University of California Transportation Center
UCTC-FR-2012-03

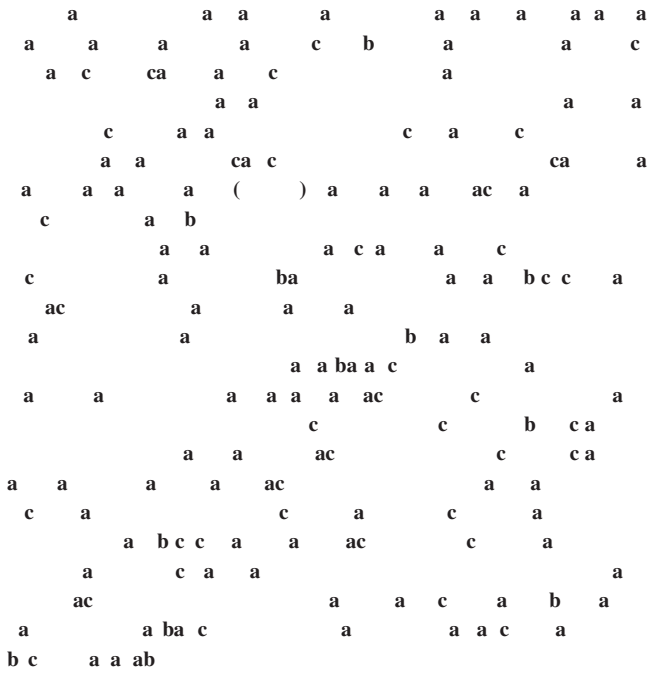
Old Road, New Directions
Plan for Adeline Street in Berkeley, California

Julia B. Griswold, Aaron Malinoff,
Karen Trapenberg Frick, and
Elizabeth Deakin, UC Berkeley
March 2012

Old Road, New Directions

Plan for Adeline Street in Berkeley, California

Julia B. Griswold, Aaron Malinoff, Karen Trapenberg Frick, and Elizabeth Deakin



Adeline Street in Berkeley, California, presents a problem seen in many cities in the United States: it is an autocentric arterial whose design and use conflict with the existing land uses and form a barrier for nonmotorized modes. Adeline contains many popular destinations within Berkeley, including a Bay Area Rapid Transit (BART) station, bus connections, a natural foods grocery store, a weekend flea market, antique stores, and other local-serving retailers. However, the street's right-of-way, which is 180 ft wide, created in part by the removal of housing and businesses to make room for the BART station and its parking lot, is not an asset to the area. Traffic routinely exceeds the speed limit, with speeds often reaching 35 to 40 mph. Distances between signalized intersections are long, and the below-grade station and parking lot create a physical and visual barrier for pedestrians and shoppers.

Changes during the past decade in the surrounding mixed-use district have created an impetus for street redesign. At the northern end of the district, a popular local food market expanded into larger quarters, greatly increasing the number of customers it serves. Several cafes have opened near the Berkeley–Emeryville border of the district and have attracted a large local clientele. The City of Berkeley has extended bicycle facilities into the district, but they do not feed directly into the BART station. Most recently, a new office complex housing multiple organizations that serve the disabled community has been built directly across Adeline Street from the BART station. While the increase in activity is spotty, it has led to more conflicts between pedestrians, bicyclists, transit users, and motorists, as well as sharper conflicts between street use and the use of adjacent residential and commercial properties. The City of Berkeley requested this study to explore redesigns that would make Adeline Street safer and more attractive to residents and visitors. The goal of the study was to redesign Adeline as a balanced, multimodal link in the transportation network, with a design that complements rather than conflicts with the land uses along the street. The proposal presented here reconfigures the corridor in several ways, reclaiming underutilized vehicle space for the benefit of all users, shortening crossings, and providing new pedestrian, bicycle, and transit facilities. The goal was not only to improve access to destinations along Adeline but also to foster new destinations in the corridor. So the proposal also creates new public spaces and development opportunities on vacant parcels and at the Ashby BART station.

This paper presents the projects proposed by 17 graduate students and their instructors in a transportation planning studio course in the spring of 2010.

J. B. Griswold, Department of Civil and Environmental Engineering; A. Malinoff, Institute of Transportation Studies; and K. Trapenberg Frick, University of California Transportation Center, University of California, Berkeley, 2614 Dwight Way, No. 7374, Berkeley, CA 94720. E. Deakin, Department of City and Regional Planning, University of California, Berkeley, 228 Wurster Hall, Berkeley, CA 94720. Corresponding author: J. B. Griswold, juliagris@berkeley.edu.

