

Final

MacArthur BART Station Access Feasibility Study



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SF06-0245

May 2008

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1. EXECUTIVE SUMMARY

Through an extensive community planning process, the City of Oakland, BART, and the representatives of residential and business organizations around the MacArthur Station Area have worked to build the necessary public support for a MacArthur Transit Village and to assist with planning and implementation. After a request for proposals in 2004, the City of Oakland and the San Francisco Bay Area Rapid Transit District (BART) selected a development team to work with City of Oakland and BART staff and the surrounding community to plan, design, construct, and operate a mixed-use project with a residential focus at the MacArthur BART Station. In April 2004, the development team was selected for the MacArthur Transit Village. The proposed Transit Village Development is now undergoing environmental review under the California Environmental Quality Act (CEQA). At this critical time, this Access Study addresses opportunities to re-envision station access in the context of BART's local and system-wide long-term plans for the MacArthur BART Station.

This Study has been prepared consistent with policies included in the *BART Strategic Plan* (BART 2003) that address access management. The three primary objectives of this Access Feasibility Study are to:

- (1) Develop a program/strategies to increase access to the MacArthur BART Station that can be used to guide capital investments that may be considered in conjunction with or independent of a specific development project,
- (2) Provide a review of the currently proposed MacArthur Transit Village development related to station access opportunities, and
- (3) Provide recommendations for the proposed MacArthur Transit Village development

A secondary objective for the MacArthur BART Station Access Feasibility Study is to identify opportunities and strategies to increase off-peak hour and off-peak direction travel to and from the station. The peak hour maximum passenger load for trains arriving at the MacArthur BART Station is currently at or above-seated capacity for the Richmond-Millbrae/Daly City and Pittsburg/Bay Point-SF Airport lines. Access strategies that focus on bringing BART patrons to the station area in the AM peak, and during mid-day, evening, or weekend periods are important aspects of a targeted and balanced access plan for the MacArthur Station.

PURPOSE

Transit-Oriented Development (TOD) projects present unique opportunities for promoting and developing alternative means of travel, as well as access to transit facilities. Historically, BART has found that these opportunities have not been given equal consideration with roadway improvements during project review. Thus, BART has begun requiring Access Feasibility Studies be performed in concert with TOD projects. BART believes that conducting an Access Study in concert with the TOD project can provide the District with sufficient information to improve the various modes of access to the transit station in general and to help shape the TOD project specifically. BART-initiated Access Feasibility Studies analyze roadway impacts as well as other modes of access to BART, such as pedestrian, bicycle, pick-up/drop-off (kiss-ride), transit (both fixed route and privately operated shuttles), taxis, and high-occupancy vehicles, within a 1/4- to 1/2-mile radius of a station and the greater station catchment area. The access improvements identified as a result of the Access Feasibility Study are not static; once an Access Feasibility Study has been produced, periodic updates of the analysis will need to be performed to address changing conditions. However, the Access Feasibility Study and its periodic updates will provide a blueprint for access improvements that can be pursued over time should funds become available.

BACKGROUND

As the BART system has matured and ridership has increased, a number of BART Stations including the MacArthur Station are experiencing peak period parking access constraints, specifically in the AM peak commute period (6:00 - 9:00 AM). In response to increased ridership and parking access constraints, BART staff has

developed access management policy guidelines that are informed by and consistent with the Board-adopted *BART Strategic Plan* (BART 2003), and has initiated preparing Station Access Feasibility studies to identify strategies to expand access mode share from non-single occupant vehicles. The Access Feasibility studies are intended to evaluate all access modes to a given BART Station. BART and its project partners intend to use the Access Feasibility Study recommendations to guide capital investments to improve and increase station access capacity, as a stand-alone effort or in conjunction with station area development at a given station. While access recommendations may be designed to address home-based AM peak period trips, most suggested geometric or policy changes would benefit all trips to and from the BART Station.

In 2005, the BART Board of Directors adopted a Transit Oriented Development (TOD) policy that foresaw the need to treat station access in a more holistic manner to promote the advancement of TOD projects at stations. The policy addresses the need to make trade-offs between development and replacement parking on a case-by-case basis, especially in the instances of higher intensity development and where the TOD projects meet other identified community and regional goals (MTC TOD Policy).

In 2006, BART completed the Access BART project to develop a strategic assessment of BART station areas and evaluate trade-offs between TOD opportunities and access investments (e.g., parking garages, bicycle facilities, etc.) at a system- and corridor-level, while also considering the known capacity constraints on existing transit infrastructure. As part of the *Access BART* project, the MacArthur BART Station was identified as an “Urban with Parking” station, which is a station that has high ridership with high walk, bicycle, and transit access shares and a small parking lot that fills early in the morning. The redevelopment of the station parking lot with a Transit Village development was identified as an opportunity to re-envision access to the station, by reducing the number of on-site parking spaces and further increasing the walk, bicycle, and transit access shares. The change would support BART’s reclassifying the station to an “Urban Station.” For the MacArthur BART Station, a key challenge will be balancing multi-modal access needs while shifting to a non-auto access focus. In making this shift, this study is the first step to move beyond BART property and develop a holistic access strategy for access to BART from all modes.

EXISTING CONDITIONS AND ACCESS OBJECTIVES

This Study includes a chapter on each travel mode, including pedestrian, transit, bicycle, and auto. Each of these chapters includes a discussion of existing conditions and planned improvements and recommends a set of access objectives relevant to each mode. The multi-modal access objectives are listed in Table 1-1.

The modal chapters are arranged according to a modal hierarchy that stresses the importance of non-auto access to the station.

TABLE 1-1 MULTI-MODAL ACCESS OBJECTIVES	
Pedestrian Access Objectives	
–	Provide safe, efficient connections between BART fare gates and adjacent streets, including the proposed Telegraph Avenue Bus Rapid Transit (BRT) service
–	Provide safe crossing opportunities, particularly of arterials surrounding the station (40th Street, Telegraph Avenue, West MacArthur Boulevard, and Martin Luther King, Jr. Way)
–	Improve pedestrian facilities within a 1/2-mile radius of the station to facilitate pedestrian access
–	Enhance personal safety for pedestrians to enable the efficacy of non-auto access strategies and incentives
Transit Access Objectives	
–	Maintain or improve travel times and route directness; Increase transit (bus/shuttle) service frequency
–	Provide flexible design for bus bays and layover areas to accommodate existing and future demand with a measure of

flexibility for future changes
- Enhance personal safety for transit patrons
- Minimize transit impacts associated with traffic congestion and drop offs/pick ups
Bicycle Access Objectives
- Provide safe and efficient connections between bicycle parking locations and adjacent streets, especially with respect to turns into and out of the station
- Provide safe crossing opportunities
- Support the goals and policies of the City's broader Bicycle Plan and provide connections to the Oakland, Emeryville, Piedmont, and Berkeley bicycle networks
- Provide sufficient and secure bicycle parking facilities
- Signalize the intersection of Frontage Road and West MacArthur Boulevard to accommodate left turns
Auto Access Objectives
- Provide efficient but slow-speed vehicle access within the station area
- Provide intuitive wayfinding, including signage to BART and residential parking areas
- Provide sufficient area for existing and expected increasing drop-off and pick-up auto access mode share
- Implement parking management techniques to reduce over-saturation and vehicles "cruising" for parking within the station area <ul style="list-style-type: none"> • Provide short-term on-street parking for Transit Village retail • Seek opportunities to better manage existing parking resources
Fehr & Peers, March 2008

ACCESS STRATEGIES

A comprehensive menu of access strategies is presented in this study in support of BART's long-term mode share and ridership goals for the MacArthur BART Station. These strategies assume a Transit Village development on the surface parking lot, a reduction in BART patron parking on-site, and a residential parking permit program (RPP) in the surrounding residential neighborhoods. However, some of these strategies can be employed irrespective of the proposed Transit Village project.

Several **Tier Zero** Strategies, which are strategies that have already been committed to and/or funded for the station area, are also presented. Additionally, a short-term Travel Demand Management (TDM) Coordinator/ Access Strategy Administrator position is discussed as an overall **Implementation Strategy**. This position is designed to respond immediately and effectively to changing access needs and to ensure successful implementation of the other access strategies.

A subsequent tiered set of strategies is recommended to achieve the following two objectives:

1. Addressing ridership and access concerns associated with an expected reduction in on-site parking supply (through ridership and parking strategies)
2. Capitalizing on the value of existing and proposed physical infrastructure improvements in terms of their capacity to facilitate non-auto station access and off-peak hour and direction ridership (through transportation demand management (TDM) and wayfinding strategies)

The parking, transportation demand management, ridership, and wayfinding strategies are classified in three tiers:

- **Tier One** Strategies are the most feasible in terms of their ease of implementation and cost-effectiveness

- **Tier Two** Strategies are less feasible because of perceived barriers to implementation and reduced cost-effectiveness. Many strategies require the support of a TDM Coordinator for administration, funding, or oversight
- **Tier Three** Strategies may or may not be feasible, and are likely not appropriate for short-term implementation or without further study because of perceived barriers to implementation and/or poor cost-effectiveness

The recommended strategies are summarized in Tables 1-2, 1-3, and 1-4 below. The tables also summarize the costs and benefits for each tier of strategies. Appendices A and C provide details on the derivation of the ridership estimates, capital costs, and operating costs as summarized in these tables.

TABLE 1-2 TIER ONE STRATEGIES			
Tier One Strategy	Daily Ridership Benefit	Capital Cost	10-Year Operating Cost
Preferential Parking for Carpool/Vanpool in the BART Lot/Garage	60	\$5,000	\$0
10-Hour Metered Parking on 40 th Street and West MacArthur Boulevard	80	\$30,000	(\$500,000)
Electronic Bicycle Lockers in the BART Plaza	insufficient data to support estimate	\$45,000	\$50,000
AC Transit and Emery-Go-Round Access Improvements , including shelters, real-time bus information, and express service	100	\$1,000,000	\$1,800,000
Hospital Shuttles Access Improvements with new traffic signal at Frontage Road and West MacArthur Boulevard	150	\$250,000	\$80,000
Expanded Motorcycle and Scooter Parking in the BART Parking Lot/Garage	24	\$1,000	\$0
Attended Parking in the BART Parking Lot/Garage	150	\$75,000	\$1,500,000
Carpool and Vanpool Transit Discounts for BART patrons	supporting strategy	\$50,000	\$250,000
Wayfinding Signs within the Station Area to encourage non-auto access and off-peak/direction travel	supporting strategy	\$40,000	\$10,000
Safety Stop to accommodate bus and shuttle patrons with on-demand stops during nighttime service	supporting strategy	\$0	\$0
Wayfinding Signs to/from the Station in Nearby Neighborhoods to encourage non-auto access and off-peak/direction travel	supporting strategy	\$60,000	\$10,000
Station Area Maps to improve wayfinding, encourage non-auto access and off-peak/direction travel	supporting strategy	\$25,000	\$16,000
Market Rate BART Parking in the BART Parking Lot/Garage	supporting strategy	\$0	(\$4,500,000)
Guaranteed Ride Home Program (ride insurance) marketing to increase usage of current Bay Area programs; Enhanced as a Supplemental Guaranteed Ride Home Program for BART patrons not eligible for current programs (with a Transit Village development)	supporting strategy	\$10,000	\$82,000
With a Transit Village Development Only:			

Remote Parking at three local churches	200	\$25,000	\$200,000
Passenger Drop-Off Improvements to reduce conflicts between shuttles, autos, bicyclists, and pedestrians	supporting strategy	\$20,000	\$20,000
Station and Village Branding , including street furniture, signage, lighting, etc.	supporting strategy	\$150,000	\$200,000
Car Sharing opportunities for Transit Village residents and employees	supporting strategy	\$0	\$300,000
Source: Fehr & Peers, March 2008			

**TABLE 1-3
TIER TWO STRATEGIES**

Tier Two Strategy	Ridership Benefit	Capital Cost	10-Year Operating Cost
Parking Benefit District to enable BART patrons to purchase surplus Residential Parking Permits (RPPs) with revenues dedicated to the District	400	\$25,000	(\$1,920,000)
Pedestrian Infrastructure Improvements on surrounding pedestrian access routes	insufficient data to support estimate	\$5,000,000	\$500,000
Bicycle Infrastructure Improvements on surrounding bicycle access routes	insufficient data to support estimate	\$500,000	\$250,000
High Capacity Bicycle Parking on the BART Plaza	insufficient data to support estimate	\$100,000	\$50,000
Volunteer Neighborhood Guides to guide visitors to the station area and Village	supporting strategy	\$100,000	\$1,000,000
Blue Light Phones/ Personal Security Improvements to encourage non-auto travel within the station area	supporting strategy	\$70,000	\$70,000
Neighborhood Ridematching/ Ridesharing (promote existing 511 service with potential expansion)	supporting strategy	\$5,000	\$50,000
Station/TDM Website to enhance wayfinding, non-auto access alternatives	supporting strategy	\$10,000	\$50,000
Smart Parking (Variable Message Signs) to alert patrons to available parking capacity in the BART Parking Lot/Garage	supporting strategy	\$35,000	\$35,000
With Transit Village Development Only:			
Village Resident EcoPass "Lite" (BART EZ Rider discounts through MTC Pilot Program) to encourage car shedding	12	\$5,000	(\$54,200)
Unbundled, shared parking for new residential development to make additional parking capacity available for BART patrons	180	\$10,000	\$100,000
Information Booth to be located in the Transit Village	supporting strategy	\$50,000	\$250,000
Source: Fehr & Peers, March 2008			

**TABLE 1-4
 TIER THREE STRATEGIES**

Tier Three Strategy	Ridership Benefit	Capital Cost	10-Year Operating Cost
Free Wi-Fi to enable Internet access for wayfinding information	supporting strategy	\$25,000	\$100,000
Internet Kiosks to provide wayfinding information	supporting strategy	\$10,000	\$100,000
With Transit Village Development Only:			
Bicycle Station co-located with a retail use in the Transit Village	insufficient data to support estimate	\$650,000	\$1,500,000
Village Resident BART EcoPass (deep discount) to encourage car shedding	40	\$5,000	\$1,280,000
Source: Fehr & Peers, March 2008			

Table 1-5 summarizes the above strategies by mode, tier, and 10-year cost/ridership benefit.

TABLE 1-5 SUMMARY OF STRATEGIES BY MODE			
Strategy	Mode	Tier	10-Year Cost/ Ridership
Preferential Parking for Carpool/Vanpool	Auto	One	\$83
10-Hour Metered Parking	Auto	One	(\$5,875)
Attended Parking	Auto	One	\$10,500
Carpool and Vanpool Transit Discounts	Auto	One	N/A
Market Rate BART Parking	Auto	One	N/A
Remote Parking	Auto	One	\$1,125
Passenger Drop-Off Improvements	Auto	One	N/A
Car Sharing	Auto	One	N/A
Parking Benefit District	Auto	Two	(\$4,738)
Neighborhood Ridematching/ Ridesharing	Auto	Two	N/A
Smart Parking (Variable Message Signs)	Auto	Two	N/A
Unbundled, shared parking	Auto	Two	\$611
Electronic Bicycle Lockers	Bicycle	One	N/A
Bicycle Infrastructure Improvements	Bicycle	Two	N/A
High Capacity Bicycle Parking	Bicycle	Two	N/A
Bicycle Station	Bicycle	Three	N/A
Expanded Motorcycle and Scooter Parking	Motorcycle/ Scooter	One	\$42

TABLE 1-5 SUMMARY OF STRATEGIES BY MODE

Wayfinding Signs within the Station Area	Multi-modal	One	N/A
Wayfinding Signs to/from the Station in Nearby Neighborhoods	Multi-modal	One	N/A
Station Area Maps	Multi-modal	One	N/A
Guaranteed Ride Home Program	Multi-modal	One	N/A
Station and Village Branding	Multi-modal	One	N/A
Blue Light Phones/ Personal Security Improvements	Multi-modal	Two	N/A
Station/TDM Website	Multi-modal	Two	N/A
Information Booth	Multi-modal	Two	N/A
Free Wi-Fi	Multi-modal	Three	N/A
Internet Kiosks	Multi-modal	Three	N/A
Pedestrian Infrastructure Improvements	Pedestrian	Two	N/A
Volunteer Neighborhood Guides	Pedestrian	Two	N/A
AC Transit and Emery-Go-Round Access Improvements	Transit	One	\$28,000
Hospital Shuttles Access Improvements	Transit	One	\$2,200
Safety Stop	Transit	One	N/A
Village Resident EcoPass "Lite"	Transit	Two	(\$4,517)
Village Resident BART EcoPass	Transit	Three	\$42,600
Source: Fehr & Peers, April 2008			

FUNDING SOURCES

Chapter 12 presents a summary of candidate federal, state, regional, and local funding sources that may be available in support of the recommended access strategies. It is important to note that most transit-oriented development (TOD) projects require multiple funding sources. It is likely that the recommended access strategies, in addition to the many other aspects of the proposed Transit Village, will also require multiple funding sources. Additionally, most funding sources are not specifically targeted for TODs, but rather for elements that may be included in a TOD, such as air quality improvement. Because funds are not earmarked for TODs, they may require TOD projects to compete for funds, adding a further challenge to obtaining funding.

PROPOSED DEVELOPMENT AND RELATED ACCESS RECOMMENDATIONS

The study concludes with a summary of the current development proposal for the MacArthur Transit Village. The proposed development includes five new buildings that will accommodate up to 675 for-rent and for-sale residential units, and up to 49,000 square feet of neighborhood-serving retail and commercial uses, live/work units, and a community center use. Approximately 1,000 parking spaces, including 300 BART patron spaces, are also proposed in structured facilities. New land uses in the project area would be consistent with the land uses prescribed in the S-15, Transit-Oriented Development Zone. The project also includes two new internal roadways, landscaping and other streetscape improvements (i.e., benches and street lighting), and improvements to the BART Plaza. The proposed development is expected to receive a Leadership in Energy and Environmental Design – Neighborhood Development (LEED-ND) Stage One Gold certification as a sustainable neighborhood development project.

The new development project would attract new BART riders because many of the new project residents would ride BART for work, shopping, and recreation trips and because the project would provide enhanced access to the station for pedestrians, bikers, transit and shuttle users, and kiss and ride users. Nonetheless, BART is concerned that the loss of patron parking spaces at or near the station could result in an overall reduction in BART ridership.

Chapter 13 presents project-specific access recommendations related to the proposed development, which responds to this concern by examining a full spectrum of multi-modal access strategies for the MacArthur station that could be implemented to improve existing conditions and to provide attractive access options to those patrons who may be affected by the reduced on-site parking. BART will consider these options in its long-term plan for improving access to the site. BART intends to use the study to work with the developer and the City of Oakland to determine which of the strategies are feasible and should be implemented by BART or others. The City of Oakland and BART have not yet finalized the improvements that will be conditions of development approval.

2. INTRODUCTION

Through an extensive community planning process, the City of Oakland, BART, and the representatives of residential and business organizations around the MacArthur Station Area (Figure 2-1) have worked to build the necessary public support for a MacArthur Transit Village and to assist with planning and implementation. An important aspect of the planning and implementation work is the development of an Access Feasibility Study for the MacArthur BART Station. Station Access Feasibility studies are required by BART to correspond with planned changes to a Station Area. The Access Feasibility Study process provides a key opportunity to re-envision station access in the context of BART's local and system-wide long-term plans for a station.

This Access Feasibility Study has been prepared consistent with policies included in the *BART Strategic Plan* (BART 2003) that address access management. The three primary objectives of this Access Feasibility are to:

- (1) Develop a program/strategies to increase access to the MacArthur BART Station that can be used to guide capital investments that may be considered in conjunction with or independent of a specific development project,
- (2) Provide a review of the currently proposed MacArthur Transit Village development related to station access opportunities, and
- (3) Provide recommendations for the proposed MacArthur Transit Village development that relate to station access opportunities

A secondary objective for the MacArthur BART Station Access Feasibility Study is to identify opportunities and strategies to increase off-peak hour and off-peak direction travel to and from the station. The peak hour maximum passenger load for trains arriving at the MacArthur BART Station (after boarding and alighting) range from moderate ridership levels for the Fremont-Richmond line to near- or above-seated capacity for the Richmond-Millbrae/Daly City and Pittsburg/Bay Point-SF Airport lines. Trains to SF Airport and Millbrae use a mix of nine and 10-car trains during peak hours, while the Richmond/ Fremont lines have six- to eight-car trains during peak hours. Access strategies, which focus on bringing BART patrons to the Station Area in the AM peak, and during mid-day, evening, or weekend periods are important aspects of a targeted and balanced access plan for the MacArthur Station.

Access refers to the portion of BART riders' trips between their origin or destination and the station faregates. A typical BART rider's trip may include multiple transportation modes, such as home-drive-BART-walk-work or home-shuttle-BART-bus-work. This Access Feasibility Study will provide short- and long-term solutions to key access issues for all users of the MacArthur BART Station including pedestrians, bicyclists, motorists, and shuttle and bus patrons. Improving access to the MacArthur BART Station is critical to meeting ridership goals and serving customer needs, across all modes.

The following provides an overview of the context for this Study and its organization.

BACKGROUND/ RELEVANT BART POLICIES

As the BART system has matured and ridership has increased, a number of BART Stations including the MacArthur Station are experiencing peak period parking access constraints, specifically in the AM peak commute period (6:00 - 9:00 AM). In response to increased ridership and parking access constraints, BART staff has developed access management policies that are informed by and consistent with the BART Board-adopted *BART Strategic Plan* (BART 2003) and has initiated preparing Station Access Feasibility studies to identify strategies to expand access mode share from non-single occupant vehicles. The Access Feasibility studies are intended to evaluate all access modes to a given BART Station.



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MacArthur BART Station Access Feasibility Study

MACARTHUR BART STATION LOCATION

FIGURE 2-1

BART and its project partners intend to use the Access Feasibility Study recommendations to guide capital investments to improve and increase station access capacity, as a stand-alone effort or in conjunction with station area development at a given station. While access recommendations may be designed to address home-based AM peak period trips, any suggested geometric or policy changes would benefit all trips to and from the BART Station.

In 2005, the BART Board of Directors adopted a Transit Oriented Development (TOD) policy that foresaw the need to treat station access in a more holistic manner to promote the advancement of TOD projects at stations. The policy addresses the need to make tradeoffs between development and replacement parking on a case-by-case basis, especially in the instances of higher intensity development and where the TOD projects meet other identified community and regional goals (MTC TOD Policy).

System-wide Access Mode Targets

In support of the Station Access Feasibility studies, the BART Board of Directors considered targets for individual access modes as part of the *Access Management and Improvement Policy Framework* (BART 2000). The targets are intended to reduce the share of drive alone personal vehicles while increasing access via walking, bicycling, transit, carpool, passenger drop-off, and taxis. While station-specific targets were not developed for the 2000 study, system-wide targets were developed based on expected ridership increases, BART’s ability to influence future access modes, and access mode share information from BART’s *1998 Ridership Profile Survey* (BART 1999). The 1998 mode share and 2010 targets are shown in Table 2-1.

Access Mode	1998 Mode Share	2010 Targets
Walk	23.0%	24.5%
Transit	21.0%	22.0%
Bicycle	2.0%	3.0%
Drop-Off, Carpool, Taxi	16.0%	19.5%
Drive Alone	38.0%	31.0%

Source: BART, 2000.

MacArthur BART Station Access Mode Targets

As part of the recent *Access BART* project (BART 2006), BART categorized all of the system stations into five different types based on an access typology matrix using the following metrics:

- Daily ridership
- Station footprint size
- Surrounding street network
- Proximity to freeway off-ramps
- Parking capacity

- Parking fill time
- Transit service type
- Number of buses per hour
- Number of bus bays
- Walk access share
- MTC regional hub location

The MacArthur BART Station was identified as an “Urban with Parking” Station, which is a Station that has high ridership with high walk, bicycle, and transit access shares and a small parking lot that fills early in the morning. Other stations in this category include Ashby, North Berkeley, and Lake Merritt in the East Bay.

In addition to classifying the different stations, the project also estimated the 2005 and 2030 access mode shares for the system based on ridership forecasting models that predict changes in BART boardings and alightings via auto, transit, and walk access given ridership, parking access, feeder bus levels, and localized land use data.

As shown in Table 2-2, BART anticipates a four percent access mode shift from driving to walking and bicycling between 2005 and 2030 at the MacArthur BART Station with current trends. With this forecast, MacArthur Station would remain an Urban with Parking Station in 2030. In order to advance its Strategic Plan goals and the Board-adopted TOD Policy, BART is considering advancing development and alternative access modes (walk, bike, transit, passenger drop-off) at the MacArthur BART Station, which may lead to a reduction in the number of on-site parking spaces at the station.

Access Mode	2005 Estimated Mode Share ¹	2030 Estimated Mode Share	2030 Urban Station Mode Share Range
Walk & Bicycle	27.0%	31.0%	52-58%
Transit	33.0%	33.0%	32-38%
Drive Alone, Drop-Off, Carpool & Taxi	41.0%	36.0%	6-12%

Source: BART, 2006.
¹ Note that 2005 estimates (based on 1998 data) are different from 2006 survey results reported in this study. Mode share changes from 1998 to 2006 are discussed in Chapter Three.

A successful development project would help to promote the station to be classified as an Urban Station in the future. Additionally, a well-developed access plan with short and long-range strategies will be critical for meeting these goals.

Increasing Off-Peak Travel to/from MacArthur Station

Another important goal is to identify opportunities and strategies to increase off-peak travel and travel during peak periods in the non-peak direction to and from the MacArthur BART Station. During peak hours, BART lines serving MacArthur Station destined for San Francisco currently operate with heavy passenger loads. During peak hours ample capacity for additional passengers is available on trains headed to Pittsburg-Bay Point, Fremont, and

Richmond and in all directions during off-peak hours. Access strategies are needed that focus not just on peak access to the station, but also providing access during the mid-day, evening and weekend periods for BART patrons to destinations in the station area. Strategies that improve the last mile connection and attract mid-day trips, such as improved station area wayfinding, marketing of access improvements, and enhanced bus or shuttle connections to employment centers in Emeryville and Oakland will be important aspects of a targeted and balanced access plan for the MacArthur Station.

REPORT ORGANIZATION

This Access Feasibility Study focuses on balancing the access needs of the BART Station users and those of private development. In doing so, this study relies on BART's Access Hierarchy and identifies incremental strategies that will enable a long-range, sustainable shift to non-auto station access modes.

Access Hierarchy

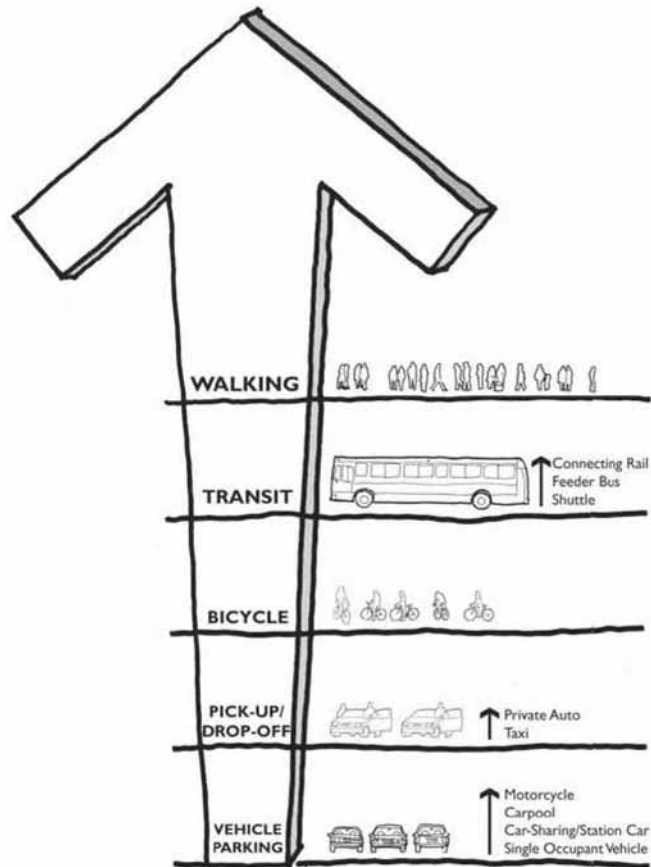
BART Station Access Guidelines include an Access Hierarchy, a tool to help resolve competing demands for funding and physical space between different access modes (BART 2003). The modal sections in this study are organized using the Access Hierarchy, as illustrated in Figure 2-2. The hierarchy stresses the walking, transit, and bicycle access modes for their current importance and especially for their projected role in enhancing multi-modal access to the Station Area.

Contents

The Access Feasibility Study is divided into the following chapters:

- Chapter 1 – Executive Summary
- Chapter 2 – Introduction
- Chapter 3 – Setting and Access Considerations
- Chapter 4 – Pedestrian Access
- Chapter 5 – Transit Access
- Chapter 6 – Bicycle Access
- Chapter 7 – Auto Access
- Chapter 8 – Overview of Access Strategies
- Chapter 9 – Tier One Strategies
- Chapter 10 – Tier Two Strategies
- Chapter 11 – Tier Three Strategies
- Chapter 12 – Funding
- Chapter 13 – Proposed Development

Chapters 4-7 include a discussion of existing conditions and a set of access objectives related to the needs identified for each mode.



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MacArthur BART Station Access Feasibility Study

ACCESS MODE HIERARCHY

FIGURE 2-2

Chapters 8-11, Tiered Strategies, are the most critical components of the Access Feasibility Study. Strategies presented in these chapters illustrate a three-tiered approach of access policies and programs.

Chapter 12 presents a summary of candidate funding sources, which may be available in support of the recommended strategies.

Although the MacArthur Transit Village development project highlighted the need to evaluate access conditions at the MacArthur BART station, many of the conditions described and recommendations included in this study address existing access conditions that could be improved unrelated to the implementation of the project. The final chapter, Chapter 13, summarizes the current Transit Village development proposal and presents additional project-specific access recommendations.

3. SETTING AND ACCESS CONSIDERATIONS

OVERVIEW

The MacArthur BART Station is an elevated station located at 555 40th Street, in the Highway 24 freeway median in Oakland, California. The MacArthur BART Station Area is located at the geographic center of the Bay Area and occupies a central location in northern Alameda County within the City of Oakland. Opened in 1972 adjacent to a 7-acre parking lot, the station has four platforms and serves as a timed transfer facility for trains on the Richmond-Fremont, Richmond-Daly City/Millbrae and Pittsburg/Bay Point-San Francisco International Airport lines.



Bounded by 40th Street to the north, West MacArthur Boulevard to the south, Telegraph Avenue to the east, and Martin Luther King, Jr. (MLK) Way to the west, the MacArthur BART Station is also surrounded by I-580 and Highway 24, which provide auto access throughout the Bay Area.

The area surrounding the station is a mix of relatively low-medium density residential and commercial land uses, with commercial uses lining the major streets. The station is located within a short distance to downtown Oakland, the Temescal and Piedmont commercial districts, the San Francisco-Oakland Bay Bridge, and shopping developments in Emeryville.

MacArthur BART Station Faregate Plaza

BART TRAIN SERVICES

The MacArthur BART Station is the central hub and transfer point of the entire BART system. Approximately 430 trains per day pass through the station providing quick and efficient service to many parts of the Bay Area, including downtown Oakland (3 minutes), downtown San Francisco (16 minutes) and the San Francisco International Airport (54 minutes).

During weekday peak commute periods, patrons at the MacArthur BART Station can directly access all other BART stations except Castro Valley and Dublin/Pleasanton. Access to these stations requires a transfer at the Bay Fair Station.

As shown in Table 3-1, the MacArthur BART Station provides service from 4:00 AM to 1:30 AM on weekdays with typical headways of 15 minutes on each line serving the station during peak and mid-day hours and 20 minute headways in the evening after 8:00 PM, and 6:15 AM (8:03 AM on Sundays) to 12:45 AM on weekends with typical headways of 20 minutes. During the weekday AM peak commute period (6:00 AM to 9:00 AM), headways toward San Francisco range from 2 to 7 minutes.

**TABLE 3-1
 MACARTHUR BART TRAIN SCHEDULE**

Line		Headway (Minutes)				
		Weekday			Weekend	
Origin	Destination	AM Commute Period (WB)	PM Commute Period (EB)	Daily	Saturday (Daily)	Sunday (Daily)
Richmond	Millbrae	15	15	15	No Service	No Service
Millbrae	Richmond	15	15	15	No Service	No Service
Richmond	Daly City	n/a	n/a	No Service	20	No Service
Daly City	Richmond	n/a	n/a	No Service	20	No Service
Richmond	Fremont	15	15	15	20 (15 after 7 pm)	15
Fremont	Richmond	15	15	15	20 (15 after 7 pm)	15
Pittsburg/Bay Point	San Francisco Airport	7	7	15	20 (15 after 7 pm)	15
San Francisco Airport	Pittsburg/Bay Point	7	7	15	20 (15 after 7 pm)	15

Source: BART and Fehr & Peers, 2008.

ORIGINS AND DESTINATIONS SURROUNDING THE BART STATION

The immediate ½-mile area surrounding the MacArthur BART Station includes a diverse mix of land uses, including commercial, industrial, institutional, public, residential, and vacant properties. There are a wide variety of land uses that serve as origins and destinations for BART patrons.

Most of the residential land uses surrounding the station are low-medium density, including single-family residences and duplexes, with some multi-unit apartment buildings. There are also a number of major destinations easily accessible from the MacArthur BART Station, including:

- Temescal shopping district – 0.50 mile to the north
- Oakland Children's Hospital – 0.60 mile to the north
- Summit Medical Center – 0.65 mile to the south
- Kaiser Permanente Medical Center – 0.60 mile to the southeast
- Piedmont shopping district – 0.75 mile to the east
- Emeryville commercial shopping district – 1.4 miles to the west

Based on the 1998 BART Station Profile Survey (BART 1999), the primary market catchment area, which describes the area and population from which a particular station attracts patrons, includes Emeryville, portions of south Berkeley, Piedmont, and portions of north and east Oakland.



Typical surrounding neighborhood low-medium density residential land use

Based on data from *Census 2000* (US Census Bureau 2000), there are approximately 114,250 people living within the MacArthur BART Station catchment area. According to ABAG projections, there will be approximately 147,450 people living within the MacArthur BART Station catchment area in 2030, a 29 percent increase.

The following sections describe the characteristics of the patrons in terms of commute pattern and mode of access.

BART RIDERSHIP

The average number of patrons with trips originating at the MacArthur BART Station in May 2006 was approximately 2,150 during the morning peak period (7:00 to 10:00 AM), and approximately 1,722 during the evening peak period (4:00 to 7:00 PM). There were approximately 6,740

total daily boardings at this station in May 2006, making it the 16th highest ridership station on the 43 station BART system.

The peak hour maximum passenger load for trains arriving at the MacArthur BART Station (after boarding and alighting) range from moderate ridership levels for the Fremont-Richmond line to near- or above-seated capacity for the Richmond-Millbrae/Daly City and Pittsburg/Bay Point-SF Airport lines. Trains to SF Airport and Millbrae use a mix of nine and 10-car trains during peak hours, while the Richmond/ Fremont lines have six- to eight-car trains during peak hours.

Because of its important role as a transfer station, as well as the growing number of employment and retail destinations accessible from the station (especially via the Emery-Go-Round shuttle), MacArthur BART Station functions as both a production and, increasingly, an attraction station. As noted, increasing the off peak hour/direction ridership to/from the station is a goal for this Access Feasibility Study because of the peak capacity constraints in the system.

Future Ridership Projections

The Strategic Station Assessments component of the *Access BART* project included ridership forecasts for the MacArthur BART Station in 2030 (BART, 2006). The forecasts projected an increase in daily boardings to 7,118 under a transit oriented development (TOD) scenario, with selective changes to station area parking and bus service in support of higher intensity, transit-supportive land uses. The forecasts projected an increase to 7,851 daily boardings if BART extensions to San Jose, eBART to Byron, the Oakland Airport Connector, the Dumbarton Rail Project, and Amtrak Capitol Corridor improvement projects are in place.

The *Access BART* estimates reflect a conservative view of BART ridership growth and do not account for increases in fuel costs or other economic changes that could increase ridership. For instance, MacArthur BART average weekday daily exits were 7,582 for the quarter ending December 2007, which is higher than the *Access BART 2030* forecast.

Ridership levels are expected to continue to increase with the proposed Transit Village Development, as well as significant residential and commercial development in the station catchment area. Growth in the station area will also affect traffic and transit conditions and BART patron access mode shares. The recommended access strategies in this study respond to the existing conditions in the area but also anticipate the growing and changing needs associated with increased BART ridership at MacArthur Station.

Patron Demographics

Based on the daily summary for platform intercept surveys of BART riders arriving at MacArthur BART Station, the following behaviors and demographics describe typical riders:

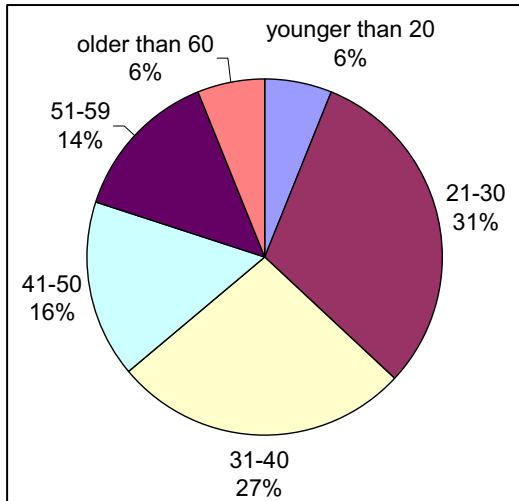
- 6% of MacArthur BART riders are younger than 20 years old, 31% are between 21 and 30 years old, 27% are between 31 and 40 years old, 16% are between 41 and 50 years old, and 14% are between 51-59 years old, and 6% are older than 60
- 56% of MacArthur BART riders identify themselves as minorities, including 30% Black/African American, 13% Asian/Pacific Islander, 10% Spanish/Hispanic/Latino, and 3% Other
- 72% of MacArthur BART riders use BART three or more days a week, 13% use BART one or two days a week, 8% use BART one to three days a month, and 7% use BART less than one day a month
- 66% of MacArthur BART riders originate in Oakland, 25% originate in Emeryville, and 9% originate in Berkeley/Piedmont/Other
- 37% of MacArthur BART riders have destinations within San Francisco, 12% have destinations within Oakland, 10% have destinations within Berkeley, and 41% have destinations within the rest of the Bay Area
- 59% of MacArthur BART riders use BART to commute to and from work, 10% use BART to commute to and from school, and 31% use BART to commute to and from personal business, shopping, recreation, or other

Figures 3-1 and 3-2 present graphical summaries of patron demographics.

