

## **CIRCULATION 8**

Ravenswood and 4 Corners will need a variety of improvements to pedestrian, bicycle, and vehicle circulation as new development occurs. In addition, new and enhanced transit service would provide a significant amenity for workers and residents in these areas. This chapter describes the circulation improvements that are envisioned by this Plan.

## Pedestrian and Bicycle Circulation

This section describes the circulation improvements that are envisioned for people who walk or bike to their destination.

### Sidewalk System

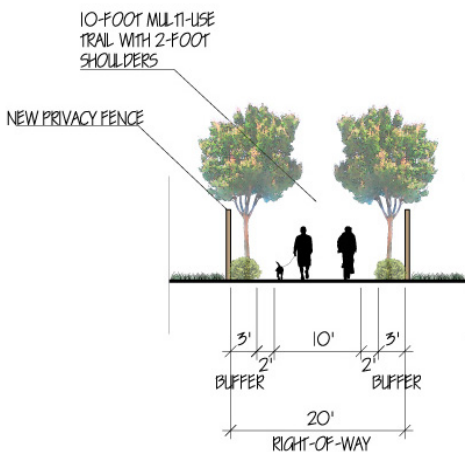
Pedestrian circulation is a major priority for Ravenswood/4 Corners. As identified in Chapter 3, the sidewalk system contains a number of gaps, which result in an incomplete pedestrian network that can create user mobility problems. One key gap is on the east side of University Avenue, north of Bay Road. This and all other sidewalk gaps should be filled as the Specific Plan is implemented. These improvements should be integrated with streetscape projects and private development as is feasible.

### Pedestrian Crossings

Pedestrian safety and comfort are prioritized in the Specific Plan. In keeping with this priority, it is recommended that any new traffic signals at intersections be accompanied by clearly defined pedestrian crossings. This could be done in several ways, including by traditional striping, special pavement treatments, or a combination of these. Where possible, pedestrian crossings should also include mid-block refuge areas for pedestrians to rest. Refuge areas should be incorporated into new street design and streetscape improvement efforts. Pedestrian countdown timers and detectors that are sensitive enough to recognize bicyclists are also recommended for all new signals. In the event that a Dumbarton Rail station is located in East Palo Alto, access to the station should be carefully designed to provide safe pedestrian access to the station.

### Multi-Purpose Trails

New multi-purpose trails, accessible to pedestrians as well as bicyclists, are proposed throughout the Specific Plan Area. Figure 4-2 in Chapter 4 shows the proposed locations of these trails and the overall circulation network they establish. These trails are meant to be publicly accessible. The details of their design are uncertain at this point, particularly since many of these trails will likely be developed alongside private development. The section to the left shows potential programming for a multi-use trail. Regardless of location, these trails will provide clear pedestrian and bicycle connections throughout the Plan Area. Trails will include lighting for safety and be universally accessible.



### Bicycle Facilities

New bicycle facilities are proposed at several key locations and along key corridors in the Specific Plan Area.

- **Class I Bicycle Facilities.** Class I bicycle facilities are dedicated bike facilities that are completely separated from vehicular traffic. This type of bicy-

cle facility is recommended in the Plan Area along the new proposed loop road, described in Chapter 7. A Class I facility at this location will provide excellent connections between Ravenswood and University Avenue. This new facility would be particularly effective if there is a new transit station near the University Avenue/loop road intersection.

- **Class II Bike Lanes.** Class II bike lanes are striped areas within roadways that are dedicated for bicycle travel. Bike lanes already exist on portions of Bay Road and University Avenue within the Plan Area. It is recommended that future Bay Road streetscape improvements also include Class II bike lanes. This will provide for bicycle connectivity in the Plan Area and also provide an enhanced connection to the Bay Trail and the future park at Cooley Landing. In addition, it is recommended that University Avenue be studied in detail to identify opportunities to close gaps in its bike lanes.
- **Class III Bike Routes.** A Class III bicycle route is a street or section of street that is designated as a shared route for bicycles and vehicles. Special signage or bicycle icons painted on the street identify the street as a bicycle route and caution drivers that bicyclists are likely to be sharing the road with them. The City’s General Plan shows bike routes on Fordham Street and Illinois Avenue within the University Village neighborhood. To date, these routes have not been designated on the street. This General Plan goal should be implemented within the Specific Plan Area as soon as is feasible.

