APPENDIX A: PARKING STRATEGY INITIAL SCREENING

North Concord to Antioch BART Station Access Study
Parking Management Strategy Evaluation
February 2018

Introduction

The primary goals of parking management are to use existing parking facilities more efficiently, reduce conflicts and circulation issues, and support other improvements aimed at mode shift or reducing crowding. Parking management improvements can also reduce enforcement costs and improve the parking experience. These improvements generally have a small effect on ridership, as they are not aimed at increasing access. Combining multiple programs to encourage carpooling, ridesharing through Transportation Network Companies (TNCs), or local transit use may moderately increase ridership. A wide range of possible parking management improvements were considered to complement the multi-modal improvements developed for this study. This document lists the improvements considered and describes the evaluation of these potential improvements.

Methodology

Parking Strategies were scored in three measures: feasibility, ridership, and cost. Feasibility was scored qualitatively based on whether the strategy would require new construction or land acquisition, experience with similar strategies piloted or implemented elsewhere in the BART system, and the identified interests and priorities of relevant stakeholders. Ridership was scored based on an estimate of the potential new riders as a result of the improvement. New spaces and spaces converted to carpool were determined to create 1 new rider per 2 spaces. Strategies that increase the efficiency of parking spaces, such as valet, were assumed to increase the number of spaces. Project costs were scored based on both capital and maintenance costs, with projects requiring no capital costs and minor maintenance and operations costs scoring as low-cost, and projects with significant capital investment and ongoing maintenance and operations costs scoring as high-cost. Most scores in the tables below are accompanied by notes describing the reasoning for the score.

After scoring each criterion, strategies were ranked by assigning them to three tiers. Projects with high cost, low feasibility, or low ridership are in Tier 3 (low priority). Remaining projects are in Tier 1 if low cost, or Tier 2 if medium cost. As only a small number of projects were in Tier 1 using these categories, all projects in Tier 1 and Tier 2 moved forward to the full evaluation with the other modal projects.

Programmatic Strategies (system-wide)

Parking Management Strategy	**Potential - Feasibility**	**New Riders – Per Station** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost**	**Tier** 1 – High 2 – Med 3 – low
Residential Permit Programs	**High**	**Low** – would not attract new riders, with opening of Antioch, riders who currently park in neighborhoods would likely be able to park in the lots	**Med**	3
Partnerships with TNCs	**Low**	**Med** to **High**	**Low*** – assumes no BART subsidy of TNC	3
Pricing: (Hourly, Congestion-based, Increase systemwide parking price cap)	**Med**	**Med**, potential to be **High** if combined with other access programs to increase options for people priced out of parking. Could offer an incentive to use BART during less-crowded times, such as Fridays.	**Low***	1/2
Enhanced information for riders	**High**	**Med**	**Low***	1
Real-time parking availability – high-tech solution would be sensors, but similar information could be achieved using strategically-placed cameras, number of parking payments	**Med** (depends on method used)	**Med** could increase usage on Fridays when there is more availability	**Med** (Depends on method used)	2
Cash-out permit spaces	**Low**	**Low**	**Low***	3
Relaunch existing carpool program with Clipper	**High**	**Med**	**Low***	1

*The costs of these improvements would be based on the technology used. Less expensive technology options or options that would not require new technology are assumed here, but some improvements may be more successful with more advanced technology.

North Concord Station

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Automated parking	**High** - doesn't require more land, more feasible if driver can operate lift instead of needing attendant; Wouldn't recommend pursing until determined that it works (cost effective too) at Dublin station	**High** – Net increase of 200 spaces (100 new riders)	**High** – include another column for comparable cost estimates *~$47,000 per space*	3
Satellite - minimum half-mile from BART, would require a shuttle (by others) or could be a park-n-ride for carpoolers	**Low** - would require coordination with private owners and implementing a shuttle Options considered: golf course, maybe some spots north of Hwy 4 but unlikely	**Med**	**Med** - shuttle operating costs; **Low** – if park-n-ride for SOVs to carpool to BART *~$20,000 per space*	3
Shared – within half-mile	**Low** – No opportunities nearby. Naval Weapons Base was considered, but it not considered shared parking because no parking facility exists there – it would have to be constructed	**High**	**Med** - paving lighting if no parking facility exists	2
Reconfigure lots	**High** - Reduce number of bus bays to accommodate passenger loading for cars; reconfigure current loading area for motorcycle and vehicle parking	**Low** - perhaps 15-20 more people **Med** if combined with increase in carpool spaces	**Low** - restriping **Med** - If need to change curb line of bus bays (BART wouldn't consider a high cost option)	2

North Concord Station (Cont'd)

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Increase reserved carpool spaces (universal)	**Med** - Programmatic and site-specific - would need to be coupled with other incentive to carpool; not site-specific recs at this time since carpool and reserved are already together	**Med** – 50+ carpool spaces	**Low** - restriping, signage	1
Implement Scoop (universal)	**High**	**Med** – if combined with increase in available spaces (50+)	**Low** - operating	1
Valet – (universal)	**Med** - Need place to park the cars and would have to accommodate high demand when a train arrives **High** - good for serving midday and short-term trips, less demand	**High**	**High** - annual operating *$110 per space in capital, but estimated $1.6 million in annual operating costs for 445 spaces ($14.20 per space per day)*	3
Manage on-street for BART/all-day use	**Med** - BART could be involved in charging for on-street parking	**Low**	**Med**	3
Restrict on-street parking from BART use	**High** – restrict parking on Port Chicago, and especially the freeway ramps; monitor East Sun Terrace neighborhood for potential RPP need	**Low**	**Low**	3

Pittsburg Bay Point Station

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Automated parking	**High** - doesn't require more land, more feasible if driver can operate lift instead of needing attendant; Wouldn't recommend pursing until determined that it works (cost effective too) at Dublin station	**High**	**High** *~$47,000 per space*	3
Satellite -	**Low** – would require coordination with private owners and implementing a shuttle Options considered: Our Lady Queen World Church	**Med**	**Med** - shuttle operating costs *~$20,000 per space*	3
Shared -	**Low** – No opportunities nearby. Safeway lot was considered, but is currently full during times BART customers would use it.	**High**	**Med** - paving lighting signage payment collection; potentially high cost for paving County lot	2
Reconfigure lots	**High** - lower end / corner of carpool parking could be squared off and create space for more motorcycle parking	**Low** - would lose ~5 vehicle spaces, but gain 15-20 motorcycle spaces	**Low** - restriping, and curb around motorcycle parking	3
Increase reserved carpool spaces	**Med**	**Low**	**Low** - restriping, signage	3
Implement Scoop	**High**	**Med** – if combined with increase in available spaces (50+)	**Low** - operating	1

Pittsburg Bay Point Station (Cont'd)

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Valet -	**Med** - Need place to park the cars and would have to accommodate high demand when a train arrives High - good for serving midday and short-term trips, less demand	**High**	**High** - annual operating *$110 per space in capital, but estimated $1.6 million in annual operating costs for 445 spaces ($14.20 per space per day)*	3
Manage on-street for BART/all-day use	**Low** - no recommendations (no room for parking with recent addition of bike lanes)	**Low**	**Low**	3
Restrict on-street parking from BART use	**Low** - no recommendations (no room for parking with recent addition of bike lanes)	**Low**	**Low**	3

Pittsburg Center Station

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Automated parking	**High** - doesn't require more land, more feasible if driver can operate lift instead of needing attendant; Wouldn't recommend pursing until determined that it works (cost effective too) at Dublin station	**Med**	**High** *~$47,000 per space*	3

Pittsburg Center Station (Cont'd)

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Satellite -	**Low** – would require coordination with private owners and implementing a shuttle. Shuttle would add a second transfer to eBART trips. Options considered: Atlantic Plaza shopping Center, Church of Good Shepherd, various businesses on Railroad Ave	**High**	**Med** - shuttle operating costs *~$20,000 per space*	3
Shared -	**Med** – Portions of Mi Pueblo Food Center, on-street parking in station vicinity, Pittsburg Civic Center. County land east of existing parking lot on Bliss Ave was considered, but it is currently an empty lot and would require paving and infrastructure Other commercial sites surrounding station were also considered, but determined to be too small or have hours incompatible with BART needs.	**High**	**Med** - paving lighting signage payment collection	2
Reconfigure lots	**Low** – Bus bays have recently been removed and this lot has already been reconfigured to maximize the number of parking spaces available.	**Med** – up to 60 spaces (30 new riders)	**Low** – remove curb and restripe	3
Increase carpool spaces	**Med** – As a new station, there is some opportunity to provide more carpool spaces right away, but demand is unknown and BART may have to wait until the demand is shown. BART should have a plan for increasing carpool spaces after lot fills up, and should combine this with other carpool programs to enable use.	**Med –** increase of 50 carpool spaces minimum	**Low** - restriping, signage, enforcement	1

Pittsburg Center Station (Cont'd)

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Implement Scoop	**Med** – requires sufficient reserved parking spaces	**Med** – if combined with increase in available spaces (50+)	**Low** - operating	3
Valet -	**Low** - Need place to park the cars and would have to accommodate high demand when a train arrives **Med** - good for serving midday and short-term trips, less demand	**Med**	**High** - annual operating *$110 per space in capital, but estimated $1.6 million in annual operating costs for 445 spaces ($14.20 per space per day)*	3
Manage on-street for BART/all-day use	**Med** – Power Ave, Center Dr, California Ave are already being considered by the city	**Med** – potential to add 150 parking spaces newly available to BART users (75 new riders)	**Med** – signage and enforcement	2
Restrict on-street parking from BART use	**High** – City already planning to introduce RPPs in affected neighborhoods	**Low**	**Med**	3

Antioch Station

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Automated parking	**High** – doesn't require more land, however, land availability is not very constrained at Antioch, so this option is still less cost effective than a conventional structure or new lot. More feasible if driver can operate lift instead of needing attendant; wouldn't recommend pursing until determined that it works (cost effective too) at Dublin station	**High**	**High** *~$47,000 per space*	3
Satellite -	**Low** – would require coordination with private owners and implementing a shuttle. Shuttle would add a second transfer to eBART trips. Options considered: Portion of Crossings shopping center, multiple churches near E Tregallas Rd and Windsor Dr	**High**	**Med** - shuttle operating costs *~$20,000 per space*	3
Shared -	**Low** – Future shared parking arrangements possible with the TOD to the north	**High**	**Med** - paving lighting signage payment collection	3
Reconfigure lots	**Low** – new lot is efficiently designed	**Low**	**Low**	3
Increase reserved carpool spaces	**Med** – As a new station, there is some opportunity to provide more carpool spaces right away, but demand is unknown and BART may have to wait until the demand is shown. BART should have a plan for increasing carpool spaces after lot fills up, and should combine this with other carpool programs to enable use.	**Med**	**Low** - restriping, signage	1

Antioch Station (Cont'd)

Parking Management Strategy	**Potential - Feasibility**	**New Riders** **High = > 100** **Med = 25 - 99** **Low = < 25**	**Cost** *Comp costs from Dublin/Pleasanton study*	**Tier** 1 – High 2 – Med 3 – low
Implement Scoop	**High**	**Med** – if combined with increase in available spaces (50+)	**Low** - operating	1
Valet -	**Low** - Need place to park the cars and would have to accommodate high demand when a train arrives **Med** - good for serving midday and short-term trips, less demand	**High**	**High** - annual operating *$110 per space in capital, but estimated $1.6 million in annual operating costs for 445 spaces ($14.20 per space per day)*	3
Manage on-street for BART/all-day use	**Low** – No existing opportunities for street parking. May be incorporated into future development around station	**Low**	**Med -** enforcement	3
Restrict on-street parking from BART use	**Med** – City is considering time restrictions on Sunset Drive west of Hillcrest	**Low**	**Low**	3

APPENDIX B: PROJECT SHEETS

NORTH CONCORD STATION ACCESS PROJECTS

1. Pedestrian Bridge Across BART Track and New Port Chicago Highway Crossing

Project Description

To improve access from the west side of the station, a bridge across the BART tracks or across Port Chicago Highway would be constructed. There are two options for this bridge:

- A bridge across the BART tracks with a high-visibility crosswalk across Port Chicago Highway.
- A bridge across the BART tracks and Port Chicago Highway.

The more feasible of these options is a shorter bridge across the BART tracks. This could be located next to or just north of the existing linear park, where there is room on both sides of the tracks for a new structure. The Port Chicago Highway crossing could be located at Sun View Terrace or Ranchito Drive. A bridge that would connect Esperanza Drive to the west side of Port Chicago Highway is less feasible due to its proximity to the neighborhood and because the BART tracks are at street level, but it would better connect people to the path along the Highway. A bridge across the highway would likely require narrowing Port Chicago Highway to widen the sidewalk enough for a landing.

This project would require a feasibility study that could also include assessments of crossings at other locations.

Project 1 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
$500,000	$2,000,000	$20,000,000	BART/City of Concord	BART

Cost estimate based on estimates for Warm Springs Pedestrian Bridge

Figure 9 Proposed Pedestrian Bridge Location

Figure 10 West Dublin/Pleasanton BART station pedestrian bridge and stairs (Source: Google Street View 2016)

2. Panoramic Drive/ Port Chicago Highway Intersection Improvements

Project Description

This project would install the missing crosswalk at the intersection, install truncated domes to be ADA accessible, and add pedestrian-scaled signage to mark the BART station entrance.

Project 2 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$17,000	BART/City of Concord	BART

Cost estimate includes high-visibility crosswalk, truncated domes, and wayfinding.