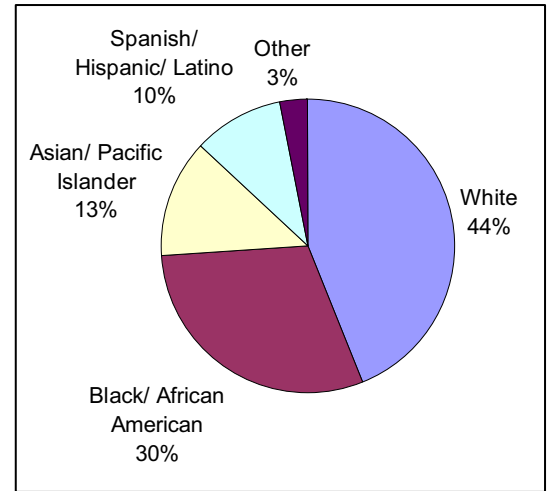
Patron Origin Locations

Data from the access mode survey was geo-coded and plotted to produce maps that show the various MacArthur BART patron origins by access mode. These maps have been placed within the subsequent modal chapters. As shown in Table 3-2 and Figure 3-3, almost all (88%) of the MacArthur BART patrons originate their trips within two miles of the Station. This may explain why the existing walk, bicycle, and transit access mode shares at MacArthur are higher than the BART system averages (which include end-of-the-line stations with very large catchment areas).

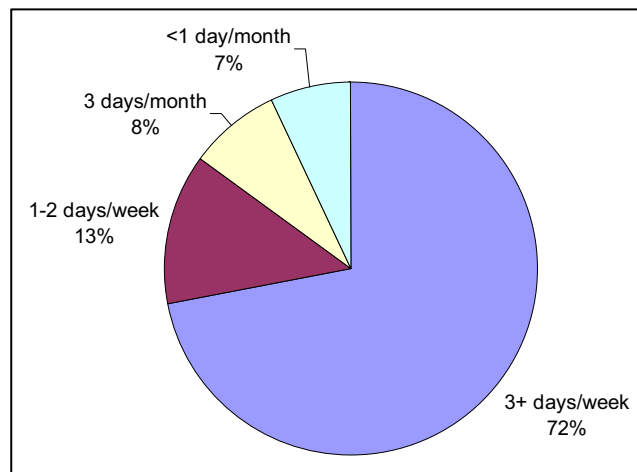
Figure 3-1 MacArthur BART Patron Demographics



Patron Age

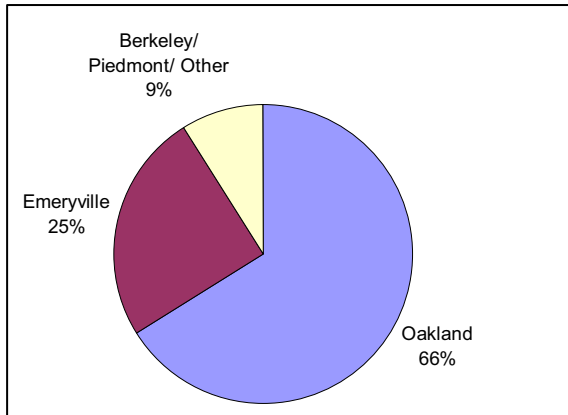


Patron Race/Ethnicity

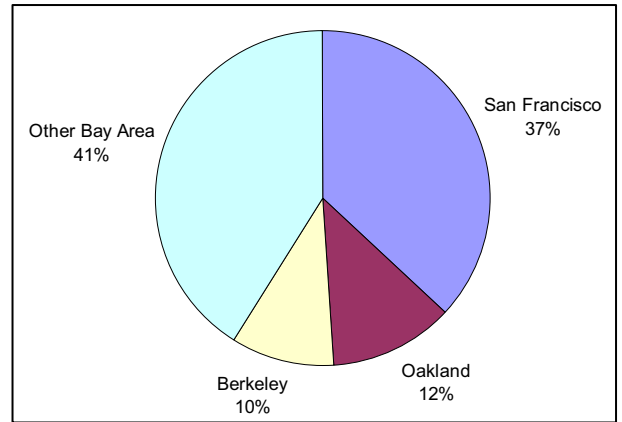


Frequency of Use

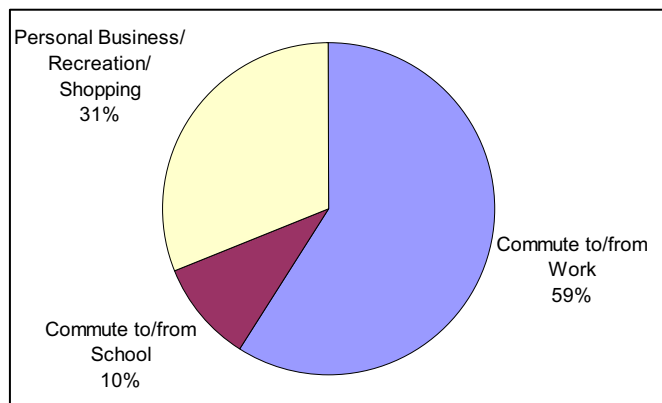
Figure 3-2 MacArthur BART Patron Demographics (Continued)



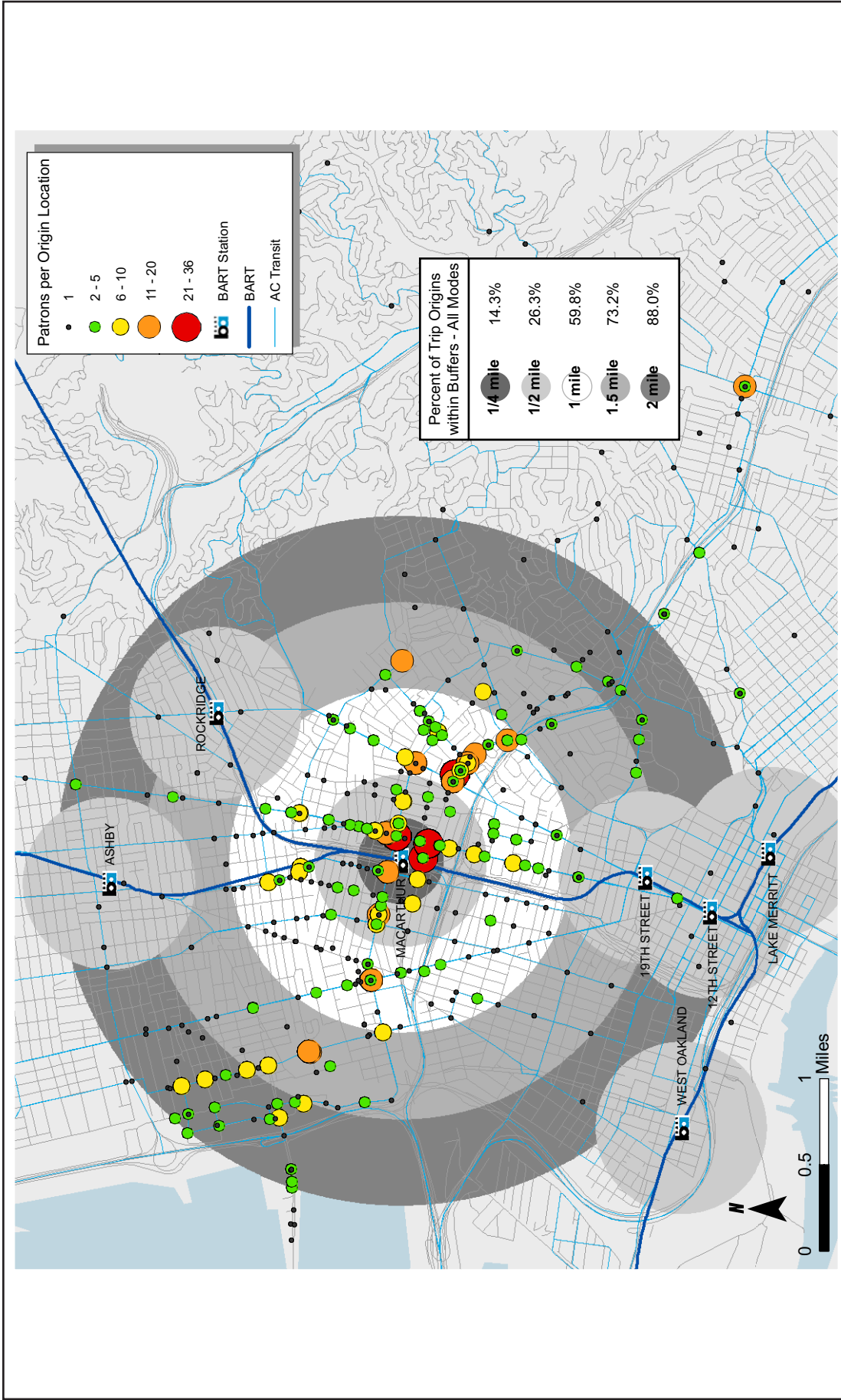
Place of Origin



Destination



Trip Purpose



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MacArthur BART Station Access Feasibility Study

MACARTHUR BART STATION PATRON ORIGINS - ALL ACCESS MODES

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FIGURE 3-3

**TABLE 3-2
 PATRON ORIGIN LOCATIONS**

Access Mode	Distance						Row Total
	<= 0.25 Mile	0.26-0.50 Mile	0.51-1.00 Mile	1.01-1.50 Miles	1.51-2.00 Miles	>2.00 Miles	
Walk	32.5%	25.5%	31.5%	4.9%	1.1%	4.5%	100%
Transit	3.4%	2.1%	35.6%	19.9%	28.6%	10.4%	100%
Bicycle	18.5%	15.3%	41.6%	9.2%	7.7%	7.7%	100%
Drop-Off, Carpool, Taxi	2.6%	11.4%	36.9%	11.4%	11.4%	26.3%	100%
Drive Alone	8.7%	3.9%	25.3%	20.4%	18.4%	23.3%	100%
Column Total	14.3%	12.0%	33.5%	13.4%	14.8%	12.0%	100%

Source: Fehr & Peers, 2006.

Geographic Information System (GIS) analysis of driver origin information and existing transit routes demonstrates that the majority of drive alone access trips originate from within ¼-mile buffers of AC Transit lines or shuttles directly serving the MacArthur BART Station. Thus, these drive alone trips are likely occurring because parking is cheap or free at/near the Station or the bus service is inconvenient, unreliable, etc. Most patrons who are dropped off at the Station also originate from within ¼-mile buffers of AC Transit lines or shuttles.

As shown in Table 3-2, more than 1/3 of drive alone access trips originate from within one mile of the station and more than 2/3 originate within two miles. An analysis of monthly parking permit holders' home addresses suggests that permit holders tend to originate farther from the station, but almost 1/2 live within two miles.

Access Mode Shares

Based on MacArthur BART Station platform intercept surveys, patron mode of access data was compiled for the AM peak period, mid-day period, and PM peak period, as shown in Table 3-3. When compared to the system-wide all-day access mode shares, patrons who access the MacArthur BART Station utilize personal vehicles much less than typical BART patrons. As shown in Figure 3-3, further analysis of the access mode data shows that of the patrons who took transit to the MacArthur BART Station, 52% used Emery-Go-Round, 25% used AC Transit, 13% used the Kaiser Hospital Shuttle, 4% used the Children's Hospital Shuttle, and 6% used the Alta Bates Summit Hospital Shuttle.

The 2006 survey illustrates significant changes in access modes to the MacArthur Station since the last survey in 1998, as shown in Table 3-4.

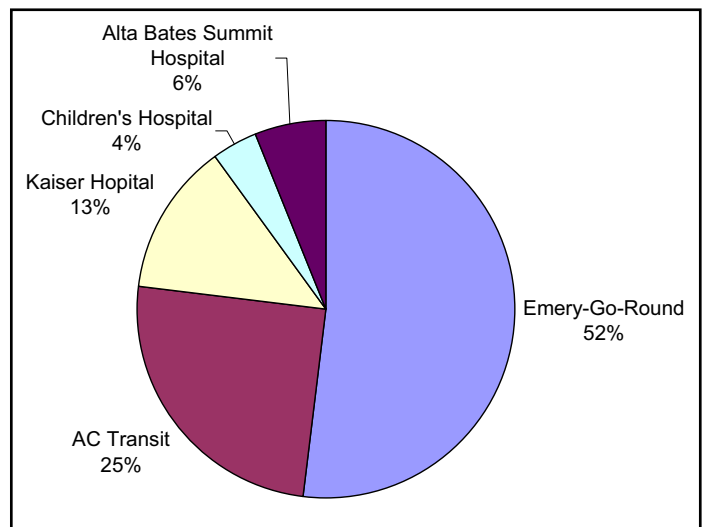


Figure 3-4 2006 Transit Access Mode Share

The 2006 bicycle mode share (AM peak) represents a significant increase (more than 100%) in bicycle access to the station since 1998. This increase is likely the result of changing demographics in the neighborhoods surrounding the station, especially the Temescal neighborhood, where many young professionals now live.¹ Additionally, bicycles are no longer allowed in the 19th Street BART Station during peak travel periods, which may have caused cyclists to shift to the MacArthur BART Station. Finally, the City of Oakland has expanded its bicycle network over the past decade, and bicycling has increased throughout the City. As demographic changes and bicycle accommodations continue in this area, there will likely be a further increase in the bicycle access mode share.

Walking and transit access to the station have also increased since 1998, by 26% and 30% in the AM peak period, respectively. The increase in walking mode share is also likely related to demographic changes as well as new transit-oriented residential developments in the station area. The increase in transit access is most likely associated with the growing popularity of the Emery-Go-Round shuttle, as well as new employment and residential developments in Emeryville.

Correspondingly, auto access to the station in the AM peak period has decreased by almost 35% since 1998.

Access Mode	AM Peak Period	Mid-day Period	PM Peak Period	Daily
Walk	34%	33%	22%	29%
Transit	26%	37%	57%	39%
Bicycle	8%	7%	5%	7%
Drop-Off & Taxi	14%	12%	11%	15%
Carpool	1%	<1%	<1%	<1%
Drive Alone	17%	11%	5%	10%
Total	100%	100%	100%	100%

Source: Fehr & Peers, 2006.

¹ Census Tract 4011, which includes the MacArthur BART Station, saw an 80% increase in residents age 25 to 44 from 1990 to 2000, with a corresponding loss in residents in every other age cohort.

**TABLE 3-4
COMPARISON OF 1998 AND 2006 MACARTHUR BART STATION ACCESS MODE SHARES**

Access Mode	AM Peak Period (1998)	AM Peak Period (2006)	AM Peak Period % Change 1998 to 2006	Daily (1998)	Daily (2006)	Daily % Change 1998 to 2006
Walk or Bicycle	31%	42%	35%	26%	36%	35%
<i>Walk</i>	27%	34%	26%			
<i>Bicycle</i>	4%	8%	100%			
Transit	20%	26%	30%	33%	39%	19%
Auto	49%	32%	-35%	41%	25%	-38%
<i>Drive Alone</i>	42%	16%	-62%			
<i>Drop-Off, Carpool, Taxi</i>	7%	16%	129%			
Total	100%	100%		100%	100%	

Source: BART Station Profile Study, 1998 and Fehr & Peers, 2006.

As noted in Chapter Two, the MacArthur BART Station is classified as an “Urban with Parking” Station based on the Access BART Station typologies. As shown in Table 3-5, the MacArthur BART Station AM peak period walk, bicycle, and transit access mode shares now exceed the “Urban with Parking” Station type range, while the daily walk and bicycle access mode shares fall below the “Urban with Parking” Station type range. The percentage of patrons accessing the station by auto is below both the AM Peak and Daily ranges.

**TABLE 3-5
BART STATION TYPOLOGY ACCESS MODE SHARES**

Access Mode	AM Peak Period		Daily	
	“Urban with Parking” Station Type Ranges	MacArthur BART Station – 2006	“Urban with Parking” Station Type Ranges	MacArthur BART Station – 2006
Walk & Bicycle	34-40%	42%	39-45%	36%
Transit	17-23%	26%	19-25%	39%
Drive Alone, Drop-Off, Carpool & Taxi	40-46%	32%	33-39%	25%

Source: BART, 2006 and Fehr & Peers, 2006.

Moving Toward an Urban Station Typology

Access mode changes since 1998 have placed the MacArthur Station in the upper range of the Urban with Parking Station typology. With the forecast land use changes in the station area, including the proposed Transit Village, BART expects to reclassify the MacArthur Station as an Urban Station. As shown in Table 3-6, meeting this goal will require an even more substantial shift toward non-auto access modes, especially on an all-day basis. The recommended Access Strategies in this study focus on obtaining an Urban Station classification for MacArthur BART Station by 2030.

**TABLE 3-6
TARGET ACCESS MODE SHARES**

Access Mode	Daily	
	"Urban" Station Type Ranges	MacArthur BART Station, 2006
Walk & Bicycle	69-75%	36%
Transit	17-23%	39%
Drive Alone, Drop-Off, Carpool & Taxi	6-12%	25%

Source: BART, 2007 and Fehr & Peers, 2007

4. PEDESTRIAN ACCESS

Almost one-third (29%) of MacArthur BART patrons currently access the station by walking. Pedestrians travel along several transit and retail corridors en route to the station. As shown in Figure 4-1, 58% of BART riders accessing the MacArthur Station on foot have trip origins within ½-mile of the station (or a 10-minute walk-shed) and some riders are walking as far as 1 to 2 miles to access the station. However, over 12% of drive alone trips to the station also originate within ½-mile of the station, indicating there may be significant opportunities for increasing pedestrian access mode share.

The following provides a discussion of existing pedestrian access conditions and planned improvements and identifies a set of objectives for improved pedestrian access.

EXISTING PEDESTRIAN FACILITIES AND CONDITIONS

While patrons access the MacArthur BART Station from all of the surrounding streets, platform survey results suggest that approximately half of the pedestrians originate from areas to the northeast and access the station along Telegraph Avenue or 40th Street.

Off-Site Facilities

The City of Oakland's *Pedestrian Master Plan* (November 2002) designates MacArthur Boulevard, Market Street, Martin Luther King Jr. Way, Telegraph Avenue, Broadway, and 51st Street as City Routes, and 40th Street, West Street, and Shattuck Avenue as District Routes (as shown in Figure 4-2). According to the plan,

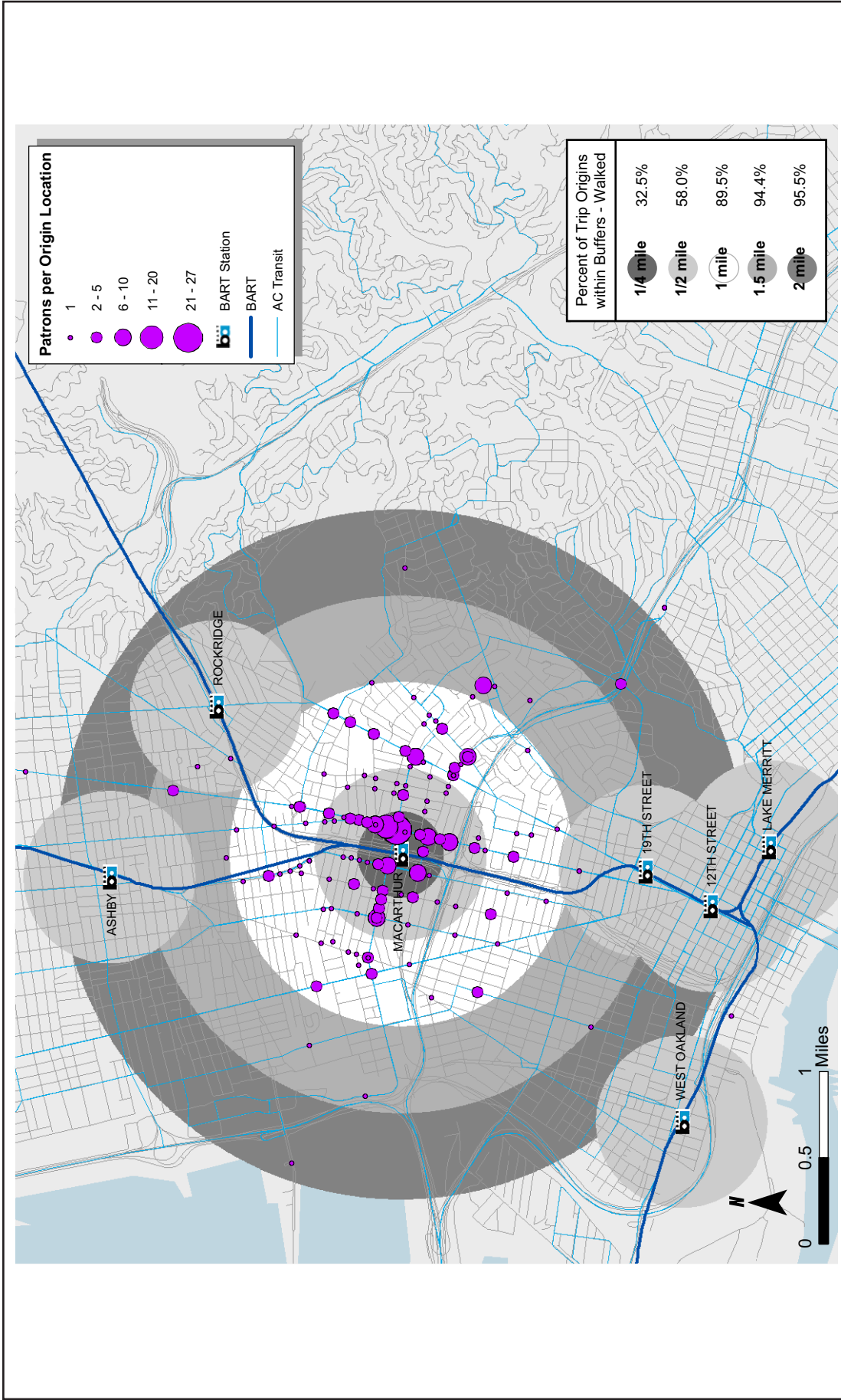
City routes designate streets that are destinations in themselves – places to live, work, shop, socialize, and travel. They provide the most direct connections between walking and transit and connect multiple districts in the City. District routes have a local function as the location of schools, community centers, and smaller scale shopping. They are often located within a single district and help to define the character of that district (*Oakland Pedestrian Master Plan*, page 48).

The pedestrian facilities in the surrounding neighborhood are typical of an urban environment. All of the surrounding streets provide sidewalks and marked crosswalks at intersections with major roadways. Pedestrian signal heads, audible warnings, and pedestrian push buttons are provided at most signalized intersections. All of the signalized intersections surrounding the MacArthur BART station have pedestrian signal heads and marked crosswalks. There are also marked crosswalks at the uncontrolled 40th Street/ Frontage Road intersection.

Since the street network is a grid, the pedestrian facilities provide a number of routes to and from the MacArthur BART station, although access is limited underneath Highway 24 and the BART line. Highway 24, which is elevated, limits the east-west pedestrian connections within a 1/4-mile of the station to three roadways: 42nd Street, 40th Street, and West MacArthur Boulevard.

While the typical sidewalk widths surrounding the station exceed Americans with Disabilities (ADA) minimum width requirements, ADA standards for ramps and side-slopes are not met at all intersections. Additionally, the sidewalk width near some of the bus stops is inadequate and creates crowding issues.

There are a number of sidewalk locations with uneven surfaces. The overall walkability of the area also suffers from a lack of street plantings and pedestrian-level lighting. The poor walkability is especially evident along sections of 40th Street and West MacArthur Boulevard under Highway 24, which are dark, loud, and littered. Access to the BART entrance from the neighborhood south of West MacArthur Boulevard is limited, as there are no marked crosswalks between Telegraph Avenue and Martin Luther King, Jr. Way.



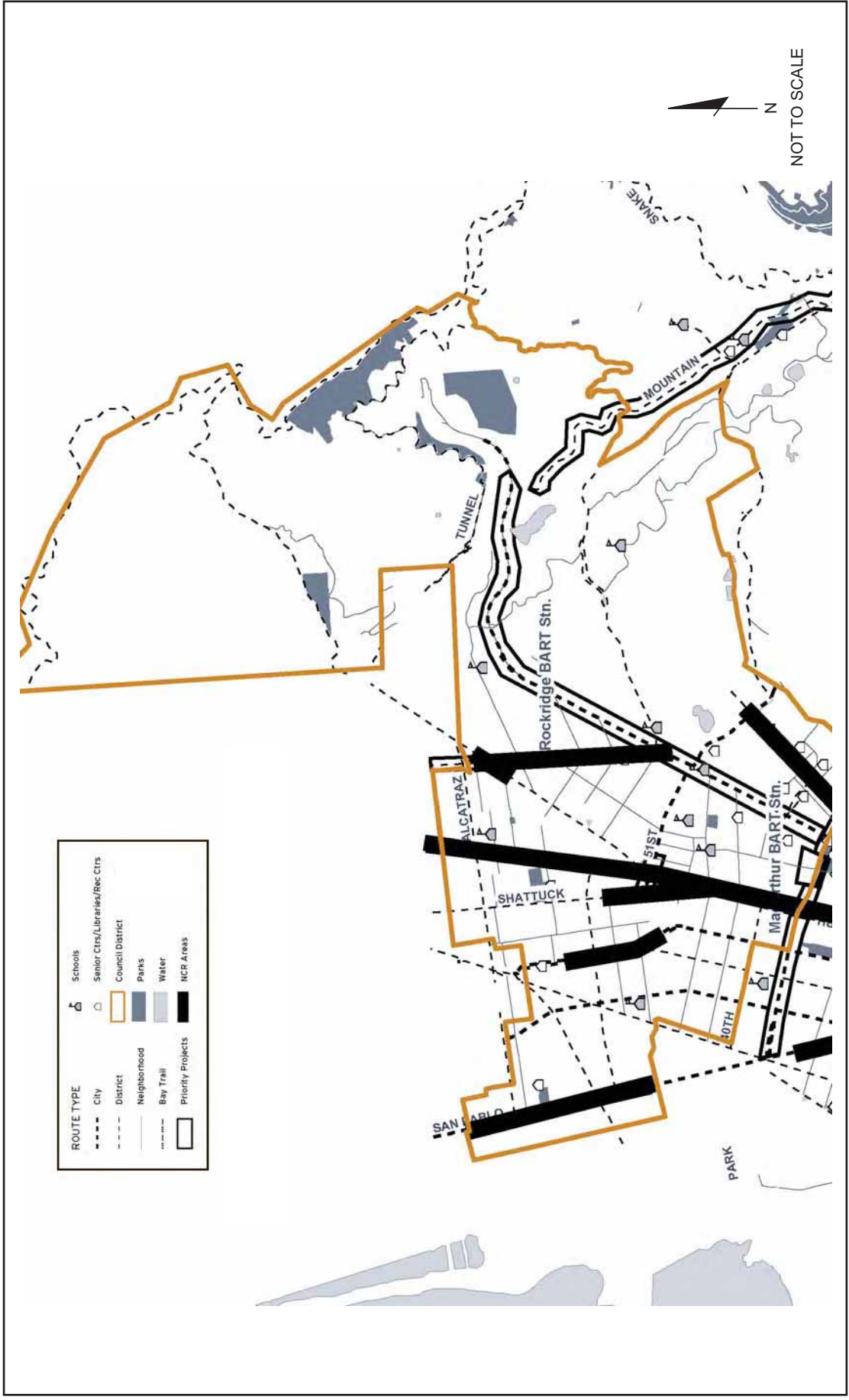
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MacArthur BART Station Access Feasibility Study

MACARTHUR BART STATION PATRON ORIGINS - WALK ACCESS MODE

FIGURE 4-1



MacArthur BART Station Access Feasibility Study

**CITY OF OAKLAND PEDESTRIAN MASTER PLAN
PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 1**

FIGURE 4-2

Pedestrians were observed illegally crossing West MacArthur Boulevard to the BART station between these intersections, using the median as a refuge.²

On-Site Facilities

Existing pedestrian circulation on-site and surrounding the station is provided via sidewalks and marked crosswalks, as shown in Figure 4-3.

Within the MacArthur BART station, ADA compliant sidewalks are provided along both sides of the Frontage Road and the north side of the parking lot. As in the surrounding area, while the typical sidewalk widths on-site exceed ADA minimum widths, there are sections along the Frontage Road in front of the shuttle stops that are narrow and present crowding issues.

Within the parking lot, there are no designated pedestrian routes; patrons walk along the parking aisles. There are three stairways that connect the parking lot, which is approximately eight feet below grade, to the Frontage Road and BART Plaza. Because the parking lot is below grade and parking spaces closest to the BART Plaza require using stairs, the ADA accessible parking spaces are located approximately 280 feet south of the fare gate plaza along the south side of Frontage Road, as shown in Figure 4-4.

The primary access between these parking spaces and the BART Plaza is a gently sloped sidewalk located on the east side of the Frontage Road.

Pedestrian Usage

AM and PM peak period (7:00 - 9:00 AM and 4:00 - 6:00 PM) pedestrian counts were taken at intersections surrounding the MacArthur BART station in May 2006. Existing pedestrian counts and the designated pedestrian routes in the project area are shown on Figure 4-5.

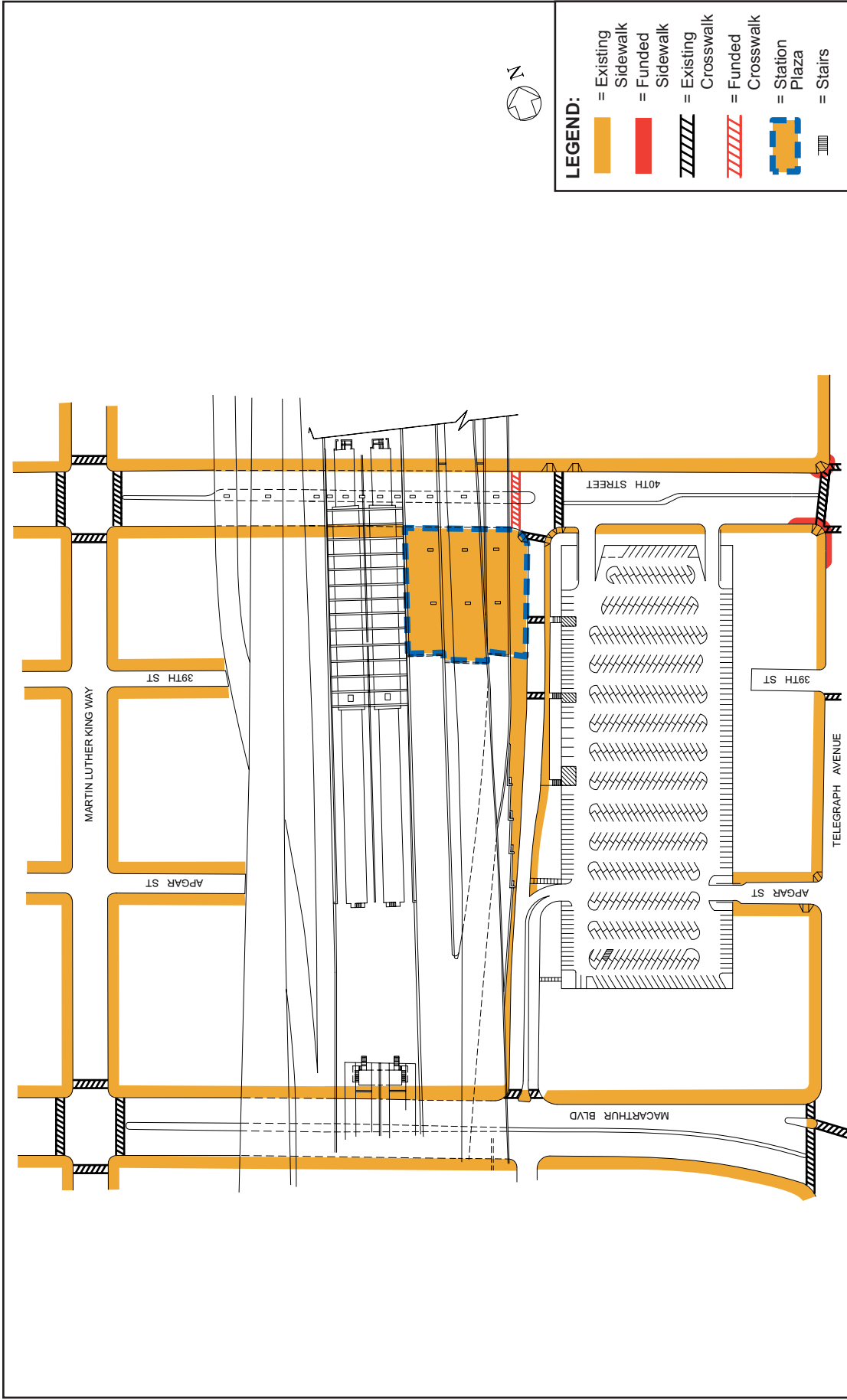
PLANNED IMPROVEMENTS

The City of Oakland's 40th Street Improvement/MacArthur Transit Hub project, which will be constructed by Spring 2009, includes improvements to the pedestrian facilities surrounding the MacArthur BART station. The improvements, as described in the *Plans for 40th Street, MacArthur Transit Hub Improvements*,³ include:

- Crosswalk improvements at the 40th Street/Martin Luther King Jr. Way and 40th Street/Telegraph Avenue intersections
- Sidewalk bulbouts on the west side of the 40th Street/Telegraph Avenue intersection at the existing bus stop
- Installation of a new traffic signal with pedestrian crossing phases at the 40th Street/Frontage Road intersection
- Bicycle lanes along 40th Street between Telegraph Avenue and Martin Luther King, Jr. Way

² Observation by Fehr & Peers in July 2007.

³ City of Oakland, July 2006.