### **Bicycle Parking**

In order to encourage bicycling, bicycle parking will be required for private development, and it is encouraged for public areas as well. Showers and locker rooms are also encouraged to be included as part of new development.

## **Vehicular Circulation**

In addition to accommodating pedestrians, bicyclists, and transit, this Specific Plan identifies necessary improvements to facilitate safe vehicular circulation upon buildout of the Specific Plan Area.

Buildout of the Specific Plan is expected to add 2,908 additional daily vehicle trips in the AM peak hour and 2,989 in the PM peak hour. Traffic analysis incorporating these additional trips was conducted for 24 intersections in and surrounding the Specific Plan Area. The transportation improvement measures described in this section are recommended to alleviate traffic that is expected as a result of Specific Plan buildout.

Some of these recommendations refer to “split phase” and “standard phase” traffic signal operation. In split phase operation, all of the traffic moving in one

direction (for example, eastbound) proceeds, and then all of the traffic traveling in the opposite direction (for example, westbound) proceeds. This accommodates dedicated left-turn lanes, but it creates delays. In standard phase operation, the dedicated left-turn lanes proceed, followed by the eastbound and westbound traffic.

### **Vehicular Improvements**

The following improvements are necessary to alleviate traffic issues within the Plan Area. All vehicular intersection improvements should also take steps to accommodate pedestrians and bicyclists safety, by potentially including features such as pedestrian count-down timers, American Disabilities Act (ADA) curbs, bicycle detection loops, and other similar elements.

- **Willow Road/Bayfront Expressway.** Buildout of this Specific Plan is expected to cause delays to the southbound approach to this intersection. To address this, the shared left through lane on eastbound Willow Road should be converted to a left-turn only lane, and the signal phasing on the east and west approaches should be converted from split phase to protected lefts. Adding a third right-turn lane on northbound Willow Road would further reduce the intersection's average control delay. Implementation of any improvement at this intersection will require coordination with and approval by Caltrans and the City of Menlo Park.
- **University Avenue/Purdue Avenue.** This intersection is expected to operate at an unacceptable level of service (LOS) with or without the Specific Plan. However, development under the Specific Plan will intensify delays. To address this problem, it is recommended that a new traffic signal be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With this improvement, the intersection will operate at acceptable levels.
- **University Avenue/Bay Road.** Buildout of this Specific Plan is expected to cause unacceptable delays at this intersection. To address these delays, it is recommended that the intersection be reconfigured to include an exclusive northbound right-turn lane and a second westbound left-turn lane. The second westbound left-turn lane would result in two left turn lanes, one through lane, and one right-turn lane in the westbound direction on Bay Road. With these changes, the signal phasing on Bay Road could be modified from split phase operation to a standard phase sequence with protected left turns. This improvement will require the acquisition of additional right-of-way and roadway widening. At least two feet of additional right-of-way would be required on the east side of University Avenue. About 12 feet of additional right-of-way would be required on the north

side of Bay Road. Roadway widening has the potential to make pedestrian and bicycle travel more difficult through the intersection. Therefore, any intersection widening or reconstruction should incorporate pedestrian and bicycle accommodation, as described above.