Figure 11 Panoramic Drive Intersection Improvements

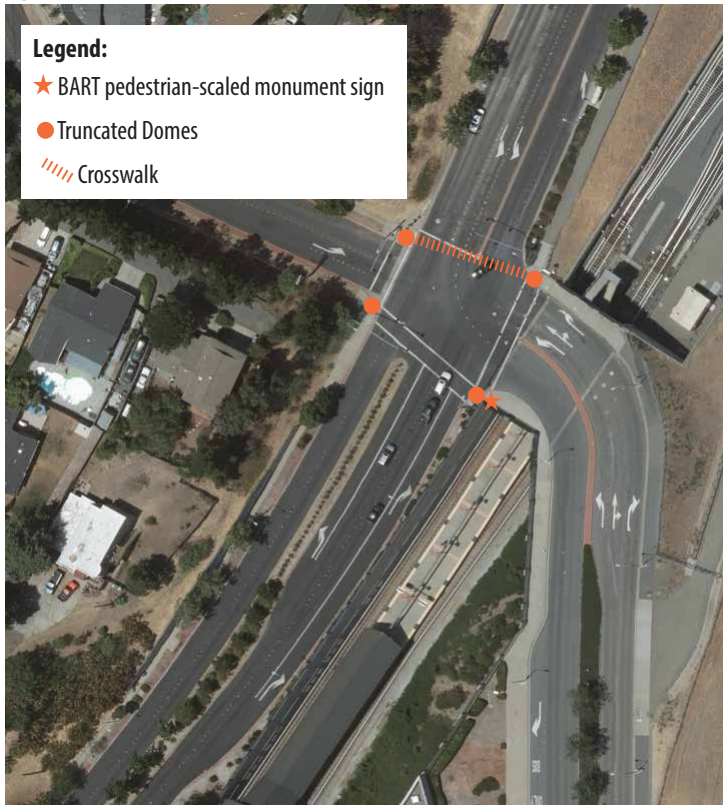


Figure 12 West Dublin/Pleasanton station signage (Source: Subway Nut)

Figure 13 Walnut Creek Wayfinding Signage (Source: Sasaki Associates)

3. Pedestrian Wayfinding

Project Description

This project will install wayfinding outside of the station directing passengers to transit connections, trail connections, and destinations.

Project 3 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$3,000	BART	BART

Cost estimate includes two wayfinding signs

Figure 14 Walnut Creek Wayfinding Signage (Source: Sasaki Associates)

Figure 15 North Concord Wayfinding Signage Location Map

4. Pedestrian Connection to Coast Guard Site

Project Description

If the site directly south of the station is developed in the future, this project would create direct access for pedestrians to access the BART station.

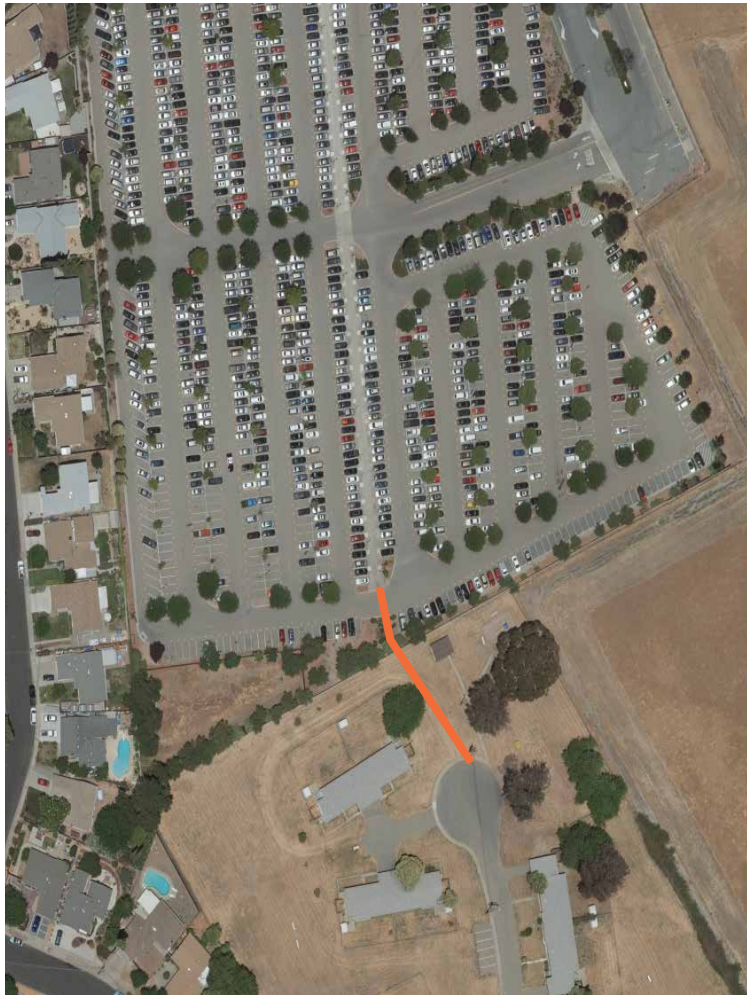
Note: This project is dependent on outside factors and will not be pursued independent from future development on the Coast Guard Property

Project 4 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$70,000	BART/City of Concord	BART

Cost estimates include clearing and demolition, new sidewalk, lighting, and landscaping

Figure 16 Coast guard site access map



5. Construct ADA Ramp to Lower Parking Lot and Add Curb Cuts

Project Description

This project would construct a ramp connecting the upper parking lot to the lower parking lot alongside the existing stairs. Additionally, ADA ramps would need to be added to the sidewalk through the lower parking lot.

Project 5 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$400,000	BART	BART

Cost estimate includes clearing and demolition, concrete ramp with railing, landscaping, and curb ramps

Figure 17 Lower parking lot ramp map

6. Pedestrian and Bike connection to East Sun Terrace Neighborhood

Project Description

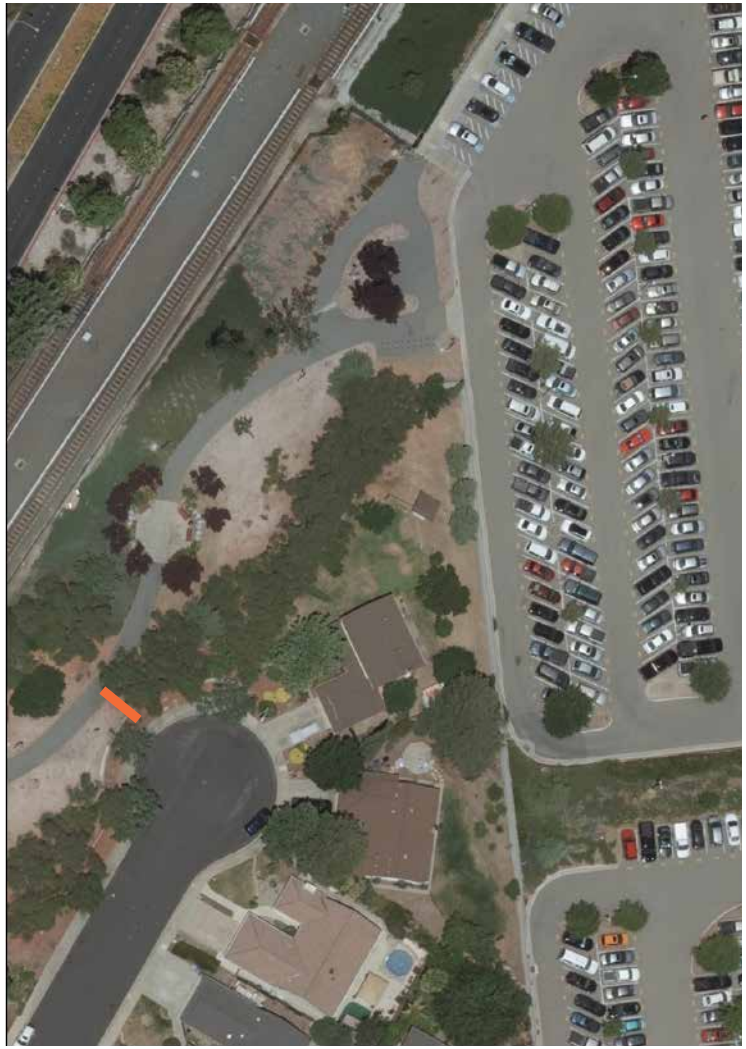
This project would improve access to the neighborhoods directly south of the station by creating a path to Dormer Avenue from the existing linear park, connecting the East Sun Terrace neighborhood with the station. The park would be well lit for security. This project would require directed outreach to the neighborhood to determine if there was interest and approval from residents.

Project 6 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$50,000	BART/City of Concord	BART

Cost estimates include clearing and demolition, new sidewalk, lighting, and landscaping

Figure 18 Dormer Ave connection map



7. Multi-Use Path to Industrial Park

Project Description

This project would improve the existing path north of the station to Arnold Industrial Way and the Industrial employers in the area. The project would include continuous pavement and crosswalks and flashing beacons at intersections.

Project 7 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$290,000	City of Concord	City of Concord

Cost estimate includes installation of sidewalks and high-visibility crosswalks

Figure 19 Multi-use path map

8. Bicycle Wayfinding at Trail Connections North and South of Station

Project Description

This project would install wayfinding for bicyclists using the paths north or south of the station. Signs would include distances to local destinations and other trail connections.

Project 8 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$3,000	BART/City of Concord	BART

Cost estimate includes two wayfinding signs.

Figure 20 Berkeley Bicycle wayfinding signage (Source: City of Berkeley)

9. Paratransit Stop Relocation

Project Description

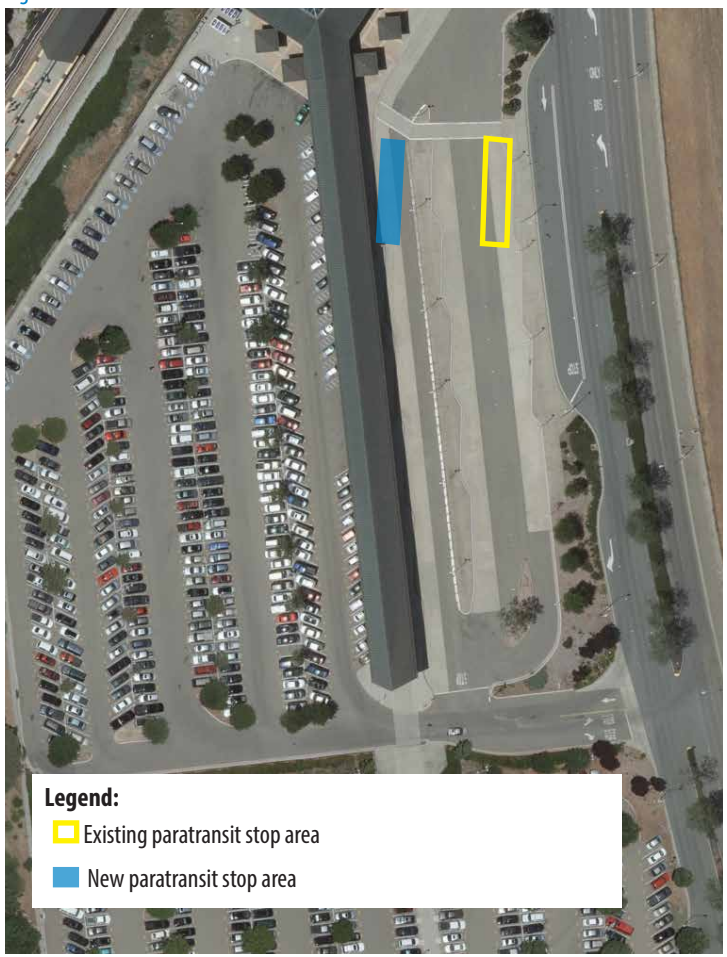
This project would move the paratransit pickup and drop-off location to an existing bus bay underneath the canopied waiting area. This would allow for waiting paratransit passengers to have a shelter, and be closer to the BART entrance for those transferring to the train.

Project 9 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	N/A	County Connection	County Connection

This project would have very little capital cost as it does not require new bus infrastructure.

Figure 21 Paratransit Shelter Locations



10. Implement Public Shuttle North to the Industrial Park

Project Description

This project would develop an existing shuttle service for County Connection employees between the bus depot and the BART station into a public shuttle for employees of the industrial area north of the station. The shuttle currently drops off at the County Connection Bus depot. A new stop would have to be chosen that is appropriate for the employees using the shuttle. Multiple stops may be necessary to serve the large industrial area. The project would require installing pre-fabricated bus shelters at stops.