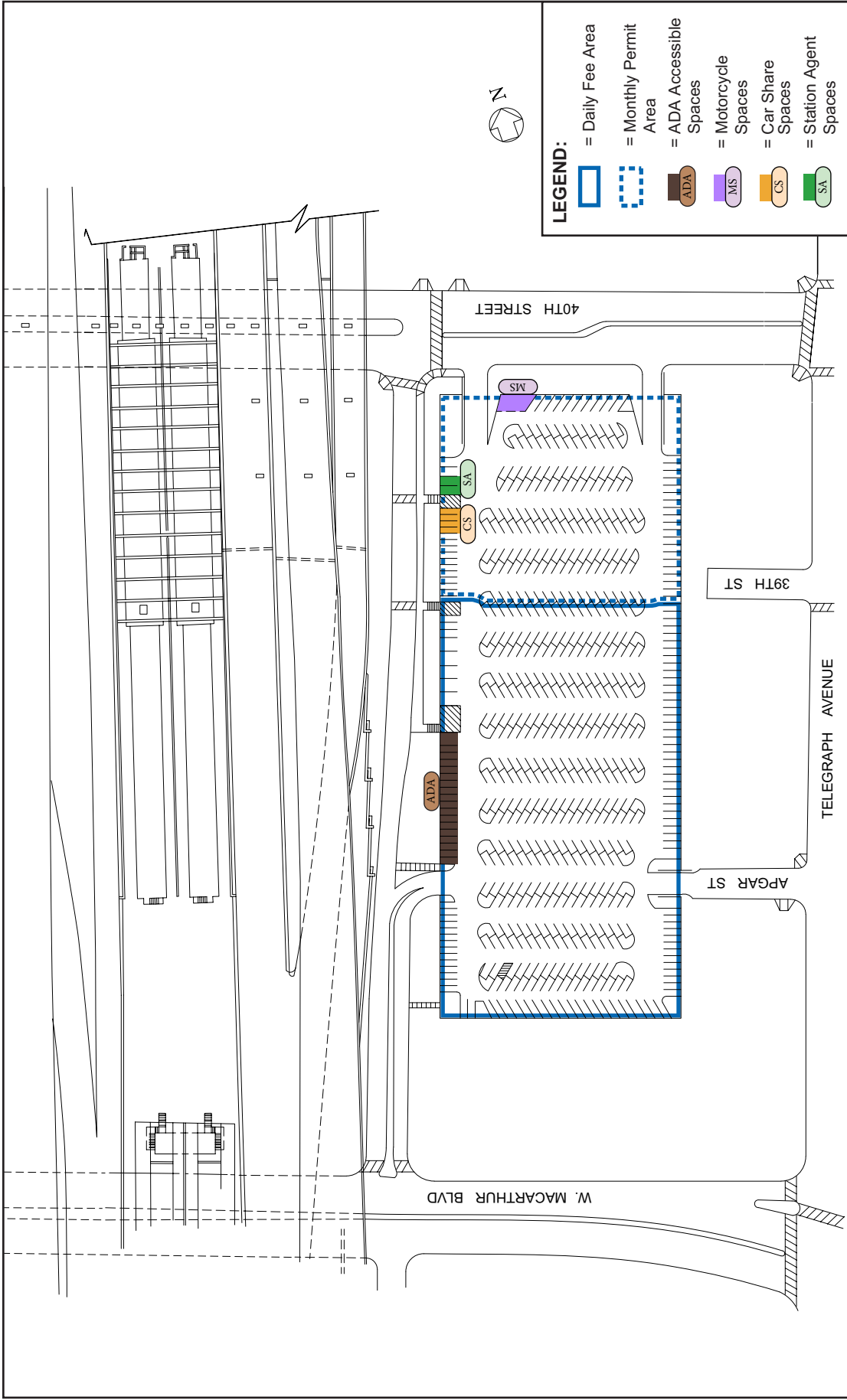
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MacArthur BART Station Access Feasibility Study

EXISTING ON-SITE PEDESTRIAN FACILITIES

FIGURE 4-3



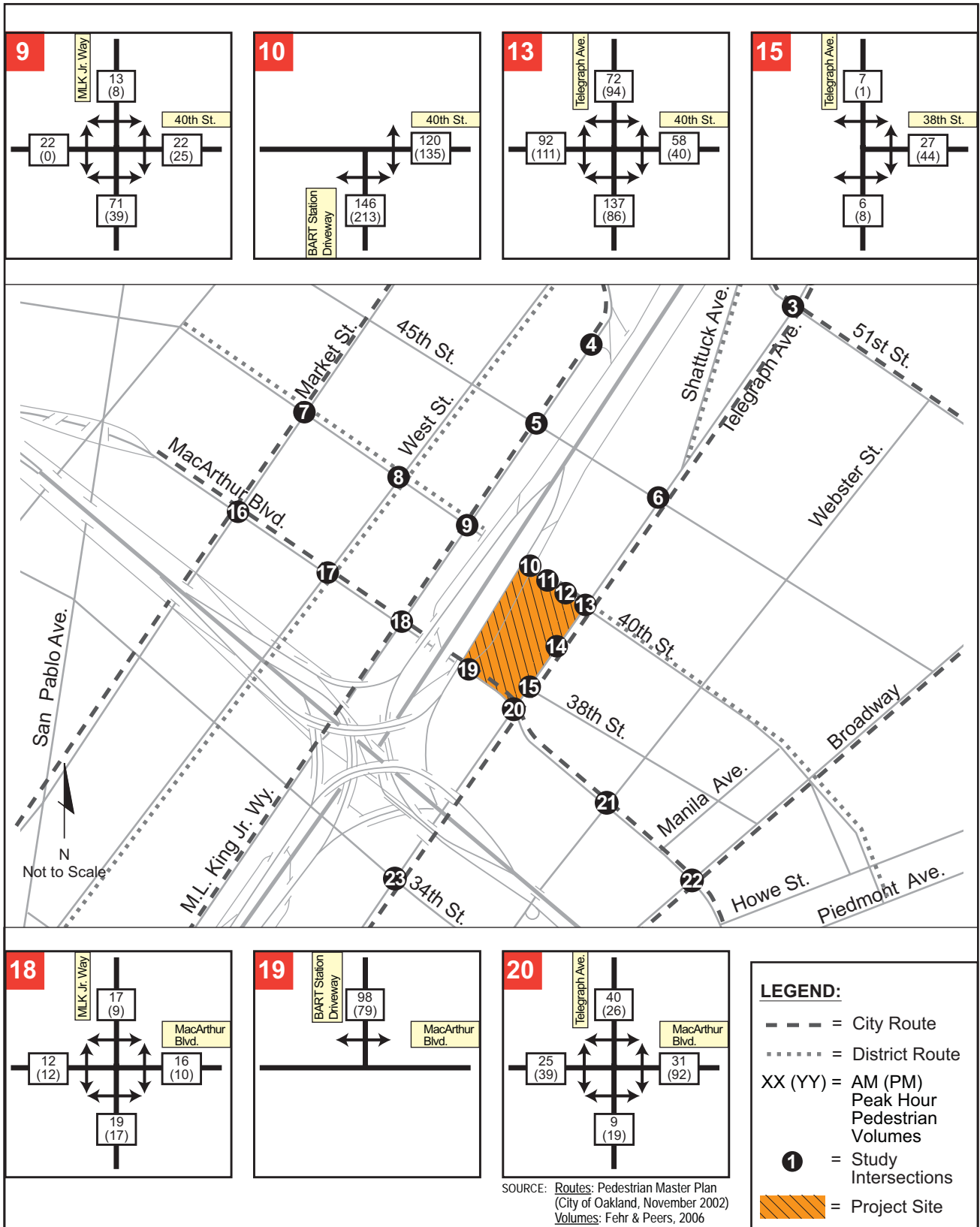
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MacArthur BART Station Access Feasibility Study

LOCATION OF ADA-ACCESSIBLE PARKING SPACES

FIGURE 4-4



- Construction of an additional crosswalk on the west side of the 40th Street/Frontage Road intersection, including the creation of a mid-block pedestrian refuge in the median
- Installation of pedestrian lighting along 40th Street, including under Highway 24 underpass, as well as bicycle and pedestrian wayfinding signage to the station

These improvements are not repeated in the access recommendations presented in this study because they are expected to be completed in the near-term, independent of the findings of this study and/or the proposed Transit Village project.

PEDESTRIAN ACCESS OBJECTIVES

Based on existing conditions and anticipated access needs associated with a shift to non-auto access modes, the objectives for pedestrian access to the MacArthur BART Station include:

1. Provide safe, efficient connections between BART fare gates and adjacent streets, including the proposed Telegraph Avenue Bus Rapid Transit (BRT) service.
2. Provide safe crossing opportunities, particularly of arterials surrounding the site (40th Street, Telegraph Avenue, West MacArthur Boulevard, and Martin Luther King, Jr. Way).
3. Improve pedestrian facilities within a 1/2-mile radius of the station to facilitate pedestrian access to BART.
4. Enhance personal safety for pedestrians to enable the efficacy of non-auto access strategies and incentives.

5. TRANSIT ACCESS

More than one-third (39%) of MacArthur BART patrons currently use bus and shuttle services to access the station. Based on platform survey results, a majority of commute-trip patrons come from locations along the Emery-Go-Round routes, along Telegraph Avenue south of the station and Broadway in Oakland, and along Piedmont Avenue and West MacArthur Boulevard between Broadway and Lakeshore Avenue, as shown in Figure 5-1.⁴

The following provides a discussion of existing transit access conditions and planned improvements and identifies a set of objectives for improved transit access.

EXISTING TRANSIT FACILITIES, SERVICES, AND CONDITIONS

The transit services near the MacArthur BART Station include Alameda-Contra Costa Transit District (AC Transit), which provides local and TransBay (San Francisco) bus service; the Emery-Go-Round, Kaiser, Summit and Oakland Children's Hospital shuttles; and BART rail service. Figure 5-2 shows the bus and shuttle stop locations at the station. Each service is described below.

The MacArthur BART Station is a major transit transfer hub as well as a layover point along several bus lines. The station provides restroom facilities for transit operators.

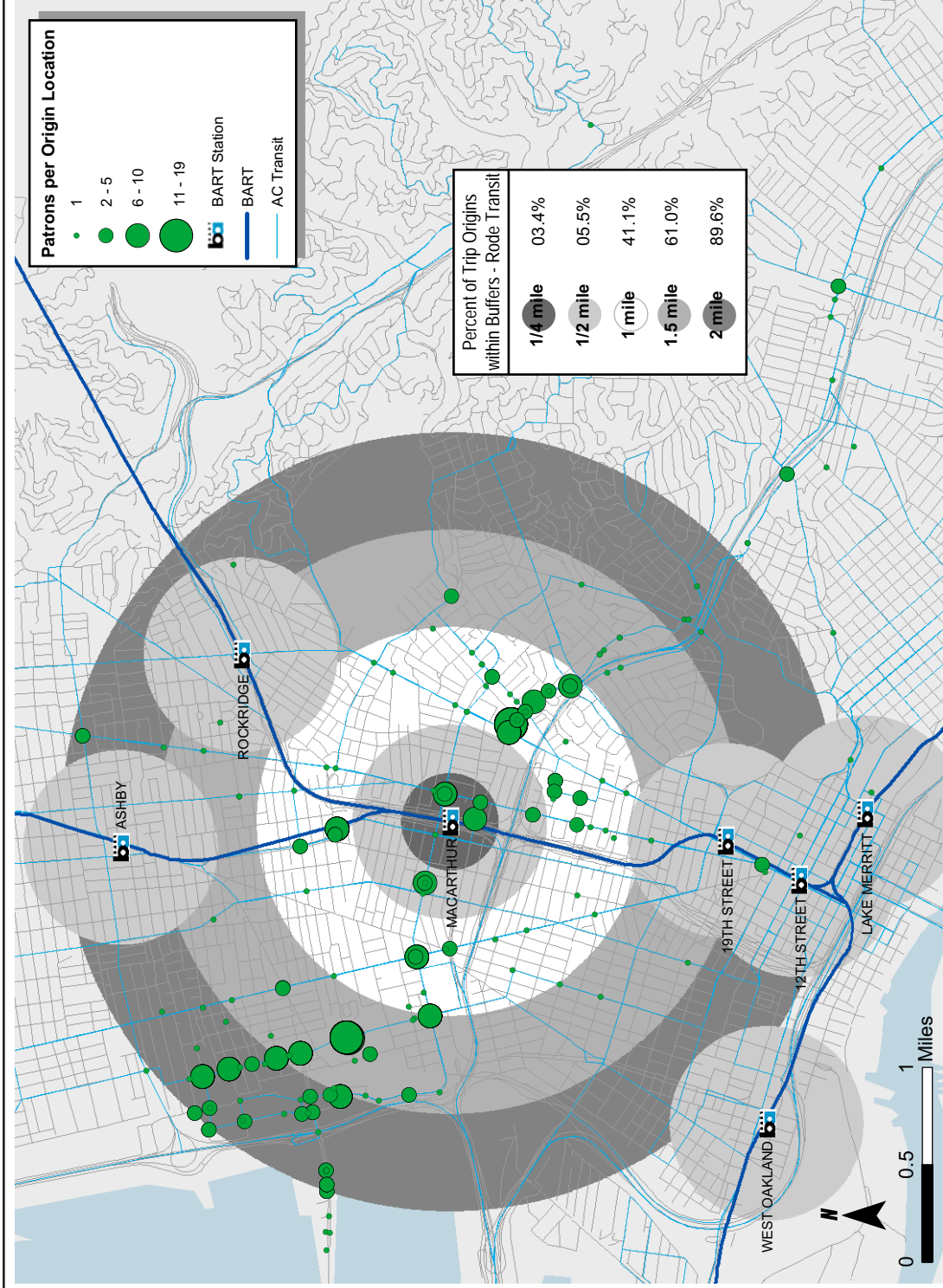
AC Transit

AC Transit provides bus service in 13 cities and adjacent unincorporated areas in Alameda County and Contra Costa County, with TransBay service serving destinations in San Francisco, San Mateo, and Santa Clara Counties. Four AC Transit bus lines directly serve the MacArthur BART station. Four more AC Transit bus lines pass within one block of the project site and four AC Transit school bus lines serve the station. All of the AC Transit buses that directly serve the MacArthur BART station stop along 40th Street, under the Highway 24 overpass, just north of the BART station fare gates. The characteristics of the AC Transit lines serving the project area are summarized in Table 5-1 .

Local adult fares, as of August 2007, are \$1.75. A \$0.25 discount is given with a transfer obtained from machines within the paid area of BART stations. A transfer to other local AC Transit lines is an additional \$0.25. TransBay adult fares are \$3.50 and provide a free transfer to or from connecting AC Transit lines. Ten- and 30-day passes are also available for both local and TransBay services. Fares are paid on the bus, and passengers must have exact change. AC Transit also honors TransLink, a universal fare card, which is planned to be introduced to the entire Bay Area region in the spring of 2008 (but is not yet compatible with BART).

Data presented in this report is based on bus lines in service as of May 2007. In June 2007, AC Transit made several changes to local bus lines serving the station. These changes include the following:

⁴ A sizeable number of transit trips to MacArthur BART are shown originating within ¼-mile of the MacArthur BART station, which suggests that patrons may have misunderstood the question, perhaps considering their BART travel as transit access.



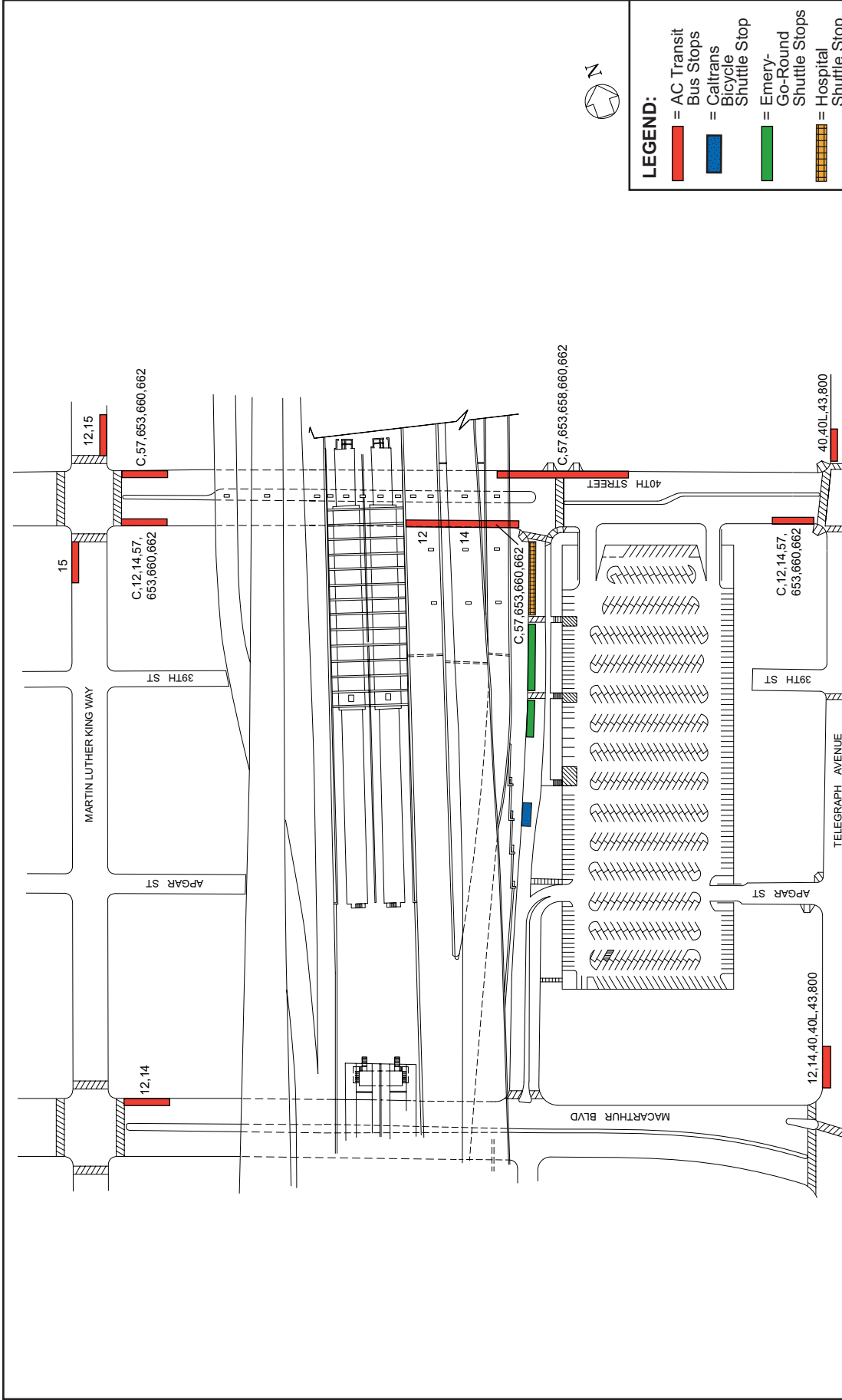
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MacArthur BART Station Access Feasibility Study

MACARTHUR BART STATION PATRON ORIGINS - TRANSIT ACCESS MODE

FIGURE 5-1



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MacArthur BART Station Access Feasibility Study

TRANSIT AND SHUTTLE FACILITIES AT MACARTHUR BART STATION AT THE TIME OF PLATFORM SURVEYS

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FIGURE 5-2

**TABLE 5-1
AC TRANSIT SERVICE SUMMARY**

Line	Route	Nearest Stop	Weekday		Weekend		Bus Type
			Hours	Headway	Hours	Headway	
<i>Local Routes</i>							
12 (Grand Avenue)	MacArthur BART station to downtown Oakland	40 th Street at MacArthur BART Station	6:00 AM to 7:00 PM	20 minutes	7:00 AM to 7:00 PM	30 minutes	40-foot buses with a 30-person seating & 90-person standing capacity
14 (East 18 th Street)	MacArthur BART station to Dimond District	40 th Street at MacArthur BART Station	6:00 AM to 7:30 PM	15 minutes (peak); 20 minutes (off-peak)	7:00 AM to 7:00 PM	30 minutes	40-foot buses with a 30-person seating & 90-person standing capacity
18 (Shattuck Avenue) ^a	Albany to Montclair District	40 th Street/ Telegraph Avenue	5:00 AM to 12:30 AM	15- to 20- minutes	6:00 AM to 12:30 PM	20 minutes	40-foot buses with a 30-person seating & 90-person standing capacity
57 (40 th Street)	Emeryville to the Eastmont Transit Center	40 th Street at MacArthur BART Station	5:30 AM to 12:00 AM	12-minutes (daytime); 20-30 minutes (early morning & late night)	6:00 AM to 12:00 AM	15-minute (daytime); 30-minute (late night)	40-foot buses with a 30-person seating & 90-person standing capacity
800 (All Nighter)	Downtown San Francisco to the Richmond BART station	40 th Street at MacArthur BART Station	12:20 AM to 5:20 AM (weekdays & Saturdays)	60 minutes	12:20 AM to 7:20 AM (Sundays)	60 minutes	40-foot buses with a 30-person seating & 90-person standing capacity
1 (Telegraph) ^b	Downtown Berkeley to the Bay Fair BART station	40 th Street/ Telegraph Avenue	5:00 AM to 1:00 AM	15-20-minutes	5:00 AM to 1:00 AM	15- to 20- minutes	60-foot articulated buses with a 40-person seating & 130-person standing capacity
1R (Telegraph/ International Boulevard Rapid) ^c	Downtown Berkeley to the Bay Fair BART station (limited stops)	40 th Street/ Telegraph Avenue	6:00 AM to 8:30 PM	12-minutes	7:30 AM to 7:00 PM	15-minutes	
15 (Martin Luther King, Jr. Way)	El Cerrito BART station & Montclair District	40 th Street/ Martin Luther King Jr. Way	6:00 AM to 9:30 PM	15 minutes (daytime); 30 minutes (evening)	6:30 AM to 10:30 PM	20 minutes (daytime); 30 minutes (evening)	40-foot buses with a 30-person seating & 90-person standing capacity
<i>Other Routes</i>							
C (Moraga Avenue)	Piedmont to Downtown San Francisco	40 th Street at MacArthur BART Station	5:55 AM to 8:55 AM	30 minutes	3:39 PM to 8:24 PM	30 minutes	40-foot buses with a 30-person seating & 90-person standing capacity
School Service	Montera Middle School (Lines 653 & 660); Skyline High School (Lines 658 & 662)	40 th Street at MacArthur BART Station	One bus per day in each direction		No service		40-foot buses with a 30-person seating & 90-person standing capacity

^a Line 43 before June 2007

^b Line 40 before June 2007

^c Line 40L before June 2007. The 1R line is planned to become ultimately a Bus Rapid Transit (BRT) line. The proposed BRT is currently under environmental review by AC Transit and the Federal Transit Administration.

Source: AC Transit, July 2007.

- Replaced the 40/40L line with the 1 and 1R (Telegraph/International Boulevard Rapid) lines. The 1 line is a local bus with 15-minute headways that replaces the 40/40L line on Telegraph Avenue. The 1R is a Rapid line, with limited stops and 9-minute headways that replaces the 82L and portions of the 40L line on Telegraph Avenue.
- Replaced Line 43 with Line 18 along Telegraph Avenue and Shattuck Avenue.
- Changed service frequency on Line 15 from 15 to 20 minutes.

Figure 5-3 shows the AC Transit routes serving MacArthur BART at the time of the platform surveys. Figure 5-4 shows the current AC Transit routes, as of July 2007.

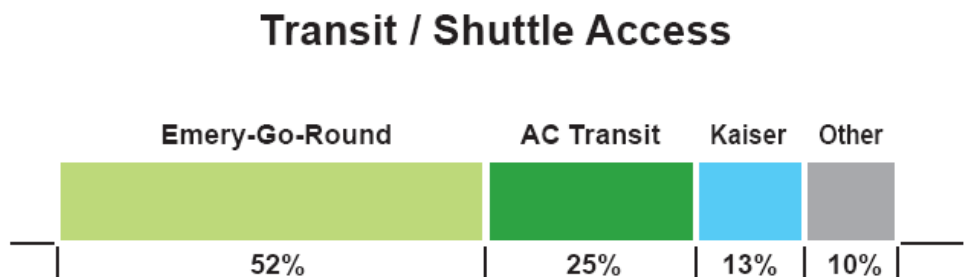
AC Transit Ridership

Table 5-2 shows the capacity and loads (passengers) of the AC Transit lines serving the project site and vicinity. Average and maximum load factors are also shown. The load factor is defined as the ratio of occupied seats to the number of seats on the bus. A load factor of 100 percent or more indicates that the bus operates at or above its seated capacity. On average, bus lines serving the MacArthur BART Station have excess capacity, with average daily load factors of 58 percent or less. As of July 2007, maximum loads are at or above capacity on the 40/40L line and the 43 line in both directions near the project.⁵

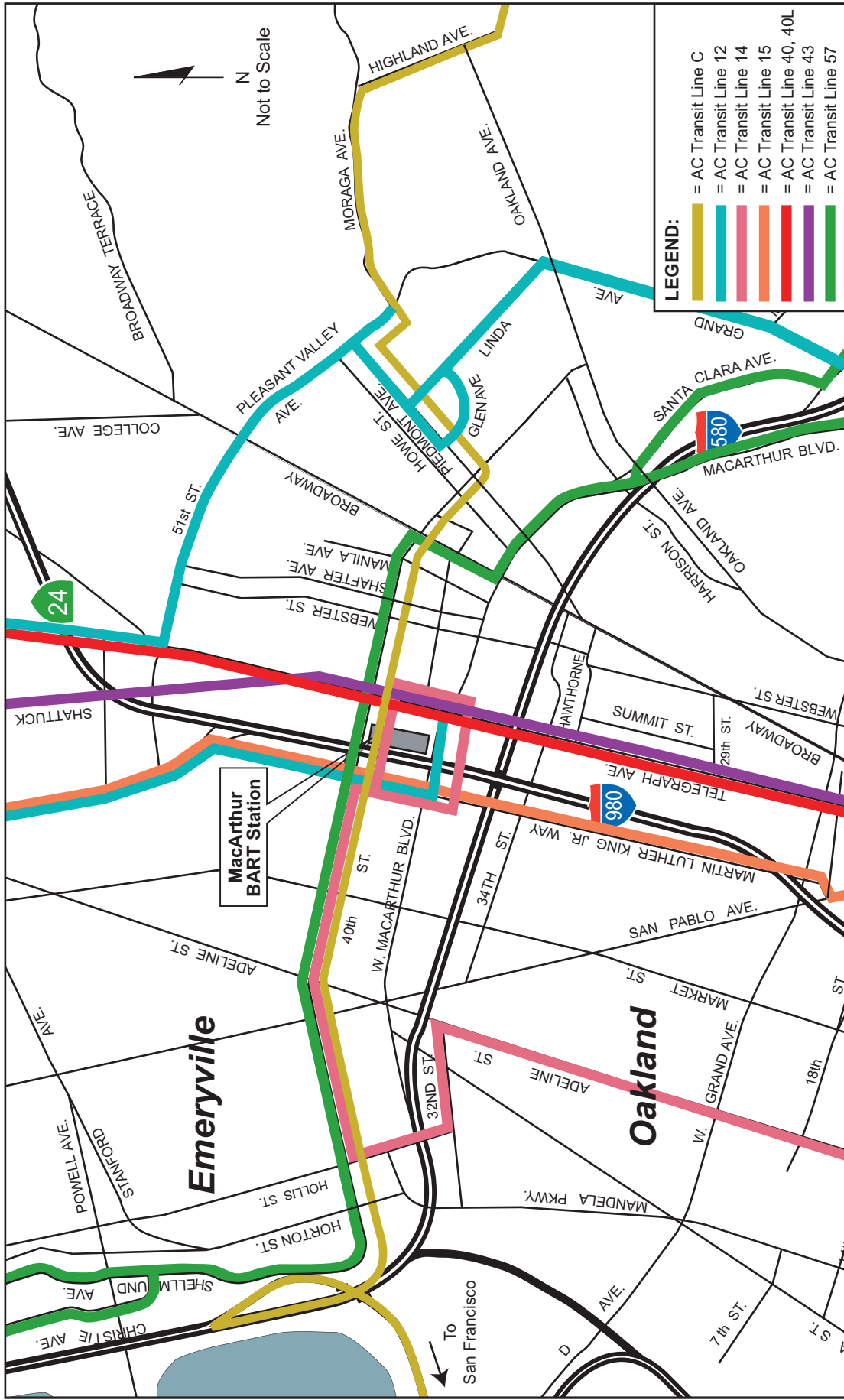
Shuttle Services

Five shuttle services directly serve the MacArthur BART station: the Emery-Go-Round, the Kaiser Hospital shuttle, the Alta Bates Summit Hospital shuttle, the Oakland Children’s Hospital shuttle, and the Caltrans bicycle shuttle (see Figure 5-5). They are all free except for the Caltrans bicycle shuttle. The Emery-Go-Round, Kaiser, Summit, and Oakland Children’s Hospital shuttles currently stop along the Frontage Road east of the BART station fare gates. The shuttles provide connections from the station to surrounding hospitals, businesses, residences, and shopping areas. Each shuttle service is described in more detail below. The Caltrans bicycle shuttle also stops along the Frontage Road, southeast of the fare gates.

A majority of BART patrons who access the station by transit ride one of the shuttles. As noted, based on the 2006 platform survey, 52% used Emery-Go-Round, 25% used AC Transit, 13% used the Kaiser Hospital Shuttle, 4% used the Children’s Hospital Shuttle, and 6% used the Alta Bates Summit Hospital Shuttle.



⁵ AC Transit, July 2007. Note that load factors are not available for Lines 1, 1R and 18 as these lines were established in June 2007. As a result, load factors are provided for the prior lines 40, 40L and 43, respectively.



MacArthur BART Station Access Feasibility Study

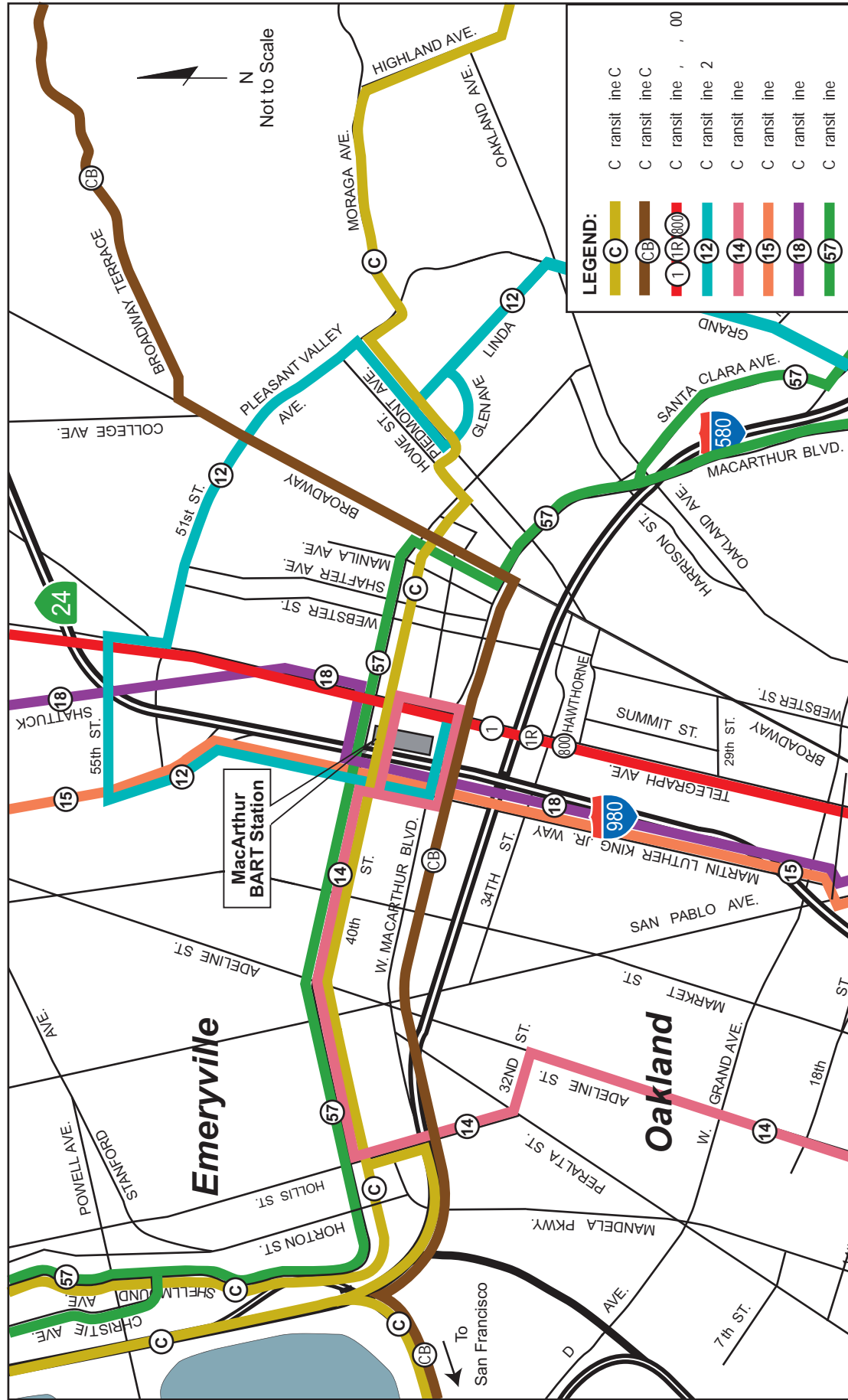
AC TRANSIT SERVICE AT TIME OF PLATFORM SURVEYS

FIGURE 5-3



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MacArthur BART Station Access Feasibility Study

CURRENT AC TRANSIT SERVICE

FIGURE 5-4

**TABLE 5-2
AC TRANSIT LOADS, BOARDINGS AND ALIGHTINGS (AVERAGE WEEKDAY)**

Bus Line	Stop Location	Direction	Average Capacity (Seats)	Avg. Load ^a	Avg. Load Factor ^b	Maximum Load ^c	Max. Load Factor ^d	Boardings (On's) ^e	Alightings (Off's) ^f
12	MacArthur BART Station	EB	30	3.5	12%	7	23%	116	0
		WB		0.2	1%	1	3%	0	99
14	MacArthur BART Station	EB	30	3.4	11%	6	20%	135	0
		WB		0.4	1%	5	17%	0	119
15	on MLK Jr. Way at 40 th Street	EB	30	9.9	33%	19	63%	50	68
		WB		9.3	31%	21	70%	62	46
15	on MLK Jr. Way at W. MacArthur Blvd.	EB	30	10.2	34%	19	63%	24	10
		WB		9.0	30%	20	67%	6	15
40/ 40L ^g	on Telegraph Ave. at 40 th Street	SB	40	19.0	48%	50	125%	121	154
		NB		21.0	53%	52	130%	159	124
40/ 40L ^g	on Telegraph Ave. at MacArthur Blvd/38 th St. ^h	SB	40	19.3	48%	57	143%	50	29
		NB		20.5	51%	47	118%	29	50
43 ^g	on Telegraph Ave. at 40 th Street	SB	30	12.3	41%	30	100%	97	92
		NB		17.5	58%	60	200%	151	95
43 ^g	on Telegraph Ave. at MacArthur Blvd/38 th St. ^h	SB	30	12.5	42%	30	100%	31	20
		NB		16.6	55%	59	197%	31	40
57	MacArthur BART Station	EB	30	12.6	42%	22	73%	300	119
		WB		10.1	34%	25	83%	101	205
800	on Telegraph Ave. at 40 th Street	EB	30	8.9	30%	14	47%	1	3
		WB		6.9	23%	10	33%	1	1
800	on Telegraph Ave. at MacArthur Blvd./38 th St. ⁱ	EB	30	9.3	31%	15	50%	1	3
		WB		6.8	23%	10	33%	1	1
C	MacArthur BART Station	EB	30	7.0	23%	16	53%	7	5
		WB		8.5	28%	13	43%	4	13

Bold indicates maximum load factor above seating capacity.

^a Number of passengers on the bus averaged on a typical weekday.

^b Average load divided by average seated capacity.

^c Maximum number of passengers on the bus observed on a typical weekday.

^d Maximum load divided by average seated capacity.

^e Total number of passengers boarding the bus at this location on a typical weekday.

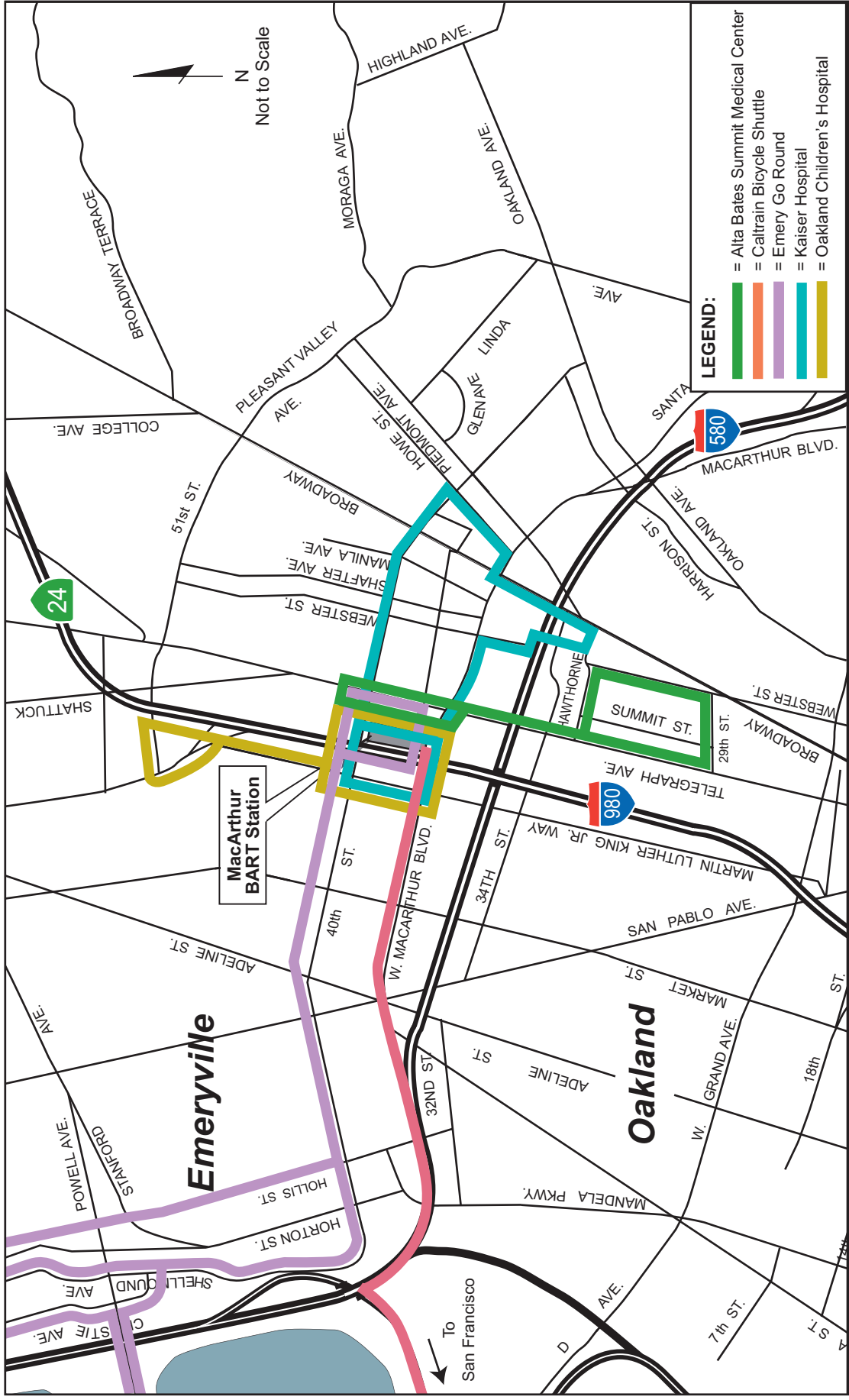
^f Total number of passengers alighting the bus at this location on a typical weekday.

^g Lines 40 and 40L were replaced by Lines 1/1R in June 2007 and Line 43 was replaced by Line 18. Since ridership data for Lines 1, 1R, and 18 are not available, the existing data for Lines 1/1R and 18 are shown.

^h Lines 40-40L and 43 southbound buses stop at MacArthur Boulevard.; northbound buses stop at 38th Street.

ⁱ Line 800 westbound buses stop at MacArthur Boulevard.; eastbound buses stop at 38th Street.

Source: Data collected June 2006 – June 2007 and provided by Howard Der, AC Transit, July 2007.



