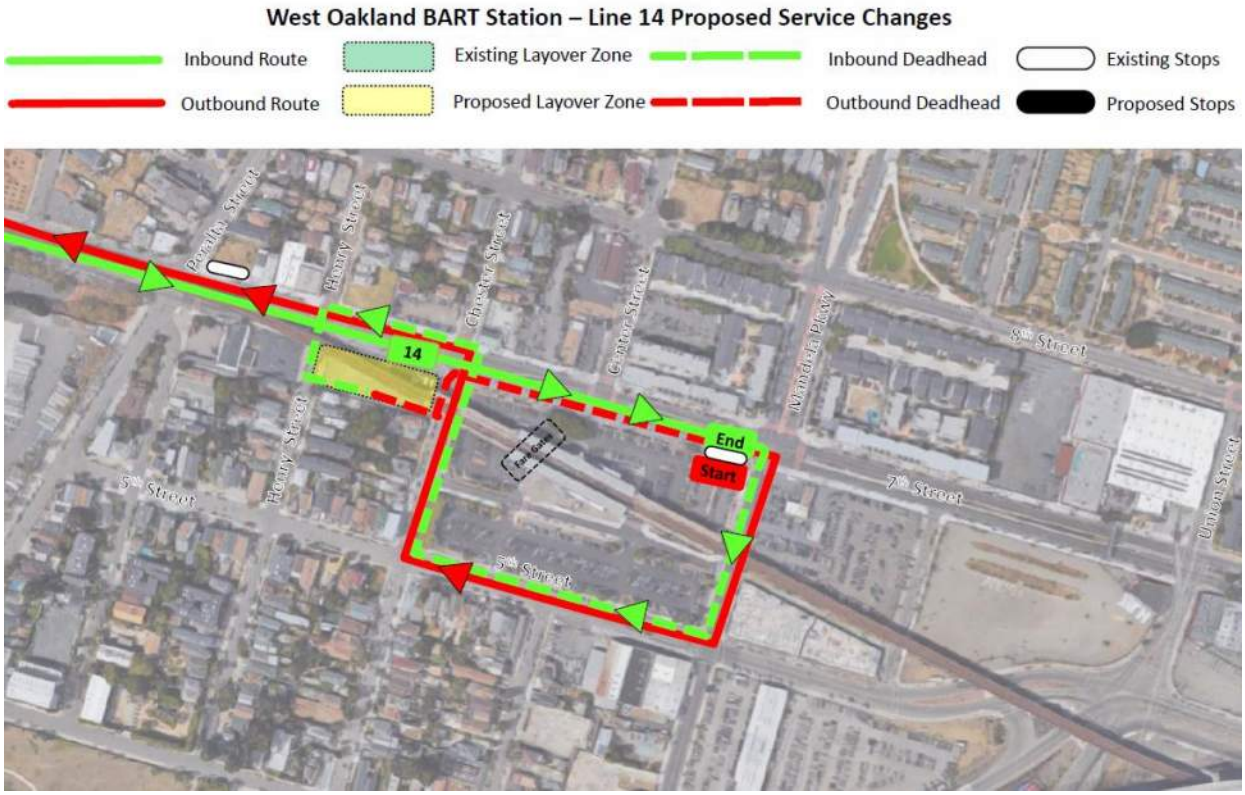
Line 14 approaches the West Oakland BART Station via southbound Wood Street, left 7th Street, right Mandela Parkway, right onto the internal roadway to the station. Heading towards Wood Street, Line 14 operates via the internal roadway, right Chester Street to a left onto 7th Street. Exhibit 6 below details the existing Line 14 routing to/from West Oakland BART.

Exhibit 6 – Line 14 Existing Route



The proposed configuration would have Line 14 drop off passengers along the south side of 7th Street, near side of Mandela Parkway. Buses would then turn right onto Mandela Parkway, right on 5th Street, right on Chester Street, left on 7th Street, left on Henry Street, and left into the BART Storage Roadway to layover. After laying over, buses would begin their trip via BART Storage Roadway, left on Chester Street, and right on 7th Street to again use the bus stop along south side of 7th Street, near side of Mandela Parkway, the first stop. Then continue via right on Mandela Parkway, right on 5th Street, right on Chester Street, and left on 7th Street to Wood Street. This routing was evaluated under the assumption that buses dropping off passengers at West Oakland BART were required to reach the station prior to laying over. Exhibit 7 below details the proposed Line 14 routing to/from West Oakland BART.

Exhibit 7 – Line 14 Proposed Service Change



The drop-off/pick-up location is approximately 400' further from the station than the bus stop located just outside the far gate along the interval roadway. This will increase the time it takes for passengers to get to/from the bus stops to BART.

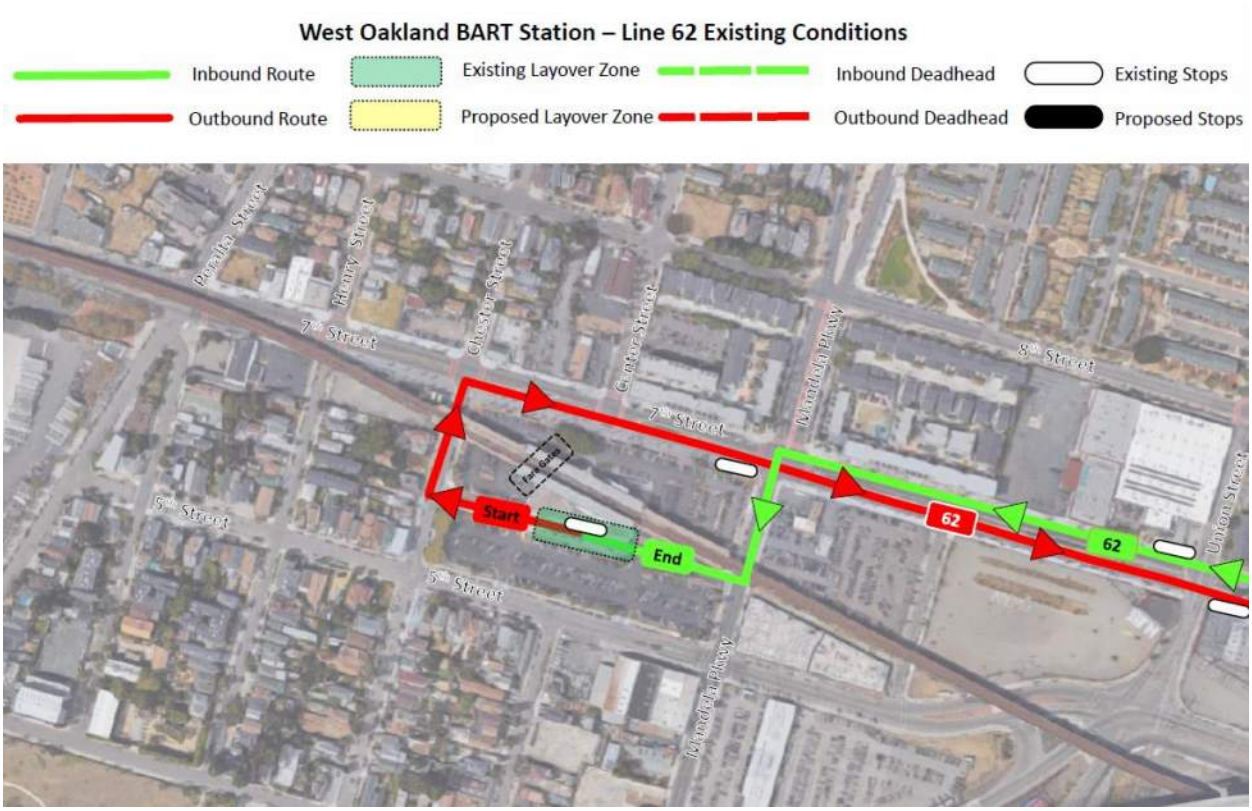
Summary:

- Longer walk to/from bus stop (~580' from bus stop located at Mandela Parkway to fare gates)
- Running time increases (est. at over 3 minutes)
- AC Transit does not currently operate along 5th Street and would require a public hearing

Line 62

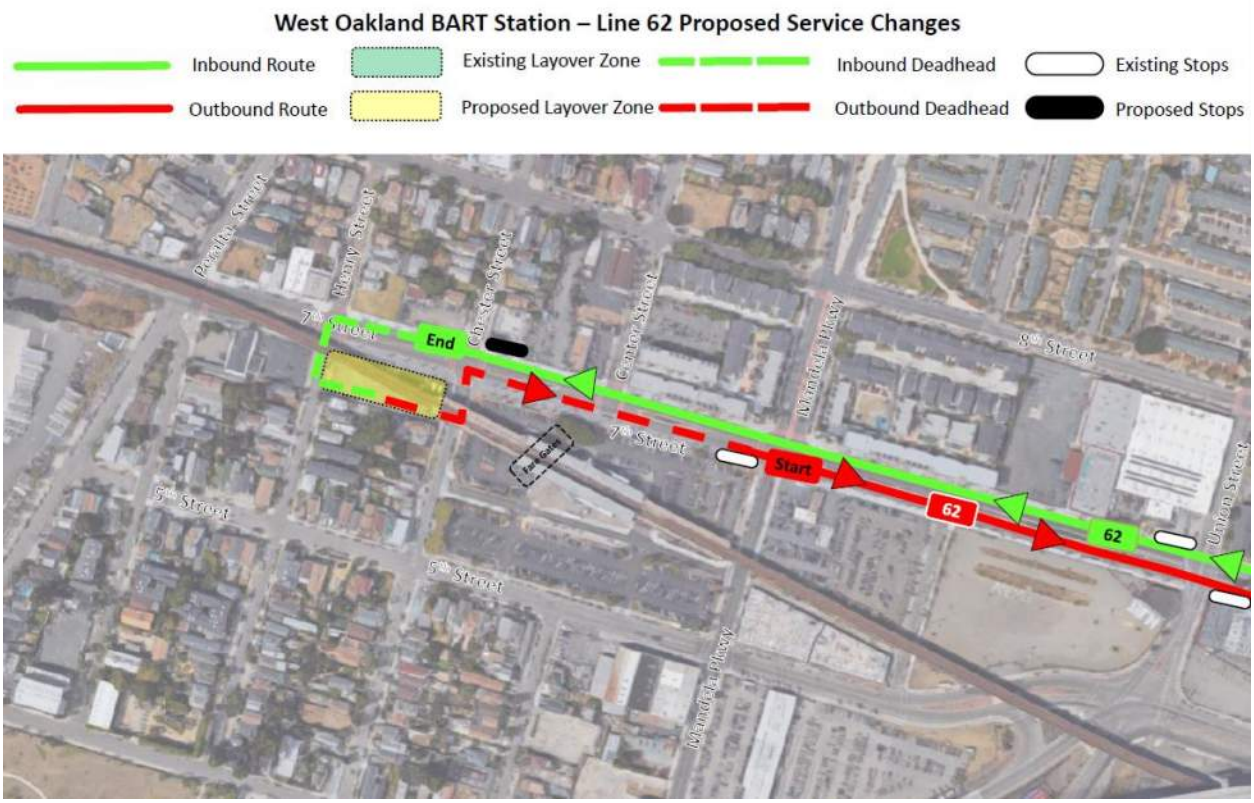
Line 62 approaches the West Oakland BART Station via westbound 7th Street, makes a left on Mandela Parkway, and then a left on the BART internal roadway to the station. Heading back towards Fruitvale BART, buses operate via the internal roadway, then right on Chester Street, and right on 7th Street. Exhibit 8 below details the existing Line 62 routing to/from West Oakland BART.

Exhibit 8 – Line 62 Existing Route



The proposed configuration would have Line 62 drop off passengers along westbound 7th Street between Center Street and Chester Street. Each weekday, 180 passengers would be forced to get off on the north side of 7th Street and cross 7th Street to get to the West Oakland BART station, adding to delay for customers and making the connection with BART less reliable. Exhibit 9 below details the proposed Line 62 routing to/from West Oakland BART.

Exhibit 9 – Line 62 Proposed Service Change



There are currently no stop controls for traffic along 7th Street, making crossing at Chester difficult. While passengers heading to/from BART are likely to use Center Street to cross 7th Street, other passengers living along/north of Chester Street are less likely to walk back towards Center Street. Regardless of the new signal, dropping off passengers across the street from the station increases the potential for bus riders jaywalking to get to BART.

The proposed bus stop in the eastbound direction is located near side of Mandela Parkway – a signalized intersection. Passengers getting off BART trying to catch Line 36 will need to walk an additional 400' to catch the bus compared to the existing bus stop today.

Line 62 would layover along the new bus roadway via 7th Street, then left on Henry Street, and left into BART Storage Roadway. To get back to the BART station, buses would operate via left on Chester Street, and right on 7th Street to bus stop along south side of 7th Street, near side of Mandela Parkway, the first stop. Buses would then continue along 7th Street towards Downtown Oakland.

Summary:

- Longer walk from drop-off bus stop (~520' from Chester Street to fare gates)
- Longer walk from pick-up bus stop (~580' from bus stop located at Mandela Parkway to fare gates)
- New signal required at Chester Street
- Increased pedestrian activity across 7th Street (westbound)

- Running time increases (est. at 30 seconds)
- AC Transit does not currently operate along Henry Street

COST IMPACTS

The added time that the bus routes may experience – especially Line 14 – may cost AC Transit additional resources to continue to provide the same level of service. Exhibit 10 details the annual cost of the added time. This does not, however, capture the impacts of having to add another bus to the line due to the added time.

Exhibit 10 – Cost of Running Time Changes by Route

Line	Annual Trip Time	Cost/Savings
29	-391.25	-$81,771
36	72.62	$15,178
14	966.50	$201,999
62	181.75	$37,986
		$173,391

POSSIBLE ROUTING/LAYOVER ALTERNATIVES

Based on our evaluation of how the elimination of the West Oakland BART station intermodal facility negatively impacts the existing AC Transit bus route network, staff looked at other alternatives outside of BART property proposed for redevelopment that would make the connection between bus service and BART less onerous for both customers and AC Transit operations.