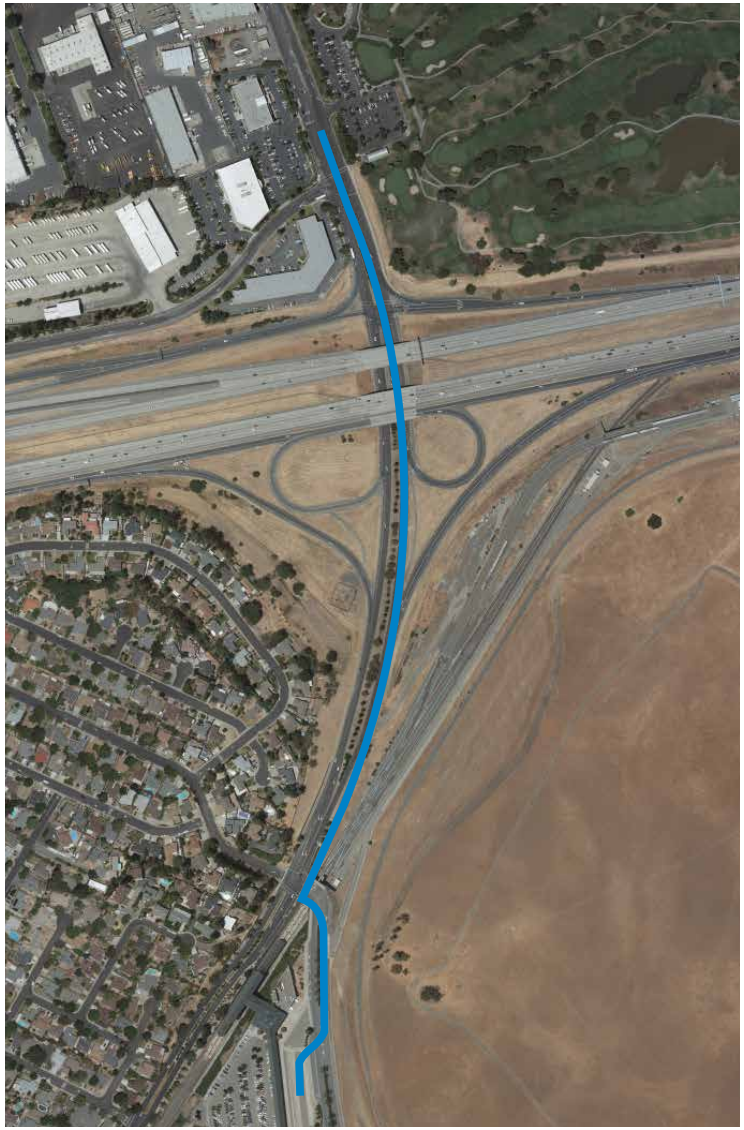
This project would be ineligible for BART funding and would be assumed to be funded from non-BART sources.

Project 11 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$47,000	County Connection	County Connection

Cost estimate includes a bus stop at the industrial park. Annual operating costs estimated to be $350,000, based on County Connection average cost.

Figure 22 Industrial park shuttle map



11.Lighting In the Lower Parking Lot

Project Description

Install lighting in the lower parking lot that will increase visibility and security throughout the lot. Security concerns are common in this lot, which is separated from the station by distance and stairs down to a lower level. The existing lighting and poles should be replaced and potentially relocated to maximize visibility throughout the lot. This would make the station area more welcoming for those using the station very early or very late, outside of the peak hours.

Project 12 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$50,000	$470,000	BART	BART

Cost estimate includes lighting fixtures for the entire lower lot

Figure 23 Lower lot lighting area map

12. Additional Off-Site Parking Opportunities

Parking Management on Port Chicago Highway

This project would implement parking management in the form of time limits, no-parking areas, and regular enforcement to reduce the common practice of cars parking unsafely near or on the freeway on-ramp. The project would require installing signage to communicate the regulations and increasing enforcement personnel.

This project would be ineligible for BART funding and would be assumed to be funded from non-BART sources.

Project 13 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$75,000	City of Concord/BART	City of Concord

Cost estimate includes striping and signage for on-street parking. The size, location, and responsibility of the shared parking is undetermined, and thus not included in this cost.

Figure 24 Port Chicago Highway on-street parking management map

13. Management Improvements for Existing Parking

Expansion of Reserved Parking Area

This project would increase the number of spaces held for those with permits or daily reservations until 10 AM, at which point they are open to all drivers. Increasing the number of spaces would make it easier for drivers who are not able to arrive early find a parking spot. This project would require replacing the signs in the parking lot to direct customers to the correct spaces.

Reconfigure Drop-Off and Bus Bays

This project would re-purpose some of the bus bays, which will be used less after eBART, to be used for drop-offs and reconfigure the drop-off area west of the station to accommodate more parking.

Designate Additional Carpool Parking Spaces

In addition to more reserved spaces, additional carpool spaces could be reserved to increase the number of passengers per space, and provide more opportunities for midday parkers to find spaces that are not used by carpoolers. This project should also be paired with carpool management improvements to maximize carpool usage.

Implement Scoop

BART is conducting a pilot project with Scoop, an app that matches and verifies carpoolers, to provide guaranteed parking spaces to those who use the app at select stations. BART is gradually expanding the program to additional stations, this study recommends including all four study area stations in the pilot to encourage carpooling in the study area. The program uses the reserved parking supply at each station, so this pilot should be combined with expansion of the reserved parking area to maximize effectiveness.

Project 15 Costs and Responsibilities

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$32,000	BART	BART

Cost estimate includes new signage for expanded reserved area.

Figure 25 Reserved parking expansion map

PITTSBURG BAY POINT STATION ACCESS PROJECTS

1. ADA Ramp at Station Entrance

Project Description

Due to its age, the elevator at the BART station entrance is often out of order, severely limiting access for people who are unable to or have difficulty using stairs, such as people with bicycles, luggage, strollers, etc. This project will allow patrons to access the station concourse via a ramp, which would also increase pedestrian capacity during peak periods. Just inside the station entrance is an underutilized seating area, which could be a potential entry point for the ramp. The height of the station interior is 8 to 10 feet high. Following a standard ramp rise of 1/12, the length of the ramp would need to be 96 to 100 feet. This could be done via switchbacks just in front of the station.

Table 16 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$160,000	BART	BART

Cost estimate includes clearing and ramp construction.

Figure 26 Station Access Ramp map

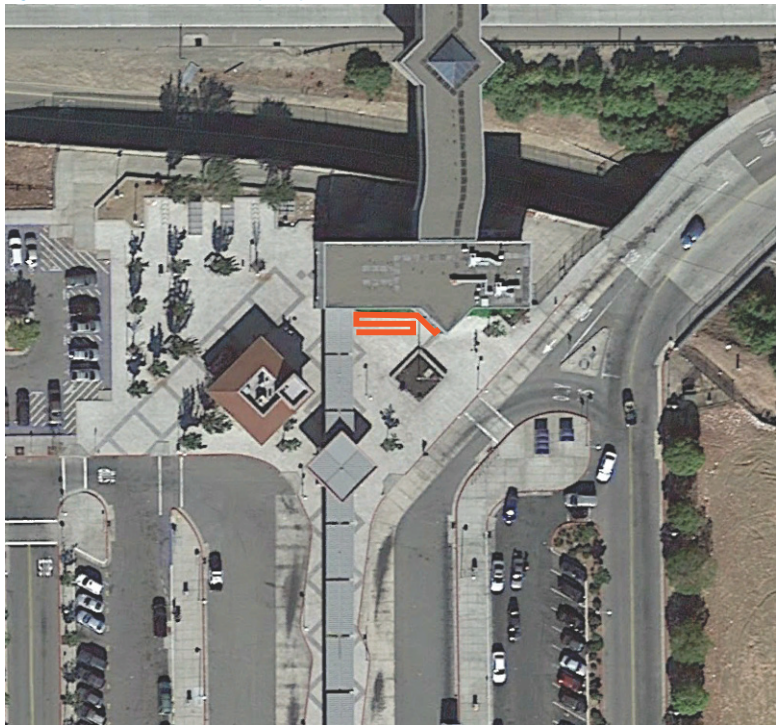


Figure 27 Front of Station - Existing

2. Pedestrian Bridge Across Highway 4

Project Description

This project creates a direct connection to the communities north of the station by constructing a bridge over Highway 4. The bridge would connect to the existing station by crossing over the westbound side of the freeway and on-ramp, and touching down on Alves Lane/Canal Road. There is space on the north side of Alves Lane/Canal Road for a stairway or ramp. If the alignment is unable to accommodate a ramp, an elevator needs to be installed for accessibility north of the freeway. The feasibility of such a connection would need to be determined in a future study.

Table 17 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
$500,000	$2,000,000	$20,000,000	BART/City of Pittsburg	BART

Cost estimate is based on Warm Spring pedestrian bridge estimate.

Figure 28 Northern Access Bridge

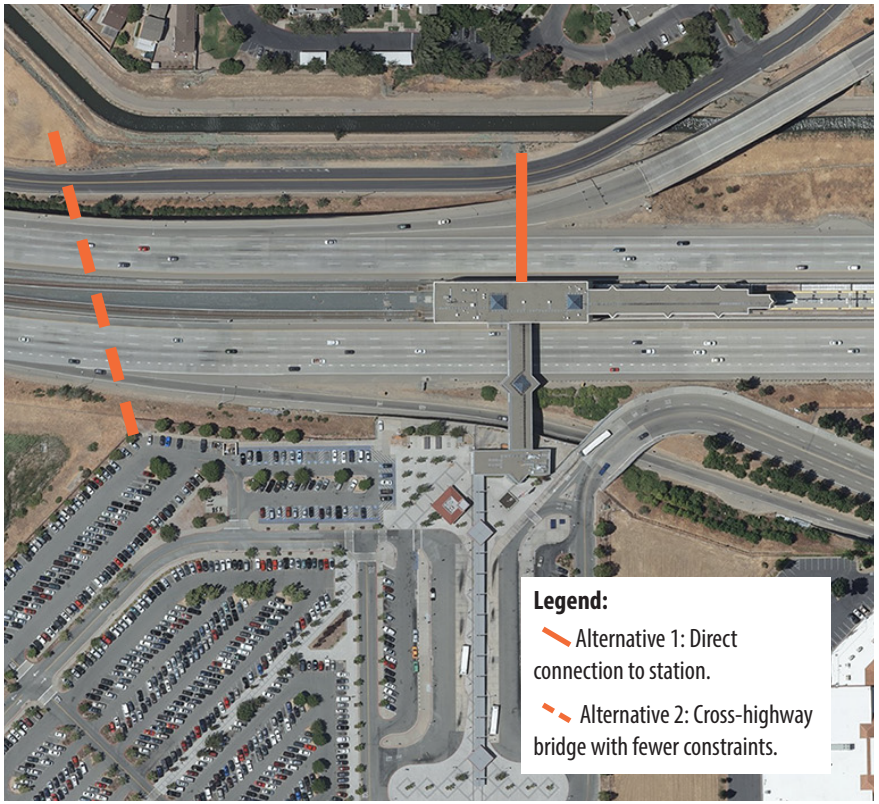


Figure 29 Existing bridge from platform to station entrance and parking lot (Source: Google Street View 2016)

Figure 30 West Dublin/Pleasanton BART station pedestrian bridge and stairs (Source: Google Street View 2016)

3. Crosswalks and Curb Ramps on Access Road

Project Description

This project will add crosswalks, curb ramps, and truncated domes for ADA access where missing. Sidewalks near the crossing areas will need to be added as well.

Table 18 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$48,000	BART	BART

Cost estimate includes high-visibility crosswalks and truncated domes

Figure 31 Access road crosswalks and curb ramps location map

4. Pedestrian Access Stairway from West Leland Road

Project Description

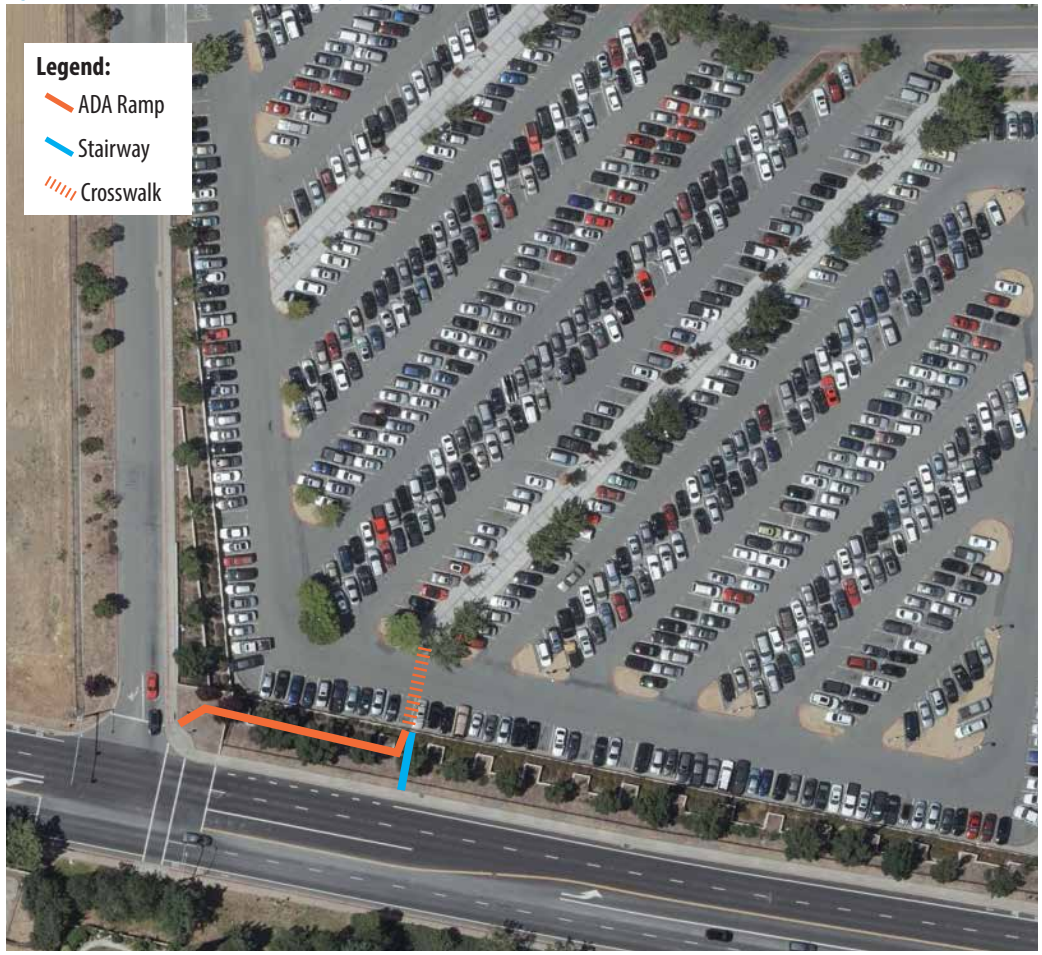
This project will create a pedestrian access route from West Leland Road into the station parking lot at the western access road through the station parking lot. An ADA-accessible ramp would be constructed alongside a stairway to allow pedestrians to travel the most direct route to the station entrance across the parking lot. The project would also include a crosswalk from the new ramp to the sidewalk through the parking lot. The project would likely require removing at least one parking space.