Transportation Research Record: Journal of the Transportation Research Board, No. 2262, Transportation Research Board of the National Academies, Washington, D.C., 2011, pp. 181–189.
DOI: 10.3141/2262-18

BACKGROUND

The study area (Figure 1) was defined as the area within a half-mile radius of the Ashby BART station. This area includes the entire stretch of Adeline Street within Berkeley, adjacent neighborhoods that offer some of the most affordable housing available in Berkeley, as well as a number of the BART users, a small section of North Oakland, an area of retail and business uses along Shattuck Avenue, and two other arterials. These arterials connect to the Bay Area's freeway system, which, along with BART, provides access to destinations across the region.

Historically, Adeline was the main street serving the study area, carrying streetcars that connected downtown Berkeley with urban centers and freight facilities in Oakland and Emeryville to the south and west. The study area originally developed as part of a string of

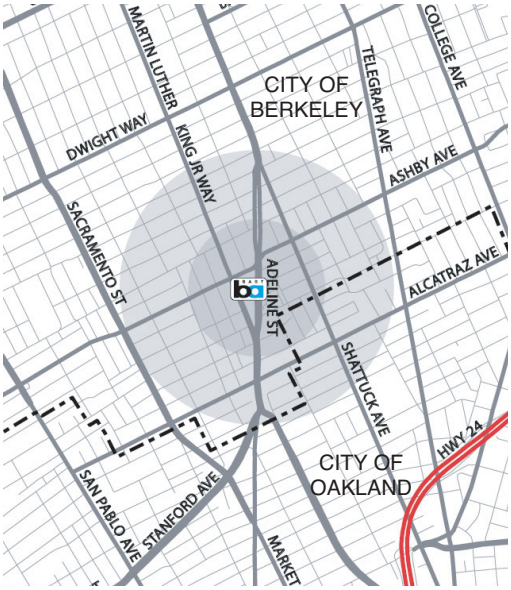


FIGURE 1 Map of study area.

streetcar suburbs and was known historically as the Lorin District. As the automobile replaced the streetcar as the dominant mode of transportation and Berkeley continued to develop, the city and the California Department of Transportation, which owns Ashby Avenue (SR-24), used the former rail right-of-way for travel lanes and reconfigured streets in the area to accommodate cars. Many of the challenges that the street currently poses date from this period, such as Adeline's wide right-of-way and the sharp angle of the Ashby–Adeline intersection, which resulted from the piecemeal widening of Ashby and a resulting misalignment at Adeline. In 1970, several blocks of residential and commercial buildings were demolished to build the Ashby BART station and parking lots in the triangular area between Adeline, Ashby, and Grove Street [now Martin Luther King Jr. Way (MLK)].

Commercial activities in the area have had mixed success. At the northern end of Adeline is a local food market, which expanded about 10 years ago from small quarters to a large shopping facility, greatly increasing its customer draw. Several neighborhood cafes are popular and seem to be thriving. In contrast, a number of storefronts have been vacant or used for storage for long periods, resulting in gaps in the retail frontage and low activity levels. The city has flagged the area as in need of economic revitalization.

Recently, the Ed Roberts Campus, a center for disability advocacy nonprofits, has been constructed on Adeline across from the Ashby BART station in an area that was formerly part of the station's east parking lot. It should help to provide activity and visual interest at the street level, but it will also greatly increase pedestrian activity in the area and to and from the BART station.

METHODOLOGY

This project began with extensive field work in the study area, with activity being observed; land uses, parking occupancy, and vehicle speeds being documented; and automobile, pedestrian, and bicycle counts being performed. The City of Berkeley staff led a walking tour, describing the planning history of the site and the city's goals for the area. Project team members then documented the land use, occupancy, and building conditions for each parcel along the corridor to help in the identification of potential development sites and to understand the distinct character of each section of the street. Team members also collected a variety of traffic and parking data. On-street parking occupancy was observed along each block face of Adeline and around the BART station in the morning and afternoon. Team members used a radar gun to capture vehicle speeds at six locations along Adeline, three northbound and three southbound. Traffic counts were conducted during the evening peak at five major intersections along the corridor. In addition, pedestrian and bicycle counts were conducted at each intersection on Adeline within the study area. All traffic counts documented turning movements. BART data were used to determine station utilization and the access modes to the station.

The team also analyzed the sociodemographic and economic conditions in the study area, drawing upon the 1990 and 2000 U.S. Census data as well as planning and economic development studies conducted by the Cities of Berkeley and Oakland and by the BART district. The city's general plan and area-specific plans were reviewed to ensure that the study team's proposals would be consistent with previous planning efforts and would address community concerns that had been raised in the past.

The study team synthesized the data and field observations and identified a list of issues and opportunities, which were reviewed with city officials. These issues and opportunities could mostly be categorized into connectivity, safety, and activity-related items, and they guided the direction of the design proposals.