- ▶ **University Avenue/Donohoe Street.** Buildout of this Specific Plan is expected to result in unacceptable delays at this intersection. To address this delay, it is recommended that an exclusive southbound right-turn lane be constructed. Furthermore, the westbound approach should be restriped to include dual left-turn lanes, one through lane and one right-turn lane. The signal phasing on Donohoe Street should be modified from split phase operation to a standard phase sequence with protected left turns. This improvement will require the acquisition of additional right-of-way and roadway widening. About 12 feet of additional right-of-way would be needed on the west side of University Avenue. Roadway widening has the potential to make pedestrian and bicycle travel more difficult through the intersection. Therefore, any intersection widening or reconstruction should incorporate pedestrian and bicycle accommodation, as described above.
- ▶ **Clarke Avenue/Bay Road.** Buildout of this Specific Plan is expected to result in unacceptable delays at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. To address this delay, it is recommended that a new traffic signal be installed at the intersection.
- ▶ **Demeter Street/Bay Road.** Buildout of this Specific Plan is expected to result in unacceptable delays at this intersection. To address this delay, it is recommended that a new traffic signal be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops.
- ▶ **Pulgas Avenue/Bay Road.** Buildout of this Specific Plan is expected to result in unacceptable delays at this intersection. To address this delay, it is recommended that a new traffic signal be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops.

## New Streets

- **Loop Road.** As discussed in Chapter 7, a new loop road is proposed to connect University Avenue at the northern part of the Plan Area to the existing northern terminus of Demeter Street.
- **Ravenswood East-West Connector.** It is recommended that a new street be built to connect Demeter Street to Pulgas Avenue, ultimately connecting to Tara Road when it is reconstructed. This cross street will provide for increased mobility and connectivity in Ravenswood.
- **Tara Street.** Tara Street should be rebuilt and extended northward as the Ravenswood area redevelops. As this occurs, the entirety of Tara Street would become a public right-of-way and would follow the design specifications detailed in Chapter 7.

## Parking

This section describes the parking policies that will ensure that new development in the Plan Area provides an adequate, but not excessive, amount of parking.

### Shared Parking

Shared parking is a strategy that allows multiple uses to share individual parking lots or structures. This enables a lesser amount of parking to be provided overall while still accommodating the individual needs of each use.

There are two kinds of shared parking that are typically allowed. First, a multi-tenant development, or several development projects in one area, can be developed with one common parking area that satisfies the needs of all users. This type of shared parking accommodates a “park-once” strategy in which people can park their cars and walk between different businesses.

Second, two uses that experience parking demand at different times of day can share parking areas. For example, a school might share a parking area with a house of worship, since schools experience high parking demand on weekdays while houses of worship experience high parking demand on their primary day of worship, typically during the weekend.

The development standards in Appendix B allow for shared parking to occur within the Plan Area.

**On-Street Parking**

On-street parking is currently provided throughout much of the Plan Area. This is beneficial to the area in two ways. It provides additional parking for uses in the Plan Area, and it provides for a safer pedestrian environment by acting as a buffer between vehicular travel lanes and sidewalks. On-street parking should continue to be allowed and encouraged throughout the Specific Plan Area. Parallel parking approaches for specific street types are shown in Chapter 7.

**Unbundled Parking**

Where feasible, unbundled parking should be encouraged in residential development projects. Unbundled parking means that instead of providing parking for every apartment in multi-family projects, parking is paid for and “unbundled” from the cost of rent. This allows individual renters to choose whether or not they want to pay for a parking space. Unbundled parking would be a particularly suitable approach once transit is improved in the Plan Area, enabling people to live comfortably with fewer vehicles per household.

Appendix B establishes regulations for allowing unbundled parking in residential development projects.

**Tandem Parking**

It is recommended that tandem parking be considered in future private development in Ravenswood/4 Corners. This type of parking allows two cars to park one behind the other. It can sometimes provide for a more efficient parking layout.

Appendix B allows for tandem parking to occur within the Plan Area for single-family homes.

**Paid Parking**

As parking demand increases with buildout of the Specific Plan, it may be appropriate to consider paid on-street parking in certain areas. This could help to address short-term parking needs, particularly for retail and service uses that are expected to develop along Bay Road and at 4 Corners.

**Parking Structures**

As parking demand increases with buildout of the Specific Plan, the City should consider acquisition of land for and development of a parking structure, particularly as the Ravenswood area redevelops with higher density uses. Investment in a parking structure will require significant additional study and analysis, but may be appropriate in future stages of Specific Plan implementation.