Table 19 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$250,000	BART	BART

Cost estimate includes clearing and demolition, ramp construction, and landscaping

Figure 32 West Leland Road access ramp map



5. Curb Ramp Improvements in Disabled Parking Area

Project Description

The project would reconstruct three curb ramps in the disabled parking area to widen them and bring them to current ADA standards.

Table 20 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$16,000	BART	BART

Cost estimate include three ramps with truncated domes

Figure 33 Disabled parking curb ramp locations

6. Access Path Between Canal Road and Bailey Road

Project Description

This project would create a direct access route from Canal Road to Bailey Road using the existing access path along the canal. The project would include a crosswalk across Canal Road and a path connecting to Bailey Road, which would take advantage of the new open space created by the removal of the freeway off-ramp that is currently underway.

Figure 34 Existing canal access path

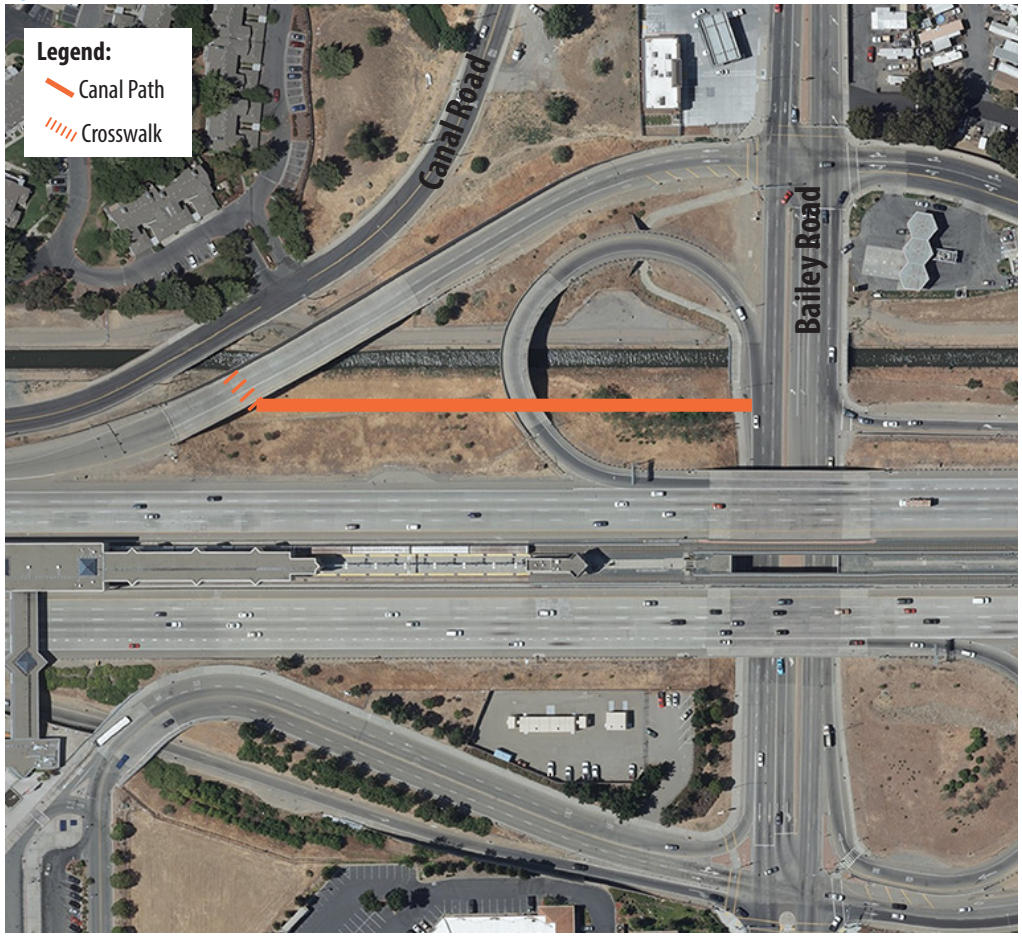
Figure 35 Canal Road at existing canal access path

Table 21 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$90,000	City of Pittsburg	City of Pittsburg

Cost estimate includes pavement markings and flashing beacons for the Canal Road crossing.

Figure 36 Canal access path map



7. West Leland Road Intersection Improvements

Project Description

This project would improve intersections on Leland Road adjacent to the station for pedestrian safety and comfort. The following features would be constructed as a part of this project:

- Add missing crosswalk at the West Leland Road and Bailey Road intersection.
- Add missing pedestrian signals at the West Leland Road and Bailey Road intersection including pedestrian actuator buttons.
- Medians for waiting pedestrians at the West Leland Road and Bailey Road intersection and the West Leland Road and the eastern BART access road intersection.
- Reduce turning radii at the two western corners of West Leland Road and Bailey Road intersection.
- Add truncated domes at all curb ramps.

Table 22 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$88,000	City of Pittsburg	City of Pittsburg

Cost estimate includes three medians, one additional pedestrian signal and actuator button, and additional striping.

Figure 37 West Leland Road intersection improvement map

8. Bicycle Lanes on BART Access Road

Project Description

This project will redesign the access road that connects Bailey Road to the BART station, adding a two-way cycle track in place of the bus lane. The bus lane will no longer be needed with Tri Delta Transit's reconfigured routing, which will be implemented when eBART service begins. This road is the primary access point to BART for bicyclists traveling along the Delta de Anza Trail as well as the neighborhoods north of the station.

The typical roadway width is 54' from curb to curb and the proposed design stays within the existing width. The design retains the existing number of general purpose travel lanes.

Where the bicycle lane ends at the station there is an unsigned, ad hoc paratransit stop. This stop location is not acceptable due to limited space for buses to pass the waiting paratransit vehicle. It is recommended that the paratransit stop be located at a bus bay, which will have more availability when Tri Delta Transit shifts some service to eBART stations. See Project #11 for additional details.

If bus service does resume using this entry, the travel land is wide enough to accommodate buses.

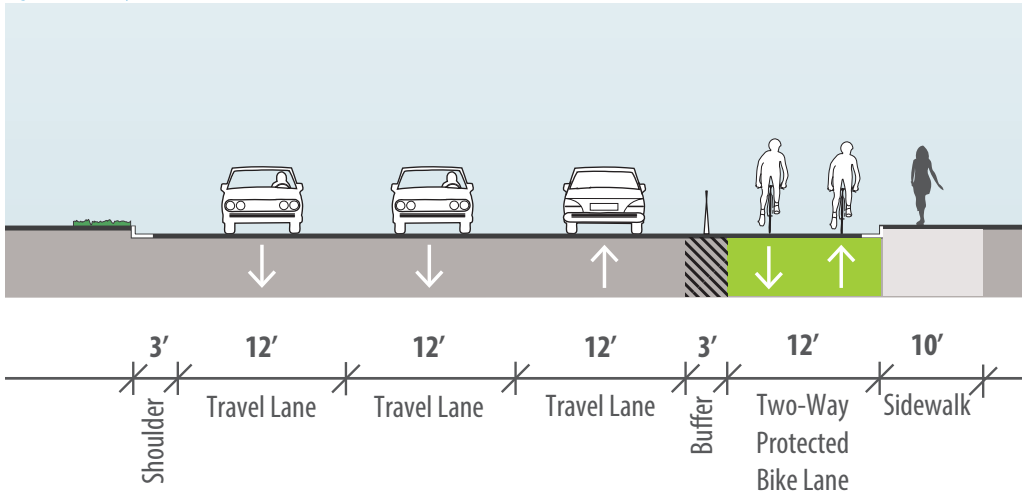
Table 23 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$300,000	BART	BART

Cost estimate includes removal of existing striping, pavement markings, and concrete sidewalk and construction costs for a curb ramp, striping, pavement markings, signage, and green thermoplastic painted bicycle lanes.

Figure 38 Bicycle Lane on BART Access Road

Figure 39 Bicycle Lane on BART Access Road Section - 54' Curb to Curb



9. Improve Bicycle and Pedestrian Wayfinding

Project Description

This project would install wayfinding signage on Bailey Road at the BART Access Road directing pedestrians and bicyclists to local destinations, transit, and trail connections.

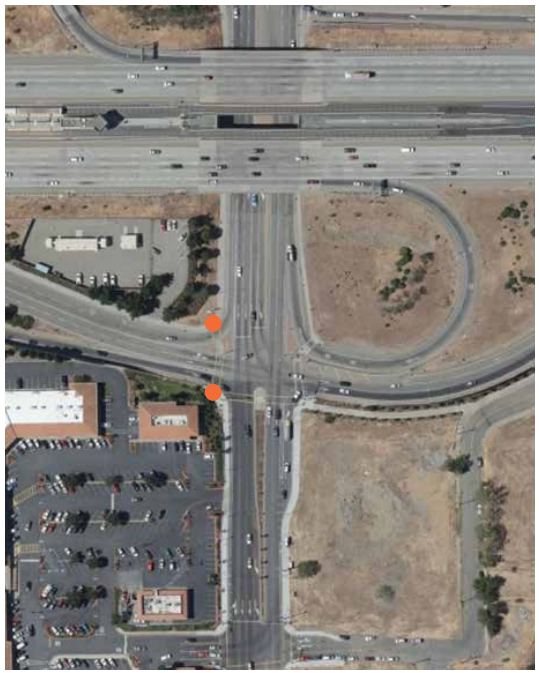
Table 24 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$3,000	BART/City of Pittsburg	BART

Cost estimate includes two wayfinding signs

Figure 40 Walnut Creek Wayfinding Signage (Source: Sasaki Associates)

Figure 41 Pittsburg Bay Point Wayfinding Location Map



10. Install Bicycle Facilities on BART Station Access Roads

Project Description

To supplement recently installed bike lanes on West Leland Road, this project would install bicycle facilities on the BART access roads in the station parking lot. Clear separations between bicycle and vehicular traffic will improve safety and encourage more bike rides. These roads are one-way, and so both should have one one-way bike lane added.

Table 25 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$27,000	BART	BART

Cost estimate includes restriping lanes and adding pavement marking

Figure 42 Access road bicycle lanes map

11. Bike Channels in Station Entrance Stairway

Project Description

The 2017 Bike Capital Plan has identified a need for bike channels on the stairway into the station. This would make it easier for cyclists to bring their bike into the station to park it securely or take it onto a BART train. The ramp proposed in project #1 would negate the need for bike channels, so this project would only be pursued if the ramp is not pursued.

Table 26 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$130,000	BART	BART

Cost estimate based on high-end cost estimate for bicycle stairway channel construction in the BART Bicycle Program Capital Plan

Figure 43 Bike Channel Location Map

12. Paratransit Stop Relocation

Project Description

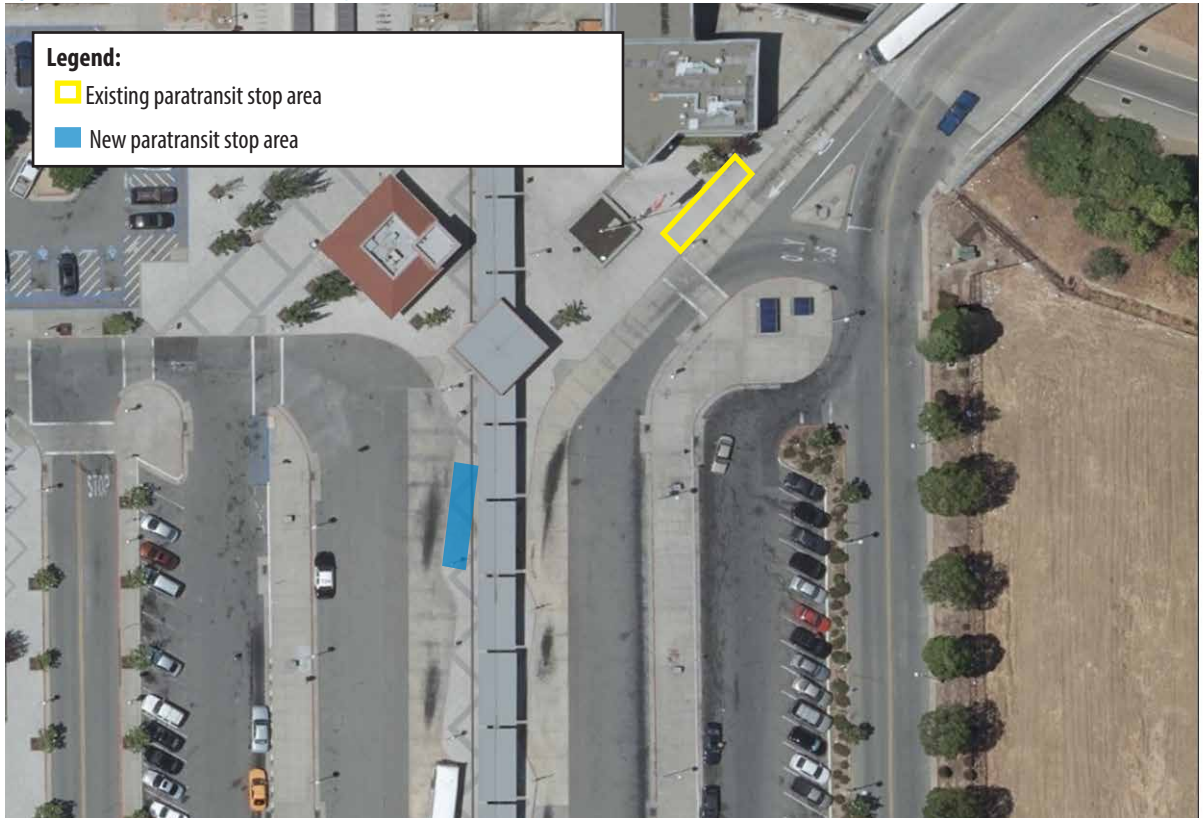
After the opening of eBART, Tri Delta Transit will reconfigure bus service along the C-Line. This will leave more bus bays at the Pittsburg/Bay Point station available for other uses. The paratransit service to the station could use the bus bay closest to the station entrance, on the west side of the bus area, which would reduce the impact of paratransit vehicles stopping in the entrance to the bus area, reduce the distance between the paratransit drop-off and station entrance, and be closer to the sheltered waiting area.