MacArthur BART Station Access Feasibility Study

EXISTING SHUTTLE SERVICE (March 2008)

FIGURE 5-5

Emery-Go-Round

The Emery-Go-Round shuttle connects the MacArthur BART station with destinations within the City of Emeryville. As of October 2007, there are six routes that serve the MacArthur BART station on weekdays and a single route on weekends. On weekdays, the BART Shopper, Hollis Amtrak, Hollis North, Watergate Express, Powell, and Hollis Routes operate between the MacArthur BART station and destinations including the East Bay Bridge shopping area, major employers such as Pixar and Novartis, the Emeryville Amtrak station, the Watergate condominium complex, IKEA, and residential areas. On weekends, the BART Shopper route operates between the MacArthur BART station and the Emeryville Public Market on 40th Street, Shellmound Street, and Christie Avenue. The travel time between the MacArthur BART station and the Emeryville shopping district is approximately 15 minutes.

The Hollis Amtrak, Hollis North, and Watergate Express shuttles operate on weekdays only between 7:00 AM and 7:00 PM, with 12-minute headways during peak hours and 20-minute headways during the mid-day. The Powell and Hollis routes operate on weekdays only from 5:45 AM to 7:00 AM and from 7:00 PM to 10:00 PM, with service every 20 to 40 minutes.

The BART Shopper operates on weekdays between 7:00 AM and 7:00 PM, with 12-minute headways during peak hours and 15-minute headways during the mid-day; on Saturdays between 9:30 AM and 9:30 PM with 30 to 40 minute headways; and on Sundays between 10:30 AM and 6:00 PM with 40-minute headways.⁶

Emery-Go-Round buses are equipped with NextBus technology, which allows patrons to access the real-time location or estimated arrival times of vehicles from the Internet or mobile devices. Emery-Go-Round has plans to install a NextBus sign at the MacArthur BART station to display the estimated arrival time of the Hollis and Powell shuttles. Emery-Go-Round is operated with 35-foot vehicles that carry approximately 45 passengers. Emery-Go-Round buses layover along the south side of 40th Street, east of Martin Luther King, Jr. Way. During peak periods, the Emery-Go-Round shuttles are over capacity and require some patrons to stand. Data from the 2005 *BayCap BART Shuttle Rider Survey*⁷ indicates that the Emery-Go-Round shuttle is the largest BART shuttle service, carrying approximately 850,000 annual passengers, with 80 percent of weekday passengers beginning or ending their shuttle trip at the MacArthur BART station.

Kaiser Medical Center

Kaiser Medical Center operates a free shuttle to serve its main hospital on Howe Street and the Mosswood Building on Broadway near I-580. Shuttles operate every 15 minutes from 5:30 AM to 11:45 PM on weekdays only and have an estimated travel time of 10 minutes. The service is operated by a minibus with a 22-person capacity. The shuttles, which are also used by the public, currently transport about 1,200 passengers each day. Kaiser plans to increase the shuttle service to serve new buildings planned as part of their expansion project in the next few years.

Oakland Children's Hospital

Free shuttle service is provided between the MacArthur BART station and Oakland Children's Hospital at 52nd Street and Martin Luther King Jr. Way. The service operates on weekdays only from 6:00 AM to 12:00 AM, with headways between 8 and 15 minutes. The service uses 15-passenger vans and has an estimated travel time of 10 minutes. The shuttles currently transport about 450 passengers each day.

⁶ Emery-Go-Round website as of October 2007.

⁷ Bay Area Air Quality Management District, 2005.

Alta Bates Summit Medical Center

Summit Medical Center operates a free shuttle for employees and visitors between the MacArthur BART station and the Summit Medical Center Campus, located between Telegraph Avenue and Broadway, just south of I-580. The service operates from 6:00 AM to 9:00 AM and 2:00 PM to 7:30 PM on weekdays only, and has an estimated travel time of 10 minutes. The service is operated using 15-seat passenger vans.

Caltrans Bicycle Shuttle

Caltrans District 4 operates the San Francisco-Oakland Bay Bridge Bicycle Shuttle between the MacArthur BART station, the Bay Bridge Bus Stop on Treasure Island, and the TransBay Terminal in Downtown San Francisco to transport cyclists across the Bay when bicycles are prohibited on BART trains (bicycles are prohibited on the Bay Bridge at all times). The Caltrans shuttle costs \$1.00 per direction of travel. In the morning, four shuttles leave from the MacArthur BART station for San Francisco (at 6:20 AM, 7:00 AM, 7:45 AM and 8:30 AM) and three leave from San Francisco for Oakland (at 6:40 AM, 7:25 AM, and 8:10 AM). In the evening, three shuttles leave San Francisco for the MacArthur BART station (at 4:15 PM, 5:05 PM, and 5:55 PM) and four shuttles leave Oakland for San Francisco (at 3:50 PM, 4:40 PM, 5:30 PM, and 6:15 PM). The service is operated by a 15-passenger van pulling a trailer that holds 15 bicycles.

PLANNED IMPROVEMENTS

AC Transit ultimately plans to convert the 1R line to a Bus Rapid Transit (BRT) line. The proposed BRT project would improve bus operations by allowing buses to travel on dedicated lanes between Berkeley, Oakland, and San Leandro. In the project vicinity, BRT would generally eliminate one through lane in each direction, narrowing Telegraph Avenue to one through lane in each direction. AC Transit published a Draft Environmental Impact Statement / Environmental Impact Report (EIS/EIR) for the implementation of the BRT project in May 2007. There are currently no finalized design plans, an assurance of full funding, or approvals from AC Transit, the City of Oakland, and other public agencies.

TRANSIT ACCESS OBJECTIVES

The over-arching transit access objective is to increase BART ridership. Supporting objectives related to feeder transit services to the MacArthur Station include:

1. Maintain or improve travel times and route directness and increase transit (bus/shuttle) service frequency.
2. Provide flexible design for bus bays and layover areas to accommodate existing and future demand with a measure of flexibility for future changes.
3. Enhance personal safety for transit patrons.
4. Minimize transit impacts associated with traffic congestion and drop offs/pick ups.

6. BICYCLE ACCESS

Seven percent of MacArthur BART Station patrons currently access the station by bicycle. As shown in Figure 6-1, 34% of these bicyclists have trip origins within ½-mile of the station. Almost all bicyclists have an origin within two miles of the station. Based on the platform survey, while patrons access the station from all of the surrounding streets, approximately half of the cyclists use Telegraph Avenue.

The following provides a discussion of existing bicycle access conditions and planned improvements and identifies a set of objectives for improved bicycle access.

EXISTING BICYCLE FACILITIES AND CONDITIONS

Oakland's climate and topography are very good for bicycling and the grid pattern of the streets, especially around the MacArthur BART Station, provides numerous potential routes. The City of Oakland is working to increase bicycle access throughout the City by building new and improving existing bicycle facilities, as detailed in the recently approved *2007 Oakland Bicycle Master Plan Update*. In addition, the Alameda County Congestion Management Agency's (ACCMA) *2006 Countywide Bicycle Plan* highlights proposed regional bicycle facilities.

Bicycle facilities can be classified into several types, including:

Class I Paths – These facilities are located off-street and can serve both bicyclists and pedestrians. Class I paths are typically eight to 12 feet wide (excluding shoulders) and are generally paved.

Class II Bicycle Lanes – These facilities provide a dedicated area for bicyclists within the paved street width with striping and appropriate signage. These facilities are typically five to six feet wide.

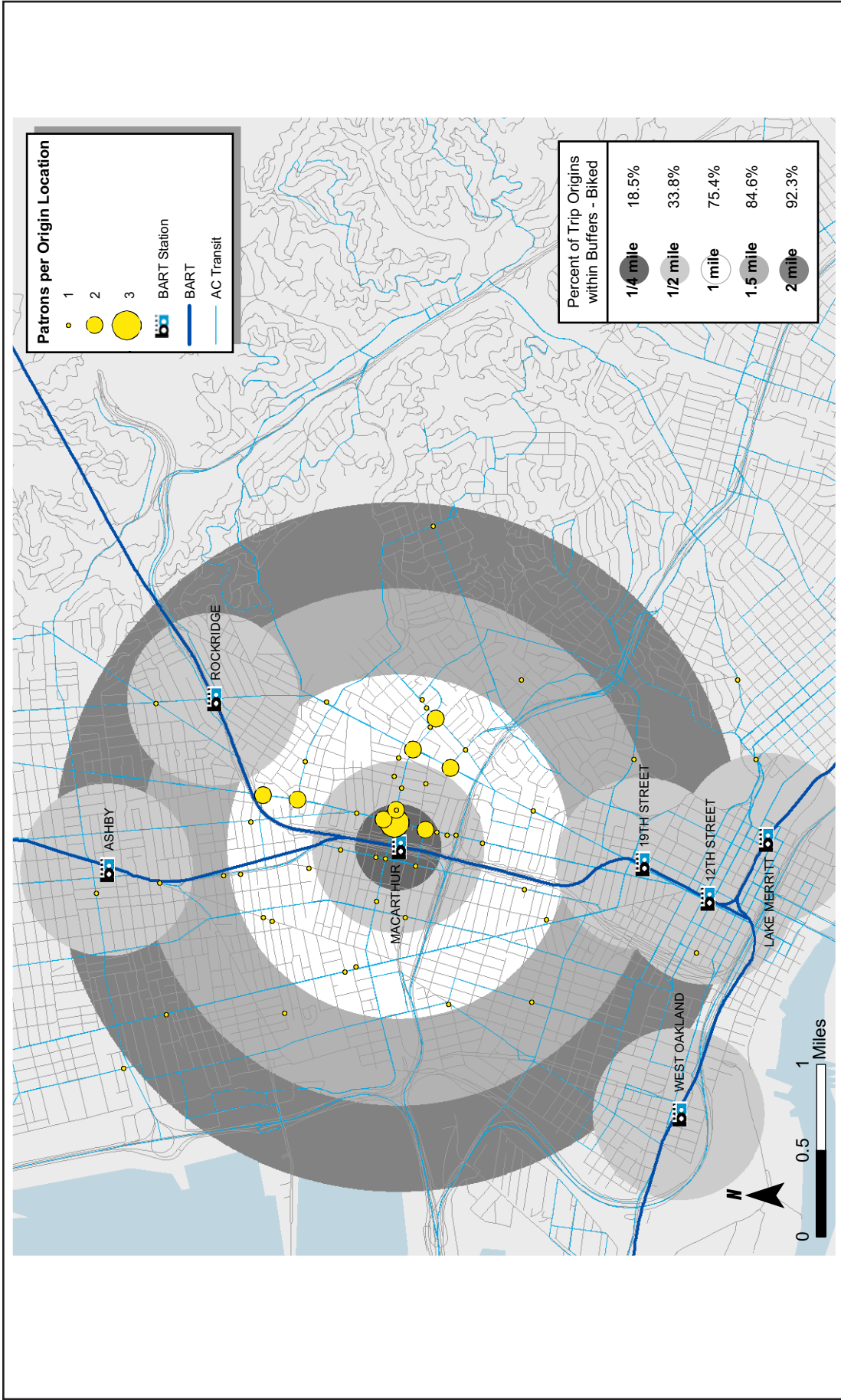
Class III Bicycle Routes – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes and are provided on low-volume streets that have no bicycle lanes. The street is then designated as a bicycle route with signage informing drivers to expect bicyclists.

The *2007 Oakland Bicycle Master Plan Update* also identifies the following variations on the standard bicycle route:⁸

Class IIIa Arterial Bicycle Routes – Bicycle routes may be used on some arterial streets where bicycle lanes are not feasible and parallel streets do not provide adequate connectivity. These streets should promote shared use with lower posted speed limits (preferably 25 miles per hour), shared lane bicycle stencils, wide curb lanes, and signage.

Class IIIb Bicycle Boulevards – These are bicycle routes on residential streets that prioritize through trips for bicyclists. The route should appeal to cyclists of varied skill levels by providing direct connections on streets with low traffic volumes. The route should reduce delay to bicyclists by assigning right-of-way to travel on the route. Traffic calming should be introduced as needed to discourage drivers from using the boulevard as a through route. Intersections with major streets should be controlled by traffic signals with bicycle actuation.

⁸ 2007 Oakland Bicycle Master Plan Update, page 67.



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MacArthur BART Station Access Feasibility Study

MACARTHUR BART STATION PATRON ORIGINS - BICYCLE ACCESS MODE

FIGURE 6-1

Surrounding Area

Several existing bicycle facilities are located near the station area, as shown in Figure 6-2. These include:

- 40th Street (east-west) – Class II bicycle lanes between San Pablo Avenue and Shellmound Avenues
- Market Street (north-south) – Class II bicycle lanes between West MacArthur Boulevard and Adeline Street
- West Street (north-south) – Class II bicycle lanes between West Grand Avenue and 52nd Street; Class III bicycle route between 52nd Street and Adeline Street
- Telegraph Avenue (north-south) – Class II bicycle lanes between Aileen Street and the City of Berkeley border
- Webster Street (north-south) – Class III bicycle route between 29th Street and the City of Berkeley border, via Shafter Avenue and Colby Street
- Broadway (north-south) – Class II bicycle lanes between 26th Street and the I-580 underpass

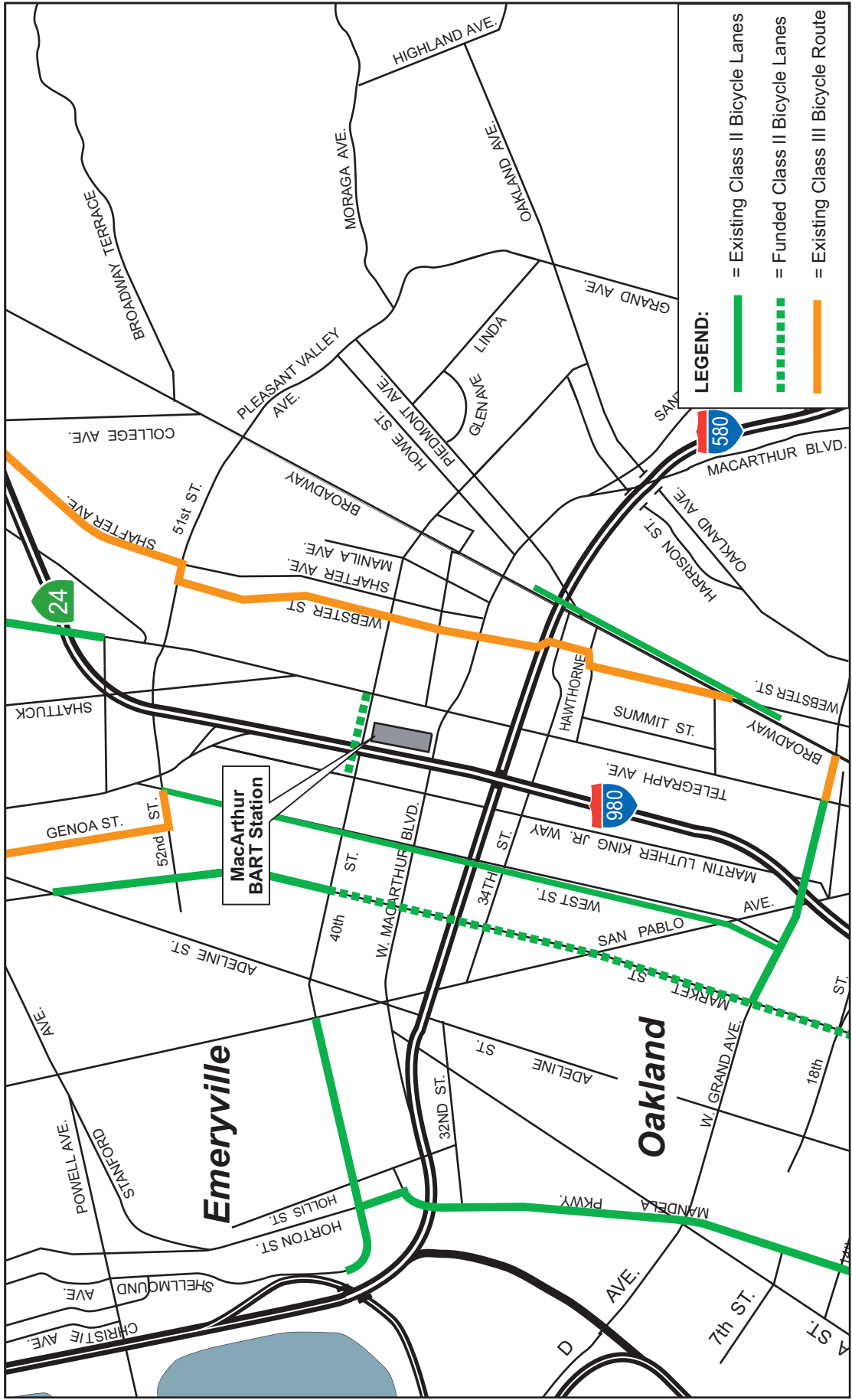
Currently no designated bikeways connect to the station. The roads directly adjacent to the station are four- to six-lane arterials, which are designed for higher-speed traffic and vehicle volumes, and are not favorable to cycling.

The topography is relatively flat and the local residential streets, such as 38th Street and 41st Street, have low traffic volumes. However, pavement conditions can be rough on arterial streets such as Broadway and Telegraph Avenue. Bicycles are not allowed in the 12th and 19th Street BART stations during the AM and PM peak periods⁹. Considering this restriction, some cyclists who live close to the downtown Oakland stations ride to the MacArthur BART station to access BART.

In the project vicinity, the City of Oakland's *2007 Bicycle Master Plan Update* proposes the following (as shown in Figure 6-3):

- Extension of the Class II lanes on Market Street south of MacArthur Boulevard
- Extension of the Class II lanes on West Street from MacArthur Boulevard to 52nd Street (completed)
- Class II lanes on Telegraph Avenue from Downtown Oakland to the existing lanes at Aileen Street
- Class II lanes on Shattuck Avenue from Telegraph Avenue to the Berkeley border
- Extension of the Class II lanes on Broadway from I-580 to Caldecott Lane
- Extension of the Class II lanes on 40th Street from Adeline Street to Telegraph Avenue, with a Class IIIb Bicycle Boulevard on 41st Street between Telegraph Avenue and Broadway, connecting to Class II lanes on 41st Street between Broadway and Piedmont Avenue

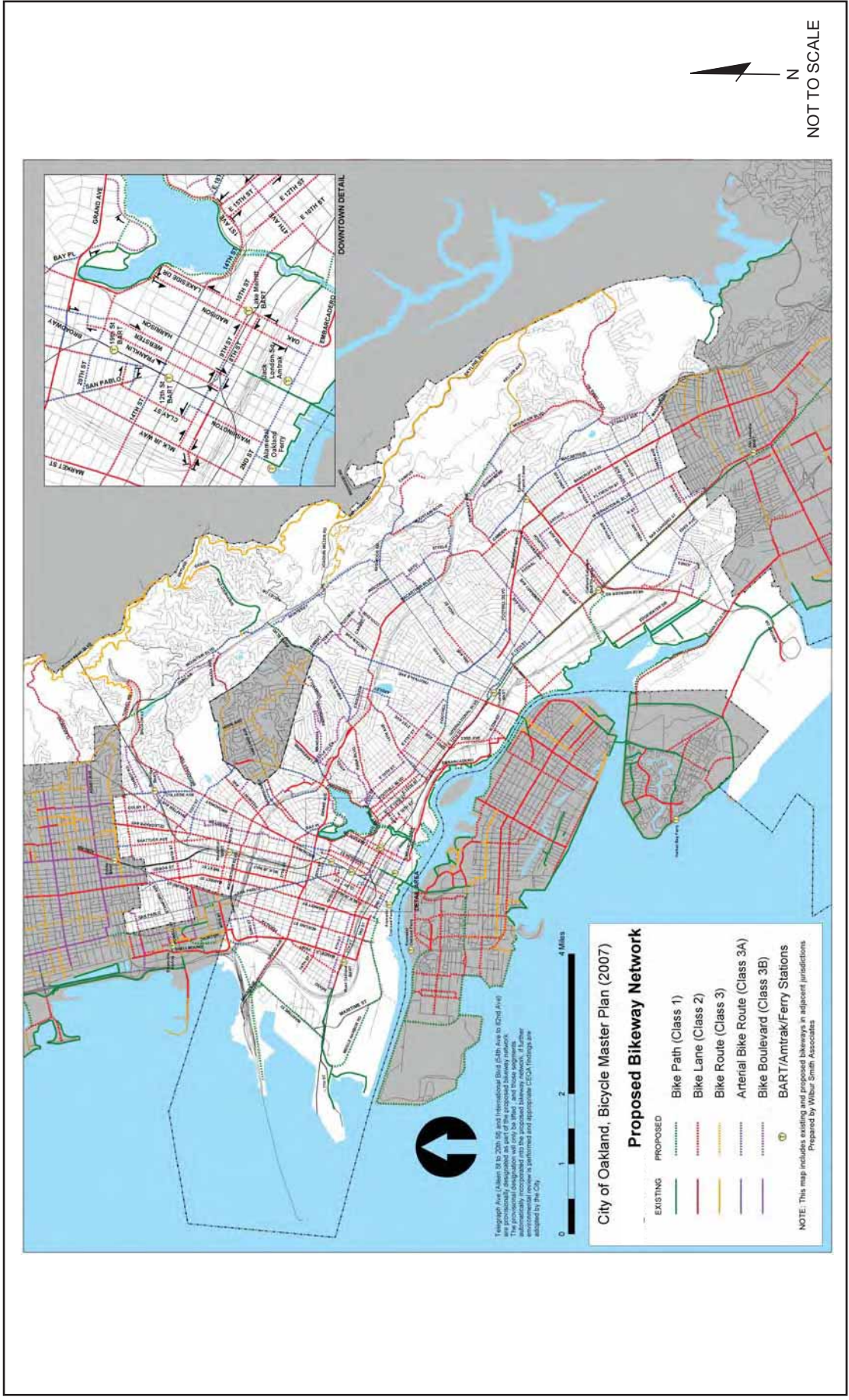
⁹ BART Fares and Schedules brochure.



MacArthur BART Station Access Feasibility Study

SURROUNDING BICYCLE FACILITIES

FIGURE 6-2



MacArthur BART Station Access Feasibility Study

PROPOSED OAKLAND BIKEWAY NETWORK

FIGURE 6-3

- Class IIIa route on 51st Street between Shattuck Avenue and the Piedmont border
- Class II lanes on West MacArthur Boulevard from Market Street to Harrison Street
- Class IIIb Bicycle Boulevard on Webster Street/Shafter Avenue between 29th Street and the Rockridge BART station

The *MacArthur BART Bicycle Access Study*, currently under study by the City of Oakland, will identify a recommended bikeway alignment and design for improving east/west bicycle access to the MacArthur BART Station while maintaining quality bus/shuttle service. The study will evaluate various bicycle facility types and alignments on West MacArthur Boulevard, 40th Street, and 41st/42nd Street to connect the MacArthur BART Station with City of Emeryville and the Piedmont Avenue neighborhood.¹⁰

Consistent with the City of Oakland's *2007 Bicycle Master Plan Update*, the *2006 Countywide Bicycle Plan* proposes extension of the Class II lanes on Market Street south of West MacArthur Boulevard to 14th Street, and extension of the Class II lanes on Telegraph Avenue from Aileen Street to 14th Street.

On-Site Facilities

The bicycle facilities on-site are generally limited to support facilities. Bicycles are not prohibited from entering and exiting the parking lot or the Frontage Road; however, given the presence of passenger cars and transit vehicles, they are not desirable locations for bicycles. Bicycles are allowed on most BART trains, except commute period peak direction trains (towards San Francisco in the AM, and away from San Francisco in the PM). The station provides bicycle storage facilities in front of the paid area under the Highway 24 ramps, as shown in Figure 6-4.

The station facilities include six bicycle storage racks that each accommodates 12 bicycles (72 bicycles total) and 30 single-use lockers for customers to store bicycles, as well as wheelchairs or mopeds. The single-use bicycle lockers are available to patrons 18 years or older on a quarterly or yearly basis (for fees of \$15 and \$30, respectively).



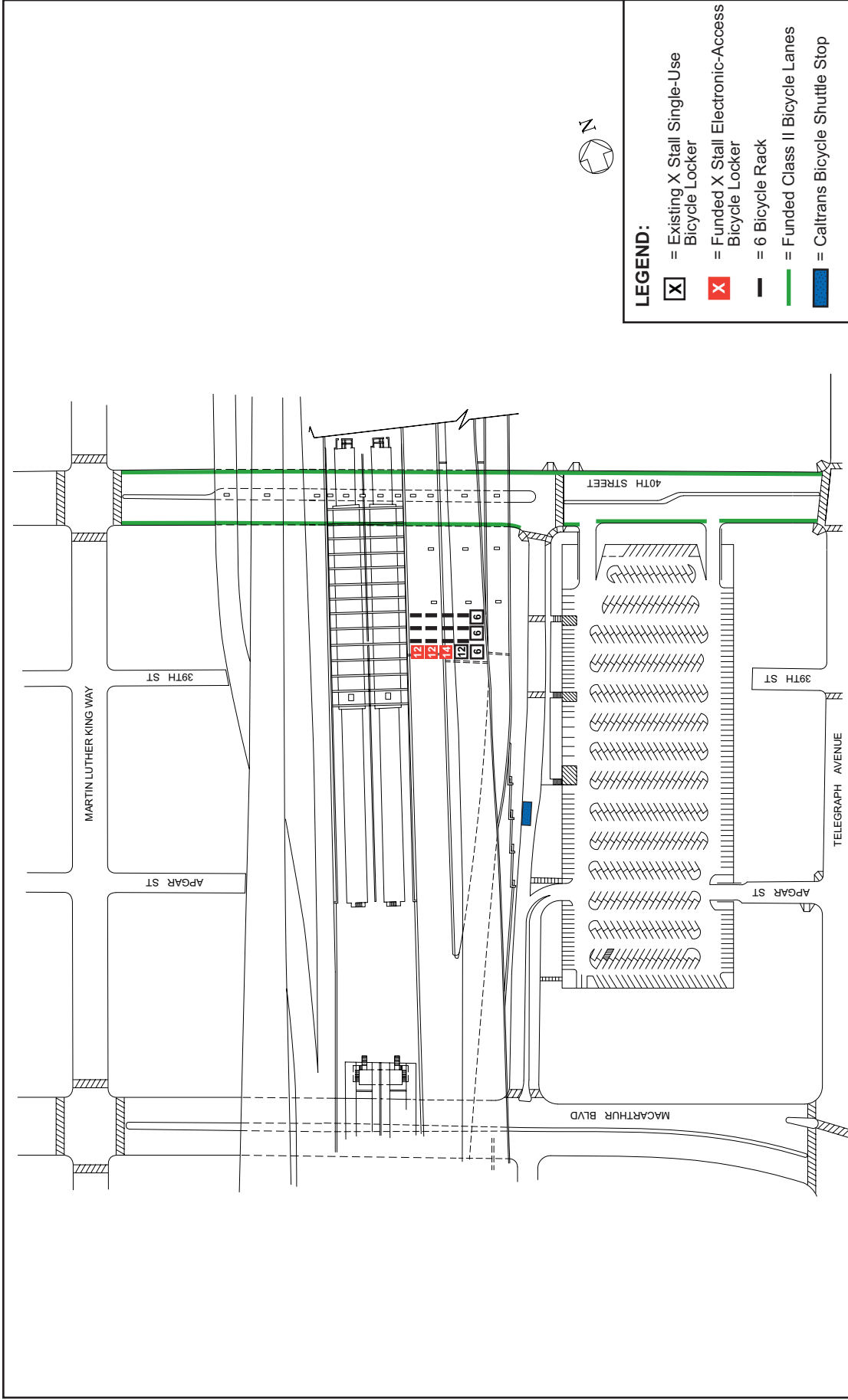
Existing Bicycle Storage at MacArthur BART

Bicycle Usage

The City has an overall bicycling commute mode share of 1.1 percent,¹¹ which does not include those who ride to BART. Currently, approximately 7 percent of patrons who access the MacArthur BART station daily from the surrounding neighborhood arrive by bicycle, significantly exceeding BART's bicycle access goal. Based on observations conducted at 12:00 PM at the station in October 2006, the bicycle racks were approximately 88 percent full, with 63 bicycles, and the lockers were approximately 13 percent full, with four bicycles.

¹⁰ *MacArthur BART Bicycle Access Study* – Project Mission Statement, September 28, 2006.

¹¹ US Census 2000.



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MacArthur BART Station Access Feasibility Study

EXISTING STATION BICYCLE FACILITIES

FIGURE 6-4

AM and PM peak period (7:00 – 9:00 AM and 4:00 - 6:00 PM) bicycle counts were taken at intersections surrounding the MacArthur BART station in May 2006. While patrons accessed the MacArthur BART station from all of the surrounding streets, approximately half of the cyclists used Telegraph Avenue. Existing bicycle counts and facilities are shown on Figure 6-5.

PLANNED IMPROVEMENTS

Funded improvements that would directly affect bicycling access to the MacArthur BART station include:

- Class II Bike Lanes on 40th Street between Telegraph and Martin Luther King Jr. Way. These are included in the *Plans for 40th Street, MacArthur Transit Hub Improvements*.¹²
- 38 new electronic bicycle storage lockers at the MacArthur BART station in the plaza area to replace the existing single-user annual rental lockers (with capacity for 30 bicycles). The electronic-access bicycle lockers will eliminate the need for individual keys and will rely on smart cards instead. This will provide a greater opportunity for more bicyclists to use the electronic lockers.

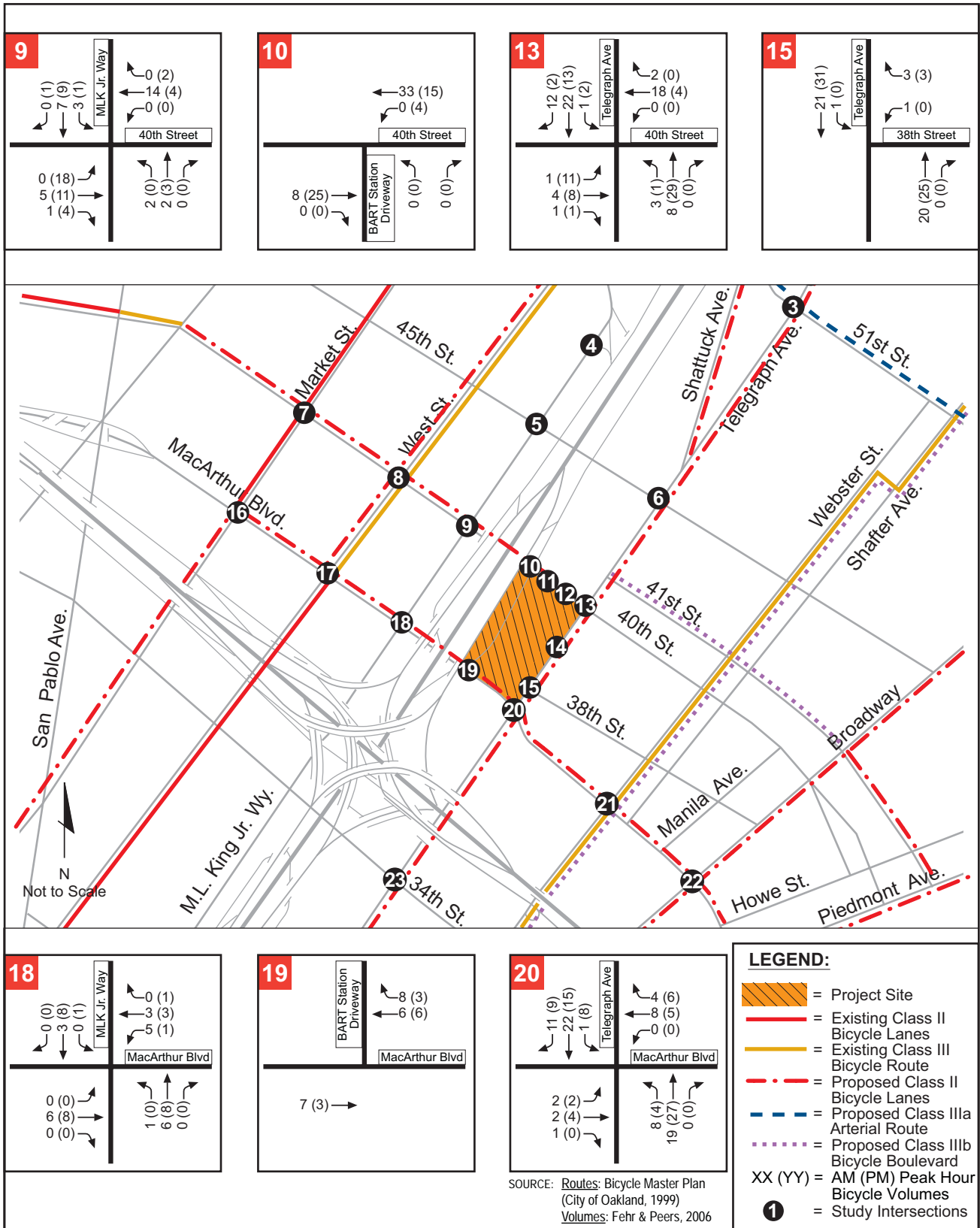
These improvements are not repeated in the recommended Access Strategies presented in this study because they are expected to be completed in the near-term, independent of the findings of this study and/or the proposed Transit Village project.

BICYCLE ACCESS OBJECTIVES

Based on existing conditions and anticipated access needs associated with a shift to non-auto access modes, the objectives for bicycle access to the MacArthur BART Station include:

1. Provide safe and efficient connections between bicycle parking locations and adjacent streets, especially with respect to turns into and out of the station.
2. Provide safe crossing opportunities.
3. Support the goals and policies of the City's broader Bicycle Plan and provide connections to the Oakland, Emeryville, Piedmont, and Berkeley bicycle networks.
4. Provide sufficient and secure bicycle parking facilities.
5. Signalize the intersection of Frontage Road and West MacArthur Boulevard to accommodate left turns.

¹² City of Oakland, July 2006.



7. AUTO ACCESS

Figures 7-1 and 7-2 illustrate the origins for BART patrons arriving to the MacArthur Station via auto. Based on 2006 platform surveys, currently 25% of daily BART patrons access the station via auto (either drive alone, drop-off, or carpool). Most auto-access patrons live within 1/4-mile of a transit route that serves the station. Many also live within 1/2-mile of the station.

The following provides a discussion of existing auto access conditions and planned improvements and identifies a set of objectives for improved auto access.

EXISTING ROADWAY SYSTEM AND CONDITIONS

Access to the station's parking lot and pick-up/drop-off area is provided from 40th Street, West MacArthur Boulevard, and Telegraph Avenue via Apgar Street. Regional access to the Station is provided via I-580 to the north, south, and west, Highway 24 to the east, and I-980 to the west (with access to I-880).

Figure 7-3 shows the location of the MacArthur BART Station and the surrounding roadway system. The figure identifies the local and regional routes of significance and highway and freeway ramps.

Local Roadways

Key local roadways that provide access to the Station are described below.

West MacArthur Boulevard is a major east-west arterial located directly south of the station that extends between Hollis Street in Emeryville and Estudillo Avenue in San Leandro, generally paralleling I-580. It varies in width from two to six lanes. Adjacent to the project site, it has six lanes, a raised median, and parallel on-street parking on both sides.

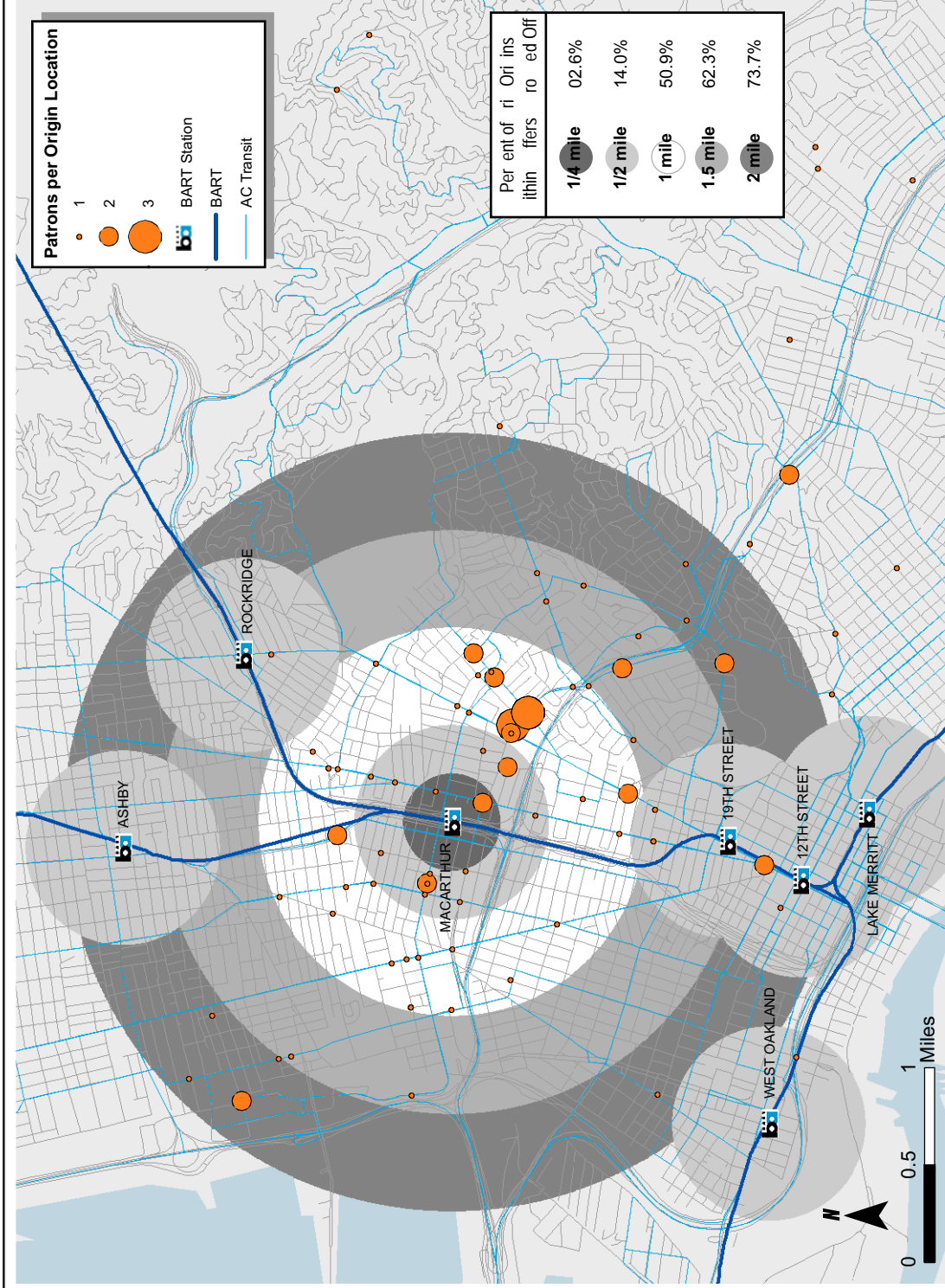
40th Street is an east-west arterial located directly north of the station that extends between Shellmound Avenue in Emeryville and Piedmont Avenue in Oakland. Within the study area, it is four lanes wide with a median that provides left-turn bays at major intersections and on-street parallel parking on both sides along most of its length.

