



# Old Road, New Directions: A Plan for Adeline

UC Berkeley  
CP 218 Transportation Planning Studio  
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## CONTRIBUTORS AND ACKNOWLEDGEMENTS

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## 1. INTRODUCTION

Adeline Street contains many of South Berkeley's most popular destinations. You may have gone shopping for groceries at the Berkeley Bowl, sampled unique pastries at Crixia Cakes, rummaged for treasures at the Berkeley Flea Market or one of the area's many antique stores, enjoyed a cup of coffee at Sweet Adeline, or boarded a BART train at Ashby Station. However, Adeline's assets are lost in the street's 180-foot-wide sea of concrete and asphalt, with torrents of cars speeding through the area en route to downtown Berkeley or the Grove-Shafter Freeway. Instead of strolling along the street and discovering the many treasures that Adeline has to offer, drivers visiting shops park outside and then head home, pedestrians and cyclists use friendlier adjacent streets such as Shattuck Avenue or Alcatraz Street to travel to destinations along Adeline, and BART riders are sequestered from the rest of the street in a massive below-grade parking lot.

Our goal is to redesign Adeline so that it is easier to visit and more inviting to stay on. Our proposed design:

- Reduces the number and width of vehicle lanes along Adeline.
- Reconfigures key intersections at Adeline/Ashby, Adeline/MLK/Woolsey, and Adeline/MLK Stanford.
- Consolidates underused right-of-way into public spaces and development parcels that are connected to destinations and pedestrian areas.
- Completes the bicycle network in the corridor.
- Creates new development opportunities at the Ashby BART Station.
- Reorients the Ashby BART Station entrance to face Adeline and the Ed Roberts Campus.
- Maintains adequate vehicle level of service and parking supply.

Instead of an auto-dominated pseudo-freeway, we envision Adeline as a balanced, multimodal link in the transportation network and a safe, attractive district for residents and visitors. The proposal that we present here reconfigures the corridor, reclaiming underutilized vehicle space for the benefit of all users, shortening crossings and providing new pedestrian, bicycle, and transit facilities. We want to not only improve access to destinations along Adeline, but also foster new destinations in the corridor, so our proposal also creates new public spaces and development opportunities on vacant parcels and at the Ashby BART Station. Because Adeline is organized so inefficiently, we accomplish all of these goals without negatively affecting the 15,000 drivers who use Adeline each day to access important destinations throughout the Bay Area.

Our proposal finds support in several local plans and policies, summarized below in Table 1.

**TABLE 1: LOCAL GOVERNMENT POLICIES SUPPORTING THE GOALS OF OUR PROPOSAL**

<b>Document</b>	<b>Agency</b>	<b>Shared goals</b>
Berkeley General Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Improve pedestrian and cyclist safety</li> <li>• Improve pedestrian and cyclist accessibility</li> <li>• Increase transit-oriented affordable housing</li> <li>• Increase pedestrian-scale mixed-use development and public spaces</li> </ul>
Berkeley Bicycle Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Improve cyclist accessibility and safety</li> </ul>
Draft Berkeley Pedestrian Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Improve pedestrian accessibility and safety</li> </ul>
South Berkeley Area Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Increase pedestrian and cyclist access to Ashby BART</li> <li>• Lower vehicle speeds and redesign intersections</li> </ul>
Climate Action Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Increase non-motorized travel</li> <li>• Increase compact, mixed-use development on transit corridors.</li> </ul>
South and West Berkeley Community Based Transportation Plan	Alameda County Congestion Management Agency	<ul style="list-style-type: none"> <li>• Improve intersections for cyclist and pedestrian safety</li> <li>• Improve connections of bicycle network.</li> </ul>

This report explains the background, aims, and specific details of our proposal for Adeline. Chapter Two provides background information on the street and on surrounding neighborhoods, and Chapter Three encapsulates this information in a list of issues and opportunities. Chapter Four outlines our visions, goals, and objectives, and relates these to the City of Berkeley’s current plans and policies. Chapter Five provides a detailed description of our proposal, and Chapter Six discusses our plan for implementing the proposal.

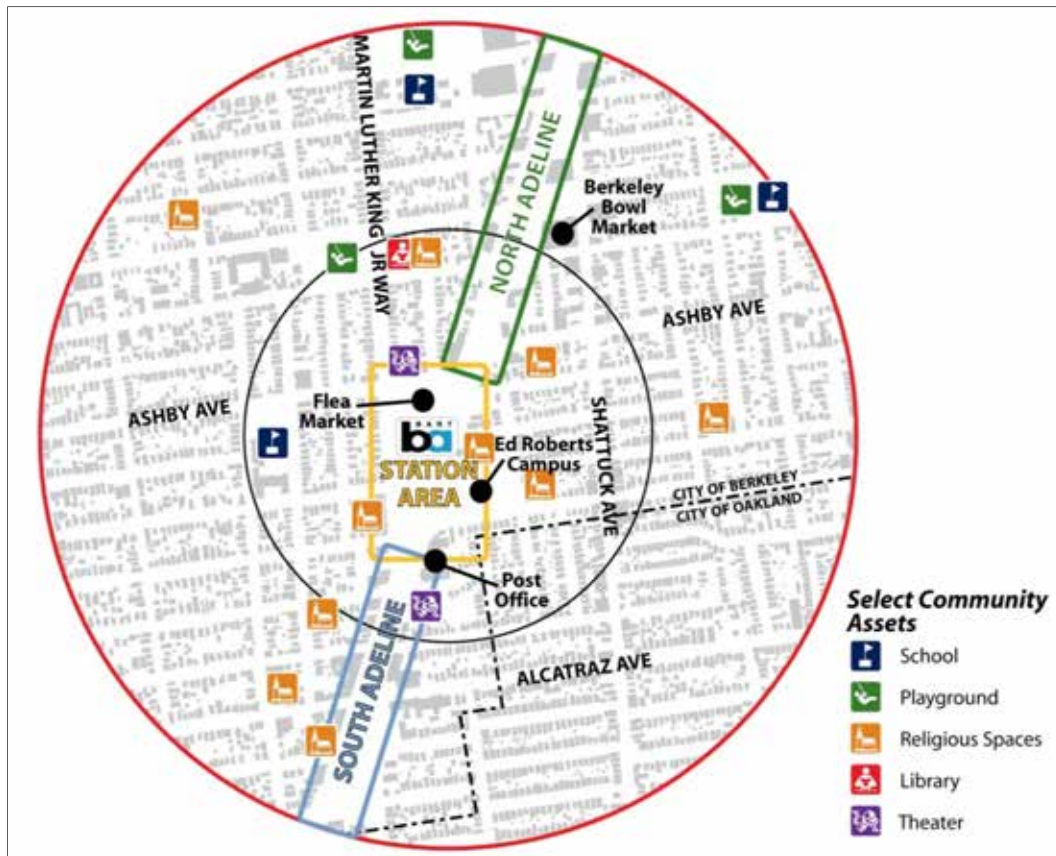


## 2. BACKGROUND

### 2.1 THE STUDY AREA

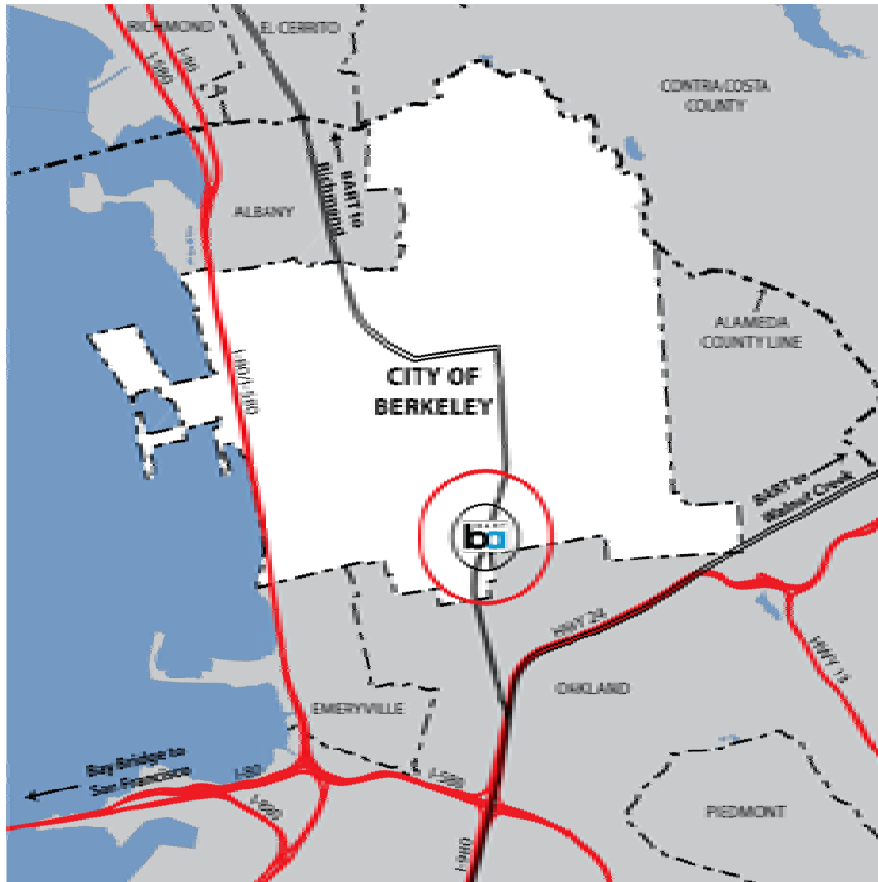
We defined our study area as the area within a half-mile of the Ashby Bay Area Rapid Transit (BART) station. This includes the entire arterial stretch of Adeline Street, which serves the BART station, the Berkeley Bowl, and the historic Lorin District along South Adeline, as well as many other community assets shown in Figure 1.

FIGURE 1: MAP OF THE STUDY AREA



Our study area also includes neighborhoods that offer some of the most affordable housing available in Berkeley, a small section of North Oakland, a growing stretch of retail and businesses along Shattuck Avenue, and several other arterials. These arterials connect to the Bay Area’s freeway system, which, along with BART, provide access to destinations across the region.

FIGURE 2: REGIONAL CONTEXT OF THE STUDY AREA



Though our design proposal focuses specifically on the Adeline corridor, we collected and analyzed information from throughout the study area in order to better inform our proposal.

## 2.2 HISTORY

Historically, Adeline Street was the main street serving the study area, carrying several sets of streetcar and heavy rail tracks that connected downtown Berkeley with urban centers and freight facilities in Oakland and Emeryville. Streetcar lines also ran via Shattuck Avenue to downtown Oakland. As a result, the study area originally developed as part of a string of streetcar suburbs. Sanborn fire insurance maps from 1911 show that the area was predominantly residential. However, mainline rail also supported more industrial uses in the triangular wedge between Shattuck and Adeline, which was served

by multiple rail sidings. Meanwhile, Ashby Avenue and Grove Street, which later became Martin Luther King, Jr. Way, were comparatively minor streets, with no rail facilities.<sup>1</sup>

As the automobile replaced the streetcar as the dominant mode of transportation and Berkeley continued to develop, the city had to reconfigure streets in the study area in order to accommodate cars. Many of the challenges that we discuss later in this report date from this transition, such as Adeline's wide right-of-way and the sharp angle of the Ashby/Adeline intersection, which resulted from an effort to combine the two misaligned sections of Ashby that met at Adeline.

Though the area was still predominantly residential as of 1950, the area began to see an increase in auto-oriented commercial development, much of it centered on what is today the Ashby BART Station. The Adeline/Ashby, Adeline/Grove, and Ashby/Grove intersections contained gas stations, auto repair/body shops, and several storefronts.<sup>2</sup> With the construction of BART in 1970, all of these businesses, as well as 82 residential units, were demolished to accommodate the station and the two parking lots that serve it, and the landscaped median that occupies the center of Adeline was installed to cover the BART tunnel that runs underneath the street. Some of the land devoted to BART parking will see new development with the scheduled 2010 completion of the Ed Roberts Campus on part of the eastern parking lot, reflecting increasing demand for developable land in the study area.

### 2.3 ARTERIAL ROADS WITHIN THE STUDY AREA

Several arterial roads traverse the half-mile surrounding the Ashby BART Station. Adeline and Stanford run diagonal to the prevailing grid pattern, creating complex, high-volume intersections where they meet other arterials in the study area. Figure 3 shows the main arterials in the study area, as well as their connections with other arterials in the surrounding area.

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<sup>1</sup> Sanborn Map Company. 1911. *Insurance Maps of Berkeley, Including Albany, Alameda County, California*. New York: The Sanborn Map Company.

<sup>2</sup> Sanborn Map Company. 1950. *Insurance Maps of Berkeley, Including Albany, Alameda County, California*. New York: The Sanborn Map Company.

FIGURE 3: ARTERIAL ROADS WITHIN THE STUDY AREA

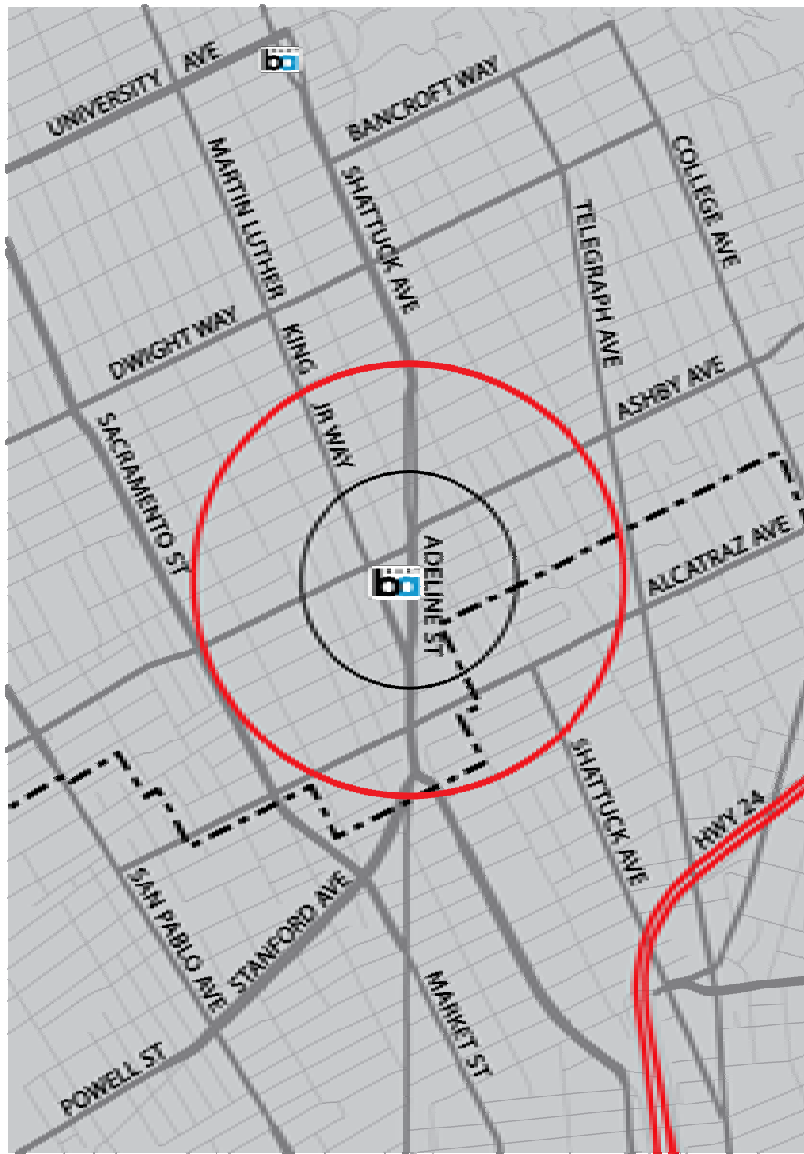


Figure 4 shows traffic volumes along the major arterials in the study area. The southern stretch of Adeline, where it carries combined traffic from North Adeline and MLK, is clearly the highest-volume segment in the study area. It is interesting to note the width of Adeline compared to other arterials that carry comparable traffic volumes.



FIGURE 4: ESTIMATED DAILY TRAFFIC VOLUMES ALONG ARTERIAL STREETS IN THE STUDY AREA



### 2.3.1 ADELINE STREET

Adeline Street connects Shattuck Avenue in the north to Stanford Avenue and Martin Luther King Jr. Way (MLK) in the south. Many drivers use Adeline to access the on-ramp to State Route 24, which is located on MLK roughly one mile south of where it intersects with Adeline. Adeline continues south of the Stanford-MLK intersection as a residential street, but we did not include this section in our study. The arterial section of Adeline serves a variety of land uses, including retail destinations such as the Berkeley Bowl and Walgreen’s, multi-family housing developments, and neighborhood-serving businesses.

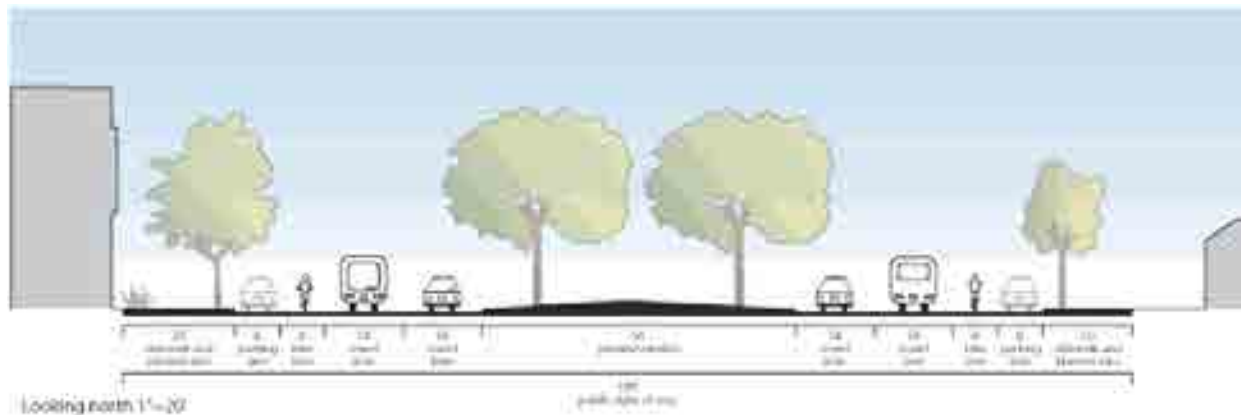
FIGURE 5: ADELINE STREET (PHOTO: CARLOS VELASQUEZ)



Adeline has a wide right-of-way, with four 12' to 14' travel lanes, bike lanes, on-street parking, boulevard strips, and wide sidewalks. We identified three distinct sections of the Adeline corridor, each with its own unique road design and travel patterns. We refer to these three sections as North Adeline, the Ashby Station Area, and South Adeline, and we use these designations throughout our report.

**North Adeline** extends from Adeline's northern end at its intersection with Shattuck to the Ashby/Adeline intersection. This section is characterized by a 180 foot right-of-way, with two travel lanes in each direction, wide bike lanes, a wide landscaped median, and wide sidewalks.

FIGURE 6: SECTION DIAGRAM OF NORTH ADELINE



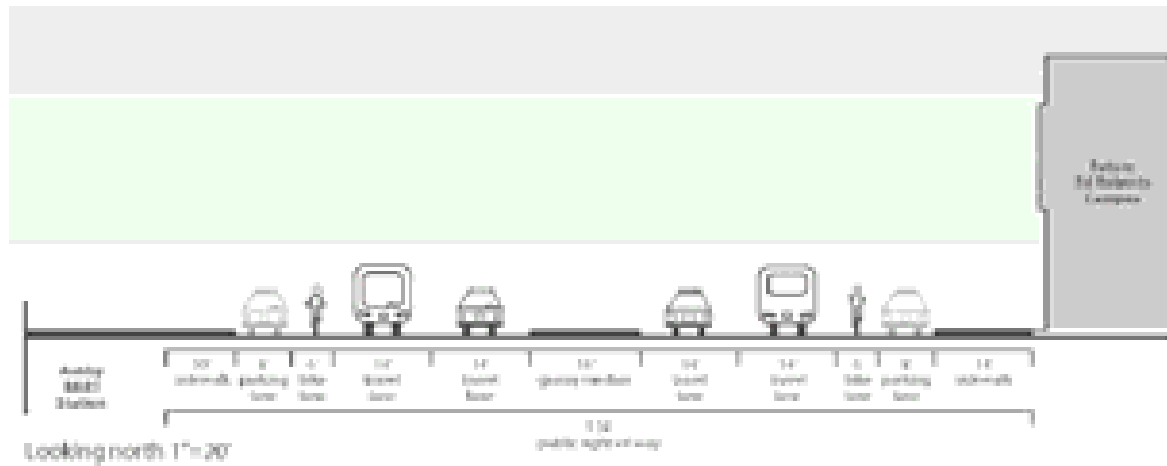
Based on our peak hour traffic counts, we estimate that North Adeline carries roughly 15,100 vehicles per day north of its intersection with Martin Luther King Jr. Way. This stretch also carries a significant amount of bicyclists and pedestrians, especially at its intersection with Oregon Street, where the Berkeley Bowl, a popular grocery store, is located.

TABLE 2: PEAK HOUR TRAFFIC VOLUMES (TRAVELERS PER HOUR) ON ADELINE STREET AT THE ADELINE/ASHBY INTERSECTION

Vehicles	1,534
Pedestrians	125
Bicycles	54

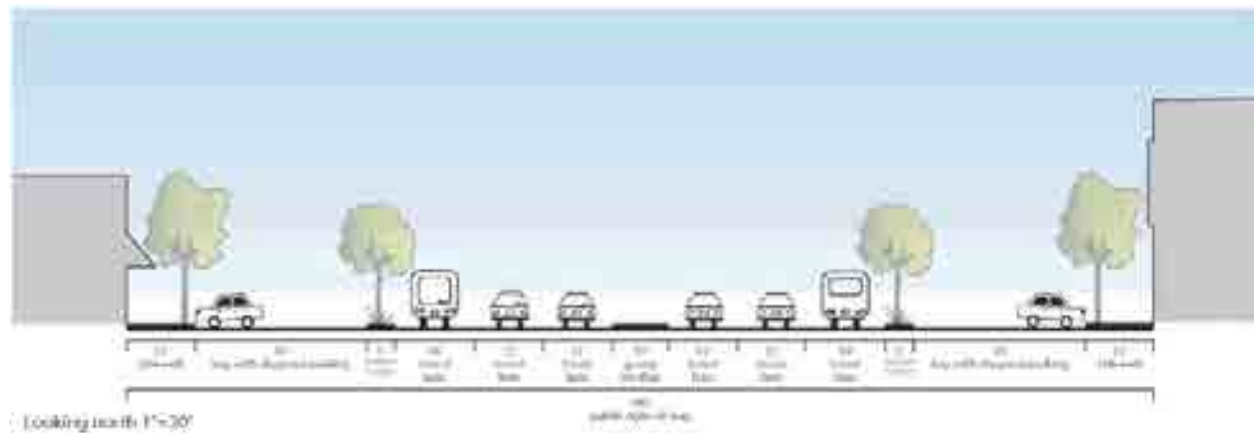
The **station area** includes all of Adeline that is adjacent to the Ashby BART station, as well as the Adeline/MLK intersection at the south end of the station parcel. Apart from the fact that it contains a narrower right-of-way with a smaller median that lacks street trees and a narrower bike lane, this section has similar road geometry to North Adeline, and carries similar traffic volumes. However, the station area merits special attention due to the fact that it includes the BART station, which is both the most important destination in the study area and one of the most difficult to access as a bicyclist or pedestrian, as well as a significant development opportunity.

FIGURE 7: SECTION DIAGRAM OF ADELINE IN THE STATION AREA



**South Adeline** refers to the section extending south of the Adeline/MLK intersection, where these two streets merge, to the Adeline/MLK/Stanford intersection, where the two streets separate and Adeline emerges as a quiet neighborhood street. A much greater proportion of the right-of-way in this section is devoted to automobiles, with three travel lanes in each direction, large diagonal parking bays, a small median, and no bike lanes.

FIGURE 8: SECTION DIAGRAMS OF SOUTH ADELINE



This stretch carries much higher volumes of vehicle traffic; up to 35,000 vehicles per day according to our estimates.

TABLE 3: PEAK HOUR TRAFFIC VOLUMES (TRAVELERS PER HOUR) ON ADELINE STREET AT THE ADELINE/ALCATRAZ INTERSECTION

Vehicles	3,427
Pedestrians	122
Bicycles	43

In general, vehicle traffic on Adeline travels much faster than the posted 25 mile per hour speed limit, particularly in the section south of MLK and north of the Adeline/MLK/Stanford. We measured an 85<sup>th</sup> percentile speed of 29 miles per hour, with drivers sometimes exceeding 40 miles per hour.

### 2.3.2 ASHBY AVENUE

FIGURE 9: ASHBY AVENUE (PHOTO: CARLOS VELASQUEZ)



Ashby Avenue is an arterial street that connects residential neighborhoods in east Berkeley to Interstate 80. Ashby is part of State Route 13, and the California Department of Transportation (CalTrans) has authority over planning decisions that affect its alignment. Ashby has two lanes along most of its length, but at many points these lanes are 17 to 20 feet wide, and drivers sometimes treat them as two lanes when maneuvering around turning or slow-moving vehicles. At the point where it intersects Adeline, Ashby is four lanes wide with on-street parking. Land uses along Ashby are predominantly residential, with some commercial uses at its intersections with MLK and Adeline.

**TABLE 4: PEAK HOUR TRAFFIC VOLUMES (TRAVELERS PER HOUR) ON ASHBY AVENUE AT THE ASHBY/ADELINE INTERSECTION**

Vehicles	1,664
Pedestrians	135
Bicycles	22

Based on our evening peak-hour traffic counts, we estimate that Ashby carries between 15,300 and 16,900 vehicles per day. Vehicle speeds vary along Ashby Avenue. Between key intersections at Telegraph Avenue, Shattuck, and Adeline, automobile traffic is often free-flowing and fast, but congestion reduces speeds approaching intersections. In spite of its high vehicle speeds and general lack of landscaping and bicycle facilities, Ashby carries more pedestrians than Adeline, and similar bicycle volumes as the other arterial streets that we studied (apart from Adeline, which has bicycle lanes).

### 2.3.3 ALCATRAZ AVENUE

**FIGURE 10: ALCATRAZ AVENUE (PHOTO: STEPHANIE DOCK)**



Alcatraz Avenue is a two-lane arterial that connects Claremont Avenue in East Berkeley with San Pablo Avenue in West Berkeley. The street is mostly bordered by housing, though commercial uses extend outward from the intersection with Adeline. Based on



our peak-hour traffic counts, we estimate that Alcatraz carries 10,600-10,900 vehicles per day, though its relatively narrow travel lanes and street design make it feel more like a neighborhood street than an arterial, and traffic moves significantly slower. We observed smaller pedestrian volumes along Alcatraz than along the other arterial streets in the study area.

TABLE 5: PEAK HOUR TRAFFIC VOLUMES (VEHICLES PER HOUR) ON ALCATRAZ AVENUE AT THE ALCATRAZ/ADELINE INTERSECTION

Vehicles	1,028
Pedestrians	48
Bicycles	26

#### 2.3.4 MARTIN LUTHER KING, JR. WAY (MLK)

FIGURE 11: SOUTHBOUND TRAFFIC ON ADELINE AND MLK MERGING AT THE ADELINE/MLK INTERSECTION (PHOTO: STEPHANIE DOCK)



Martin Luther King, Jr. Way traverses a large stretch of Alameda County, connecting neighborhoods in North Berkeley with downtown Oakland. North of its intersection with Adeline, MLK has four through lanes and a 25 mile per hour speed limit and is bordered mainly by housing. South of Adeline, MLK parallels State Route 24, serving a mix of residential and commercial uses. In this section the street widens to six lanes, and the

speed limit increases to 35 miles per hour. Based on our peak hour traffic counts, we estimate that MLK carries 18,300 vehicles per day, which suggests that traffic entering our study area from the south is roughly evenly split between vehicles that use MLK to access West and North Berkeley and vehicles travel north on Adeline toward downtown Berkeley.

**TABLE 6: PEAK HOUR TRAFFIC VOLUMES (VEHICLES PER HOUR) ON MARTIN LUTHER KING, JR. WAY AT THE MLK/ASHBY INTERSECTION**

Vehicles	1,624
Pedestrians	129
Bicycles	25

### 2.3.5: SHATTUCK AVENUE

**FIGURE 12: SHATTUCK AVENUE (PHOTO: CARLOS VELASQUEZ)**

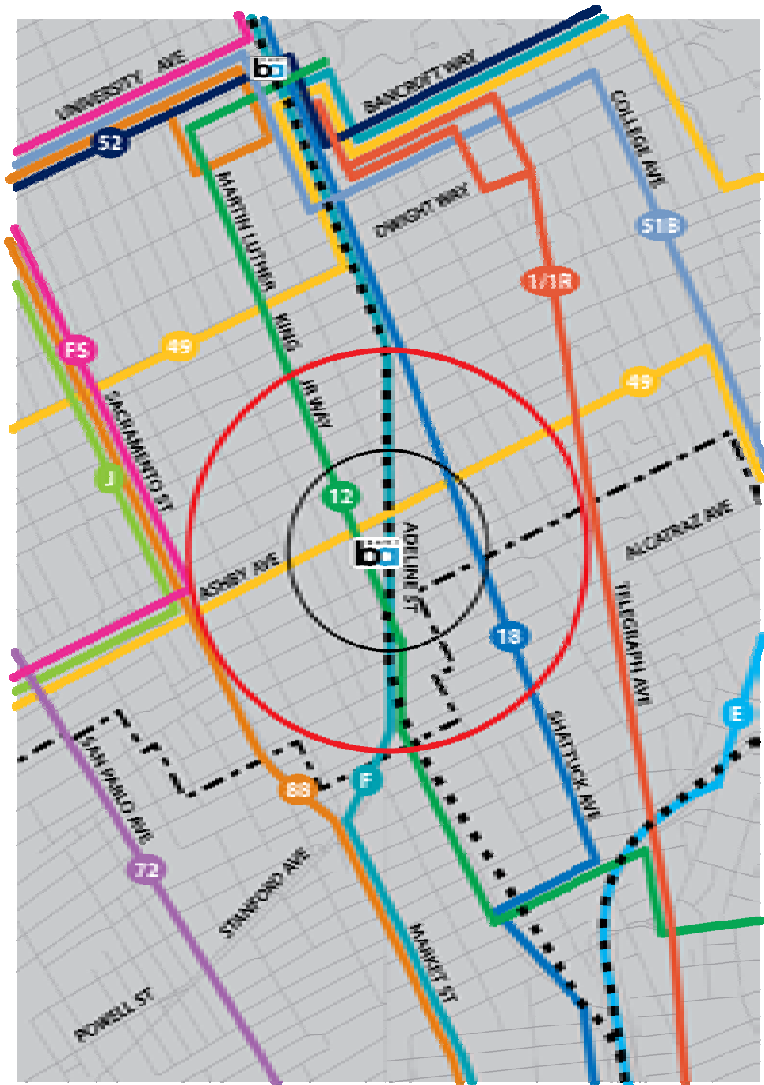


Shattuck Avenue connects commercial neighborhoods in North Berkeley with Telegraph Avenue in North Oakland. While we did not conduct traffic counts along Shattuck Avenue, we included it in our land use study because of its status as a developing commercial/retail district. The stretch of Shattuck that runs through our study area is a two-lane road that in recent years has played host to new cafes and houses that have been

converted to small offices. Many of the pedestrians and bicyclists heading to the destinations in the triangular stretch of land between Shattuck and Adeline travel via Shattuck.

## 2.4 TRANSIT SERVICE WITHIN THE STUDY AREA

FIGURE 13: AC TRANSIT AND BART SERVICE SURROUNDING THE STUDY AREA



The Adeline corridor is served by two main transit agencies: Bay Area Rapid Transit (BART), a heavy-rail system that provides service to three of the Bay Area’s most populous counties and to several regional job centers, including downtown San Francisco; and the Alameda-Contra Costa County Transit District (AC Transit), which operates bus service in Alameda and Contra Costa counties, as well as Transbay lines serving San Francisco and San Mateo.

#### 2.4.1 BAY AREA RAPID TRANSIT (BART)

Ashby BART station is at the center of the study area, and is served by two BART lines. The Richmond-Daly City/Millbrae Line runs between 4:00 A.M. and 8:00 P.M. and connects the city of Richmond in Contra Costa County with the San Francisco airport via downtown San Francisco. The Richmond-Fremont line runs between 4:00 P.M. and 1:00 A.M. from Richmond to Fremont, in southern Alameda County.<sup>3</sup> Overall, studies conducted by BART indicate that the system is primarily used by commuters who choose to take transit instead of driving. The majority of BART riders use the system to travel to work, and the typical BART rider has a car available with which to make his/her trip, as well as a slightly higher income than the average resident in BART's service area.<sup>4</sup>

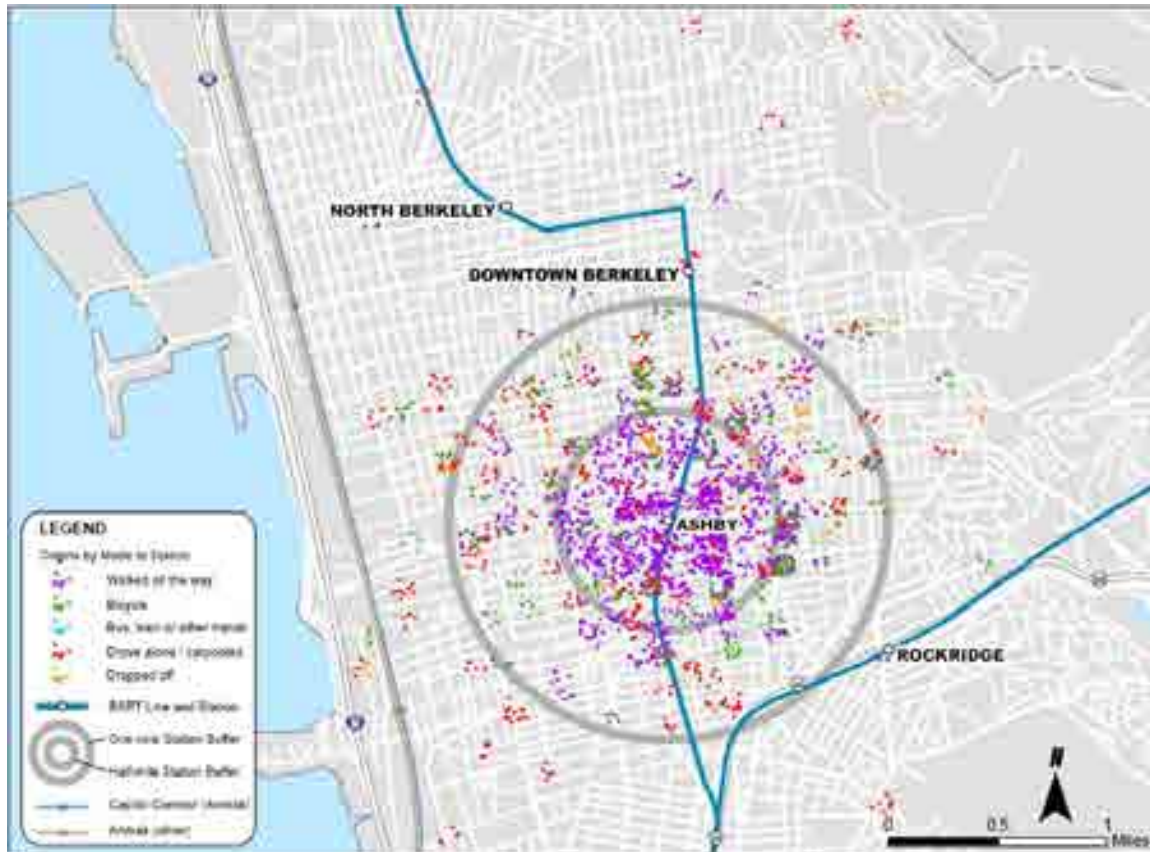
Ashby Station is less busy than adjacent BART stations and primarily serves neighborhood residents. On the average weekday, 4,797 riders enter at Ashby, compared to 7,802 at MacArthur Station to the south and 11,929 at Downtown Berkeley. 69 percent of riders at Ashby Station are coming from home, and the median distance between their homes and the station is 0.63 miles, which gives Ashby the third-shortest median commute distance of any station in the BART system. As Figure 14 shows, a large majority of these riders live within one mile of the station.

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<sup>3</sup> Bay Area Rapid Transit. 2010. "Schedules by Line." <http://www.bart.gov/schedules/byline.aspx> (accessed April 16, 2010).

<sup>4</sup> Bay Area Rapid Transit Marketing and Research Department. 2008. *2008 Bart Station Profile Report*.

FIGURE 14: HOME ORIGINS AND TRAVEL MODES TO ASHBY BART STATION<sup>5</sup>



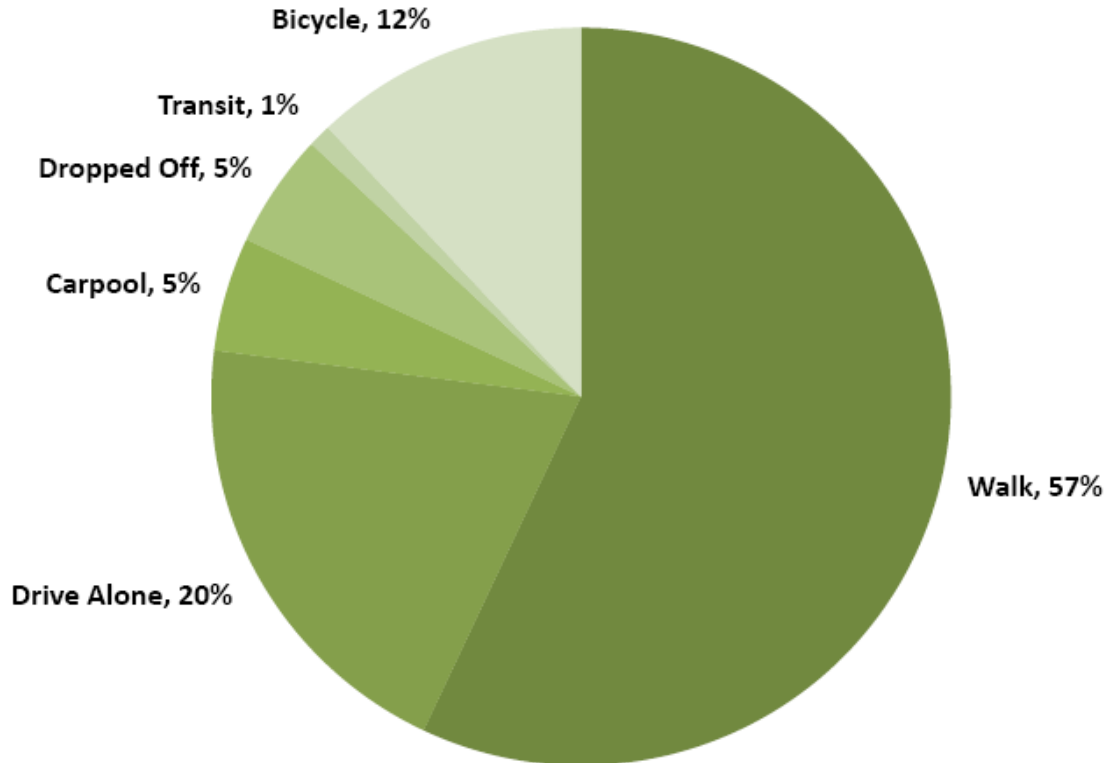
Ashby Station has the highest bicycle mode share and the fifth-highest pedestrian mode share compared to all other stations in the BART system. Walk and bicycle shares are increasing, while car and transit shares are decreasing.<sup>6</sup> These findings, combined with the fact that Ashby riders who access the station by car have the shortest median driving distance of any BART station, suggest that drivers may be able to use another mode to access the station if parking spaces are removed or priced at higher rates. It is also interesting to note that a relatively high share (eight percent) of riders are using Ashby Station to access medical appointments due to the station's proximity to the Alta Bates Summit Medical Center, which runs shuttles to the station.<sup>7</sup> This number may grow once the Ed Roberts Campus, a center for services for the disabled located across the street from Ashby Station, is completed in late spring 2010.