Table 27 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	N/A	Tri Delta Transit	Tri Delta Transit

This project has no Construction Costs as there is no new infrastructure needed.

Figure 44 Paratransit stop relocation map



13. New Surface Parking Lot

Project Description

This project would add approximately 440 new parking spaces to a BART-owned vacant lot between the Oak Hills Shopping Center and the existing BART lot. Preliminary design was completed by in June of 2016. Recommended modifications to the preliminary design include the following:

- Add entrance/exit at Oak Hills Drive signal into parking lot (results in reduction of approximately 10 parking spaces over the original parking lot design). New signalized intersection would be close to entry/exit of Oak Hills Shopping Center and may require restrictions on left turning vehicles into and out of this driveway.
- For northern exit allow right turn only for exiting vehicle to reduce delay for traffic along access road.
- Add pedestrian access point from W Leland Drive, creating a more direct route for pedestrians.

The current configuration of the Oak Hills Shopping Center faces Bailey Road, while maintenance and delivery access faces the BART station and vacant lot. The feasibility of a pedestrian connection between the north end of the new lot and the Oak Hills Shopping Center should be investigated as part of the design phase. The flexibility for future pedestrian access between the shopping center and the BART station should be preserved in case the shopping center property is redeveloped.

Table 28 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$720,000	$6,000,000	BART	BART

Cost estimate based on preliminary project cost estimate from BART.

Figure 45 Parking lot modifications conceptual drawing

Parking lot design provided by BART (June 2016)

14. Eastern Passenger Drop-off Area Reconfiguration

Project Description

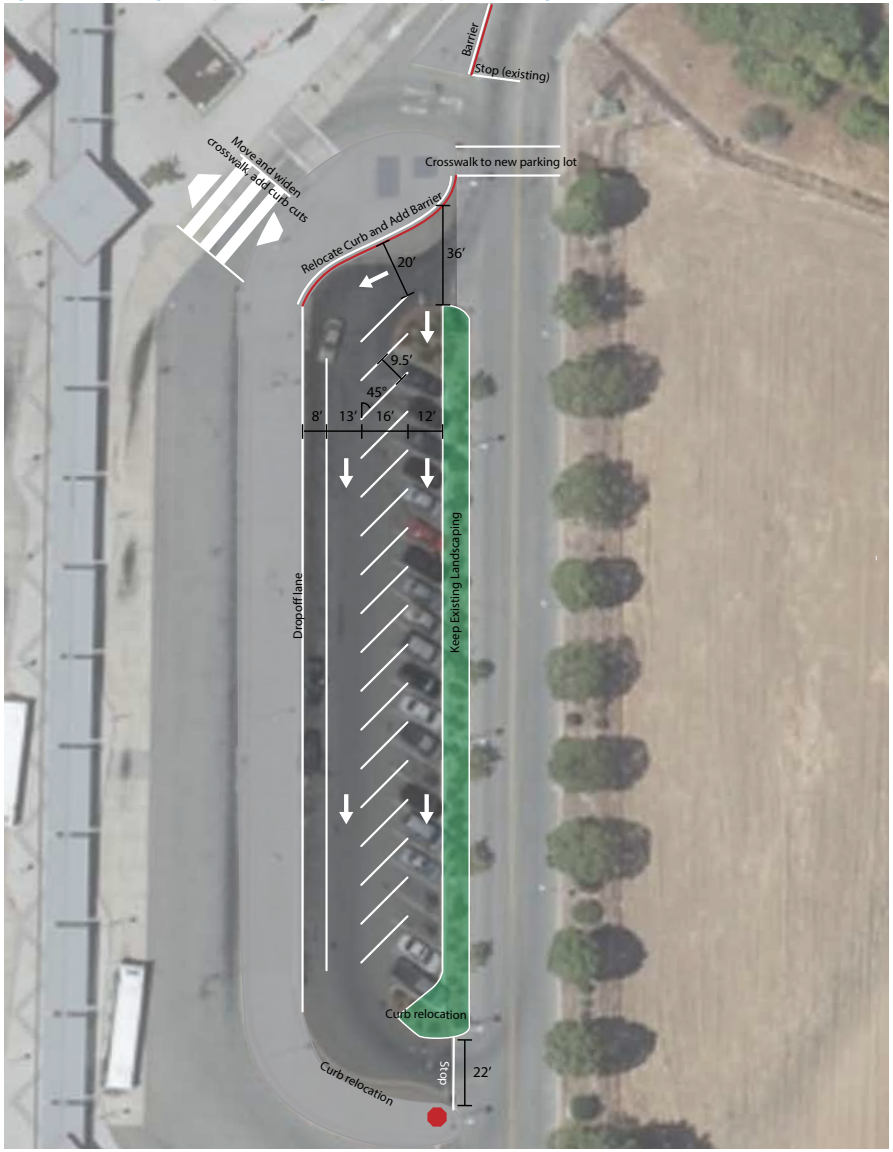
To alleviate the congestion at the passenger drop-off area on the east side of the station parking lot, a new configuration is proposed. This configuration introduces pull-through spaces, in which vehicles can drive forward into and out of a space to drop off a passenger. The pull-through spaces replace the short-term parking spaces that are currently located in the drop-off area. This will reduce the congestion caused by cars stopping at the curb nearest to the station entrance and will increase the flow of cars through the lot. Barrier rails will also be installed near the drop-off area entrance to prevent vehicles from stopping there.

Table 29 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$100,000	BART	BART

Cost estimate include clearing and demolition, new sidewalk and curbs, restriping, and railing.

Figure 46 Passenger drop-off reconfiguration conceptual drawing



15. Signage and Wayfinding for Drivers

Project Description

Add or update signage and wayfinding within and immediately surrounding the station to guide drivers to station entrances, passenger loading, and designated parking areas.

Table 30 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$5,000	BART	BART

Cost estimate includes three new wayfinding signs

Figure 47 Augusta, GA, medical district wayfinding (Source: WFXG 2014)

16. Management Improvements for Existing Parking

Carpool Parking Relocation

Relocate carpool parking to the southeastern corner of the parking lot, next to the permit parking. This will improve the efficiency of parking enforcement.

Implement Scoop

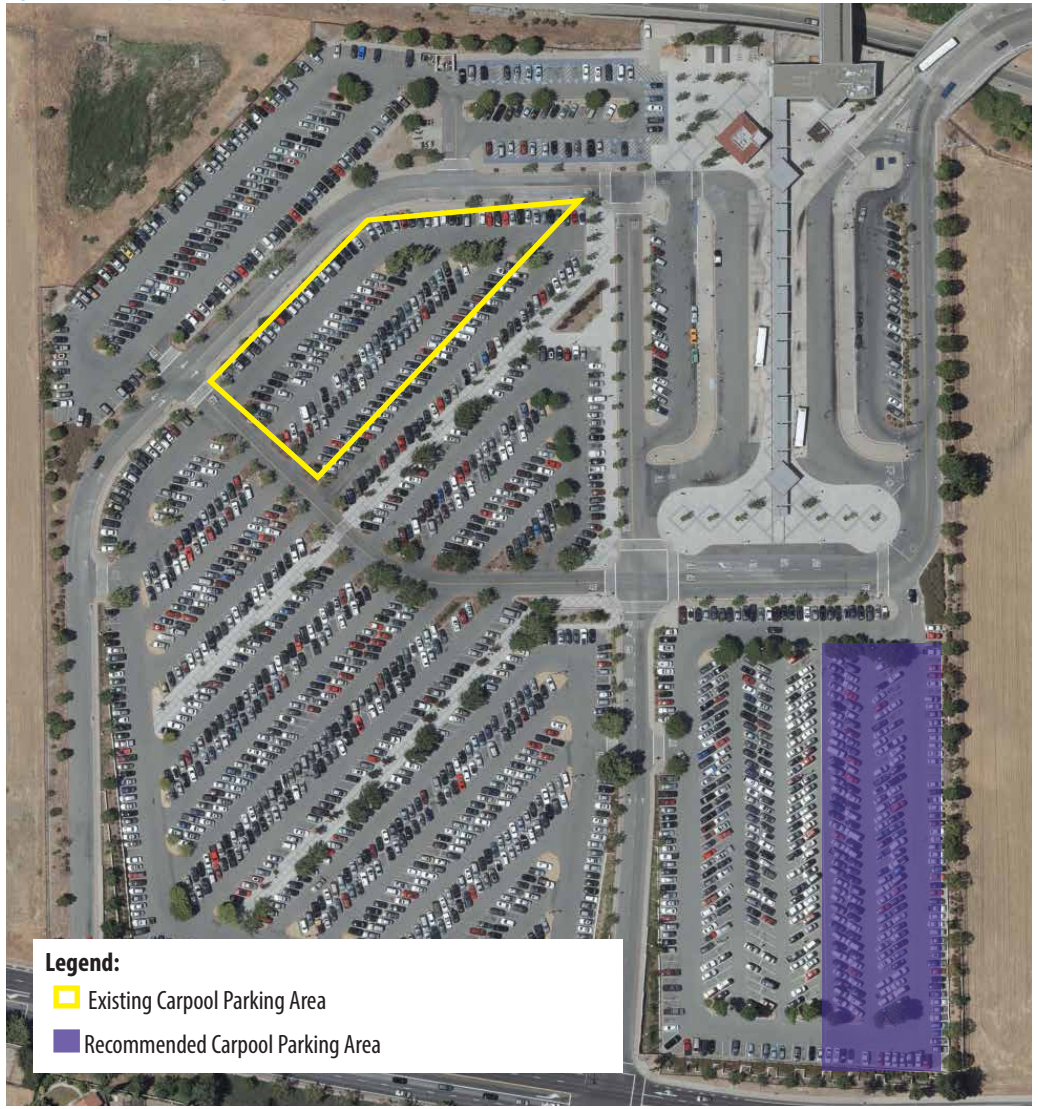
BART is conducting a pilot project with Scoop, an app that matches and verifies carpoolers, to provide guaranteed parking spaces to those who use the app at select stations. BART is gradually expanding the program to additional stations, this study recommends including all four study area stations in the pilot to encourage carpooling in the study area. The program uses the reserved parking supply at each station, so this pilot should be combined with expansion of the reserved parking area to maximize effectiveness.

Table 31 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$30,000	BART	BART

Cost estimate includes salvaging and moving existing signage and adding two new wayfinding signs

Figure 48 Carpool parking relocation map



PITTSBURG CENTER STATION PROJECTS

1. Railroad Avenue Sidewalk Improvements

Project Description

This project would replace the proposed barrier on Railroad Avenue in front of the station with a more attractive option, along with lighting, to improve the experience for pedestrians entering and exiting the station.

Table 33 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$140,000	City of Pittsburg	City of Pittsburg

Cost estimate includes a pedestrian barrier and streetlights

Figure 50 Railroad Avenue sidewalk improvement map

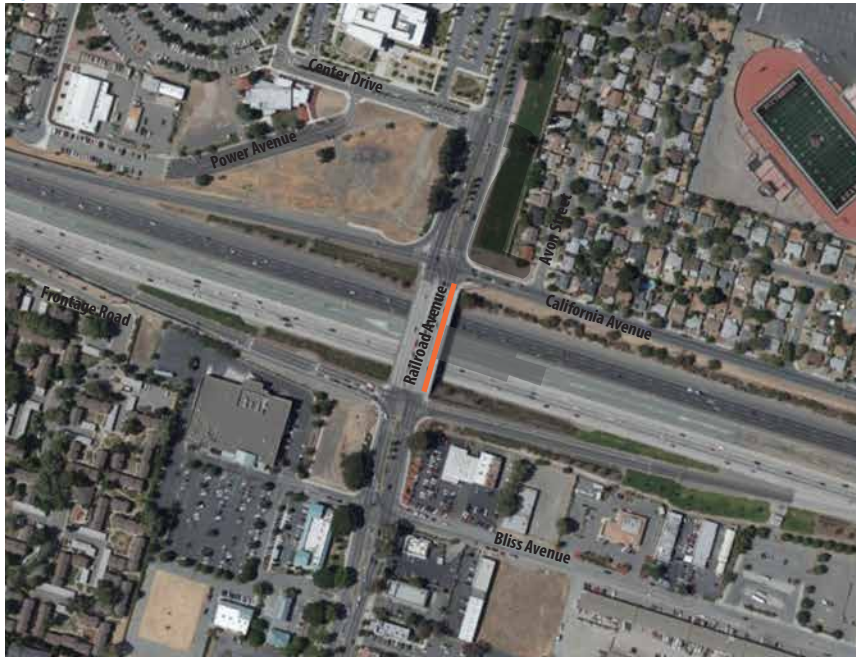


Figure 51 BART 16th St/Mission station decorative fence (Source: SFCTA)

2. Railroad Avenue Intersection Safety Improvements

Project Description

This project would reduce the turning radii at three Railroad Avenue intersections, California Avenue, the Route 4 eastbound off-ramp, and Bliss Avenue, to help reduce vehicle speeds and improve safety for pedestrians accessing the station. At California Avenue, all corners except the southwest corner would be improved. At the eastbound off-ramp, the two southern corners would be improved. At Bliss Avenue, all four corners would be improved.