The team then developed specific proposals for land use and transportation and assessed their feasibility and impact. The land use group identified potential development locations and created proposals for infill development, examining the potential in relation to zoning, land ownership, and economic development. A three-dimensional graphic of the main development proposal was created to show how the design would integrate into the neighborhood. The street design group developed redesign proposals for all the major intersections on Adeline and road diets for most of the length of the corridor. SYNCHRO software was used to examine the traffic impacts of the design changes and to optimize signal timing to reduce traffic impacts. In acknowledgment of the high cost of redesigning an entire 1-mi corridor, a low-build option was also developed. The design included many of the benefits of the main design, using temporary infrastructure like soft-hit posts. As a final step, cost estimates were developed for all the design proposals, and potential funding sources were identified. The work was presented to city officials, neighborhood residents, and business leaders for their review and comment and was favorably received. The city is now considering implementation options.

CLOSER LOOK AT CORRIDOR

The data collected in the field work largely confirmed the previous concerns voiced by city officials, residents, and merchants of the Adeline corridor. The 14-ft-wide lanes make it easy for cars to speed: the average speed on a Saturday night was 29 mph, but speeds were clocked as high as 47 mph near the BART station, well in excess of the posted 25 mph limit. Changing signal timing and coordination could reduce vehicle speeds and make crossing easier for nonmotorized modes. Parking was generally underutilitized, and only the block faces around the BART station had occupancy above 80%

when the data were collected. Figures 2*a* and 2*b* show the bicycle and pedestrian counts determined at intersections during the afternoon peak hour. Bicycle volumes were highest at Oregon Street, a local road that is the entry to the Berkeley Bowl Marketplace, and at Russell Street, a bicycle boulevard. Pedestrian volumes were highest at the intersections adjacent to the BART station as well as at Oregon Street. These patterns demonstrate the poor bicycle access to the BART station as well as the general lack of amenities for cyclists south of the station. Figure 2*c* shows the estimated annual average daily traffic for automobiles. Volumes are highest on Adeline south of the merger with MLK; much of this traffic is either coming from or accessing the freeway.

Adeline is characterized by an extremely large right-of-way, much of which is devoted to automobiles. North and south of the BART station area, the entire right-of-way is 180 ft, of which 40% in the north and 76% in the south (where Adeline goes from two to three travel lanes in each direction) is reserved for automobiles (including parking). In the station area, the right-of-way narrows to 124 ft but mainly through a reduction in the widths of sidewalks and the road's median; here, motor vehicles control about 58% of the public right-of-way. Because Adeline runs at an angle to the grid pattern of adjacent streets, intersections along the street feature awkward geometries that create very long east-west crossings for pedestrians and allow vehicles to travel through or turn at higher-than-typical speeds. North of the Adeline–Ashby intersection, a 56-ft landscaped median provides a refuge for pedestrians and cyclists making east–west crossings; however, the median largely disappears south of that intersection, which results in crossings that are up to 150 ft. At unsignalized crossings along Adeline, this lack of a median creates a real danger for pedestrians and cyclists crossing the street. Enough space exists in the right-of-way to accommodate all types of users and to improve safety with traffic calming measures, with little impact on automobile traffic.

The Ashby BART station in the center of the study area creates significant problems for pedestrian and cyclist movement across Adeline. Bordered by three arterials, the BART station can be accessed only by entering its large, 350-space parking lot, which is below street level. This situation forces pedestrians and cyclists moving east or west to travel long distances to navigate around the parking lot or to go through the parking lot by entering driveways, creating a source of conflicts with cars. With no street-level uses on any side of the station, the BART parcel is a "dead" zone that can seem particularly uncomfortable at night and that inhibits movement between destinations on the northern and southern sections of Adeline. This parking lot is a good site for compact, mixed-use development. Furthermore, parking at the station is only $1/day, and pricing strategies could be applied to manage parking demand in and around the station.