### **Mechanized Parking**

Mechanized parking or parking lifts should be encouraged to save space and make the provision of parking more feasible in certain developments. Mechanized parking systems are engineered structures that allow vehicles to be stacked vertically, through the use of elevators, with minimum amounts of clearance to allow maximum efficiency. This method should be considered on a project-by-project basis, but may be appropriate in some instances.

## **Transit**

This section explores the potential for transit improvements for the Plan Area. At the time at which this Specific Plan is being created, there is still uncertainty regarding the future Dumbarton Rail Corridor. As such, this Specific Plan cannot provide detailed recommendations about station locations or associated roadway configurations. However, this Specific Plan follows transit-oriented development principles of providing mixed-use development, pedestrian-friendly environments, and multimodal transportation options. It also provides a land use framework suitable for responding to future transit improvements, in whichever form they may be implemented.

### **Transit Alternatives**

There are two alternatives for station sites for the Dumbarton Rail, as well as a bus rapid transit (BRT) option. Figure 8-1 shows the potential alternatives for Dumbarton Rail stations, as well as the BRT option.

The first alternative is to locate a Dumbarton Rail Corridor transit stop in East Palo Alto, near where the rail right-of-way crosses University Avenue. However, this alternative has been ranked below the station location in Menlo Park (discussed below) in a feasibility ranking completed for the Dumbarton Rail Corridor. The primary reasons given were environmental constraints and a concern about a potential lack of ridership.

The second alternative is to locate a station near where the rail right-of-way crosses Willow Avenue in Menlo Park. This alternative is ranked particularly high, mostly because there are fewer environmental constraints at this location and because a large employer has committed to locating their expanded offices near this location, in addition to the significant existing office and light industrial uses in the vicinity. These two factors substantially reduce the risk of investment in a new station at this location.

The third alternative is to develop BRT using the existing Dumbarton Bridge. This alternative has cost advantages, but it would not attract the frequency of

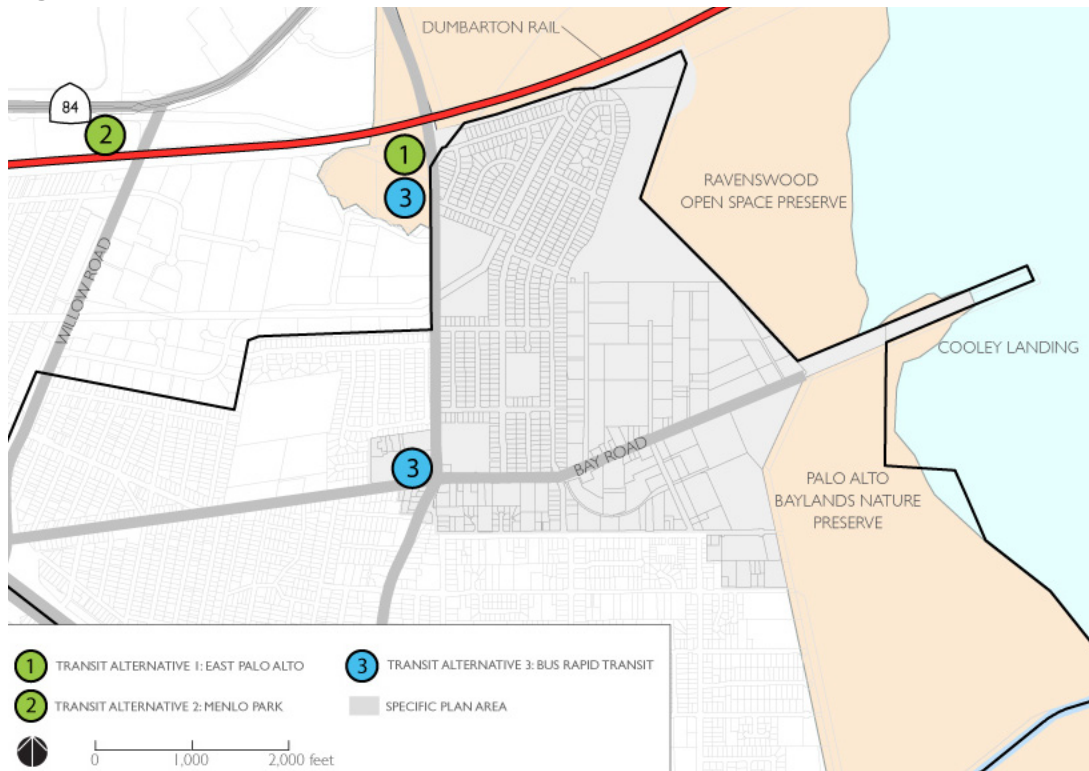
ridership that a fixed train would. However, it could still be a viable option for commuters. A BRT option could be operated along the same lines as the potential Dumbarton Rail, but could also potentially be augmented with a new north-south line that traveled along University Avenue, connected to Palo Alto, and was designed in coordination with an east-west Dumbarton BRT.