<sup>5</sup> Bay Area Rapid Transit. 2008. "Station-Level Maps (Home Origin) – 12<sup>th</sup> St. Oakland – Dublin/Pleasanton." [http://www.bart.gov/docs/StationProfileStudy/StationMaps\\_HomeOrigins\\_12thSt-Dublin.pdf](http://www.bart.gov/docs/StationProfileStudy/StationMaps_HomeOrigins_12thSt-Dublin.pdf) (accessed April 16, 2010).

<sup>6</sup> Bay Area Rapid Transit Marketing and Research Department. 2008. *2008 Bart Station Profile Report*.

<sup>7</sup> Ibid.

FIGURE 15: TRAVEL MODE TO ASHBY BART STATION FOR HOME-BASED TRIPS<sup>8</sup>



#### 2.4.2 ALAMEDA-CONTRA COSTA COUNTY TRANSIT DISTRICT (AC TRANSIT)

Overall, AC Transit riders are much more likely to be transit-dependent than BART riders. The majority (70 percent) use the system because they either cannot drive or do not have access to a car. Almost half of riders earn less than 30 percent of the area median income. While a plurality (38 percent) of riders use AC Transit to travel to work, a sizeable portion (28 percent) use the system to get to school.<sup>9</sup> Four AC Transit routes pass through the study area during the day, plus one night service that substitutes for BART after hours. Figure 13 shows the four routes that run through the study area, and Table 7 shows ridership statistics for these routes.

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<sup>8</sup> Ibid., p. 71.

<sup>9</sup> Alameda Contra-Costa Transit District. 2003. *2002 On-Board Passenger Survey: System-wide results.*



TABLE 7: RIDERSHIP STATISTICS FOR AC TRANSIT ROUTES WITHIN THE STUDY AREA<sup>10</sup>

Name	Route	Boardings		Avg. Load		Max. Load	
		Study Area	Total	Study Area	Total	Study Area	Total
12 MLK	DT Berkeley - DT Oakland	862	6,104	9.1	8.0	35	35
9 Ashby	Berkeley Marina - Claremont	612	4,566	5.8	7.0	25	30
F Transbay	DT Berkeley - San Francisco	659	6,245	11.2	9.6	32	41
18 Shattuck	Albany - Montclair	967	28,534	12.2	10.5	33	49

77 percent of AC Transit riders walk to bus stops, and over three quarters of these walked four blocks or less from their home to their stop.<sup>11</sup> This suggests that improving the walking environment at those intersections around which the busiest AC Transit stops and lines cluster, such as the Ashby/Adeline and Alcatraz/Adeline intersections, will enhance access to transit, particularly for those routes—15, 18, and F—where passengers are concentrated within the study area.

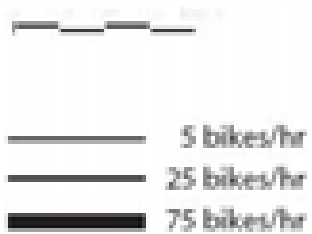
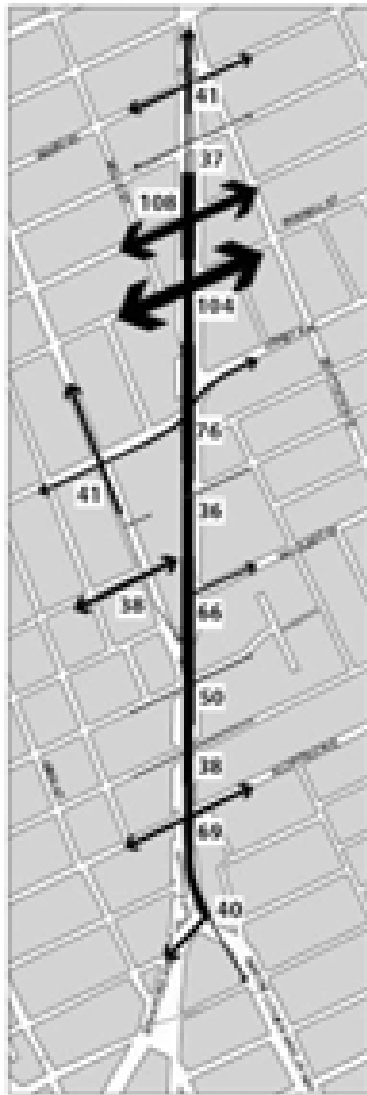
## 2.5 BICYCLE FACILITIES WITHIN THE STUDY AREA

As the high number of residents who travel to BART by bicycle demonstrates, bikes are a very popular mode of travel in the study area, which is well served by bicycle lanes and boulevards. Figure 16 shows bicycle volumes at intersections and road segments along Adeline and MLK.

<sup>10</sup> Der, Howard Der. November, 2009. Personal communication.

<sup>11</sup> Ibid.

FIGURE 16: MAXIMUM HOURLY BICYCLE VOLUMES ALONG ADELINE AND MLK (LINE THICKNESS DENOTES VOLUME ALONG ROAD SECTIONS, WHILE NUMBERS DENOTE VOLUMES PASSING THROUGH INTERSECTIONS)



In the Berkeley Bicycle Plan, the City of Berkeley designates five different classes of bicycle facilities, plus several additional treatments. Our study area contains four types of bicycle facilities:

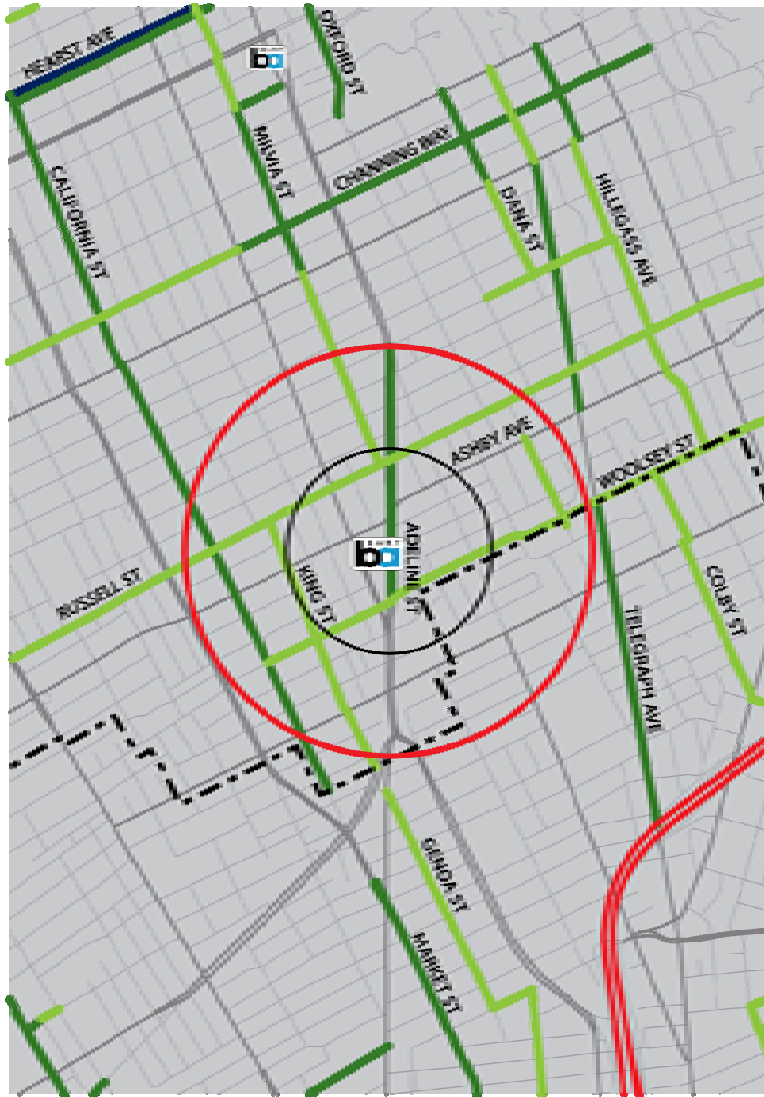
- Russell and Milvia Streets are **bicycle boulevards**, roadways that have been modified to enhance bicyclists' safety and convenience, with intersections that prioritize bicycle right-of-way and devices to calm or divert traffic.
- Oregon Street contains a **bicycle detector loop**, an in-pavement sensor with painted marking to indicate where a bicyclist should wait in order to activate a traffic-actuated signal.
- Adeline Street contains a **bike lane**, a striped lane for the exclusive use of bicyclists located on a roadway with higher traffic volumes or speeds.
- Woolsey Street is a **bicycle route**, a roadway that is signed as a bikeway because it provides continuity in the overall bikeway network or it identifies a route that is preferable to immediately adjacent streets.<sup>12</sup>

Figure 17 shows the location of bicycle lanes and routes in the study area, as well as connecting bike routes and lanes in the surrounding area.

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<sup>12</sup> City of Berkeley. 2008. *Berkeley Bicycle Plan: Draft for Inclusion in the General Plan*.

FIGURE 17: BICYCLE LANES (DARK GREEN) AND ROUTES (LIGHT GREEN) IN THE STUDY AREA



With the exception of Milvia, which ends shortly after it enters the study area, we discuss each of the aforementioned streets in more detail in the following subsections. However, it is worth noting that both our observations and previous studies show that many cyclists in the study area travel on streets without bicycle facilities.<sup>13</sup>

<sup>13</sup> Gould, B., D. Miller, and E. Rose. 2009. *Berkeley Bowl Bicycle Access*.

### 2.5.1 RUSSELL STREET

FIGURE 18: RUSSELL STREET BICYCLE BOULEVARD AT ITS INTERSECTION WITH ADELINE (PHOTO: CARLOS VELASQUEZ)



Russell Street is a neighborhood street designated as a bicycle boulevard, with wayfinding signs, markings painted on the pavement, and traffic diverters. It parallels Ashby Avenue, connecting residential neighborhoods in East Berkeley with San Pablo Avenue in West Berkeley. Russell also connects with Milvia Street, a bicycle boulevard that serves downtown Berkeley. We counted 63 bicyclists crossing Adeline on Russell during a weekday morning peak hour. This is a wide, unsignalized crossing with a refuge in the center.

## 2.5.2 OREGON STREET

FIGURE 19: OREGON STREET ADJACENT TO THE BERKELEY BOWL (PHOTO: ELIOT ROSE)



Oregon Street is a neighborhood street that runs parallel to Russell, one block to the north. Though it is not designated as a bicycle route, the intersection of Oregon and Adeline is signalized, with a marked bicycle detector loop (shown as a marking with a cyclist and two lines in Figure 19 above) that cyclists can use to trigger a green light. Previous studies have concluded that cyclists are unlikely to go out of their way to use this loop detector.<sup>14</sup> However, we counted 40 cyclists crossing Adeline on Oregon during weekday evening peak hour. These cyclists may be using Oregon to access the Berkeley Bowl grocery store, a popular destination.

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<sup>14</sup> Ibid.



### 2.5.3 ADELINE STREET

FIGURE 20: BICYCLE LANES ON ADELINE APPROACHING THE ADELINE/ASHBY INTERSECTION (PHOTO: ELIOT ROSE)



North of its intersection with Martin Luther King, Jr. Way, Adeline contains five foot wide bike lanes on both sides of the street, and between Stuart and Ashby the lanes are eight feet wide. This means that the lanes offer ample space for bicyclists to swerve around the open door of a car parked alongside them. However, there are important gaps in the bike lanes, not only south of the MLK intersection, where the lanes disappear completely, but also in the southbound direction at the Ashby intersection, where a pedestrian island protrudes into the lane and cyclists must merge with vehicles. This may account for variation in bicycle volumes that we observed during weekday peak hour counts. We counted 39 cyclists crossing Oregon on Adeline and 42 crossing Woolsey, where in both cases Adeline has a bike lane, but only 12 crossing Ashby, where it doesn't.

## 2.5.4 WOOLSEY STREET

FIGURE 21: BART PARKING RAMP AT THE WOOLSEY/ADELINE INTERSECTION<sup>15</sup>



Woolsey Street is a neighborhood street designated as a bike route. The section that traverses the study area contains no bicycle treatments apart from wayfinding signs. Ashby BART Station currently blocks all through movement on Woolsey, posing a major obstacle to both through travel on Woolsey and station access. Currently, cyclists traveling west on Woolsey to access BART must either travel well out of their way to avoid the Woolsey/Adeline intersection or enter the parking lot illegally via a one-way exit ramp. Those cyclists continuing westward typically travel through the parking lot and exit via the west ramp onto Prince Street. Meanwhile, cyclists approaching BART from the west on Woolsey take the reverse route, traveling a block north to Prince, entering the parking lot, and exiting via the east ramp. During the weekday evening peak we counted three bikes per hour entering the station illegally from the west, and eight leaving the parking lot via the east exit ramp.

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<sup>15</sup> ParkingKarma. 2010. "BART – Ashby Station."

<http://www.parkingcarma.com/images/Site/Entrances/7ce8338a-e95b-dc11-8064-0013723eb578.jpg>  
(accessed April 26, 2010).

## 2.6 PEDESTRIAN FACILITIES WITHIN THE STUDY AREA

As Figure 22 below shows, pedestrian activity is particularly high in three zones within the study area: the Adeline/Oregon intersection, which offers pedestrian access to the Berkeley Bowl; the intersections adjacent to Ashby Station, which pedestrians use to access both the station and the Berkeley Flea Market on weekends; and the west side of Adeline between Fairview and Harmon Streets, which hosts the shops and businesses of the historic Lorin District.

FIGURE 22: MAXIMUM HOURLY PEDESTRIAN VOLUMES ALONG ADELINE AND MLK (LINE THICKNESS DENOTES VOLUME ALONG ROAD SECTIONS, WHILE NUMBERS DENOTE VOLUMES PASSING THROUGH INTERSECTIONS)



- 10 ped/hr
- 50 ped/hr
- 150 ped/hr

Pedestrians are sensitive to a wider variety of factors in the built environment than any other group of travelers. These include not only land use factors, such as housing density and the presence of destinations like those listed above, but also physical factors, such as the speed and volume of adjacent traffic and the quality and availability of sidewalks, crosswalks, and street furniture, and buffers from vehicular traffic; as well as aesthetic

factors, such as landscaping and the architectural quality of adjacent buildings. We synthesized many of these factors into a single qualitative index of the pedestrian environment that takes into account sidewalk condition, street furniture, protection from traffic, landscaping and street trees, building frontages, architectural character and upkeep, and public artwork. Figure 23 shows the results of this analysis.

FIGURE 23: PEDESTRIAN ENVIRONMENTAL QUALITY IN THE ADELINE CORRIDOR



Though the pedestrian environment along Adeline is generally fair-to-good quality, it is not very consistent, with important weak spots at the Adeline/Alcatraz intersection and surrounding Ashby Station, which is the area's most important pedestrian destination. Though sidewalks are quite wide in the station area, the below-grade parking lot that occupies most of the site creates a huge gap in the urban fabric, sidewalks and crossings

are inadequately designed and maintained at key intersections, and there is little in the way of street furniture or landscaping to create a more aesthetically pleasing environment.

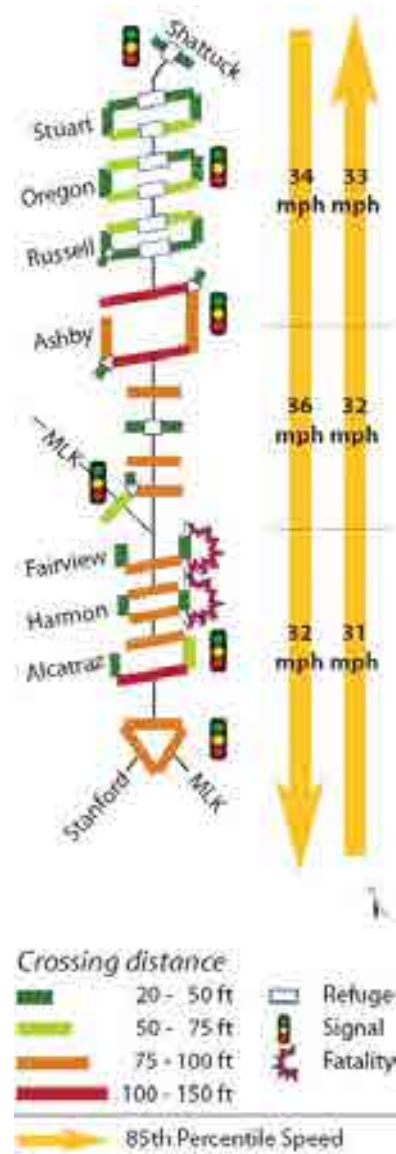
## 2.7 SAFETY

### 2.7.1 BICYCLES AND PEDESTRIANS

Though improving pedestrian and bicycle facilities along the Adeline corridor would certainly improve the walking and bicycling environment, the single largest barrier to travel by these modes in the corridor is the roadway design along Adeline itself. The street's wide travel lanes invite vehicles to travel much faster than the posted speed limit, and its wide right of way, of which 40 to 75 percent is devoted to vehicular traffic, make bicycle and pedestrian crossings both difficult and dangerous. Beginning in 2000, the City of Berkeley undertook a series of bicycle and pedestrian improvements to North Adeline, refurbishing sidewalks, installing streetlights, painting crosswalks, and adding the existing bicycle lane. In spite of these improvements, the Adeline corridor remains a dangerous environment for bicycles and pedestrians. On our site visits, we witnessed a series of near-incidents and unsafe behavior along Adeline. In particular, fast-moving vehicles often threatened crossing pedestrians at intersections. Figure 24 shows crossing distances, signalization, and refuges at intersections along Adeline. The station area and South Adeline contain several long crossings that lack refuges and traffic signals—factors that have contributed to recent pedestrian fatalities at the Adeline/Fairview and Adeline/Harmon intersections.



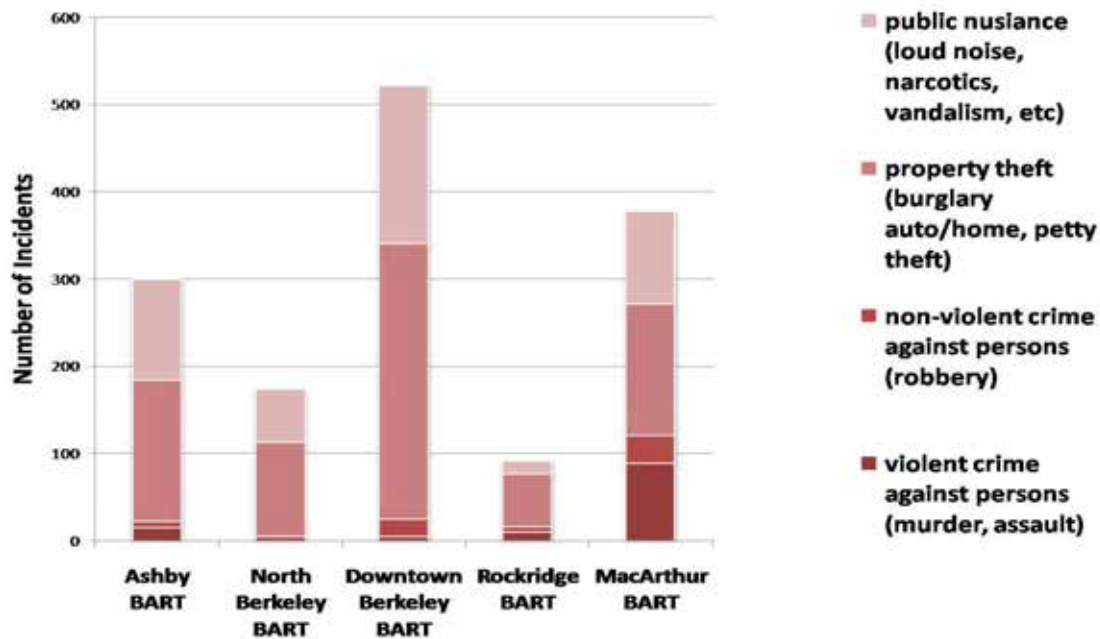
FIGURE 24: INTERSECTION CROSSING DISTANCES, SIGNALIZATION, AND REFUGES, WITH 85<sup>TH</sup> PERCENTILE VEHICLE SPEEDS



### 2.7.2 CRIME

Fewer incidents of crime occur in the area surrounding Ashby BART than at adjacent Downtown Berkeley and MacArthur stations, as shown in Figure 25 below.

FIGURE 25: INCIDENTS OF CRIME WITHIN A HALF-MILE OF ASHBY AND SELECTED NEARBY BART STATIONS, DECEMBER 2009-FEBRUARY 2010.



However, the area has a reputation for crime, and neighborhood business owners report that crime levels are an obstacle to growth.<sup>16</sup> There are several possible explanations for this. Though the area around the Ashby BART Station has lower absolute crime levels than at MacArthur and Downtown Berkeley stations, these stations host much more activity than Ashby (MacArthur has 63 percent more daily boardings than Ashby, and Downtown Berkeley has 149 percent more), so they have a lower density of crime. The area around Ashby BART also has a higher incidence of violent crime than Downtown Berkeley, and its reputation could be due to these higher-profile incidents. Alternately, the area’s reputation may simply be slow to change in spite of dropping crime levels.

## 2.8 DEMOGRAPHIC AND HOUSING CHARACTERISTICS

The study area is currently a racially diverse, mixed-income area of Berkeley. With the exception of Hispanic households, average household incomes substantially trail Berkeley averages for all races. Black homeownership in the study area is markedly higher than in the city of Berkeley, though over time it appears to be on the decline. Overall, home values are some of the most affordable within Berkeley.<sup>17</sup>

<sup>16</sup> Delgado, Elizabeth Delgado. April 16, 2010. Interview.

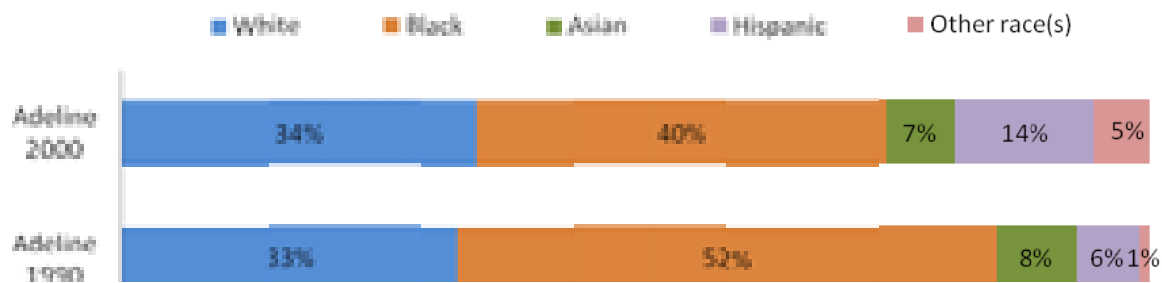
<sup>17</sup> This analysis uses 1990 and 2000 census data to describe the demographic and housing characteristics of the study area and compare these characteristics to the city of Berkeley. For this purposes of this analysis, the “study area” is defined as all block groups within ½ mile radius around the Ashby BART station. In 1990,

### 2.8.1 RACIAL MAKEUP

Compared to the city of Berkeley, the Adeline Corridor has more Black residents (40 percent compared to 13 percent) and fewer white residents (34 percent compared to 59 percent).<sup>18</sup>

The racial make-up of the study area changed significantly from 1990 to 2000. The percentage of Hispanic residents increased, while the percentage of black residents decreased and the percentage of white and Asian residents remained relatively unchanged.<sup>19</sup> See Figure 26 below. Berkeley also saw a decrease in the percentage of black residents from 1990-2000, from 18 percent to 13 percent, but the percentage of white residents increased from 55 percent to 59 percent, as did the percentage of Hispanic residents, from 8 percent to 10 percent.

FIGURE 26: CHANGING RACIAL MAKEUP IN THE STUDY AREA, 1990-2000



### 2.8.2 INCOME DISTRIBUTION

Average household income in the study area is considerably lower than in Berkeley as a whole. In 2000, the average household income in the study area was \$54,701.61, compared to \$68,437.05 in Berkeley.<sup>20</sup> However, incomes vary by householder age and race, and are generally on the rise. And while disparities in income persist across racial and age groups, the disparities here are less extreme than in the city as a whole.

In Berkeley, the share of university students within a neighborhood can skew income data, since students typically earn less. To account for the very low income of students,

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these block groups were: Tract 4005 block groups 1-4, Tract 4234 block groups 3-4, Tract 4235 block groups 2-3, Tract 4239 block group 2, and Tract 4240 block groups 1-5. In 2000, these block groups were: Tract 4005 block groups 1-4, Tract 4234 block groups 3-4, Tract 4235 block groups 2-3, Tract 4239.01 block groups 1-2, Tract 4239.02 block group 1, and Tract 4240.01 block groups 1-4.

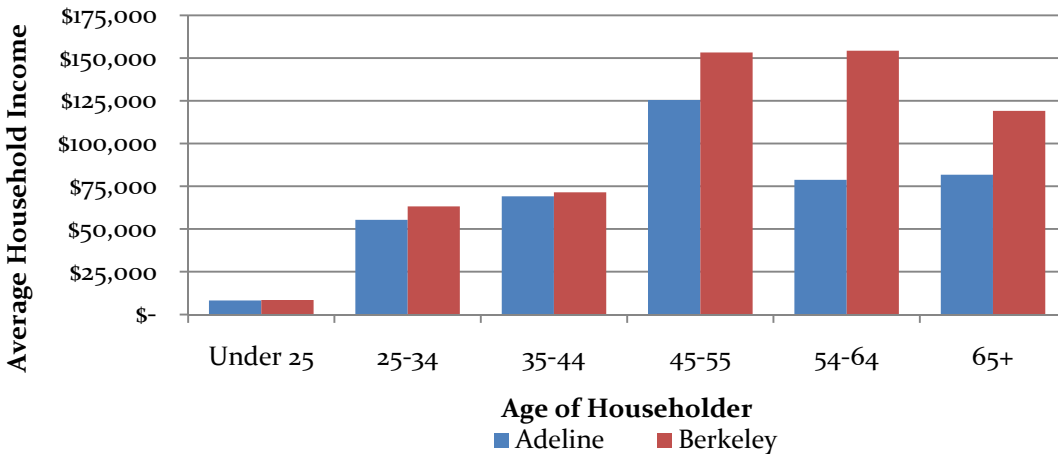
<sup>18</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Tables P7.

<sup>19</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table P7; U.S. Census Bureau. 1990. *1990 Census of Population and Housing*, SF 3, Table 12.

<sup>20</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table P54.

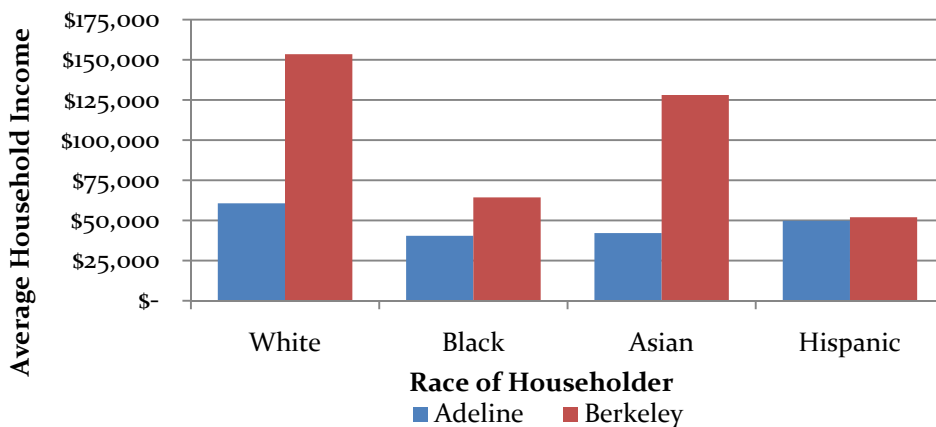
it's important to look at average household income by age. In the study area, average household income is on par with Berkeley for householders between the age of 25 and 44. As Figure 27 illustrates, after age 45 the income gap between the study area and Berkeley as a whole widens significantly.<sup>21</sup>

FIGURE 27: AVERAGE HOUSEHOLD INCOME BY AGE OF HOUSEHOLDER



Incomes also vary by race of householder. Mirroring trends seen throughout the rest of Berkeley, on average white households earn higher incomes than black households. However, the size of this gap is smaller in the study area than the rest of Berkeley. In Berkeley white householders earn 138 percent more than black householders; in the study area they earn 50 percent more.<sup>22</sup> See Figure 28 below.

FIGURE 28: AVERAGE HOUSEHOLD INCOME BY RACE OF HOUSEHOLDER

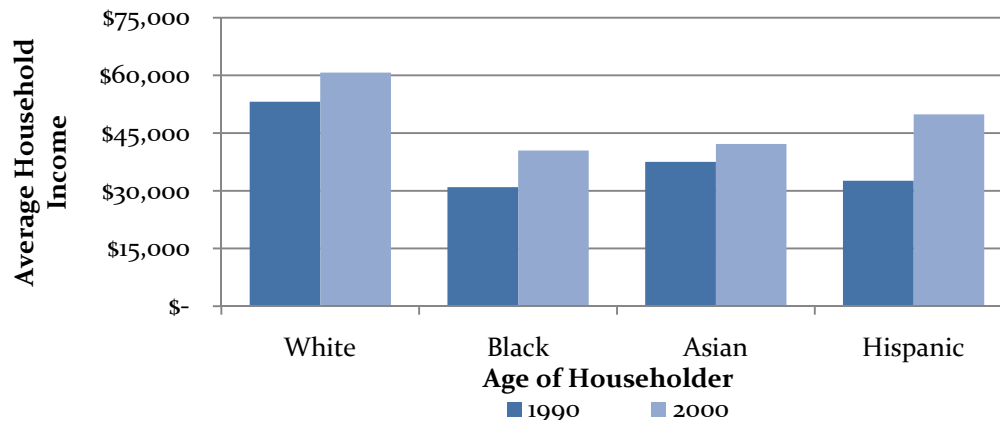


<sup>21</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table P57.

<sup>22</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Tables P153A, P153B, P153D, 153I, H11.

While the average household income of white householders is higher than that of other races, from 1990-2000 black and Hispanic households experienced a proportionately larger increase in income.<sup>23</sup> See Figure 29 below.

FIGURE 29: AVERAGE HOUSEHOLD INCOME, BY RACE OF HOUSEHOLDER, 1990-2000



### 2.8.3 HOME OWNERSHIP

In 2000, a greater share of housing in the study area was occupied by renters than in the rest of Berkeley. 34 percent of households in the study area were owner-occupied, compared to 43 percent of households in the City of Berkeley.<sup>24</sup> The racial makeup of homeowners in the study area dramatically differed from the rest of Berkeley. 40 percent of all homeowners in the study area were black, compared to only 13 percent of all homeowners in Berkeley.<sup>25</sup> While black homeownership remains relatively high in the area, over time it appears to be declining. In 1990, black homeowners accounted for 54 percent of all home owners in the study area.<sup>26</sup>

### 2.8.4 HOUSING AFFORDABILITY

The value of owner-occupied housing units in 2000 is one proxy for housing affordability relative to the City of Berkeley. 65 percent of owner-occupied units in the study area are valued at less than \$300,000, compared to only 44 percent in Berkeley.<sup>27</sup>

<sup>23</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Tables P153A, P153B, P153D, 153I, H11. U.S. Census Bureau. 1990. *1990 Census of Population and Housing*, SF 3, Tables P084, P085, H009.

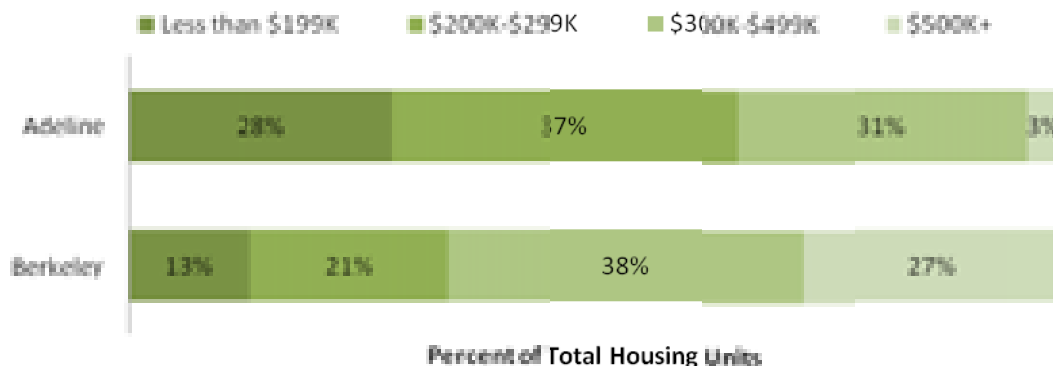
<sup>24</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table H07.

<sup>25</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table H11.

<sup>26</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table H10.

<sup>27</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table H84.

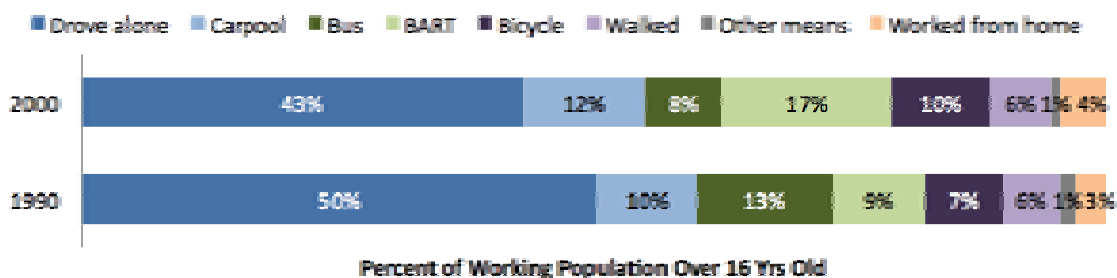
FIGURE 30: VALUE OF OWNER-OCCUPIED HOUSING UNITS, 2000



### 2.8.5 HOUSEHOLD TRANSPORTATION CHARACTERISTICS

Though residents of the Adeline corridor are just as likely to drive or carpool to work as the average Berkeley resident, they are much more likely to commute by transit or bicycle, and less likely to walk. Census data shows that over the past ten years, the number of workers driving and taking the bus to work in the study area has decreased, while the number using BART and biking to work has increased.

FIGURE 31: JOURNEY-TO-WORK MODE SHARE FOR STUDY AREA COMMUTERS, 1990-2000<sup>28</sup>

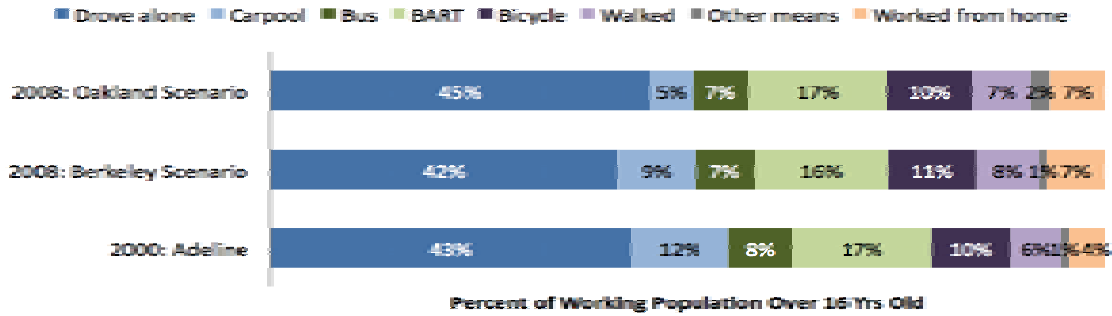


We used city-level data for both Berkeley and Oakland from the 2008 American Community Survey to estimate the change in journey-to-work mode share between 2000 and 2008, but this did not lead us to conclude that travel patterns had changed substantially over the past decade, apart from an increase in commuters working from home and a decrease in carpooling in favor of solo driving.

<sup>28</sup> U.S. Census Bureau. 1990. *1990 Census of Population and Housing*, SF 3, Table H040. 2000 US Census, SF 3, Table H44.



FIGURE 32: JOURNEY-TO-WORK MODE SHARE IN THE STUDY AREA USING BERKELEY AND OAKLAND DATA, 2000-2008<sup>29</sup>



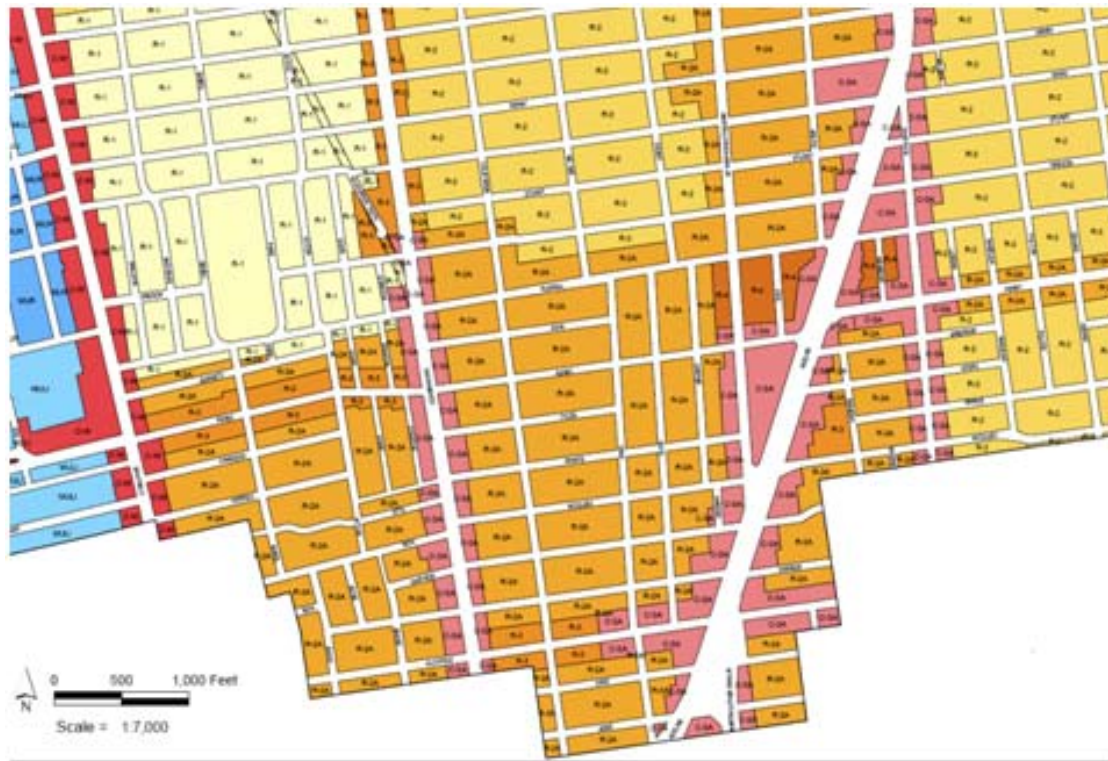
## 2.9 EXISTING LAND USES AND ECONOMIC ACTIVITY

### 2.9.1 CURRENT ZONING

All parcels abutting Adeline Street are zoned C-SA (south area commercial), including the BART station and its associated parking lots. Most parcels to the east and west of Adeline Street are zoned residential except for the parcels along the southern portion of Shattuck Avenue, which are also zoned C-SA. Figure 33 shows the current zoning designations surrounding Adeline.