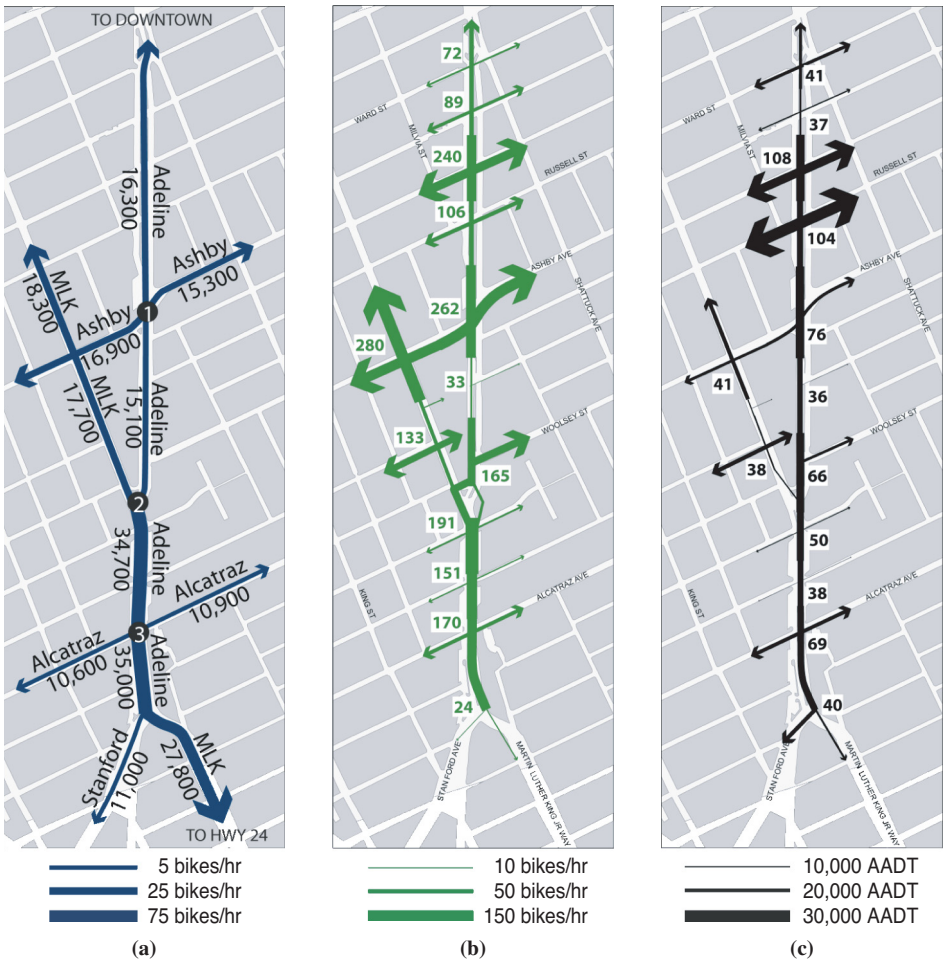


FIGURE 2 Traffic counts: (*a*) bicycle (peak hour), (*b*) pedestrian (peak hour), and (*c*) motor vehicle.

Improving safe and convenient pedestrian and bicycle access to the BART station is particularly important because the shares for the walk and bike access modes for the station—57% and 12%, respectively—are among the highest in the BART system (*1*). Along with the fact that drivers accessing the Ashby BART have the shortest median driving distance of any station in the BART system (*1*), these figures suggest that potential is significant for increasing the share of BART patrons who walk or bike to the Ashby BART station if walking conditions were improved. The current high usage by pedestrians and bicycles assures that new facilities will be utilized. Land uses along Adeline paint a mixed picture. Of the parcels that front the major roads in the study area, few are vacant, but some of the vacant parcels have remained unused for many years. North of Ashby Avenue, the street's wide grassy median (over the BART tunnel) serves as open space, but perhaps because of its sparse furnishings and the high vehicle speeds along Adeline, it attracts few users. Likewise, small plazas and street furniture were introduced south of the BART station as part of previous improvements to the area, but these too are infrequently used. The northern portion of the study area contains major retail attractors and a number of multifamily homes. Other important destinations include the weekend Berkeley Flea Market (located in the BART parking lot), religious institutions, and the several theaters and cultural centers that make up the Ashby Arts District. Near the Adeline–Ashby intersection is a cluster of antique and furniture stores that attract few customers. The area south of the BART station is characterized by smaller lots, which feature a mix of retail, medical, small office, and residential uses. Owing to the early development of the Lorin District, several registered historic buildings stand along Adeline; in general, building quality in the study area was found to be very heterogeneous, with some structures in good condition, some needing some upkeep, and some suffering from much deferred maintenance. These historic buildings and the installation of consistent, human-scale streetscape improvements along the corridor could create a common sense of place.

DESIGN PROPOSAL

Overview

On the basis of the identified issues and opportunities, the following goals were chosen for the project:

- Enhance corridor connectivity for all users,
- Create a safer environment for pedestrians and cyclists, and
- Encourage designs and uses that support active, walkable neighborhoods.

These goals were used to develop a design proposal that

- Reduces the number and width of vehicle lanes while maintaining a reasonable level of service for auto users (Figure 3*a* shows locations of the lane reductions);
- Reconfigures key intersections at Adeline and Ashby; Adeline, MLK, and Woolsey; and Adeline and MLK Stanford (Figure 3 shows the locations of the realigned intersections);
- Consolidates underused right-of-way into public spaces and development parcels connected to destinations and pedestrian areas (Figure 3*b* shows the areas of new or expanded open space and land for development);
- Completes the bicycle network in the corridor (Figure 3*c* shows the completed bicycle network as proposed);
- Creates new development opportunities at the Ashby BART station (Figure 3*b* shows the location of the entrances for the new covered BART parking);
- Reorients the entrance to the Ashby BART station to face Adeline and the Ed Roberts Campus; and
- Maintains adequate vehicle level of service and parking supply (Figure 3*b* shows the location of the reorganized street parking).