Line 29, 36, and 62

Instead of the dropping passengers off on the north side of 7th Street and placing the layover zone between Henry Street and Chester Street, lines 29, 36, and 62 could operate via westbound 7th Street, then turn left onto Mandela Parkway. A bus stop would need to be sited along Mandela Parkway near 7th Street in order to provide quicker access to the BART station. Adding new fare gates on the east side of the station would also improve the connection for bus riders trying to transfer to BART.

After dropping off passengers, buses would continue along Mandela Parkway, then right onto 5th Street to a new layover/bus stop along the north side of 5th Street between Mandela Parkway and Chester Street. The intersections of 5th Street/Center Street and 5th Street/Chester Street should also be controlled (3-way stop sign or traffic signal) if buses are going to be laying over just east of these intersections, blocking visibility of the proposed pedestrian crossings.

After laying over, buses would continue in service via 5th Street, right Chester Street, then right 7th Street to pick up passengers at the existing bus stop near side of Mandela Parkway.

While this alternative does add time to the existing lines 36 and 62, it is shorter than the original proposal. It also eliminates the need for bus riders to cross the street to access the BART station.

Line 14

Instead of dropping off passengers along eastbound 7th Street, driving to the off-site layover and then back to 7th Street, AC Transit would like to see a layover/bus stop along Mandela Parkway for Line 14. This location would serve as the drop off pick up/for this line in order to improve access to the BART station. New fare gates on the east side of the station would also improve the connection for bus riders trying to transfer to BART.

After dropping off passengers, buses would continue along Mandela Parkway, then right onto 5th Street, right on Chester Street, and then left onto 7th Street.

This alternative keeps the running time close to what it takes in the existing condition and is much faster than the time estimated for the original proposal.

If there is not enough room along Mandela Parkway, we would look at a Line 14 layover along 5th Street with the three other lines.

SUMMARY

The changes being proposed to the West Oakland BART station access and circulation impact AC Transit operations, passenger convenience, and passenger safety. For the most part, buses will take longer to operate to/from the station. In the case where the new routing is faster, it comes at the expense of customer safety and convenience by forcing them to walk further to/from the BART station instead of being dropped off/picked-up close to the station.

AC Transit would ask that the proposal be reimagined with the inclusion of an internal roadway for buses to allow for more convenient and safer passenger drop-off and pick-up as well as keep bus layovers at the station instead of shifting them a block away. The District believes this configuration would be the best outcome for AC Transit, BART, and the residents and employees at the proposed development. If the internal roadway is no longer being considered, we ask that the alternatives described above (Mandela Parkway; 5th Street) be evaluated.

We would also like Chester Street and Mandela Parkway – between 7th Street and 5th Street – evaluated for bus all bus movements being proposed or considered. Chester Street in particular is very narrow and can be very difficult for our bus operations. We currently operate two-way along Chester Street and it does not work well with the current parking layout.

Appendix B: AC Transit Bus Stop Improvement Unit Cost Assumptions

AC TRANSIT
MAJOR CORRIDORS STUDY
Capital Cost Estimates
May 2016

Unit Costs

Category	Element	Assumptions	Unit	Cost per Unit/ Percentage	Notes
Roadway/Track	Light rail track	Include all elements	Mile	$ 125,900,000	Example projects typically include maintenance facility and central ctrl
	Exclusive Bus Lanes	Concrete lanes	Mile	$ 7,460,000	assumes some widening, takes parking, and takes some landscape strip
	Semi-Exclusive Bus Lanes	Concrete lanes	Mile	$ 3,030,000	assume retain curb-to-curb, takes parking
	Mixed Flow		Mile	$ -	
	Transit Priority Zone	Bus Mall (allows autos)	Mile	$ 470,000	Both potential locations require limited improvements to convert
	Bus turntable	AC Transit to provide	Each	$ 1,000,000	
	Queue jumps		Each	$ 320,000	Assume some widening, localized parking removal
	Curb Extensions		Each	$ 37,500	
Stations	Light rail	2-sided station	Each	$ 600,000	
	BRT Median	2-sided station	Each	$ 400,000	
	BRT Curbside		Each	$ 300,000	
	Rapid Bus Stop	curbside	Each	$ 200,000	
	Enhanced Bus Stop-High	1/2 stops with shelter	Each	$ 150,000	
	Enhanced Bus Stop-Low	1/2 stops w/o shelter	Each	$ 50,000	
	Relocated Local Bus stops	Per Corridor	Lump sum	$ 20,000	Allocation to address changes inb local bus stops to accommodate HCT
Support Facilities	Operator restrooms	2 per corridor	Each	$ 225,000	
	New Maintenance Facility	LRT Only	Lump Sum	$ 100,000,000	Includes property costs
Systems	Transit Signal Priority	Includes controller upgrade	Per sig. intersection	$ 45,000	Assumes upgrade to signal controller
	Transit Signal Priority	Without controller upgrade	Per sig. intersection	$ 20,000	Assumes upgrade to signal controller not needed
	Adaptive signal control	From other projects	Per sig. intersection	$ 50,000	
	Real-Time Information	Rapid/BRT/LRT only	Per Station/Stop	$ 17,500	Assumes two-sided 3-line panel display hung or shelter or on pole
	Off-Board Fare Collection	BRT/LRT only	Per Station/Stop	$ 25,000	
Property Acquisition		BRT/LRT only	Lump Sum	$ 1,000,000	
Vehicles		LRT Vehicle	Each	$ 3,000,000	
		BRT: 60'; zero-emission; 2-sided	Each	$ 1,500,000	
		For Rapid Bus: 40' hybrid	Each	$ 777,000	Includes Clipper Card readers
		For Enhanced Bus: 40' hybrid	Each	$ 771,000	
Branding/Marketing			Percentage	2.0%	
Project Development	Design/Engineering		Percentage	15.0%	
	Agency Costs		Percentage	7.0%	
	Construction Management		Percentage	10.0%	
	Environmental/Inspections/Legal		Percentage	6.0%	
Contingency			Percentage	35.0%	
Year 2020; assumed annual escalation			Percentage	3.50%	
Year 2030; assumed annual escalation			Percentage	3.50%	
Year 2040; assumed annual escalation			Percentage	3.50%	