Telegraph Avenue is a major north-south arterial located directly east of the station that extends between Broadway in Downtown Oakland and Bancroft Way, adjacent to the University of California campus in Berkeley. Within the study area, Telegraph Avenue is four lanes wide with left-turn bays at major intersections and on-street parallel parking on both sides.

Martin Luther King, Jr. Way is a north-south arterial that extends between West Grand Avenue in Downtown Oakland and Hopkins Street in Berkeley. Martin Luther King, Jr. Way is generally four lanes wide with on-street parallel parking on both sides.

Frontage Road is a private north-south street on the BART station property adjacent to Highway 24. It provides access to the parking lot from West MacArthur Boulevard and has one travel lane in each direction from West MacArthur Boulevard to the parking lot. North of the parking lot, Frontage Road provides one southbound travel lane. No parking is permitted on Frontage Road.

Apgar Street is a short east-west, two-lane local street that connects the MacArthur BART station parking lot to Telegraph Avenue, between 40th Street and West MacArthur Boulevard. Apgar Street dead-ends at the parking lot but then starts again west of Highway 24 freeway towards Emeryville. On-street parallel parking is provided along both sides of the roadway.



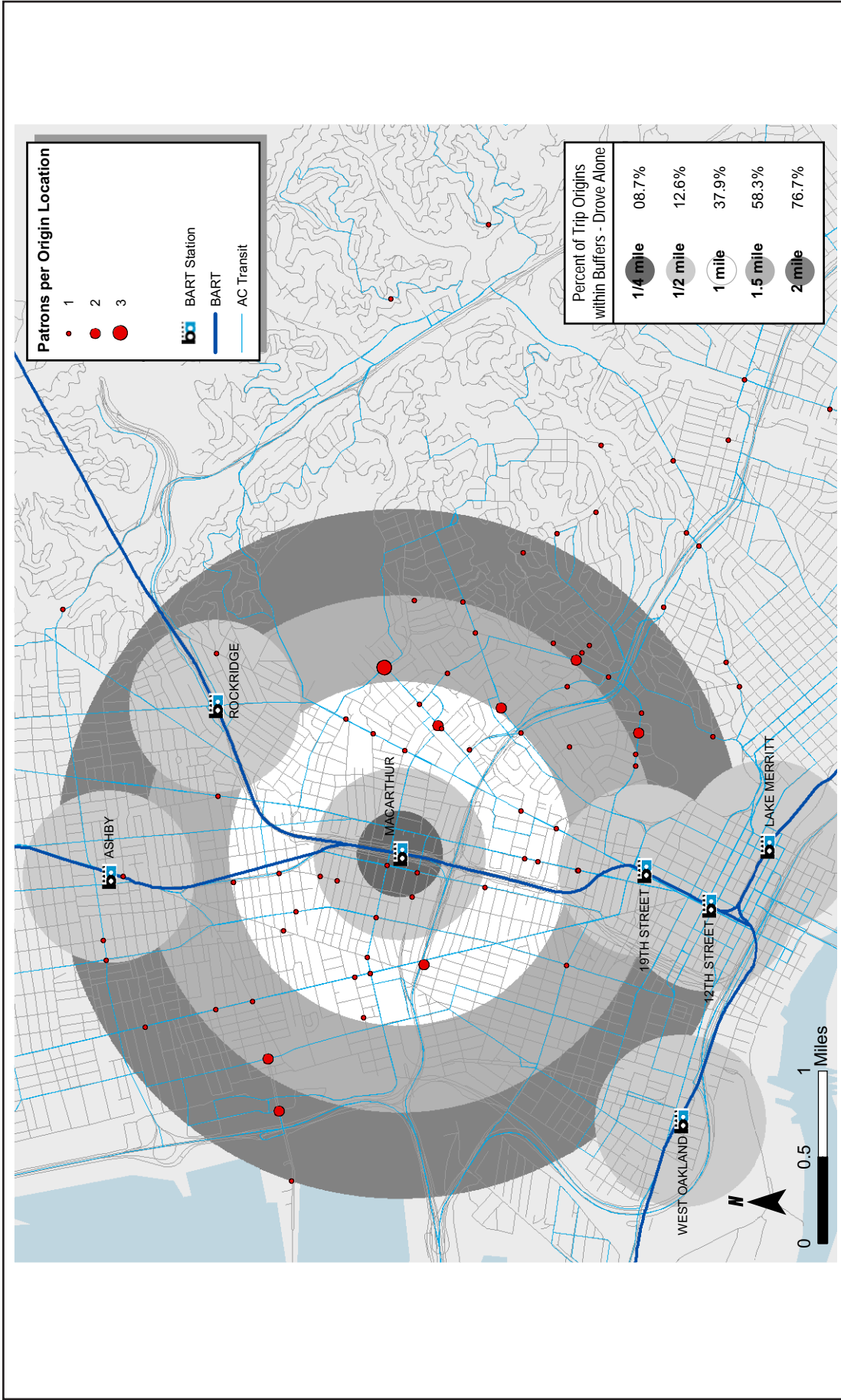
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MACARTHUR BART STATION PATRON ORIGINS - DROPPED-OFF ACCESS MODE

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FIGURE 7-1



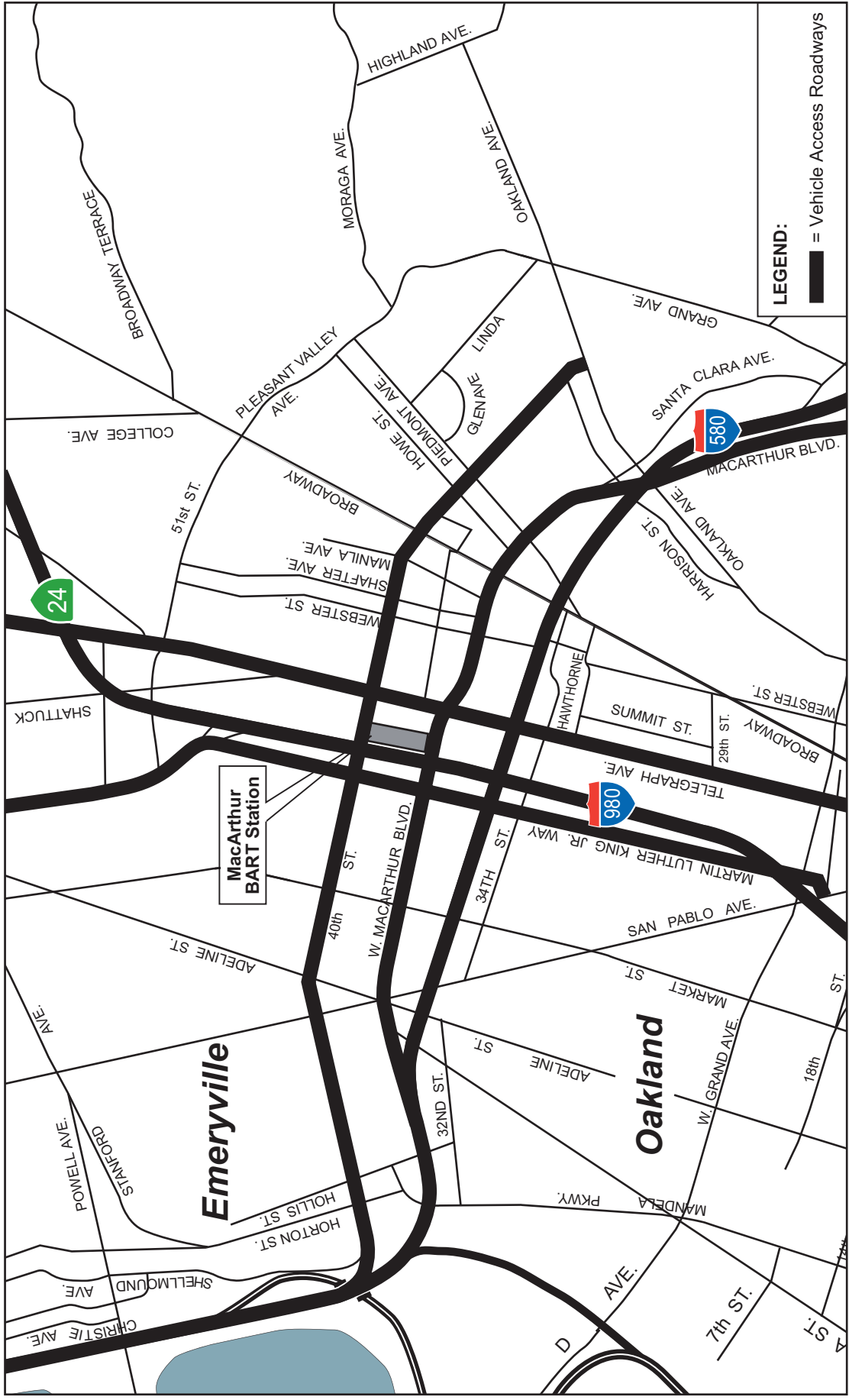
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MacArthur BART Station Access Feasibility Study

MACARTHUR BART STATION PATRON ORIGINS - DROVE ALONE ACCESS MODE

FIGURE 7-2



MacArthur BART Station Access Feasibility Study

LOCAL AND REGIONAL ROADWAY SYSTEM

FIGURE 7-3



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39th Street is a short east-west two-lane cul-de-sac connecting to Telegraph Avenue, adjacent to the MacArthur BART Station parking lot. The BART parking lot cannot be accessed from 39th Street. 39th Street dead-ends at the parking lot but then starts again west of Highway 24 to Adeline Street. On-street parallel parking is provided along both sides of the roadway.

Existing Traffic Conditions

Traffic conditions in urban areas are affected more by the operations at the intersections than by the capacities of the local streets because traffic control devices (signals and stop signs) at intersections control the capacity of the street segments. The operations are measured in terms of a grading system called level of service (LOS), which is based on average vehicle delay experienced at the intersections. That delay is a function of intersection control device (i.e., signal or stop sign), intersection lane widths and configuration, hourly traffic volumes, pedestrian volumes, and parking and bus conflicts. LOS ranges from A (free flow) to F (extreme congestion). Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study intersections in May and June 2006, while area schools were in normal session.

As part of the MacArthur Transit Village Project EIR, analysis of peak-hour traffic conditions was conducted at 25 study intersections. The existing AM and PM peak-hour intersection level of service and delays are summarized in Table 7-1. All study intersections, including the entrances to the station, currently operate at LOS D or better during both AM and PM peak hours. Field observation of existing intersection operations supports the results of the level of service analysis at the study intersections.

On-Site Circulation

BART Station support vehicles, including revenue collection tractor-trailers, maintenance trucks, engineering trucks, and BART police cars, use the Frontage Road to access the faregate plaza and station electric substation. Passenger cars picking-up or dropping-off patrons also use the Frontage Road entrance.

All of the remaining access points are two-way, side-street stop controlled intersections that directly lead to the 618-space parking lot. Inside the parking lot, the vehicle circulation is typical of large parking facilities, with two-way travel lanes encircling the majority of parking spaces and one-way drive aisles to access individual spaces. Figure 7-4 details the station vehicle access points and internal circulation system.

Pick-Up/Drop-Off Facilities

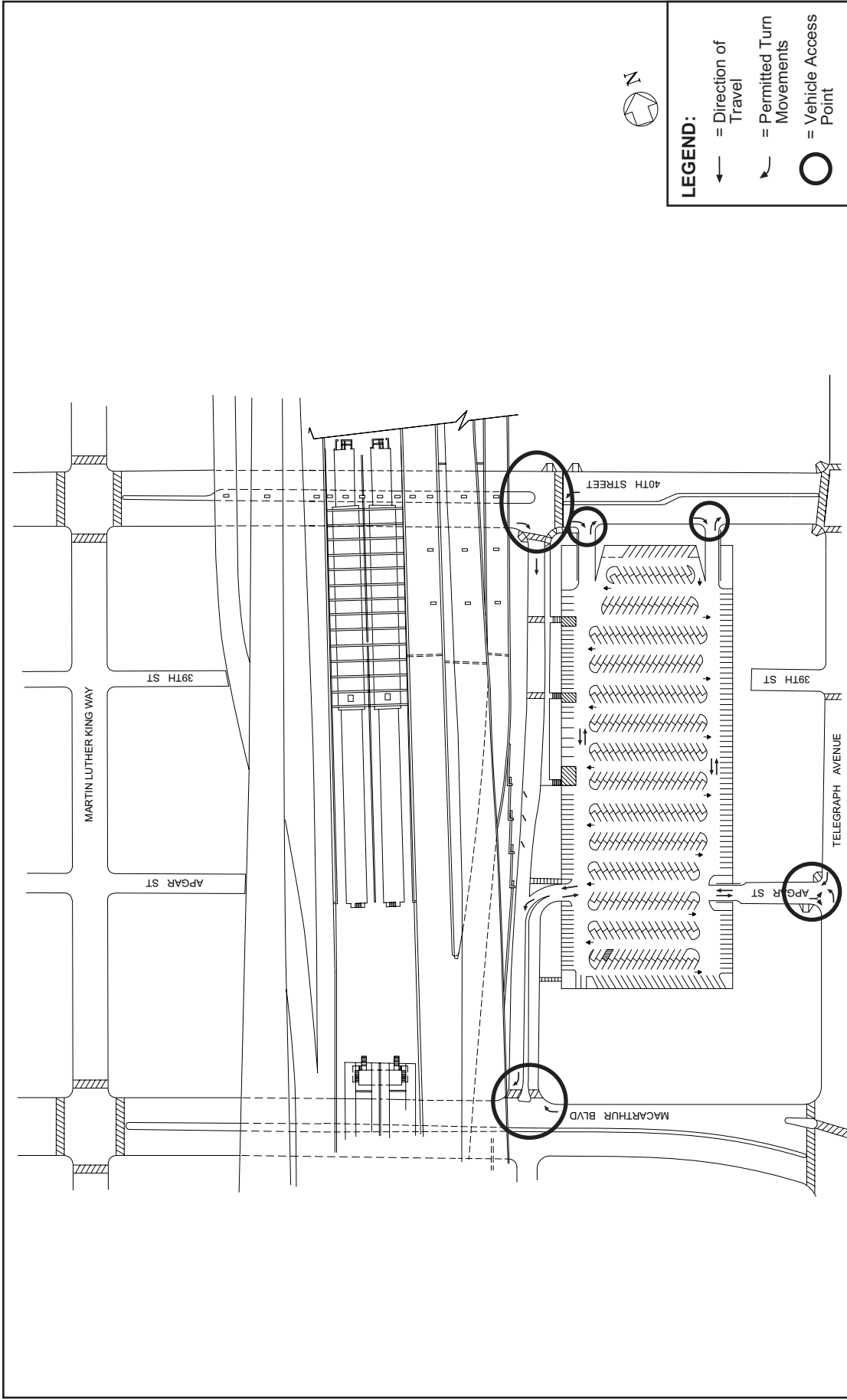
The MacArthur BART Station has a designated pick-up/drop-off area along the Frontage Road, south of the shuttle stops and in the parking lot near the western-most 40th Street driveway and a dedicated taxi stand located on the south side of 40th Street, near the AC Transit bus bays, as shown in Figure 7-5. Given the MacArthur BART Station design, an informal pick-up/drop-off area has also developed along the Frontage Road within the shuttle staging areas. BART patrons have also been observed being picked-up/dropped-off along the south side of 40th Street, east of the Frontage Road. Significant conflicts currently exist between buses, shuttles, and passenger cars, with many cars stopping in areas designated for bus or shuttle use.

**TABLE 7-1
EXISTING CONDITIONS INTERSECTION LEVEL OF SERVICE SUMMARY**

No.	Intersection	Traffic Control	Existing AM		Existing PM	
			LOS	Delay	LOS	Delay
1	Shattuck Avenue/52 nd Street	Signal	D	54.3	D	51.3
2	Telegraph Avenue/52 nd Street/ Claremont Avenue	Signal	B	17.7	B	18.8
3	Telegraph Avenue/51 st Street	Signal	D	39.1	D	47.1
4	Martin Luther King Jr. Way/47 th Street/ Westbound SR-24 On-Ramp	Signal	C	26.8	B	11.0
5	Martin Luther King Jr. Way/45 th Street	Signal	A	9.0	A	9.0
6	Telegraph Avenue/45 th Street	Signal	B	10.3	A	6.8
7	Market Street/40 th Street	Signal	B	17.6	C	25.0
8	West Street/40 th Street	Signal	B	13.8	B	17.4
9	Martin Luther King Jr. Way/40 th Street	Signal	B	13.9	B	19.9
10	Frontage Road/40 th Street	SSSC	B	10.2	B	13.8
11	BART parking access (west)/40 th Street	SSSC	B	13.8	C	17.5
12	BART parking access (east)/40 th Street	SSSC	B	14.6	C	17.9
13	Telegraph Avenue/40 th Street	Signal	C	23.9	C	28.6
14	BART parking access/Telegraph Avenue	SSSC	C	19.3	C	21.4
15	Telegraph Avenue/38 th Street	SSSC	B	14.8	C	21.6
16	Market Street/MacArthur Boulevard	Signal	B	16.8	C	31.6
17	West Street/MacArthur Boulevard	Signal	B	12.3	B	14.1
18	Martin Luther King Jr., Way/ MacArthur Boulevard	Signal	A	9.0	B	11.5
19	Frontage Road/MacArthur Boulevard	SSSC	B	14.6	C	15.7
20	Telegraph Avenue/MacArthur Boulevard	Signal	B	18.8	B	14.4
21	Webster Street/MacArthur Boulevard	Signal	A	8.7	B	11.4
22	Broadway/MacArthur Boulevard	Signal	D	54.7	D	42.0
23	Telegraph Avenue/34 th Street	Signal	A	6.8	B	13.0
24	Telegraph Avenue/27 th Street	Signal	C	23.1	C	21.8

Note: The LOS/delay for Side-Street Stop-Control (SSSC) intersections represents the worst movement or approach; for Signalized intersections, the LOS/Delay represents overall intersection.

Source: Fehr & Peers, 2007.



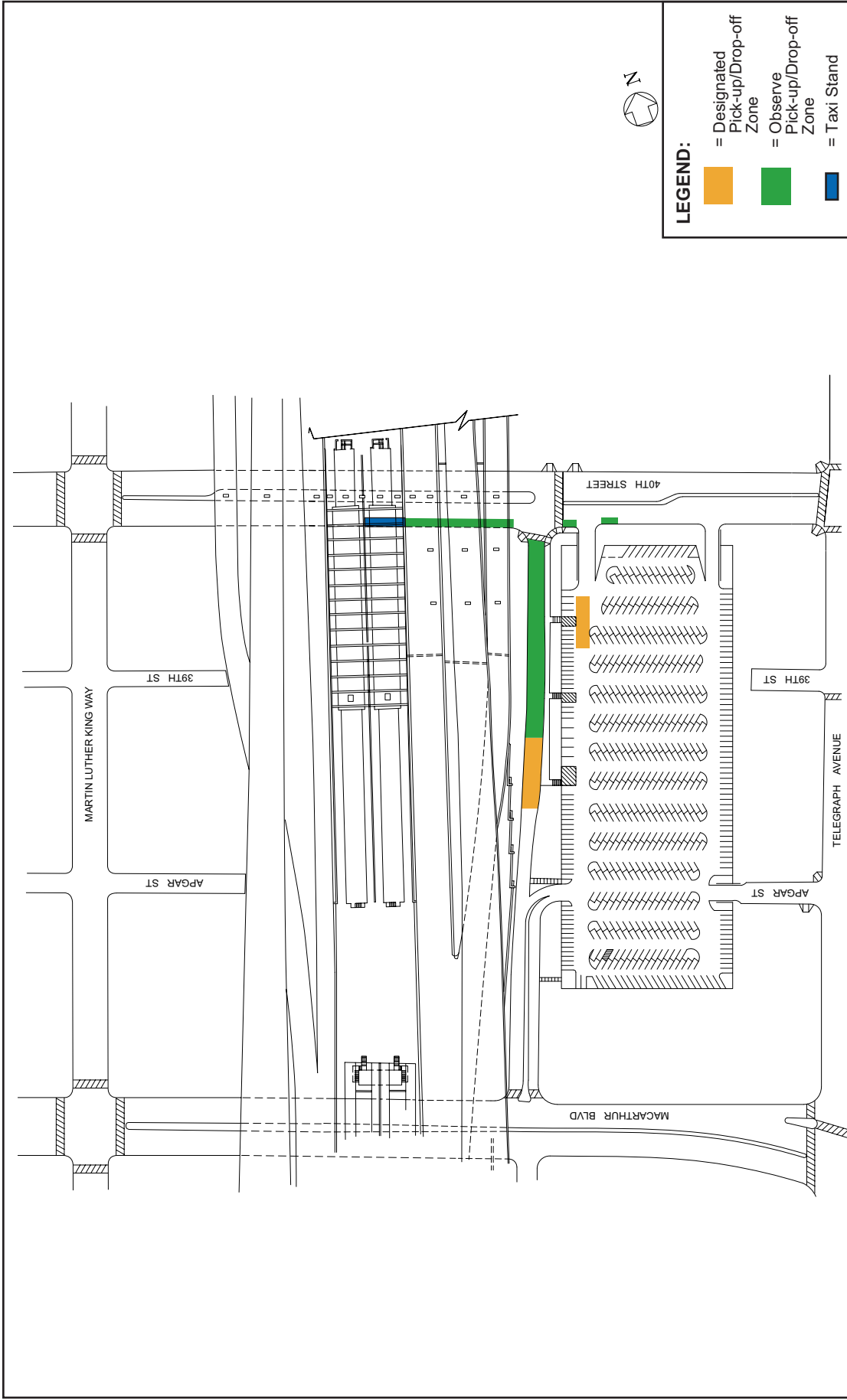
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ON-SITE CIRCULATION SYSTEM

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FIGURE 7-4



MacArthur BART Station Access Feasibility Study

EXISTING PICK-UP AND DROP-OFF FACILITIES

FIGURE 7-5

EXISTING PARKING FACILITIES AND CONDITIONS

The existing on-street and off-street parking supply and demand within the project study area are described below.

On-Site Parking

The MacArthur BART Station provides 618 dedicated parking spaces in a large surface parking lot east of the fare gate area, as shown in Figure 7-6.

Supply

The on-site parking lot has 618 spaces, including:

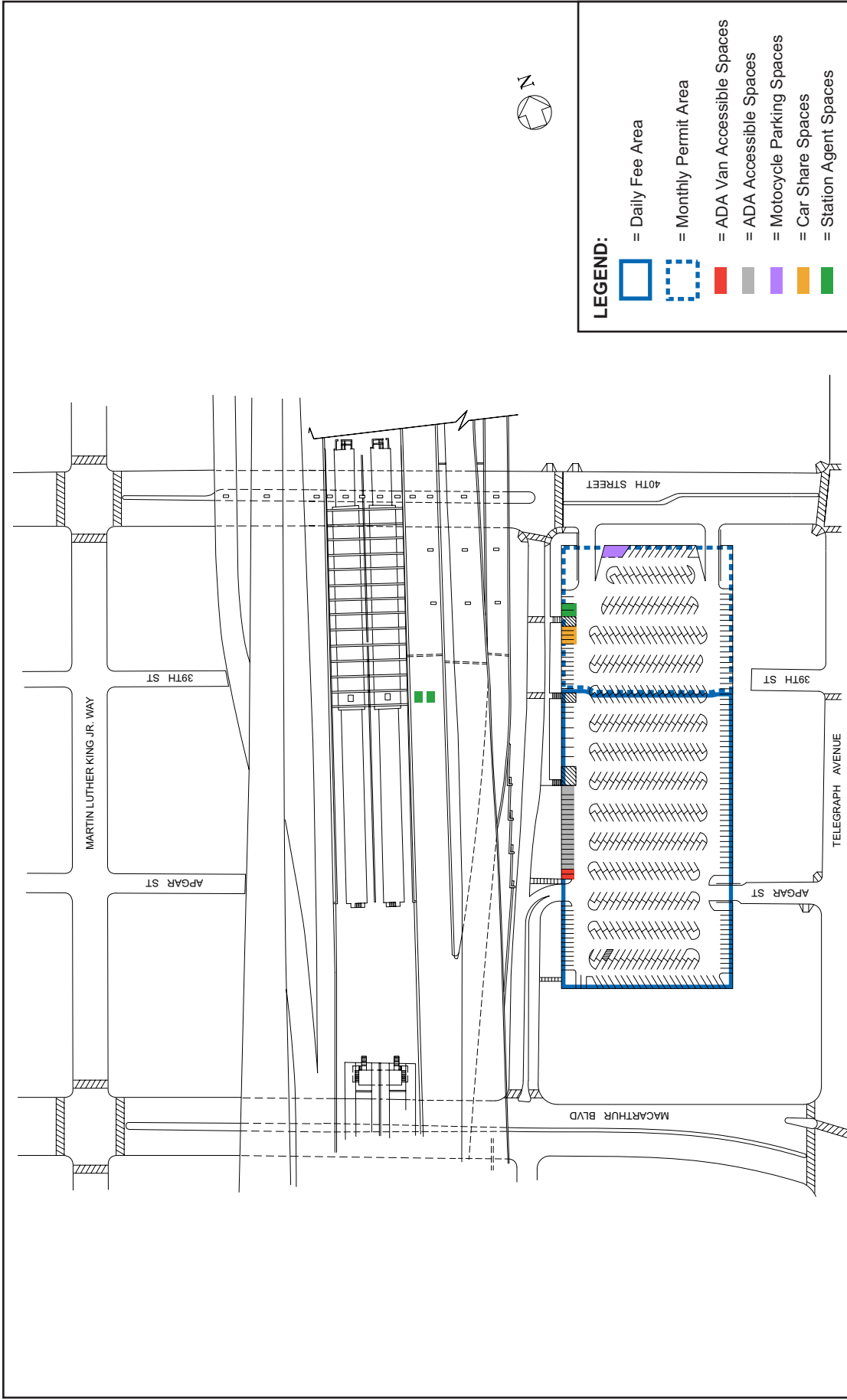
- 420 Daily Fee Spaces – First come, first served spaces, available all day, which require a daily fee of \$1.
- 18 Daily Reserve Spaces – Permits are \$4.50 for single day use and must be purchased in advance via the BART website. Spaces are reserved until 10:00 AM, when they become available first come, first served for a daily fee of \$1.
- 160 Monthly Reserved Permit Spaces – Permits for monthly reserved parking guarantee users a space within a designated parking area until 10:00 AM. Any monthly reserved permit spaces that are not filled by 10:00 AM are available to passengers arriving after 10:00 AM and require a daily fee of \$1. Currently, 53 patrons are on the waitlist for a monthly permit. The monthly reserved spaces cost \$84 per month and must be purchased in advance via the BART website.
- 14 ADA-Accessible Spaces – First come, first served, ADA-accessible, spaces, which require a daily fee of \$1.
- 4 Car Share Spaces – Reserved for City Car Share and Flex Car vehicles.
- 2 Station Agent Spaces – Spaces reserved for BART personnel.
- 8 Motorcycle Spaces

The parking lot also provides eight motorcycle parking spaces. There are currently no designated carpool parking spaces. BART station agents are also allowed to park two vehicles in the fare gate plaza.

Demand

Based on parking occupancy counts conducted within the MacArthur BART Station parking lot in October 2006, the daily fee spaces were fully occupied by 7:40 AM. At 9:00 AM, 78 of the reserved permit spaces were available, and by noon, all of the parking spaces were occupied.

At 10:00 AM reserved spaces become available as daily fee spaces. Fall 2005 parking survey data shows that available spaces fill quickly after 10:00 AM. Only six of the eight motorcycle parking spaces were occupied throughout the day.



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MacArthur BART Station Access Feasibility Study

CURRENT STATION PARKING FACILITIES

FIGURE 7-6

On-Street Parking

Existing on-street parking is available in areas surrounding the BART station as described below.

Supply

Within a 1/4-mile of the MacArthur BART station, which roughly corresponds with the distance patrons feel comfortable walking from their car to a station, there are approximately 1,080 on-street parking spaces on the surrounding neighborhood streets. The number of spaces was estimated through a field review in May 2006 of neighborhood streets within the 1/4-mile area, as shown in Figure 7-7. Parking spaces were not generally delineated, so the number of spaces on a given block face was estimated using an average of 22 feet per parking space.¹³ Curb cuts, no-parking zones, and corners were not included in the block face length calculation. On streets with marked spaces, the spaces were simply counted.

The parking spaces in the surrounding neighborhood streets are generally free, with the exception of some metered spaces along Telegraph Avenue. Almost all of the parking is unrestricted in duration and does not require a residential permit. However, there are sections of Telegraph Avenue, Martin Luther King, Jr. Way, and some neighborhood streets east of Telegraph Avenue that have two-hour restricted parking spaces. Most of the residential streets within the area have street cleaning twice a month between 9:00 AM and noon, and on-street parking is prohibited during this time. The major streets in the area (i.e., Broadway, Telegraph Avenue, and West MacArthur Boulevard) have street cleaning three times a week between midnight and 3:00 AM.

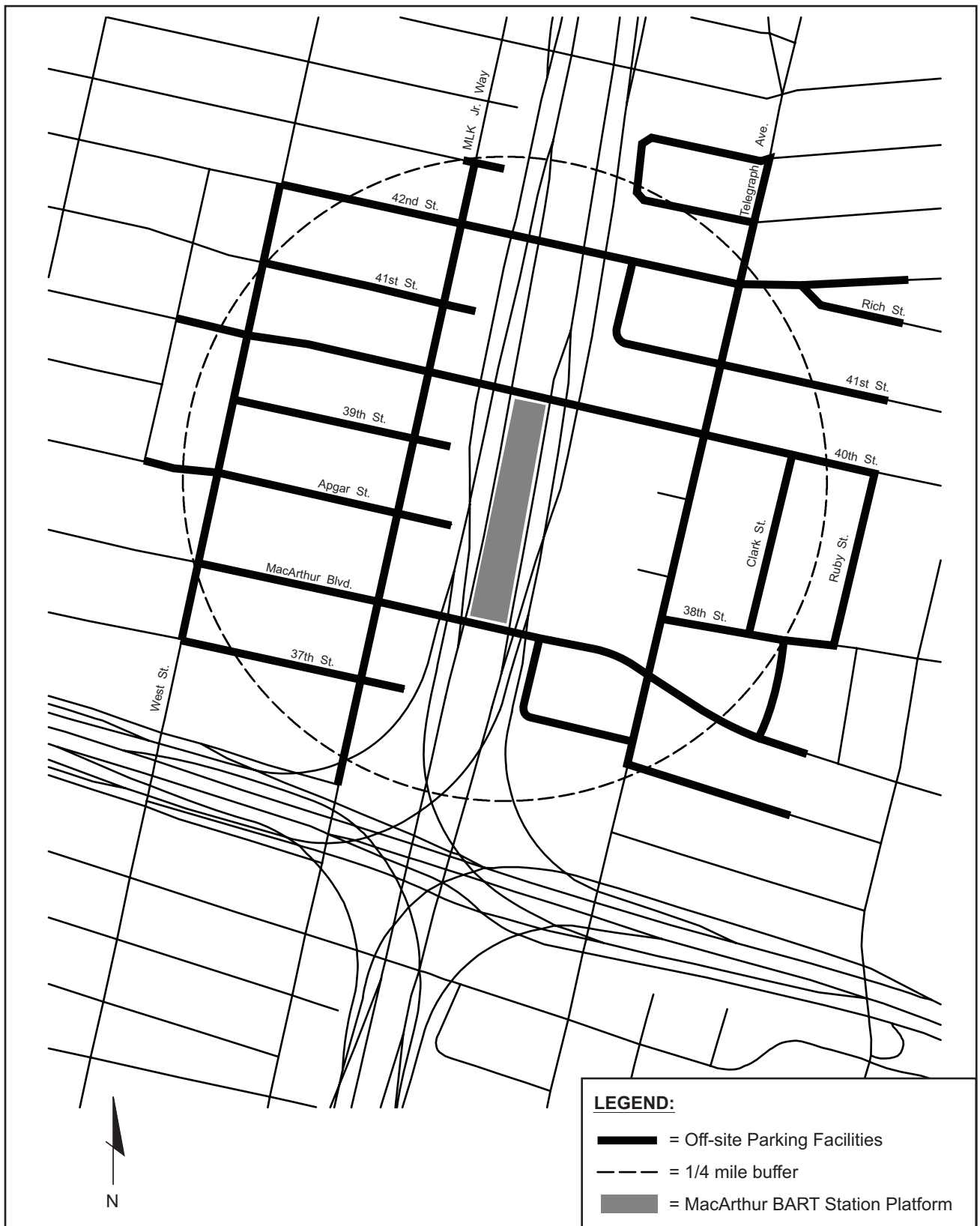
Demand

To estimate the number of MacArthur BART station patrons that park on the surrounding neighborhood streets, a parking occupancy count and license plate survey were conducted in May 2006,¹⁴ after BART instituted parking fees for all of the MacArthur BART Station parking lot spaces. The parking occupancy counts were conducted within the 1/4-mile area every 30 minutes during three periods of the day: the morning peak from 6:30 AM to 10:00 AM, the midday from 11:00 AM to 1:00 PM, and the evening peak from 4:00 PM to 6:30 PM. The license plate survey was conducted on each street at 6:30 AM and a second time at 10:00 AM. By having a list of the vehicles present at 6:30 AM and 10:00 AM, vehicle turnover was determined, as well as how many vehicles stay in the neighborhood, how many leave and how many arrive.

Based on the results of the on-street parking analysis, the maximum number of vehicles parked within a 1/4-mile of the MacArthur BART station was 805 at 4:00 PM, which represents 75 percent of the total parking spaces. Additionally, of the 735 vehicles parked on-street at 10:00 AM, 216 were estimated to be BART patrons. This estimate is equal to 90% of the 240 counted in the license plate survey as having been parked in the neighborhood after 6:30 AM.

¹³ Based on the City's standard parallel parking length as stated in Zoning Code Section 17.94.060; a conservative estimate as a typical car is about 16 feet long.

¹⁴ Survey conducted on Tuesday, May 9, 2006.



The parking occupancy levels reached a maximum of 75 percent for the study area as a whole. This indicates that patrons can find vacant parking spaces within a 1/4-mile of the MacArthur BART station throughout the day. On-street parking occupancy in the area east of Highway 24 peaked at 80 percent, while occupancy for the area west of Highway 24 peaked at 60 percent.

PLANNED IMPROVEMENTS

The following roadway improvements are planned in the near future:

- The Shattuck Avenue/52nd Street intersection (#1) will be modified to provide exclusive left-turn lanes on the northbound and southbound Shattuck Avenue approaches. Signal operations will also be modified to provide protected left-turn phases in the eastbound and westbound approaches, a permitted left-turn phase in the southbound approach, and a protected/permitted left-turn in the northbound approach. These improvements are expected to be implemented in Winter 2008.
- As part of the proposed Kaiser Medical Center project, the Broadway/MacArthur Boulevard intersection (#22) will be reconfigured to convert a shared through/right-turn lane to an exclusive right-turn lane in the northbound and southbound approaches. This improvement, part of conditions of approval for the Kaiser project, is expected to be implemented by 2015.
- AC Transit ultimately plans to convert the 1R line to a Bus Rapid Transit (BRT) line. The proposed BRT project would improve bus operations by allowing buses to travel on dedicated lanes between Berkeley, Oakland, and San Leandro. In the project vicinity, BRT would generally eliminate one through lane in each direction and narrow Telegraph Avenue to one through lane in each direction. AC Transit published a Draft Environmental Impact Statement / Environmental Impact Report (EIS/EIR) for the implementation of the BRT project in May 2007. There are currently no finalized design plans, an assurance of full funding, or approvals from AC Transit, the City of Oakland and other public agencies.
- 40th Street/ MacArthur Transit Hub Project: Traffic signals are planned at the BART Frontage Road intersection with 40th Street.

These improvements are not repeated in the recommended Access Strategies presented in this study because they are expected to be completed in the near-term, independent of the findings of this study and/or the proposed Transit Village development.