The Bliss Avenue intersection improvements could alternatively be combined with project #12, the pick-up/drop-off area on Bliss Avenue.

Table 34 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$160,000	City of Pittsburg	City of Pittsburg

Cost estimate includes demolition and paving for five turn radius reductions

Figure 52 Railroad Avenue intersection safety improvements map

3. Wayfinding Outside of Station and at Multimodal Facility

Project Description

This project would install pedestrian-oriented wayfinding signage on Railroad Avenue outside of the station, and at the corner of Railroad Avenue and California Avenue at the Multimodal Transfer Facility. The signage would direct pedestrians to local destinations, transit, and trail connections, as well as directing passengers between the station and the multi-modal facility.

Table 35 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$3,000	BART	BART

Cost estimate includes two wayfinding signs

Figure 53 Walnut Creek Wayfinding Signage (Source: Sasaki Associates)

Figure 54 Pittsburg Center Wayfinding Location Map

4. Sidewalk Improvements Within Station Area

Project Description

This project would install sidewalks where they are missing and widen narrow sidewalks in the station area. The following blocks have missing sidewalks that would be installed by this project:

- Bliss Avenue - south side
- Frontage Road - north side
- Power Avenue - south side
- Center Drive - west side
- California Avenue - south side

The following blocks have narrow sidewalks that would be widened for this project:

- Railroad Avenue - Both sides

This is a total of 2.88 miles of sidewalk. The sidewalks should be 8 feet wide at a minimum, and could be wider where there is space to expand into the roadway.

Note: A sidewalk on the north side of Bliss Avenue is being added before the opening of eBART.

Table 36 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$160,000	$1,700,000	City of Pittsburg	City of Pittsburg

Cost estimate include approximately 2.5 miles of concrete sidewalk

Figure 55 Missing Sidewalks in Pittsburg Center Station Area

5. Bicycle Lanes South of Station and Bicycle Wayfinding

Project Description

This project would add bike lane symbols and signs to south of the station on Railroad Avenue where there are already existing bike lanes. The project would also add wayfinding directing bicyclists to the station, the multi-modal facility, and other destinations, including the Delta de Anza trail.

Table 37 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$6,500	City of Pittsburg	City of Pittsburg

Cost estimate includes pavement markings and signage for the bike lane within the station area.

Figure 56 Bicycle Lane and Wayfinding Map South of Station

6. Bike Station

Project Description

This project would install an enclosed, controlled-access bike parking facility, commonly known as a bike station. The location of a bike station would depend greatly on land availability and development opportunity, but ideal sites would be on California Avenue at the Multimodal Transfer Facility, or on Bliss Avenue as ground-floor retail of future development.

Figure 57 Pittsburg Center Bike Station Potential Locations

Table 38 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$100,000	$1,200,000	BART	BART

Cost estimate is for a 1600 square foot bike station, as estimated in the BART Bike Plan

Figure 58 BART Modular Bike Station Exterior Rendering (Source: BART Bike Capital Plan, STV Architects)

Figure 59 BART Modular Bike Station Interior Rendering (Source: BART Bike Capital Plan, STV Architects)

7. Bike Racks South of Station or on Overpass

Project Description

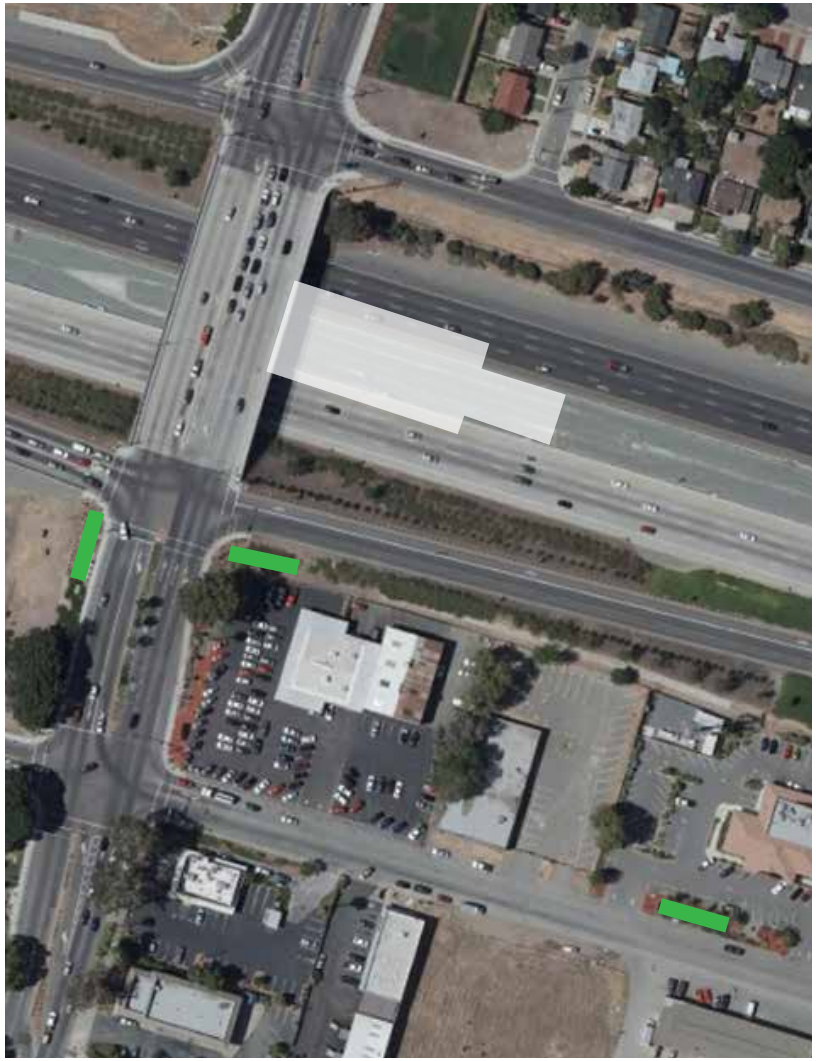
This project would install bicycle racks or lockers on Railroad Avenue south of the station or on Bliss Avenue. Bike racks should be accessible to riders coming from the south.

Table 39 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$2,500	City of Pittsburg	City of Pittsburg

Cost estimate includes 10 bike racks

Figure 60 Bike rack possible locations map



8. Bicycle Trail and Bike Lanes in Station Area

Project Description

This project would include:

- Bike lanes on both sides of Railroad Avenue extending north to East 17th St
- A Class I bike path parallel to Railroad Avenue extending south to the Delta De Anza Regional Trail
- A Class I Bike path parallel to Highway 4, on the south side of the highway to the Bliss Avenue Parking Lot
- A Class I bike path parallel to Highway 4, on the north side of the highway to Harbor Street at a minimum, ideally to Loveridge Road.

Table 40 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$130,000	$1,400,000	City of Pittsburg	City of Pittsburg

Cost estimate includes approximately two miles of Class I bike trail, using estimates from the Bay Trail Gap Analysis Study, and 1/3 mile of bike lane striping, , pavement markings, and signage.

Figure 61 Bike lanes map

9. New Bus Stop and Upgrade Existing Stops

Project Description

After the opening of eBART, there will be four bus stops in the station area, north and south of the station on Railroad Avenue. The southbound stop south of the station is currently more than a block away. Riders making a transfer between eBART and a Tri-Delta bus would have to walk two blocks and cross two intersections. This project would add a bus stop at the southwest corner of Railroad Avenue and Highway 4. This project would require moving the existing curb and sidewalk and adding a shelter and signage.

This project will also involve installing prefabricated bus shelters with seating at each of the existing stops to improve the experience of waiting passengers.

Table 41 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$440,000	Tri Delta Transit	Tri Delta Transit

Cost estimate includes removal and re-installation of concrete sidewalk and road pavement, signal and streetlight relocation, plus four pre-manufactured bus shelters

Figure 62 Tri Delta bus shelter (Source: Google Streetview)

Figure 63 Station Area Bus Stop Locations

10. Pick-Up/Drop-Off Area on Bliss Avenue

Project Description

This project would designate curb space on Bliss Avenue for passenger pick-ups and drop-off south of the station. As there is currently no sidewalk on most of Bliss Avenue, there is opportunity to design the curb space to accommodate waiting vehicles appropriately.

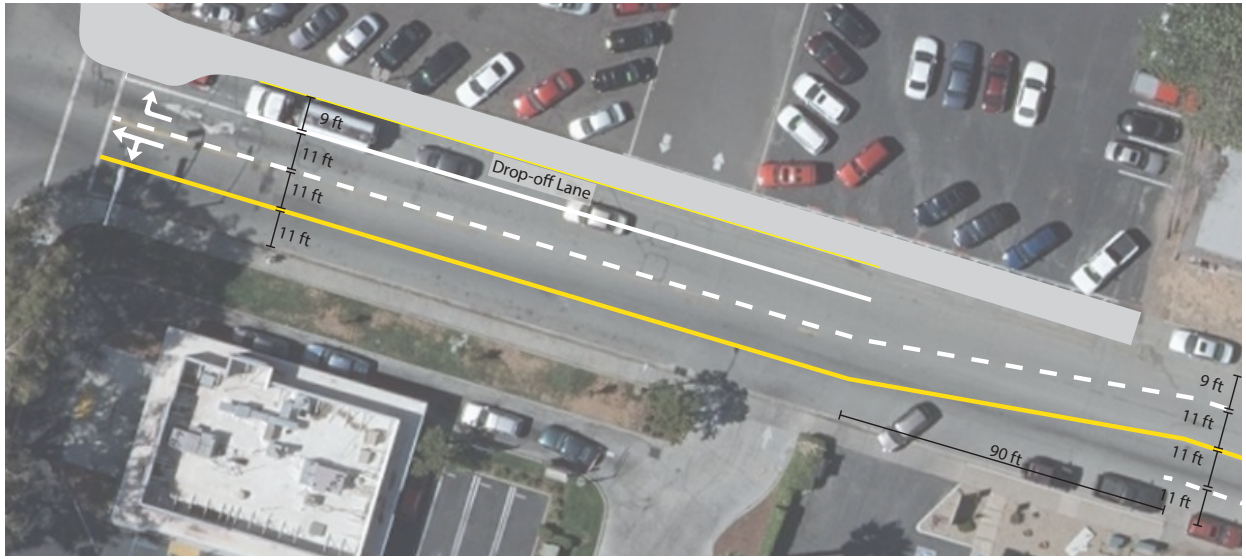
Table 42 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$29,000	BART/City of Pittsburg	BART

Cost estimate includes installation of a concrete sidewalk and new striping

Figure 64 Bliss Avenue drop-off overview map

Figure 65 Bliss Avenue drop-off conceptual design



11. Wayfinding on Railroad Avenue for Drivers

Project Description

Add wayfinding on Railroad Avenue for drivers, directing them to parking lots and drop-off areas.

Table 43 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$3,000	BART	BART

Cost estimate includes two wayfinding signs

Figure 66 Augusta, GA, medical district wayfinding (Source: WFXG 2014)

12. Additional Off-Site Parking Opportunities

Shared Parking

This project would implement shared parking arrangements between BART and nearby parking facilities. The Mi Pueblo Food Center lot across Railroad Avenue is often under-used during the day, and is close enough for BART passengers to park and walk to the station. There is also significant parking in the City Hall lot which will require coordinated parking management, and could potentially be used for shared parking. Both of these arrangements would require enforcement and payment technology. This could be done with a formal agreement with BART that includes sharing maintenance and revenues, or the lot owners could implement BART passenger-friendly policies in coordination with BART but without BART management.

Manage Parking on Surrounding Streets

This project will implement parking management on the streets surrounding the station and in the City Hall area. The city is already planing to set and enforce parking time limits in the City Hall parking lots and in nearby residential areas, which would also be paired with residential parking permits. To support these programs, this project proposes managing currently unregulated parking on Power Avenue and Center Drive, and adding new spaces on California Avenue, for all-day BART passenger use. This could involve an agreement with BART to share management and revenue collection, or could be managed solely by the City in coordination with BART. This project could add up to 150 parking spaces.

This project would be ineligible for BART funding and would be assumed to be funded from non-BART sources.

Table 44 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$450,000	Lot owners/BART	Lot owners

Cost estimate includes paving and sidewalk for additional parking spaces on California Avenue. Additional parking management and enforcement cost would be required.