Table 1 compares the proposed design with the existing layout of Adeline by using selected performance measures. As the table illustrates, the design improves bicycle and pedestrian conditions by reducing crossing distances and narrowing vehicle lanes 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.

North Adeline

The stretch of Adeline north of Ashby faces many of the same challenges as the rest of the corridor: pedestrian and bike hazards, high vehicle speeds, and underutilization of public space. In the proposal for North Adeline, these issues are addressed by (*a*) removing a travel lane to shorten crossings and reduce vehicle speeds, (*b*) narrowing travel lanes to calm traffic further while maintaining access, (*c*) realigning the intersection of Ashby and Adeline to create a safer environment for all users and to provide better pedestrian access to the Ashby BART station from the north, and (*d*) expanding the center median into an attractive public park by using the space reclaimed from automobiles. Figure 4 shows an example of how the road section could change with the proposed design.

During field observations, 90% of the cars in this section exceeded the posted 25-mph speed limit. This large percentage of speeders is in part due to excessively wide 14-ft vehicle lanes on North Adeline. Removing a travel lane and narrowing the remaining lanes from 14 to 11 ft is an effective way to calm traffic, and it frees road space for the benefit of other users. The SYNCHRO analysis indicated that level of service C could be maintained throughout this stretch of Adeline, as long as the road expanded to three lanes at the intersection with Ashby to accommodate turns.

Figure 5 shows the existing and proposed designs for the intersection of Ashby and Adeline. The cross distances are significantly shorter in the proposed design because of the improved intersection angle and the lane reductions.

Reducing auto lanes will make the corridor more inviting for nonmotorized 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. Automobile access is especially important for the antique stores, whose patrons must haul purchases away in trucks. The new design also keeps a sizable amount of parking close to the rows of antique stores to facilitate these shopping trips.

Adeline in Station Area

This section of Adeline hosts the Ashby BART station, the most important destination in the corridor. The station is not only an inter-