<sup>29</sup> U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table H44; U.S. Census Bureau. 2008. *2008 American Community Survey*, Table B08301.

FIGURE 33: SOUTH BERKELEY ZONING MAP (C-SA AREAS SHOWN IN PINK; RESIDENTIAL AREAS IN YELLOW AND ORANGE)<sup>30</sup>



The 1990 rezoning of South Berkeley commercial corridors, such as Adeline Street, to C-SA was “primarily aimed” at encouraging local-serving mixed use development.<sup>31</sup> As such, the zoning along Adeline Street allows a wide variety of uses, subject to a zoning certificate, an administrative use permit, or a use permit approved after a public hearing.<sup>32</sup> The permitted uses range from department stores, hotels and smoke shops to pet hospitals, medical practices and nightclubs. Nonetheless, there are a few glaring use prohibitions, including dry cleaners, most auto-related sales and services, and the sale and service of hard liquor along Adeline Street south of Ashby Avenue.<sup>33</sup>

<sup>30</sup> City of Berkeley Municipal Code, Sub-Title 23F, Zoning Maps Plate 2.

<sup>31</sup> City of Berkeley. 1990. *South Berkeley Area Plan*, p. 30.

<sup>32</sup> Note that regardless of the type of use within the C-SA district, a use permit is required for the construction of any new building with a gross floor area of 3,000 square feet or more. Berkeley Municipal Code, section 23E.52.050. In addition, all development in the district is subject to design review. Berkeley Municipal Code, section 23E.08.020.

<sup>33</sup> Berkeley Municipal Code, sections 23.E.52.030.A, 23.E.52.060.D.1.

Throughout the C-SA district, the floor-area ratio is capped at four.<sup>34</sup> Residential developments are required to provide 200 square feet of open space per dwelling unit, while mixed-use developments are required to provide 40 square feet per unit. The usable open space mandates for residential developments are also the same throughout the district, with a minimum requirement of 200 square feet per dwelling unit in purely residential buildings and 40 square feet per unit.<sup>35</sup> Though most zoning requirements are uniform throughout the C-SA district, height limits are more restrictive along Adeline Street, as shown in Table 8 below.

**TABLE 8: HEIGHT AND STORY LIMITS IN C-SA ZONES<sup>36</sup>**

Use Type	Height (ft.) by Location			Stories (number) by Location		
	Adeline, Russell, Shattuck between Parker and Ward	Shattuck between Durant and Parker	All other C-SA areas	Adeline, Russell, Shattuck between Parker and Ward	Shattuck between Durant and Parker	All other C-SA areas
Commercial Only	24	36	24	2	3	2
Mixed Use	36	60	36	3*	5*	3*
Other Uses	24	36	24	2	3	2
Residential Only	36	60	36	3	5	3

\*In mixed use buildings all floors above the second must only be used for residential purposes

In addition to the development standards in the C-SA district, there are also parking requirements. Developers must provide one off-street parking spot per 1,000 gross square feet for residential projects with ten or more units and one spot per unit for projects with fewer than ten units.<sup>37</sup> Commercial developments must have two off-street parking spaces per 1,000 square feet of gross floor area, but the requirement “may be modified or waived” by the zoning board for the commercial portion of mixed-use projects.<sup>38</sup>

A final major mandate for new development is Berkeley’s inclusionary housing requirement for residential projects. Under the inclusionary housing ordinance, both

<sup>34</sup> Berkeley Municipal Code, section 23E.52.070.A

<sup>35</sup> Berkeley Municipal Code, sections 23E.52.070.D-E. Note that balconies can be used to help satisfy the open space requirement, but only if they are at least six feet by six feet. In addition, in no case can more than 50 percent of the open space requirement be satisfied by balconies. And as for the non-balcony open space, at least 40 percent of the total area required as usable open space must be a landscaped area.

Berkeley Municipal Code, section 23.D.04.050.

<sup>36</sup> Berkeley Municipal Code, section 23E.52.070.B

<sup>37</sup> Berkeley Municipal Code, section 23D.40.080.A

<sup>38</sup> Berkeley Municipal Code, sections 23E.52.080.B, E

ownership and rental housing projects must provide at least 20 percent of their units at affordable prices.<sup>39</sup> Furthermore, section 23C.12.040 of the Berkeley Municipal Code appears to require that affordable units always be commingled with market-rate housing instead of placed in separate buildings on the development site. Alternatively, developers may pay in-lieu fees instead of providing affordable units within their projects.<sup>40</sup>

It is important to note, however, that Berkeley's inclusionary unit requirements for rental housing projects may be unconstitutional under the rationale of the Second District Court of Appeal's recent decision in *Palmer/Sixth Street Properties, L.P. v. City of Los Angeles*.<sup>41</sup> There, the court held that the Los Angeles Central City West Specific Plan's inclusionary zoning requirements, which capped the allowable rent amount charged for affordable units, were unconstitutional because they were preempted by the Costa-Hawkins Rental Housing Act.<sup>42</sup> The court also held that the Specific Plan's in-lieu fee provision was invalid because it "inextricably intertwined with the invalid portion of the Plan's affordable housing requirements."<sup>43</sup>

This ruling signals that Berkeley's inclusionary unit requirements for rental housing projects may either be challenged and invalidated in court or no longer enforced by the city. However, the ruling does not by itself invalidate Berkeley's requirements or even bind the First District Court of Appeal (whose jurisdiction encompasses Berkeley). While all the California superior (trial) courts are bound by the decisions of every state court of appeal, the six district courts of appeal are not explicitly required to follow each other's holdings, though they ordinarily do.<sup>44</sup>

### 2.9.2 PRIMARY DESTINATIONS

We conducted a physical survey of the corridor to identify the land uses and business activities currently taking place within the area. Figure 34 shows a map of land uses along Adeline. It is notable that the smaller lot sizes along South Adeline foster a greater diversity of use types. Parcels with strictly residential uses are concentrated along North Adeline and along MLK across from the BART station. There are few vacant parcels along Adeline, though there are several surface parking lots, mostly concentrated along the east side of Adeline.

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<sup>39</sup> Berkeley Municipal Code, sections 23C.12.030, 23C.12.060, 23C.12.070

<sup>40</sup> Berkeley Municipal Code, section 23C.12.035.

<sup>41</sup> *Palmer/Sixth Street Properties, L.P. v. City of Los Angeles*, 175 Cal. App. 4th 1396 (2009).

<sup>42</sup> California Civil Code, sections 1954.50 *et seq.*

<sup>43</sup> *Palmer/Sixth Street Properties, L.P.*, 175 Cal. App. 4th at 1412

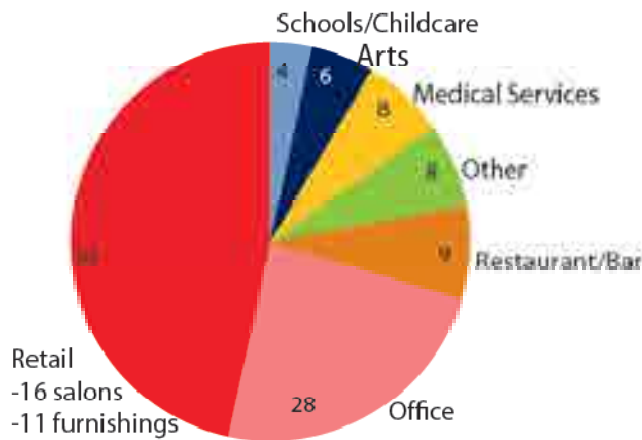
<sup>44</sup> See *Greyhound Lines, Inc. v. County of Santa Clara*, 187 Cal. App. 3d 480, 485 (1986).

FIGURE 34: LAND USES ALONG ADELINE, INCLUDING OPEN SPACE AND VACANT LOTS



Our foot survey identified 121 businesses along Adeline, immediately around the BART station, and on Ashby up to the Ashby/Shattuck intersection. Figure 35 shows the breakdown of these establishments by type.

FIGURE 35: BUSINESS ESTABLISHMENTS ALONG ADELINE (121 TOTAL)



**Retail establishments** – Hair salons and home furnishing stores occupy the majority of storefronts. There are a total of 16 personal care businesses, such as hair or nail salons, in the study area and five of them are clustered around the Alcatraz/Adeline intersection. There are also 11 home furnishing stores in the study area, and with one exception all of them are within a block of the Ashby/Adeline intersection. Other common types of retail are musical instruments, outdoor equipment, and bookstores, with two examples of each in the study area.

**Restaurants** – There are a scarcity of dining options in the study area, especially during evening hours. While Crixia Cakes and Sweet Adeline’s Bakeshop area popular destinations during the morning and afternoon, they close by dinnertime. While there are a handful of limited-service restaurants in the South Adeline section of the Corridor (Chen’s Garden, Ming’s Chinese Kitchen, La Bayou, Dominos Pizza), the study area lacks full service restaurants open during the evening. On a positive note, the owner and pastry chef of Sweet Adeline’s Bakery, Jennifer Millar, is teaming up with Thomas Schnetz, a partner in the popular Temescal restaurant Dona Tomas, to open a pizza place called Addie’s Pizza Pie at the former location of Spud’s Pizza. As of April 24, 2010, the restaurant is expected to open in early summer of 2010.

**Arts district** –Originally spearheaded by the now-defunct Epic Arts Studio and the still-active Shotgun Players at the Ashby Stage, the Ashby Arts District is a partnership between eight non-profit organizations and performance venues all located within the Adeline Corridor study area. Both the Shotgun Players and Black Repertory Theatre are adjacent to the Ashby BART station site, while other members, such as the Starry Plough and the Nomad Café, are located along Shattuck Ave.



**Religious spaces** – Separate from our foot survey of uses along the Adeline Corridor, we also identified the churches and other houses of worship located throughout the study area. While there was only one religious space east of Adeline, we identified five religious spaces west of Adeline. These institutions play an important role in shaping the transportation environment within the study area. For example, the Thai Buddhist Temple, located on Russell between Adeline and MLK, hosts a popular brunch every Sunday morning that attracts many pedestrians and bicyclists, and churches located around the Alcatraz/Ashby intersection feature some of the largest parking lots identified in the Southern portion of the study area. The Progressive Baptist Church at Alcatraz and King has a parking lot with capacity for 20 vehicles while the Ephesian Church of God in Christ located across the street has a parking lot with capacity for 30 vehicles.

**Berkeley Flea Market** – For over three decades, the Berkeley Flea Market has occupied a section of the west Ashby BART Station parking lot on weekends, when demand for BART parking is lower. The market currently operates Saturdays and Sundays from 7:00am to 7:00pm, weather permitting, in the north section of the parking lot. The flea market has become a key community institution that draws both local and regional visitors, and organizers feel a sense of ownership of the BART parking lot.

To better understand the economic and social role the market plays in the surrounding community, we conducted an informal survey of the flea market on Saturday afternoon, February 27, 2010. We counted 425 people in and around the 84 operating booths, suggesting a daily attendance between one and two thousand.

FIGURE 36: THE BERKELEY FLEA MARKET (PHOTO: BRIAN GOULD)



We observed a variety of different types of limited-run, used, and mass-produced goods (and some services). Many booths sold various types of ethnic clothes, scarves, jewelry, art, and masks, while others sold more conventional clothing, from shirts and pants to underwear and socks. Other booths sold an assortment of used media products, including music, movies and electronics. There were also a number of food trucks scattered around the site. The products are grouped by category in Table 9. We found that nearly half of flea market booths consisted of a tent and vehicle combination; however, most sellers were not actively using their vehicle, rather simply storing it in the parking lot.

TABLE 9: ITEMS AVAILABLE AT THE BERKELEY FLEA MARKET, FEBRUARY 27, 2010

Item	Number of Vendors Selling Item*
Clothing	28
Jewelry	13
Food	10
Media	7
Used	7

<b>Art</b>	5
<b>Soaps/Scents</b>	5
<b>Electronics</b>	5
<b>Other</b>	11

\*Note: If vendor sold more than 1 item, each item is included in the above table

In sum, the flea market is an informal, yet institutionalized, market for a variety of used and low-cost goods that may be difficult to otherwise find in the area. It is also a significant community event and gathering place that plays a key social role in addition to its economic role.

### 2.9.3 BUILDING QUALITY AND MAINTENANCE

The Adeline corridor is home to a number of buildings with historic character, many of which are on the historic registry. While some buildings are well-maintained, other buildings suffer from deferred maintenance. If anything, the most notable characteristic of building quality in the corridor is its heterogeneity. Neither high quality nor historic buildings are concentrated in any one section of the corridor, but each section has a diverse mix of old, new, dilapidated, and recently refurbished buildings. Figure 37 shows the condition of buildings along the corridor, as well as the location of historic buildings. The only building we saw that appeared so dilapidated as to be uninhabitable was actually on Shattuck, just north of where Adeline ends. As shown in Figure 34, As shown in Figure 34, there are few entirely vacant lots and buildings overall. There are, however, several partially vacant buildings, further contributing to Adeline’s heterogeneity.

FIGURE 37: BUILDING CONDITION AND HISTORIC STATUS



There are also a number of examples of public art throughout the Corridor, both in highly trafficked areas, like the “HERE/THERE” sculpture at the Adeline/MLK intersection (Figure 38) and murals in more out of the way places (Figure 39). These projects beautify the corridor and help change perceptions about an area that in the past has been perceived as run-down and dangerous.

FIGURE 38: "HERETHERE" SCULPTURE AT THE ADELINE/MLK INTERSECTION



FIGURE 39: MURAL ON THE CORNER OF ALCATRAZ AND ELLIS (PHOTO: LAURA WILES)



#### 2.9.4 ADJACENT COMMERCIAL DISTRICTS

**Shattuck Avenue** –Shattuck Avenue contains a scattering of cafes and homes that have been converted into office space. Between Prince and Woolsey there is a cluster of non-profit offices, on the west side of the street while on the east side there are two performance spaces, the Starry Plough Pub and La Pena Cultural Center. Shattuck has a much narrower roadway than Adeline with only two lanes of traffic, creating a more pedestrian-scale environment. While the area features a diverse mix of uses, the lack of available or convertible space may limit the ability of the existing clusters to expand.

**Sacramento Street** – Sacramento contains several popular destinations, such as a bicycle shop and a biofuel gas station, as well as several corner stores and a few restaurants. However, Sacramento is over a half-mile from Ashby BART Station, and has a less walkable environment than Adeline, with fast traffic, a wide right-of-way, and little to no landscaping or street furniture.

Our review of the adjacent commercial districts makes a strong case for why Adeline Street is ripe for investment and revitalization. It contains a larger number of potential development sites than Shattuck Avenue, particularly in highly-trafficked areas surrounding Ashby BART Station and the Adeline/Alcatraz intersection. Unlike Sacramento, Adeline offers strong transit links and good bicycle access, increasing the likelihood that new development will generate non-motorized trips instead of vehicle traffic.



### 3. ISSUES AND OPPORTUNITIES

As the introduction to the study area has highlighted, there are a range of considerations that had to factor into our proposal. This section highlights the primary issues and opportunities we identified for this corridor. We used these to guide our vision and goals for the study area, and to guide our decisions about what designs to put forward.

#### 3. 1. ISSUES AND CONSIDERATIONS

The Adeline corridor presents a number of challenges and constraints that needed to be addressed as part of our proposal.

##### 3.1.1. CONNECTIVITY

*High traffic volumes, high vehicle speeds, and a wide right-of-way make Adeline a barrier to east-west crossings, especially for pedestrians and cyclists.* Adeline's existing design inhibits movement across the corridor, both for people passing through the area and for those in the area that wish to access destinations on both sides of the corridor

*The existing layout of the Ashby BART station creates a gap in the urban fabric, inhibiting pedestrian movement along Adeline.* The lack of street-level structures and the below-grade parking create a visual void along the Ashby BART station. This gap does not encourage pedestrians to move between the northern and southern sections of Adeline, because it is both uncomfortable to walk through, and because it can be hard for visitors on one side of the station to know that there are activities on the other side. When opened, the Ed Roberts campus should help to provide activity and visual interest at the street level, but the west parking lot at the Ashby BART station will remain a void.

*Gaps in the bicycle network and Adeline crossings create potential conflict points between drivers and cyclists and make it difficult for cyclist to access destinations along the corridor.* The bicycle network is currently incomplete through the corridor, making it difficult for cyclists, particularly infrequent riders or those unfamiliar with the area, to navigate. Two major east-west bicycle routes (Russell and Woolsey Streets) traverse the study area, but it is difficult for cyclists to cross Adeline, particularly at Woolsey where it is interrupted by the Ashby BART Station area.

##### 3.1.2. SAFETY

*Pedestrian and cyclist safety is a concern throughout the Adeline corridor due to high vehicle speeds, poor intersection design, and insufficient traffic controls.* The existing corridor design raises many safety concerns for pedestrian and bicyclists. Vehicle speeds are typically well above the posted 25 miles per hour speed limit, and this poses dangers for pedestrians and cyclists, particularly when they attempt to cross Adeline. Safety

concerns are exacerbated by poor intersection designs that have long crossing distances and limited accommodation for bicycles. Finally, signals along the corridor are widely spaced and so do little to slow vehicles, particularly when traffic is light, and this leaves pedestrians and bicycles with fewer safe crossing points.

*Unsafe intersections along the corridor discourage pedestrians and BART riders from visiting businesses along Adeline.* The BART station is separated from the northern and southern sections of the corridor by two of the busiest, biggest intersections along the corridor: Adeline and Ashby Avenue, and Adeline and Martin Luther King Jr Way. Both of these intersections are characterized by very long crossing distances and lengthy signal cycles that can leave pedestrians waiting for long periods to cross the street. The safety concerns at these intersections make them unfriendly to pedestrians, and discourage people from crossing to the other sections of Adeline, effectively cutting businesses off from the BART station, the corridor's largest source of visitors.

### 3.1.3. ACTIVITY

*Public and sidewalk spaces along Adeline are underutilized, contributing to a lack of "eyes on the street."* With some exceptions on the weekend and around the commute hours, there are generally few people moving around the corridor. As a result, the various public spaces along the corridor – like the sidewalks, the little plazas, or the median in the northern section – feel empty and uncomfortable. This lack of people can also cause the corridor to feel unsafe, because the dearth of pedestrians suggests that there is little reason to be there and that there will be little help if something happens. This can be particularly problematic at night, despite the good lighting throughout the corridor. Safety is not a serious concern in this area, but for visitors, the presence of pedestrians is a better indicator of safety than crime statistics.

*An adjacent shopping district along Shattuck draws pedestrian traffic away from Adeline.* Adeline Street and Shattuck Avenue both have retail and service businesses and are close enough that they can be viewed as a single district. This means, however, that our proposals for commercial uses along Adeline must account for the retail uses already along Shattuck, and for the relative attractiveness and availability of space along each street for new businesses.

*Some neighborhood residents and flea market patrons fear gentrification and displacement due to redevelopment.* Flea market organizers opposed previous development plans for redeveloping the Ashby BART parking lot, citing a lack of consideration of the flea market in those plans. Project supporters proposed relocating the flea market to Adeline Street, which was to be closed to motor vehicles and opened to shoppers, but organizers were

adamant that this would not provide the stability necessary for ongoing operations given the lack of a permanent home and potential conflicts with its new neighbors. Organizers argue, “there is no alternative location that provides the same benefits, security, and central location in the community as the one the Flea Market currently occupies. Moving the Flea Market means killing it. Any plan for development at the Ashby BART station must include leaving the Flea Market where it is.”<sup>45</sup>

#### 3.1.4. OTHER CONCERNS

*BART’s parking replacement policy drives up the cost of station area development.* BART requires that any development on its land not reduce the amount of parking available at its stations. Development at the Ashby BART station must therefore find a way to provide the same number of spaces currently in the BART parking lots, or make a case for reducing the amount of parking available. Either way, structured parking of some form will likely be required to accommodate BART parking and parking for any new uses. Structured parking is, however, expensive to provide and difficult to finance, especially where parking is provided for free or a nominal fee.

*The study area contains several antique stores, which draw vehicles and require good automobile access.* The antique stores do not sell products that are easily transported on foot, bicycle, or transit. Our efforts to make the corridor more pedestrian- and bicycle-friendly must take into account the need to maintain automobile and truck access to these businesses.

### 3.2. OPPORTUNITIES

Adeline Street presents many opportunities for future improvement of the corridor. Our proposal seeks to build on the assets and existing potential in the area.

#### 3.2.1. CONNECTIVITY

*Ashby BART station attracts a high share of pedestrians and cyclists, indicating a strong demand for improvements to pedestrian and bicycle network infrastructure.* Nearly two thirds of BART riders boarding at Ashby station are arriving on foot or on bicycle, and many of them have to cross Adeline or the difficult intersections with Ashby Avenue and Martin Luther King Jr Way. If the corridor were more accommodating to pedestrians and cyclists, the use of those modes in this corridor could potentially be further increased. More people on the sidewalks would likely have positive repercussions: it would

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<sup>45</sup> Community Services United. “Berkeley Flea Market.” <http://www.berkeleyfleamarket.com/> (accessed April 25, 2010).

contribute to a sense of activity and safety along the corridor, drawing more pedestrians, who may patronize local businesses.

*There is ample space within Adeline's wide right-of-way to better accommodate pedestrians, cyclists, transit, and more vibrant public spaces without significant impacts to automobile level of service.* The existing road design is inefficient and allocates more space to automobiles than is actually needed for cars to travel safely and smoothly through the corridor. The freeway-sized lanes could be reconfigured to better match the local-serving characteristics of this road, and in the process provide more space to support other modes. Encouraging people to walk, cycle, or take transit can also help the corridor to accommodate more development while minimizing the traffic impacts of the increased activity.

*The study area is well served by bicycle facilities.* While Adeline does currently serve as a barrier to cyclists traveling east-west, Russell, Milvia, and Woolsey Streets, as well as the bicycle lanes on Adeline, ensure good access to the corridor and may contribute to higher-than-average bicycle mode shares.

*Wide sidewalks along much of Adeline have the capacity to accommodate a large amount of pedestrians.* Adeline already has the pedestrian infrastructure to support more intensive pedestrian activity. This allows us to encourage more pedestrian uses in our proposal without having to make substantial investments in the sidewalks, though we will need to improve intersections.

### 3.2.2. SAFETY

*Reducing long traffic signal cycles could reduce vehicle speeds while making crossings easier.* Traffic signals in the corridor are currently timed to move large volumes of cars through the intersections before switching directions and allowing similarly large volumes of cross traffic to move through. This often results in automobiles building up speed. Shortening signal cycles would be a low-cost way to reduce vehicle speeds provided that signals could be timed to allow pedestrians ample time to cross at intersections.

*Adeline's right-of-way is suitable for introducing road diets and other traffic calming measures to promote pedestrian and cyclist safety.* Adeline has space to not only accommodate multiple modes in its right-of-way, but to do so in ways that protect pedestrians and cyclists. This includes implementing 'road diets', which reduce the number of lanes in order to encourage motorists to travel more slowly, and other traffic calming measures like narrower lanes and raised crosswalks.

### 3.2.3. ACTIVITY

*Destinations such as Berkeley Bowl, Ashby BART, the flea market, and soon-to-be completed Ed Roberts Campus draw large numbers of non-motorized trips to Adeline. Our proposal can build on the existing pedestrian- and bicycle-attracting activities in the study area to further encourage non-motorized trips to Adeline. If we can provide safe, attractive connections between the new and existing uses, the new businesses will have access to a customer base that does not generate additional automobile trips.*

*The area is part of the Ashby/Adeline Arts District and contains theaters and numerous public art installations along it. The various arts uses and public art installations in the corridor can help define Adeline's identity as a distinct district in Berkeley. Theater uses can also help to bring activity to the corridor after commute hours when the corridor tends to be less well used.*

*The large amount of space devoted to surface parking at Ashby BART provides a good site for development of alternative land uses. Located at the center of the corridor, the Ashby BART Station parking lot is a well-situated piece of underused land. Redeveloping this site to accommodate new land uses and redesigning existing parking would help to fill in the gap in the urban fabric between the northern and southern sections of Adeline and support more active uses of the corridor.*

### 3.2.4. OTHER CONCERNS

*Historic buildings give the Lorin District a unique identity, and similar streetscape design of the northern and southern segments of the corridor could be connected to create a common sense of place along the entire corridor. The historic Lorin District in the southern portion of the Adeline corridor is currently recognized as its own area, but historic structures and streetscape design all along the corridor create the potential to more directly link the northern and southern segments. Building off of Adeline's existing assets to draw the corridor together would give it a stronger sense of place.*

*Parking at and adjacent to the Ashby BART station can be priced to manage demand and generate funds for neighborhood improvements. Parking at and around the BART station is currently very cheap (or free) and this encourages BART patrons to drive, even when other modes may be equally viable. Pricing parking at market rates can help to encourage the use of other modes, ensure that parking is available for those that need to drive, and generate revenue that can be used for improvements in the station area. Those improvements could focus on the pedestrian and cyclist environment, helping to further encourage walking and cycling and improving the livability of the neighborhood.*

## 4. GOALS AND OBJECTIVES

### 4.1. VISION

Adeline Street will be a balanced, multimodal link in the transportation network and a safe, attractive district for residents and visitors, with new housing well served by transit.

### 4.2. GOALS AND OBJECTIVES

#### **Goal 1: Enhance corridor connectivity for all users**

- Objective 1.1: Improve pedestrian and bicycle network continuity and infrastructure
- Objective 1.2: Improve movement through and across the corridor
- Objective 1.3: Facilitate intermodal connections that will enhance access to the corridor's destinations

#### **Goal 2: Create a safer pedestrian and cyclist environment**

- Objective 2.1: Improve intersection designs, traffic controls, and shorten crossings.
- Objective 2.2: Reduce vehicle speeds along the corridor
- Objective 2.3: Reduce conflicts between pedestrians, cyclists, and motorists

#### **Goal 3: Encourage designs and uses in the Adeline corridor that support active, walkable neighborhoods**

- Objective 3.1: Cultivate compact residential development at the Ashby BART station.
- Objective 3.2: Create public spaces that are inviting and well-used.
- Objective 3.3: Encourage the development of pedestrian-friendly commercial uses along the corridor, with concentrations of retail uses around the Adeline/Alcatraz and Adeline/Ashby intersections.

### 4.3 LINKS TO EXISTING POLICIES

Several plans, policies, and documents that the City of Berkeley and other agencies have adopted over the years support the framework guiding our design proposal.

Table 10 lists the documents we reviewed and describes their relevance to the goals and objectives of our project.

**TABLE 10: LOCAL GOVERNMENT POLICIES SUPPORTING THE GOALS OF OUR PROPOSAL**

<b>Document</b>	<b>Agency</b>	<b>Shared goals</b>
Berkeley General Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Improve pedestrian and cyclist safety</li> <li>• Improve pedestrian and cyclist accessibility</li> <li>• Increase transit-oriented affordable housing</li> <li>• Increase pedestrian-scale mixed-use development and public spaces</li> </ul>
Berkeley Bicycle Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Improve cyclist accessibility and safety</li> </ul>
Draft Berkeley Pedestrian Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Improve pedestrian accessibility and safety</li> </ul>
South Berkeley Area Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Increase pedestrian and cyclist access to Ashby BART</li> <li>• Lower vehicle speeds and redesign intersections</li> </ul>
Climate Action Plan	City of Berkeley	<ul style="list-style-type: none"> <li>• Increase non-motorized travel</li> <li>• Increase compact, mixed-use development on transit corridors.</li> </ul>
South and West Berkeley Community Based Transportation Plan	Alameda County Congestion Management Agency	<ul style="list-style-type: none"> <li>• Improve intersections for cyclist and pedestrian safety</li> <li>• Improve connections of bicycle network.</li> </ul>

The following sections highlight specific ways in which these documents relate to our vision and goals.

#### 4.3.1 VISION

The Berkeley General Plan’s first goal, “preserve Berkeley’s unique character and quality of life,” notes that the City contains “a number of lively pedestrian-oriented commercial areas that developed along former streetcar routes”<sup>46</sup> that have avoided conversion into auto-oriented sprawl development. Our proposal seeks to capitalize on this aspect of the Adeline corridor’s history to return the corridor to its roots as a vibrant residential and commercial area that provides equal access across all modes. Both this General Plan goal and the next (“ensure that Berkeley has an adequate supply of decent housing, living-wage jobs, and businesses providing basic goods and services”) call for development of affordable housing and local-serving businesses on mixed-use corridors that are well

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<sup>46</sup> All references to the General Plan are taken from the City of Berkeley Website: “City of Berkeley General Plan: A Guide for Public Decision-Making.” <http://www.ci.berkeley.ca.us/contentdisplay.aspx?id=488> (accessed April 20, 2010).



served by transit and provide safe access for pedestrians and cyclists. These goals support our project’s vision of Adeline as a safe, attractive, and vibrant multimodal corridor.

#### 4.3.2 GOAL 1: ENHANCE CORRIDOR CONNECTIVITY FOR ALL USERS

Berkeley’s Bicycle Plan (which has since been integrated into the General Plan) and Pedestrian Master Plan demonstrate the City’s commitment to improving non-motorized access to residential and commercial opportunities along City streets. This is reflected in the following goals from these plans:<sup>47</sup>

Provide universally safe and equal access...[including] policies, actions and implementation measures related to American Disabilities Association (ADA), safe crossings, access to destinations, and reducing conflicts and collisions.<sup>48</sup>

Integrate the consideration of bicycle travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve bicycle facilities and access within and connecting to Berkeley.<sup>49</sup>

Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists.<sup>50</sup>

In addition, support for increasing multimodal access by Berkeley residents to retail and employment opportunities are found in the following policies of the General Plan’s Transportation Element:

Improve access by increasing proximity of residents to services, goods, and employment centers.... Locate essential commercial and other services in transit-oriented locations to reduce the need for cars and enable people living near transit and services to reduce auto trips. Encourage higher density housing and commercial infill development that is consistent with General Plan and zoning standards in areas adjacent to existing public transportation services. (T-16)

[T]he City shall consider how a plan or project affects all modes of transportation, including transit riders, bicyclists, pedestrians, and motorists, to determine the transportation impacts of a plan or project. Significant beneficial pedestrian, bicycle, or transit impacts, or significant beneficial impacts on air quality, noise, visual quality, or safety in residential areas, may offset or mitigate a significant

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<sup>48</sup> City of Berkeley. 2010. *Berkeley Pedestrian Master Plan: Final Draft*, p. 2-5.

<sup>49</sup> City of Berkeley. 1998. *Berkeley Bicycle Plan*, p. 2-1.

<sup>50</sup> City of Berkeley. 1998. *Berkeley Bicycle Plan*, p. 2-2.

adverse impact on vehicle Level of Service (LOS) to a level of insignificance. The number of transit riders, pedestrians, and bicyclists potentially affected will be considered when evaluating a degradation of LOS for motorists. (T-18)

In particular, several City of Berkeley documents note that the Ashby BART station is difficult to access and creates a barrier to corridor connectivity. According to the South Berkeley Area Plan, “[t]he BART station remains an island, isolated from the commercial and residential life of the community.”<sup>51</sup> The Bicycle Plan says that the station is “bordered by high-traffic streets, and has dead-end and non-continuous streets nearby that make it difficult for bicyclists to easily get to and from the station,” and suggests that “[o]ptions should be studied for improving access.”<sup>52</sup> The South and West Berkeley Community Based Transportation Plan (CBTP) also notes that wide, high-volume arterials such as Adeline Street create gaps in Berkeley’s otherwise well-connected bicycle network.<sup>53</sup> Our proposal addresses these issues by integrating the BART station with the surrounding area, converting the station from a gap in the neighborhood fabric to a node that knits the surrounding area together with improved access for cyclists and pedestrians alike. It will also address the connectivity issues that Adeline as an arterial poses to the local bicycle network.

#### 4.3.3 GOAL 2: CREATE A SAFER PEDESTRIAN AND CYCLIST ENVIRONMENT

Berkeley’s General Plan expresses concern over pedestrian and cyclist safety on Berkeley’s streets in several locations. Its first goal notes that “Berkeley has too many accidents involving pedestrians and bicyclists.” More specific to our proposal, the South Berkeley Area Plan mentions that Adeline’s width and high vehicle speeds discourage pedestrian use and notes that many intersections in South Berkeley pose safety problems.<sup>54</sup> This is certainly true of many of the intersections in our study area. The South and West Berkeley CBTP, which involved extensive outreach to local stakeholders including those in the study area, identified concerns about pedestrian and cyclist safety along area arterials, including Adeline. In particular, stakeholders mentioned high vehicle speeds, the length of unsignalized crossings, and the visibility of unsignalized crossings to motorists as contributing to unsafe conditions for pedestrians and cyclists. The CBTP

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<sup>51</sup> City of Berkeley (1990). *South Berkeley Area Plan Summary*: 49.

<sup>52</sup> City of Berkeley (1998). *Berkeley Bicycle Plan*: 4-14.

<sup>53</sup> Alameda County Congestion Management Agency (1997). *South and West Berkeley Community Based Transportation Plan*: IV-19

<sup>54</sup> City of Berkeley. 1990. *South Berkeley Area Plan Summary*, p. 49.

specifically cites Adeline Street as requiring improvement to address pedestrian safety concerns.<sup>55</sup>

Our project’s goal of improving pedestrian and cyclist safety reflects the following policies from the General Plan’s Transportation Element:

Provide safe and convenient pedestrian crossings throughout the city (T-52).

Reduce pedestrian and bicycle collisions, injuries, and fatalities (T-53).

Among other solutions, policy T-53 proposes changes to unsafe roadways and intersections. Likewise, the City of Berkeley Pedestrian Charter, adopted as a City ordinance in 2004, calls for “provid[ing] and maintain[ing] infrastructure that gives pedestrians safe and convenient passage while walking along and crossing streets.”<sup>56</sup> Our proposal contains several design treatments, both at intersections and along the length of Adeline, that are focused on implementing these policies and addressing local concerns regarding pedestrian and cyclist safety on Adeline.

#### 4.3.4. GOAL 3: ENCOURAGE DESIGNS AND USES IN THE ADELINE CORRIDOR THAT SUPPORT ACTIVE, WALKABLE NEIGHBORHOODS

Our proposal expands the supply of housing in the Adeline corridor while incorporating design changes that promote walking as a means to access local destinations and attract people to underused public spaces. The City’s General Plan Land Use and Housing Elements provide ample support for these objectives. In particular, our project takes support from the following policies:

Increase the number of housing units affordable to low- and moderate-income Berkeley residents (H-1).

Encourage construction of new medium and high density housing on major transit corridors and in the Downtown consistent with zoning and compatible with the scale and character of these areas (H-16).

Encourage affordable housing or mixed-use development including housing on the air rights above the Ashby BART station and parking lot west of Adeline Street (LU-32).

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<sup>55</sup> Alameda County Congestion Management Agency. 1997. *South and West Berkeley Community Based Transportation Plan*: V-12 – V-16.

<sup>56</sup> City of Berkeley. 2010. *Berkeley Pedestrian Master Plan: Final Draft*, p. 3-1.

Ensure that neighborhoods are pedestrian- and bicycle-friendly with well-maintained streets, street trees, sidewalks, and pathways (LU-11).

Maintain and improve Avenue Commercial<sup>57</sup> areas...as pedestrian-friendly, visually attractive areas of pedestrian scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs (LU-27).

By making Adeline more pedestrian-friendly, we encourage travelers to walk instead of drive in a manner consistent both with longstanding policies and the City's 2009 Climate Action Plan. In particular, the Climate Action Plan calls for increasing residential and commercial density along transit corridors such as Adeline, enhancing public open space, and improving pedestrian and bicycle infrastructure with the goal of reducing automobile use.<sup>58</sup> By making Adeline more walkable and introducing new compact, mixed-use development along the corridor, we are creating the opportunity for residents to travel by more sustainable modes—not only for short-distance trips to neighborhood destinations, but also for long-distance trips made via a BART station that is more accessible by foot and bike. These changes will improve local air quality and aid the City in its effort to reduce Berkeley's carbon footprint.

Our vision, goals, and objectives all represent a continuation and extension of local policies and priorities—some of them recent, and some longstanding. In accordance with these policies, our proposal will improve pedestrian and cyclist safety, accessibility, and comfort, enhance access to transit, add needed housing to the area, and reduce residents' need to drive.

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<sup>57</sup> Adeline Street is considered an "Avenue Commercial" area in Berkeley municipal documents.

<sup>58</sup> City of Berkeley. 2009. *Berkeley Climate Action Plan*, Chapter 3.

## 5. DESIGN PROPOSAL FOR THE ADELINE CORRIDOR

The foldout on the following page displays our plan for Adeline. Section 5.1 gives an overview of the entire plan and discusses issues that apply along the length of the corridor, while Sections 5.2 through 5.5 contain in-depth information and maps of our proposals for the four subareas that our proposal addresses: North Adeline, Adeline in the Ashby BART Station Area, South Adeline, and the Station Area Development. Each section contains subsections with further discussion and analysis of each aspect of the proposal.

### 5.1 OVERVIEW

Based on the issues and opportunities that we identified for the study area, we created a design proposal for the Adeline corridor that:

**Reduces the number and width of vehicle lanes.** Many sections of Adeline have excess vehicle capacity, with lanes wider than those recommended by CalTrans for 55 mile per hour highway lanes, resulting in high vehicle speeds and wide crossings for pedestrians and cyclists. Our proposed design contains no more than two travel lanes in each direction, with a maximum lane width of 11 feet in order to accomplish the following goals and objectives:

- Goal 1: Enhance corridor connectivity for all users
  - Objective 1.2: Improve movement through and across the corridor.
- Goal 2: Create a safer pedestrian and cyclist environment
  - Objective 2.1: Improve intersection designs, traffic controls, and shorten crossings.
  - Objective 2.2: Reduce vehicle speeds along the corridor.

**Reconfigures key intersections at Adeline/Ashby, Adeline/MLK/Woolsey, and Adeline/MLK Stanford.** These intersections currently feature odd angles and vehicle slip lanes, creating long crossings and unpredictable conditions for bicyclists and pedestrians and long signal times that delay drivers. Our proposed design creates more rectilinear intersections and eliminates slip lines in order to accomplish the following objectives:

- Goal 1: Enhance corridor connectivity for all users
  - Objective 1.2: Improve movement through and across the corridor
- Goal 2: Create a safer pedestrian and cyclist environment
  - Objective 2.1: Improve intersection designs, traffic controls, and shorten crossings.

- Objective 2.3: Reduce conflicts between pedestrians, cyclists, and motorists

**Consolidates underused right-of-way into public spaces and development parcels that are connected to destinations and pedestrian areas.** Many of Adeline’s existing public spaces are separated from sidewalks and storefronts by busy roads that are hostile to pedestrians. We use the space reclaimed through reducing and narrowing travel lanes to connect existing public spaces with pedestrian environments, and to create new public spaces and development opportunities at key corners adjacent to important destinations, including a large parcel at the southwest corner of the Adeline/MLK intersection. This accomplishes the following goals and objectives:

- Goal 3: Encourage designs and uses in the Adeline corridor that support active, walkable neighborhoods
  - Objective 3.2: Create public spaces that are inviting and well used.
  - Objective 3.3: Encourage the development of pedestrian-friendly commercial uses along the corridor, with concentrations of retail uses around the Adeline/Alcatraz and Adeline/Ashby intersections.