Appendix C: Transit Project Source Documents

AC Transit Access Study Stop Recommendations, 2019									
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
14	Eastbound	1	WEST OAKLAND BART STATION	265	0	265	37.804727	-122.295502	
14	Eastbound	2	7TH ST PERALTA ST	34	5	38	37.806050	-122.298051	
14	Eastbound	3	7TH ST WILLOW ST	0	1	1	37.806823	-122.301139	
14	Eastbound	4	WOOD ST 8TH ST	40	10	49	37.808190	-122.301822	
14	Eastbound	5	WOOD ST 12TH ST	48	62	111	37.811728	-122.299035	Build bus bulb
14	Eastbound	6	14TH ST WILLOW ST	28	6	34	37.812442	-122.296257	
14	Eastbound	7	14TH ST CENTER ST	54	7	61	37.811039	-122.292725	Move back to far-side Peralta for connections with Line 29
14	Eastbound	8	14TH ST MANDELA PKWY	12	2	14	37.810614	-122.290976	
14	Eastbound	9	14TH ST POPLAR ST	17	2	19	37.810140	-122.289081	Eliminate for stop-spacing.
14	Eastbound	10	14TH ST ADELINE ST	62	11	74	37.809381	-122.285843	
14	Eastbound	11	14TH ST FILBERT ST	10	5	15	37.808769	-122.283081	Eliminate for stop-spacing.
14	Eastbound	12	14TH ST MARKET ST	53	28	81	37.808193	-122.281185	Move far-side, consolidate with Brush stop, build bus bulb/bikeway
14	Eastbound	13	14TH ST BRUSH ST	16	4	20	37.807365	-122.279254	Eliminate when Market street stop is moved far-side
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
14	Westbound	47	14TH ST BRUSH ST	3	16	19	37.807411	-122.279030	Eliminate for stop-spacing.
14	Westbound	48	14TH ST MARKET ST	26	48	74	37.808509	-122.281393	Build bus-bulb/bikeway
14	Westbound	49	14TH ST FILBERT ST	5	16	21	37.808880	-122.282927	Eliminate for stop-spacing.
14	Westbound	50	14TH ST ADELINE ST	11	55	67	37.809575	-122.285944	Move far-side
14	Westbound	51	14TH ST POPLAR ST	2	18	20	37.810278	-122.289056	Eliminate for stop-spacing.
14	Westbound	52	14TH ST MANDELA PKWY	1	19	20	37.810670	-122.290657	
14	Westbound	53	14TH ST PERALTA ST	4	58	62	37.811385	-122.293713	Move far-side
14	Westbound	54	14TH ST WILLOW ST	4	32	35	37.812615	-122.296449	Move far-side
14	Westbound	55	WOOD ST 12TH ST	61	42	103	37.812009	-122.298902	Build bus bulb
14	Westbound	56	WOOD ST 8TH ST	6	40	47	37.807909	-122.302031	
14	Westbound	57	7TH ST CAMPBELL ST	2	21	23	37.806342	-122.299877	Eliminate
14	Westbound	58	7TH ST PERALTA ST	2	8	10	37.806010	-122.298392	
14	Westbound	59	WEST OAKLAND BART STATIO	0	216	216	37.804673	-122.295245	

AC Transit Access Study Stop Recommendations, 2019									
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
29	Eastbound	10	HOLLIS ST 34TH ST	9	1	10	37.825988	-122.284194	Lengthen red curb or move far-side and remove trees.
29	Eastbound	11	PERALTA ST LOUISE ST	15	1	16	37.823612	-122.284356	Pave planter strip
29	Eastbound	12	PERALTA ST 28TH ST	18	1	19	37.820938	-122.286377	Re-pave planter strip
29	Eastbound	13	MANDELA PKWY W GRAND AV	9	3	12	37.817286	-122.289580	Pave planter strip and remove trees or move far-side to cutout.
29	Eastbound	14	PERALTA ST 16TH ST	6	2	8	37.812790	-122.292874	Move far-side or fix sidewalk
29	Eastbound	15	PERALTA ST 12TH ST	11	6	17	37.810104	-122.295018	Eliminate, move to 14th street far-side
29	Eastbound	16	PERALTA ST 10TH ST	16	7	23	37.808482	-122.296313	
29	Eastbound	17	PERALTA ST 8TH ST	10	6	16	37.807003	-122.297344	Build bus bulb
29	Eastbound	18	7TH ST MANDELA PKWY	18	76	95	37.805068	-122.294006	
29	Eastbound	19	UNION ST 7TH ST	9	4	12	37.804772	-122.290437	
29	Eastbound	20	UNION ST 8TH ST	3	1	4	37.805479	-122.289999	Eliminate
29	Eastbound	21	10TH ST UNION ST	17	4	21	37.806939	-122.289188	Eliminate
29	Eastbound	22	10TH ST ADELINE ST	15	4	19	37.806534	-122.286894	
29	Eastbound	23	10TH ST FILBERT ST	4	4	7	37.805932	-122.284202	Eliminate
29	Eastbound	24	10TH ST MARKET ST	25	5	30	37.805368	-122.281650	
29	Eastbound	25	11TH ST BRUSH ST	4	0	4	37.805162	-122.280310	
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
29	Westbound	30	10TH ST MARKET ST	8	15	23	37.805510	-122.281686	Move far-side
29	Westbound	31	10TH ST FILBERT ST	7	15	22	37.805984	-122.284201	Eliminate
29	Westbound	32	10TH ST ADELINE ST	10	17	26	37.806622	-122.287011	Move far-side, widen sidewalk or add bus bulb
29	Westbound	33	UNION ST 10TH ST	4	28	32	37.806894	-122.289352	Eliminate
29	Westbound	34	UNION ST 8TH ST	2	9	11	37.805306	-122.290276	Eliminate
29	Westbound	35	7TH ST UNION ST	0	3	3	37.804835	-122.291143	
29	Westbound	36	WEST OAKLAND BART STATION	66	36	103	37.804614	-122.295284	
29	Westbound	37	7TH ST PERALTA ST	6	7	13	37.806106	-122.297784	
29	Westbound	38	PERALTA ST 8TH ST	2	2	4	37.807292	-122.297134	Move far-side
29	Westbound	39	PERALTA ST 9TH ST	8	31	39	37.808289	-122.296366	Build bus bulb
29	Westbound	40	PERALTA ST 12TH ST	4	7	10	37.809928	-122.295088	Eliminate, move to 14th street far-side
29	Westbound	41	PERALTA ST 17TH ST	2	7	10	37.813293	-122.292409	Lengthen stop
29	Westbound	42	PERALTA ST 24TH ST	3	7	10	37.818149	-122.288454	Move back to Mandela into cutout
29	Westbound	43	PERALTA ST 28TH ST	1	15	16	37.821079	-122.286191	
29	Westbound	44	PERALTA ST LOUISE ST	0	11	11	37.823275	-122.284488	Pave planter strip
29	Westbound	45	HOLLIS ST 34TH ST	1	24	25	37.826065	-122.284165	