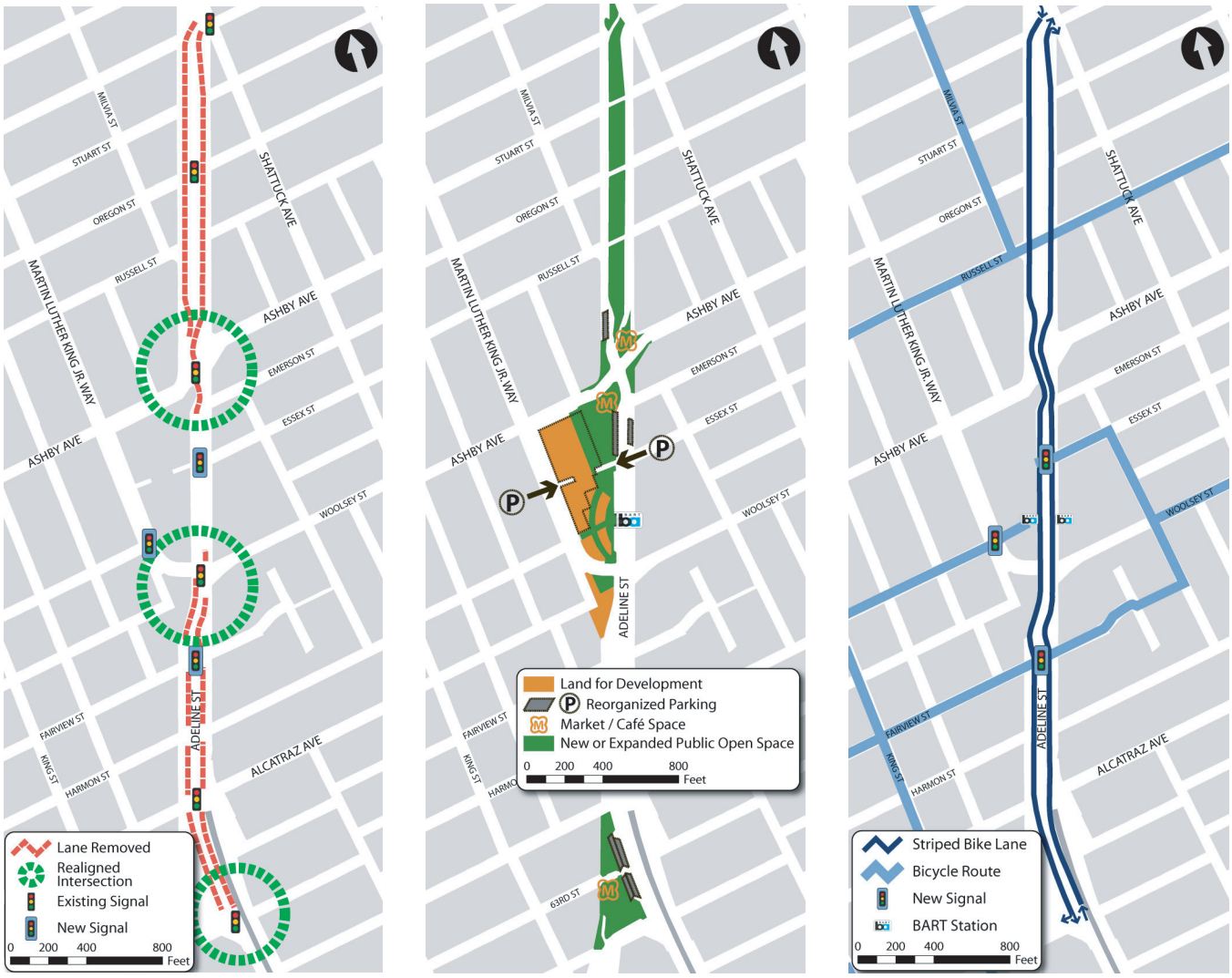


FIGURE 3 Overview of proposed changes: (*a*) traffic, (*b*) land use, and (*c*) bicycle network.

TABLE 1 Performance Measures and Existing and Proposed Designs

Performance Measure	Existing	Proposed
Maximum width of vehicle lanes (ft)	14	11
Number of on-street parking spaces	327	332
Right-of-way devoted to cars (%)	59	45
New public space created (sq ft)	—	227,660
New developable space created (sq ft)	—	104,570
Bicycle lane completion along Adeline (%)	62	100
Crossing distances at key intersections on Adeline (ft)		
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
62nd–Adeline (northern crosswalk)	85	75
62nd–Adeline (southern crosswalk)	90	75
Alcatraz–Adeline	120	80

modal transfer point for travelers accessing the station via bus, car, bicycle, and foot; it is also the site of future development—both the recently completed Ed Roberts Campus and the proposed development at the Ashby BART's west parking lot. Despite its importance to users across all modes, this section currently has a design similar to that for North Adeline, which moves vehicles through the area at high speed without adequate consideration of other users. At the southern end of this section is the intersection of Adeline and MLK, where these two arterials merge at a 37° angle, which poses a particular obstacle for both pedestrians and cyclists crossing and traveling along Adeline. The proposed redesign aims to slow traffic, improve pedestrian safety and convenience, and help create a sense of place along this stretch of the road. The redesign includes narrowing lanes to a width appropriate for a 20-mph road to reduce vehicle speeds and devote more space to other users and expanding sidewalks, bus stops, and kiss-and-ride bays by using the space reclaimed from vehicle lanes (Figure 6). The existing bicycle lanes, center median, and number of vehicle lanes would be maintained. A new traffic signal would be installed at Adeline and Essex, and a raised

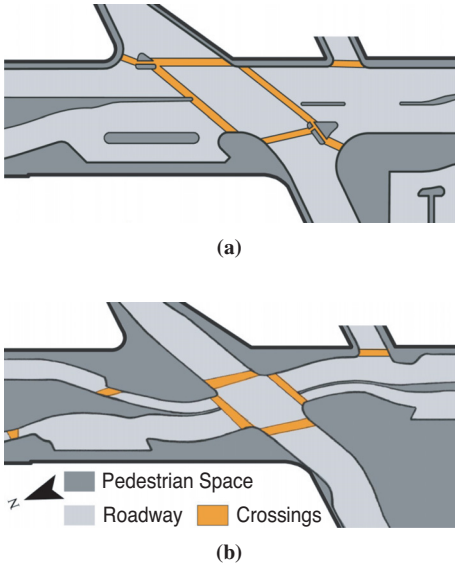
(a) (b)

FIGURE 4 Views of North Adeline facing north toward the Adeline–Oregon intersection under (*a*) existing and (*b*) proposed designs.

crosswalk would be used to connect the BART station and the Ed Roberts Campus. Existing on-street parallel parking would be reconfigured as diagonal parking to maintain the number of spaces available to adjacent businesses. Finally, the Adeline and MLK intersection would be realigned to foster a safer environment for bicycles and pedestrians and to create new space for development.

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. But it also serves as an access road to the freeway just south of the study area. Therefore, a design that both accommodates cars and is more respectful of other uses in the area was developed.



(a)

(b)

FIGURE 5 Design for intersection of Ashby Street and Adeline Street: (*a*) existing and (*b*) proposed.