Figure 67 Potential Shared Parking Locations

13. Management Improvements for Existing Parking

Designate Additional Carpool Parking Spaces

As a new station, there is some opportunity to provide more carpool spaces right away than at other, similarly sized stations. However, at the station opening, the parking lot is not expected to fill up, so there may not be a strong incentive to use carpools. This parking management project includes a plan to increase the number of spaces reserved for carpools as parking demand at the station increases. Future carpools spaces can be striped immediately to prepare for future changes. This project should also be paired with carpool improvements described in the programmatic parking management section to maximize carpool usage.

Implement Scoop

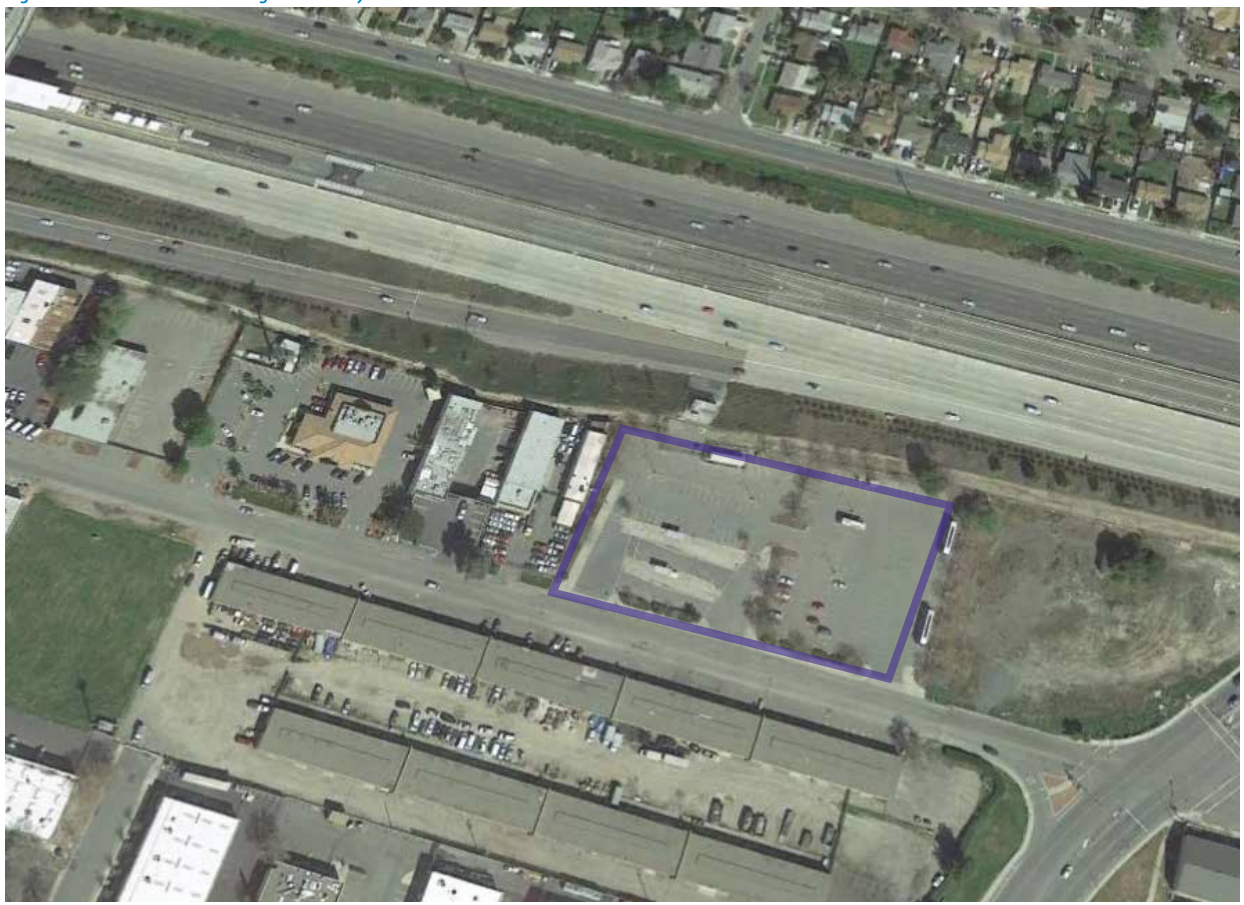
BART is conducting a pilot project with Scoop, an app that matches and verifies carpoolers, to provide guaranteed parking spaces to those who use the app at select stations. BART is gradually expanding the program to additional stations, this study recommends including all four study area stations in the pilot to encourage carpooling in the study area. The program uses the reserved parking supply at each station, so this pilot should be combined with expansion of the reserved parking area to maximize effectiveness.

Table 45 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	N/A	BART	Tri Delta Transit/BART

No costs are associated with this project because the improvements depend greatly on the transit and carpool needs at the facility.

Figure 68 Bliss Avenue Parking Lot Bus Bays



ANTIOCH STATION PROJECTS

1. Pedestrian Way-finding

Project Description

This project will install wayfinding signage in front of the station to direct passengers to transit, bicycle, and pedestrian connections and pick-up/drop-off areas. Because of the residential nature of the station area, there will likely be no local destinations to direct riders.

Table 46 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$1,500	BART	BART

Cost estimate includes one wayfinding sign

Figure 69 Walnut Creek Wayfinding Signage (Source: Sasaki Associates)

Figure 70 Antioch Wayfinding Station Locations

2. Pedestrian and Bicycle Bridge Across Highway 4

Project Description

This project would construct a pedestrian and bicycle connection across the freeway to provide direct access to the neighborhoods south of the station. The station was designed to allow for a future connection directly south. However, to reduce disruption to the residential neighborhood, an alignment that lands near the existing commercial area would be preferred. The feasibility of such a connection would need to be determined in a future study.

Table 47 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
$500,000	$2,000,000	$20,000,000	BART/City of Antioch	BART

Cost Estimate based on the Warm Springs pedestrian bridge estimate.

Figure 71 Bicycle/Pedestrian Bridge to Station

3. Sidewalk Widening on Hillcrest Avenue

Project Description

This project would replace the existing sidewalks on Hillcrest avenue 1/2 mile north and south of the station with 8 foot to 10 foot wide sidewalks, depending on the available space.

Table 48 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$150,000	$1,500,000	City of Antioch	City of Antioch

Cost Estimate Includes approximately one mile of 10-foot sidewalks on both sides of the street

Figure 72 Sidewalk widening area map

4. Sidewalk Extensions on Viera Avenue and Slatten Ranch Road

Project Description

This project would ensure that when the Viera Avenue and Slatten Ranch Road extensions are constructed, they will have 5 foot minimum sidewalks on both sides for most of the alignment. The middle stretch of Slatten Ranch Road may not require sidewalks on both sides, as there are no connections to the north or south between the station and Highway 160.

This project is dependent on outside factors and will not be pursued independent from future development on sites east and north of the station.

Table 49 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$250,000	$2,500,000	City of Antioch	City of Antioch

Cost Estimate Includes about 1.25 miles of 5-foot sidewalks on both sides of the street

Figure 73 Slatten Ranch and Viera Avenue extension map (approximate locations)

5. Pedestrian and Bicycle Bridge Across Highway 4 Ramps

Project Description

To alleviate safety concerns created by the completion of the new highway ramp configuration, this project would construct a bridge across on-ramp and off-ramp for pedestrians and bicyclists. The alignment shown is based on a concept produced during design of the station.

The need for this project would be substantially reduced if project #2, a pedestrian and bicycle bridge across Highway 4, #6 a bike path on the south side of Slatten Ranch Road, and/or project #8, a multi-use path north of Slatten Ranch Road, were built.

Table 50 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$2,000,000	$20,000,000	BART/City of Antioch	BART

Cost Estimate based on the Warm Springs pedestrian bridge

Figure 74 Pedestrian and Bicycle Bridge Across Highway Ramps

6. Class I Bike path from Hillcrest Avenue to Antioch Station

Project Description

This project is currently proposed by the Contra Costa Transportation Authority as the second phase of bicycle improvements to alleviate safety concerns created by the new roadway configuration and new highway ramp, which could potentially cause conflicts between bicyclists and turning vehicles. This project would construct a class I bicycle path on the south side of Slatten Ranch Road. This path would connect both sides of Hillcrest Avenue to the existing path leading along the BART parking lot into Antioch station. The project would include bike ramps from the street onto the sidewalk at the path entrance and bike crossings across Slatten Ranch road and the highway ramps, including modified signals and/or bike boxes. The overall design and selection of specific elements is currently under review by BART.

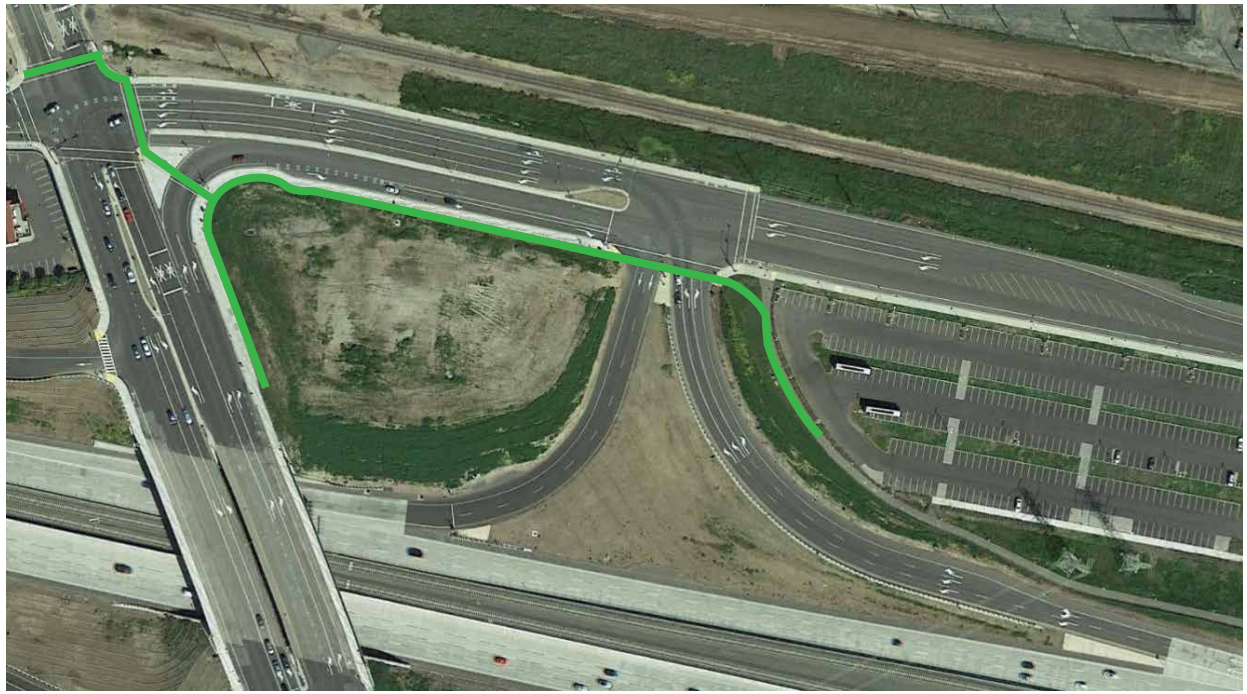
The need for this project would be substantially reduced if project #2, a pedestrian and bicycle bridge across Highway 4, #5, a pedestrian/bicycle bridge across the freeway ramps, and/or project #8, a multi-use path north of Slatten Ranch Road, were built.

Table 51 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$350,000	BART/City of Antioch	BART

Cost estimate is the total of Hillcrest Alt 1 and Slatten Alt 1 prepared by BART

Figure 75 Class I Bike Path along south side of Slatten Ranch Road and Hillcrest crossings



7. Bike Station

Project Description

This project would install an enclosed, controlled-access bike parking facility, commonly known as a bike station. The location of a bike station would depend greatly on land availability and development opportunity, but ideal sites would be to the west of the station or across Slatten Ranch Road. The construction of the bike station could be coordinated with the future parking garage or new development near the station as a ground floor use.