**Completes the bicycle network in the corridor.** There are key gaps in Adeline’s bike lanes at the Ashby/Adeline intersection and south of the MLK/Adeline intersection, as well as difficult crossings for existing bicycles at the Russell and Woolsey bike routes. Filling these gaps accomplishes the following goals and objectives:

- Goal 1: Enhance corridor connectivity for all users
  - Objective 1.1: Improve pedestrian and bicycle network continuity and infrastructure
  - Objective 1.2: Improve movement through and across the corridor
- Goal 2: Create a safer pedestrian and cyclist environment
  - Objective 2.3: Reduce conflicts between pedestrians, cyclists, and motorists

**Creates new development opportunities at the Ashby BART Station.** The Adeline corridor’s key destination is currently occupied by a large surface parking lot, stymieing development at the area’s largest site and creating a gap in the urban fabric that separates commercial districts to the north and south of the station. We propose covering the parking lot and building a predominantly residential mixed-use development on top of it in order to accomplish the following goals and objectives:

- Goal 3: Encourage designs and uses in the Adeline corridor that support active, walkable neighborhoods

- Objective 3.1: Cultivate compact residential development at the Ashby BART station.

**Reorients the Ashby BART Station entrance to face Adeline and the Ed Roberts**

**Campus.** The station currently opens onto the parking lot, favoring those who drive to the station and hiding the corridor’s most important destination. We propose housing the station entrance in a hemispherical plaza that mirrors the form of the Ed Roberts Campus and is flanked by bus stops and kiss-and-ride bays in order to accomplish the following objectives:

- Goal 1: Enhance corridor connectivity for all users
  - Objective 1.3: Facilitate intermodal connections that will enhance access to the corridor’s destinations
- Goal 3: Encourage designs and uses in the Adeline corridor that support active, walkable neighborhoods
  - Objective 3.2: Create public spaces that are inviting and well used.

**Maintains adequate vehicle level of service and parking supply.** The issues that we identified are not due to lack of space, but to inefficient organization of existing space. We can therefore convert Adeline to a multi-modal corridor without negatively impacting drivers who currently use the street to access important destinations throughout the Bay Area. This accomplishes the following goals and objectives:

- Goal 1: Enhance corridor connectivity for all users
  - Objective 1.2: Improve movement through and across the corridor

Table 11 compares our proposed design to the existing layout of Adeline using selected performance measures. As the table illustrates, our design improves bicycle and pedestrian safety by reducing crossing distances and narrowing vehicle lanes in order to slow traffic; enhances bicycle access by completing fragmented bicycle lanes; and creates vitality by reducing the overall proportion of the right-of-way devoted to vehicles while increasing the amount of public space—all without substantially reducing vehicle travel times through the corridor.





0 200 400 800 Feet

TABLE 11: PERFORMANCE MEASURES, EXISTING AND PROPOSED DESIGNS

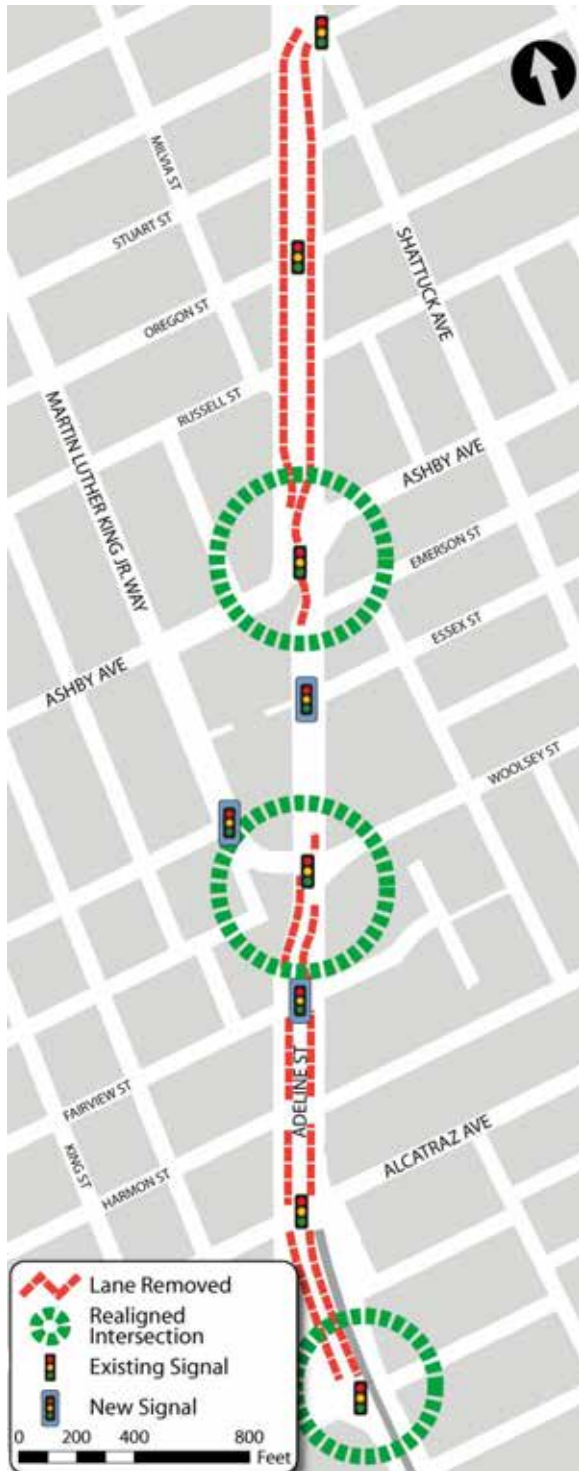
	Existing	Proposed
Maximum width of vehicle lanes (feet)	14	11
Number of on-street parking spaces	327	332
Percent of right-of-way devoted to cars	59%	45%
New public space created (square feet)	-	227,660
New developable space created (square feet)	-	104,570
Bicycle lane completion along Adeline (percent)	62%	100%
Crossing distances at key intersections on Adeline (feet):		
Adeline/Oregon	88	30
Adeline/Ashby (northern crosswalk)	117	70
Adeline/Ashby (southern crosswalk)	126	70
Ed Roberts Campus crosswalk	105	70
Adeline/MLK	130	70
62 <sup>nd</sup> /Adeline (northern crosswalk)	85	75
62 <sup>nd</sup> /Adeline (southern crosswalk)	90	75
Alcatraz/Adeline	120	80

Though it provides a useful summary, this quantitative analysis does not capture some of the most important benefits of our proposal. The next three subsections further examine three aspects of our design that apply to the entire Adeline corridor: removing and narrowing vehicle lanes, creating new public spaces, and maintaining adequate vehicle facilities. Sections 5.2 through 5.5 provide quantitative information about our proposals for each subarea of Adeline and in-depth discussions of specific issues that apply to each subarea.

#### 5.1.1 REDUCING SPEEDS AND INCREASING SAFETY

High vehicle speeds are the single largest threat to pedestrian safety along Adeline, and the large amount of space devoted to vehicles makes for long crossings at intersections. In order to create safer conditions along Adeline, we propose to remove and narrow vehicle lanes, add new traffic signals, and reconfigure intersections. Figure 40 summarizes these changes.

FIGURE 40: LANES REMOVED, ADDED TRAFFIC SIGNALS, AND RECONFIGURED INTERSECTIONS



Though the posted speed limit is 25 miles per hour, we measured an 85<sup>th</sup> percentile vehicle speed of 29 miles per hour along the street, and observed several vehicles per hour traveling at 40 miles per hour. A pedestrian hit by a vehicle has a five percent chance of

dying if the vehicle is traveling at 20 miles per hour. If the vehicle is traveling at 30 miles per hour, the pedestrians' odds of dying increase to 45 percent, and at 40 miles per hour the odds of dying jump to 85 percent.<sup>59</sup> Therefore, even a small reduction in vehicle speeds along Adeline carries huge benefits for pedestrian safety.

Reducing speeds along the corridor requires design interventions. Lowering the posted speed limit will likely make little difference given motorists' disregard for the existing speed limit, speed tables and speed bumps are unpopular with the public, and enforcing speed limits along Adeline is expensive and does not have lasting effects.<sup>60</sup> The road is simply designed for speeding, with excess capacity and lanes that are 14 feet wide, which is over two feet wider than the 11.8-foot lanes that CalTrans recommends for new highways with 55 mile per hour speed limits.<sup>61</sup> Removing and narrowing lanes is the most effective and feasible way to reduce vehicle speeds. Studies conducted on arterial roads have concluded that travel speeds drop by between one and three miles per hour for each foot that is subtracted from a lane,<sup>62</sup> and that subtracting a lane reduces vehicle speeds by three miles per hour because it deprives speeding motorists of opportunities to pass slower-moving cars.<sup>63</sup> Therefore, our design should be sufficient to dramatically increase the odds that a pedestrian will survive in the event of a collision. For example, on North Adeline we subtract a lane of traffic and narrow the remaining lane from 14 to 11 feet. Based on the results cited above, this should reduce speeds by between six and twelve miles per hour. Using the average value, this would reduce the 85<sup>th</sup> percentile speed to 20 miles per hour, diminishing the odds of pedestrian death from roughly 45 percent to only five percent. We also propose adding new signals at key intersections and timing traffic signals to best accommodate 20 mile per hour traffic in order to further encourage motorists to drive at safe speeds.

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<sup>59</sup> U.K. Department of Transportation. 1987. *Killing Speed and Saving Lives*. London.

<sup>60</sup> Nichols, Matt. February 27, 2010. Personal Communication.

<sup>61</sup> California Department of Transportation. 2008. "Chapter 300: Geometric Cross Sections." *Highway Design Manual*.

<sup>62</sup> Heimbach, Clinton L. et al. 1983. "Some Partial Consequences of Reduced Traffic Lane Widths on Urban Arterials." *Transportation Research Record* 923; Fitzpatrick, Kay et al. 2000. "Design Factors That Affect Driver Speed on Suburban Arterials." In *Research Report 1769-3*, Texas Transportation Institute, June 2000. Heimbach et al found that lane width correlates to speed at a rate of one mile per hour per foot of lane on four-lane undivided arterials during peak hours, while Fitzpatrick et al observed an increase of 2.9 miles per hour in 85<sup>th</sup> percentile speeds for each foot of added lane width.

<sup>63</sup> Skene, Michael. 1999. "Traffic Calming On Arterial Roadways." In *Institute of Transportation Engineers Compendium of Technical Papers*.

In order to increase pedestrian safety, we need to not only lower vehicle speeds, but also reduce pedestrian exposure to collisions by shortening crossing distances, particularly at unsignalized intersections where pedestrians have no designated safe interval in which to cross the street. For example, assuming a walking speed of 4 feet per second, it currently takes a pedestrian 30 seconds to walk across the 120 foot vehicle lanes on Adeline at Alcatraz street. Our design reduces this crossing time by 10 seconds, or 33 percent, and provides a center median along this section of Adeline so that pedestrians can safely pause and wait for an interval in which to cross the remaining lanes.

By reducing the amount of road space devoted to cars and reconfiguring intersections, we are also able to complete the bicycle network in the corridor, adding bike lanes and creating safer conditions where designated bicycle routes cross Adeline. Figure 41 summarizes these changes.

FIGURE 41: PROPOSED BICYCLE NETWORK



Though our analysis focuses on pedestrians and bicyclists, it is important to keep in mind that these improvements also improve safety for drivers, whose odds of survival in a collision also improve dramatically at lower speeds. In fact, most travelers visiting Adeline

must cross the street at some point, whether they're BART passengers who cross between the eastern parking lot and Ashby Station or bus riders bound for a destination that is on the opposite side of the street from the closest stop. Removing and narrowing lanes will benefit all of these users.

### 5.1.3 CREATING NEW PUBLIC SPACES

Wherever possible, our proposed design reclaims space from the right-of-way and devotes it to providing new usable land. However, Adeline's location above the BART tunnel prohibits development on the majority of these parcels, with the exception of a large new parcel at the Adeline/MLK/Woolsey intersection, which we discuss further in Section 5.3 below. Though Adeline already contains several large stretches of public space, most of these are separated from pedestrian areas by roadways. Therefore, instead of proposing to develop this reclaimed land, we use it to knit together a continuous network of pedestrian and public space that runs the length of the corridor. Figure 42 shows all public and developable space reclaimed from the roadway in our proposal.



FIGURE 42: NEW PUBLIC AND DEVELOPABLE SPACE ALONG ADELINE



Many of these spaces provide new opportunities for public art, which would help to cement the identity of the existing Ashby Arts District. In particular, the southeast corner of our proposed plaza and the Adeline/MLK/Stanford intersection could host a gateway

artwork mirroring the iconic Here/There sculpture across the street, and the widened medians on North Adeline could host creative street furniture and interactive sculpture to draw users to the area. We recommend that the City organize a competition to design the public art throughout the corridor, providing the opportunity for local artists to create a unified identity for Adeline. This would build upon the neighborhood's existing status as an arts district and engage the community in improving the environment along Adeline Street.

#### 5.1.4 MAINTAINING ADEQUATE VEHICLE FACILITIES

In order to examine our proposal in more depth and ensure that it does not create congestion at specific intersections or on intersecting streets, we used Synchro/SimTraffic 5 traffic simulation software to model vehicle flow through the corridor for a typical weekday PM peak. This portrayal is based on the proposed geometry, existing traffic counts (with both BART parking lots in operation), existing projections for the new Ed Roberts Campus, and our projection for automobile trips associated with our proposed Ashby BART redevelopment. Motor vehicle counts were balanced and missing counts conservatively estimated, with the resulting inputs presented in Appendix A. While our motor vehicle, pedestrian, and bicycle counts are included in the model, it is important to note that Synchro/SimTraffic is an auto-centric traffic modeling package that does not model conditions for pedestrians and bicyclists, and only includes these users as obstacles to drivers.

We developed our traffic model alongside our street designs so that the two processes could inform each other, particularly in terms of the overall number of lanes on Adeline and intersection signalization and phasing. Our model includes fully coordinated signals with actuation in key locations (such as at Alcatraz and MLK/Woolsey) to maximize the feasibility of the proposed road diets. We also modeled traffic with used a cruising speed of 20 miles per hour to support traffic calming and pedestrian safety goals and selected a signal cycle time of 90 seconds. While our analysis suggests that drivers would benefit from a longer cycle time, pedestrians would need to endure longer waits. For the additional benefit of pedestrians and bicyclists, we chose not to actuate pedestrian phases or through movements.

Synchro uses Highway Capacity Manual (HCM) methodology<sup>64</sup> to calculate motor vehicle level of service (LOS) based on volumes, geometry, and phasing plans. Table 12 shows the modeled LOS at key intersections in our study area under our proposed design.

**TABLE 12: MOTOR VEHICLE LEVEL OF SERVICE (LOS) AT KEY INTERSECTIONS ALONG AND ADJACENT TO ADELINE STREET**

Intersection		Level of service	
Primary street	Intersecting street(s)	Overall Intersection	Worst Movement
Adeline	Oregon	B	C
Adeline	Ashby	B	D*
Adeline	Essex	B	B
Adeline	MLK	C	C
Adeline	Fairview	A	C
Adeline	Alcatraz	C	D**
Adeline	Stanford/MLK	B	C
MLK	Ashby	B	C
MLK	Prince	A	A

\*Westbound Left Turn

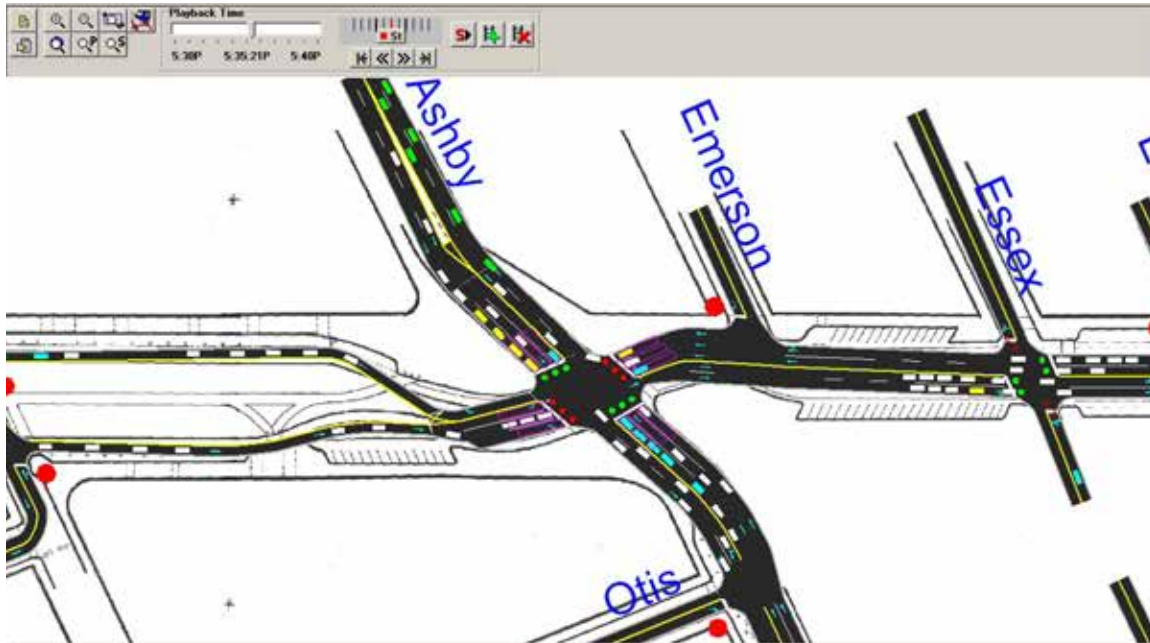
\*\*Alcatraz Through Movements

Our proposed design achieves motor vehicle LOS of C or above at each intersection, indicating minimal automobile congestion throughout the entire Adeline corridor. While we propose reducing the number of lanes available to motor vehicles in many cases, these lanes are relatively underutilized, as the current widespread speeding along Adeline indicates, and our intersection realignments minimize the amount of wasted green time. Though proposal intends to induce a significant mode shift away from automobile travel, our model conservatively assumes that existing drivers continue to drive.

While Synchro calculates HCM LOS, its companion program, SimTraffic, uses an equally valuable micro-simulation process. Along with Synchro results, we also observed motor vehicle flow in SimTraffic to inform our design decisions. Figure 43 shows a screen shot of our traffic model, and depicts representative queue lengths at certain intersections.

<sup>64</sup> Transportation Research Board. 2000. *Highway Capacity Manual 2000*. Washington, D.C.: Transportation Research Board of the National Academies.

FIGURE 43: SCREEN SHOT OF THE SIMTRAFFIC 5 TRAFFIC MODEL OF OUR PROPOSED DESIGN AT THE ASHBY/ADELINE INTERSECTION



SimTraffic, being a micro-simulation, is able to produce other valuable results. For instance, Synchro analysis suggests that the cruising speed, be it 20 MPH or 30 MPH, has little effect on delay and motor vehicle LOS at signals, and SimTraffic confirms this result more quantitatively by allowing us to calculate average vehicle speeds throughout the modeled network. We modeled two additional scenarios for comparative purposes. The first eliminates the road diet component of our proposal, restoring two lanes in each direction in North Adeline and three in South Adeline. The second additionally removes the new signals serving pedestrians and bicyclists at Essex, Prince, and Fairview. Both scenarios retain the proposed intersection realignments and use a 30 mile per hour cruise speed to isolate the impacts of these two specific changes. Table 11 compares these five scenarios.

TABLE 11: SIMTRAFFIC RESULTS BY SCENARIO.

	Road diet at 20 MPH	Road diet at 25 MPH	Road diet at 30 MPH	No Road diet	No New signals
Average speed (MPH)	9	10	11	12	13
Total delay (hours)	34	32	34	27	26
Total stops	3600	3200	3200	3000	2900
Fuel consumption (Gallons)	56	60	66	64	65

As the table shows, the choice of cruising speed has relatively little effect on signal delay, especially compared to the road diet itself increasing delay by approximately 25%. The lower speed limit additionally reduces fuel consumption; while motor vehicles stop more, they stop from lower speeds and thus waste less energy. While the road diet and lower cruising speeds do lead to lower average speeds, the marginal impact on speed is relatively minor.

In support of our decision to pursue both the road diet and 20 mile per hour speed target, Berkeley’s General Plan Transportation Element policy T-18 states that

Significant beneficial pedestrian, bicycle, or transit impacts, or significant beneficial impacts on air quality, noise, visual quality, or safety in residential areas, may offset or mitigate a significant adverse impact on vehicle Level of Service (LOS) to a level of insignificance.<sup>65</sup>

We propose that the beneficial impacts to pedestrians, bicyclists, and transit riders, along with the reduction in emissions from fuel consumption and increase in safety in this residential area, offset the increase in travel time and signal delay for motor vehicles. Indeed, reduced motor vehicle speeds play a key role in our proposal achieving these benefits. Further, since our model predicts minimal congestion and queuing, drivers will continue to be able to travel smoothly along Adeline – they will simply do so more slowly if they remain in their cars.

Residents and businesses located along adjacent arterial streets may voice concerns that reducing motor vehicle speeds along Adeline may induce more traffic to switch to

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<sup>65</sup> City of Berkeley. 2001. *City of Berkeley General Plan: A Guide for Public Decision-Making*, Transportation Element, adopted December 18, 2001. <http://www.ci.berkeley.ca.us/contentdisplay.aspx?id=488> (accessed April 20, 2010).

adjacent north-south arterials, such as Shattuck and MLK, causing congestion along these streets. However, since Adeline is diagonal to the prevailing grid pattern, these other arterials diverge from Adeline rapidly to the north (in the case of MLK) and south (in the case of Shattuck) of the study area, making them poor substitutes for Adeline.

Furthermore, previous studies have measures much slower vehicle speeds along Shattuck than along Adeline (26 miles per hour compared to 35 miles per hour),<sup>66</sup> making it unlikely that Shattuck would offer drivers a substantially quicker alternative to Adeline even with our proposed road diet.

#### 5.1.5 IDENTIFYING AND ADDRESSING POTENTIAL OPPOSITION

While the purpose of our Adeline corridor proposal is to ultimately improve the safety, livability and quality of life of Berkeley residents, there may be individuals or local groups who oppose these changes.

Converting roadway to park space may benefit many in the community but could negatively affect those living adjacent to the Adeline corridor, in particular along North Adeline, which is the section of the corridor with the most residential development. By converting the median to a park we would bring public space very close to these residents' front doors. Those living in these parcels may not want a public gathering space right outside their front windows. The City may also opposition from residents living on MLK adjacent to the Ashby BART station. These residents will see the most dramatic changes in the corridor due to the proposed station area development, which will affect their views as well as auto, pedestrian and bicycle traffic on adjacent streets. Local merchants' associations may also see our proposed road diet and a threat to their business. In the short term, the heavy construction that will have to occur under our proposal would likely disrupt access to some businesses.

According to City of Berkeley staff, the Ed Roberts Campus came to fruition through the efforts of a specific constituency; members of the disabled community who wanted a local center for disabled services.<sup>67</sup> Our proposal will be no different and will require a vocal constituency in support of changing the environment along Adeline. Fortunately, as the previously discussed City policies and plans attest, residents of South Berkeley—including residents' and merchants' groups—have expressed numerous concerns over precisely the safety and design issues that our proposal seeks to address. Unfortunately, some of the community groups that were more active in supporting previous neighborhood plans and

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<sup>66</sup> Gould, B., D. Miller, and E. Rose. 2009. *Berkeley Bowl Bicycle Access*.

<sup>67</sup> Fogarty, David. April 28, 2010. Personal Communication.

proposals, such as the Ashby Arts District and the Adeline-Alcatraz Merchants' Association, are no longer as active as they once were. The city should seek to engage and revitalize these stakeholder groups in order to build support for a redesign of Adeline and create community-approved solutions to the potentially contentious aspects of this proposal.

We discuss specific aspects of our proposal that may raise community concerns in more detail in the subsections below.

## 5.2 NORTH ADELINE

Though the City of Berkeley has done much to improve the bicycle and pedestrian environment in the stretch of Adeline north of Ashby, the area still faces many of the same challenges as the rest of the corridor: pedestrian and bike hazards, high vehicle speeds, and the underutilization of public space. In our proposal for North Adeline, we address these issues by:

- **Removing a travel lane** in order to shorten crossings and reduce vehicle speeds.
- **Reducing travel lanes from 14 feet to 11 feet** in order to further calm traffic while still maintaining emergency access.
- **Realigning the intersection of Ashby Avenue and Adeline Street** in order to create a safer environment for all users and provide better pedestrian access to the Ashby BART station from the north.
- **Expanding the center median into a magnetic public park** using the excess space created by reducing the number of travel lanes and narrowing the remaining lanes.



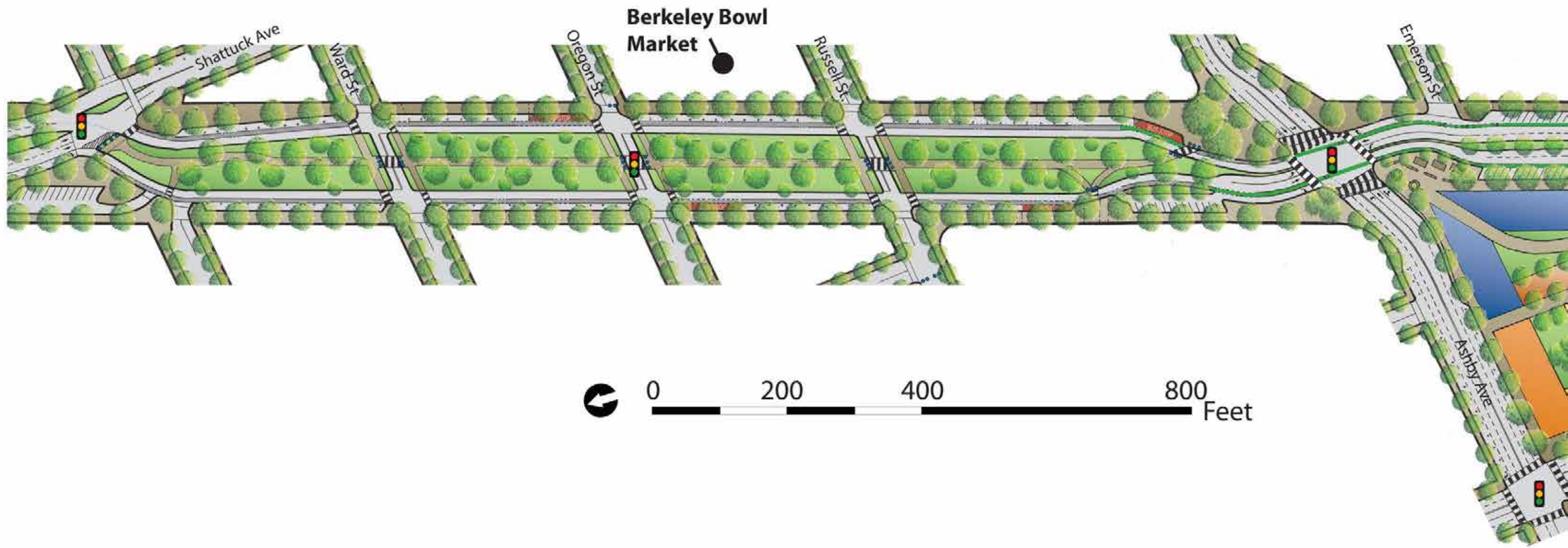


TABLE 13: SELECTED PERFORMANCE MEASURES FOR EXISTING AND PROPOSED DESIGNS OF NORTH ADELINE

	Existing	Proposed
Number of vehicle lanes in each direction	2	1
Maximum width of vehicle lanes (feet)	14	11
Number of on-street parking spaces	88	88
Percent of right-of-way devoted to cars	40%	21%
New public space reclaimed (square feet)	-	58,360
Crossing distances at key intersections (feet):		
Adeline/Oregon	88	38
Adeline/Ashby (eastern crosswalk)	117	70
Adeline/Ashby (southern crosswalk)	126	70
Adeline/Ashby (western crosswalk)	73	70
Adeline/Ashby (northern crosswalk)	148	73

#### 5.2.1 REMOVING AND NARROWING TRAVEL LANES

Where Adeline Street splits with Shattuck Avenue, automobiles zip confidently over two extra-wide automobile travel lanes in each direction. According to our observations, 90 percent of drivers in this section exceed the posted 25 mile per hour speed limit. This is in part due to excessively wide 14-foot vehicle lanes on North Adeline. Removing a travel lane and narrowing the remaining lanes from 14 to 11 feet is the most effective way to calm traffic, and frees up excess road space for the benefit of other users.

Our analysis indicates that it is possible to remove and narrow lanes without reducing vehicle speeds to below the posted speed limit or otherwise substantially increasing delay. During the evening peak, when southbound traffic is heaviest, we counted 822 vehicles moving south through the Ashby/Adeline intersection. Though this approaches the maximum capacity of a single lane, our traffic model showed that a single lane in each direction would adequately serve existing and projected automobile demand, maintaining LOS C or above throughout this section of Adeline. In order to avoid a bottleneck, southbound Adeline Street fans out to three travel lanes as it approaches the Adeline/Ashby intersection in order to accommodate left- and right-turning vehicles.

North Adeline is home to many successful businesses: Crixia Cakes, Walgreens, the Berkeley Bowl, and the antique stores that cluster around the Ashby/Adeline intersection all draw pedestrians, bicyclists, and motorists. Reducing auto lanes will make the corridor more inviting for non-motorized users. Maintaining the existing on-street parking and

bicycle lane will also create a buffer between pedestrians and motorized transportation and preserve access to neighborhood businesses and residences. Auto access is especially important for the antique stores that usually require their patrons to haul purchases away in trucks. Our new design also keeps a sizable amount of parking close to the rows of antique stores to facilitate these shopping trips.

### 5.2.2 REALIGNING THE ASHBY/ADELINE INTERSECTION

FIGURE 44: PROPOSED DESIGN FOR THE ASHBY-ADELINE INTERSECTION



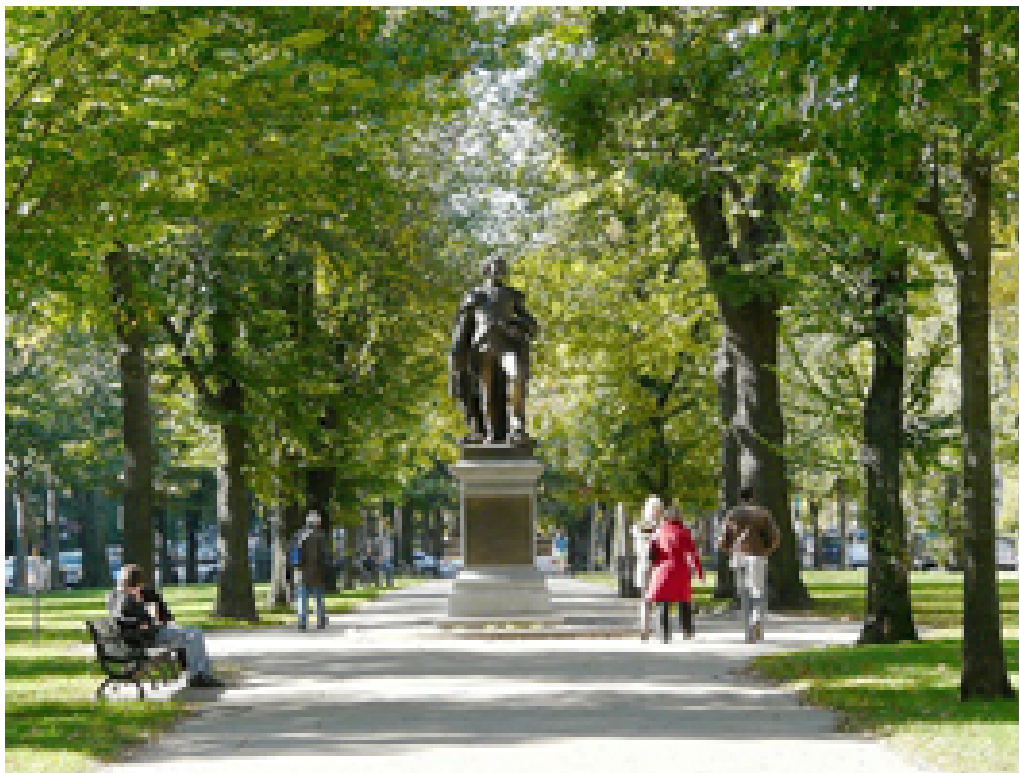
Our design proposal focuses on the Ashby/Adeline for several reasons. First, Ashby Avenue is a state highway and an important link in the regional road network that carries heavy car volumes. Second, the intersection design affects access to the Ashby BART Station, which sits at its southwestern corner, as well as to the local businesses that hold the remaining three corners. Currently, Ashby and Adeline intersect at an irregular angle, which requires crossing pedestrians to navigate 120-plus foot crosswalks and makes it difficult for all users to see and anticipate intersecting traffic movements. Free right turn lanes further complicate street crossing, allowing turning vehicles to ignore traffic signals and creating an unpredictable environment for pedestrians. We propose adjusting the angle between Adeline and Ashby and eliminating free right turn lanes in order to shorten crossings and create more predictable traffic patterns. These changes benefit not only pedestrians, but also drivers. Currently, signal timing at the Ashby/Adeline intersection hinges on the time it takes a pedestrian to cross safely. By reducing the distance a pedestrian has to walk in order to cross the intersection, we can reduce the effective signal cycle time. This reduces the intersection delay and allows us to maintain an adequate vehicle level of service, even after reducing the road width.

### 5.2.3 PARKS AND PUBLIC SPACES



Though the existing median on Adeline is spacious and well-landscaped, we rarely observed anyone using it. This is probably due in part to the high vehicle speeds and long distances that users would have to cross in order to reach the median, and the previously discussed improvements make it easier for pedestrians to access the median. However, in order to attract users, the median not only needs to be accessible, but also needs to become a destination in its own right. As such, we propose fusing the newly liberated travel lanes with the central median to create a linear park. This park would be 94 feet wide; 65 percent wider than the existing 57-foot median, and similar to the width of Commonwealth Avenue in Boston.

FIGURE 45: COMMONWEALTH AVENUE IN BOSTON, MASSACHUSETTS<sup>68</sup>



This transition from pavement to public space has the potential to turn the existing, underutilized median into a promenade. We recommend installing a central pathway running the length of the median from Ward Street to Ashby. Public seating, art displays, public gardens, and market space would further draw users to the park.

Our design also reclaims space from the roadway at the northeast and southwest corners of the Ashby/Adeline intersection. While both parcels sit above the BART tunnel, which makes it impossible to construct any permanent structures overhead, they are high-

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<sup>68</sup> Flickr user hankzby. 2010. <http://www.flickr.com/photos/hankzby/2972121710/> (accessed April 24, 2010).

profile locations that have the potential to host non-permanent uses that draw pedestrian traffic from the new linear park and the Ashby BART station. These include market space, skate parks, space for the Bay Area’s popular taco trucks or other food carts, and public art installations. Overall, our design not only increases safety and accessibility, but provides additional destinations, creating a truly multimodal corridor along North Adeline.

### 5.3 ADELINE IN THE STATION AREA

This section of Adeline hosts Ashby BART station, the most critical destination in the corridor. The station is not only an important intermodal transfer point for travelers accessing the station via bus, car, bicycle, and foot, is also the site of future development—both the soon-to-be-completed Ed Roberts Campus and potentially our proposed development at the west Ashby BART parking lot. In spite of its importance to users across all modes, this section currently has a design similar to North Adeline, which moves vehicles through the area at high speed without adequately considering other users. At the southern end of this section is the Adeline/MLK intersection, where these two arterials merge at an odd angle, which poses a particular obstacle for pedestrians and cyclists both crossing and traveling along Adeline. Our proposed design:

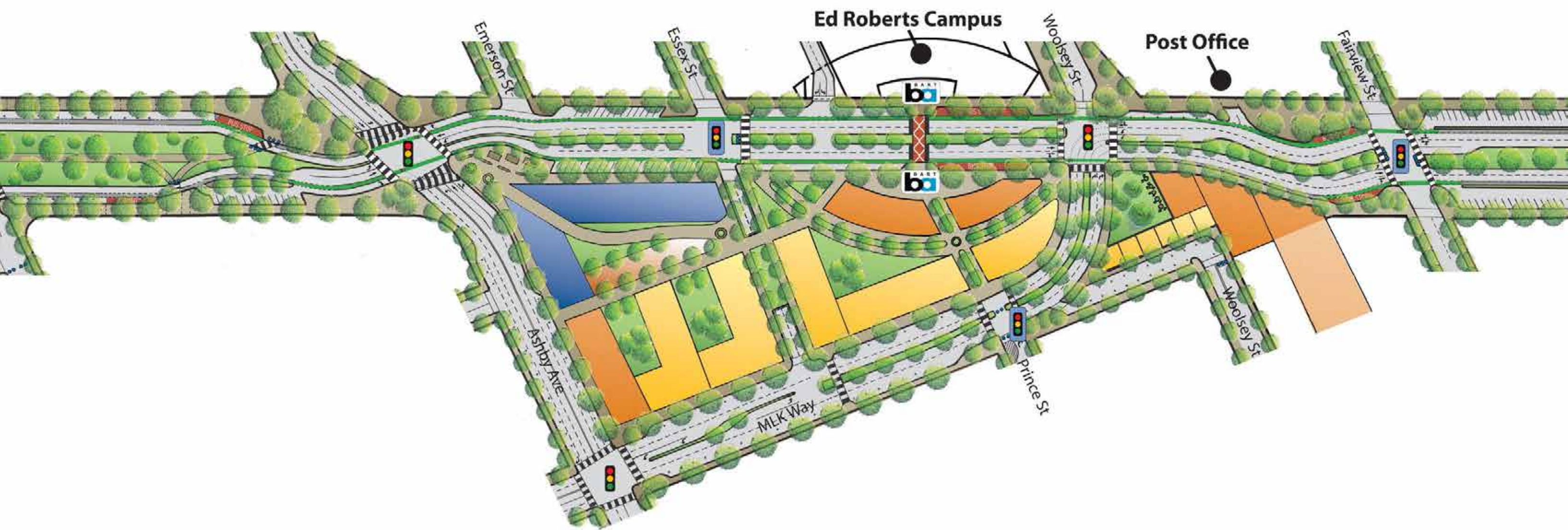
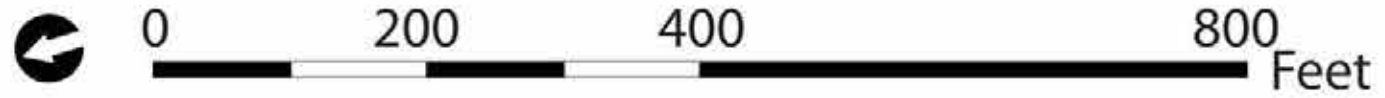
**Narrows lanes to a width appropriate for a 20 mile per hour road** in order to reduce vehicle speeds and devote more space to other users. Our proposed design for this section includes two vehicle travel lanes in each direction, with a 10-foot inner lane and an 11-foot outer lane to accommodate transit vehicles.

**Expands sidewalks, bus stops, and kiss-and-ride bays** using the space reclaimed from vehicle lanes. This makes it easier for all users to access the Ashby BART Station while maintaining the existing bicycle lanes, center median, and number of vehicle lanes.

**Installs a new signal at Adeline and Essex and a raised crosswalk across from the Ed Roberts Campus** in order to slow vehicles, create a sense of place around the station entrance, and improve safety and accessibility for people traveling between Ashby BART Station and the eastern parking lot, Ed Roberts Campus, or neighborhoods and destinations on the east side of Adeline.

**Reconfigures existing on-street parallel parking to diagonal parking** in order to maintain vehicle access to the BART station and adjacent businesses.

**Realigns the Adeline and MLK intersection** to foster a safer environment for bicycles and pedestrians and create new space for development.