AUTO ACCESS OBJECTIVES

Based on existing conditions and anticipated access needs associated with a shift to non-auto access modes, the objectives for auto access to the MacArthur BART Station include:

1. Provide efficient but slow-speed vehicle access within the station area
2. Provide intuitive wayfinding, including signage to BART and residential parking areas
3. Provide sufficient area for existing and expected increasing drop-off/pick-up and taxi access modes
4. Implement parking management techniques to reduce over-saturation and vehicles "cruising" for parking within the station area
 - a. Provide short-term on-street parking for Transit Village retail
 - b. Seek opportunities to better manage existing parking resources

8. ACCESS STRATEGIES: OVERVIEW

In support of BART's long-term mode share and ridership goals for MacArthur BART Station, this chapter outlines a tiered set of strategies with the following objectives:

- Addressing ridership and access concerns associated with a potential reduction in on-site parking supply (through ridership and parking strategies)
- Capitalizing on the value of existing and proposed physical infrastructure improvements in terms of their capacity to facilitate non-auto station access and off-peak hour and direction ridership (through transportation demand management (TDM) and wayfinding strategies)

Several Tier Zero Strategies, which are strategies that have already been committed to and/or funded for the station area, are also presented. Additionally, a Travel Demand Management (TDM) Coordinator/ Access Strategy Administrator position is discussed as an overall Implementation Strategy.

The subsequent strategies are classified into three tiers:

- Tier One Strategies are the most feasible in terms of their ease of implementation and cost-effectiveness
- Tier Two Strategies are less feasible because of perceived barriers to implementation and reduced cost-effectiveness. Many strategies require the support of a TDM Coordinator for administration, funding, or oversight
- Tier Three Strategies may or may not be feasible and are likely not appropriate for short-term implementation or without further study because of perceived barriers to implementation and/or poor cost-effectiveness

The Access Strategies assume a Transit Village development on the surface parking lot, a reduction in BART patron parking on-site, and a residential parking permit program (RPP) in the surrounding residential neighborhoods. However, project-specific detail for the Transit Village development is not considered for these strategies, making this menu applicable for any potential development. Additionally, where noted some strategies could be implemented, and would be beneficial, under current conditions (i.e., with or without a Transit Village development).

This chapter presents an overview of each of the strategy topics considered and a brief discussion of the overall Implementation Strategies. The following chapters present a summary of the strategies in each of the three tiers, including the anticipated ridership benefits and capital and 10-year operating costs associated with each. Appendix A includes detailed assumptions for the cost and ridership estimates.

Overview of Strategy Topics

Parking Strategies

The recommended parking strategies have four primary purposes:

- To encourage non-auto access to BART and the Transit Village, while recognizing that not all BART and Village patrons have a non-auto access alternative
- To reduce the loss of BART ridership from the elimination of up to 50% of the current on-site patron parking capacity
- To support local businesses by maintaining parking availability in the retail areas

- To improve community livability and mitigate on-street BART patron parking in residential areas

Transportation Demand Management Strategies

Several transportation demand management (TDM) strategies are recommended to complement the parking strategies. The TDM strategies largely focus on current BART riders who drive to the station and will be affected by reduced parking because of the proposed project. Many of these strategies also tangentially create ridership incentives for BART and other transit modes.

Ridership Strategies

While the TDM strategies principally focus on maintaining current ridership levels despite the parking supply reductions, ridership strategies focus on expanding BART ridership beyond current levels. These strategies also focus on increasing off-peak hour/direction ridership, making them particularly important given current BART capacity constraints.

Wayfinding Strategies

Finally, several wayfinding strategies are recommended. At many BART Stations throughout the system there is a need for improved wayfinding. A primary goal of enhanced wayfinding is to solve the "last mile" connection problem by facilitating transit, bicycle, and pedestrian trip planning to and from BART. Additionally, pedestrian and bicycle safety will be improved by delineating clear paths and access points for these modes to, from, and within the Transit Village and Station Area.

Wayfinding is also recommended as a strategy to encourage BART travel to the various destinations that surround the MacArthur Station. Specifically, additional off-peak and weekend travel to destinations such as the Temescal, Emeryville, and Piedmont Avenue shopping and restaurant districts as well as the Kaiser and Oakland Children's hospitals could be encouraged by improved wayfinding.

TIER ZERO STRATEGIES

The following strategies are designed to respond immediately to the changing access needs that would arise with a reduction of on-site parking. This tier includes those strategies that have already been planned or funded.

Short-Term Targeted Marketing to Patrons

As a Tier Zero strategy, targeted marketing to patrons would address concerns regarding the displacement of existing auto-access users. Marketing should include incentives for transit ridership, such as free or reduced transit fares.

A short-term, targeted marketing strategy for the MacArthur BART Station is one of the most important components of a plan to address the loss of parking spaces for BART patrons with the proposed development. This may include the following steps:

1. Place postcards on windows of existing BART patron vehicles and flyers at station exits
2. Postcards and flyers will invite patrons to meet face-to-face with a Marketing Coordinator, call in, or access a web page with more information on travel choices
3. Patrons who meet, call, or access the webpage will receive customized travel options information in an easy-to-understand, quick reference form that can be posted on a refrigerator

4. The information will be specific: identifying bus routes, nearby bus stop locations, schedules, information on bike routes, bike parking options, etc.

As encouragement to participate in direct marketing, participants would receive an electronic TransLink card valued at \$20 (for use on BART and other forms of transit). This incentive would accomplish two goals: (1) increase direct marketing efficiency, and (2) promote TransLink when fully deployed.

A permanent TDM Office in the Transit Village, as recommended below, would increase the long-term effectiveness and reach of the targeted marketing strategy.

Table 8-1 summarizes the potential costs and benefits associated with targeted marketing.

TABLE 8-1 SHORT-TERM TARGETED MARKETING TO PATRONS: POTENTIAL COSTS AND BENEFITS	
Estimated Cost: \$125,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Short-term Marketing Coordinator - Website development and hosting - Promotional Materials - TransLink incentives 	<ul style="list-style-type: none"> - With strong targeted marketing, BART riders currently accessing BART via auto may be able to find convenient alternative modes of traveling to BART, reducing the impact of the reduction in parking spaces - May increase BART ridership - Information for unscheduled commutes, such as Guaranteed Ride Home, may lessen anxiety regarding emergency situations to BART riders considering alternative mode choices
<p>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</p>	

Planned and/or Funded Station Area Improvements

A series of planned and funded improvements are being made in anticipation of the Transit Village project.

Funded Improvements

Bicycle and Pedestrian Access

The City of Oakland, BART, and the MacArthur BART Citizen’s Planning Committee (CPC) worked with the design team of Wallace, Roberts, and Todd (WRT) to create a design plan for improving bicycle and pedestrian access to the MacArthur BART Station in 2004. The following improvements are funded as part of the 40th Street/MacArthur Transit Hub Improvement project, and are planned to begin construction in early 2008:

- Crosswalk improvements at the 40th Street/Martin Luther King Jr. Way and 40th Street/Telegraph Avenue intersections
- Sidewalk bulb-outs on the west side of the 40th Street/Telegraph Avenue intersection
- Installation of a new traffic signal with pedestrian crossing phases at the 40th Street/Frontage Road intersection
- Construction of an additional crosswalk on the west side of the 40th Street/Frontage Road intersection, including the creation of a mid-block pedestrian refuge in the median

- Pedestrian lighting and sidewalk treatments along 40th Street
- Bicycle and pedestrian wayfinding signage to the station
- Underpass lighting improvements and surface treatments

BART has also received funding to install 38 electronic bicycle lockers to replace existing lockers.

Earthquake Safety

Additionally, by 2014, portions of the MacArthur BART station will be seismically retrofitted as part of the BART Earthquake Safety Program. Station upgrades may include aerial structure upgrade (increased foundation sizes, jackets around concrete columns, additional foundation piles, etc.), as well as strengthening platform connections, canopies, and stairways. For mechanical, electrical, and other equipment, upgrades will consist of additional anchorage.

Wayfinding

BART has hired a consultant to program, fabricate, and install exterior wayfinding signs within the station plaza and within one mile of the station. These signs will focus on pedestrian and bicycle wayfinding and are expected to be implemented by the end of 2008. Enhanced interior wayfinding signs are also planned for the MacArthur BART Station as a component of an overall BART interior signage program. Signs will comply with the *BART Wayfinding and Signage Standard*. The MacArthur Station will be the first station to receive new signage, with the installation expected in the next six months.

Planned Station Improvements

In 2003, BART produced an internal memorandum outlining proposed interim and full build-out station capacity improvements for the MacArthur BART station. Completed after BART's *Core Stations Capacity Study*, this document was developed with input from all major BART departments including planning, operations, property development, customer service, and BART police. The horizon year for the station improvements is 2025. BART offered a two-phase approach to enhancing the capacity at the MacArthur BART Station:

- Interim Plan (Phase 1 – completion date unknown):
 - Expand the existing pay area to include six new fare gates
 - Improve the emergency exit stairs
 - Add two inter-platform bridges
- Full Build-Out Plan (Phase 2 – completion date unknown):
 - Construct two new staircases from the expanded passenger waiting area to the platforms
 - Construct two new escalators from the expanded passenger waiting area to the platforms
 - Construct canopies to fully cover the platforms

OVERALL STRATEGY IMPLEMENTATION

Transportation Demand Management (TDM) Coordinator/Overall Access Strategy Administration

In addition to short-term marketing, an optional, longer-term TDM Coordinator or Access Strategy Administrator position would be beneficial to address the access challenges associated with a loss of BART on-site parking. The TDM Coordinator could be a shared coordinator for BART and the Transit Village and be housed in the proposed Transit Village. He or she would promote TDM programs, activities, and features to all employees, residents, and patrons, and would conduct a monitoring/reporting process. The TDM Coordinator could also develop an on-site transportation information center with BART, AC Transit, Emery-Go-Round and other shuttles' schedules and maps.

The TDM Coordinator position could further evolve into a partnership with the City of Oakland and form an office with several staff members. The TDM staff could then be responsible for parking management, pricing, and enforcement, as well as a Parking Benefit District for the station area, as recommended in Tier Two. The TDM staff would then implement or support the following parking strategies (as presented in the following sections):

- Unbundled, Shared Parking
- Remote Parking
- Residential Parking Permits Sales to BART Patrons
- Preferential Parking for Carpool/Vanpool and BART Discounts

Table 8-2 summarizes the potential costs and benefits of a TDM Coordinator.

TABLE 8-2 TDM COORDINATOR: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost:\$3,520,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
- Personnel and operating costs of hiring a TDM Coordinator	- Stronger and better maintained TDM program - Consistent evaluation of the TDM program - Increased visibility of the TDM program for transit riders - Supports most other parking and TDM strategies - Ensures that all appropriate strategies are applied cost-effectively
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

9. TIER ONE STRATEGIES

Tier One Strategies are considered the most feasible and cost-effective strategies in support of BART's access and ridership goals. Strategies are grouped as either primary or supporting strategies. Additionally, some strategies would only be recommended/ applicable with a Transit Village development, while others could be employed to improve existing conditions. Table 9-1 summarizes the estimated ridership benefits and capital and 10-year operating costs associated with each strategy.

Following the summary table is a description and a detailed table with potential costs and benefits for each strategy.

Tier One Strategy	Ridership Benefit (Patrons)	Capital Cost	Operating Cost (Annual)
Preferential Parking for Carpool/Vanpool in the BART Lot/Garage	60	\$5,000	\$0
10-Hour Metered Parking on 40 th Street and West MacArthur Boulevard	80	\$30,000	(\$50,000)
Electronic Bicycle Lockers in the BART Plaza	insufficient data to support estimate	\$45,000	\$5,000
AC Transit and Emery-Go-Round Access Improvements , including shelters, real-time bus information, and express service	100	\$1,000,000	\$180,000
Hospital Shuttles Access Improvements with new traffic signal at Frontage Road and West MacArthur Boulevard	150	\$250,000	\$8,000
Expanded Motorcycle and Scooter Parking in the BART Parking Lot/Garage	24	\$1,000	\$0
Attended Parking in the BART Parking Lot/Garage	150	\$75,000	\$150,000
Carpool and Vanpool Transit Discounts for BART patrons	supporting strategy	\$50,000	\$25,000
Wayfinding Signs within the Station Area to encourage non-auto access and off-peak/direction travel	supporting strategy	\$40,000	\$1,000
Safety Stop to accommodate bus and shuttle patrons with on-demand stops during nighttime service	supporting strategy	\$0	\$0
Wayfinding Signs to/from the Station in Nearby Neighborhoods to encourage non-auto access and off-peak/direction travel	supporting strategy	\$60,000	\$1,000
Station Area Maps to improve wayfinding, encourage non-auto access and off-peak/direction travel	supporting strategy	\$25,000	\$1,600
Market Rate BART Parking in the BART Parking Lot/Garage	supporting strategy	\$0	(\$450,000)

**TABLE 9-1
 TIER ONE STRATEGIES**

Tier One Strategy	Ridership Benefit (Patrons)	Capital Cost	Operating Cost (Annual)
Guaranteed Ride Home Program (ride insurance) marketing to increase usage of current Bay Area programs; Enhanced as a Supplemental Guaranteed Ride Home Program for BART patrons not eligible for current programs (with a Transit Village Development)	supporting strategy	\$10,000	\$8,200
With a Transit Village Development Only:			
Remote Parking at Three Local Churches	200	\$25,000	\$20,000
Passenger Drop-Off Improvements to reduce conflicts between shuttles, autos, bicyclists, and pedestrians	supporting strategy	\$20,000	\$2,000
Station and Village Branding , including street furniture, signage, lighting, etc.	supporting strategy	\$150,000	\$2,000
Car Sharing opportunities for Transit Village Residents and Employees	supporting strategy	\$0	\$30,000
Source: Fehr & Peers, March 2008; Cost and benefit calculations and assumptions are presented in Appendix A			

PREFERENTIAL PARKING FOR CAR/VANPOOL

Description: Convenient parking spaces may be reserved for high-occupancy vehicles (HOVs) to encourage ridesharing. In the short-term, up to 30 spaces could be reserved for 2+ person carpools on a first-come, first-served basis or by monthly permit. This number could increase if there is sufficient demand. A Guaranteed Ride Home program (Tier One) and a ridematching program (Tier Two) may further encourage ridesharing.

Feasibility: Preferential spaces could be striped and signed within the BART parking lot or garage at a low cost. If this strategy is implemented with attended parking, there would be minimal enforcement costs as the parking attendant could monitor vehicle occupancy. Experience with carpool parking at other BART stations suggests that without a parking attendant to monitor compliance, carpool violations may be significant. BART is considering revamping the carpool parking program to allow online applications for permits and automatic permit revocation with violations (via random enforcement). A strict enforcement method such as this would be necessary at the MacArthur Station to prevent abuse of carpool parking without an attendant.

Table 9-2 summarizes the potential costs and benefits of preferential parking spaces for HOVs.

**TABLE 9-2
PREFERENTIAL SPACES FOR HOVs: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$5,000		Estimated Ridership Benefit: 60	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Striping and signing costs - Challenging enforcement - Increased enforcement and administration costs 		<ul style="list-style-type: none"> - Reduced single occupant vehicle access to BART/ increased HOV access - Increased person capacity at BART lots which may lead to increased ridership - Reduced VMT 	
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A			

10-HOUR METERED PARKING ON 40TH STREET AND WEST MACARTHUR BOULEVARD

Description: The provision of 10-hour metered parking along 40th Street and West MacArthur Boulevard from Martin Luther King, Jr. Way to Telegraph Avenue would provide an estimated 40 additional on-street parking spaces for BART patrons. This strategy could also provide a significant revenue stream that could be captured for improvements in the neighborhood through a Parking Benefit District (as discussed in Tier Two).

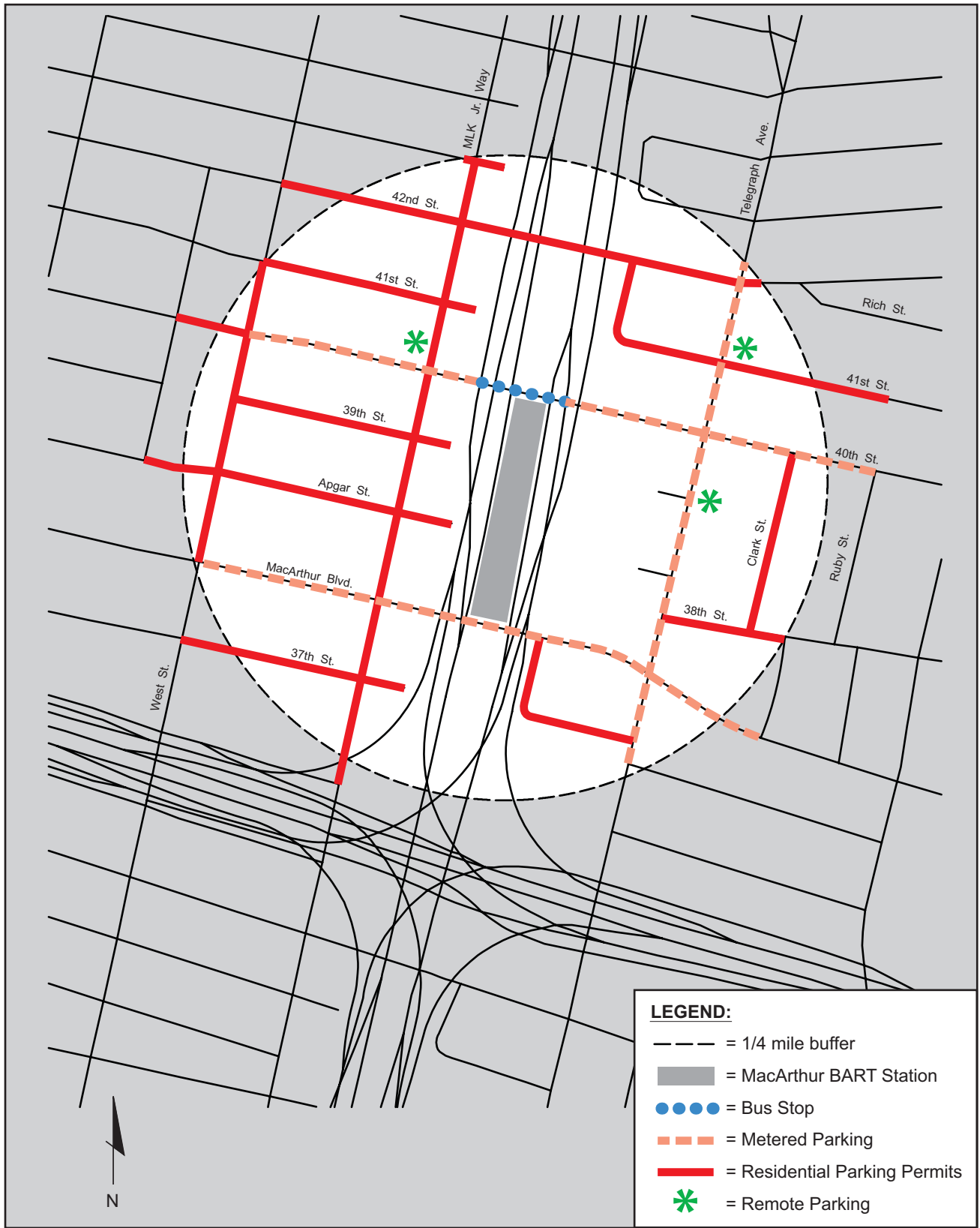
Feasibility: To save installation costs and allow for flexible pricing, pay and display parking meters could be installed along 40th Street and West MacArthur Boulevard. Because parking meters are currently present in the immediate area (along Telegraph Avenue), the installation of additional meters would not result in significant additional enforcement costs.

Table 9-3 summarizes the potential costs and benefits associated with 10-Hour Metered Parking.

Figure 9-1 depicts the proposed station area parking locations, included metered, permit, and shared parking areas (shared/remote parking is recommended with development only, as detailed below).

**TABLE 9-3
10 HOUR METERED PARKING: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: (\$470,000)		Estimated Ridership Benefit: 80	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Maintenance cost for new pay and display meters 		<ul style="list-style-type: none"> - Accommodates additional BART patron parking immediately adjacent to the Station Area - Significant revenue source - Revenue generated by citations 	
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A			



PROPOSED METERED AND PERMIT PARKING LOCATIONS

ELECTRONIC BICYCLE LOCKERS

Description: The MacArthur BART Station currently provides short-term bicycle racks for approximately 84 bicycles and long-term lockers for 30 bicycles. Based on bicycle rack/locker occupancy counts conducted at the station in October 2006, there were 63 bicycles locked to the racks and 4 bicycles in lockers at 12:00 PM. According to BART's *Bicycle Access and Parking Plan (2002)*, all of the bicycle lockers at the MacArthur station are rented and there is a wait list of 38 people. The high demand for lockers despite their low usage is likely the result of each locker being rented to an individual on an annual basis. Therefore, when a locker is not being used, other cyclists cannot access the empty locker. Electronic-access bicycle lockers would eliminate the need for individual keys and would rely on electronic personal identification numbers instead. This would allow access to any available locker.

Feasibility: BART currently has funding to provide 38 new electronic bicycle storage lockers at the station in the plaza area to replace the existing single-user lockers.

BART's *Bicycle Access and Parking Plan (2002)* calls for the following bicycle parking provisions:

- B-1. Provide adequate Class 1 parking (lockers or other long-term parking) to meet existing demand plus an additional 10 percent for future growth.
- B-2. Provide adequate Class 2 parking (racks or other short-term parking) to meet existing demand plus an additional 30 percent to accommodate seasonal fluctuations and future growth.
- B-12. Consider including bike stations as part of future Transit Village redevelopment projects on BART property especially when demand for Class 1 parking exceeds 100 spaces.

Based on these recommendations and the BART bicycle usage data presented above, bicycle parking for BART patrons should include an additional 42 Class I lockers (38 to meet the existing waiting list demand and 4 to meet future growth), for a total of 72 lockers, and a total of 82 Class 2 bicycle rack spaces. Given the flexibility of the new locker system, the level of use should be monitored to determine if demand is met. Anticipating that additional capacity will be needed, a Tier Two recommendation calls for the consideration of high capacity bicycle parking and a Tier Three recommendation calls for an attended bike station.

Table 9-4 summarizes the potential costs and benefits of electronic bicycle lockers.

TABLE 9-4 ELECTRONIC BICYCLE LOCKERS: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$95,000	Estimated Ridership Benefit: N/A
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Maintenance costs 	<ul style="list-style-type: none"> - Reduced bicycle theft - Increased bicycle access to the Station - Reduced VMT
<p>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</p>	

AC TRANSIT AND NEIGHBORHOOD SHUTTLE ACCESS IMPROVEMENTS

Description: Four Alameda-Contra Costa Transit District (AC Transit) bus lines and five shuttle services directly serve the MacArthur BART Station. Additionally, four AC Transit bus lines pass within one block of the station and four AC Transit school bus routes serve the station. Although the transit access mode share is already high at MacArthur BART, improving AC Transit and Neighborhood Shuttle access to the station could further encourage transit access and perhaps increase BART ridership.

AC Transit

Currently, all of the AC Transit buses that directly serve the station stop along 40th Street, under the Highway 24 overpass, just north of the faregates. Up to four buses access the 40th Street bus stop at a time. Based on observations, the stop has signed capacity for only three buses. AC Transit staff suggests that additional space will be needed to accommodate future bus operations at the site.¹⁵

- Recommendation: Consider expanding the 40th Street bus stop area to the west to provide space for four or more buses and relocating the taxi stand farther west on the south side of 40th Street.

Additional AC Transit bus stops are located on Telegraph Avenue (just north of West MacArthur Boulevard and just north of 40th Street) and on Martin Luther King, Jr. Way at 40th Street. Telegraph Avenue and 40th Street serve as major bicycle and pedestrian access routes to the BART station, and are major corridors for AC Transit buses. Potential conflicts may occur between buses and pedestrians and bicyclists, and between vehicles and pedestrians accessing or leaving bus stops. Recommendations to address these conflicts are included in the pedestrian and bicycle infrastructure strategies in Tier Two.

Rapid bus service along Telegraph Avenue is likely to improve transit access for some patrons; however, most patrons currently driving to the station do not live within a 1/4-mile buffer of the 1R line. Other improvements that could improve AC Transit access to MacArthur BART include:

- Bus signal actuation
- Real time transit information
- Covered waiting areas at bus stops
- Consolidated bus stops/ express service during peak periods
- Reduced headways

NextBus technology, providing real-time information on bus arrivals, is available on many AC Transit routes, including several that serve the MacArthur BART Station. This information is not currently broadcast at MacArthur BART.

- Recommendation: Display real-time bus arrival information on information boards at bus stops and within the BART Station.

Route reliability and travel time enhancements are recommended over new or expanded bus routes, as most auto access patrons already live within a 1/4-mile buffer of an existing AC Transit route, as discussed in the feasibility section below. Specifically, two AC Transit bus routes serving the MacArthur Station could be enhanced with a focus on access to BART.

¹⁵ Telephone conversation with Tony Bruzzone, AC Transit planner, October 2007.

Recommendations:

- Provide an express “57 R” option during AM and PM peak hours along MacArthur Boulevard from Eastmont Town Center to Emeryville. The express option could make use of queue jump lanes envisioned for the NL Rapid line along portions of MacArthur Boulevard.
- Increase the use of Line C as a mode of access to BART for non-TransBay trips. Signage, real-time information, marketing, and potential fare policy changes would support this expanded use.

While the above recommendations offer significant opportunities for improving AC Transit access to MacArthur BART, the limiting factor for improving transit service to BART in the future will likely be intersection delays and roadway congestion.

- Recommendation: Consider queue jump lanes and signal actuation where feasible along key transit access routes (such as MacArthur Boulevard).

Shuttles

The hospital and Emery-Go-Round shuttles currently access the site via 40th Street, turn onto Frontage Road, stop to unload and load passengers in the designated area, and exit to West MacArthur Boulevard. There are potential conflicts between shuttle buses, private vehicles, pedestrians, and bicyclists near the shuttle bus stops, and along Frontage Road.

There are no freestanding shelters for bus or shuttle users at the MacArthur BART station; however, shelter is provided by the Highway 24 ramps that cover the majority of the station plaza area. The ramps also shelter passengers waiting for AC Transit along 40th Street. Passengers waiting for shuttles on Frontage Road may wait under the freeway ramps, but the ramps are located 25 feet from the curb and only cover approximately half of the shuttle curb length. The designated stops for the Emery-Go-Round and the Caltrans bicycle shuttle are past the elevated ramps and have no sheltered waiting areas.

- Recommendation: Provide shelters adjacent to shuttle stops for pedestrians waiting for shuttles.

Scheduled upgrades to 40th Street and likely improvements to West MacArthur Boulevard as part of a Transit Village project (including a signal at Frontage Road and West MacArthur Boulevard) would result in significant operational improvements for shuttles accessing MacArthur BART Station. Currently, the Kaiser and Summit Medical Center shuttles exiting the BART Station must turn right from the Frontage Road to westbound West MacArthur Boulevard, resulting in circuitous routes to serve their respective sites. A traffic signal at the Frontage Road/West MacArthur Boulevard intersection would allow shuttles to turn left from the Frontage Road to eastbound West MacArthur Boulevard, decreasing the travel time from the BART Station to Kaiser and Summit Medical Centers by up to one-half.

- Recommendation: With the reduction in travel time, seek opportunities for collaboration with the private shuttle providers such as Kaiser Hospital for more extensive neighborhood coverage, as many BART patrons already make use of these free shuttles.

Discussions are also underway between AC Transit and Emery-Go-Round regarding AC Transit’s taking over Emery-Go-Round operations.

- Recommendation: Should this consolidation occur, the current strong ridership levels on Emery-Go-Round suggest that a free fare and the Emery-Go-Round branding should be maintained.

Regardless of whether operations are combined with AC Transit, Emery-Go-Round service could be enhanced with additional transit signal priority locations. Emery-Go-Round currently has transit signal priority technology on all vehicles; however, it is not yet operational with traffic signals in Emeryville pending significant planned

development. The use of this technology will be especially important if traffic conditions deteriorate along transit routes.

- Recommendation: Coordinate traffic signal priority for Emery Go Round vehicles within both Emeryville at Oakland, especially along the 40th Street/ Shellmound corridor
- Recommendation: Consider providing hospital shuttles with transit signal priority technology¹⁶

Taxis. Currently, there is a taxi stand west of the AC Transit stop on the south side of 40th Street. Due to crowding of AC Transit buses on 40th Street and the high number of bus riders at the site, the taxi stand may need to be relocated, possibly further west on 40th Street.

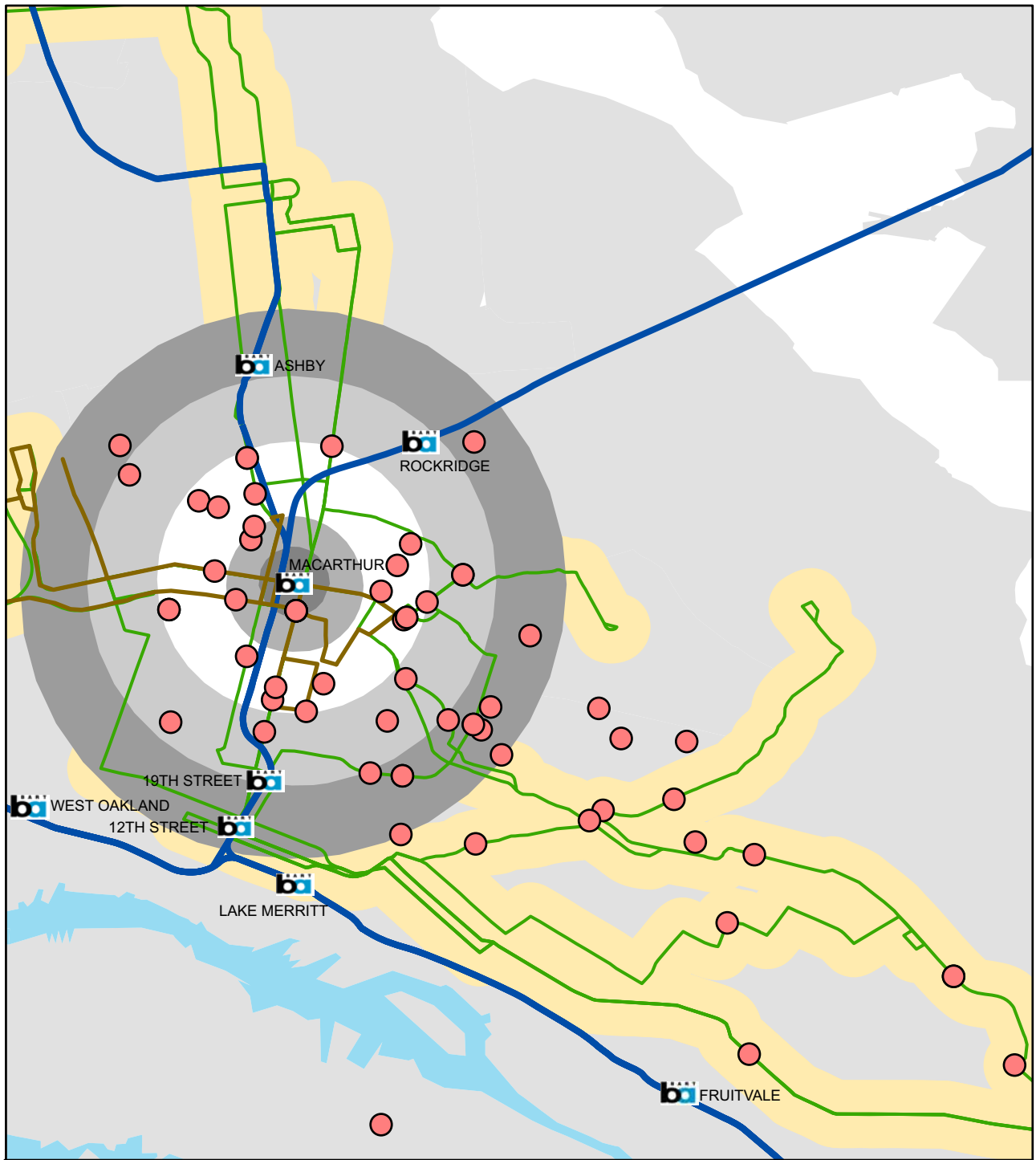
- Recommendation: During daytime hours, re-locate the existing taxi zone farther west on 40th Street, if needed.
- Recommendation: Consider designating an evening (i.e. 7:00 PM and later) taxi zone closer to the BART station to shorten the walking distance and increase personal safety.

Feasibility: Despite significant transit access options in the neighborhoods surrounding the station, some BART patrons still drive to the station because frequent and/or convenient transit access is not available to connect their homes to the station. GIS analysis of driver origin information and existing transit routes demonstrates that the majority of drive alone access trips originate from within 1/4-mile buffers of AC Transit lines or shuttles directly serving the MacArthur BART Station. This is illustrated in Figure 9-2. Thus, these drive alone trips are likely occurring because parking is cheap or free at/near the station or the bus service is inconvenient, unreliable, etc. Figure 9-3 illustrates that a transit option is also available for most patrons who are dropped off at the station.







Many BART patrons who currently access the station by auto would therefore have a fallback option to AC Transit or a neighborhood shuttle if parking supply is reduced. However, this option may be significantly less convenient for many patrons, especially those living farther from the station and along local bus routes with frequent stops. Transit improvements should be targeted at improving reliability and efficiency, especially during peak hours.

Table 9-5 summarizes potential costs and benefits of improved AC Transit and neighborhood shuttle service to the Station.






¹⁶ Pending a City of Oakland feasibility study

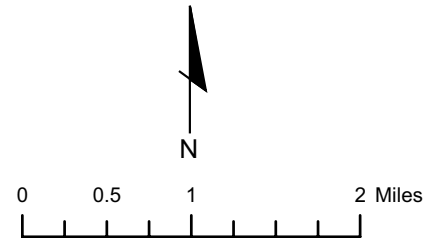


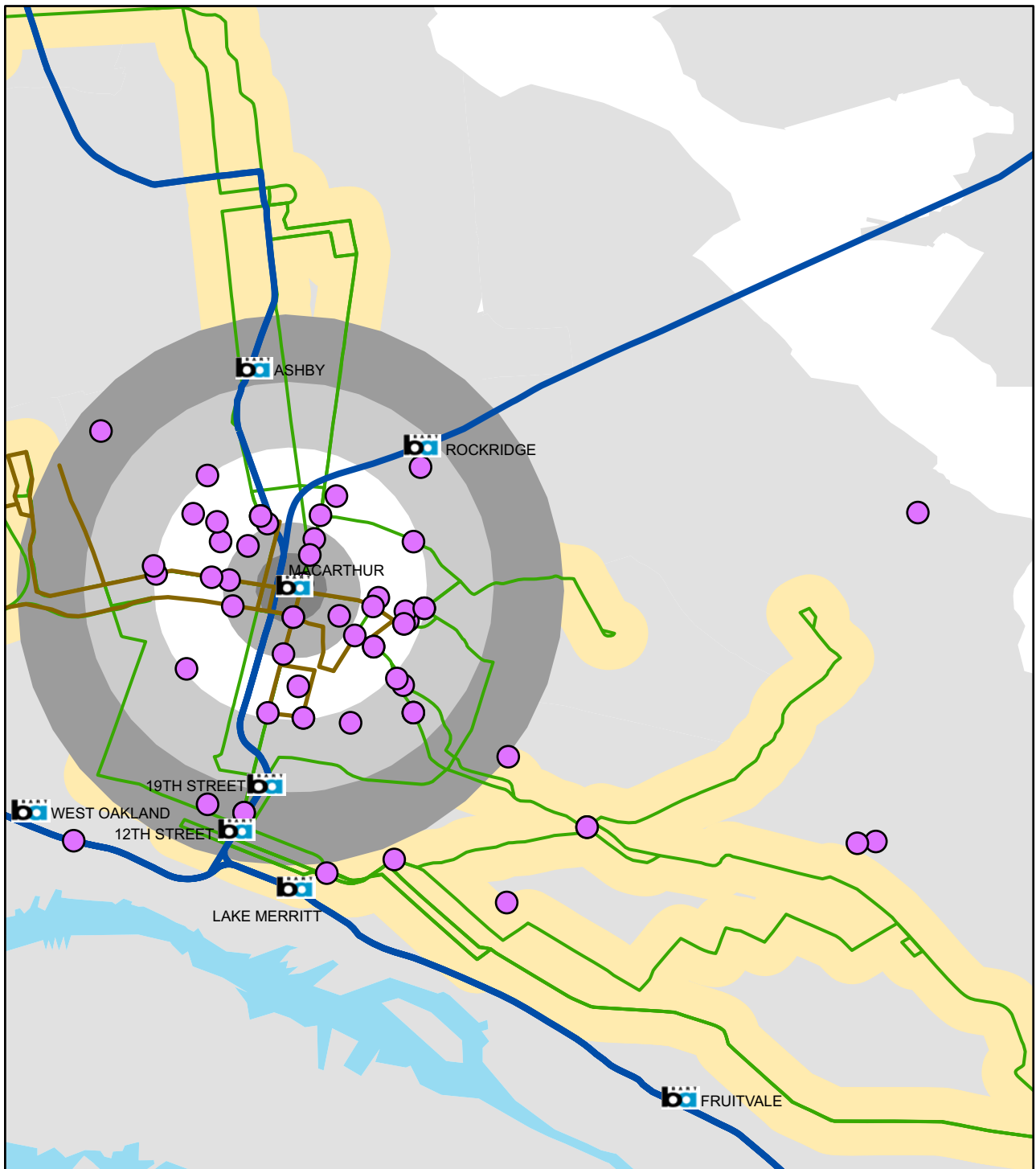
LEGEND:

-  Drove Alone Access Mode
-  Shuttles
-  BART Station
-  BART
-  AC Transit Accessing MacArthur BART
-  1/4 mile Bus Route Buffer






Distance from MacArthur BART Station:

-  1/4 mile
-  1/2 mile
-  1 mile
-  1.5 mile
-  2 mile






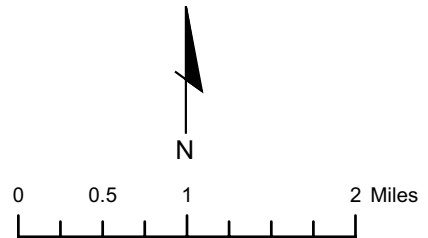


LEGEND:

-  Shuttles
-  BART Station
-  BART
-  AC Transit Accessing MacArthur BART
-  1/4 mile Bus Route Buffer

Distance from MacArthur BART Station:

-  1/4 mile
-  1/2 mile
-  1 mile
-  1.5 mile
-  2 mile



**TABLE 9-5
IMPROVE AC TRANSIT AND NEIGHBORHOOD/ HOSPITAL SHUTTLE ACCESS TO THE STATION:
POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$3,130,000		Estimated Ridership Benefit: 250	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Capital costs (primarily bus stop improvements and real time traffic information signs/ technology) - Operations and maintenance costs - Coordination with private shuttle providers 		<ul style="list-style-type: none"> - Provides non-auto alternative for residents to travel to the BART Station - Fewer vehicle miles traveled (VMT); Mode shift from driving to transit - Reduced parking demand - Increased revenue for transit (AC Transit routes) 	
Source: Fehr & Peers, August 2007			

EXPANDED MOTORCYCLE/ SCOOTER PARKING

Description: Approximately five motorcycles or scooters can be parked within one conventional auto parking space. Expanding motorcycle and scooter parking would require minimal striping and signing changes.