AC Transit Access Study Stop Recommendations, 2019									
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
36	Northbound	1	WEST OAKLAND BART STATION	197	0	197	37.804543	-122.294814	
36	Northbound	2	7TH ST UNION ST	6	0	6	37.804496	-122.290335	
36	Northbound	3	ADELINE ST 7TH ST	20	3	23	37.804701	-122.288185	
36	Northbound	4	ADELINE ST 10TH ST	17	5	22	37.806618	-122.287354	Move far-side, bus bulb/bikeway
36	Northbound	5	ADELINE ST 14TH ST	14	4	18	37.809385	-122.286229	Move far-side, bus bulb/bikeway
36	Northbound	6	ADELINE ST 16TH ST	5	3	9	37.810925	-122.285643	Eliminate
36	Northbound	7	ADELINE ST 18TH ST	15	11	27	37.812125	-122.285183	Move far-side, bus bulb/bikeway
36	Northbound	8	ADELINE ST W GRAND AV	5	6	12	37.815349	-122.284009	Move far-side, bus bulb/bikeway
36	Northbound	9	ADELINE ST 24TH ST	6	11	17	37.817057	-122.283386	Eliminate
36	Northbound	10	ADELINE ST 26TH ST	3	16	19	37.818608	-122.282821	Move far-side, bus bulb/bikeway
36	Northbound	11	ADELINE ST 28TH ST	3	17	20	37.820158	-122.282261	Eliminate
36	Northbound	12	ADELINE ST 30TH ST	4	12	16	37.821889	-122.281639	Move far-side, bus bulb/bikeway
36	Northbound	13	ADELINE ST 32ND ST	6	24	31	37.823638	-122.281019	Eliminate
36	Northbound	14	ADELINE ST 35TH ST	4	16	21	37.826851	-122.279918	Move to far-side 34th, add bus bulb/b
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
36	Southbound	32	ADELINE ST 35TH ST	14	3	17	37.826995	-122.279963	Move to far-side 34th, add bus bulb/b
36	Southbound	33	ADELINE ST 32ND ST	18	7	25	37.823594	-122.281190	Eliminate
36	Southbound	34	ADELINE ST 30TH ST	13	4	17	37.822121	-122.281704	Move far-side, bus bulb/bikeway
36	Southbound	35	ADELINE ST 28TH ST	12	4	16	37.820059	-122.282452	Eliminate
36	Southbound	36	ADELINE ST 26TH ST	12	4	16	37.818839	-122.282897	Move far-side, bus bulb/bikeway
36	Southbound	37	ADELINE ST 24TH ST	10	6	17	37.817326	-122.283450	Eliminate
36	Southbound	38	ADELINE ST W GRAND AV	5	6	12	37.815809	-122.284002	Move far-side, bus bulb/bikeway
36	Southbound	39	ADELINE ST 18TH ST	15	8	24	37.812611	-122.285211	Move far-side, bus bulb/bikeway
36	Southbound	40	ADELINE ST 16TH ST	2	6	8	37.811214	-122.285777	Eliminate
36	Southbound	41	ADELINE ST 14TH ST	2	16	18	37.809875	-122.286342	Move far-side, bus bulb/bikeway
36	Southbound	42	ADELINE ST 10TH ST	3	20	23	37.806692	-122.287687	
36	Southbound	43	7TH ST ADELINE ST	3	19	22	37.804357	-122.288769	
36	Southbound	44	7TH ST UNION ST	1	9	9	37.804715	-122.291102	
36	Southbound	45	WEST OAKLAND BART STATIO	0	172	172	37.804543	-122.294979	

AC Transit Access Study Stop Recommendations, 2019									
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
62	Eastbound	1	WEST OAKLAND BART STATION	168	0	168	37.804644	-122.294861	
62	Eastbound	2	7TH ST MANDELA PKWY	69	3	72	37.805010	-122.293792	
62	Eastbound	3	7TH ST UNION ST	16	1	17	37.804201	-122.290179	
62	Eastbound	4	7TH ST ADELINE ST	31	9	40	37.803690	-122.287880	
62	Eastbound	5	7TH ST FILBERT ST	23	7	30	37.803113	-122.285235	Eliminate
62	Eastbound	6	7TH ST MARKET ST	36	11	47	37.802561	-122.282423	Move far-side
ROUTE	DIR	STOP	STOPNAME	DAY_ON	DAY_OFF	DAY_TOT	LAT	LONG	RECOMMENDATION
62	Westbound	45	7TH ST MARKET ST	13	41	54	37.802838	-122.282615	
62	Westbound	46	7TH ST FILBERT ST	4	28	32	37.803333	-122.285255	
62	Westbound	47	7TH ST ADELINE ST	8	35	43	37.804009	-122.288436	
62	Westbound	48	7TH ST UNION ST	2	36	38	37.804489	-122.290836	
62	Westbound	49	WEST OAKLAND BART STATIO	0	174	174	37.804625	-122.294929	

West Oakland BART Service Enhancements 1.10.2019

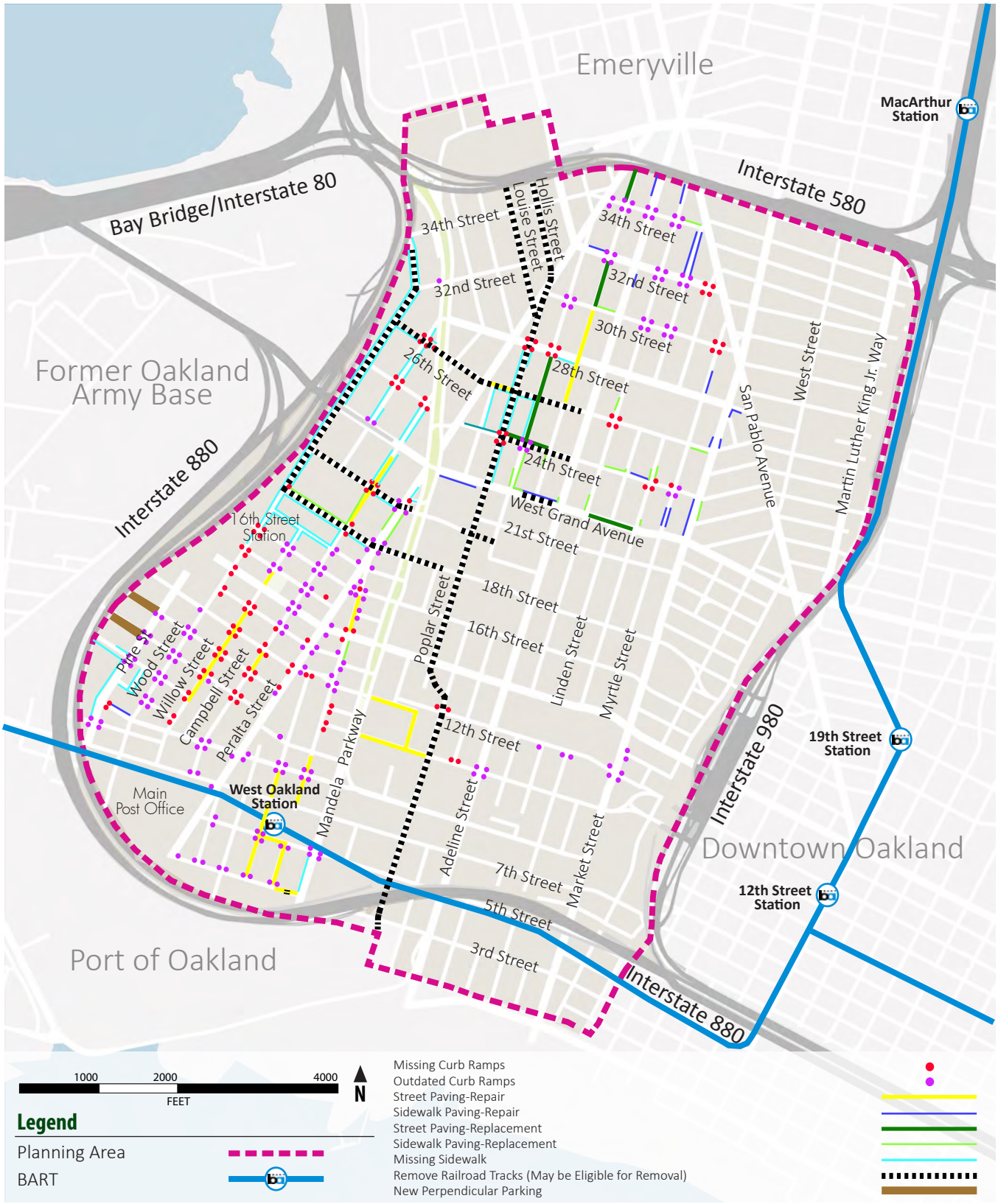
Line	Frequency			Statistics			
	Weekday Peak	Weekday Off-peak	Weekend	Vehicle count	Hours / yr	Miles / yr	$ / yr
Current							
14	15	15	30	11	44,861	422,577	$ 8,074,980
29	20	20	30	6	27,131	236,947	$ 4,883,526
36	30	30	30	5	26,220	226,355	$ 4,719,546
62	15	20	30	8	35,078	317,676	$ 6,313,968
Total				30	133,289	1,203,555	$ 23,992,020
ACgo (Full Implementation)							
14	15	15	20	12	50,356	478,796	$ 9,064,008
29	20	20	20	7	33,710	296,096	$ 6,067,764
36	20	20	20	6	38,423	336,474	$ 6,916,140
62	15	20	20	8	37,454	338,809	$ 6,741,792
Total				33	159,943	1,450,174	$ 28,789,704
Acgo Plus							
14	15	15	20	12	51,365	489,769	$ 9,245,772
29	15	15	20	9	41,600	364,620	$ 7,487,910
36	15	15	20	8	47,236	413,406	$ 8,502,444
62	15	15	20	8	39,316	357,665	$ 7,076,862
Total				37	179,517	1,625,459	$ 32,312,988