**TABLE 14: SELECTED PERFORMANCE MEASURES FOR EXISTING AND PROPOSED DESIGNS OF ADELINE IN THE STATION AREA**

	<b>Existing</b>	<b>Proposed</b>
Number of vehicle lanes in each direction	2	2
Maximum width of vehicle lanes (feet)	14	11
Number of parking spaces	105	96
Percent of right-of-way devoted to cars	58%	53%
New developable space reclaimed (square feet)	-	21,345
Crossing distances at key intersections (feet):		
Adeline/MLK	130'	70'
Ed Roberts Campus crosswalk	105'	70'

### 5.3.1 TRAFFIC CALMING IN THE STATION AREA

We envision the section of Adeline in between Ashby and Woolsey as the focal point for pedestrians, bicyclists, transit, shuttles, and vehicles accessing the Ashby BART station, with a station entrance plaza mirroring the Ed Roberts Campus and a central, raised crosswalk connecting the two. Narrowing lanes and installing a traffic signal at the Adeline/Essex intersection reduces vehicle speeds to the point where the many pedestrians that will use this crosswalk will not risk life-threatening crashes without significantly impacting vehicle level of service. Though installing a signal at Essex raises project costs, it helps manage vehicle speeds and consolidates vehicle platoons, which creates gaps in traffic that allow bicycles and pedestrians safety cross Adeline.

According to our traffic model, our proposed design maintains LOS B at the Adeline/Essex intersection. In fact, keeping two lanes in each direction provides excess capacity given current traffic volumes, but our analysis indicated that one lane in each direction would not accommodate any increases in vehicle demand due to the new station area development or future growth at the Ed Roberts Campus. Additionally, two lanes provide enough room for buses and cars visiting the kiss-and-ride bays to safely move in and out of the flow of traffic, ensuring easy intermodal transfers.

### 5.3.2 RECONFIGURING THE ADELINE/MLK INTERSECTION

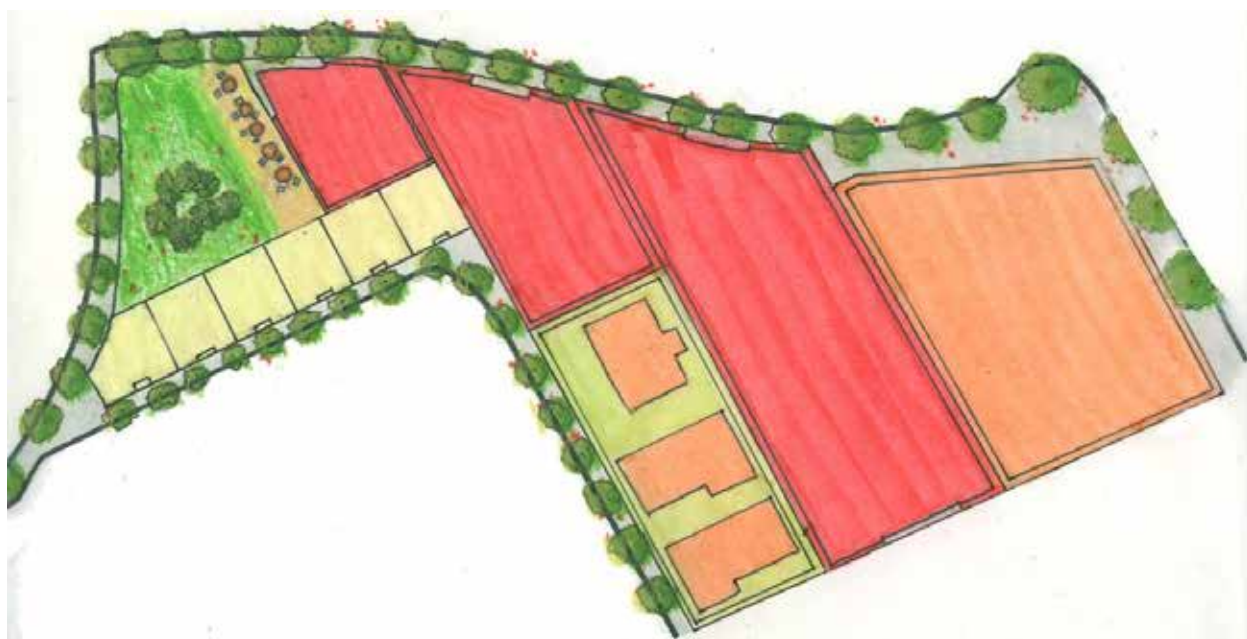
As Adeline moves south from the station area, it merges with MLK at an angle, creating an intersection that is both awkward and busy. North of the intersection, both roads carry roughly 15,000 vehicles per day, and after the merge Adeline carries upwards of 30,000



vehicles per day. The existing three-legged intersection design is unsafe for motor vehicles, pedestrians, and particularly bicycles traveling east on Woolsey Street, a designated bike route that intersects Adeline just north of the Adeline/MLK intersection. The Adeline/MLK intersection's location at the southern tip of the station and the proposed station area development makes it an important access point for all street users. Not only is the existing intersection dangerous, but it uses space inefficiently, occupying land that would otherwise be in high demand due to its proximity to the BART station.

After analyzing three alternatives, which we discuss in more depth below, we chose to reconfigure MLK to curve to the east north of the existing intersection and align with the east side of Woolsey, intersecting with Adeline at a right angle. This option frees up a large new parcel of land just south of the Ashby BART station adjacent to the proposed station area development (Figure 46). In addition, this land hugs an existing vacant parcel, which could be capitalized as part of this development. A single-lane road continuing south along the current alignment of MLK provides access to existing homes. This access lane greatly improves the safety, value and street conditions for these homes, providing an additional benefit for the area. Furthermore, moving the intersection to the north provides additional clearance and increases safety for pedestrians crossing Adeline at Fairview Street to the south.

**FIGURE 46: PROPOSED LAYOUT OF PARCEL AT ADELINE/MLK**



The most significant challenge at the Adeline/MLK intersection is providing through movement for bicycles traveling across Adeline on Woolsey. Our proposed design

channels westbound bicycles a block to the south and onto Fairview Street. While this diverts cyclists off of the currently designated bicycle route, it offers cyclists a safer, more direct route around the station area that crosses Adeline at a designated signal. If bicycle facilities were included along MLK and Woolsey in the new MLK/Adeline intersection, the signal phasing would be complicated and the cycle length excessively long. Our traffic model indicates that this intersection will have an LOS C, which we feel is acceptable given the large number of travelers using other modes in the study area.

### 5.3.3 BICYCLE CIRCULATION THROUGH THE ADELINE/MLK INTERSECTION

Our proposed changes to the bicycle network accomplish two goals: providing better access throughout the area, and providing safer bicycle crossings.

First, we have diverted the primary east-west bicycle route west of the station area from Woolsey to Fairview Street. Westbound cyclists would take a left onto Tremont Street, one block before Adeline, and then a right onto Fairview Street, which would continue to the present end of the route on California Street. Eastbound cyclists would follow this route in reverse. For cyclists who prefer to avoid automobile traffic, Fairview makes for a more predictable crossing, especially with the new traffic signal that we have proposed at the Fairview/Adeline intersection, and carries a lower volume of cars turning at the Fairview/Adeline intersection would allow easier bicycle turns to and from the bike lanes on Adeline.

This realignment takes the bicycle route through completely residential streets with much lower automobile volumes. One segment of the route around the Tremont/Fairview intersection crosses the city border into Oakland, and Berkeley and Oakland would need to collaborate in order to create the route. A short section of Fairview between Tremont and Dover Streets is also a narrower, 20' right of way that is presently one-way eastbound for cars (Figure 47). This section could accommodate bicycles in both directions, but it may be desirable to restrict automobile access in order to avoid conflicts. This change would also require collaboration between the Cities of Berkeley and Oakland.

FIGURE 47: ONE-WAY SECTION OF FAIRVIEW STREET BETWEEN TREMONT AND DOVER



A Fairview Street bicycle route provides safe, low-conflict access to cyclists traversing the area. However, the route does not necessarily serve access to and from the BART station, proposed transit plaza, or destinations within the station area development. In our design, cyclists coming from and going to these points would have several additional options. First, they could use the Fairview crossing to access the Adeline Street bicycle lanes to the station area and either cross Adeline as pedestrians at the station plaza crosswalk or access BART via the entrance at the Ed Roberts Campus front face. Returning, a cyclist could follow the path around the Ed Roberts building back to Woolsey Street (where the ERC also accommodates substantial amount of bike parking). A cyclist could also exit BART on the station side of the street, use the Adeline Street southbound lane, and make a left onto Woolsey. Lastly, in what we believe would be the preferred means of access for less experienced riders, cyclists could use neighborhood streets on either side of the corridor—Prince Street from the west or Essex Street from the east—to access Ashby BART station. At Prince Street, a new signal would serve only

bicycle and pedestrian traffic crossing MLK, and can allow bicycle access along neighborhood streets to the Fairview or California Street bicycle routes. At Essex, a new signal would allow cyclists to enter or exit the parking underneath the development, which would allow arrival at the BART station level instead of the street level. Cyclists could connect from Essex to Woolsey via Tremont.

This route change does introduce a diversion from the established route along Woolsey, and experienced westbound cyclists traveling through the area may prefer to continue along Woolsey through the new intersection and Adeline and MLK and then make a left turn to continue west on Woolsey. Eastbound cyclists would take the reverse route, but would have to cross Adeline as pedestrians in order to avoid conflicts with right-turning cars. This route is legal and accommodated by our proposed design, but may lead to more conflict points with traffic.

Overall, the variety of new bicycle routes we are proposing in the station area may seem more complicated, but this variety also offers cyclists with different comfort levels different means of accessing BART and traveling through the area. To make navigation easier, wayfinding signs should be installed at key bicycle route intersections, including Woolsey/Tremont, Tremont/Essex, Tremont/Fairview, Fairview/King, and Prince/King.

#### 5.3.4 AVOIDING INCREASED TRAFFIC ON SIDE STREETS

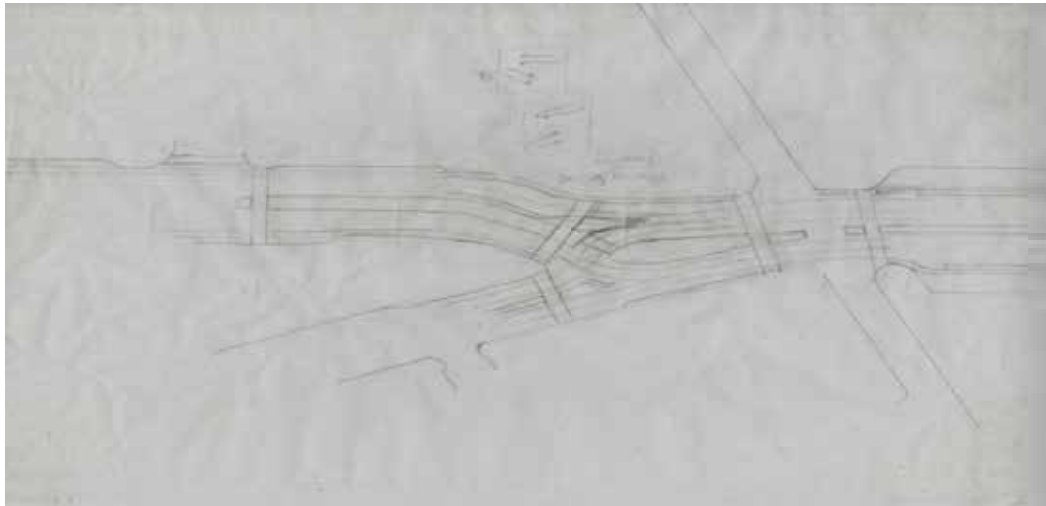
In installing new traffic signals at intersections between arterials and residential streets, a common concern of residents is the potential for increased automobile traffic using the residential streets. In our design, we have coordinated traffic signals in order to encourage drivers to remain on Adeline and MLK. Autos traveling the speed limit should find they meet intersections with green lights most of the time. Furthermore, green signal time on side streets will be held near the minimum required for pedestrian crossings—crossings that have already been made shorter by realigning the intersections and reducing the number and width of vehicle lanes. These characteristics of the network will maintain the incentive for cars to remain on the main streets.

Additional measures can further discourage drivers from using side streets, including prohibition of left turns from Adeline onto these streets. Traffic calming measures such as speed humps, chicanes, or traffic circles could further slow traffic along side streets, particularly on bicycle routes. These methods have been used elsewhere in Berkeley, such as Milvia Street and on Woolsey Street. A traffic diverter blocking vehicles from continuing on Woolsey through the Woolsey/Tremont intersection would prevent traffic from using Woolsey as a shortcut to access the Ed Roberts Campus.

### 5.3.5 MLK/ADELINE INTERSECTION DESIGN ALTERNATIVES

During the design process, we considered three alternative designs for the Adeline/MLK intersection. The first alternative was a teardrop shaped median at the center of the existing intersection (Figure 48) was the proposal that most resembled the existing intersection. It kept all of the existing turning movements except that it removed the underutilized slip lane that allowed drivers heading south on Adeline to make a U-turn movement at the tip of the BART station and turn north onto MLK. The main benefit of this alternative was that it reclaimed space in the middle of the intersection that could potentially host a statue or fountain to help with place-making. Ultimately, this new space was not usable by pedestrians and did not improve bicycle and pedestrian safety. Additionally, the teardrop is not a “regular” shape, such as a t-intersection, and thus is more confusing to road users.

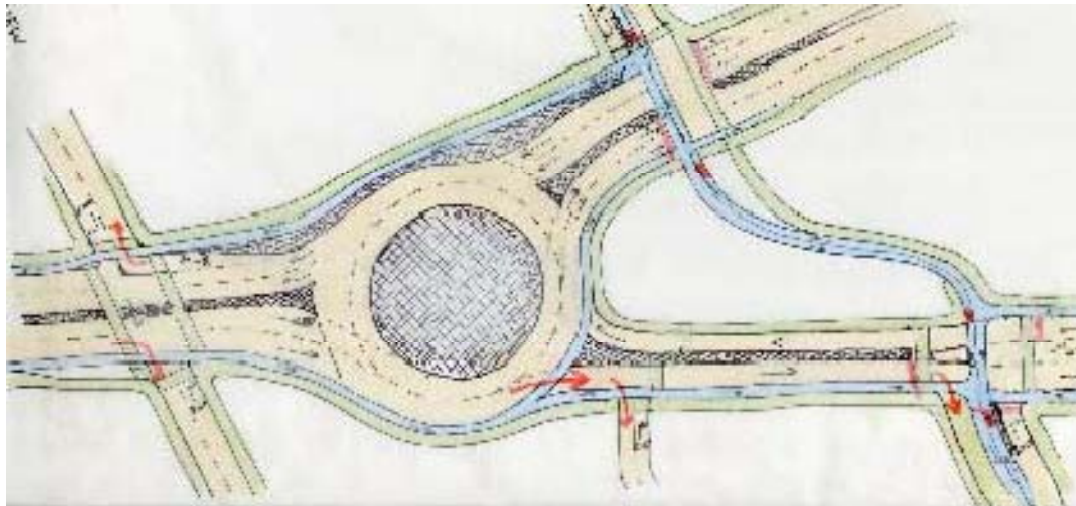
FIGURE 48: DRAWING OF THE TEARDROP ALTERNATIVE FOR THE ADELINE/MLK INTERSECTION



The second proposal was to make a formalized roundabout instead of the teardrop (Figure 49). Like the teardrop design, this alternative reclaimed street space from cars to create an area in the middle of the intersection for place-making. The difference with this design is that it did greatly change the turning movements in the intersection by allowing free flowing vehicles to enter the intersection and then disperse onto either MLK or Adeline. While it improved vehicle flow, this option did not provide any additional benefits for bicyclists and pedestrians, and in fact make the intersection more complicated for these users. Similar to the teardrop, the roundabout is not a regular shape familiar to motorists.



FIGURE 49: DRAWING OF THE ROUNDABOUT ALTERNATIVE FOR THE ADELINE/MLK INTERSECTION



The final proposal realigned Adeline to intersect with MLK through a normalized T-intersection. Though this was the most expensive alternative, it slowed down vehicles, created a safer crossing for bicyclists and pedestrians, and opened up new land in the former Adeline right-of-way that could be used for a new park or development. The major barriers to this redesign were providing access to driveways along the east side of Adeline between Fairview and Woolsey and determining an efficient way to move bicyclists through the area traveling in the east-west direction.

TABLE 15: DESIGN CRITERIA MATRIX OF THE ADELINE/MLK INTERSECTION

Alternative	Design Criteria					
	<i>Bicycle safety</i>	<i>Bicycle accessibility</i>	<i>Pedestrian safety</i>	<i>Pedestrian accessibility</i>	<i>Development Opportunity</i>	<i>Cost</i>
Teardrop	Low	Low	Low	Low	Low	Low
Roundabout	Low	Low	Low	Low	Low	Medium
T-intersection	High	High	High	High	High	High

Table 15 summarizes the design criteria we used to decide between the three intersection redesign proposals. We ultimately chose to proceed with a version of the T-intersection proposal because it scored the highest among our design criteria.

#### 5.4 SOUTH ADELINE

The southern section of Adeline carries 35,000 vehicles per day, more than any other section discussed in the proposal. Furthermore, a larger portion of the right-of-way is devoted to vehicles in this section, which has three travel lanes in each direction, large bays with diagonal parking, a narrow median, and no bike lanes. South Adeline serves the

historic Lorin District, with its excellent but underutilized building stock. We are proposing a road diet for South Adeline that will free up space for other users and create new public spaces. Our proposed design:

**Reduces the number of lanes** from three to two in each direction with left turn pockets at signalized intersections, in order to calm traffic and reduce crossing distances.

**Narrows remaining travel lanes**, which are currently between 12 and 14 feet wide, to match our proposed lane widths in the Ashby BART Station area: a ten-foot wide inside lane and an 11-foot wide outside lane that accommodates transit vehicles.

**Widens the median and creates pedestrian refuges surrounded by bollards in the center of crossings** in order to give pedestrians safe places to wait if they are unable to cross both directions of traffic at once.

**Installs colored crosswalks at the Adeline/Harmon intersection** in order to increase pedestrian visibility.

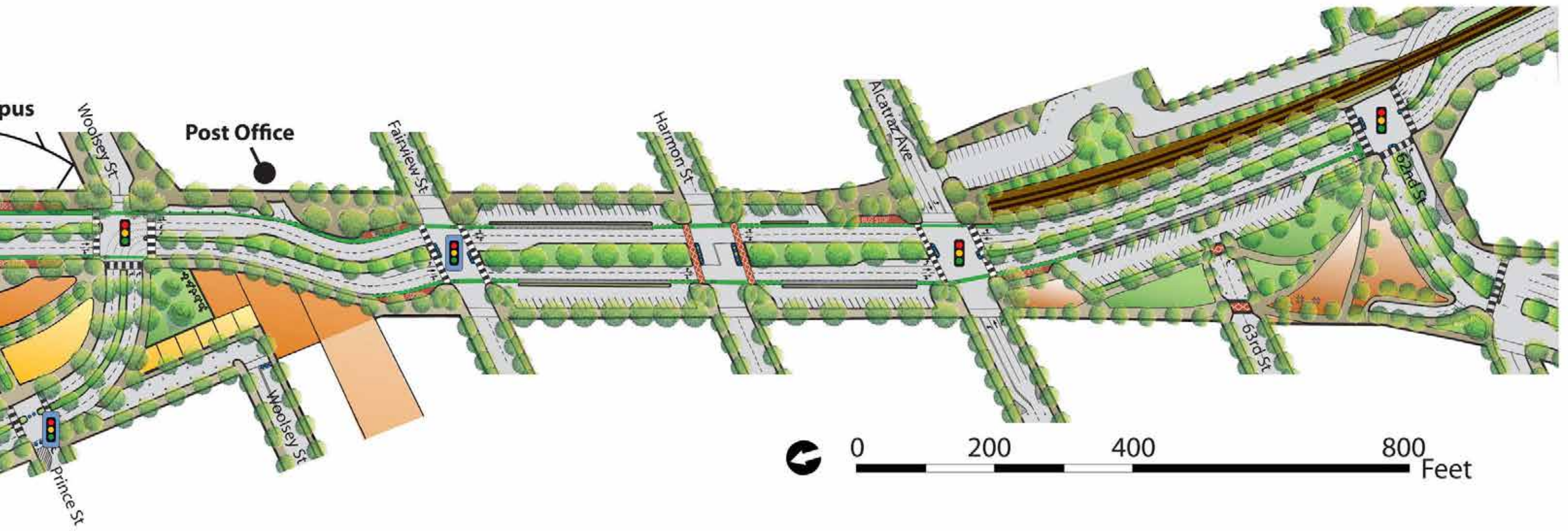
**Installs a signal at the Adeline/Fairview intersection** in order to improve safety for crossing pedestrians and bicyclists and spread the storage of vehicle volume along the busier south end of the corridor.

**Installs bicycle lanes on Adeline between MLK and 63<sup>rd</sup> Street** in order to complete the bicycle network and allow bicyclists a safe way to access land uses along South Adeline.

**Creates new public space at the northwest corner of the Adeline/Alcatraz intersection** that serves as a gateway to the Lorin District and to Berkeley, provides open space in a neighborhood with a dearth of parks, and draws residents to the Adeline corridor.

**Reconfigures the Adeline/Stanford intersection and reduces the number of lanes on Stanford** to calm traffic and shorten crossings for pedestrians.





Post Office

pus

Woolsey St

Fairview St

Harmon St

Alcatraz Ave

62nd St

63rd St

Woolsey St

Prince St



0

200

400

800

Feet

TABLE 16: SELECTED PERFORMANCE MEASURES FOR EXISTING AND PROPOSED DESIGNS OF SOUTH ADELINE

	Existing	Proposed
Number of vehicle lanes in each direction	3	2
Maximum width of vehicle lanes (feet)	14	11
Number of parking spaces	134	148
Percent of right-of-way devoted to cars	78%	69%
New public space reclaimed (square feet)	-	50,000
Crossing distances at key intersections (feet):		
62 <sup>nd</sup> /Adeline (western crosswalk)	100	45
62 <sup>nd</sup> /Adeline (southern crosswalk)	85	75
62 <sup>nd</sup> /Adeline (northern crosswalk)	90	75
Alcatraz/Adeline	120	80

#### 5.4.1 ROAD DIET AND PEDESTRIAN IMPROVEMENTS

In order to calm traffic and make crossings safer for pedestrians we are proposing a comprehensive road diet and pedestrian improvements to South Adeline. Though this is the highest-volume traffic carrier of our study area, we rarely observed congestion in this section, even during peak periods, which suggests that existing road capacity is excessive. We measured an average speed of 28 miles per hour and a high speed of 40 miles per hour on this section, and speeds are likely to be higher during low-traffic periods. In order to cross the street, pedestrians have to navigate six lanes of traffic, often without the aid of refuges or signals. As a result, this section of Adeline Street has a poor pedestrian safety record, with a least two recorded pedestrian fatalities as well as numerous pedestrian injuries in the past decade.<sup>69</sup>

In response to this set of concerns we are proposing a road diet that will reduce the number of car lanes to two in each direction, with left turn pockets at unsignalized intersections, and that will narrow the remaining lanes to ten and eleven feet. The

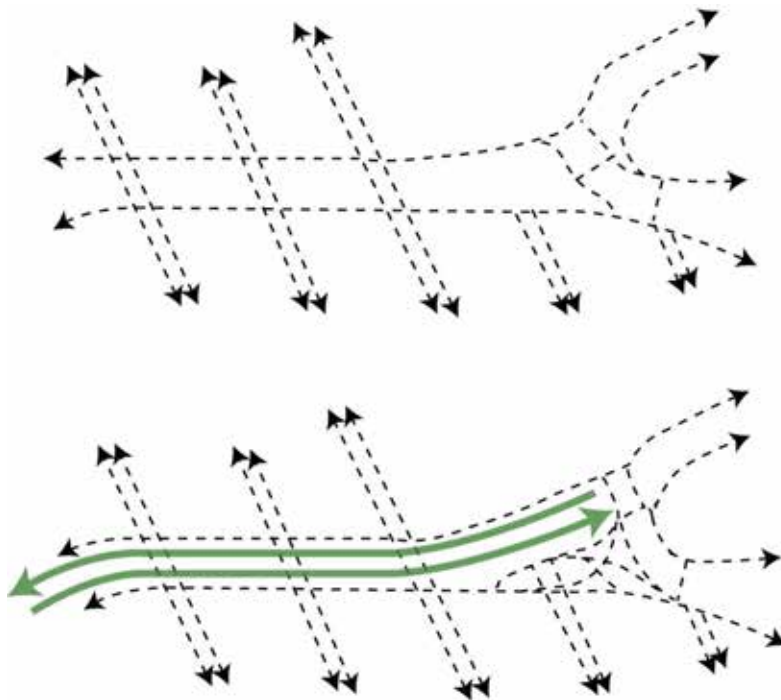
<sup>69</sup> Nichols, Matt. February 27, 2010. Personal communication.

reduction in the number of lanes reduces pedestrian crossing distances, discourages cars from speeding, and frees up considerable land for other non-road purposes. Between Fairview and Alcatraz, we plan to replace the existing inside lanes with a wide median, with robust pedestrian refuges surrounded by bollards to give pedestrians safe places to wait should they be unable to cross both directions of traffic at the same time. Since our proposal retains the parking bays on both sides of the street, it does not affect the total number of parking spaces on South Adeline.

In addition, we propose adding a signal to the intersection of Adeline/Fairview to improve pedestrian safety by giving pedestrians a protected crossing option, and to spread the storage of vehicle volume along the busier south end of the corridor. These signals will be both car and pedestrian actuated. At Adeline/Harmon, the wider median will be able to store cars that are turning left, mitigating the need for a left-turn signal. Though this intersection remains unsignalized, we propose to color the crosswalk and texture the roadway surrounding it in order to alert drivers to be careful of pedestrians. Furthermore, the shorter crossing distance and pedestrian refuge in the median will make this crossing much easier for pedestrians than it currently is. Since trees cannot be planted in medians along Adeline due to the BART tunnel that runs immediately below, we recommend planting low-maintenance native shrubs and grasses for both their traffic-calming and aesthetic effects.

Our proposal also realigns Stanford Street to join Adeline in an orthogonal T-section, and reduces Stanford to one lane in each direction plus turn pockets for the block before the intersection. This increases pedestrian safety at this large intersection by shortening pedestrian crossings and creating smaller turning radii to slow car traffic down. It also reclaims more roadspace to serve as part of our proposed public space at the northeast corner of Stanford in Adeline, which we discuss in greater detail below. Figure 50 shows the changes in pedestrian and bicycle circulation due to our proposed improvements, and in particular the more direct pedestrian routes that the reconfigures Adeline/Stanford/MLK intersection provides.

FIGURE 50: EXISTING AND PROPOSED PEDESTRIAN (DASHED) AND BICYCLE (GREEN) CIRCULATION



In addition to improving pedestrian safety, the road diet treatment will also provide important place-making benefits. Two lanes of traffic in each direction, slower traffic speeds and shorter, better marked crossings, will create an environment that is still hospitable to cars but is now much smaller-scale and appealing for pedestrians, and it will help to turn Adeline into a navigable seam running through the corridor rather than a car-dominated rift.

Our traffic model indicates that there is currently excess capacity along South Adeline, and that our proposed road diet does not create undue congestion. In fact, our proposed street configuration of two lanes in each direction with parking bays, a center median, and left turn pockets is essentially identical to nearby Shattuck Avenue between Carelton Street and downtown Berkeley, which carries virtually the same traffic volume and does not experience significant congestion. If concerns about the road diet impacts are high, the realignment can first be tried inexpensively and temporarily through the use of soft-hit posts, as is proposed in our Phase I/low build alternative improvements. Meanwhile, reconfiguring the roadway while retaining existing sidewalks and parking bays will keep costs down. Though they may seem dramatic, these changes can adequately carry the traffic volume on this section, and our proposal is more than worthwhile for the increased pedestrian safety and strong place-making benefits that it provides.



#### 5.4.2 NEW BIKE LANES FOR MULTI-MODALITY

Currently, the bike lanes on either side of Adeline do not continue south of the Adeline/Fairview intersection. Our proposal introduces a five-foot wide bike lane in both directions south of Fairview Street to the intersection with 63<sup>rd</sup> Street. Conditions are currently unfavorable for bicyclists because they have no designated space and thus little protection from the speeding traffic alongside them. Even with such unfavorable conditions, the number of cyclists that travel along South Adeline is comparable to the number that travel along Adeline at the Adeline/Ashby intersection, which has a bike lane (43 cyclists per hour at Adeline/Alcatraz compared to 54 cyclists per hour at Adeline/Alcatraz). This suggests that there is sufficient demand to merit a bike lane in this section.

There would be no on-street parking adjacent to the bicycle lanes, thus eliminating the need for cyclists to veer into travel lanes in order to avoid car doors that extend into the bicycle lane when opened. This makes it possible for us to separate the bicycle lane from the other travel lanes by a curb with soft-hit posts on top of it for large portions of South Adeline. This will provide safer conditions for bicyclists by preventing the cars from crossing into the bicycle lane. Where the bicycle lanes to cross entrances to parking bays or bus stops, we recommend painting the bicycle lane in order to alert cars. We are also proposing a bicycle box, which provides a space for bicyclists to wait at a light on front of turning cars, on Adeline southbound at the intersection with Stanford. This treatment, which has been tried and proven to work in Portland, OR, prevents conflicts between through-moving bicyclists and cars turning right.

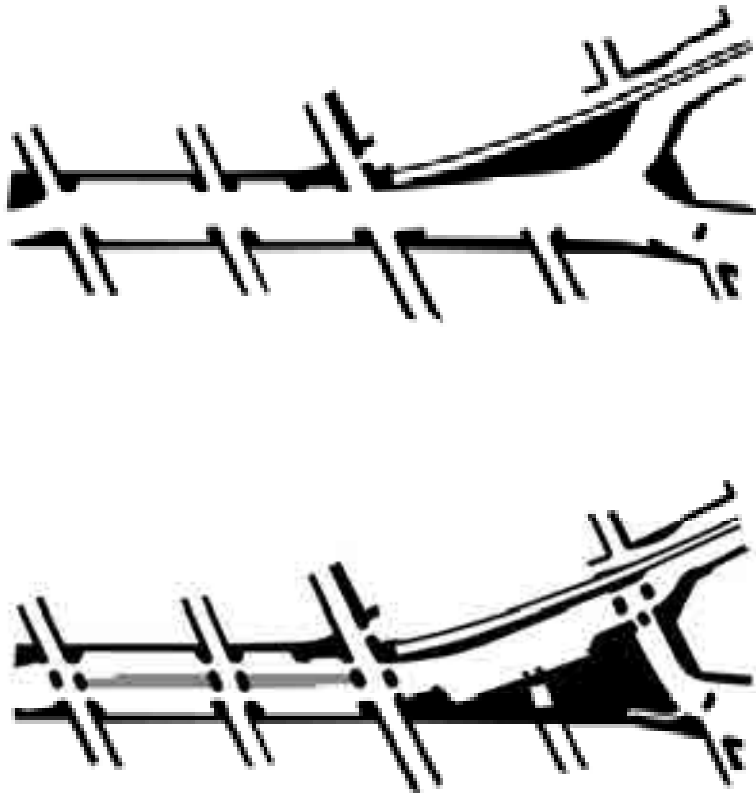
Though our plan shows the new lanes terminating at the intersection with 63<sup>rd</sup> Street, which is the Berkeley-Oakland, border, we strongly recommend that the City of Oakland install continuous bike lanes along Stanford Avenue and MLK as they continue south. These streets both have ample available roadway to accommodate a bike lane in each direction and will connect bicyclists to existing routes at Genoa and Market Streets, ensuring a continuous regional bicycle network.

#### 5.4.3 ROAD REALIGNMENT AND NEW PUBLIC SPACE

Our proposal includes a realignment of Adeline Street closer to the BART tracks south of Alcatraz Avenue, accompanied by a reorganization of parking in this area. This leaves a great deal of excess right-of-way space that can be turned into a central neighborhood

plaza and/or park space. Figure 51 shows the configuration of public space under existing conditions and our proposed design.

FIGURE 51: EXISTING AND PROPOSED PUBLIC SPACE (BLACK) AND MEDIANS (GRAY) ALONG SOUTH ADELINE



The existing right of way, which is over 300 feet wide as Adeline splits into Stanford and MLK, is inefficient and adds little value to either the surrounding Lorin District shops or the local community. The roadway in this area is flanked by an underused wedge of landscaped grassy, park-like area between the emerging BART tracks and Adeline Street to the east and an inefficiently-organized parking area to the west. The small park contains a pedestrian pathway, over a dozen trees, and the landmark "HERETHERE" artwork, a series of facing eight-foot high powder-coated steel plate lettering which spell the words "here" (on the Berkeley side) and "there" (on the Oakland side) that are intended to act as a gateway between the two cities. We seldom observed people using the greenspace, which is located between two noisy transportation lines and far away from the storefronts and pedestrian activity on the west side of Adeline. Meanwhile, the parking area contains wide travel lanes that make it unclear whether pedestrians or cars have the right of way. Pedestrians crossing Adeline at the Stanford intersection are forced

to either walk through the parking lot, or walk out of their way to remain on the sidewalk.

Our proposal shifts travel lanes on Adeline so that they run immediately along the BART tracks and creates a more compact and efficient parking bay alongside the shifted roadway to replace the existing lot. This consolidates dispersed strips of public space into a contiguous parcel adjacent to the popular shops on the west side of Adeline. This new space can serve as a gateway to the Lorin District and to Berkeley and provide gathering space in a neighborhood that otherwise lacks parks. We recommend that this space accommodate a park, plaza, and/or playground, as well as outdoor seating for the neighboring cafes and restaurant. The reconfigured parking bays will form a barrier separating this space from Adeline, while trees and flower pots will provide a barrier between the space and Stanford. 62<sup>nd</sup> Street will continue along its current alignment as a narrow access lane to the parking bay and neighborhood streets west of Adeline, with wide raised crosswalks to alert drivers to be careful for pedestrians and discourage through-traffic. A “clear zone” along the sidewalk will provide emergency access to the businesses and housing that front Adeline, while a small access lane at the south of the plaza will provide access for residents of the apartment complex at the northwest corner of Stanford and Adeline, and separate these apartments from the public space.

#### 5.4.4 ALTERNATIVE DESIGNS FOR PUBLIC SPACE AT ADELINE/STANFORD

We also considered an alternative arrangement of the plaza space at Adeline/Stanford in which parking was placed in a small triangular parking lot between 63<sup>rd</sup> and Alcatraz instead of in bays lining the plaza. This is a somewhat more efficient configuration of parking that creates a larger, less narrow public space. Businesses may also prefer the closer-to-hand parking of this alternate configuration. However, we prefer the current proposal because it creates public space adjacent to the sidewalk instead of a space that is separated from the sidewalk and storefronts by parking, and uses parking as a buffer between public space and the roadway. Both configurations create comparable numbers of parking spaces, and the parking in our preferred alternative is sufficiently close to shops along Adeline.



## 5.5 STATION AREA DEVELOPMENT

FIGURE 52: AERIAL VIEW OF PROPOSED DEVELOPMENT AT ASHBY BART STATION



The Ashby BART Station is the focal point of our study area, connecting residents to jobs, shops, and other destinations throughout the region and broadening the customer base of local businesses. With 4,797 daily station entries, the station is a significant destination in and of itself. The station's west parking lot also hosts the weekend Berkeley Flea Market, which is a popular event and important economic institution for both neighborhood residents and regional visitors.

While the station may be an asset to the community, the station area is for the most part an impediment to improving the environment along Adeline. The large, triangular parcel between Adeline, MLK, and Ashby could form the keystone of the corridor, yet it is occupied by a large, below-grade surface parking lot that does not address the street, creates an inhospitable pedestrian environment, inefficiently stores a relatively small number of cars, costs more for BART to maintain than it generates in parking fees, and counts a single hot-dog stand as its only other weekday revenue-generating use. We propose a design for the station area that reflects the station's importance to the community. Our design:

**Brings roughly 735 new residents<sup>70</sup> and 370 new housing units to the neighborhood,** providing needed workforce housing near BART and bringing new life to a parcel that is currently devoid of weekday activity.

**Creates over 25,000 square feet of retail/commercial space** for station-, neighborhood-, and resident-serving businesses.

**Centers on a high-profile new station entrance plaza** that mirrors the curvilinear design of the Ed Roberts Campus, giving the station a sense of place and directing visitors to BART.

**Creates a 47,000 square foot open-air market plaza at the corner of Adeline and Ashby** in order to accommodate the Berkeley Flea Market in a highly-visible and permanent location that is adjacent to the proposed linear park on North Adeline.

**Activates edges along Adeline, MLK, and Ashby** to better define these streets and improve the pedestrian experience.

**Installs pedestrian paths and promenades through the station area** in order to improve connectivity and direct pedestrians to the station entrance.

**Provides improved pedestrian and bicycle access,** especially from western neighborhoods along Prince Street via a signalized crossing of MLK and direct connection to the main entrance and nearby surface level bicycle station.

**Reorganizes and undergrounds all off-street automobile parking in the western lot,** accommodating automobiles traveling to the station more efficiently and filling the existing hole so that buildings will address the street. The plan removes 100 BART parking spaces, but the station is so well-served by other modes that drivers who used these spaces should be able to travel to the station by bicycle, foot, transit, carpool, or drop-off.

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<sup>70</sup> This number was calculated by multiplying the total number of dwelling units in our proposal by the average household size for rental units in the City of Berkeley, which was obtained from: U.S. Census Bureau. 2000. *2000 Census of Population and Housing*, SF 3, Table H.12.

### 5.5.1 LAND USES AND IN THE STATION AREA

FIGURE 53: LAND USE MAP OF THE STATION AREA DEVELOPMENT



TABLE 17: COMPOSITION, SIZE, AND COST OF RESIDENTIAL UNITS

	Size (square feet)	Number	Market Rent	Affordable Units
One-bedroom units	500	196	\$1,850/month	20% (39 units)
Two-bedroom units	800	175	\$2,575/month	20% (35 units)
<b>Total</b>		<b>371</b>		<b>20% (74 units)</b>

Our development proposal focuses primarily on providing housing near the station area for four reasons. First, the Ashby BART Station boasts the 5<sup>th</sup> highest share of riders who walk from their homes to stations in the Bay Area, and adding housing next to the station would increase BART ridership and reduce the demand for residential automobile parking. Second, workforce housing is in high demand in Berkeley, as shown both by previous calls for housing development on the west parking lot site and by the jobs-

housing imbalance in the City.<sup>71</sup> Third, adding more residents to the Ashby BART station area would increase the market for the numerous local businesses that are struggling financially. A final and related reason is that the number of under-patronized stores along adjacent sections of Adeline, combined with competition from the nearby retail district on Shattuck, makes it unlikely that providing a large amount of retail space would turn profits for either developers or business owners.

The guiding principle for our proposed site layout was that the triangular parking lot should be broken into rectangular parcels in order to efficiently accommodate buildings and parking and align with the existing street grid. Overall, our proposed development contains four separate parcels ranging from three to five stories in height. These are predominantly residential, offering over 300,000 gross square feet of residential space, spread across four parcels with building heights between three and five stories. For that space, we propose 371 rental units,<sup>72</sup> with 175 two-bedroom units and 196 one-bedroom units. At least 20 percent of each type of unit would be affordable, marketed either to households with incomes equal to less than 50 percent or less than 81 percent of the area median income for the Oakland Metropolitan Statistical Area, depending on the availability of Section 8 or other rental subsidies.<sup>73</sup>

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<sup>71</sup> Longitudinal employer-household dynamics (LEHD) data from the U.S. Census Bureau data make clear that there is a distinct jobs-housing imbalance in Berkeley, with many workers being forced by high housing costs, housing unavailability or both to live outside the city limits and commute back in. According to the data, in 2002, 21 percent of Berkeley workers lived in Berkeley and 34 percent of Berkeley residents worked in Berkeley. And the gap between the percentage of Berkeley workers living in Berkeley appears to be widening. In 2008, Berkeley employed 70,162 people, yet only eighteen percent of those workers lived in the City of Berkeley. Of the 40, 937 employed residents in Berkeley in 2008, thirty-one percent of these residents work in Berkeley. The jobs-housing imbalance is recognized in the introduction to the Land Use Element of Berkeley's General Plan.