**Potential Dumbarton Rail Ridership**

A 2010 study by SamTrans identified a variety of transportation options for the type of service to be provided by Dumbarton Rail, along with projected ridership in the year 2035 for each alternative. The options vary widely, ranging from less frequent to more frequent rail service along the entire rail line to expanded bus service that would follow a similar route to the rail service. As a result, the ridership projections for each option are substantially different from one another.

For the rail options, approximately 6,000 to 15,500 trips would be expected each day throughout the entire system. Of these trips, approximately 1,300 to 1,800 trips would be internal to the West Bay (including East Palo Alto), and approximately 2,300 to 5,100 trips would cross the Bay in each direction.

**Figure 8-1: Transit Alternatives**



For the bus options, approximately 4,500 to 6,000 trips would be expected each day throughout the entire system. Of these trips, approximately 1,100 to 1,400 trips would be internal to the West Bay (including East Palo Alto), and approximately 900 to 1,200 trips would cross the Bay in each direction.

The exact nature of Dumbarton Rail service is still being defined. It is anticipated that SamTrans will continue to refine its ridership projections as it works to select a preferred option for future service.

**Specific Plan Response to Transit Alternatives**

Alternative One, with a station in East Palo Alto, will serve the new development by providing a fixed rail alternative to vehicular traffic, especially for users who may live in the East Bay and commute to jobs envisioned by the Specific Plan.

Alternative Two will require bus transit and private shuttle connections to the Menlo Park rail station, as well as improved bicycle connections. This Specific Plan provides guidelines and recommendations for pedestrian- and bicycle-friendly streets, which should be referenced when designing a safe, pedestrian-friendly connection to a potential Menlo Park station. If this alternative goes forward, it is also recommended that a stand-alone study be conducted to identify safe routes from the Plan Area to the station.

Alternative Three provides the potential for alternative rapid bus routes that could travel down University Avenue. If this alternative is pursued, it will be important to provide transit infrastructure such as bus shelters, bulbouts, and custom signage. This is particularly important at 4 Corners, where a BRT station could potentially be located.

**Conventional Transit**

It is currently uncertain what transit facilities will be developed near the Plan Area as this Specific Plan is implemented. Furthermore, there is no guarantee that a Dumbarton Rail station will be located in or near East Palo Alto. However, it should be noted that this Specific Plan allows and encourages development at an intensity and residential density that will support transit services of all kinds. Therefore, as development occurs, transit services currently operating in the Plan Area are likely to expand. In addition, if Dumbarton Rail stops in a nearby city, shuttle service and enhanced bicycle access could be provided between Ravenswood/4 Corners and the station.

This Specific Plan allows for substantial increases in residential development and office uses, and therefore should create an attractive location for expanded transit service. If transit is improved in concert with increased private devel-

opment, auto dependence and environmental impacts are both likely to decrease.

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