West Oakland BART Service Enhancements 1.10.2019

Cost Summary	Buses	Capital (one-time)	Hours	Operations (annual)
Current	30	$ 36,000,000	133,289	$23,992,020
Acgo (additional)	3	$ 3,600,000	26,654	$ 4,797,684
Acgo Plus (additional)	7	$ 8,400,000	46,228	$ 8,320,968

Appendix D: Pedestrian Project Source Documents

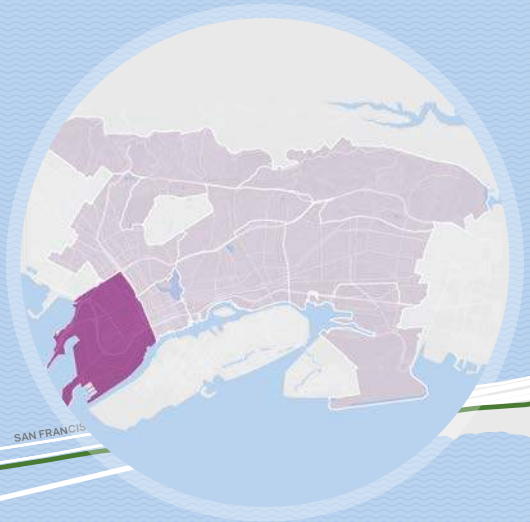
Fig. 6.1.1: Infrastructure Improvements*



*Map for illustrative purposes only. Indicates the type and general locations of infrastructure improvements identified to date. Other improvements may be identified in future surveys.

Appendix E: Bicycle Project Source Documents

The Oakland Athletics are currently proposing to relocate their ballpark to Howard Terminal. This unique nature of this proposed project may necessitate adjustments to this Bike Plan network to balance competing game-day demands on surrounding streets, including but not limited to Broadway, Market Street, Martin Luther King Jr. Way, Embarcadero West, and 3rd Street. While precise street segments on the Bike Network may change to accommodate these demands, high quality bicycle facilities to and from the ballpark will be incorporated in both the Howard Terminal project design and any revisions to the network envisioned herein to ensure safe and sustainable transportation to and from the waterfront.



RECOMMENDATIONS BY

West Oakland

EXISTING

RECOMMENDED BICYCLE NETWORK

- Path
- Protected Bike Lane
- Buffered Bike Lane
- Bike Lane
- Neighborhood Bike Route
- Bike Route
- East Bay Bus Rapid Transit Stops
- Community Facilities
- Hospital
- Libraries
- Parks
- Schools
- BART Station
- Amtrak Station
- Ferry Station

EMERYVILLE

PORT OF OAKLAND

ALAMEDA

Middle Harbor Shoreline Park

Raimondi Park

DeFremery Park

Lowell Park

Lafayette Elementary

MLK Jr. Elementary

McClymonds High

Hoover Elementary

WEST OAKLAND

19TH ST

12TH ST

JACK LONDON SQUARE

JACK LONDON SQUARE

N

0 0.25 0.5 MILES

SUPPORTING INFRASTRUCTURE

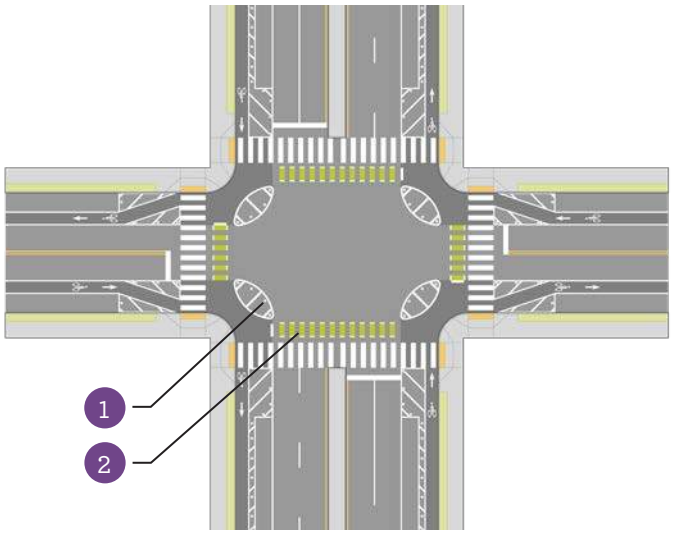
TYPICAL INTERSECTION TREATMENTS

Street intersections create conflict points between different modes of travel. Intersection design is important because it affects how pedestrians, bicycles, and motor vehicles interact. There is no single intersection design that can be applied everywhere. Variations in each location's context need different design features. The best approach is to create predictable interactions between pedestrians, bicycles, and motor vehicles. This increases safety and comfort for everyone. The following graphics illustrate some common design methods.