<sup>72</sup> Based on previous feasibility analyses of housing developments on the west parking lot site, as well as discussions with various housing developers and real estate experts, we concluded that ownership housing would not be feasible on the site for at least a number of years. As such, we focused our proposal solely on rental housing.

<sup>73</sup> As previously discussed, Berkeley's inclusionary zoning ordinance may be subject to scrutiny and invalidation based on a recent court case. Nonetheless, because the City possesses the option to purchase the air development rights above the west parking lot, it could lawfully make an inclusionary housing requirement part of any contract transferring its air rights to a developer. It is vitally important to locate affordable housing in any project on the parking lot because it would both help assure that current residents in the Ashby area would not be locked out of living in the new development and reduce fears of gentrification.

The parcels located at high traffic locations at the new station entrance and along Ashby offer over 25,000 square feet of ground floor retail/commercial space. We recommend that these spaces host station-serving uses such as cafes, dry cleaners, flower shops, and child care centers. Banks or other financial services that are lacking in the neighborhood or galleries displaying works from the neighborhood arts district could also find homes. The post office that is currently on the east side of Adeline at Woolsey could also be relocated to the station entrance plaza.<sup>74</sup>

#### 5.5.2 URBAN FORM AT THE STATION AREA DEVELOPMENT

One of the guiding principles of our design for the station area was to create a new entrance plaza for Ashby BART. The existing station entry opens up onto the below-grade parking lot, and for the large number of pedestrians and bicyclists who board BART at Ashby, the station is marked by only a few small signs hanging over the vast void of the parking lot. Recently, the newly-built Ed Roberts Campus has brought more active land uses to the east BART parking lot, and our design for the west parking lot seeks further the ERC's success with a curvilinear building at that mirrors the west façade of the ERC, creating a semicircular station entry plaza for buses, drop-offs, pedestrians, and cyclists (Figure 54).

FIGURE 54: THE STATION ENTRY PLAZA



The plaza area contains most of the retail space in our proposed development, and we

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<sup>74</sup> According to Alameda County and City of Berkeley property records, the post office is not located on federally owned land as they often are. Instead, the federal government is leasing from private parties. As such, relocating the post office would be much easier than would otherwise be expected.



recommend that this space host station-serving establishments, such as cafés and dry-cleaners, in order to draw in passers-by on their way to the station.

Several 30-foot wide paths that align with neighborhood streets at the border of the station area also offer access to the station area development (Figure 55). Even with landscaping, these are sufficiently wide to offer delivery and emergency vehicles access to the apartments and shops in the station area, though pedestrians should be given priority.

**FIGURE 55: PATHWAY ENTERING THE STATION AREA AT ADELINE/MLK**



Though building heights at the station area development represent an increase over most surrounding buildings, we believe that they are justified given the proximity of this site to BART, and we have made every effort to design them such that they integrate well with the surrounding area. This means that along MLK, which is primarily residential, we propose reduced building heights to the south and reduced heights at the streetwall further north, along with careful articulation and private entrances to ground-level units (Figure 56). At the same time, we propose building to higher densities where appropriate, such as at the Ashby/MLK intersection (Figure 57).

FIGURE 56: BUILDING FACADES ON THE EAST FRONTAGE OF MLK



FIGURE 57: BUILDING FACADES AT THE SOUTHWEST CORNER OF MLK AND ASHBY



### 5.5.3 OPEN-AIR MARKET PLAZA

The Berkeley Flea Market is an important neighborhood destination, as well as a valuable regional resource for buyers and sellers of unique and affordable merchandise. For this reason, it is important to provide a permanent home for the flea market in a visible, pleasant, and highly-trafficked location. Our proposed development includes a 47,000 square-foot landscaped market space with a covered arcade that is located at street level



in the northeast corner of the station area, which not only houses the flea market, but also defines the street edge and integrates the flea market with neighboring commercial activity by bringing it up to the surface.

FIGURE 58: OPEN-AIR MARKET ENTRANCE AT THE SOUTHWEST CORNER OF ADELINE AND ASHBY



This market plaza is next to the Adeline/Ashby intersection, which is one of the busiest intersections in our study area, and is visible from our proposed linear park on North Adeline. An arcade on the north and east of the market plaza provides covered stalls for vendors and creates a visual buffer between the plaza and the street. The wide sidewalk to the northeast of the plaza, which includes space reclaimed from the reconfigured Adeline/Ashby intersection, contains spaces and curb-cuts to accommodate food trucks, and low concrete walls in this area serve both as bollards and seating. The back-in parking spaces on Adeline to the east of the market plaza should be reserved for sellers on the market days, since they provide easy loading access and allow vendors the option of selling directly out of their cars, as many do at the existing market. Fences demarcate the boundaries between the public market space and the private courtyards of the adjacent residential buildings.

Though the proposed market plaza is roughly half the size of the section of the parking lot that currently hosts the flea market, it is more efficiently organized, and should be able to accommodate more activity than the current market. A large amount of space in the market is occupied by vehicles parked in BART's inefficiently-organized lot, even though most vendors do not sell goods out of their cars, but simply park next to their booth in order to load and unload goods. The parking spaces adjacent to our proposed market plaza allow for easy loading, and by relocating vehicles to the fringe of the market area we free up useable space in the center, creating a much more pleasant environment for shoppers. Not only does this plaza provide a permanent home for the Berkeley Flea Market, but also creates space for a farmer's market or other such use on weekdays when the flea market is not in operation.

#### 5.5.4 RECONFIGURING AND REDUCING BART PARKING

The western BART parking lot both contains more spaces than is necessary and organizes these spaces inefficiently. Though the lot fills up every day, its heavy usage is largely due to the fact that it is underpriced at only one dollar per day. Since BART spaces cost \$1.25 per day to maintain,<sup>75</sup> the station is losing money on parking. While an average lot contains 250 to 300 square feet per parking space (including drive lanes and landscaped space; parking spaces themselves are typically around 150 square feet), the lot at Ashby BART contains 500 square feet per space. This inefficiency is due in part to the wide drive aisles and ample landscaped areas separating parking bays, but also to designs that attempt to fit rectangular parking into triangular parcels. More space is wasted at the narrower southern end of the parking lot, and the wedge between the southern exit ramp, MLK, and Adeline contains only 13 parking spaces in over 15,000 square feet.

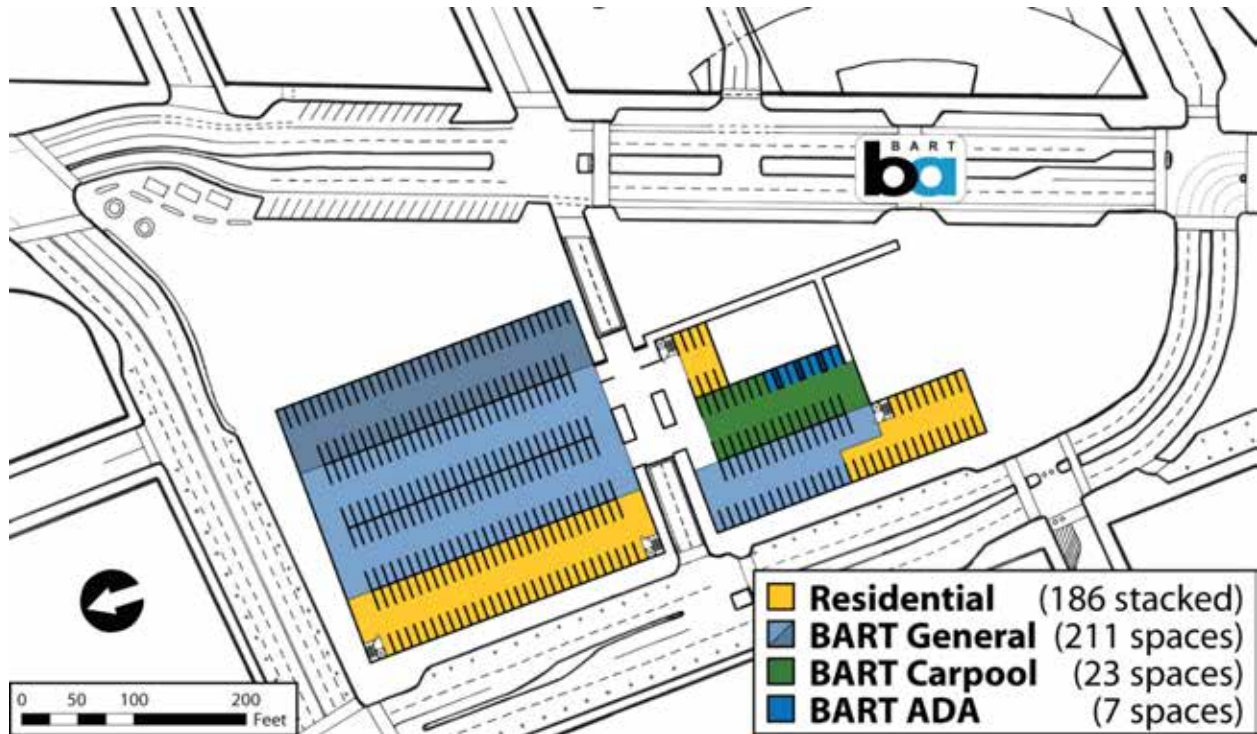
We propose to underground parking and concentrate spaces in the wider northern end of the station area. Though underground parking is more expensive than surface parking or above-ground multi-story parking lots, it has two advantages in this case. First, the existing parking lot is below grade, and underground parking provides a platform for our proposed development, bringing it up to street level. Second, the narrow, triangular parcel is not wide enough in most places to accommodate cheaper above-ground options, such as the freestanding parking structures surrounded by residential buildings that house cars at the planned MacArthur transit village. Concentrating parking at the north end of the parcel not only places it in the most efficient space, but also aligns parking garages with parcels, which would allow the garage to be constructed concurrently with the building overhead. 329 spaces could fit in a series of modules with eight-by-18-foot

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<sup>75</sup> Deakin, Elizabeth. April 21, 2010. Personal communication.

spaces and 24-foot wide drive aisles—the City of Berkeley standard—at the northern end of the parcel, as shown in Figure 59.

FIGURE 59: PROPOSED LAYOUT OF PARKING SPACES AT THE STATION AREA DEVELOPMENT.



To accommodate one residential parking space per two dwelling units, 93 of the single storey spaces would be double-stacked parking spaces, bringing the total number of spaces to up to 427. While this is greater than the amount of spaces that are currently in the west parking lot, some of these spaces would have to be dedicated parking for new land uses in the station area development. At 0.5 spaces per dwelling unit, the 371 new dwelling units would require 186 spaces, leaving 241 spaces for BART. All commercial/retail parking is to be accommodated in on-street spaces (by taking advantage of the waiver for commercial spaces in mixed-use buildings), which should be priced at market rates rather than given away free to BART riders.

Several additional parking management strategies are appropriate for the redevelopment project to support increasing travel by transit, bicycle, and foot as well as preventing parking spill-over. Residential parking spaces should be fully unbundled and offered for rent at monthly rates, with any spaces unused by residents then being offered to park-and-ride drivers. Agreements that residents without parking spaces not own cars would support the success of unbundled parking, as would the introduction residential parking permit programs to the west of the station and other nearby areas.

Though reducing the number of spaces runs contrary to BART's historic one-to-one parking replacement policy, it is merited in the case of Ashby Station since only 30 percent of riders drive from home to the station. The station with the most comparable driving mode share, Glen Park,<sup>76</sup> has only 50 parking spaces,<sup>77</sup> which are only available for midday parking, while Ashby Station has another large parking lot just across the street on the Ed Roberts Campus site.

The new development at nearby MacArthur Station is only building 510 BART parking spaces to replace the 600 that are currently at the site. Furthermore, the large bicycle and pedestrian mode shares at Ashby BART coupled with the fact that the average driver only travels 1.1 miles to reach the station<sup>78</sup> suggest that drivers who cannot find a parking space will easily be able to access the station by another mode. In light of these facts, even the 250 remaining spaces, which we estimate will cost over \$11 million to build, seem excessive. Further lowering the parking replacement requirement would make a development on the station parcel much less expensive and more feasible.

#### 5.5.5 TRANSPORTATION IMPACTS OF THE STATION AREA DEVELOPMENT

One of the most important benefits of this development is that it would increase BART ridership at Ashby Station by more than three percent. Using the methodology developed by Richard Wilson, Ph.D and BART staff and adapted by Fehr and Peers in order to estimate the traffic impacts of a new development proposed at MacArthur BART station, which is the next station south of Ashby BART, we calculated that our proposed development would add 319 daily trips to or from the BART station. Table 18 summarizes the results of this analysis, which is depicted in more detail in Appendix B:

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<sup>76</sup> BART. 2008. *2008 BART Station Profile Study*, p. 134.

<sup>77</sup> BART. "Glen Park Station." <http://www.bart.gov/stations/glen/index.aspx> (accessed April 26, 2010).

<sup>78</sup> BART. 2008. *2008 BART Station Profile Study*. p. 135.

TABLE 18: INCREASE IN BART RIDERSHIP AT ASHBY STATION DUE TO STATION AREA DEVELOPMENT<sup>79</sup>

	BART trips per day
Total increase in BART ridership due to new development	<b>499</b>
<i>Trips generated by residential development (371 DU)</i>	443
<i>Trips generated by commercial/retail development (25,364 SF)</i>	56
Decrease in BART ridership due to loss of parking (109 spaces)	-180
<b>Total change in BART ridership</b>	<b>319</b>
Daily station entries and exits at Ashby BART in 2009	9,594
<b>Percent change in Ashby BART station ridership</b>	<b>+&gt;3%</b>

This is likely a conservative estimate. A lower percentage of riders drive to Ashby BART Station than at MacArthur, and those who drive travel shorter distances, so decreasing the amount of BART parking spaces is unlikely to have as pronounced an effect on ridership at Ashby.

We also calculated new automobile trips that would be generated by the station area development and included these trips in our traffic model in order to ensure that additional trips generated by the development would not lead to congestion in our proposed road design. Based on studies of comparable infill developments, we assumed that each residential unit would generate 0.3 peak hour trips, 50% of which would be by

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<sup>79</sup> Using assumptions and coefficients from Fehr and Peers' traffic assessment of the MacArthur Transit Village, contained in: City of Oakland. 2008. MacArthur Transit Village Project, Volume 1 Draft Environmental Report, SCH No. 2006022075. Appendix K: Bart Ridership Estimates: 2-3. For more information on these assumptions, see

Appendix A: Motor vehicle traffic volumes as entered in Synchro 5

The tables on the following pages contain PM peak hour volumes for all intersection turn movements in our traffic model, including projected additional traffic from the Ed Roberts Campus and proposed station area development

Appendix B: Impacts of station area development on BART ridership.



automobile.<sup>80</sup> This results in a total of 60 evening peak hour auto trips, which we assigned in roughly equal proportions to Adeline North, Adeline South, Stanford South, Ashby East, Ashby West, and MLK North. We assumed that two-thirds of evening peak trips would be inbound and the remaining third would be outbound, and assigned each vehicle the most direct route between the station development's parking ramps and its destination.

While we recommend station-serving retail uses that would attract pass-by trips, we assumed that any commercial development in the station area would induce approximately 100 peak hour trips, evenly split between various looping and simple pass-by maneuvers to access on-street parking. Since the number of BART parking spaces are to be reduced by 110 under this scenario, we reduced the net development trip generation for BART riders by 50 peak hour automobile trips. We then added these 160 (net 110) peak hour automobile trips to existing traffic (including the Ed Roberts Campus trip generation and BART parking trips from its EIR) in our traffic model.

We anticipate that these assumptions are conservative based on the project's focus on multi-modal connectivity. They can be made even more conservative by pursuing advanced trip management strategies for the development (such as fully unbundled residential parking and agreements that residents without parking spaces will not own cars) and adjacent areas (market rate meter pricing on the adjacent blocks of Ashby, Adeline, and MLK, along with residential permit programs).

#### 5.5.6 FEASIBILITY ANALYSIS

In order to test the financial feasibility of our proposed station area development we conducted a simplified land residual analysis, which is a technique used to calculate the amount a developer could afford to pay for a parcel of land, i.e. the underlying value of the land. The calculation is done by projecting the value of the final project and then subtracting from that the cost of development. As a general rule of thumb, when the residual land value is greater than or equal to the price of the land to be developed, the proposed development is financially feasible. Appendix C contains detailed tables showing all of the assumptions and values that we used when conducting our feasibility analysis.

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<sup>80</sup> California Department of Transportation. 2009. *Trip-Generation Rates for Urban Infill Land Uses in California*, Phase 2: Data Collection. Final Report. We based our trip generation rate on developments in downtowns outside of Berkeley. Downtown Berkeley had a much lower trip generation rate of 0.16 peak hour trips per DU, perhaps due to the large number of students living in the area.



Here, we simplified the analysis by excluding all the commercial space from the project and restricting our analysis to the 371 planned residential units. In addition, we made a number of other assumptions in the pencil out. First, we assumed the developer would be able to purchase the air rights over and ground rights to (either in fee or in the form of a long-term lease) the west Ashby BART parking lot very cheaply—just as the Ed Roberts Campus did on the east lot—which would make the development feasible if the residual values was greater than \$0. Second, we assumed that the cost of providing BART replacement parking, which includes the cost of providing alternative parking while the replacement parking is being built, would be covered by outside funding sources, such as MTC’s Transportation for Livable Communities (TLC) capital grants.<sup>81</sup> Third, the rental prices used in the pencil out are an average across all units, and do not explicitly take into account the difference in price between the affordable and the market-rate units. Table 12 summarizes the results of our analysis:

**TABLE 19: SUMMARY OF FEASIBILITY ANALYSIS FOR THE NORTHWEST AND WEST PARCELS OF THE STATION AREA DEVELOPMENT**

	Total for All Proposed Housing (303,800 gross square feet; 371 units)
Cost of construction	-\$71,288,200
<i>Parking</i>	-\$5,565,000
<i>Building</i>	-\$64,165,000
<i>Appliances</i>	-\$1,558,200
Soft Costs	-\$24,950,870
Total Costs	-\$96,239,070
Supported debt	\$96,249,366
<b>Residual land value</b>	<b>\$10,296</b>

As Table 12 shows, a development just including the housing portion of our proposal would pencil out if our assumptions hold true. In addition, by the time any development

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<sup>81</sup> We estimated the cost of building the replacement BART parking spots – not including the cost of providing alternative parking during construction – as \$10,845,000, assuming 241 spots would be replaced at a cost of \$45,000 each. Our source for the cost of building underground parking is: Shoup, Donald. 2005. *The High Cost of Free Parking*. American Planning Association.

for the west BART parking lot is imminent, we anticipate that both the housing and retail markets have recovered, increasing the feasibility of the project. Furthermore, there are numerous other funding sources that could be tapped to augment developer capital, equity and debt financing, which we discuss further in Subsection 6.2.1.

However, while the housing portion of our proposed project pencils out, it is likely that the market-rate units would be unaffordable for residents with comparable incomes to those who currently live in the study area. This becomes more evident when the rental prices for the affordable units are distinguished from the prices for the market-rate units. Assuming that (1) all of the affordable units (20 percent of the total units for the project) were priced for households with incomes at 50 percent of the Oakland area median income, and (2) Section 8 or other comparable rental subsidies were available, the allowable rents for those units would be \$1,278 for one-bedroom units and \$1,515 for two-bedroom units.<sup>82</sup> Given these rents for affordable units, to meet the average rental prices used in the pencil out the market-rate units would have to be priced at \$1,992 for one-bedroom units and \$2,840 for two-bedroom units.<sup>83</sup> The increased rental prices for the market-rate units are still well within the range for comparably sized transit-accessible rental units in newer buildings in downtown Berkeley, but they are likely somewhat more than what many “workforce” tenants could likely afford.<sup>84</sup>

Thus, even if development on the parking lot would be feasible without obtaining outside subsidies, acquiring those additional funds should be prioritized so as to help make the market-rate units more viable as workforce housing. Other strategies to reduce the cost of the market-rate units could also be pursued, such as reducing the off-street residential parking requirement to one spot for every three units or even lower. Additionally, the developer could reduce the cost of the market-rate units by such things as providing

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<sup>82</sup> Berkeley Housing Authority. 2009. “Payment standards, income limits and utility allowance.” <http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=18730> (accessed April 2010).

<sup>83</sup> These rents would actually be slightly higher because of the utilities allowance the developer would have to pay for the affordable units (see Berkeley Housing Authority, 2010).

<sup>84</sup> This is based on our review of rental prices at the Gaia, Fine Arts, ARTech, Berkeleyan, Touriel, Bachenheimer and other buildings in downtown Berkeley, as well as the Pinnacle at City Centre development in Hayward, using information provided on the websites for the rental agencies for those properties (e.g. <http://brecitycentre.com/PinnacleCityCentre/ApartmentsandPrices.asp?Special=-2>; <http://www.equityapartments.com/searchresults.aspx?geographyId=17131>). The rental prices in these buildings are also significantly higher than for most of the units currently on offer in the vicinity of Ashby BART, as determined by a review of the prices for the one and two bedroom units listed on Craigslist. That review showed a range for one bedroom units from \$850 to \$1,500 and from \$1,175 to \$2,200 for two bedroom units.

fewer amenities like dishwashers (which are currently include as an appliance cost in the pencil out).

Regardless of what market-rate rents turn out to be, our proposed development would still carry immense benefits for the neighborhood. Increasing the number of residents and workers on the station parcel would broaden the customer base of adjacent businesses, and developing the BART parcel would enhance the environment around the station area for all users, potentially drawing new travelers to one of the Bay Area’s most walkable transit stations.

#### 5.5.7 PROPERTY OWNERSHIP AND DEVELOPMENT RIGHTS

In 1966, the City of Berkeley elected to pay for the creation of undergrounding BART lines and stations at both North Berkeley and Ashby. As a result, pursuant to a 1964 agreement, the City obtained and promptly exercised the option to purchase the air rights above the parking lots at both stations for a total price of \$100,000. While the City later exchanged its air rights option over the North Berkeley BART station parking lots for leasehold and purchase option interests in other BART property along Hearst Avenue, it retained its options to the air rights over the Ashby BART station lots.<sup>85</sup>

In subsequent meetings, however, BART and City officials agreed that the definition of “air rights” in the original 1964 agreement was ambiguous. To clarify the legal contours of the City’s air rights, the City and BART executed a memorandum of understanding in 1997. Among other things, the City and BART agreed in the memorandum to (1) “seek development solutions” to the ambiguous definition of air rights, (2) agree on a mechanism for preserving BART’s rights to require replacement parking, (3) “work together cooperatively on development scenarios,” and, in the event a development project “proceeds to fruition,” (4) complete the conveyance of the Ashby station’s parking lot air rights from BART to the City through an agreement to be negotiated by both BART and the City.”<sup>86</sup>

Working from the framework of the 1997 memorandum, the City, BART and the Ed Roberts Campus (ERC) recently orchestrated a deal to develop the east Ashby BART parking lot, which included the following steps: (1) the City assigned its air rights over the

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<sup>85</sup> See Kamlarz, Phil. January 18, 2005. Memorandum to the Mayor and City Councilmen of Berkeley re: Renewal of Contract with Ed Roberts Campus for Assignment of a Portion of the City’s Air Rights at Ashby BART (copy on file with authors); City of Berkeley & BART. October 22, 1964. Agreement (copy on file with authors); City of Berkeley & BART. November, 1975. Agreement (copy on file with authors); City of Berkeley & BART. June 1, 1997. Memorandum of Understanding (copy on file with authors).

<sup>86</sup> City of Berkeley & BART. June 1, 1997. Memorandum of Understanding (copy on file with authors).

east Ashby BART parking lot to ERC; (2) ERC purchased the air rights from BART for \$45,000; (3) ERC purchased the ground rights to the parking lot except for a remainder parcel to be used for BART parking and subject to a permanent access easement across the ERC parcel from the remainder lot to the BART station; (4) ERC relinquished the air rights over the remainder parcel. All of these steps were only taken after certain conditions precedent were met, including compliance with the California Environmental Quality Act (CEQA), obtaining all discretionary city approvals and a showing by ERC that it had lined up enough financing to build the project.<sup>87</sup>

The deal for construction of the Ed Roberts Campus did not affect the nature of the City's air rights option over the west Ashby BART parking lot, but it is instructive as to how a development could proceed on that site. First, because ERC paid BART \$45,000 for the air rights over the east parking lot, it means the City or its assignee would only have to pay \$55,000 for the west parking lot air rights. Second, and most importantly, the ERC deal serves as a model for how development would likely occur on the west parking lot, in terms of property rights transactions, collaboration on design, permitting, and CEQA compliance.

In summary, BART owns the ground rights under the west Ashby BART parking lot, while the City possesses the option to acquire the air rights over the parking lot. However, given the ambiguity of the term "air rights" in the original 1964 agreement between the City and BART and pursuant to the 1997 memorandum of understanding between the two parties, any development project on the parking lot site would be a collaborative effort between the two parties and the developer. This would be especially so if the developer wished to purchase the ground rights to the parcel from BART. In addition, BART would almost assuredly require some form of replacement BART parking as a condition of any development agreement.

#### 5.5.8 HISTORY OF DEVELOPMENT PROPOSALS FOR THE WEST PARKING LOT

Largely because the City has retained the option to purchase the air development rights over the west parking lot for such a low price, there have been numerous proposals to develop the site since the 1960s. The proposed developments have mostly been housing-oriented and have garnered varying degrees of community support. However, due mostly to the high cost of replacing the BART parking spots and intermittent community

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<sup>87</sup> Kamlarz, Phil. January 18, 2005. Memorandum to the Mayor and City Councilmen of Berkeley re: Renewal of Contract with Ed Roberts Campus for Assignment of a Portion of the City's Air Rights at Ashby BART (copy on file with authors); Ordway, Jeff. April 22, 2010. Personal communication.

opposition, none of the proposals ever came to fruition. A chronological summary of some of the more prominent past development designs follows.

- **1967:** South Berkeley residents, after series of neighborhood meetings, recommended that the City provide dense housing and some retail around the to-be-constructed Ashby BART station. To preserve maximum open space, the residents proposed 10- to 12-story buildings.<sup>88</sup> Despite the residents' suggestions, however, the existing housing and businesses on the site were cleared to make way for the BART station and were replaced with parking lots instead of new development.<sup>89</sup>
- **1990:** The South Berkeley Area Plan was approved by the City Council. Among other things, the plan, which is still in effect, calls for evaluating "the merits of . . . mixed use development at the Ashby BART station, with a particular emphasis on affordable housing options."<sup>90</sup>
- **2001:** A group of presidents of union locals representing employees of the City, the University of California, and the Berkeley Unified School District sent a letter to various officials of those three entities requesting to work with the City to develop the west parking lot site for housing that would be "rented or sold on a preferential basis to public employees," i.e. "workforce housing." They further suggested that the development (1) include both rental and ownership housing, (2) include some community-serving retail, (3) be LEED certified, (4) fully replace BART parking, (5) include a condition for residents prohibiting them from driving to work except in emergencies, and (6) relocate the Berkeley Flea Market. As for financing, the proponents cited interest by the AFL-CLO Housing Investment Trust in using its pension capital fund to bankroll the project.<sup>91</sup> While this proposal was never realized, it spurred future proposals and feasibility studies, and led to the adoption by the Berkeley City Council of numerous General Plan policies supporting development of the west parking lot site.<sup>92</sup>

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<sup>88</sup> Dodsworth, Fred. 2006. "Eminent Domain not Planned." *East Bay Daily News*, January 20, p.1.

<sup>89</sup> Ashby BART Task Force. September 19, 2006. "Frequently Asked Questions about the Ashby BART Task Force." <http://www.southberkeley.org/TaskForce.html>.

<sup>90</sup> City of Berkeley. 1990. *South Berkeley Area Plan*, p. 24.

<sup>91</sup> Fike, Barry et al. January 3, 2001. Letter to Mayor Dean, Vice-Mayor Shirek, the Berkeley City Council, President Doran of the Berkeley Unified School District and the members of School Board, and Chancellor Berdahl of the University of California, Berkeley (copy on file with the authors).

<sup>92</sup> These include General Plan Policies H-16, H-18, LU-23, LU-32 and T-16, as well as policies set forth in the City's Climate Action Plan (pp. 25, 27, 29) and South Berkeley Area Plan (p. 24). Some of these policies are discussed in more detail in Section 4.3.

- **2002:** The City commissioned a feasibility study for a wide range of potential housing and mixed use developments on the west parking lot.<sup>93</sup> The author of the study, a recent graduate from UC Berkeley’s Haas School of Business, concluded that, among other things, the cost of fully replacing all the BART parking spots would be a “significant impediment to undertaking development at the site.”<sup>94</sup>
- **2002:** City Manager Weldon Rucker provided the Berkeley City Council with two development options for the site, containing between 201 and 249 housing units each. Rucker, however, concluded that neither design was feasible “due primarily to the high cost of providing replacement (BART) parking.”<sup>95</sup>
- **2004:** Strategic Economics performed an Ashby BART site development feasibility analysis for the East Bay Community Foundation. The analysis focused on two development proposals for the west parking lot site, both of which would provide just over 60,000 square feet of retail/community/office space, replace all the existing BART parking, and provide about one off-street parking space per residential unit along with some off-street parking for retail customers. The two proposals differed primarily in the amount of dwelling units they would provide, 482 versus 553. The report analyzed the feasibility of both ownership and rental housing for both designs. The authors concluded that there was not a sufficient market for ownership housing, but that rental housing would be financially viable if the developers did not have to bear the cost of replacing the BART parking spots.<sup>96</sup>
- **2006:** On December 13, 2005, the Berkeley City Council asked the South Berkeley Neighborhood Development Corporation to convene the Ashby BART Task Force to study and pursue development on the west parking lot site. In July 25, 2006, the City Council requested that the Task Force “prepare a budget and work plan for ‘implementing a wide outreach effort in the community to develop a vision, goals, objectives, and criteria’” for development on the site, with the end result being a

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<sup>93</sup> Portions of this study are on file with the authors. The full study could not be obtained.

<sup>94</sup> Kamlarz, Phil. January 18, 2005. Memorandum to the Mayor and City Councilmen of Berkeley re: Renewal of Contract with Ed Roberts Campus for Assignment of a Portion of the City’s Air Rights at Ashby BART (copy on file with authors).

<sup>95</sup> Dodsworth, Fred. 2006. “Eminent Domain not Planned.” *East Bay Daily News*, January 20, p.49 (quoting Sheldon Rucker).

<sup>96</sup> Strategic Economics. April 14, 2004. “Ashby Bart Site Development Feasibility Analysis.” Memorandum to East Bay Community Foundation (copy on file with authors).



recommendation to the City Council on future planning and funding.<sup>97</sup> While the Task Force held a number of community meetings in 2006, the outreach and planning process has been stalled for the past couple years.

These past development ideas and feasibility analyses have informed both the design and rationale behind our proposal. Most notably, our decision to propose a primarily housing-based development takes a significant cue from the consistent focus on and calls for housing on the west parking lot site over the years.

## 5.6 LAND USE POLICY

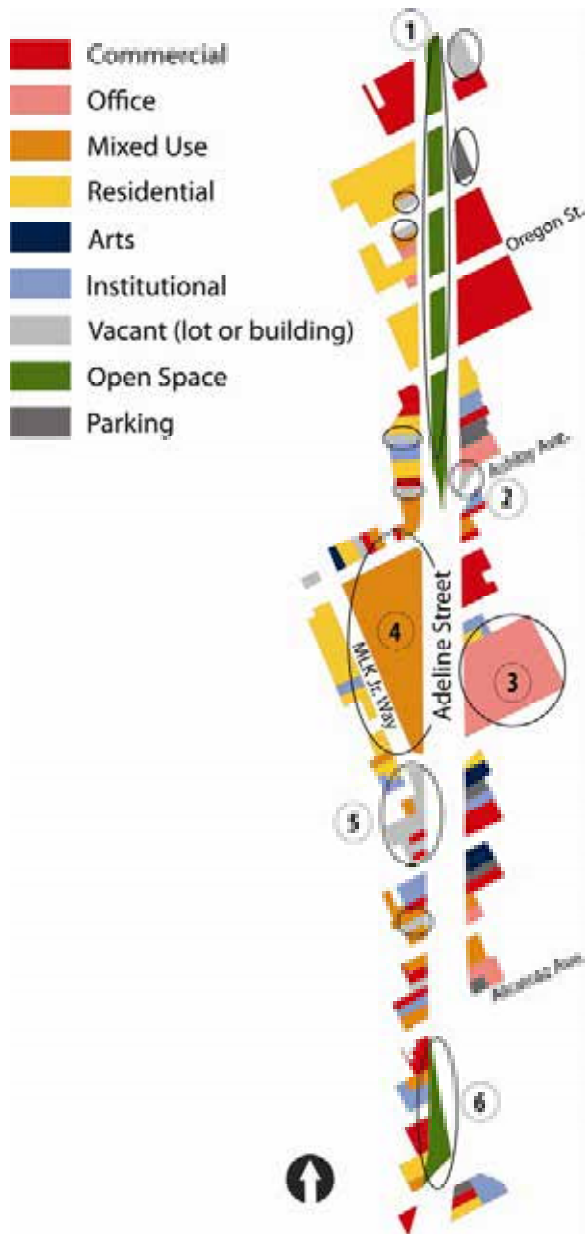
Adeline currently contains several vacant buildings, and our proposal creates a large new parcel of developable land on Adeline southeast of Ashby BART Station. The City should capitalize on our proposed improvements to the pedestrian environment by seeking to draw businesses that attract pedestrian traffic, such as restaurants, beauty salons, laundromats, and convenience stores,<sup>98</sup> to these opportunity sites. Figure 6o shows the location of opportunity sites along Adeline.

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<sup>97</sup> Ashby BART Task Force. September 19, 2006. "Frequently Asked Questions about the Ashby BART Task Force." <http://www.southberkeley.org/TaskForce.html>.

<sup>98</sup> Gordon, Kevin. April 16, 2010. Interview.

FIGURE 6o: PROPOSED LAND USES AT OPPORTUNITY SITES (CIRCLED)



Although Adeline has unparalleled transit service, there is still the potential for competition with adjacent commercial corridors. Shattuck Avenue, just a block east of North Adeline, contains various shops that may threaten Adeline’s economic competitiveness. Telegraph Avenue and Sacramento Avenue, a half a mile to the east and west of Adeline, respectively, also contain shops and other pedestrian attractions. However, real-estate professionals and city representatives do not consider the adjacent districts much of a threat to Adeline. Telegraph and Sacramento are currently in more disrepair than Adeline and serve different neighborhoods, while Shattuck lacks the

amount of foot traffic and number of shops necessary to compete with Adeline.<sup>99</sup> Our proposed changes only enhance Adeline’s competitiveness and chances for success.

Though our proposed changes to Adeline may disrupt business activity during construction, they maintain the current amount of on-street parking spaces that serve these businesses, and in the long term we believe that they will draw more potential customers to the area.

## 6. IMPLEMENTING THE PROPOSAL

### 6.1. SUMMARY OF ROADWAY IMPROVEMENT COSTS

We have prepared a basic estimate of project construction costs for all proposed changes to the roadway. Table 20 shows the cost of these changes on a corridor-wide level, with an expected 2015 build date. Overall, we estimate that the project will cost \$7.1 million dollars to build. Appendix D contains a detailed table and our assumptions related to construction costs.

TABLE 20: SUMMARY OF COSTS

<b>Item</b>	<b>Cost</b>
<b>Roadway</b>	<b>\$4,636,300</b>
Earthwork	\$125,200
Construction	\$4,076,900
<i>Pavement</i>	<i>\$1,442,100</i>
<i>Drainage</i>	<i>\$2,800</i>
<i>Pavement Markings</i>	<i>\$59,000</i>
<i>Landscaping</i>	<i>\$2,573,100</i>
Contingency	\$434,100
<b>Equipment</b>	<b>\$1,350,800</b>
Signs	\$14,100
Traffic Signals	\$1,111,000
Barriers	\$6,100
Parking	\$6,000
Lighting	\$213,700
<b>Pre-construction and Administrative</b>	<b>\$1,112,500</b>
Administration (Construction)	\$278,200

<sup>99</sup> Ibid.; Delgado, Elizabeth. April 16, 2010. Interview.

(6%)	
Planning (Construction) (2%)	\$92,700
Design/Engineering (10%)	\$520,400
Field Inspection (2%)	\$221,100
<b>Total Current Year (2010) Capital Cost</b>	<b>\$7,099,700</b>
<b>Total Build Year (2015) Capital Cost</b>	<b>\$8,058,900</b>

## 6.2. POTENTIAL FUNDING SOURCES

The City of Berkeley may not have sufficient funds to implement our proposal, and may need to seek grants or use other mechanisms to raise money. The Berkeley Pedestrian Master Plan identifies a number of funding sources for pedestrian and bicycle projects, and we have identified several additional programs and policies that could provide support for this proposal.<sup>100</sup> Though the table in the previous section focuses primarily on the cost of changes to the roadway, the sources we discuss below also include several that could be applied to our proposed station area development. These sources include, among others, the MTC Transportation for Livable Communities (TLC) capital funds<sup>101</sup> and the California Department of Housing and Community Development’s Infill Infrastructure Grants and Transit-Oriented Development Housing Program.<sup>102</sup> Funding for development near transit is likely to increase as SB 375 is implemented.<sup>103</sup>

### 6.2.1. REGIONAL, STATE AND FEDERAL SOURCES

There are a number of federal, state, and regional funding programs that could be used to help implement this plan. Table 21 below lists those that we identified in an initial scan of funding databases and websites. The table also notes what parts of the plan the funding sources can be used for: pedestrian and bicycle improvements, parking, parks, and

<sup>100</sup> This list draws heavily on the Berkeley Pedestrian Master Plan. See City of Berkeley. 2010. *Final Draft Berkeley Pedestrian Master Plan*, chapter 10.

<sup>101</sup> These funds are explicitly allowed to be used for structured or below-grade parking as long as certain transportation and parking demand reduction studies have been done. See Metropolitan Transportation Commission. 2010. “Planning: Smart Growth/Transportation for Livable Communities.” [http://www.mtc.ca.gov/planning/smart\\_growth/](http://www.mtc.ca.gov/planning/smart_growth/).

<sup>102</sup> California Department of Housing and Community Development. 2009. *Financial Assistance Program Directory*. <http://www.hcd.ca.gov/fa/>

<sup>103</sup> Metropolitan Transportation Commission. 2009. *Fact Sheet: SB 375 (Steinberg): Linking Regional Transportation Plans to State Greenhouse Gas Reduction Goals*. <http://www.mtc.ca.gov/library/sb375.htm>.

housing and transit-oriented development (TOD)-related projects; as well as whether each program is directed at planning or construction activities. Since private developers will independently seek funding to build housing in the station area, the table only includes housing funding programs that can also be applied toward other portions of our proposal (e.g. parking, parks). A complete list of state affordable housing programs can be found in the California Department of Housing and Community Development's *Financial Assistance Program Directory*.<sup>104</sup>

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<sup>104</sup> California Department of Housing and Community Development. 2009. *Financial Assistance Program Directory*. <http://www.hcd.ca.gov/fa/>.