The study team proposed a road diet for South Adeline that would free space for other users and create new public spaces. The proposed design includes the following improvements:

- Reducing the number of lanes from three to two in each direction with left turn pockets at signalized intersections to calm traffic and reduce crossing distances,
- Narrowing remaining travel lanes to match the proposed lane widths in the area of the Ashby BART station,
- Widening the median and creating pedestrian refuges surrounded by bollards at crosswalks to give pedestrians safe places to wait if they are unable to cross both directions of traffic at once,
- Installing colored crosswalks at the intersection of Adeline and Harmon to increase pedestrian visibility,
- Installing a signal at the intersection of Adeline and Fairview to improve safety for crossing pedestrians and bicyclists and spread the storage of vehicle volume along the busier south end of the corridor,
- Reconfiguring the intersection at Adeline and Stanford and reducing the number of lanes on Stanford to calm traffic and shorten crossings for pedestrians, and
- Installing bicycle lanes on Adeline between MLK and 63rd Street to complete the bicycle network and allow bicyclists a safe way to access destinations along South Adeline.

The redesign frees land that could be used for a new public space at the northwest corner of the intersection of Adeline and Alcatraz that serves as a gateway to the Lorin District and to Berkeley. This would provide usable open space in a neighborhood that lacks parks and could help draw residents to the Adeline corridor.

Development of Station Area

The Ashby BART station is the focal point of the study area, connecting residents to jobs, shops, and other destinations throughout

(a) (b)

FIGURE 6 Views of Adeline Street in station area facing north from intersection of Adeline and Woolsey under (*a*) existing and (*b*) proposed designs.

the region and broadening the customer base of local businesses. With nearly 5,000 daily station entries, the station is a significant destination. 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, its surrounding area is, for the most part, an impediment to improving the environment along Adeline. The 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. The proposed design for the station area reflects the station's importance to the community. The design brings roughly 735 new residents 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. It also creates more than 25,000 ft^2 of retail–commercial space for businesses serving the station, the neighborhood, and the residents.

The design centers on a new high-profile plaza before the station entrance that mirrors the crescent-shaped design of the Ed Roberts Campus, giving the station a sense of place and directing visitors to BART. It creates a 47,000-ft^2 open-air market plaza at the corner of Adeline and Ashby to continue to accommodate the Berkeley Flea Market in a highly visible permanent location adjacent to the proposed linear park on North Adeline. The resulting development would activate the edges along Adeline, MLK, and Ashby to define these streets better and improve the pedestrian experience (Figure 7).

Pedestrian paths and promenades would be installed through the station area to improve connectivity and direct pedestrians to the station entrance. Additional pedestrian improvements would include signalized crossings and raised crosswalks. For bicycles, a signalized crossing would provide a link to the main BART entrance and nearby surface-level bicycle station.

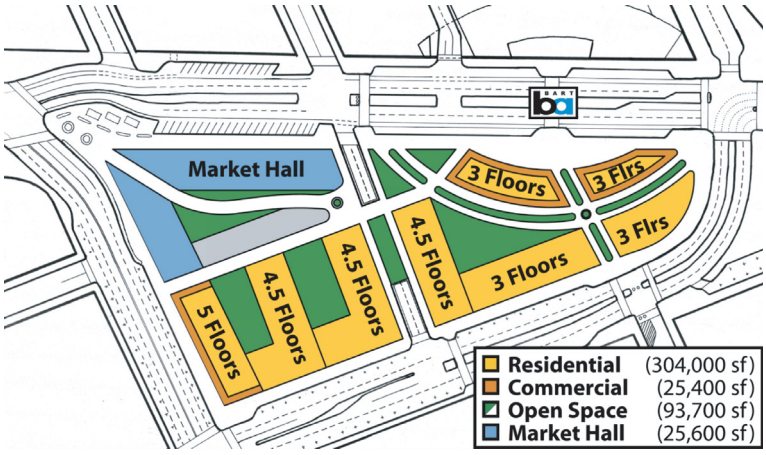


FIGURE 7 Land use map of development of station area.

Parking for BART would be reorganized and placed underground (i.e., development would occur in air rights). The more efficient redesign would accommodate all off-street automobile parking in the western lot, by filling the existing hole so that buildings would address the street.

IMPLEMENTING THE PROPOSAL

The proposal contains radical changes for Adeline and will require substantial time and money to implement. A basic estimate of project construction costs for all proposed changes to the roadway, with an expected 2015 build date, was $7.1 million. The studio report contains a detailed description of potential funding sources (*2*).