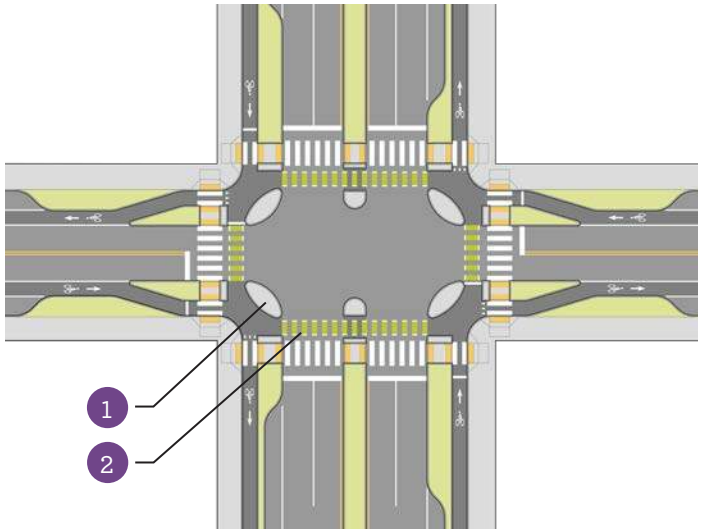
OakDOT consults the NACTO Urban Bikeway Design Guide, AASHTO Guide for the Development of Bicycle Facilities, California Manual on Uniform Traffic Control Devices (MUTCD), Caltrans Highway Design Manual (HDM), AC Transit Multimodal Corridor Guidelines, City standards, and engineering judgment to make context sensitive design decisions.

Protected intersections minimize exposure to conflicts, reduce speeds at conflicts points, increase sight distance, and clarify right-of-way priority.

PROTECTED INTERSECTION
Short Term/Lower Cost



PROTECTED INTERSECTION -
Long Term/Higher Cost



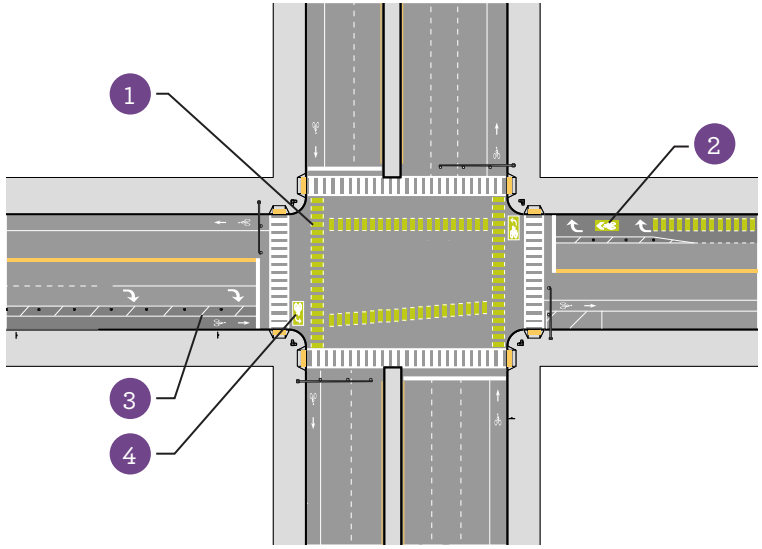
Key Features:

1. **Bike lane buffer** – install bike lane buffer treatments that extend into the intersection and include protection islands at corners. The extension of the protection buffer provides a safer and more intuitive crossing through the intersection, and allows bicycles to wait for red lights in a position that is more visible to motor vehicle traffic.
2. **Marked bicycle crossings** – install to enhance awareness of bicycles crossing roadway and define dedicated space to make those crossings.

Optional Features:

- **Buffers** – can be semi-permanent (e.g., flex posts, painted buffer) or permanent (e.g., raised curb)
- **Bicycle signals** – use for separate bicycle-specific signal phasing.
- **Pedestrian and median refuge islands** – can provide additional safety for pedestrians crossing arterial roadway.

BIKE LANES CROSSING AN ARTERIAL INTERSECTION



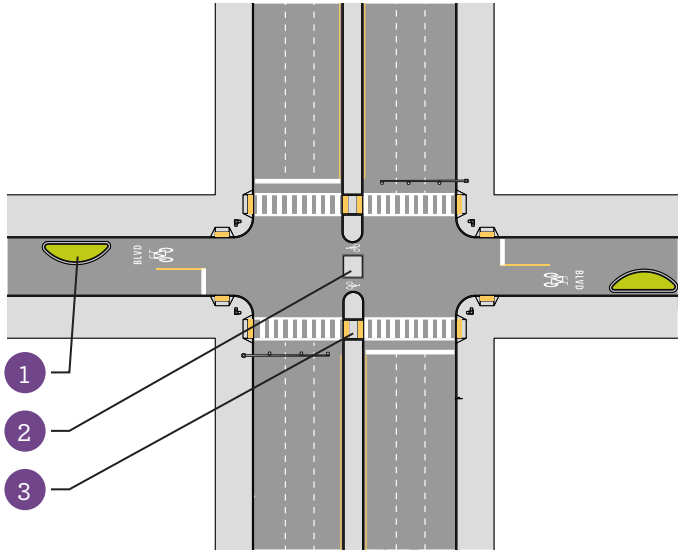
Key Features:

1. **Marked bicycle crossings** – install to enhance awareness of bicycles crossing roadway and define dedicated space to make those crossings.
2. **Right-turn channelization** – install to define locations for bicycles and right turning vehicular traffic at the intersection with pavement markings, flexible posts, and possible signalization.
3. **Bike lane buffer** – continue buffered area adjacent to bike lane up to the to intersection where possible.
4. **Two-stage green turn boxes** – identify space for left-turning bicycles to make a two-stage left turn.

Optional Features:

- **Bicycle signals** – use for separate bicycle-specific signal phasing

NEIGHBORHOOD BIKE STREET CROSSING AN ARTERIAL

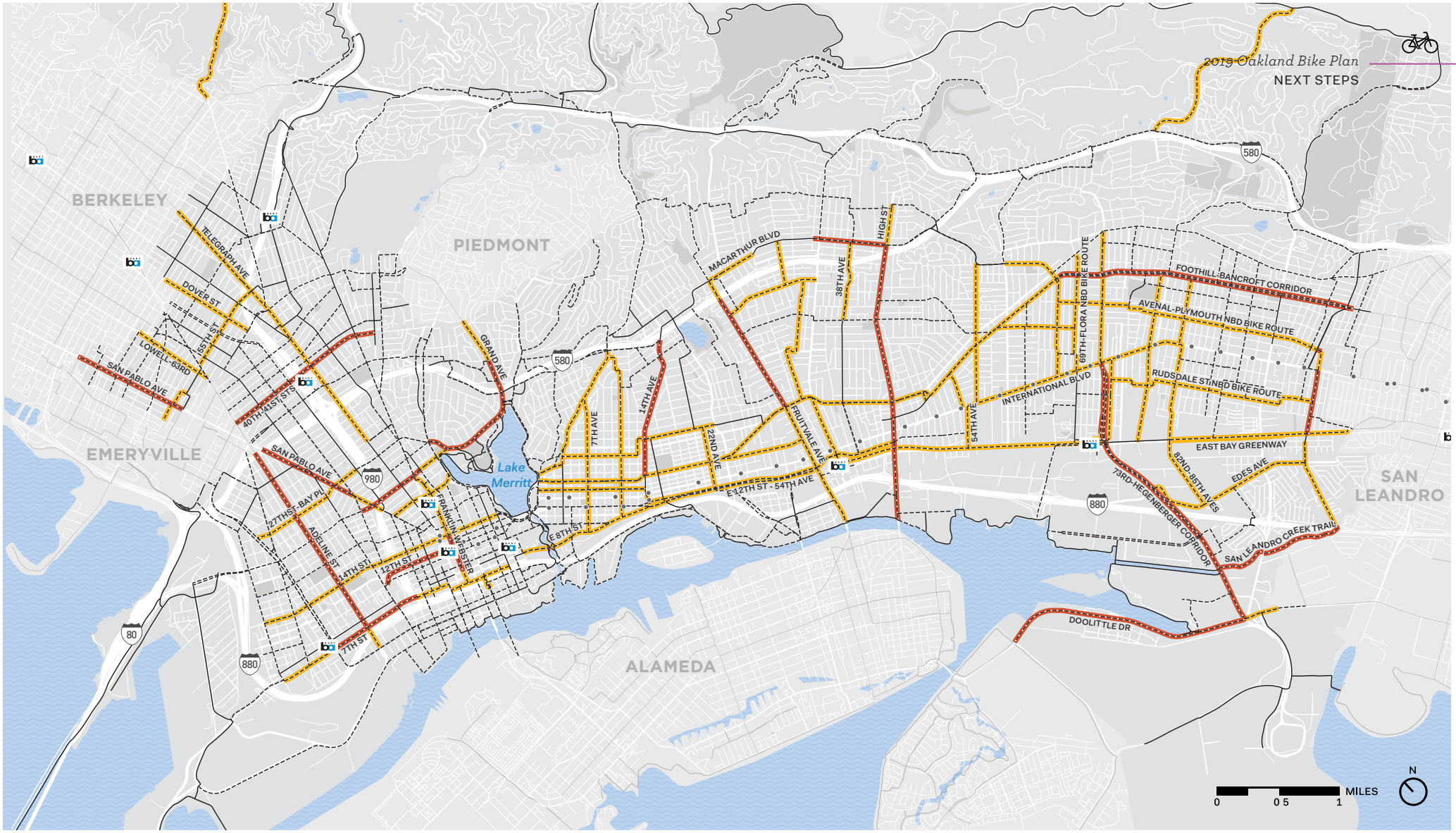


Key Features:

1. **Traffic calming** – install features on neighborhood bike streets to reduce traffic speeds, such as the chicanes shown above. Other options include speed humps, curb bulbs, traffic circles, etc.
2. **Traffic Diverters** – can reduce non-neighborhood cut-through traffic along bike boulevard.
3. **Median refuge islands** – can provide additional safety for pedestrians crossing arterial roadway.

Optional Features:

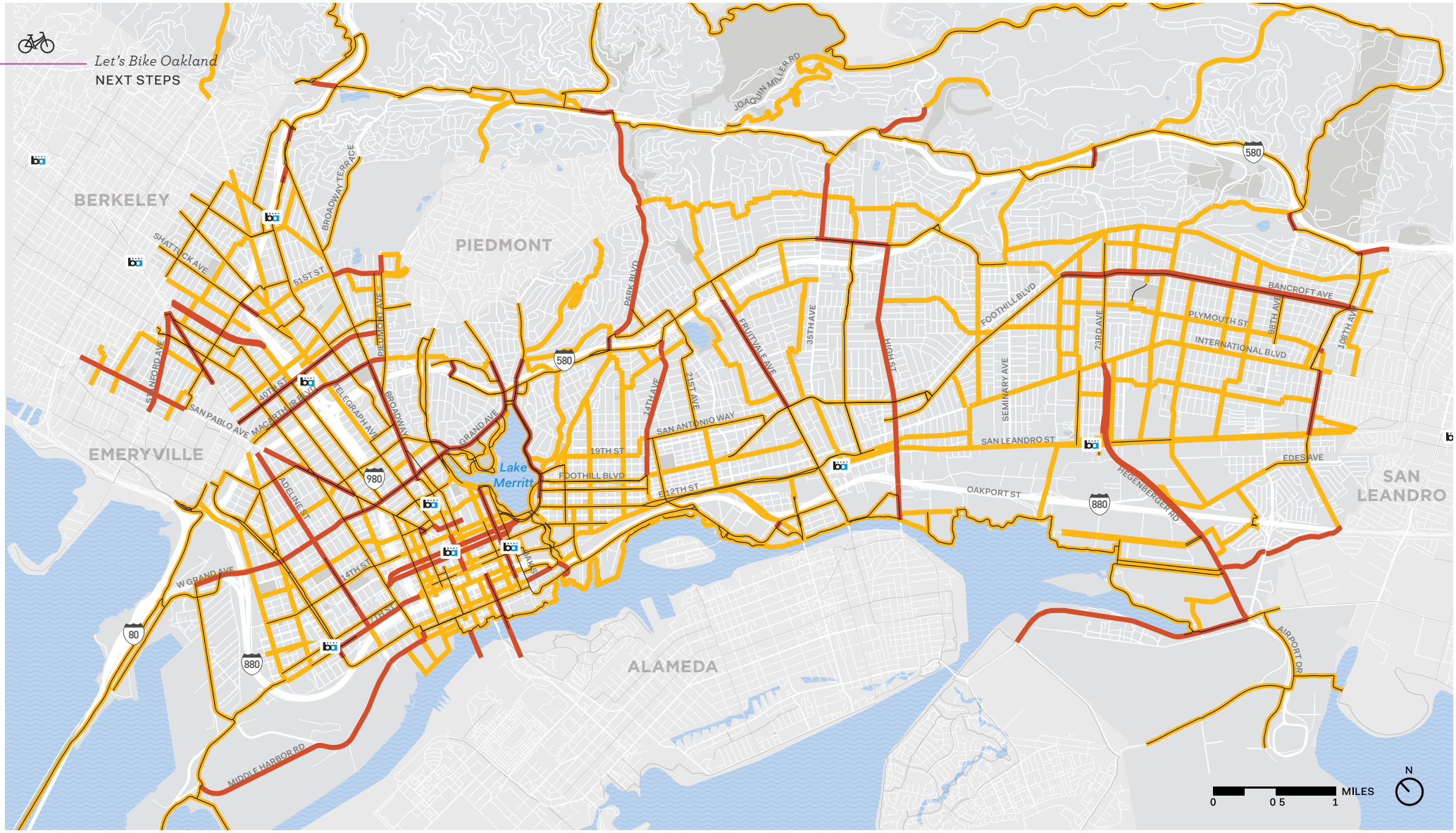
- **Signalization** – use rectangular rapid flashing beacons (RRFB) or full signalization for pedestrians and bicycles.



Priority Corridors

Just over 80 miles of bikeway projects have been prioritized to improve connectivity, reduce collisions, close gaps in the network, and leverage the City's investments in road repaving. 58% of priority bikeway miles are located in Eastlake/Fruitvale and Central East Oakland.

- Existing Bikeways
- Recommended Bikeways
- Short Term Priority Projects
- Vision Priority Projects
- Park
- Oakland City Limits
- BART Station
- East Bay Bus Rapid Transit Stops



Short Term & Vision Networks

Short term projects, in orange, can be implemented more quickly, and vision projects, in red, are more complicated and require greater collaboration and time.

- Existing Bikeways
- Short Term Network
- Vision Network
- Park
- Oakland City Limits
- BART Station