TABLE 21: REGIONAL AND STATE FUNDING PROGRAMS

Ped/ Bike	Parking	Parks	Housing/TOD	Planning	Construction	Program Description
x	x	x	x		x	<p><b>Program: Transportation for Livable Communities Capital Grants</b></p> <p><b>Agency:</b> Metropolitan Transportation Commission</p> <p><b>Funding Details:</b> Grants up to \$6 million, require a 20% local match</p> <p><b>Description:</b> “The purpose of the Transportation for Livable Communities (TLC) program is to support community-based transportation projects that bring new vibrancy to downtown areas, commercial cores, neighborhoods, and transit corridors, enhancing their amenities and ambiance and making them places where people want to live, work and visit. TLC provides funding for projects that are developed through an inclusive community planning effort, provide for a range of transportation choices, and support connectivity between transportation investments and land uses.”<sup>105</sup> Eligible projects include:</p> <ul style="list-style-type: none"> <li>• “Streetscape projects focusing on high-impact, multi-modal improvements</li> <li>• Non-transportation Infrastructure Improvements: projects could include sewer upgrades as a result of new TOD units</li> <li>• Transportation Demand Management: projects could include TOD parking, carsharing or TransLink®-related projects</li> <li>• Density Incentives: projects could include density bonuses, land banking or site assembly”<sup>106</sup></li> </ul> <p><b>Website:</b></p>

<sup>105</sup> MTC. 2010. Smart Growth/Transportation for Livable Communities website. Available online:

[http://www.mtc.ca.gov/planning/smart\\_growth/tlc\\_grants.htm](http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm)

<sup>106</sup> MTC. 2010. *Transportation for Livable Communities 2010 Capital Program Regional Call for Projects Application Guidelines*. Oakland: MTC.



						<a href="http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm">http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm</a>
x	x	x	x		x	<p><b>Program: Infill Infrastructure Grant Program</b></p> <p><b>Agency:</b> California Department of Housing and Community Development</p> <p><b>Funding Details:</b> Grants of up to \$30 million, \$50 million maximum over the life of the program for a qualifying project or area</p> <p><b>Description:</b> The Infill Infrastructure Grant Program “funds infrastructure improvements to facilitate new housing development in residential or mixed use infill projects and infill areas.... Capital improvement projects that are part of, or necessary for the development of, qualifying infill projects or areas, including but not limited to parks or open space; water, sewer, or other utility service improvements; streets, roads, parking structures, or transit linkages and facilities; pedestrian or bicycle transit facilities; traffic mitigation; infill site preparation or demolition; or sidewalk or streetscape improvements.”<sup>107</sup></p> <p><b>Website:</b> <a href="http://www.hcd.ca.gov/fa/iig">http://www.hcd.ca.gov/fa/iig</a></p>
x			x		x	<p><b>Program: Transportation Funds for Clean Air Program</b></p> <p><b>Agency:</b> Bay Area Air Quality Management District (BAAQMD), Alameda County Congestion Management Agency</p> <p><b>Funding Details:</b> Grants</p> <p><b>Description:</b> “The purpose of the TFCA program is to provide grants to implement the most cost-effective projects in the Bay Area that will decrease motor vehicle emissions, and thereby improve air quality.... The TFCA program can fund a wide range of project types, including the purchase or lease of clean air vehicles; shuttle and feeder bus service to train stations; ridesharing programs to encourage carpool and transit use; bicycle facility improvements such as bike lanes, bicycle racks, and lockers; arterial management improvements to speed traffic flow on major arterials; smart growth projects; and transit information projects to enhance the availability of transit</p>

<sup>107</sup> California Department of Housing and Community Development. 2009. *Financial Assistance Program Directory*: 27.

					information. <sup>108</sup> <b>Website:</b> <a href="http://www.baaqmd.gov/Divisions/Strategic-Incentives/Transportation-Fund-for-Clean-Air.aspx">http://www.baaqmd.gov/Divisions/Strategic-Incentives/Transportation-Fund-for-Clean-Air.aspx</a>
x		x	x	x	<p><b>Program: Alameda County Measure B (2000)</b></p> <p><b>Agency:</b> Alameda County Congestion Management Agency</p> <p><b>Funding Details:</b> Grants, which can be used as the local match for other programs</p> <p><b>Description:</b> Alameda County Measure B (2000) funds several transportation programs in Alameda County.</p> <ul style="list-style-type: none"> <li>• Pedestrian and bicycle improvements: three-quarters of the funds are passed through to cities and the County, one-quarter goes into the Countywide Discretionary Fund (CDF) grant program funds capital projects, programs and master plans of countywide significance.</li> <li>• Transit center development “to encourage residential and retail development near transit centers.”<sup>109</sup></li> <li>• Local transportation priorities, allocated to cities, the County, and transit operators in the county</li> <li>• Paratransit/special transportation city programs and "gap" programs: “to close gaps in services for seniors and disabled populations”<sup>110</sup></li> </ul> <p><b>Website:</b> <a href="http://www.actia2022.com/Programs">http://www.actia2022.com/Programs</a></p>
x			x	x	<p><b>Program: Safe Routes to Transit</b></p> <p><b>Agency:</b> Transform and East Bay Bicycle Coalition</p> <p><b>Funding Details:</b> Grants generally less than \$1 million per year</p> <p><b>Description:</b> “Safe Routes to Transit (SR2T) promotes bicycling and walking to transit stations by funding projects and plans that make important feeder trips easier, faster, and safer... Funds may</p>

<sup>108</sup> BAAQMD. 2010. Transportation Fund for Clean Air website. Available online: <http://www.baaqmd.gov/Divisions/Strategic-Incentives/Transportation-Fund-for-Clean-Air.aspx>

<sup>109</sup> ACTIA. 2010. Transit Center Development. Available online: [http://www.actia2022.com//app\\_pages/view/23](http://www.actia2022.com//app_pages/view/23)

<sup>110</sup> ACTIA. 2010. Special Transportation (Paratransit). Available online: [http://www.actia2022.com//app\\_pages/view/23](http://www.actia2022.com//app_pages/view/23)

					<p>be used for:</p> <ul style="list-style-type: none"> <li>• Secure bicycle storage at transit stations/stops/pods</li> <li>• Safety enhancements for ped/bike station access to transit stations/stops/pods</li> <li>• Removal of ped/bike barriers near transit stations</li> <li>• System-wide transit enhancements to accommodate bicyclists or pedestrians”<sup>iii</sup></li> </ul> <p><b>Website:</b> <a href="http://www.transformca.org/campaign/sr2t">http://www.transformca.org/campaign/sr2t</a></p>	
x				x	x	<p><b>Program: Safe Routes to School</b></p> <p><b>Agency:</b> Federal, state, and regional programs; CalTrans Division of Local Assistance, Metropolitan Transportation Commission</p> <p><b>Funding Details:</b> Grants from the state require a 10% match (no match for federal grants)</p> <p><b>Description:</b> The state and federal Safe Routes to School programs aim to increase the number of children who walk or bicycle to school by funding projects that remove the barriers that currently prevent them from doing so. Those barriers include lack of infrastructure, unsafe infrastructure, lack of programs that promote walking and bicycling through education/encouragement programs aimed at children, parents, and the community. Projects must be in the vicinity of a school (K-12 state, K-8 federal)</p> <p><b>Website:</b> <a href="http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm">http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm</a></p>
x				x	x	<p><b>Program: Transportation Development Act Article 3</b></p> <p><b>Agency:</b> Metropolitan Transportation Commission, Alameda County Congestion Management Agency</p> <p><b>Funding Details:</b> Grants, which can be used as the local match for other programs</p> <p><b>Description:</b> Transportation Development Act (TDA) Article 3 funds are available for transit, bicycle and pedestrian projects in California. Eligible pedestrian projects include construction and</p>

<sup>iii</sup> Transform. 2010. Safe Routes to Transit Grant Program website. Available online: <http://www.transformca.org/campaign/sr2t>

					<p>engineering for capital projects and development of comprehensive pedestrian facilities plans. A city or county is allowed to apply for funding for pedestrian plans not more than once every five years. These funds may be used to meet local match requirements for federal funding sources.<sup>112</sup></p> <p><b>Website:</b> <a href="http://www.mtc.ca.gov/funding/STA-TDA/">http://www.mtc.ca.gov/funding/STA-TDA/</a></p>
x				x	<p><b>Program: Regional Bicycle and Pedestrian Program</b></p> <p><b>Agency:</b> Metropolitan Transportation Commission, Alameda County Congestion Management Agency</p> <p><b>Funding Details:</b> Grants require a local match of 11.5%</p> <p><b>Description:</b> The Regional Bicycle and Pedestrian Program Project funds “construction of the Regional Bicycle Network, regionally significant pedestrian projects as well as bicycle/pedestrian projects serving schools or transit....Activities eligible for funding include: pedestrian and bicycle facilities (including bike parking) that provide access to regional transit, lifeline transit, regional activity centers, or schools; bicycle facilities on the Regional Bicycle Network defined in the Regional Bicycle Plan (December 2001); and regionally significant pedestrian projects. Pedestrian projects are intended to be inclusive of facilities or improvements that accommodate wheelchair use.”<sup>113</sup></p> <p><b>Website:</b> <a href="http://www.mtc.ca.gov/planning/bicyclespedestrians/regional.htm">http://www.mtc.ca.gov/planning/bicyclespedestrians/regional.htm</a></p>
x				x	<p><b>Program: Office of Traffic Safety Grants</b></p> <p><b>Agency:</b> California Office of Traffic Safety (OTS)</p> <p><b>Funding Details:</b> Grants</p> <p><b>Description:</b> OTS makes grants “to local and state public agencies for programs that help them enforce traffic laws, educate the public in traffic safety, and provide varied and effective means of reducing fatalities, injuries and economic losses from collisions.” Relevant programs, administered by OTS,</p>

<sup>112</sup> City of Berkeley. 2010. “Chapter 10. Implementation and Funding,” *Final Draft Berkeley Pedestrian Master Plan*. (Berkeley: City of Berkeley, January): 10-12.

<sup>113</sup> MTC. 2004. Regional Bicycle and Pedestrian Program Guidelines, Resolution No. 3644.

					<p>are:</p> <ul style="list-style-type: none"> <li>• “Pedestrian and Bicycle Safety: The program goal is to increase safety awareness among pedestrians, bicyclists and motorists through various approaches including education, enforcement and engineering.”</li> <li>• “Roadway Safety: The program goal is to improve the roadway and associated environment with a special emphasis on the identification and surveillance of crash locations, traffic control device inventories and other related traffic engineering services.”<sup>114</sup></li> </ul> <p><b>Website:</b>  <a href="http://www.ots.ca.gov/OTS_and_Traffic_Safety/About_OTS.asp">http://www.ots.ca.gov/OTS_and_Traffic_Safety/About_OTS.asp</a></p>
x				x	<p><b>Program: Bicycle Transportation Account</b></p> <p><b>Agency:</b> CalTrans Division of Local Assistance</p> <p><b>Funding Details:</b> Grants up to \$1.8 million, 10% local match required</p> <p><b>Description:</b> “Provides state funds for city and county projects that improve safety and convenience for bicycle commuters”<sup>115</sup></p> <p><b>Website:</b>  <a href="http://www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm">http://www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm</a></p>
		x		x	<p><b>Program: Land and Water Conservation Fund</b></p> <p><b>Agency:</b> California Department of Parks and Recreation</p> <p><b>Funding Details:</b> grants require 50% local match</p> <p><b>Description:</b> The Land and Water Conservation Fund is meant for the “acquisition or development of outdoor recreation areas and facilities. Priority development projects include trails, campgrounds, picnic areas, natural areas and cultural areas for recreational use. Property acquired or developed under the program must be retained in perpetuity for public outdoor</p>

<sup>114</sup> California Office of Traffic Safety. 2007. “About OTS.”

[http://www.ots.ca.gov/OTS\\_and\\_Traffic\\_Safety/About\\_OTS.asp](http://www.ots.ca.gov/OTS_and_Traffic_Safety/About_OTS.asp)

<sup>115</sup> CalTrans Local Assistance. 2010. Bicycle Transportation Projects.

<http://www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm>

						recreation use. <sup>116</sup> <b>Website:</b> <a href="http://www.parks.ca.gov/?page_id=21360">http://www.parks.ca.gov/?page_id=21360</a>
		x	x		x	<b>Program: Housing-Related Parks Program</b> <b>Agency:</b> California Department of Housing and Community Development <b>Funding Details:</b> Grants based on affordable housing creation <b>Description:</b> The Housing-Related Parks Program provides incentives for cities and counties to increase their numbers of affordable housing starts by providing funding for the creation or improvement of parks and recreational facilities based on the number of new affordable units started during a year. Bonus grants are awarded for park projects that serve disadvantaged and park-deficient communities. <b>Website:</b> <a href="http://www.hcd.ca.gov/hrp/hrpp">http://www.hcd.ca.gov/hrp/hrpp</a>
			x		x	<b>Program: Transit-Oriented Development Housing Program</b> <b>Agency:</b> California Department of Housing and Community Development <b>Funding Details:</b> Loans for housing development and grants for infrastructure improvements; maximum assistance is \$17 million for a single development, \$50 million for a single transit station <b>Description:</b> The Transit-Oriented Development Housing Program “provides funding to stimulate production of higher density housing and related infrastructure close to transit stations.” <sup>117</sup> Funding can be used for rental housing development, land acquisition for proposed housing development, and infrastructure supporting that housing or facilitating access to transit from those developments. <b>Website:</b> <a href="http://www.hcd.ca.gov/fa/tod">http://www.hcd.ca.gov/fa/tod</a>
			x		x	<b>Program: Low Income Housing Tax Credits</b> <b>Agency:</b> California Tax Credit Allocation Committee <b>Funding Details:</b> Federal and state tax credits of up to 9% or

<sup>116</sup> California State Parks. 2009. Land and Water Conservation Fund.  
[http://www.parks.ca.gov/?page\\_id=21360](http://www.parks.ca.gov/?page_id=21360)

<sup>117</sup> California Department of Housing and Community Development. 2009. *Financial Assistance Program Directory*: 40.



					<p>\$2.5 million for owners of affordable housing developments</p> <p><b>Description:</b> “The Low-Income Housing Tax Credit (LIHTC) is the most important resource for creating affordable housing in the United States today.... Created by the Tax Reform Act of 1986, the LIHTC program gives State and local LIHTC-allocating agencies the equivalent of nearly \$8 billion (nationwide) in annual budget authority to issue tax credits for the acquisition, rehabilitation, or new construction of rental housing targeted to lower-income households.”<sup>118</sup></p> <p><b>Website:</b> <a href="http://www.treasurer.ca.gov/ctcac/tax.asp">http://www.treasurer.ca.gov/ctcac/tax.asp</a></p>
x			x	x	<p><b>Program: Environmental Justice: Context Sensitive Planning Grants</b></p> <p><b>Agency:</b> CalTrans</p> <p><b>Funding Details:</b> Grants up to \$250,000, requires 10% match. Cannot apply to both this program and the Community Based Transportation Planning Grant program</p> <p><b>Description:</b> “Environmental Justice Context Sensitive Planning Grants are intended to promote the involvement of low-income and minority communities, and Native American Tribal governments, in the planning of transportation projects to prevent or mitigate disproportionately negative impacts while improving mobility, access, safety, and opportunities for affordable housing and economic development.”<sup>119</sup></p> <p><b>Website:</b> <a href="http://www.dot.ca.gov/hq/tpp/grants.html">http://www.dot.ca.gov/hq/tpp/grants.html</a></p>
			x	x	<p><b>Program: Community Based Transportation Planning Grants</b></p> <p><b>Agency:</b> CalTrans</p> <p><b>Funding Details:</b> Grants up to \$300,000, requires 10% match. Cannot apply to both this program and the Environmental Justice program</p> <p><b>Description:</b> “Community Based Transportation Planning grants</p>

<sup>118</sup> HUD USER. 2010. Low-Income Housing Tax Credits dataset website. <http://www.huduser.org/portal/datasets/lihtc.html>

<sup>119</sup> CalTrans Office of Community Planning. 2010. *Community-Based & Environmental Justice Transportation Planning Grants Handbook*: 4.

					<p>fund coordinated transportation and land-use planning projects that encourage community involvement and partnership. Projects must support livable/sustainable community concepts with a transportation or mobility objective and promote community identity and quality of life.”<sup>120</sup></p> <p><b>Website:</b> <a href="http://www.dot.ca.gov/hq/tpp/grants.html">http://www.dot.ca.gov/hq/tpp/grants.html</a></p>
x				x	<p><b>Program: Transportation, Community, and System Preservation</b></p> <p><b>Agency:</b> Federal Highways Administration</p> <p><b>Funding Details:</b> Grants are generally less than \$1 million per year</p> <p><b>Description:</b> “This program seeks to:</p> <ul style="list-style-type: none"> <li>• Improve the efficiency of the transportation system of the United States.</li> <li>• Reduce environmental impacts of transportation.</li> <li>• Reduce the need for costly future public infrastructure investments.</li> <li>• Ensure efficient access to jobs, services, and centers of trade.</li> <li>• Examine community development patterns and identify strategies to encourage private sector development patterns and investments that support these goals.”<sup>121</sup></li> </ul> <p><b>Website:</b> <a href="http://www.fhwa.dot.gov/tcsp/">http://www.fhwa.dot.gov/tcsp/</a></p>
x				x	<p><b>Program: Local Public Health and the Built Environment</b></p> <p><b>Agency:</b> California Center for Physical Activity</p> <p><b>Funding Details:</b> Grants of less than \$5,000</p> <p><b>Description:</b> “The Local Public Health and the Built Environment Project uses educational trainings, teleconferences with state and national experts, local workshops, and community-wide activities to:</p> <ul style="list-style-type: none"> <li>• Raise awareness among public health professionals on the</li> </ul>

<sup>120</sup> Ibid.

<sup>121</sup> Federal Highway Administration. 2009. Transportation, Community and System Preservation Program website. <http://www.fhwa.dot.gov/tcsp/>

					<p>importance of integrating public health into community design;</p> <ul style="list-style-type: none"> <li>• Develop a cadre of local public health department staff with content expertise in land use and transportation;</li> <li>• Enable public health practitioners to participate in discussions about community design;</li> <li>• Encourage bicycle-friendly, walkable streets, and harness economic incentives to support accessibility to healthy foods in residential neighborhoods or by public transit.”<sup>122</sup></li> </ul> <p>Small grants are available to public health departments to advance these objectives</p> <p><b>Website:</b> <a href="http://www.caphysicalactivity.org/lphbe.html">http://www.caphysicalactivity.org/lphbe.html</a></p>
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### 6.2.2. REDEVELOPMENT DISTRICT PROPOSALS

In order to raise funds for improvements supporting the station area development, such as relocating and undergrounding BART parking, the City of Berkeley could designate the station area as a redevelopment area, which would enable it to reap increased tax revenues generated due to improvements within the district to area projects.<sup>123</sup> A nearby precedent for this type of funding approach is the soon-to-be constructed MacArthur BART Transit Village, which is centered on the existing station parking lot and lies within Oakland’s Broadway/MacArthur/San Pablo redevelopment area.<sup>124</sup> Oakland’s Community and Economic Development Agency used redevelopment funds to hire consultants to conduct pre-development assessments of the site. Numerous City of Berkeley policies aim to make increasing amounts of funding available for business district improvements, low-income housing and rehabilitation of commercial and mixed use projects. For examples, see Policy H-2 from the Housing Element of City’s General Plan,<sup>125</sup> Policy ED-9 from the

<sup>122</sup> California Center for Physical Activity. 2010. *Local Public Health and the Built Environment (LPHBE)*. <http://www.caphysicalactivity.org/lphbe.html>

<sup>123</sup> See for example Center for Transit-Oriented Development, *Reconnecting America*. August, 2008. *Financing Transit-Oriented Development in the San Francisco Bay Area: Policy Options and Strategies*. Prepared for the Metropolitan Transportation Commission. Available at <http://www.reconnectingamerica.org/public/projects/313>.

<sup>124</sup> McCarthy, Joe. April 13, 2010. Interview.

<sup>125</sup> Policy H-2 reads: “Aggressively develop additional sources of funds for low-income housing, assistance to low-income residents, and implementation of the Berkeley Homelessness Continuum of Care Plan....[Action D]Consider adopting a redevelopment project area for blighted commercial areas of the city, including

Economic Development and Employment Element of the General Plan,<sup>126</sup> and the City's South Berkeley Area Plan.<sup>127</sup>

According to the California Redevelopment Act, a designated redevelopment area must meet four criteria:

1. The area must be predominantly urbanized,
2. the area must have pervasive economic and physical blight
3. there must be a nexus between redevelopment and blight alleviation, and
4. private and public sector agencies acting alone must not be able to alleviate blight without redevelopment funds.<sup>128</sup>

Adeline meets all four of these criteria. Many of the buildings face serious dilapidation or deterioration, and the conditions of vacant lots hinder development. The corridor is characterized by depreciating and stagnant property values, especially on vacant lots and in surface parking lots. The station area development on Ashby BART would add both housing that would increase the customer base of neighborhood businesses and commercial space that would foster new business opportunities. The Adeline Corridor already contains one redevelopment area, the Savo Island Redevelopment Area, located on the west side of the street between Ward and Stuart. Should the City decide to create another redevelopment area along Adeline, we recommend that it include the Ashby BART parcel and the Lorin District, as shown in Figure 61 below.

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blighted areas of south Shattuck Avenue, and directing tax increment revenues from those areas to fund infill affordable housing as part of mixed use development.”

<sup>126</sup> Policy ED-9 reads: “Encourage local efforts to fund additional services and improvements for business districts, such as business improvement districts, redevelopment areas, and assessment districts.”

<sup>127</sup> On page 5, the South Berkeley Area Plan lists the following goal: “Promote existing City rehabilitation programs for commercial and mixed use projects, employing Redevelopment funds as one funding source.”

<sup>128</sup> California Assembly Committee on Housing and Community Development. January 4, 2006. Bill analysis of AB 782 (Mullin). Available at [http://info.sen.ca.gov/pub/05-06/bill/asm/ab\\_0751-0800/ab\\_782\\_cfa\\_20060109\\_142903\\_asm\\_comm.html](http://info.sen.ca.gov/pub/05-06/bill/asm/ab_0751-0800/ab_782_cfa_20060109_142903_asm_comm.html).

FIGURE 61: PROPOSED ADELINE REDEVELOPMENT AREA AND EXISTING SAVO ISLAND REDEVELOPMENT AREA



Creating another redevelopment area would not dramatically reduce the City of Berkeley’s tax revenues. Berkeley currently contains only two redevelopment areas. The Savo Island Redevelopment Area collects about \$150,000 a year in tax increment financing, and the West Berkeley Redevelopment Area collects about \$1.5 million a year. The former collects a small amount of revenue that would otherwise go to the City’s general fund, while the latter is set to expire in 2012. A new redevelopment area along Adeline would likely collect less tax increment financing than West Berkeley currently does, so it would not increase the overall share of tax dollars going to redevelopment areas instead of to the general fund.

However, community opposition is a major barrier to forming new a redevelopment area. A West Berkeley Redevelopment Area representative stated that the main barrier to redevelopment is political, as any proposition will “rattle the cages” and mobilize the community.<sup>129</sup> Even with the potential for opposition, the benefits of forming a redevelopment area to fund the improvements that promise to make the area a more

<sup>129</sup> Evans, Amber. April 7, 2010. Interview.

attractive and vibrant destination may be too great to ignore. The City should work to engage community groups prior to proposing the redevelopment area in order to minimize opposition.

### 6.3. ZONING CHANGES

Currently, the zoning in the station area prohibits medium-density mixed-use development. Table 22 summarizes the zoning changes that would be necessary in order to implement our proposed station area development, or otherwise encourage more active land uses on the BART parking lot.

TABLE 22: NECESSARY (\*) AND PROPOSED (^) ZONING CHANGES TO THE ASHBY STATION AREA

	<i>Current Zoning</i>	<i>Proposed Zoning</i>
<i>Height Limit Residential and Mixed Use*</i>	36 feet (23E.52.070.B.3)	60 feet
<i>Height Limit Commercial*</i>	24 feet (23E.52.070.B.3)	36 feet
<i>Story Limit Residential and Mixed-Use*</i>	3 stories (23E.52.070.B.3)	5 stories
<i>Story Limit Commercial*</i>	2 stories (23E.52.070.B.3)	3 stories
<i>Residential Parking Requirement*</i>	1 parking spot per 1,000 gross residential square feet (23E.52.080.B; 23D.40.080.A)	1 parking spot per 2 or 3 dwelling units
<i>Usable Open Space Requirement^</i>	200 square feet per dwelling unit for residential only buildings (23E.52.070.E; 23D.40.070.F)	40 square feet per dwelling unit for residential only buildings
<i>Allowable Uses^</i>	(1) Dry cleaners currently prohibited; (2) Alcoholic beverages service currently prohibited on Adeline Street south of Ashby Avenue except in full service restaurants (23E.52.030.A; 23E.52.060)	(1) Allow dry cleaners that use “green” practices, potentially including wet processing and use of liquid silicone; (2) Allow alcoholic beverages service at non-full service restaurants



#### 6.4. BUSINESS IMPROVEMENT DISTRICT

A Business Improvement District (BID) is a district where property owners or merchants agree to assess themselves and use those funds to promote, protect and ultimately improve their area. The City of Berkeley has been attempting to organize the merchants and property owners in the Lorin District to form a BID. Unfortunately, the idea has not gained traction amongst property and business owners, who worry that they would be unable to afford additional fees in the midst of a recession.<sup>130</sup>

As of now, there is a merchant's association in the Lorin District that is primarily funded through government grants. The association's main goal is to improve the overall environment in order to attract potential shoppers to the district. They have identified pedestrian safety, crime and an overall uninviting physical environment as problems they would like to see addressed. Our proposal addresses these issues and goes further by augmenting the housing stock in the area. Although the chances of a BID forming in the near future are not good, our plan proposes several improvements that a BID may wish to fund, should the City succeed in its efforts to organize one.

#### 6.5 PHASE I IMPROVEMENTS

Our proposal contains radical changes for Adeline, and will require substantial time and money to implement. However, many of the issues we have identified, such as the high vehicle speeds, long and unpredictable crossings, and gaps in the bicycle network, pose immediate threats to safety, and can and should be addressed as soon as possible. Therefore, we have prepared a set of low-cost, short-term Phase 1 Improvements Plan that resolve some of the most urgent issues facing Adeline and take the first steps toward implementing our compete vision. In the event of budget shortfalls, these actions could constitute a low-build alternative for Adeline. Our Phase I improvements:

**Remove one lane in each direction** on North and South Adeline.

**Reduce lane widths throughout the corridor** in order to create 10-foot median lanes and 11-foot outside lanes

**Complete bicycle lanes along Adeline**, and provide a 3-foot buffer where lanes are adjacent to parallel parking

**Reconfigure the Ashby/Adeline intersection** to reduce crossing distances and eliminate unpredictable turn movements.

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<sup>130</sup> Delgado, Elizabeth. April 16, 2010. Interview.

**Reconfigure medians and lanes on Adeline and MLK adjacent to the BART station** in order to calm traffic and create safer pedestrian and bicycle crossings.

**Install an inbound bicycle lane on the BART parking lot exit ramp at Adeline/Woolsey**, including bollards to block inbound vehicles from using the ramp, in order to improve station access for bicyclists.

**Install raised crosswalks at all unsignalized crossings on Adeline and MLK adjacent to Ashby Station** to calm traffic and create safer conditions for pedestrians.

The majority of our Phase I improvements can be achieved using inexpensive measures such as re-stripping lanes; using soft-hit posts and bollards as lane and median delineators; installing planters at pedestrian crossings; and demolishing small sections of medians to allow for passage of bicycles. Figure 62 shows examples of some of these treatments.

**FIGURE 62: EXAMPLES OF SELECTED LOW-COST ROAD TREATMENTS PROPOSED AS PART OF PHASE 1 IMPROVEMENTS.**

Delineators separating automobiles and bicycles (Washington DC).<sup>131</sup>



Planters and plastic bollards separating automobiles, bicycles, and pedestrians (New York City, NY)<sup>132</sup>



Figure 63 and Figure 64 highlight some of the changes and treatments included in our Phase I improvements.

<sup>131</sup> ReadysetDC. 2010. <http://readysetdc.com/2009/11/09/ddot-completes-15th-street-cycletrack/> (accessed April 26, 2010).

<sup>132</sup> Skyscraper Forum. 2010. [http://farm3.static.flickr.com/2615/3932478758\\_171f6eb772\\_o.jpg](http://farm3.static.flickr.com/2615/3932478758_171f6eb772_o.jpg) (accessed April 26, 2010).

FIGURE 63: ADELINE/ASHBY RECONFIGURATION IN PHASE 1 IMPROVEMENTS.

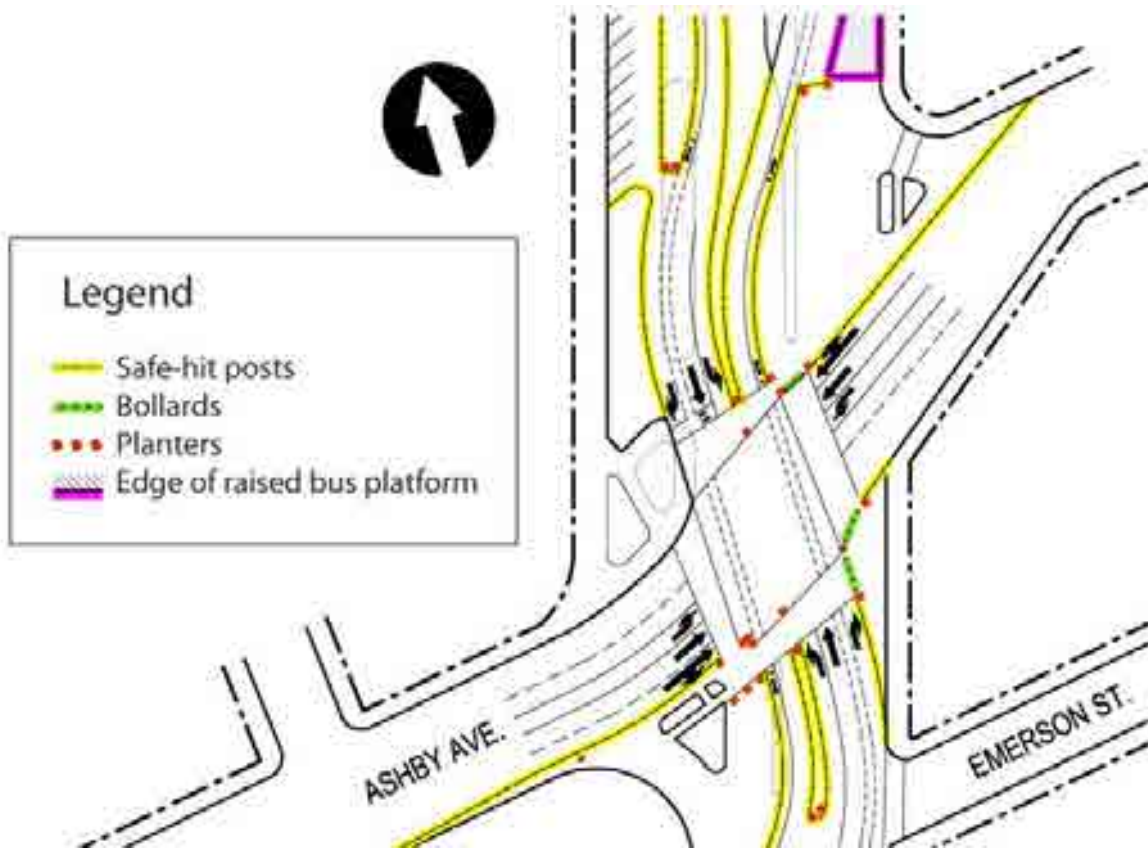
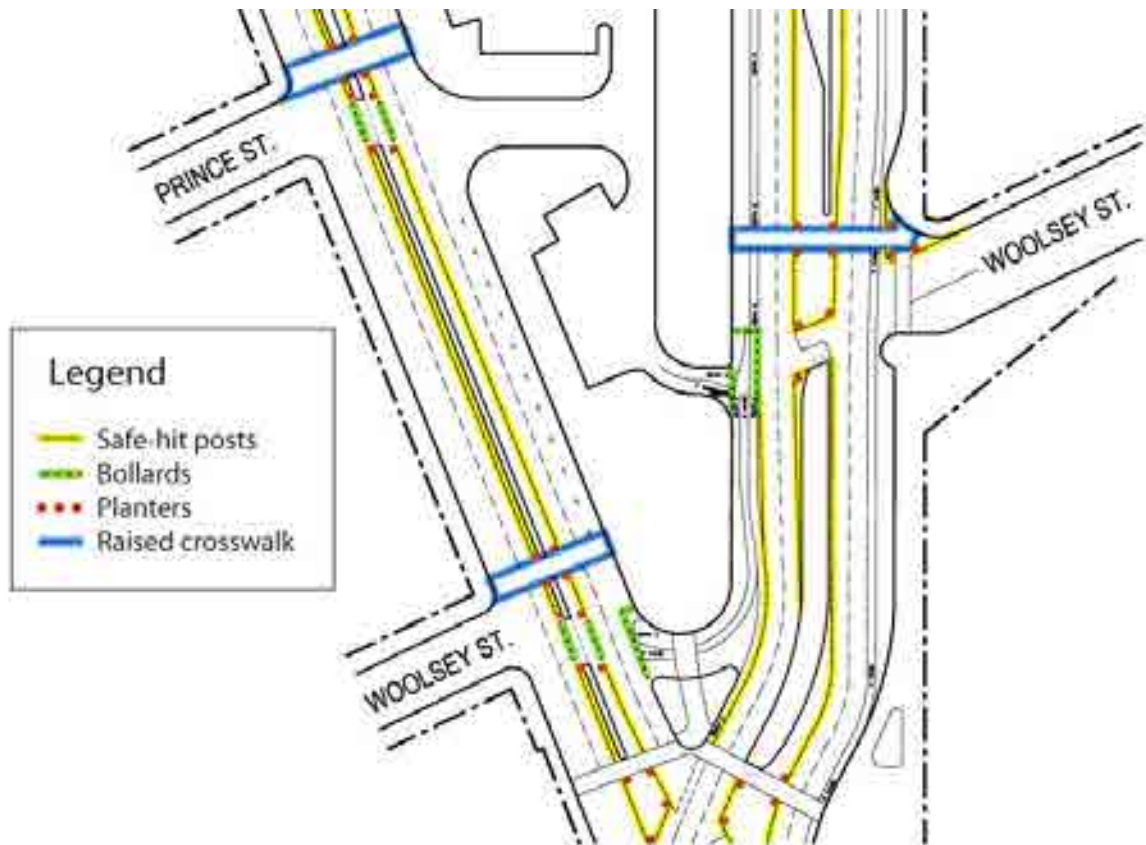


FIGURE 64: SOUTH SECTION OF BART STATION AFTER PHASE 1 IMPROVEMENTS.



Together, these improvements support our vision of Adeline as a balanced, multimodal link in the transportation network and a safe, attractive district for residents and visitors, accomplishing the following goals and objectives:

- Goal 1: Enhance corridor connectivity for all users
  - Objective 1.1: Improve pedestrian and bicycle network continuity and infrastructure
  - Objective 1.2: Improve movement through and across the corridor
- Goal 2: Create a safer pedestrian and cyclist environment
  - Objective 2.1: Improve intersection designs, traffic controls, and shorten crossings.
  - Objective 2.2: Reduce vehicle speeds along the corridor
  - Objective 2.3: Reduce conflicts between pedestrians, cyclists, and motorists
- Goal 3: Encourage designs and uses in the Adeline corridor that support active, walkable neighborhoods

- Objective 3.2: Create public spaces that are inviting and well-used.

### 6.5.1 ANALYSIS OF PHASE 1 IMPROVEMENTS

Table 23 compares our Phase 1 improvements with the existing road layout and our proposed design according to selected performance measures.

**TABLE 23: PERFORMANCE MEASURES, EXISTING AND PROPOSED DESIGNS**

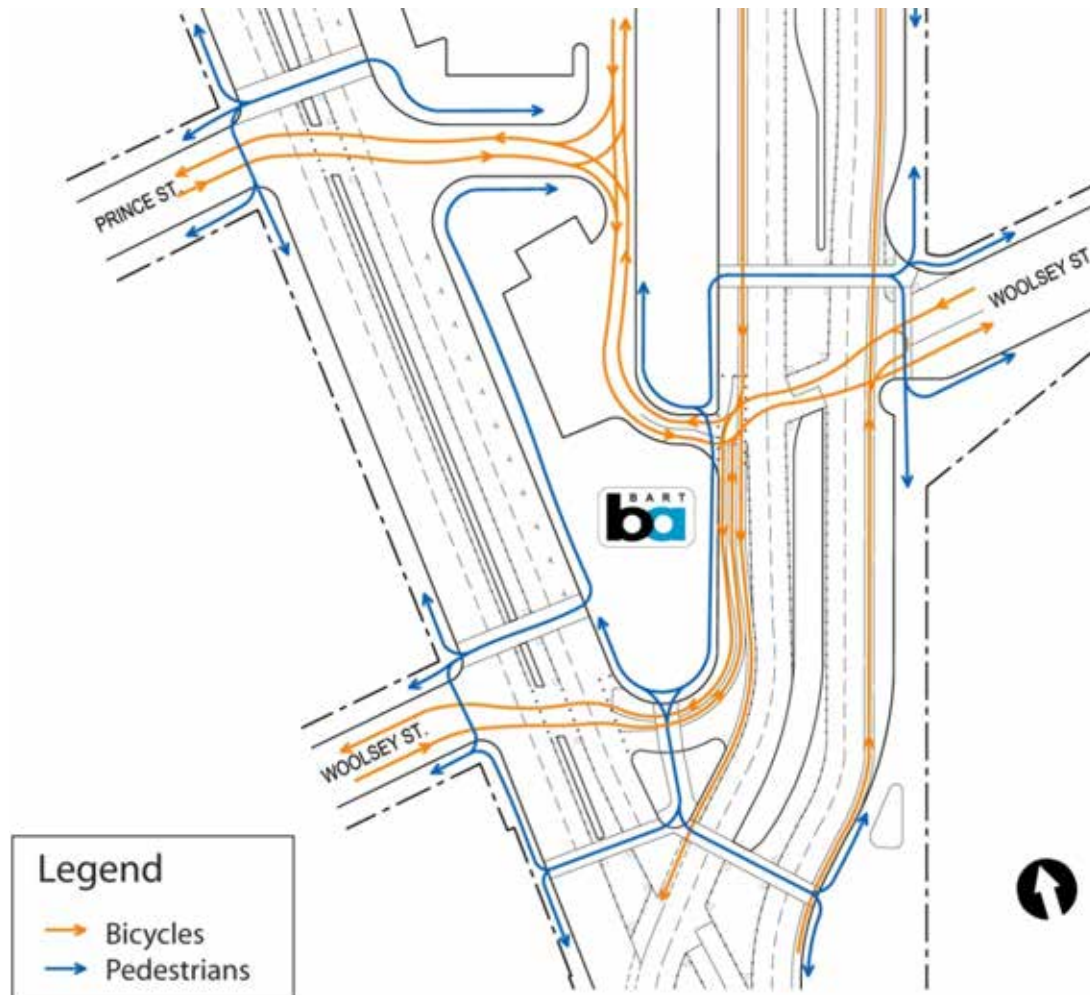
	Existing	Proposed	Phase 1
Maximum width of vehicle lanes (feet)	14	11	11
Number of on-street parking spaces	327	332	317
Percent of right-of-way devoted to cars	59%	45%	48%
New public space created (square feet)	-	227,660	29,000
New developable space created (square feet)	-	104,570	0
Bicycle lane completion along Adeline (percent)	62%	100%	100%
Crossing distances at key intersections on Adeline (feet):			
Adeline/Oregon	88	30	30
Adeline/Ashby (northern crosswalk)	117	70	70
Adeline/Ashby (southern crosswalk)	126	70	70
Ed Roberts Campus crosswalk	105	70	70
Adeline/MLK	130	70	130
62 <sup>nd</sup> /Adeline (northern crosswalk)	85	75	85
62 <sup>nd</sup> /Adeline (southern crosswalk)	90	75	90
Alcatraz/Adeline	120	80	120

Though the Phase 1 improvements do not reclaim as much space from vehicles or shorten pedestrian crossings quite as much as our proposed design, they do shorten crossings at the Adeline/Ashby intersection and create new public space at this important corner. Though modifying this intersection is relatively expensive compared to the rest of the Phase I improvements, it is a critical step in improving bicycle and pedestrian safety, especially for the large number of BART riders who travel to Ashby Station by these modes. The Adeline/MLK intersection also meets these criteria, but would be much more expensive to reconfigure due to its complicated geometry. Instead, our Phase I improvements seek to improve access for all users at the south end of Ashby Station by modifying the parking lot exit ramp as well as the right turn slip lane to allow for bicycle movements only, removing key obstacles to bicycle circulation. Figure 65 highlights the



improvements to bicycle and pedestrian circulation we plan to achieve at the South section of the BART Station with our Phase 1 improvements.