Phase I

Many of the issues identified, such as 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, a set of low-cost, short-term Phase 1 improvements are proposed to resolve some of the most-urgent issues facing Adeline and to take the first steps toward implementing the complete vision. In the event of budget shortfalls, these actions could constitute a low-build alternative for Adeline. The Phase I improvements include the following:

- Removing one lane in each direction on North and South Adeline and reducing lane widths throughout the corridor to create 10-ft median lanes and 11-foot outside lanes,
- Completing bicycle lanes along Adeline and providing a 3-ft buffer where lanes are adjacent to parallel parking,
- Reconfiguring the intersection of Ashby and Adeline to reduce crossing distances and eliminate unpredictable turn movements,
- Reconfiguring medians and lanes on Adeline and MLK adjacent to the BART station to calm traffic and create safer pedestrian and bicycle crossings,
- Installing an inbound bicycle lane on the BART parking lot exit ramp at Adeline and Woolsey (including bollards to block inbound vehicles from using the ramp) to improve station access for bicyclists, and
- Installing raised crosswalks at all unsignalized crossings on Adeline and MLK adjacent to the Ashby station to calm traffic and to create safer conditions for pedestrians.

The majority of the Phase I improvements can be achieved by using inexpensive measures such as restriping of lanes, installing soft-hit posts and bollards as lane and median delineators, installing planters at pedestrian crossings, and demolishing small sections of medians to allow for the passage of bicycles. The total implementation cost for the Phase I improvements is approximately $530,000.

Additional Phasing

The Phase I improvements described above form the first step to implementing the proposal. After that, improvements can be phased in along five segments of Adeline (Figure 8).

When how to phase the corridor segments, implementation cost, and safety and livability needs were being determined, the following factors were considered: impact on users during construction, connection to other segments, and availability of funding for each segment. The following order of implementation is recommended:

1. Ashby–Adeline intersection. As noted earlier, this intersection has numerous safety concerns and is heavily used by pedestrians going to 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 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 with other segments, and so it should have lower costs and have less impact on users during construction. It would also be likely to qualify for pedestrian and bicycle improvement funds.
3. Intersection of Stanford, Adeline, and MLK. 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 contribute greatly to the livability of South Adeline by creating vibrant public spaces to 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 in helping with the intersection's 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 exist here. Widening the park will be expensive, and a few funding sources

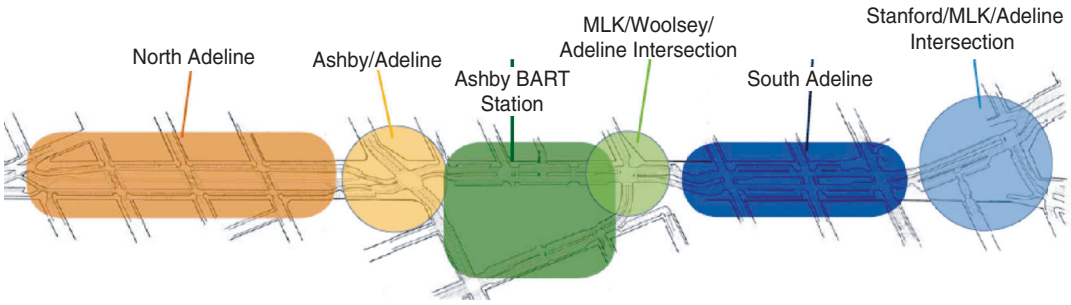


FIGURE 8 Segments of construction phasing.

that could support this work have been identified. The project should have a relatively limited impact on users during construction if the low-build alternative has already been implemented.

5. Intersection of MLK, Woolsey, and Adeline. This redesign is a major project that will be expensive and have substantial impacts on users during construction. It is, however, necessary for the long-term livability and safety of the corridor. This project needs to precede the BART station redevelopment, but it should be done in conjunction with that work to take advantage of funding streams and allow for the redevelopment of the new land created to be potentially linked to the station redevelopment.

6. Ashby BART Station area. Because the station redevelopment will likely take the longest to implement, 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, once implemented, make it more successful. 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.

CONCLUSION

Berkeley's Adeline Street suffers from the common urban problem of a mismatch between transportation facilities and land use. This paper presents a proposal for a redesign to address issues of safety, livability, economic development, and access. While the scale of the design is ambitious and implementation will be expensive, the proposal recommends realistic phasing options that can make the project happen.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the assistance and interest of the City of Berkeley and BART, as well as Monica Altmaier, Stephanie Dock, Emily Ehlers, Brian Gould, Jeff Hood, Mike Izzo, Andy Kosinski, Erin Machell, Bob Masys, Mariana Parreiras, Taylor Reiss, Eliot Rose, Carlos Velasquez, Jamey Volker, and Laura Wiles, graduate students at the University of California, Berkeley.

REFERENCES

1. *2008 Bart Station Profile Study*. http://www.bart.gov/docs/StationProfileStudy/2008StationProfileReport_web.pdf. Marketing and Research Department, Bay Area Rapid Transit, Berkeley, Calif. Accessed July 30, 2010.
2. CP 218 Transportation Planning Studio Class. *Old Road, New Directions: A Plan for Adeline.* University of California, Berkeley, Spring 2010.

The Context-Sensitive Design–Solutions Task Force peer-reviewed this paper.