Feasibility: Although motorcycle parking would provide a more efficient use of parking space, there is not a significant latent demand for motorcycle parking. Based on the Fall 2006 Parking and Access Inventory, six of the eight motorcycle spaces were occupied. At other BART stations, such as Ashby Station, where more motorcycle parking is provided, this parking is also underutilized. Scooters may also use the electronic bicycle lockers for additional parking security.

Table 9-6 summarizes potential costs and benefits of additional motorcycle/ scooter parking.

**TABLE 9-6
MOTORCYCLE/ SCOOTER PARKING**

Estimated 10-Year Cost: \$1,000		Estimated Ridership Benefit: 24	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Minor striping and signing costs - Parking may be underutilized 		<ul style="list-style-type: none"> - Represents an efficient use of parking spaces, with up to five motorcycle or scooters parking within one conventional auto space 	
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A			

ATTENDED PARKING

Description: Attended parking employs the service of a parking attendant who organizes efficient parking based on arrival and departure times. This strategy is well suited for a BART station where arrivals and departures come in “waves” with ample time during the day to rearrange vehicles for efficient storage and exiting. Unlike valet parking, where a valet parks a vehicle on arrival and retrieves the vehicle on departure, attended parking relies on organized parking queues and is not intended as a luxury service. Drivers typically park and retrieve their own vehicles. A significant benefit of attended parking is the ability to utilize more capacity in a parking area.

Feasibility: Attended parking has been employed at the Pleasant Hill BART Station for some time, and with much success. The service costs approximately \$25,000/month with a staff of five attendants. Despite some damage complaints (which have now been reduced), attended parking has significantly increased capacity in the parking areas (by as much as 40-45%). While the MacArthur Station parking area will likely be a smaller parking area with structured parking (as opposed to the Pleasant Hill surface parking area), experience with attended parking programs in structured parking suggests that a 25-35% increase in capacity is still likely. This capacity increase assumes that the garage would be designed for self-parking to enable a conversion to self-parking should the demand for parking spaces reduce over time. If attended parking is employed in the existing surface lot, the Pleasant Hill method would be directly applicable.

Parking attendants in the garage would instruct patrons to park on a certain level and in tandem based on their planned return time. Attendants would retain keys to each vehicle to enable shuffling as needed during off-peak hours and upon patron return.

Table 9-7 summarizes the potential costs and benefits of attended parking.

TABLE 9-7 ATTENDED PARKING: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$1,575,000	Estimated Ridership Benefit: 150
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Increased parking costs - Increased administration costs (managing parking service contract) - Inconvenience for drivers 	<ul style="list-style-type: none"> - Increased parking capacity on site - Added security for patrons and their vehicles
<small>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</small>	

TRANSIT DISCOUNTS FOR CAR/VANPOOL

Description: In addition to preferential parking for carpools and vanpools, BART patrons commuting via carpool or vanpool may receive subsidized transit travel as an additional incentive.

Feasibility: HOV discounts for BART fares would require significant monitoring and enforcement to prevent abuse of the system. This could be a responsibility of the TDM Coordinator, who could issue the discounted fares. Because this program is not currently offered within the BART system, it is likely that startup costs could be high, and may not be justified for implementation at only one station.

Table 9-8 summarizes the potential costs and benefits of preferential parking spaces for HOVs.

**TABLE 9-8
 TRANSIT DISCOUNTS FOR HOVs: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$300,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
- Increased enforcement and administration costs	- Reduced single occupant vehicle access to BART/ increased HOV access - Increased person capacity at BART lots which may lead to increased ridership - Reduced VMT - Increased ridership if all carpool/vanpool members were not previously BART riders

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

WAYFINDING SIGNS WITHIN THE STATION AREA

Description: Wayfinding signs should also be placed at strategic locations throughout the station area, providing directions to:

- Faregates
- Parking facilities (auto and bicycle)
- The Information Booth/ TDM Coordinator’s Office in the Transit Village
- Kiss & Ride locations
- Transit and shuttle connection locations
- Area bike routes
- Area walking routes

Because the MacArthur Station is a major transit transfer point, signage for transit and shuttle connection locations is critical. A color-coding scheme with painted (or textured, patterned) bus stops and matching signs and even colored paths could be helpful. In addition, signs should provide information on transit schedules and routes.

Feasibility: BART has hired a consultant to program, fabricate, and install exterior wayfinding signs within the station plaza and within one mile of the station. These signs will focus on pedestrian and bicycle wayfinding and are expected to be implemented by the end of 2008. Enhanced interior wayfinding signs are also planned for the MacArthur BART Station as a component of an overall BART interior signage program. Signs will comply with the *BART Wayfinding and Signage Standard*. The MacArthur Station will be the first station to receive new signage, with the installation expected in the next six months. These signs should be upgraded to address wayfinding changes that may be associated with a Transit Village development.

Table 9-9 summarizes potential costs and benefits of wayfinding signs within the station area.

**TABLE 9-9
 WAYFINDING SIGNS WITHIN THE STATION AREA: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$50,000		Estimated Ridership Benefit: Supporting Strategy	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Sign installation - Sign fabrication - Sign maintenance/ replacement 		<ul style="list-style-type: none"> - Helps station patrons locate area services/ amenities such as bicycle lockers, parking retail, etc. - Assists patrons in accessing connecting transit services from BART 	
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A			

SAFETY STOP

Description: The Safety Stop strategy is currently in use in both Toronto and New York. Women traveling alone by bus in Toronto from 9 PM to 5 AM may request a stop between scheduled stops if the bus can safely come to a stop. In New York, MTA’s Request-A-Stop program allows customers flexible stop locations between the hours of 10 PM and 5 AM.

Feasibility: A nighttime “safety stop” on AC Transit routes to/from the station could address personal safety concerns that may otherwise reduce transit ridership. Such concerns have been noted for the station area.

Table 9-10 summarizes potential costs and benefits of improved AC Transit access.

**TABLE 9-10
 SAFETY STOP: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$0		Estimated Ridership Benefit: Supporting Strategy	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Potential for transit delays if several stop requests are made 		<ul style="list-style-type: none"> - Additional security for riders opting to use alternative modes of transportation to and from the BART Station - Mode shift from driving to transit (decreased VMT) - Increased transit revenue 	
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A			

WAYFINDING SIGNS TO/FROM NEARBY NEIGHBORHOODS AND DESTINATIONS

Description: Wayfinding is an important supporting strategy to encourage remote parking and non-auto access to the station. Additionally, wayfinding signs may help to connect the station with the many nearby destinations, thereby encouraging off-peak/direction travel to MacArthur Station, which is one of BART's key goals given current capacity constraints.

Wayfinding signs should be installed to direct pedestrians, bicyclists, and motorists to the station from nearby neighborhoods and destinations and along primary pedestrian, bicycle, and auto routes, including.

- Temescal
- Summit Hospital
- Children's Hospital
- Telegraph Avenue (UC Berkeley)
- Piedmont Avenue
- Koreatown
- Kaiser Hospital
- Emeryville



**Oakland Chinatown
Wayfinding Example
(Source: Studio l'Image)**

Feasibility: As noted, the City of Oakland and BART have hired a consultant to program, fabricate, and install exterior wayfinding signs within the station plaza and within one mile of the station as part of the existing Safe Routes To Transit grant. These signs will focus on pedestrian and bicycle wayfinding and are expected to be implemented by the end of 2008. Additional funding will be required for signage leading from the station to other community facilities, as well as signage leading to and from BART for transit connectivity and directing vehicle traffic to the new parking garage and drop-off areas. These additional signage elements will need to be developed in concert with the Transit Village developer, BART, and the City of Oakland. The above Chinatown graphic is an Oakland-based example of providing a BART wayfinding system that also functions as a community-wayfinding system. Table 9-11 summarizes potential costs and benefits of wayfinding signs to/from nearby neighborhoods.

**TABLE 9-11
WAYFINDING SIGNS TO/FROM NEARBY NEIGHBORHOODS: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$70,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Signage plan, design, and installation - Capital costs of manufacturing signs 	<ul style="list-style-type: none"> - Improved pedestrian/bicycle access to station - Increased pedestrian safety by designating specific routes to BART

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

STATION AREA MAPS

Description: Both static and “takeaway” paper and electronic maps are needed to facilitate multi-modal circulation to, from, and within the station. Large area maps should be placed at the main exits at the BART Station, entrances to the Transit Village, and at the Transit Village Information Booth/ Bike station/ TDM Coordinator’s Office (as recommended in Tier Two). The large “you are here” maps also provide an opportunity to locate the station within a broader East Bay context. These maps could be combined with local area information/ history, advertising, events calendars, etc. Takeaway maps should be available at the BART Station, the Transit Village Information Booth, in PDF form for online access/printing, and in mobile form for easy PDA/cell phone browser access. Multi-modal local area maps should highlight:

- Area bike routes
- Area walking routes
- Area transit routes
- Area vehicle routes, including Kiss & Ride locations
- Parking facilities, including remote parking and bike parking
- Retail and restaurant locations

Feasibility: As with other wayfinding strategies, significant opportunities exist to update the station area maps for a Transit Village development and to incorporate the branding strategy. BART has hired a consultant to program, fabricate, and install exterior wayfinding signs within the station plaza and within one mile of the Station. This program includes the development of a vicinity map for the station plaza. This map should be updated with a Transit Village development to include additional wayfinding and destination information, and should be developed as part of the station area branding program.

Table 9-12 summarizes potential costs and benefits of Station Area Maps.

TABLE 9-12 STATION AREA MAPS: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$41,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Map design and production 	<ul style="list-style-type: none"> - Assists BART patrons in navigating from the Station Area to their destination - Provides directions for bicycle/ pedestrian routes to and from the station
<small>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</small>	

MARKET RATE BART PARKING

Description: If a new BART parking garage is constructed, it may be financed with state bond money. As such, market rate pricing would be required. Market rate parking fees would also be an option to manage parking demand in the existing surface parking lot.

Feasibility: In addition to managing demand, market rate pricing could enable the provision of attended parking by raising revenue to cover the added costs of this strategy. A market rate of \$5/day, which is likely conservative, is assumed for costs estimates.

Table 9-13 summarizes potential costs and benefits of Market Rate BART Parking.

TABLE 9-13 MARKET RATE BART PARKING: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: (\$4,500,000)	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Could result in patron shifts to other BART stations 	<ul style="list-style-type: none"> - Significant revenue to support Increased parking capacity on site via attended parking - May discourage auto-access and thereby reduce VMT
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

GUARANTEED RIDE HOME PROGRAM/ TAXI SERVICE

Description: One of the reasons many commuters choose to drive to work and/or transit stations, rather than being dropped off or taking transit, is their inability to go home unexpectedly or the fear of being stranded if returning late without a car at the station. Guaranteed Ride Home (GRH) programs are designed to allay these fears. With this program, transit riders are able to use a complimentary or reduced price taxi service to get home.

Adequate taxi service is necessary for the Guaranteed Ride Home program to be successfully implemented.

Feasibility: The Alameda County Congestion Management Authority currently offers free Guaranteed Ride Home “commute insurance” for Alameda County employers with more than 75 employees (<http://www.grh.accma.ca.gov/>). Currently 150 employers and 4,600 employees are registered for the service. There is no cost to employers or employees to participate. All other Bay Area counties except Marin and Santa Clara offer similar programs (although most charge a minimal membership fee). These programs are considered successful programs with few abuse concerns. In 2006, 126 of the 4,600 Alameda County participants used the service.

The short-term marketing strategy (and a long-term TDM Coordinator) could advertise these programs to eligible BART patrons and Transit Village residents and employees. Brochures for the programs could also be available on BART.

For those not eligible for an existing GRH program, a supplementary GRH service could be established for MacArthur BART patrons. The service could be funded by BART or an alternative funding source, such as developer fees or parking revenue. As presented below, the cost for this service, including taxi fares and administration, is assumed separate from a TDM Coordinator position. With a TDM Coordinator, the administration costs could be reduced.

To avoid abuse of this program, a small buy-in fee for BART riders could be implemented. A membership card or a maximum number of GRH rides per year could also be used to limit the number of times that a transit rider uses the program, thus curbing the potential for abuse.

Table 9-14 summarizes the potential costs and benefits of a Guaranteed Ride Home program.

**TABLE 9-14
GUARANTEED RIDE HOME PROGRAM/ TAXI SERVICE: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$92,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Program administration costs¹⁷ - Potential for program abuse 	<ul style="list-style-type: none"> - More security and flexibility for riders using alternative transportation modes - Supports other TDM initiatives (Can increase ridesharing by up to 15%)¹⁸ - Progressive benefit assists low income users and enhances transportation equity

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: REMOTE PARKING FOR THE TRANSIT VILLAGE AND BART

Description: Remote parking includes off-site or fringe parking facilities. Pricing remote parking at a reduced rate could encourage commuters, residents, and employees to use remote parking.

Feasibility: Using aerial photographs and site visit data, the station area was reviewed for potential remote parking facilities. While there are several surface parking lots close to the station, most serve land uses for which parking is needed during typical weekday work hours. The lots appear to be heavily used. However, potential remote parking opportunities may exist with three local churches with 1/4-mile of the station. These include:

- Sacred Heart Church, 4025 Martin Luther King, Jr. Way
- East Bay Church of Religious Science, 4130 Telegraph Avenue
- Beebe Memorial Cathedral CME Church, 3900 Telegraph Ave

Churches offer natural remote parking opportunities because their peak parking demands (typically Sunday mornings) do not overlap with workweek parking demands. From an aerial photograph, the three parking lots appear to contain approximately 200 parking spaces. No discussions with the churches regarding this proposal have occurred to date. These discussions should address the feasibility of this option, including parking enforcement and pricing.

Information on remote parking alternatives could be provided as a component of the targeted marketing campaign (Tier Zero). Remote parking options should also be listed on a Village website and identified on station area maps and wayfinding signs. Pedestrian infrastructure improvements, as recommended in Chapter Five, would also be important supporting strategies to encourage use of remote parking facilities.

¹⁷ Resource Conservation Manitoba. "Transportation Demand Management." April 2007. Retrieved 06 August 2007 from http://www.resourceconservation.mb.ca/gci/TDM/TDMpdfs/IISD_GHG_calculator.pdf.

¹⁸ UrbanTrans Consultants, Inc. "Transportation Demand Management Study Report." Regional Municipality of Peel. June 2004. Retrieved 06 August 2007 from <http://www.region.peel.on.ca/planning/transportation/pdfs/TDM%20Study%20Report%20June%202004.pdf>.

Remote parking lots would be less convenient than parking in the BART parking garage. Consideration should be given to selling remote lot spaces on a monthly basis at a discounted price compared to monthly spaces in the BART garage. Remote lot spaces should be reserved parking to guarantee utilization and simplify payment and enforcement.

Table 9-15 summarizes the potential costs and benefits associated with remote parking.

TABLE 9-15 REMOTE PARKING: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$225,000	Estimated Ridership Benefit: 200
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Increased administration and enforcement costs - Cost to secure and maintain off-site parking options - Inconvenience to motorists 	<ul style="list-style-type: none"> - Reduced "cruising" for parking and wasted fuel - Increased parking capacity for BART patrons
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: PASSENGER DROP-OFF IMPROVEMENTS

Description: Any proposed Transit Village project that reduces the amount of BART parking will likely result in an increase in pick-up and drop-off activity. Based on existing kiss-and-ride patterns, drivers may disobey designated pick-up/drop-off spaces and drop-off or pick-up passengers where convenient. Pick-up/drop-off activity should be enforced to occur in designated zones to reduce conflicts between pedestrians, bicyclists, autos, and transit vehicles.

Feasibility: The site plan for the proposed Transit Village development improves passenger drop-off conditions (as discussed in Chapter 13). Any new or changed site plan should be reviewed to ensure appropriate and efficient designated pick-up/drop-off locations.

Table 9-16 summarizes the potential costs and benefits of passenger pick-up/ drop-off improvements.

TABLE 9-16 PASSENGER PICK-UP/ DROP-OFF IMPROVEMENTS	
Estimated 10-Year Cost: Assume included in development costs	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Loss of meter revenue and on-street parking spaces - Signage and striping - Enforcement 	<ul style="list-style-type: none"> - Reduced conflicts between pedestrians, bicyclists, autos, and transit vehicles - Potentially reduced transit headways
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: STATION AND VILLAGE "BRANDING"

Description: A coordinated "palette" of street furniture, lighting, wayfinding, and signage throughout the station and Village area could contribute to a heightened awareness of the area, attracting visitors, residents, and transit

riders.¹⁹ This “branding” can include customized poles and mounts for regulatory signs and lighting fixtures, and an area logo, font, and color scheme, among other techniques.²⁰

Feasibility: With the Transit Village development, there are significant opportunities to brand the area, beginning with the short-term marketing strategy (Tier Zero). Station and Village branding costs could be included as a component of development costs. Maintenance of the branding could be a responsibility of the TDM Coordinator through the website, informational materials, etc., as proposed in Tier Two. The costs presented here assume costs to develop the brand and install coordinated street furniture and lighting.

The branding program is integral to the Transit Village wayfinding element that is not included in the Safe Routes to Transit Project.

Table 9-17 summarizes potential costs and benefits of station and Village branding.

TABLE 9-17 STATION AND VILLAGE BRANDING: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$170,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Branding strategy and implementation plan - Capital costs of implementation 	<ul style="list-style-type: none"> - Attract visitors, residents, and transit riders to the MacArthur BART Station Area - Improved conditions for retail in the Station Area - Enables BART to capture more value from the Station if property values/ rents increase with branding
<p>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</p>	

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: CARSHARING

Description: With carsharing, a fleet of vehicles is available to members of a carsharing group. Membership fees typically include insurance, fuel, and maintenance costs and may be paid on a per-hour or mile basis. Carsharing can be an alternative to car ownership or may encourage a household to “shed” an extra car.

Feasibility: Carsharing would serve as an important complement to unbundled parking and Residential Parking Permits. By constraining parking options for Village residents, these strategies may encourage car shedding if a feasible alternative, such as car sharing, is available. Four carshare cars (provided by FlexCar and City CarShare) are currently parked in the MacArthur BART parking area. The cars encourage BART access to the car-oriented land uses (such as Emeryville’s Bay Street Shopping Center) which are near the station. Such trips are likely off-peak trips. The opportunities for carsharing will increase with the station redevelopment, as many residents who self-select to live near the BART Station may still require occasional vehicle access. Carshare parking could be placed in the BART garage, along internal roadways, and/or in the residential garages. Carshare parking would be most visible along internal roadways.

¹⁹ Adams County, Colorado. “Transit Oriented Development and Rail Station Area Planning Guidelines.” 2006. Accessed from https://www.co.adams.co.us/documents/page/planning/long_range/tod_guidelines.pdf

²⁰ City of San Leandro, California. “San Leandro BART Station Access Improvement Plan.” 2007. Accessed from <http://www.ci.san-leandro.ca.us/develop/StationAccessPlan.pdf>

The primary cost associated with carsharing is a loss in parking revenue. Some of this cost could be defrayed through parking cost-sharing negotiations with the carshare providers. Such an arrangement is assumed for the cost estimate. Additionally, carshare membership at \$50/year for all residential units is assumed part of HOA dues or provided by the developer.

Table 9-18 summarizes the potential costs and benefits of carsharing.

TABLE 9-18 CARSHARING: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$300,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Loss of parking spaces for BART patrons and/or Village residents/patrons, and potential loss of parking revenue (depending on agreements with carshare companies) 	<ul style="list-style-type: none"> - Encourages off-peak/direction trips to MacArthur BART - Helps ensure the success of unbundled parking (making additional parking spaces available for BART patrons) - Encourages car shedding - Reduces demand for parking in residential areas
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

10. TIER TWO STRATEGIES

Strategies in this tier are likely feasible but have perceived barriers to implementation and may require the support of a TDM Coordinator. Strategies are grouped as either primary or supporting strategies. Additionally, some strategies would only be recommended/ applicable with a Transit Village development, while others could be employed to improve existing conditions. Table 10-1 summarizes the estimated ridership benefits and capital and operating costs associated with each strategy.

The following sections present a description of each strategy and potential costs and benefits associated with each.

Tier Two Strategy	Ridership Benefit (Patrons)	Capital Cost	Operating Cost (Annual)
Parking Benefit District to enable BART patrons to purchase surplus Residential Parking Permits (RPPs) with revenues dedicated to the District	500	\$25,000	(\$192,000)
Pedestrian Infrastructure Improvements on surrounding pedestrian access routes	insufficient data to support estimate	\$5,000,000	\$50,000
Bicycle Infrastructure Improvements on surrounding bicycle access routes	insufficient data to support estimate	\$500,000	\$25,000
High Capacity Bicycle Parking on the BART Plaza	insufficient data to support estimate	\$100,000	\$5,000
Volunteer Neighborhood Guides to guide visitors to the Station Area and Village	supporting strategy	\$100,000	\$100,000
Blue Light Phones/ Personal Security Improvements to encourage non-auto travel within the Station Area	supporting strategy	\$70,000	\$7,000
Neighborhood Ridematching/ Ridesharing (existing 511 with potential expansion)	supporting strategy	\$5,000	\$5,000
Station/TDM Website to enhance wayfinding, non-auto access alternatives	supporting strategy	\$10,000	\$5,000
Smart Parking (Variable Message Signs) to alert patrons to available parking capacity in the BART Parking Lot/Garage	supporting strategy	\$35,000	\$3,500
With Transit Village Development Only:			
Village Resident EcoPass (BART EZ-Rider card and AC Transit Monthly Pass) to encourage car shedding	12	\$5,000	(\$5,920)
Unbundled, shared parking for new residential development to make additional parking capacity available for BART patrons	180	\$10,000	\$10,000
Information Booth to be located in the Transit Village	supporting strategy	\$50,000	\$25,000

Source: Fehr & Peers, March 2008; Cost and benefit calculations and assumptions are presented in Appendix A

PARKING BENEFIT DISTRICT

Description: A Parking Benefit District (PBD) provides a mechanism for parking revenue from meters or permits to be returned to the community less administration and enforcement costs. In this way, revenue can fund community improvement projects such as streetscapes, street cleaning, or security patrols. As an enhancement for the MacArthur BART Station Area, through a PBD, a portion of the anticipated Residential Parking Permits (RPPs) could be sold to BART patrons on a monthly basis (perhaps starting with 200 RPPs and adjusting periodically based on supply and demand). This revenue could be used to pay for the RPP capital and operating costs, making the permits free to area residents. To streamline administration, the TDM Coordinator's Office could be established to collect fees and fines and disburse funds to the district.

Feasibility: Selling surplus RPPs to BART patrons via a PBD would address the following:

- Initiation and installation costs, as well as yearly enforcement and administration costs of RPPs: based on recent experience in Jack London Square, capital costs may be as high as \$70,000 and yearly costs are approximately \$65/permit
- A reduction in the off-street parking supply for BART patrons with RPPs: it has been estimated that as many as 216 BART patrons already park on residential streets adjacent to the station.

However, no current precedent exists for an RPP sell-back program in the City. A scaled-back PBD could collect and distribute market-rate meter revenues.

Table 10-2 summarizes the potential costs and benefits of a PBD.

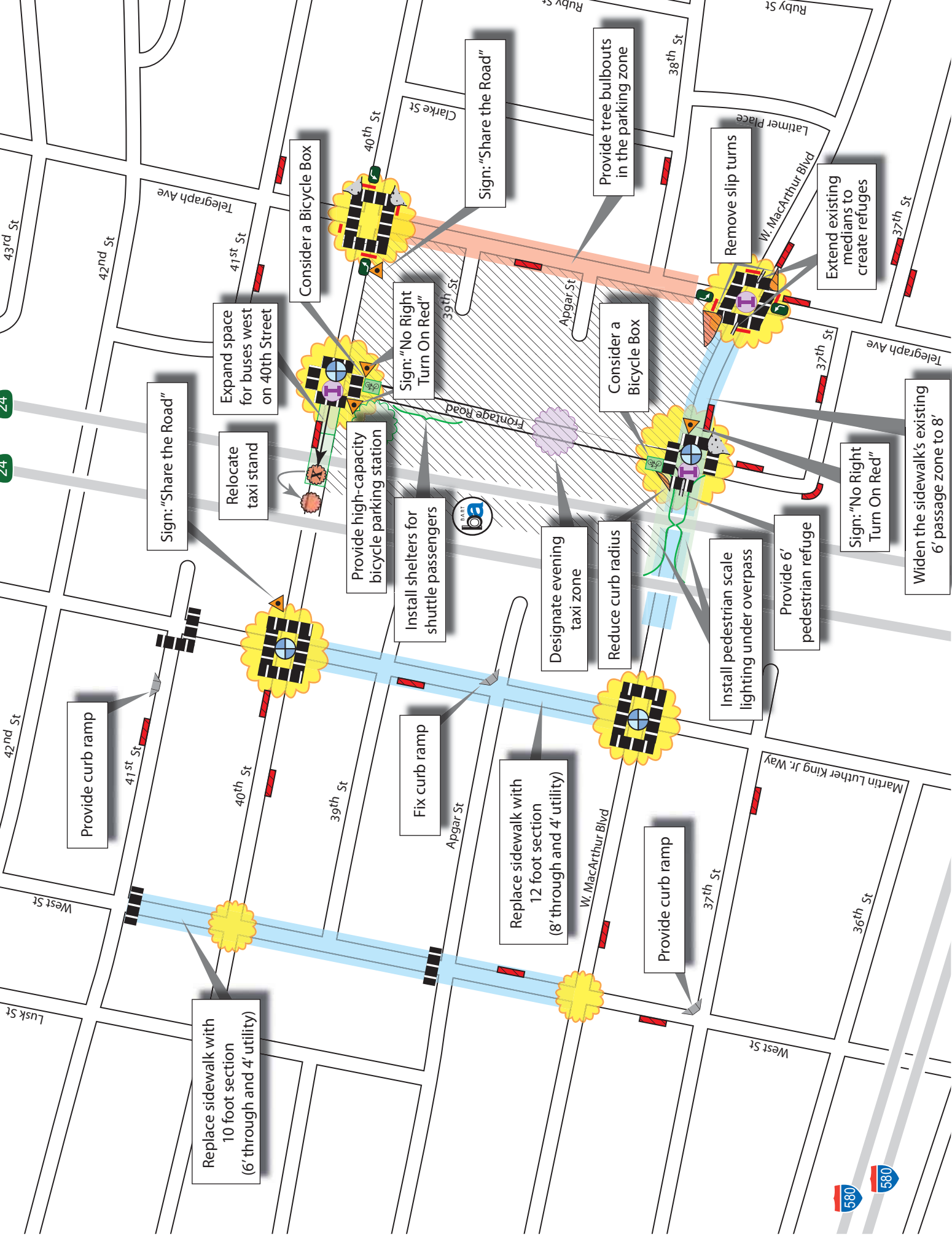
TABLE 10-2 PARKING BENEFIT DISTRICT: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: (\$1,895,000)	Estimated Ridership Benefit: 400
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Increased administration and enforcement costs 	<ul style="list-style-type: none"> - Funding for neighborhood improvements that promote walking, cycling and transit use (i.e., sidewalks, lighting, curb ramps, and bicycle lanes) - Retains on-street parking capacity for BART patrons
<p>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</p>	

PEDESTRIAN INFRASTRUCTURE IMPROVEMENTS

Description: A number of physical pedestrian infrastructure improvements are recommended to encourage pedestrian access to the MacArthur BART Station and improve pedestrian safety and personal security. These are summarized in Figure 10-1.

Many of these improvements focus on improving pedestrian conditions along key destination and shopping streets (as shown in Figure 10-2)

Oakland's *Pedestrian Master Plan (PMP)* establishes a hierarchy of roadways based on the level of pedestrian activity that they attract. Roads are defined as City Routes, District Routes, and Neighborhood Routes.



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29% of people who use MacArthur BART access it by walking



FEHR & PEERS
TRANSPORTATION CONSULTANTS

March 2008
SF06-0245\graphics\Draft Access Plan\Figures\Mar08\0245_4-2

According to the *PMP*,

City Routes are destinations in themselves – places to live, work, shop, socialize, and travel. They provide the most direct connections between walking and transit and connect multiple districts in the City. District routes have a local function as the location of schools, community centers, and smaller scale shopping. They are often located within a single district and help to define the character of that district. Neighborhood routes are local streets that connect to schools, parks, recreational centers, and libraries.²¹

The *PMP* includes a series of general design recommendations as well as specific improvements for individual roadways. These recommendations are incorporated below where applicable.

Major Roadways

Martin Luther King, Jr. Way – This road is designated a City Route in Oakland's *Pedestrian Master Plan (PMP)*. Currently, the sidewalk along the east side of Martin Luther King, Jr. Way between 41st Street and 37th Street ranges from about 7 to 12 feet in width. Segments of the roadway have broken sidewalks (particularly on the west side between Apgar Street and 39th Street), litter (particularly between West MacArthur Boulevard and Apgar Street), weeds, and no street trees. On Martin Luther King, Jr. Way between 47th Street and Downtown, the *PMP* recommends replacing the existing sidewalk with a minimum 12-foot sidewalk section (8-foot through passage zone plus a 4-foot utility zone) and adding bulb-outs at major intersections.²² The sidewalk on Martin Luther King, Jr. Way between 39th Street and Apgar Street will be improved as part of the residential development currently under construction on Martin Luther King, Jr. Way at 39th Street.

Between 2000 and 2006, there was one reported vehicle-pedestrian collision (with an injury) on Martin Luther King, Jr. Way at West MacArthur Boulevard.

- Recommendation: In order to be consistent with the recommendations of the adopted *Pedestrian Master Plan*, consider replacing the existing sidewalk on Martin Luther King, Jr. Way with a minimum 12-foot sidewalk section (8-foot through passage zone plus a 4-foot utility zone) and adding bulb-outs at major intersections (bulb-outs should be designed to accommodate a SU-30 (30-foot long single unit) truck). Detailed engineering studies may be needed to determine feasibility.
- Recommendation: Provide smooth, level, and un-cracked sidewalk surfaces on the west side of Martin Luther King, Jr. Way between Apgar Street and 39th Street to improve pedestrian access.
- Recommendation: Add pedestrian-scale lighting at key locations along Martin Luther King, Jr. Way, such as bus stops and crosswalks.

West MacArthur Boulevard – This road is designated a City Route in the *PMP*. The northern sidewalk between West Street and Latimer Place ranges from about 7 to 12 feet in width, with a minimum of five feet clear width. The roadway has a narrow (about 5-foot) concrete median with no pedestrian refuges at intersections. Segments of the roadway have multiple curb cuts and litter. The sidewalk under the freeway overpass is dark and littered with broken glass. Segments of the sidewalk are uneven and cracked, particularly between West Street and Martin Luther King, Jr. Way on the south side, which is sloped, cracked, and uneven due to tree roots, between Highway 24 and Telegraph Avenue on the south side, which is raised due to tree roots, and east of Telegraph Avenue on the south side, which is cracked.

Between 2000 and 2006, there were five reported vehicle-pedestrian collisions on West MacArthur Boulevard: four at Telegraph Avenue, and one at Martin Luther King, Jr. Way.

²¹ City of Oakland, 2002. *Pedestrian Master Plan*, page 48.

²² *Ibid*, page 120.

On West MacArthur Boulevard between San Pablo Avenue and Piedmont Avenue, the *PMP* recommends providing 4-foot wide minimum refuge islands²³ at regular intervals at intersections (20 feet in length) and 6-foot bulb-outs onto major streets with two curb cuts each at regular intervals at intersections.²⁴

- Recommendation: Install pedestrian-scale lighting at key locations along West MacArthur Boulevard, including under the overpass and at bus stops and crosswalks to increase pedestrian security.
- Recommendation: Consider widening the existing 6-foot wide passage zone on the sidewalk along West MacArthur Boulevard (between the freeway overpass and Telegraph Avenue) to an 8-foot wide passage zone, as recommended in the sidewalk guidelines of the Pedestrian Master Plan. The total sidewalk is currently approximately 13 feet wide, with a 7-foot wide landscape strip, so no additional right of way would be required.
- Recommendation: In order to be consistent with the recommendations of the adopted Pedestrian Master Plan for West MacArthur Boulevard, consider providing 4-foot wide minimum (6-foot preferred) refuge islands at regular intervals at intersections and 6-foot bulb-outs onto major streets with two curb cuts each at intersections. Bulb-outs should be designed to accommodate a SU-30 (30-foot long single unit) truck. More detailed engineering studies may be needed to determine feasibility.
- Recommendation: Provide smooth, level, and un-cracked sidewalk surfaces on West MacArthur Boulevard at the following locations to improve pedestrian access: between West Street and Martin Luther King, Jr. Way on the south side, between Highway 24 and Telegraph Avenue on the south side, and east of Telegraph Avenue on the south side.

Telegraph Avenue - This road is designated a City Route in the *PMP*. Currently, the west side of the roadway between 40th Street and 37th Street has 10- to 15-foot sidewalks, with street trees (and street furniture such as trash cans, planters, and benches). Segments of the sidewalk along Telegraph Avenue are broken or raised, particularly on the west side between Apgar Street and 39th Street and on the east side between 37th Street and West MacArthur Boulevard.

Between 2000 and 2006, there were 17 reported vehicle-pedestrian collisions (14 with injuries) on Telegraph Avenue: four at MacArthur Boulevard, nine at 40th Street, and four mid-block.

On the entire length of Telegraph Avenue, the *PMP* recommends providing 4-foot wide minimum (6-foot preferred) refuge islands at regular intervals at intersections (20 feet in length) and 6-foot wide bulb-outs with two curb cuts each at regular intervals at intersections, as well as tree bulb-outs with 4- by 6-foot curbed tree wells in the parking zone at regular intervals.²⁵

- Recommendation: In order to be consistent with the recommendations of the adopted *Pedestrian Master Plan* for Telegraph Avenue, consider providing the following: 6-foot wide bulb-outs onto major streets, with two curb cuts each at regular intervals at intersections; and tree bulb-outs with 4- by 6-foot curbed tree wells in the parking zone at regular intervals. Bulb-outs should be designed to accommodate a SU-30 (30-foot long single unit) truck. Detailed engineering studies may be needed to determine feasibility.

²³ Six-foot wide refuge islands are preferred, to provide additional protection for pedestrians as well as for bicyclists walking in the crosswalk.

²⁴ Ibid, page 119.

²⁵ Ibid, page 120.

- Recommendation: Provide smooth, level, and un-cracked sidewalk surfaces on Telegraph Avenue between Apgar Street and 39th Street on the west side, and between 37th Street and West MacArthur Boulevard on the east side to improve pedestrian access.
- Recommendation: Install pedestrian-scale lighting at key locations along Telegraph Avenue, such as at bus stops and crosswalks to increase pedestrian security.

40th Street – This road is designated a District Route in the *PMP*. Currently, the segment of the roadway between West Street and Clarke Street has 10- to 16-foot-wide sidewalks, with a minimum of 5 feet clear width. This segment has intermittent street trees and is dark under the freeway overpass. Segments of the sidewalk are cracked, sloped, or narrow, particularly between West Street and Martin Luther King, Jr. Way (which is sloped and cracked on the north side, and narrow and sloped on the south side); and between Highway 24 and Frontage Road on the north side, which is narrow due to the location of a bench and trash can.