FIGURE 65: CIRCULATION DIAGRAM FOR PEDESTRIAN AND BICYCLES IN SOUTH SECTION OF BART STATION AFTER PHASE I IMPROVEMENTS



#### 6.5.2 ANALYSIS OF STATION AREA DESIGN ALTERNATIVES

We considered three alternatives for Phase 1 improvements in the station area:

- Alternative 1: Install raised crosswalks at all unsignalized crossings on Adeline and MLK adjacent to Ashby Station.
- Alternative 2: Install new traffic signals at currently unsignalized crossings on Adeline and MLK adjacent to Ashby Station.
- Alternative 3: Remove lanes along the sections of Adeline and MLK adjacent to Ashby Station (road diet).



Table 24 shows the pros and cons of each of these.

TABLE 24: EVALUATION OF STATION AREA PHASE I ALTERNATIVES

Alt.	Pros	Cons
1	<ul style="list-style-type: none"> <li>▪ Inexpensive</li> <li>▪ Slows down speeds</li> <li>▪ Easy to install and reversible</li> <li>▪ Smoother on larger vehicles than speed humps</li> </ul>	<ul style="list-style-type: none"> <li>▪ May draw opposition from disabled community</li> </ul>
2	<ul style="list-style-type: none"> <li>▪ Highest safety at pedestrian crossings that are currently unsignalized</li> <li>▪ Improved vehicular traffic flow</li> </ul>	<ul style="list-style-type: none"> <li>▪ Expensive</li> <li>▪ Not easily reversible</li> </ul>
3	<ul style="list-style-type: none"> <li>▪ Inexpensive</li> <li>▪ Slows down speeds</li> <li>▪ Reduces risk of multiple-threat pedestrian collisions</li> <li>▪ Consistent with treatment along the rest of the corridor</li> <li>▪ Easy to install and reversible</li> </ul>	<ul style="list-style-type: none"> <li>▪ Safety improvement for pedestrians in unsignalized crossings not as high as in Options 1 and 2.</li> <li>▪ May cause unacceptable automobile congestion if not combined with other measures or if traffic volumes do not decrease.</li> </ul>

Based on this evaluation, we recommend Alternative 1, raised crosswalks, for our Phase 1 improvements. It is much less costly and easier to reverse than Alternative 2, signaling intersections, and improves pedestrian safety more than Alternative 3, narrowing and reducing lanes. Furthermore, our traffic model suggests that Option 3 may cause unacceptable levels of congestion in the area in the short term. However, Alternative 3 is consistent with the road diet that are proposing for North and South Adeline in Phase 1, and there is evidence that in the long term road diets can reduce traffic volumes as drivers adjust by using different routes, traveling at different times, switching to different modes, or forgoing redundant trips altogether. For example, the road diet/bicycle lane project implemented on Valencia Street in San Francisco resulted in a 10 percent reduction in peak automobile volumes as well as a 144 percent increase in peak bicycle volumes. At the one-year evaluation, the automobile traffic appeared to have re-distributed itself to four adjacent arterials, and bicycles accounted for 16 percent of vehicular traffic on the corridor.<sup>133</sup> If the City of Berkeley wishes to implement Alternative 3, we recommend that the work be phased, with the city first conducting a trial of the

<sup>133</sup> Sallaberry, M. December 14, 2000. *Valencia Street Bike Lanes: A One Year Evaluation*. [http://www.sfmta.com/cms/uploadedfiles/dpt/bike/Valencia\\_Street\\_Report.pdf](http://www.sfmta.com/cms/uploadedfiles/dpt/bike/Valencia_Street_Report.pdf) (accessed April 26, 2010).

road diet along North and South Adeline and using the data from these sections to determine whether a road diet in the station area is feasible.

### 6.5.3 IMPLEMENTING PHASE I IMPROVEMENTS

For the most part, our Phase I improvements are relatively inexpensive, temporary measures that can be tested as pilot projects and can be reversed if, after a trial period, they are deemed ineffective or undesirable. We propose an approach to implementing these improvements based on the New York Department of Transportation's (NYDOT's) recent traffic-calming projects. NYDOT has implemented innovative treatments and ideas, such as the closure of the Times Square and Herald Square sections of Broadway to automobile traffic on a pilot project basis, achieving immediate results and overcoming public skepticism.<sup>134</sup> This approach has allowed NYDOT to bypass years of environmental review, and projects that seemed unthinkable just a year ago are now permanent. New York's approach has been so successful that other jurisdictions around the country have started following their lead. San Francisco, for example, has also conducted a "Pavements to Parks" trial in the Castro that they now plan to make permanent, and has identified other sites for similar pilot projects.<sup>135</sup> We recommend that the City of Berkeley implement our Phase I improvements immediately as a year-long pilot project.

Table 25 breaks down our improvements into specific action items and shows the approximate cost of each.

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<sup>134</sup> Grynbaum, Michael M. 2010. New York Traffic Experiment Gets Permanent Run. *The New York Times*, February 11. Available at <http://www.nytimes.com/2010/02/12/nyregion/12broadway.html> (accessed April 26, 2010).

<sup>135</sup> City of San Francisco Planning Department. 2010. Pavement to Parks. <http://sfpavementtoparks.sfplanning.org/> (accessed April 26, 2010), and Roth, M. 2010. "A Tale of Two Plazas." *Streetsblog San Francisco*, April 6. Available at <http://sf.streetsblog.org/2010/04/06/a-tale-of-two-plazas/> (accessed April 26, 2010).

TABLE 25: ACTION ITEMS AND APPROXIMATE COSTS FOR PHASE I IMPROVEMENTS<sup>136</sup>

Action item	Approximate cost
Use soft-hit posts to close travel lanes	\$144,500
Re-stripe vehicle lanes along the entire length of Adeline in order to narrow lanes to ten feet (median) and 11 feet (outside)	\$30,000
Demolish sections of medians to allow for re-alignment and bicycle access	\$60,000
Paint bike lanes on Adeline at the Adeline/Ashby intersection and between MLK and 62 <sup>nd</sup> Street	\$12,000
Widen sidewalk bulb-outs at the Adeline/Ashby intersection	\$100,000
Install temporary raised crosswalks on Adeline at Essex and Woolsey and in front of the Ed Roberts Campus, and on MLK at Prince and at the BART station exit ramp	\$55,000
Install temporary planters at select cross perimeters	\$20,000
Temporary planter maintenance	\$100,000/yr.
Install bollards at select pedestrian and bicycle crossings	\$10,000
Recapture un-utilized bus stops with temporary patio planking	\$96,000

The City of Berkeley will need to monitor the performance of these improvements over the course of the year-long trial period in order to determine whether these changes should be made permanent. We recommend that the City of Berkeley collect the following before/after data:

- Speed surveys along the three sections of the corridor
- Automobile traffic volumes at key intersections
- Pedestrian and bicycle volumes at key intersections

<sup>136</sup> Bicyclinginfo.org. 2010. "Benefit-Cost Analysis of Bicycle Facilities." <http://www.bicyclinginfo.org/bikecost/mainsheet2.cfm> (accessed April 26, 2010).

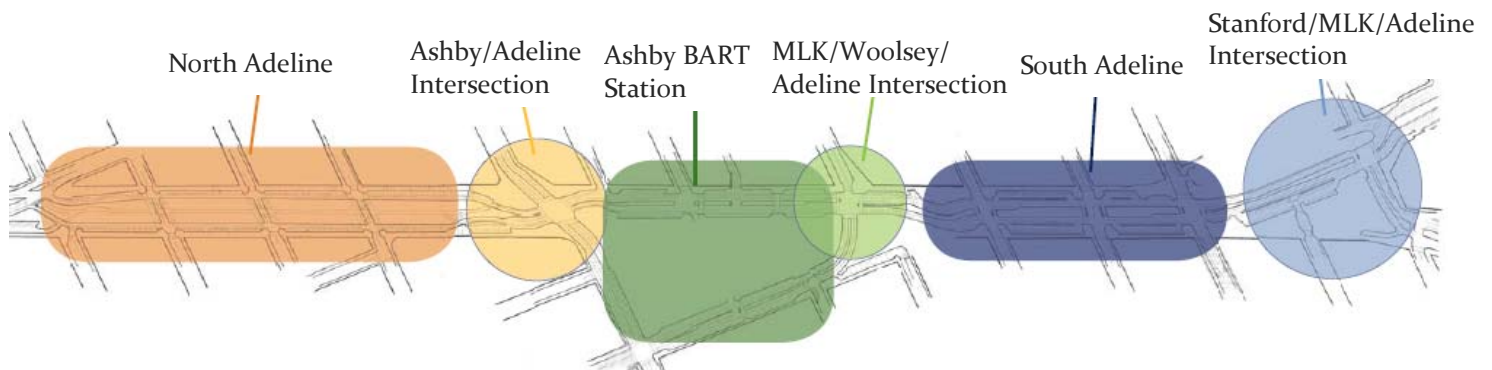
- Intercept surveys of pedestrians and cyclists

The majority of the potential funding sources that we have identified for our complete proposal could also be applied to our Phase I improvements. For a complete list of these sources, see Table 21.

## 6.6 NEXT STEPS: PHASING AND IMPLEMENTATION

The Phase I improvements described above form the first step to implementing our proposal. After that, improvements can be phased in along five different segments of Adeline. Figure 66 shows these five segments.

**FIGURE 66: CONSTRUCTION PHASING SEGMENTS**



When recommending how to phase the corridor segments, we consider the following dimensions of each segment:

- Total cost to implement
- Safety and livability needs
- Impact on users during construction
- Connections to other corridor segments (some segments need to be done before others, or should be done together if possible)
- Availability of funding for segment projects

We recommend the following order of implementation:

### 1. *Ashby/Adeline Intersection*

As noted above in the Phase I improvements section, this intersection has numerous safety concerns and is heavily used by pedestrians going and coming from the BART station, the corridor's main destination. This project's cost and user impact during construction are higher than for some other segments of the corridor, but we feel that the need for this project outweighs those dimensions. This project may qualify for safety,

pedestrian, and bicycle related funding programs, many of which have annual funding cycles, so that funds could be accessed relatively quickly.

## *2. South Adeline*

This segment was given priority because of the need for pedestrian and bicycle safety improvements in this area. This segment is also a less radical change from existing conditions when compared to other segments, and so should have less impact on users during construction and lower costs. This segment would also be likely to qualify for pedestrian and bicycle improvement funds.

## *3. Stanford/Adeline/MLK Intersection*

This intersection is a continuation of the South Adeline segment, and reconfiguring it would complete the redesign of the southern section of the corridor. Equally important, this project would also contribute greatly to the livability of South Adeline by creating vibrant public spaces that can help attract visitors who can support local businesses. This project will likely be quite expensive, however. Of the identified funding sources, several of the planning grants may be appropriate to help with the intersections redesign, and the parks, bicycle, and pedestrian programs could support the construction.

## *4. North Adeline*

The projects in this segment will bring greater vitality to this portion of the corridor. This segment faces fewer threats to safety than South Adeline, and the Phase I improvements should address the immediate speed and safety problems that do exist here. Widening the park will be expensive, and we have identified a few funding sources that could support this work. The project should have a relatively limited impact on users during construction if the low-build alternative has already been implemented.

## *5. MLK/Woolsey/Adeline Intersection*

This redesign is a major project that will be expensive and have substantial impacts on users during construction. It is however, highly necessary for the long-term livability and safety of the corridor. This project needs to happen before the BART station is redeveloped, but it should be done in conjunction with that work to take advantage of funding streams (like Transportation for Livable Communities) and allow for the redevelopment of the new land created to be potentially linked to the station redevelopment.

## *6. Ashby Station Area*

The station redevelopment will likely take the longest to implement, which is why it is phased last. Moreover, the other corridor improvements will help to increase the area's

attractiveness, which can help to prime the market to put this plan into action and then make it more successful once implemented. This project will have a substantial impact on users (mainly BART riders) during construction, but it will also make the corridor a much more livable place.



## 7. CONCLUSION

The “HERETHERE” sculpture at the Adeline/MLK/Stanford intersection refers to a famous Gertrude Stein quote: “the trouble with Oakland is that when you get there, there isn’t any there there.” But a similar statement could be made about the section of Adeline that lies on the other side of the sign: there isn’t really any *here* here. The dominant feature of the Adeline corridor is Adeline itself, and the roadway overwhelms the things that make the neighborhood worth visiting. There may be worthwhile destinations on the other side of the street, but they’re over half a football field away. There may be the sound of neighbors greeting each other, but it’s buried underneath the rush of traffic.

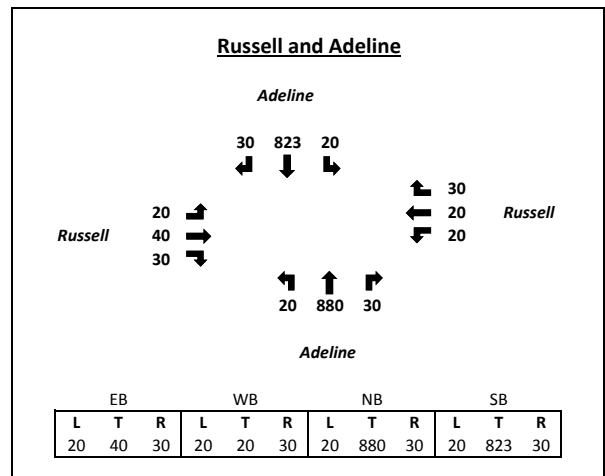
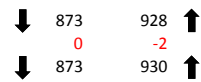
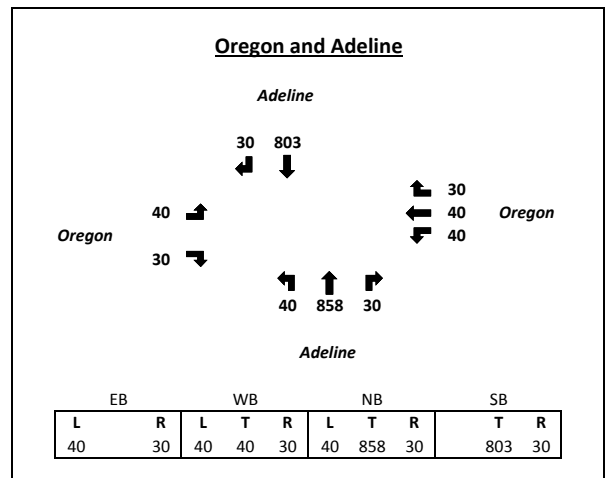
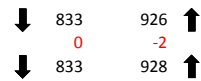
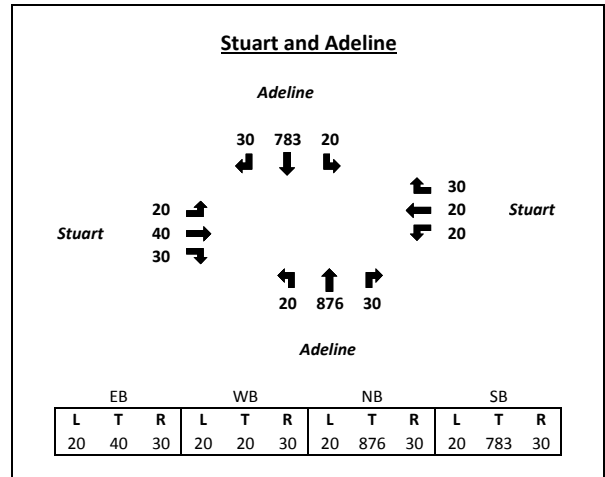
Our proposal for Adeline puts the street in balance with the land uses surrounding it. We sincerely hope that it will be useful to neighborhood residents and City of Berkeley staff as they continue to work toward a day when Adeline doesn’t just carry people through a place, but to a place.

## APPENDIX A: MOTOR VEHICLE TRAFFIC VOLUMES AS ENTERED IN SYNCHRO 5

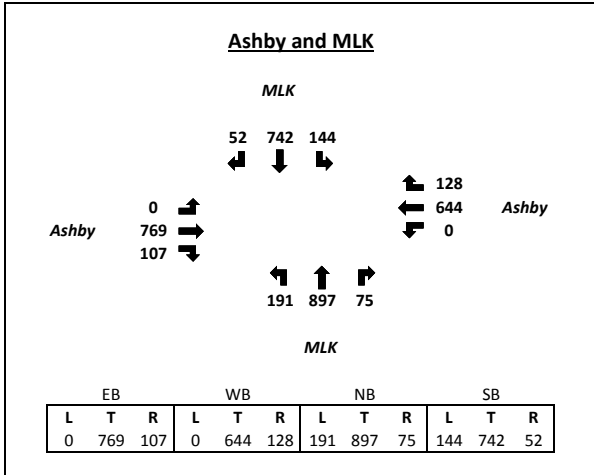
The tables on the following pages contain PM peak hour volumes for all intersection turn movements in our traffic model, including projected additional traffic from the Ed Roberts Campus and proposed station area development.

## Appendix D:

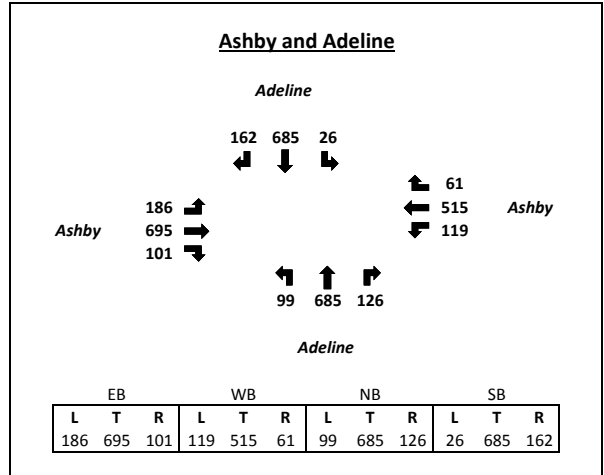
Motor Vehicle Traffic Volumes as Entered in Synchro 5  
(PM Peak Hour, post-Ed Roberts Campus and proposed West  
Parking Lot Redevelopment)



↓ 873    930 ↑  
    0    -2  
 ↓ 873    932 ↑

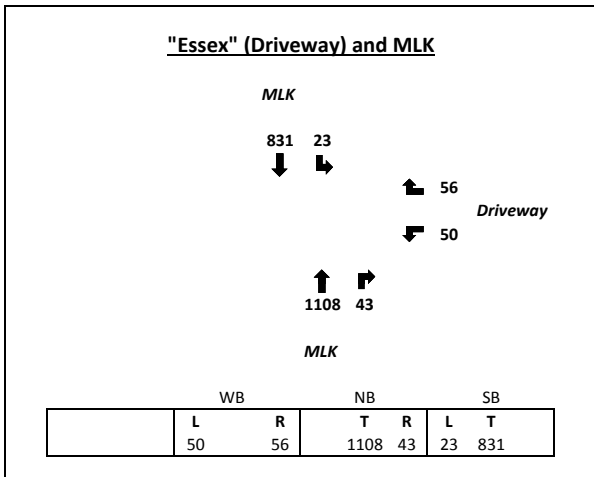


← 772    ←  
    -4    776  
 987    -6    982  
 →        →

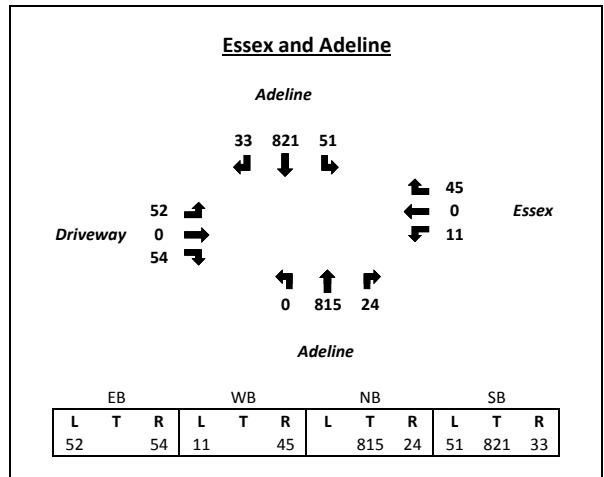


↓ 849    1163 ↑  
    5    -1  
 ↓ 854    1164 ↑

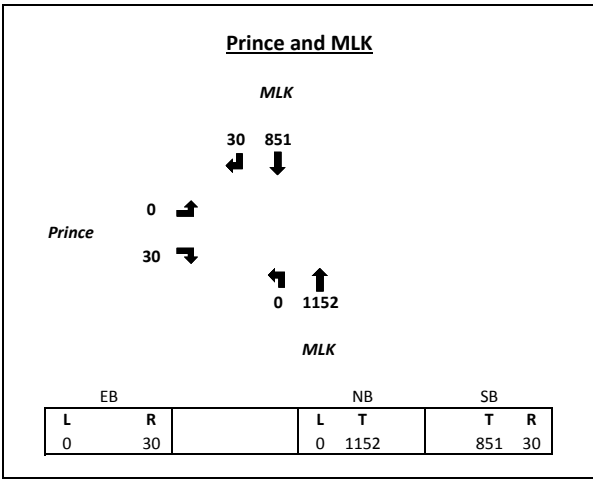
↓ 905    909 ↑  
    0    -3  
 ↓ 905    912 ↑



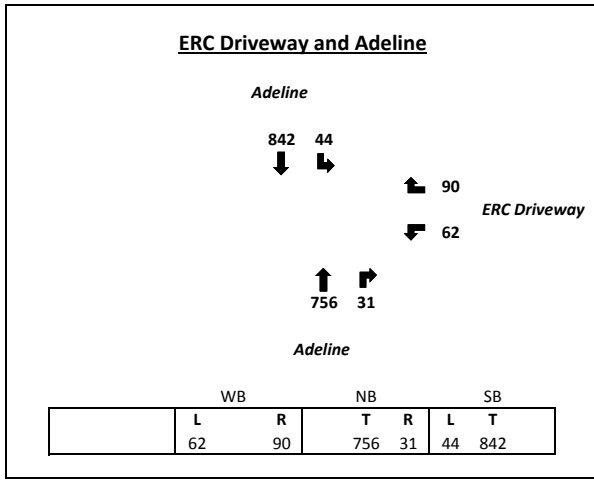
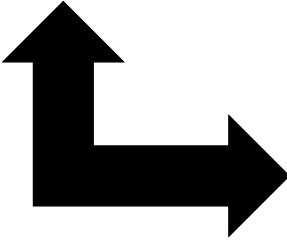
↓ 881    1152 ↑  
    0    0  
 ↓ 881    1152 ↑



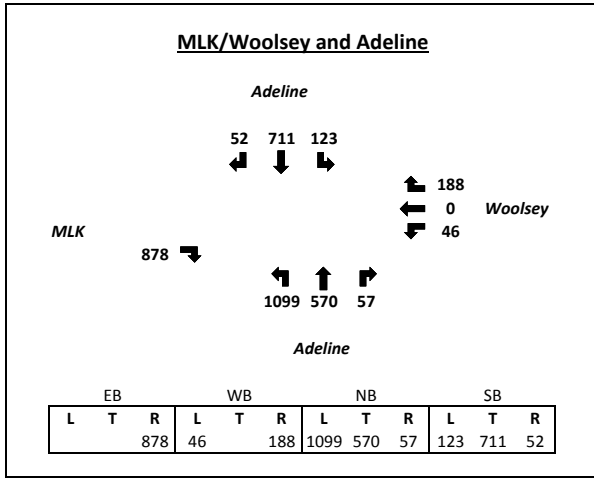
↓ 886    839 ↑  
    0    -7  
 ↓ 886    846 ↑



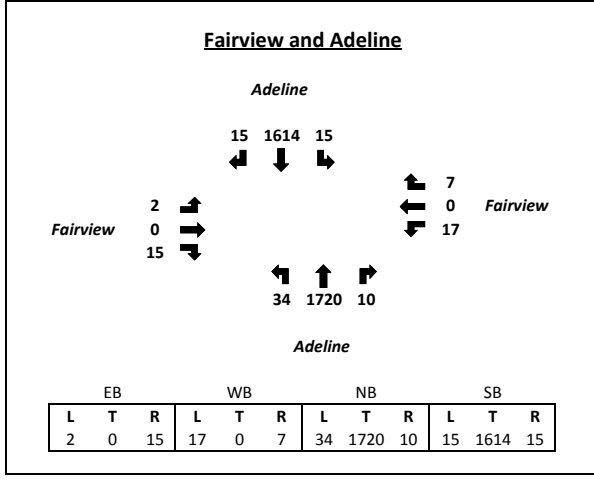
↓ 881    1152 ↑  
   -3       0  
 ↓ 878    1152 ↑



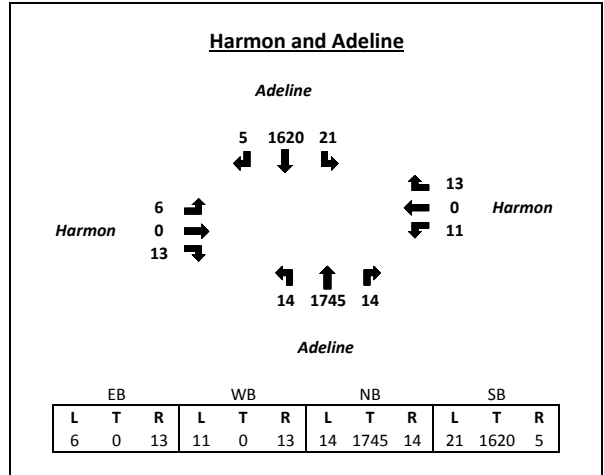
↓ 904    787 ↑  
   -17    29  
 ↓ 887    758 ↑



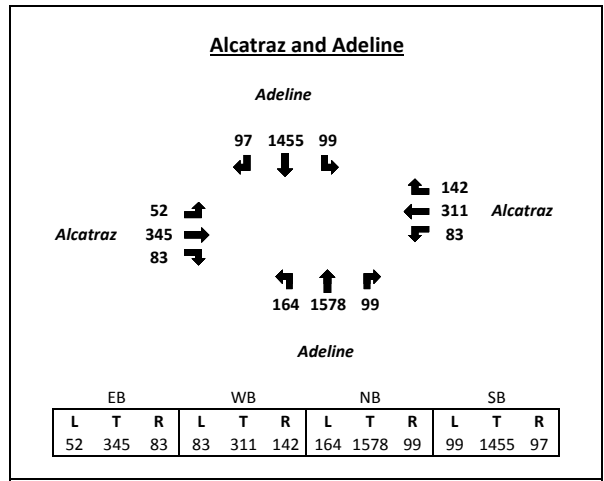
↓ 1636    1726 ↑  
       8       -3  
 ↓ 1644    1729 ↑



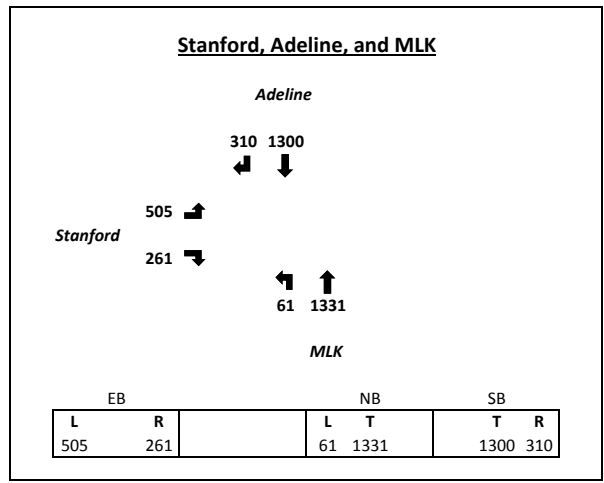
↓ 1646    1764 ↑  
           0        0  
 ↓ 1646    1764 ↑



↓ 1644    1773 ↑  
           8        0  
 ↓ 1652    1773 ↑



↓ 1621    1842 ↑  
           -12        5  
 ↓ 1610    1836 ↑





## APPENDIX B: IMPACTS OF STATION AREA DEVELOPMENT ON BART RIDERSHIP

Table 19 shows the increase in ridership due to new land uses at the BART station, which we calculated using the methodology developed by Richard Wilson, Ph.D and BART staff and adapted by Fehr and Peers in the environmental impact report for the MacArthur Transit Village, a proposed development at the next station south of Ashby BART. We are using the same BART capture percentages used by Fehr and Peers for the MacArthur station development, which are higher than the average for other rail-served developments in Pleasant Hill and south Alameda County, because our proposed development would be very similar in terms of both proximity to the BART station and lower than average number of parking spaces per dwelling unit.

TABLE 26: BART TRIPS GENERATED BY NEW STATION AREA DEVELOPMENT<sup>137</sup>

Type	Total Amount	Total Trips <sup>138</sup>	Trip split	BART Trips	BART capture	BART trips (daily)
Residential (DU)	371	1,956	0.25	489	0.555	271
			0.75	1,467	0.117	172
Retail (kSF)	25,364	1,124	1	1,124	0.05	56
<b>Total increase</b>						<b>499</b>

However, since we are reducing the total number of BART parking spaces, people who formerly accessed the station by car may choose not to use BART. Table 20 shows the resulting decrease in BART trips. However, the decrease shown is likely an overestimate. The large bicycle and pedestrian mode shares at Ashby BART coupled with the fact that the median driver only travels 1.1 miles to reach the station<sup>139</sup> suggest that the assumed 25

<sup>137</sup> City of Oakland. 2008. MacArthur Transit Village Project, Volume 1 Draft Environmental Report, SCH No. 2006022075. Appendix K: Bart Ridership Estimates. Table 1: BART Ridership Changes Due to Transit Village Development: 2.

<sup>138</sup> We obtained these numbers by using ITE trip generation, 7th edition, equations for residential condominium/townhouse (Land Use 230) and specialty retail (Land Use 814). The equation for residential trip generation is:  $\ln(T) = 0.85 \ln(\text{DU}) + 2.55$ . The equation for specialty retail trip generation is:  $(T) = 44.32(\text{number of thousands of gross square feet})$ .

<sup>139</sup> BART. 2008. 2008 BART Station Profile Study, p. 135.

percent access mode share switch for those people who are dissuaded from driving would actually be substantially higher.

**TABLE 27: BART TRIPS REDUCED DUE TO ELIMINATION OF PARKING SPACES<sup>140</sup>**

Spaces reduced	100
Turnover	1
People per car	1.1
Trips per driver	2
Reduction in auto boardings/alightings	240
Access mode switch share	0.25
Ridership retained due to mode switch	60
<b>Total decrease</b>	<b>180</b>

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<sup>140</sup> City of Oakland. 2008. MacArthur Transit Village Project, Volume 1 Draft Environmental Report, SCH No. 2006022075. Appendix K: Bart Ridership Estimates. Table 2: BART Ridership Changes Due BART On-site BART Parking Reduction: 3.

## APPENDIX C: FEASIBILITY ANALYSIS OF THE ASHBY BART STATION AREA DEVELOPMENT

Table 21 summarizes the type, number, size and rental price of the residential units we are proposing for the station area development. These numbers were then used in the pencil out, the inputs and results of which are shown in Table 22.

**TABLE 21: STATION AREA DEVELOPMENT RESIDENTIAL UNIT TYPE, NUMBER, SIZE AND RENTAL PRICE**

Unit Type	Usable Square Footage	Total Units	Total Usable Square Footage	Rent per month per unit (\$)	Total Rent per Month (\$)
Studio	400	0	0	0	0
1 br	500	196	98,000	1,850	362,600
2 br	800	175	140,000	2,575	450,625
3 br	1,100	0	0	0	0
	Totals	371	238,000		813,225

**TABLE 22: SIMPLIFIED PENCIL OUT**

	Assumed	Variable	Sources and Notes
<b>COSTS</b>			
Parking requirement (per du)	0.5		*
Gross spaces required		185.5	
Net spaces required (once stacked)		92.75	
Cost of undergrounding parking, per space (\$)	45,000.00		**
Cost of building stacker, per space (\$)	15,000.00		***
Total cost per space (once stacked) (\$)	60,000.00		
<b>Cost of Construction – Parking</b>		<b>\$5,565,000.00</b>	

Number of units		371	
Usable sq. ft. per unit		642	
Common space (elevators, stairwells, hallways, etc.) (sq. ft./sq.ft usable space)	0.25		^^
Community room, apartment manager space, etc. (sq. ft.)	5,000		^^
Gross floor area (sq. ft.)		302,500	
Cost per sq. ft. (\$)	210		^
Cost of elevators (4) (\$)	640,000		^^^
<b>Cost of Construction - Building</b>		<b>\$64,165,000.00</b>	
Cost of appliances, plus dishwasher (\$/du)	4,200		^^^
Total appliance cost (\$)		1,558,200.00	
<b>Cost of Construction - Building + Appliances + Parking</b>		<b>\$71,288,200.00</b>	
Land costs (\$)	0		o
Miscellaneous costs (% of hard costs)	5%		^
Soft costs (% of hard costs)	30%		^
<b>Total Cost</b>		<b>\$96,239,070.00</b>	

<b>INCOME</b>			
Monthly gross (\$)		813,225.00	
Vacancy	0.05		^
Expenses (\$/unit/year)	5,000		^
<b>Monthly Net Operating Income</b>		<b>\$663,623.12</b>	
<b>DEBT CHARACTERISTICS</b>			
Interest rate	6%		^
Debt coverage	1.15		^
Term (number of years)	30		^
<b>Supportable Payment</b>		<b>\$577,063.58</b>	
<b>PROJECT SHORTFALL</b>			
Project cost (\$)		(96,239,070.00)	
Debt supported (\$)		96,249,366.07	
<b>Project Shortfall</b>		<b>\$10,296.07</b>	

\* See Section 5.5.4. of this report.

\*\* Source: Shoup, Donald. 2005. *The High Cost of Free Parking*. American Planning Association.

\*\*\* Source: See, e.g., Lee, Justin. 2003. "Hydraulic Parking Lifts Save Space, Money in Berkeley." *Daily Californian*, April 21. Available at [http://www.dailycal.org/article/11737/hydraulic\\_parking\\_lifts\\_save\\_space\\_money\\_in\\_berkel](http://www.dailycal.org/article/11737/hydraulic_parking_lifts_save_space_money_in_berkel). (Quoting Berkeley real estate developer Patrick Kennedy).

^ Source: Rule of thumb

^^ Source: Personal opinion (we think it is important to have this)

^^^ Source: RS Means construction estimate

° Note: We are assuming zero land costs. Contrary to our assumption, the land will likely cost the developer something (either via purchase or in the form of a long-term lease). We made our assumption of zero land costs both because it would be hard to estimate how much the land would cost and because the land will likely be relatively cheap (based on the Ed Roberts Campus example).

APPENDIX D: ASSUMPTIONS USED TO ESTIMATE ROADWAY  
CONSTRUCTION COSTS

Item	DESCRIPTION	Units	Length (Feet)	Width (Feet)	Depth (Inches)	Default Unit Cost (2002)	Notes	Unit	Itemized Cost (nearest hundred)
1	Roadway Demolition / Construction								
1.1	Earthwork								
1.11	Grading		3500	150		\$2,555		mile	\$1,700
1.12	Pavement Removal		3500	80	5	\$14		cu yd	\$60,500
1.13	Curb/Gutter Removal		3500			\$4		l ft	\$14,000
-	Earthwork Contingency					10%			\$7,600
1.2	Pavement								
1.21	Portland Cement Concrete Pavement-Road		3500	90	5	\$96		cu yd	\$466,700
1.22	Portland Cement Concrete Pavement-Sidewalk		500	36	5	\$96		cu yd	\$26,700
1.23	Aggregate Base		3500	120	4	\$28		cu yd	\$165,900
1.24	Curbing		7000			\$22		l ft	\$154,000
1.25	Curb Ramps	60				\$1,068		each	\$64,100
1.3	Drainage								
1.31	Storm Drains		25			\$113		l ft	\$1,700
1.4	Pavement Markings								
1.41	Bicycle Arrow	20				\$53		each	\$1,100
1.42	Bicycle Symbol	40				\$71		each	\$2,800
1.43	Bicycle Box (colored pavement)	8	8	5		\$9		sq ft	\$2,900
1.44	Lane Striping		3000			\$5,000	*	mile	\$28,400

			0						
1.45	Shared Lane Marking (sharrow)	10				\$71		each	\$700
1.5	Landscaping								
1.51	Landscaping - Northern Section Park		2000	90		\$7	**	sq ft	\$1,260,000
1.52	Landscaping - Medians		3000			\$100	*	ft	\$300,000
1.53	Root Dams		500			\$11		l ft	\$5,500
-	Construction Estimate								\$2,565,400
-	Location Index					140%			\$1,026,100
-	Construction Contingency					10%			\$359,100
	<b>TOTAL CONSTRUCTION &amp; DEMOLITION COST</b>								<b>\$3,950,600</b>
3	Equipment								
3.1	Signs								
3.11	Sign with Post	60				\$200	o	each	\$12,000
3.2	Traffic Signals	3				\$300,000		each	\$900,000
3.21	Bicycle Signal	4				\$10,000		each	\$40,000
3.22	Pedestrian Signal Activation - 4 Way	40				\$3,900		each	\$156,000
3.23	Pedestrian Signal Activation - 2 Way	0				\$1,900		each	\$0
3.24	Loop Detector	10				\$1,500		each	\$15,000
3.3	Barriers								
3.31	Bollards	40				\$130		each	\$5,200



3.4	Parking								
3.41	Bicycle Rack (Inverted U, 2 bicycles)	20				\$190		each	\$3,800
3.42	Bicycle Rack (Ribbon or similar, 6 bicycles)	20				\$65		per bike	\$1,300
3.5	Lighting								
3.51	Street Lights	50				\$3,640		each	\$182,000
	<b>TOTAL EQUIPMENT COST</b>								<b>\$1,315,300</b>
-	Administration (Construction)					6%			\$237,000
-	Planning (Construction)					2%			\$79,000
-	Design/Engineering					5%			\$443,300
-	Field Inspection					2%			\$188,300
	<b>SUBTOTAL PROJECT COST</b>								<b>\$6,213,500</b>
	TOTAL BASE YEAR CAPITAL COST							2002	\$6,213,500
	<b>TOTAL BUILD YEAR CAPITAL COST</b>						***	2015	<b>\$8,058,900</b>

Source: bicyclinginfo.org cost calculator unless otherwise indicated.

\* Source: walkinginfo.org

\*\*Source: Conversations with CalTrans, City of Berkeley Engineering & SFMTA

\*\*\* Costs inflated per NASA Cost Estimating Web Site

<http://cost.jsc.nasa.gov/inflation/nasa/inflateNASA.html>