Table 52 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$100,000	$1,100,000	BART	BART

Cost Estimate Includes one 1600 square foot bike station, based on estimates from the BART bike plan

Figure 77 BART Modular Bike Station Exterior Rendering (Source: BART Bike Capital Plan, STV Architects)

Figure 76 BART Modular Bike Station Interior Rendering (Source: BART Bike Capital Plan, STV Architects)

8. Bike Lanes on Larkspur Drive

Project Description

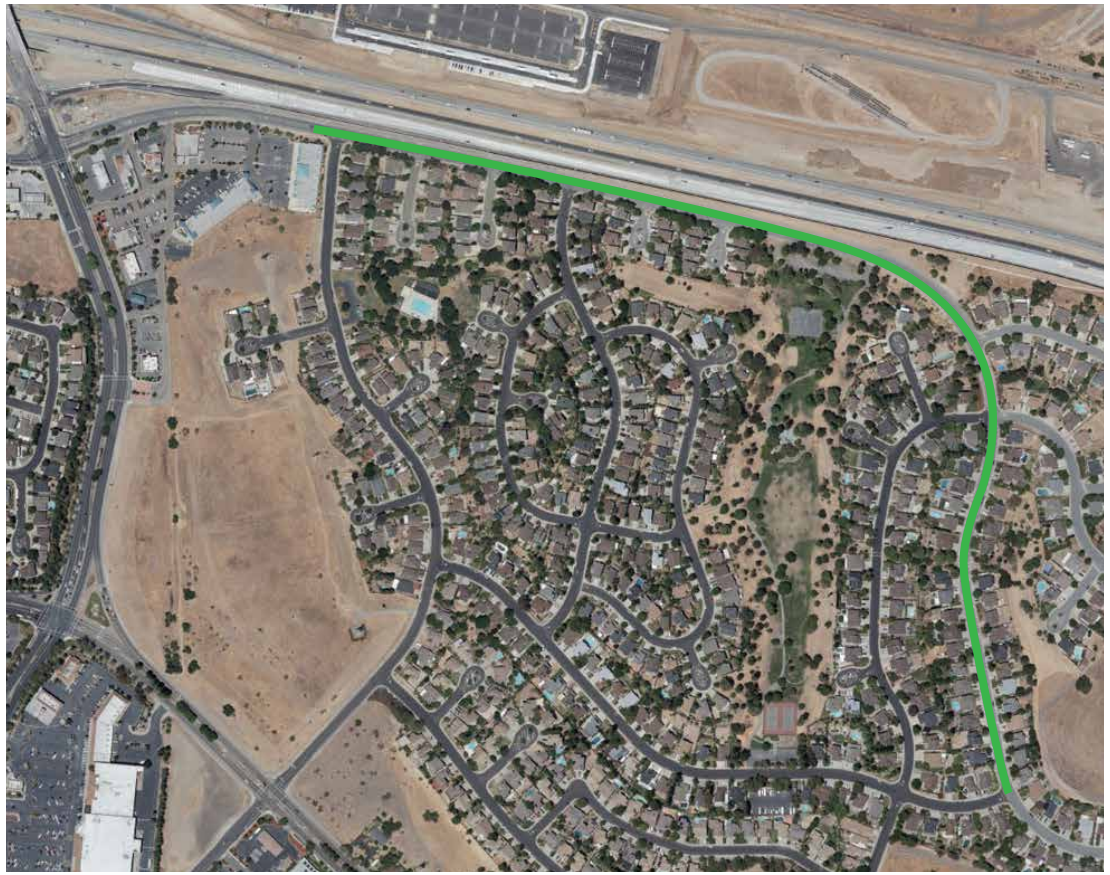
Bike lanes extend only a short ways on Larkspur drive. This project would paint bike lanes on both sides of the road to Sunflower Drive. The road is 52 foot wide, and thus could accommodate two 6 foot bike lanes while maintaining four 10 foot traffic lanes. Installing the bike lane would include bike pavement markings and signage.

Table 53 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$90,000	City of Antioch	City of Antioch

Cost Estimate Includes restriping and adding pavement markings and signage.

Figure 78 Bicycle/Pedestrian Bridge to Station



9. Bike Path Parallel to Slatten Ranch Road

Project Description

This project would construct a Class I bike path parallel to Slatten Ranch Road. The path could be positioned between Slatten Ranch Road and the Union Pacific Rail right-of-way. The path would be 12 feet wide and extend from Hillcrest Avenue to Highway 160 at a minimum. The bike path could be extended further east and south along with the Slatten Ranch Road extension.

Table 54 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	$200,000	$1,900,000	City of Antioch/EB Parks	City of Antioch/EB Parks

Cost Estimate Includes 2.6 miles of bike trail, using estimates from the Bay Trail Gap Analysis Study.

Figure 79 Bicycle/Pedestrian Bridge to Station

10. Bike Lane Extension to Viera Avenue and Slatten Ranch Road

Project Description

This project would ensure that bike lanes are added to the Viera Avenue and Slatten Ranch Road extensions. A bike lane would be installed on both sides of the full extents of both roads.

This project is dependent on outside factors and will not be pursued independent from future development on sites east and north of the station.

Table 55 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$60,000	City of Antioch	City of Antioch

Cost Estimate Includes striping, pavement markings, and signage.

Figure 80 Slatten Ranch and Viera Avenue extension map (approximate locations)

11. Bus Shelter Upgrades at Station Bus Bays

Project Description

This project would replace or upgrade the existing bus shelters at the station bus bays with larger customized shelters that provide more protection from the weather.

Table 56 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$280,000	BART	BART

Cost Estimate Includes six custom bus shelters

Figure 81 Custom bus shelter at Union City station (Source: BART)

Figure 82 Bus bay concepts for Berryessa Station (Source: VTA)

12. Wayfinding for Drivers

Project Description

This project would install wayfinding signage for drivers at the station entrance, with directions to parking and drop-off areas. Wayfinding should also include directions for cyclists entering the station.

Table 57 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$3,000	BART	BART

Cost Estimate Includes two wayfinding signs

Figure 83 Augusta, GA, medical district wayfinding (Source: WFXG 2014)

13. New Parking Lot East of the Existing Lot

Project Description

This project, required by the Environmental Impact Report for the eBART extension, would construct a parking garage at the station to increase the parking supply by 1,600 spaces. The garage could be constructed on the unused land just east of the existing parking lot.

Alternatively, a larger parking garage could be built on this lot in association with future TOD on BART's existing surface parking lot.

Table 58 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
$500,000	$10,000,000	$100,000,000	BART	BART

Cost Estimate Includes a 1600 space garage based on the Dublin/Pleasanton Station Garage estimates

Figure 84 Potential New Garage Location

14. Management Improvements for Existing Parking

Designate Additional Carpool Spaces

As a new station, there is some opportunity to provide more carpool spaces right away than are typically provided at other, similarly sized stations. However, at the station opening, the parking lot is not expected to fill up, so there may not be a strong incentive to use carpools. This parking management project includes a plan to increase the number of spaces reserved for carpools as parking demand at the station increases. Future carpools spaces can be striped immediately to prepare for future changes. This project should also be paired with carpool improvements described in the programmatic parking management section to maximize carpool usage.

Implement Scoop

BART is conducting a pilot project with Scoop, an app that matches and verifies carpoolers, to provide guaranteed parking spaces to those who use the app at select stations. BART is gradually expanding the program to additional stations, this study recommends including all four study area stations in the pilot to encourage carpooling in the study area. The program uses the reserved parking supply at each station, so this pilot should be combined with expansion of the reserved parking area to maximize effectiveness.

Table 59 Evaluation

Early Design/ Feasibility Costs	Design Costs	Construction Costs	Assumed Maintenance Responsibility	Lead Agency
N/A	N/A	$4,000	BART	BART

Cost Estimate Includes signage for reserved and carpool spaces.

APPENDIX C: EVALUATION CRITERIA

Evaluation Criteria for BART Station Access Projects

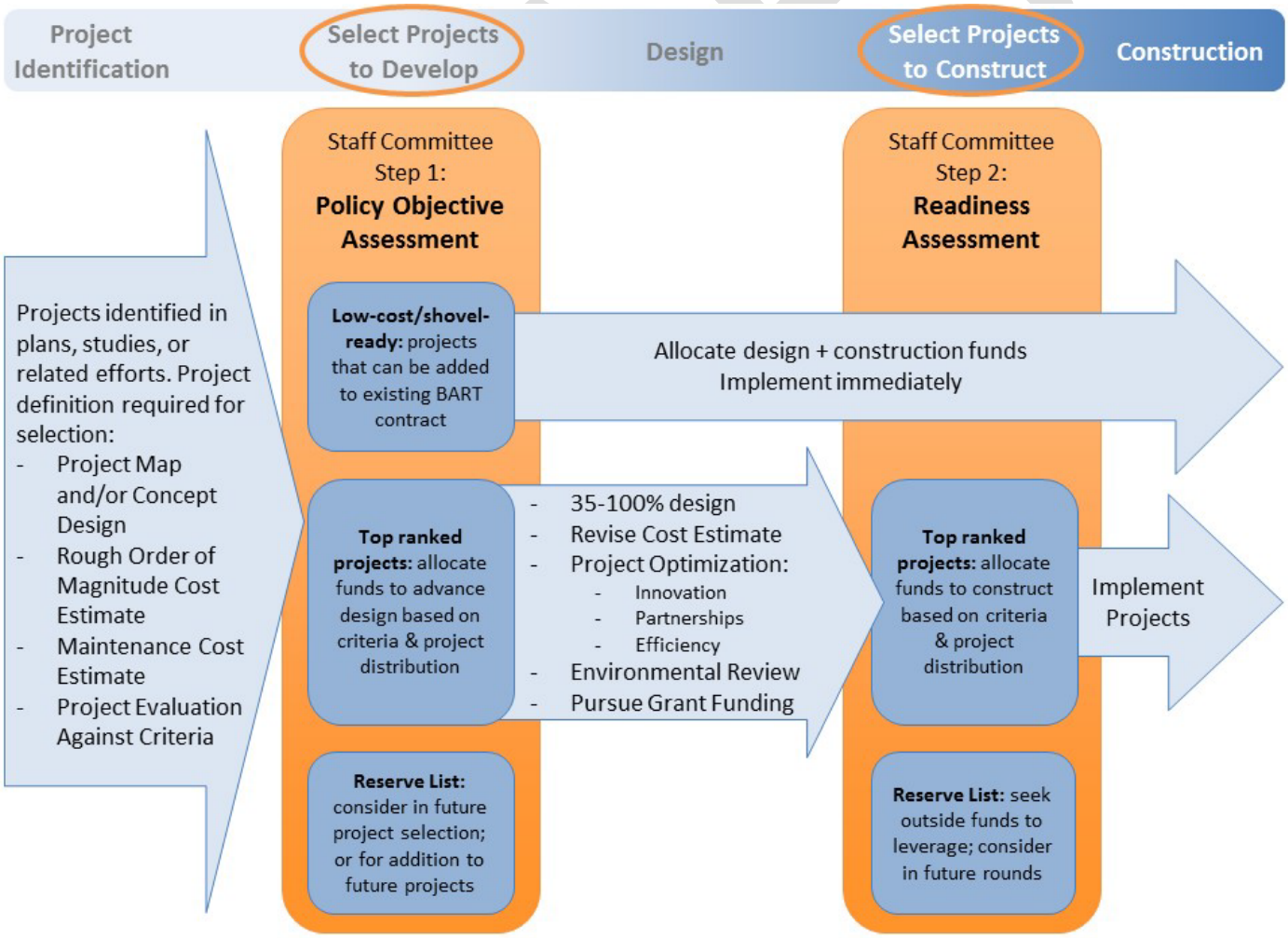
July 7, 2017 DRAFT

For projects that are primarily active access, shared mobility and/or drive and park, projects will be prioritized for implementation using the following process and criteria. Project selection will occur every 6 months, and at two stages in project development, as shown in Figure 1. Projects for seniors and people with disabilities will be prioritized through the Districtwide Accessibility Improvement Program, currently underway.

An Interdepartmental Staff Committee will use Decision Lens to prioritize projects based on project benefit, as defined by how well the project meets BART's Station Access Policy objectives, and estimated project cost. Criteria to determine project benefit are outlined in Table 1, and are scored on a scale from 0-1. Staff will use Decision Lens to assign each project a score for how well it meets the criteria, and produce an optimized list of projects based on the relative benefit and cost of each project. The Interdepartmental Staff Committee will determine which projects to proceed with based on the Decision Lens output, after also considering the following factors:

- Geographic distribution
- Current and Aspirational Station Type
- Mode funding allocation

Figure 1: Station Access Project Selection & Development Process



APPENDIX D: PROJECTS INVESTIGATED BUT REMOVED FROM CONSIDERATION

Projects Investigated but Removed from Further Consideration

February 2018

Multi-modal projects

Pittsburg Bay Point

Entrance from Underpass: This project was reviewed by BART and it was determined that there was not enough space to construct a new entrance at this location.

Pittsburg Center

Bridge Crossing from Bliss Parking Lot to Station: This project was reviewed by BART and it was determined to be infeasible because it would require a new entrance, including station agent and ticketing machines, but would only save a relatively small amount of distance to the station.

Shared/Satellite Parking Locations

A list of potential shared or satellite parking sites was developed by identifying sites with large parking facilities within the station area likely to have low usage during BART peak hours of operation. This generally included churches, shopping centers, and lots that are currently unused. While BART is willing to enter shared parking arrangements with owners of public or private parking facilities, the options for shared parking surrounding the four stations in this study are limited in size and quantity. It is, therefore, difficult to justify the cost of providing staff to operate/enforce parking, provide shuttle service to and from satellite parking, or invest in infrastructure or technology to implement shared parking at these facilities. Successful sites for shared parking had existing parking infrastructure and are currently used a times of the day conducive to sharing with BART patrons. The following potential shared or satellite parking sites were considered. Most sites were removed from consideration due to their distance from the station or unavailability for shared use

Site Investigated		*Reason Removed from Consideration*
North Concord		
1	Golf Course	Would require shuttle
2	Naval Weapons Base	Would require construction of a new parking lot; long-term plans for development on the site
Pittsburg Bay Point Station		
3	Our Lady Queen World Church	Would require shuttle
4	Safeway Lot	Lot is full throughout the day, during times BART customers would want to park there
5	County owned lots	Planned housing development in the near future; would require construction of a new parking lot
Pittsburg Center		
6	Atlantic Plaza Shopping Center	Would require shuttle
7	Church of Good Shepherd	Would require shuttle
8	County owned lot	Would require construction of a new parking lot
Antioch		
9	Crossings Shopping Center	Would require shuttle
10	Churches near E Tregalla Road and Windsor Drive	Would require shuttle
Sites Included for Further Evaluation		*Reason Included for Further Evaluation*
Pittsburg Center		
A	Civic Center Lots and Streets	Existing lots and street parking capacity, city is interested in pursuing shared parking arrangements
B	Mi Pueblo Foods Center	Existing lot, there is availability during times BART customers would want to use the lot

BART North Concord to Antioch Access Study
Shared and Satellite Lots Investigated