The roadway has a narrow concrete median (about 4 feet wide at intersections) with minimal landscaping and no pedestrian refuges at intersections. Between 2000 and 2004, there were 14 reported vehicle-pedestrian collisions (10 with injuries) on 40th Street: nine at Telegraph Avenue and five mid-block. A fatal collision occurred west of Telegraph Avenue (approximately at the Frontage Road). Along all of 40th Street, the *PMP* recommends providing 4-foot-wide minimum (6-foot preferred) refuge islands at regular intervals at intersections (20 feet in length) and 6-foot wide bulb-outs onto Major Street with two curb cuts each at regular intervals at intersections.²⁶

As noted, the following improvements are funded as part of the 40th Street/MacArthur Transit Hub Improvement project, and are planned to begin construction in early 2008 (note that these are not shown on the recommendations in Figure 10-1, as they are already funded):

- Crosswalk improvements at the 40th Street/Martin Luther King, Jr. Way and 40th Street/Telegraph Avenue intersections
- Sidewalk bulb-outs on the west side of the 40th Street/Telegraph Avenue intersection
- Installation of a new traffic signal with pedestrian crossing phases at the 40th Street/Frontage Road intersection
- Construction of an additional crosswalk on the west side of the 40th Street/Frontage Road intersection, including the creation of a mid-block pedestrian refuge in the median
- Pedestrian lighting and sidewalk treatments along 40th Street
- Bicycle and pedestrian way finding signage to the station
- Underpass lighting improvements and surface treatments

Additional recommendations for pedestrian access along and across 40th Street include the following:

- Recommendation: In order to be consistent with the recommendations of the adopted *Pedestrian Master Plan* for 40th Street, consider providing 4-foot wide minimum (6-foot preferred) refuge islands at regular intervals at intersections (20 feet in length) and 6-foot wide bulb-outs onto major streets with two curb cuts each at intersections. Bulb-outs should be designed to accommodate a SU-30 (30-foot long single unit) truck. More detailed engineering studies may be needed to determine feasibility.

²⁶ Ibid, page 116.

- Recommendation: Provide smooth, level, and un-cracked sidewalk surfaces on the north side of 40th Street between West Street and Martin Luther King, Jr. Way to improve pedestrian access.
- Recommendation: Widen the sidewalk or remove obstacles to pedestrian passage at 40th Street between West Street and Martin Luther King, Jr. Way on the south side, and by Frontage Road on the north side. This may not be feasible at all locations, as sidewalk widening may require the loss of on-street parking or narrowing of vehicle travel lanes.
- Recommendation: Install pedestrian-scale lighting at key locations along 40th Street, including at bus stops and crosswalks, to increase pedestrian security.

West Street – This road is designated a District Route in the *PMP*. Currently, segments of the roadway between 37th Street and 41st Street have narrow sidewalks, particularly between 37th Street and Apgar Street. These include the west side between 37th Street and West MacArthur Boulevard, and the east side between West MacArthur Boulevard and Apgar Street (narrow and sloped).

Upgraded curb ramps with yellow tactile domes/detectable surfaces have been installed on several corners, including at West MacArthur Boulevard (northeast and southeast corners), 41st Street (southeast corner; northeast corner under construction), and 40th Street (southwest corner). This segment has few street trees. On West Street between Martin Luther King, Jr. Way and 14th Street, the *PMP* recommends replacing the existing sidewalk condition with a minimum 10-foot wide sidewalk (6-foot through passage zone plus a 4-foot utility zone) and adding bulb-outs at major intersections (collector streets).²⁷

- Recommendation: In order to be consistent with the recommendations of the adopted *Pedestrian Master Plan* for West Street, consider replacing the existing sidewalk with a minimum 10-foot wide sidewalk (6-foot through passage zone plus a 4-foot utility zone) and adding bulb-outs at major intersections (collector streets). Bulb-outs should be designed to accommodate a SU-30 (30-foot long single unit) truck. More detailed engineering studies may be needed to determine feasibility.
- Recommendation: Widen the sidewalk or remove obstacles to pedestrian passage on West Street between 37th Street and West MacArthur Boulevard on the west side, and between West MacArthur Boulevard and Apgar Street on the east side. This may not be feasible at all locations, as sidewalk widening may require the loss of on-street parking or narrowing of vehicle travel lanes.

Frontage Road - Frontage Road runs along the east side of the BART station between 40th Street and West MacArthur Boulevard. It is currently shared by southbound vehicles and shuttle buses, as well as northbound vehicles entering the BART parking lot at the northeast corner of the Frontage Road/West MacArthur Boulevard/37th Street intersection, and pedestrians and bicyclists going to and from the BART station. No AC Transit buses use Frontage Road. A sidewalk is present on both sides of the road except for a segment on the east side between West MacArthur Boulevard and just north of the BART parking lot entrance/exit. No designated bicycle facilities are present.

Conflicts exist between bicyclists, pedestrians, and vehicles at the northern end of Frontage Road near 40th Street. Bicyclists and pedestrians entering and exiting the BART station cross Frontage Road, conflicting with each other and with southbound shuttles and pick-up/drop-off vehicles.

- Recommendation: Any proposed Transit Village site plan should be reviewed to ensure direct access through the site for all modes, while limiting conflicts between private vehicles and shuttles, bicyclists, and pedestrians. Provisions should be made to allow through access for emergency vehicles, such as City and BART Police, fire, and ambulance vehicles.

²⁷ Ibid, page 121.

Residential Streets

41st Street – in the study area, 41st Street extends between West Street and Highway 24, and between 42nd Street and Telegraph Avenue. Segments of the sidewalk are narrow, sloped, or cracked (including between West Street and Martin Luther King, Jr. Way on the north side, between Highway 24 and Telegraph Avenue on the south side, and east of Telegraph Avenue on the south side).

38th Street – in the study area, 38th Street extends between Telegraph Avenue and Clarke Street/Latimer Place. Segments of the sidewalk are cracked, particularly between Telegraph Avenue and Clarke Street on the north side.

37th Street – in the study area, 37th Street extends between West Street and Highway 24, and between West MacArthur Boulevard and Telegraph Avenue. It then jogs to the south and continues east of Telegraph Avenue. Segments of the sidewalk are cracked or broken, and others are narrow and sloped. These include the following segments:

- North-south segment between 37th Street and West MacArthur Boulevard, east side: narrow and sloped
- Between West Street and Martin Luther King, Jr. Way, south side: cracks and broken edge of sidewalk
- Between Highway 24 and Telegraph Avenue, both sides: cracks and slope around corner
- Between east of Telegraph Avenue, south side: water pooling and cracks (both sides)

Streetlights are present on all streets in the study area, with varying frequency of lighting. Pedestrian-scale lighting is only provided in the bus stop area on 40th Street adjacent to the BART station, and along 40th Street under Highway 24. Minimal lighting is present along West MacArthur Boulevard under Highway 24.

- Recommendation: Provide smooth, level, and un-cracked sidewalk surfaces at the following locations to improve pedestrian access:
 - 41st Street between West Street and Martin Luther King, Jr. Way on the north side, between Highway 24 and Telegraph Avenue on the south side, and east of Telegraph Avenue on the south side.
 - 38th Street between Telegraph Avenue and Clarke Street on the north side.
 - 37th Street between West Street and Martin Luther King, Jr. Way on the south side, between Highway 24 and Telegraph Avenue on both sides, and east of Telegraph Avenue on both sides.
- Recommendation: Widen the sidewalk or remove obstacles to pedestrian passage at the following location. This may not be feasible at all locations, as sidewalk widening may require the loss of on-street parking or narrowing of vehicle travel lanes:
 - 37th Street, on the east side of the north-south segment between 37th Street and West MacArthur Boulevard.

Key Intersections

A series of options should be considered at key intersections to increase pedestrian access and safety. Those options particularly relevant for each intersection are noted below. The recommendations assume that the existing circulation patterns continue. If significant changes to the circulation system are proposed, recommendations for intersections affected by those intersections should be re-evaluated. Note that currently, the City of Oakland does not install high visibility crosswalks or advance stop bars at signalized intersections unless there are sight distance issues.

Martin Luther King, Jr. Way/West MacArthur Boulevard – This intersection is currently signalized, with marked crosswalks on all four approaches. It has standard curb ramps (one per corner), and standard (not countdown) pedestrian signals on the northeast and southwest corners only (crossing Martin Luther King, Jr. Way). No pedestrian push buttons are present because the pedestrian walk phase occurs every signal cycle. Currently, up to 65 pedestrians cross the intersection during peak hours. One reported vehicle-pedestrian collision, which resulted in an injury, occurred between 2000 and 2006.

- Recommendation: Consider providing high visibility crosswalks, audible countdown signals, and additional curb ramps.

Martin Luther King, Jr. Way/40th Street – This intersection is currently signalized, with marked yellow (school zone) crosswalks on all four approaches. It has one curb ramp per corner, and standard pedestrian signals for each crosswalk. No pedestrian push buttons are present because the pedestrian walk phase occurs every signal cycle. Currently, up to 130 pedestrians cross the intersection during peak hours. Most pedestrians cross the southern approach of the intersection. No vehicle-pedestrian collisions were reported at this intersection between 2000 and 2006.

- Recommendation: Consider providing high visibility crosswalks, audible countdown signals, and additional curb ramps.

Telegraph Avenue/40th Street – This intersection is currently signalized, with protected left turn phases for northbound and southbound vehicles and audible, countdown pedestrian signals for all crossings. There are marked crosswalks on all four approaches, with separate curb ramps (with truncated domes) for each crosswalk. The pedestrian signals are actuated, requiring pedestrians to push the button to activate the walk signal. Based on observations, many pedestrians either do not push the button or push the button too late (i.e., they push the button just after the beginning of the phase). Some pedestrians try to cross the street anyway, and become stuck in the intersection when the signal has changed.

Currently, up to 400 pedestrians cross the intersection during peak hours. Based on collision reports, the intersection had nine reported vehicle-pedestrian collisions between 2000 and 2006, 7 with injuries. Over half (five) of the collisions were attributed to violation of pedestrian right of way, and two involved vehicles making right turns.

- Recommendation: Consider increasing the initial walk interval, and providing a leading pedestrian interval, high visibility crosswalks, curb ramps, advance stop bars, and bulb-outs. Bulb-outs are specifically recommended at the northeast and southeast corners of the intersection. At the northeast corner, parking is currently prohibited due to bus stops on both Telegraph Avenue and 40th Street. Therefore, no parking would be lost, but the bus stops may need to be moved, and the bulb-out would have to be designed to accommodate buses and trucks. The southeast corner has red curb markings on Telegraph Avenue and a short portion of 40th Street. Therefore, some parking would be lost on 40th Street.
- Recommendation: Provide protected left turns for eastbound and westbound vehicles on 40th Street at Telegraph Avenue. Left turn pockets are already marked at the intersection; therefore, no changes to the right of way would be necessary. However, this would extend the overall signal cycle, adding delay for pedestrians.
- Recommendation: Provide automatic pedestrian calls (instead of actuated) at the Telegraph Avenue/40th Street intersection during peak hours.

Telegraph Avenue/West MacArthur Boulevard – This intersection is currently signalized, with audible countdown pedestrian signals and marked crosswalks on all approaches. The signals for pedestrians crossing Telegraph Avenue are actuated, requiring pedestrians to push the button to activate a walk signal, while the signals for pedestrians crossing West MacArthur Boulevard are automatic. There is generally one curb ramp (with truncated

domes) per corner. Upgraded curb ramps with yellow tactile domes/detectable surfaces have been installed on three ramps on the slip turn refuge island on the northwest corner.

Currently, up to 200 pedestrians cross the intersection during peak hours. Between 2000 and 2006, four vehicle-pedestrian collisions were reported at the intersection. The primary collision factor cited for all four collisions was violation of pedestrian right of way. Three of the collisions involved vehicles making a left turn.

- Recommendation: Consider increasing the initial walk interval, and providing a leading pedestrian interval, high visibility crosswalks, additional curb ramps, and advance stop bars.
- Recommendation: Provide automatic pedestrian calls (instead of actuated) at the Telegraph Avenue/West MacArthur Boulevard intersection during peak hours.
- Recommendation: Provide actuated protected left turns for northbound and southbound vehicles on Telegraph Avenue at West MacArthur Boulevard. Left turn pockets are already marked at the intersection; therefore no changes to the right of way would be necessary. However, this would extend the overall signal cycle, adding delay for pedestrians.
- Recommendation: Extend the existing median on the eastbound and westbound approaches to the West MacArthur Boulevard/Telegraph Avenue intersection to provide pedestrian refuges. The existing median is approximately 6 feet wide at the intersection. No additional width would be required. Pedestrian push buttons should be provided on the refuges.

40th Street/Frontage Road – The 40th Street/Frontage Road intersection is a T-intersection, and is currently uncontrolled, with marked crosswalks crossing the east and south approaches of the intersection. Upgraded curb ramps with yellow tactile domes/detectable surfaces have been installed on the southeast corner of the intersection. As many as 350 pedestrians currently cross the intersection during peak hours. Collision data shows four reported vehicle-pedestrian collisions between 2000 and 2004 on 40th Street between 200 and 450 feet west of Telegraph Avenue, including one adjacent to Frontage Road that resulted in death. In three of the four cases, the primary collision factor cited was violation of pedestrian right of way.

The 40th Street/MacArthur Transit Hub improvement project, which is expected to begin construction in early 2008, includes installing a traffic signal with standard pedestrian phases, audible countdown pedestrian signals, curb ramps, special pavement treatments, and a crosswalk with a median pedestrian refuge on the west side of the 40th Street/Frontage Road intersection. The signal would provide a protected westbound left turn phase (there is currently a westbound left turn pocket at the intersection). The 40th Street project will also add lighting under the Highway 24 overpass. These improvements are expected to improve pedestrian safety at the intersection.

- Recommendation: Consider restricting right turns on red, providing an extended walk interval, and providing a leading pedestrian interval and high visibility crosswalks at the 40th Street/Frontage Road intersection.

West MacArthur Boulevard/Frontage Road/37th Street – This intersection currently has four approaches, but a median prevents through and left-turn movements to and from the northbound and southbound approaches. A marked crosswalk is provided across Frontage Road. Currently, the intersection has wide corners that encourage high vehicle speeds, faded crosswalks, and narrow sidewalks on the southbound approach. Up to 100 pedestrians cross Frontage Road during peak hours. In addition, pedestrians have been observed crossing West MacArthur Boulevard, despite the lack of crosswalks, indicating a need for a safe crossing. Between 2000 and 2006, there were no reported vehicle-pedestrian collisions.

- Recommendation: To increase pedestrian access and safety, the intersection should be signalized and a portion of the West MacArthur Boulevard median removed to allow direct access between Frontage Road and 37th Street.

- Recommendation: Extend the existing median on the west side of the West MacArthur Boulevard/Frontage Road/37th Street intersection to provide a pedestrian refuge. The existing median is approximately 6 feet wide at the intersection; therefore, no additional right of way would be required.
- Recommendation: Reduce the curb radius on the northwest corner of the West MacArthur Boulevard/Frontage Road/37th Street intersection to reduce vehicle speeds.
- Recommendation: Consider restricting right turns on red and providing an extended walk interval, a leading pedestrian interval, high visibility crosswalks, audible countdown signals, additional curb ramps, and bulb-outs. A bulb-out is specifically recommended at the southeast corner. This may require removing on-street parking along a short portion of West MacArthur Boulevard east of 37th Street.

Other intersections – All studied four-way intersections have curb ramps at each corner, with the exception of the West Street/37th Street intersection, which has no ramp at the northeast corner. All three-legged intersections have curb ramps on both sides of the minor street leg. All marked crosswalks have curb ramps on both sides of the crosswalk, with the exception of the uncontrolled school crossing on 41st Street (between West Street and Martin Luther King, Jr. Way), which has no curb ramp on the north side of the street (it is adjacent to a driveway with a curb ramp).

All of the curb ramps at corners with two crosswalks are diagonal, which tend to lead the pedestrian into the middle of the intersection. Some locations have curving ramps that extend around the corner to the street level. These include the northeast corner of Martin Luther King, Jr. Way/41st Street, and the northwest, northeast, and southeast corners of Martin Luther King, Jr. Way/37th Street intersections.

Crosswalks are marked on all legs of the major signalized intersections in the area, including 40th Street at West Street, Martin Luther King, Jr. Way, and Telegraph Avenue; and on West MacArthur Boulevard at West Street, Martin Luther King, Jr. Way, and Telegraph Avenue. In addition, crosswalks are marked at one stop-controlled location: across 41st Street at Martin Luther King, Jr. Way, on the west leg only.

There are nine uncontrolled marked crosswalks in the area: across West Street at 41st Street (south leg only); across 41st Street mid-block between West Street and Martin Luther King, Jr. Way; across Martin Luther King, Jr. Way at 41st Street (south leg only); across West Street at Apgar Street (north leg only); across 40th Street mid-block at the BART Frontage Road; across the BART Frontage Road (a one-way southbound road) at 40th Street; across Telegraph Avenue at 41st Street (south leg only); across Telegraph Avenue at 39th Street (south leg only); and across 40th Street at Clarke Street (west leg only).

Several of the crosswalks in the area are school area (yellow) crosswalks. These include the signalized crosswalks at 40th Street and Martin Luther King, Jr. Way; the uncontrolled crosswalk across West Street at 41st Street, across West Street at Apgar Street, across 41st Street mid-block between West Street and Martin Luther King, Jr. Way, and across Martin Luther King, Jr. Way at 41st Street; and the stop-controlled crosswalk across 41st Street at Martin Luther King, Jr. Way.

- Recommendation: Provide a curb ramp at the northeast corner of the West Street/37th Street intersection.
- Recommendation: Provide a curb ramp at the north side of the uncontrolled school crossing on 41st Street between West Street and Martin Luther King, Jr. Way.
- Recommendation: Fix the curb ramp at the northeast corner of Apgar Street/Martin Luther King, Jr. Way intersection to prevent water ponding.
- Recommendation: Provide additional signage and high-visibility striping (similar to that at the mid-block crosswalk across 41st Street between West Street and Martin Luther King, Jr. Way) at the uncontrolled school area crosswalks across West Street at 41st Street, across West Street at Apgar Street, and across Martin Luther King, Jr. Way at 41st Street.

Feasibility: Pedestrian infrastructure improvements are critical elements in support of BART's goal of reducing auto access to the MacArthur BART Station. These improvements are eligible for many of the funding sources presented in Chapter 12. Additionally, as recommended above, a Parking Benefit District with funds from RPP and/or meter revenue could be used to finance some of the pedestrian improvements.

Table 10-3 summarizes the potential costs and benefits of pedestrian infrastructure improvements.

TABLE 10-3 PEDESTRIAN INFRASTRUCTURE IMPROVEMENTS: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$5,500,000	Estimated Ridership Benefit: No available data to predict ridership impact
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Significant capital and maintenance costs for new facilities 	<ul style="list-style-type: none"> - Encourages non-auto access to the Station - Improved safety and security - Potentially increased BART ridership if new patrons are attracted with improved pedestrian conditions (both peak and off-peak directions/hours)
<small>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</small>	

BICYCLE INFRASTRUCTURE IMPROVEMENTS

Description: A number of bicycle infrastructure improvements are recommended to encourage and facilitate safe bicycle access to the MacArthur BART Station.

Major Roadways

Oakland's climate and topography are very good for bicycling and the grid pattern of the streets, especially around the MacArthur BART station, provides numerous potential routes. However, the roads directly adjacent to the station are four- to six-lane arterials, which are designed for higher-speed traffic and vehicle volumes, and are not favorable to cycling. In addition, there are currently no designated bikeways connecting the station to the surrounding area.

The City of Oakland is working to increase bicycle access throughout the city by building new and improving existing bicycle facilities, including on West MacArthur Boulevard, 40th Street, and Telegraph Avenue, as detailed in the recently approved *2007 Oakland Bicycle Master Plan Update*. The feasibility of these bicycle lanes, including potential needs for traffic lane removal, would be analyzed as part of studies completed for these bicycle lane projects.

Martin Luther King, Jr. Way– Martin Luther King, Jr. Way currently has no bicycle facilities, and the *2007 Bicycle Master Plan Update* does not propose a bicycle facility on the roadway. Currently, few bicyclists ride on Martin Luther King, Jr. Way, most likely because there are existing bicycle lanes on parallel streets (West Street and Market Street). A Transit Village at the MacArthur BART Station would likely increase bicycle travel in the area, but most bicyclists would continue to use the facilities on West Street and Market Street rather than Martin Luther King, Jr. Way.

West MacArthur Boulevard – West MacArthur Boulevard currently has no bicycle facilities. The *2007 Bicycle Master Plan Update* proposes Class II bicycle lanes on West MacArthur Boulevard between Market Street and Harrison Street. Currently, few bicyclists ride on West MacArthur Boulevard. However, a Transit Village at the MacArthur BART Station would likely increase bicycle travel on the roadway, particularly if a bicycle facility is provided along Frontage Road and the West MacArthur Boulevard/Frontage Road intersection is signalized.

- Recommendation: Any proposed changes to the right of way along West MacArthur Boulevard associated with a Transit Village development should be evaluated for potential conflicts with the proposed Class II lanes in the 2007 *Bicycle Master Plan*.

Between 2000 and 2006, three vehicle-bicycle collisions were reported on West MacArthur Boulevard west of Telegraph Avenue (two with injuries), and four vehicle-bicycle collisions were reported on West MacArthur Boulevard at Telegraph Avenue. Bicycle lanes would increase bicycle safety on West MacArthur Boulevard and support bicycle transportation to and from the BART station. However, the installation of bicycle lanes would require a reduction in travel lanes. In addition to providing for improved bicycle access, reducing vehicle lanes may allow for a left turn lane from eastbound West MacArthur Boulevard into the station.

Telegraph Avenue – There are currently no bicycle facilities on Telegraph Avenue south of Highway 24. However, the 2007 *Bicycle Master Plan* Update proposes Class II bicycle lanes along Telegraph Avenue between 20th Street and Highway 24. Currently, up to 65 bicyclists travel along Telegraph Avenue during peak hours, despite the lack of bicycle facilities. A Transit Village at the MacArthur BART Station would likely increase bicycle travel on Telegraph Avenue.

Between 2000 and 2006, ten vehicle-bicycle collisions (three with injuries) were reported on Telegraph Avenue: four at MacArthur Boulevard, five at 40th Street, and one at Apgar Street. Bicycle lanes would increase bicycle safety on Telegraph Avenue and support bicycle transportation to and from the BART station.

- Recommendation: Any proposed changes to the right of way along Telegraph Avenue associated with a Transit Village development should be evaluated for potential conflicts with the proposed Class II lanes in the 2007 *Bicycle Master Plan*.

40th Street – No bicycle facilities are present along 40th Street in Oakland. However, the 2007 *Bicycle Master Plan* Update proposes Class II bicycle lanes along 40th Street between Adeline Street and Telegraph Avenue and a Bicycle Boulevard on 41st Street from Telegraph Avenue to Broadway. Currently, up to 40 bicyclists travel along 40th Street near the BART station during peak hours. Between 2000 and 2004, six reported vehicle-bicycle collisions (three with injuries) occurred on 40th Street: five at Telegraph Avenue and one west of Telegraph Avenue.

Bicycle lanes would increase bicycle safety on 40th Street and support bicycle transportation to and from the BART station. The 40th Street/MacArthur Transit Hub Improvement project includes the installation of bicycle lanes along 40th Street between Telegraph Avenue and Martin Luther King, Jr. Way (note that these are not shown on Figure 10-1, as they are already funded).

- Recommendation: Any proposed changes to the right of way along 40th Street associated with a Transit Village development should be evaluated for potential conflicts with the proposed Class II lanes in the 2007 *Bicycle Master Plan*.

Key Intersections

For each intersection, a description of existing conditions for bicyclists and any recommended improvements to increase bicycle access and safety are noted below.

Martin Luther King, Jr. Way/West MacArthur Boulevard – This intersection currently has no bicycle facilities. As described above, the 2007 *Bicycle Master Plan* Update proposes Class II bicycle lanes on West MacArthur Boulevard. Currently, up to 30 bicyclists travel through the intersection during peak hours. There were no reported vehicle-bicycle collisions at this intersection between 2000 and 2006.

Martin Luther King, Jr. Way/40th Street – This intersection currently has no bicycle facilities. As described above, the 2007 *Bicycle Master Plan* Update proposes Class II bicycle lanes along 40th Street between Adeline Street

and Telegraph Avenue. Bicycle lanes on 40th Street between Martin Luther King, Jr. Way and Telegraph Avenue are funded through the 40th Street/MacArthur Transit Hub Improvement project.

Currently, up to 55 bicyclists travel through the intersection during peak hours, most of who ride on 40th Street. No vehicle-bicycle collisions were reported at this intersection between 2000 and 2006.

Telegraph Avenue/40th Street – This intersection currently has no bicycle facilities, but as described above, the 2007 *Bicycle Master Plan Update* proposes Class II bicycle lanes on both 40th Street and Telegraph Avenue. Bicycle lanes on 40th Street between Martin Luther King, Jr. Way and Telegraph Avenue are funded through the 40th Street/MacArthur Transit Hub Improvement project. Currently, up to 75 bicyclists travel through the intersection during peak hours. The intersection had five reported vehicle-bicycle collisions between 2000 and 2006, three involving injuries.

Telegraph Avenue/West MacArthur Boulevard – This intersection currently has no bicycle facilities, but as described above, the 2007 *Bicycle Master Plan Update* proposes Class II bicycle lanes on Telegraph Avenue, and Class II bicycle lanes on MacArthur Boulevard. Currently, up to 80 bicyclists travel through the intersection during the peak hours, most on Telegraph Avenue. Between 2000 and 2006, four reported vehicle-bicycle collisions occurred at the intersection, but no reported injuries. Two collisions involved vehicles making right turns against bicyclists traveling through or across the intersection, and the other two involved vehicles making left turns against bicyclists traveling through or across the intersection.

There are channelized “slip” right turns on Telegraph Avenue for northbound and southbound vehicles, which can cause conflicts with bicyclists traveling in the right-most lane. One collision occurred when a vehicle exited the parking lot on the northeast corner of the intersection and drove through southbound traffic waiting at the signal to reach the channelized turn lane onto westbound West MacArthur Boulevard. A more common conflict would occur when right-turning vehicles entering the channelized turn lane cut off bicyclists traveling in the same direction.

- Recommendation: Consider providing bicycle detection for actuated through movements or left turns.
- Recommendation: Provide actuated protected left turns for northbound and southbound vehicles and bicycles on Telegraph Avenue at West MacArthur Boulevard. Left turn pockets are already marked at the intersection; therefore, no changes to the right of way would be necessary.
- Recommendation: Remove the channelized right turns for northbound and southbound vehicles at the West MacArthur Boulevard/Telegraph Avenue.

40th Street/Frontage Road – The 40th Street/Frontage Road intersection is a T-intersection, and is currently uncontrolled. Up to 45 bicyclists pass through the intersection during peak hours. Collision data shows one reported vehicle-bicycle collision near this intersection between 2000 and 2004, in which a westbound vehicle on 40th Street making a U-turn collided with a bicyclist traveling eastbound.

The 40th Street/MacArthur Transit Hub improvement project, which is expected to begin construction in early 2008, includes installing a traffic signal at the 40th Street/Frontage Road intersection. The signal would provide a protected westbound left turn phase (there is currently a westbound left turn pocket at the intersection). The 40th Street project also includes installing bicycle lanes on 40th Street between Telegraph Avenue and Martin Luther King, Jr. Way and adding lighting under the Highway 24 overpass. These improvements are expected to improve bicycle safety at the intersection.

West MacArthur Boulevard/Frontage Road/37th Street – This intersection currently has four approaches, but a median prevents through and left-turn movements to and from the northbound and southbound approaches. Between 2000 and 2006, there was one reported vehicle-bicycle collision near the West MacArthur Boulevard/Frontage Road/37th Street intersection.

Any Transit Village project on the site would likely increase bicycle volumes at this intersection.

- Recommendation: To provide improved access between the BART station and West MacArthur Boulevard, the intersection should be signalized (and bicycle detection included), and a portion of the West MacArthur Boulevard median removed to allow all movements to and from both Frontage Road and 37th Street. Any Transit Village project proposed for the site should also be reviewed to ensure it does not prevent the installation of future Class II lanes on West MacArthur Boulevard.

Feasibility: Bicycle infrastructure improvements are also critical elements in support of BART's goal of reducing auto access to the MacArthur BART Station, and, like the pedestrian improvements, are eligible for many of the funding sources presented in Chapter 12. Table 10-4 summarizes the potential costs and benefits of bicycle infrastructure improvements.

TABLE 10-4 BICYCLE INFRASTRUCTURE IMPROVEMENTS: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$750,000	Estimated Ridership Benefit: N/A
Potential Costs	Potential Benefits
- Significant capital and maintenance costs for new facilities	- Improved safety for bicyclists - Encourages bicycle access to station
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

HIGH CAPACITY BICYCLE PARKING

Description: High capacity bicycle parking, in the form of bicycle cages, provides additional security than bicycle "U racks." Small cages are preferred to limit the number of people with access to any single cage. According to Oakland's 2007 *Bicycle Master Plan Update* (BMP), multiple small cages should be considered for high-demand locations such as the MacArthur BART Station. A single cage of 18' x 20' occupies the same footprint as two standard parking stalls (or 9' x 20' each) (American Association of State Highway and Transportation Officials 2004, p. 371).

Based on the policies in Oakland's 2007 *BMP* and BART's *Bicycle Access and Parking Plan*, a secure, high-capacity bicycle parking station, similar to the bike stations provided at the Downtown Berkeley BART Station and the Fruitvale Transit Village, is recommended for MacArthur Station. However, as a bicycle station is estimated to have high costs and may not be feasible unless co-located with a retail use in the proposed Transit Village. A short- to medium-range improvement for bicycle parking would be high capacity bicycle cage(s).

Feasibility: Based on observations, many BART patrons park their bicycles at the bicycle racks for many hours. Most of these patrons are likely not on the locker waiting list because it is oversubscribed. However, they would likely park at a bicycle cage to increase the security of their bicycle. A bicycle cage may also encourage overnight bicycle storage for reverse commuters who work near the station. The bicycle cage could be located on the BART Plaza or within the faregates as space permits.

Table 10-5 summarizes the potential costs and benefits of high capacity bicycle parking.

**TABLE 10-5
HIGH CAPACITY BICYCLE PARKING: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$150,000	Estimated Ridership Benefit: No available data to predict ridership impact
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Staff and operating expenses - Capital costs of materials and construction of cage 	<ul style="list-style-type: none"> - Increased bicycle access to the Station - Improved security for bicycle patrons concerned about bicycle thefts - Reduced VMT

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

VOLUNTEER NEIGHBORHOOD GUIDES

Description: Volunteer guides or “walking buddies” could also be stationed at an Information Booth or on the BART Plaza. This would be a cost-effective method of improving wayfinding, encouraging community involvement, attracting off-peak/direction travel to the station area, and improving personal safety for pedestrians at night.

Feasibility: Volunteer neighborhood guides could include any community member. For example, this could be a community involvement program for at-risk teenagers in Oakland or the local historical society. The Oakland Heritage Alliance currently leads walking tours throughout the City on Saturday mornings, including a recent walk (August 11, 2007) in Temescal.²⁸ The TDM Coordinator could be responsible for organizing and publicizing this program. He/she could also facilitate “walking buddy” matches.

Table 10-6 summarizes the potential costs and benefits of a neighborhood guides program. Costs include program administration and recruiting/ organizing the volunteer guides.

**TABLE 10-6
VOLUNTEER NEIGHBORHOOD GUIDES: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$1,100,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Administration and set-up costs 	<ul style="list-style-type: none"> - Improved safety and security for pedestrians accessing the station - Encourages non-auto access to the station

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

BLUE LIGHT PHONES/ PERSONAL SECURITY IMPROVEMENTS

Description: Blue light phones or other personal security improvements such as enhanced lighting and walking or bicycle police patrol would be important strategies to encourage pedestrian access to the station. This strategy supports enhanced use of the above pedestrian infrastructure improvements. It also addresses concerns from

²⁸ Oakland Heritage Walking Alliance. “Walking Tours.” Accessed from http://www.oaklandheritage.org/walking_tours.htm

BART patrons who may live within walking distance of the station but choose to drive because of personal security concerns.

Feasibility: The primary feasibility challenge for this strategy would be coordinating between BART Police and Oakland Police jurisdiction for the phones and/or enhanced Police patrols. Phones installed in the station plaza would have direct lines to BART Police, while those installed off site would have direct lines to Oakland Police. This is a non-traditional strategy for BART; other blue light phones at BART stations are on BART property only.

Table 10-7 summarizes the potential costs and benefits of blue light phones.

TABLE 10-7 BLUE LIGHT PHONES: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$140,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Installation and maintenance costs - Police coordination - Capital costs of phones 	<ul style="list-style-type: none"> - Improved safety and security for BART patrons
<p>Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A</p>	

NEIGHBORHOOD RIDEMATCHING AND RIDESHARING

Description: Carpools consist of two or more people riding in one vehicle. A vanpool consists of seven to 15 passengers, including the driver, and the vehicle is either owned by one of the vanpoolers or their employer or leased by a vanpool rental company. Carpools and vanpools maximize the number of BART patrons that can be served by a station parking facility, and thus should be encouraged. However, carpool and vanpool formations often require ridematching assistance.

Feasibility: Neighborhood carpooling would be incentivized through priority parking in the BART garage and BART transit fare reductions (Tier One strategies). Additionally, the Guaranteed Ride Home program would provide an insurance plan to those hesitant to join carpools for concerns of being unable to respond to an emergency, sick child, etc.

To facilitate the formation of carpools, a TDM Coordinator at the MacArthur BART Station could administer an on-site carpool and vanpool matching service for BART patrons and maintain a list of available vanpools that provide service between the MacArthur BART Station and various residential neighborhoods. If a TDM Coordinator position is not created in the short- and/or long-term, patrons can be encouraged to use the 511.org Rideshare website to access additional ridematching services (perhaps via an on-site web kiosk).

Table 10-8 summarizes the potential costs and benefits of a neighborhood ridesharing program.

**TABLE 10-8
NEIGHBORHOOD RIDEMATCHING/ RIDESHARING: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$55,000		Estimated Ridership Benefit: Supporting Strategy	
Potential Costs		Potential Benefits	
– Administration and set-up costs		– With stronger marketing, a potential increase in carpooling of 15-25% (and 15-25% of parking spaces can be converted to carpool parking) ²⁹	
		– Reduced VMT	

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

STATION/TDM WEBSITE

Description: A station area website would be another key wayfinding strategy. Critical information for the website includes contact information for a TDM Coordinator and links to the 511.org website for transit route and schedule information. The Fruitvale Village has a website that may serve as an example for the MacArthur Station (<http://www.unitycouncil.org/fruitvale/index.htm>). This website also includes links to news articles about the Transit Village.

Feasibility: Updating and maintaining the TDM website would be an important role for the TDM Coordinator.

Table 10-9 summarizes the potential costs and benefits of a Station/TDM website.

**TABLE 10-9
STATION/TDM WEBSITE: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$60,000		Estimated Ridership Benefit: Supporting Strategy	
Potential Costs		Potential Benefits	
– Administration and set-up costs		– Improved non-auto access to the Station	
		– Reduced VMT	

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

SMART PARKING (VARIABLE MESSAGE SIGNS)

Description: Using advanced technologies, smart parking systems can help motorists locate available parking. Systems usually employ changeable message signs to display real-time information on parking availability and locations, and sometimes also transit departure times and roadway conditions/ collisions downstream. Smart

²⁹ Nelson\Nygaard. "RideNow! Evaluation Draft Report." Alameda County Congestion Management Agency. September 2006. Retrieved 07 August 2007 from http://www.ridenow.org/4113_ACCMADynamicRidesharing.pdf.

parking management systems are widely used in European, British, and Japanese cities. Pilot systems have also been implemented in Oakland (Rockridge BART); Bethesda, Maryland; and Chicago.³⁰

Feasibility: Variable message signs could display BART parking lot or garage space availability information. Signs could also display information about non-auto access strategies.

Table 10-10 summarizes the potential costs and benefits of variable message signs.

TABLE 10-10 VARIABLE MESSAGE SIGNS: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$70,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Installation and maintenance costs - Capital cost of signs (assume 2) 	<ul style="list-style-type: none"> - Convenience for motorists - Opportunity to encourage non-auto access strategies
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: VILLAGE RESIDENT ECOPASS “LITE”

Description: An EcoPass is a transit pass offered at a discount to a user based on a group rate. A neighborhood EcoPass can be implemented by having mandatory or optional buy-ins for a residential community. As a Tier Two Strategy, and EcoPass “Lite” program could provide Village residents with access to BART EZ Rider passes, which provide a 6.25% discount (a \$48 ticket is available for \$45).

Residents could also be eligible for an AC Transit bus EcoPass. Based on current projections, the unit cost for the AC Transit pass would be \$86/pass per year, a 94% discount from the standard price of a TransBay pass of \$116 per month or \$1,392 per year. This minor cost of \$7/month per resident could be included in Homeowners’ Association (HOA) dues or apartment rents. The key benefit to BART of the AC Transit EcoPass for Village Residents would be the incentive for car shedding. By reducing the number of resident vehicles parked on site, additional parking could be made available for BART patrons.

Feasibility: Initial set up costs for both discount programs would be minor and could likely be funded through a Metropolitan Transportation Commission (MTC) pilot program. With respect to BART ridership, a deeper discount BART fare would be more effective (as recommended in Tier Three); however, no current BART EcoPass programs exist.

Table 10-11 summarizes the potential costs and benefits of a Village Resident EcoPass.

³⁰ Rodier, C., Shaheen, S. and Smirti, M. “Transit-Based Smart Parking in the US: Behavioral Analysis of San Francisco Bay Area Field Test.” TRB 86th Annual Meeting Compendium of Papers CD-ROM. 2007. Accessed 08 August 2007 from <http://database.path.berkeley.edu/imr/papers/UCD-ITS-RR-06-19.pdf>.

**TABLE 10-11
 VILLAGE RESIDENT TRANSIT ECOPASS LITE: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$(54,200)		Estimated Ridership Benefit: 12	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Cost of EcoPass subsidies (lost revenue for transit operations) - May be difficult to administer; requires a TDM Coordinator or MTC grant 		<ul style="list-style-type: none"> - Increased transit ridership - Makes transit ridership more affordable and more convenient for Transit Village residents - Encourages carshedding and may increase parking availability for BART patrons 	
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A			

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: UNBUNDLED, SHARED PARKING

Description: The cost of parking is often “hidden” within the rent or purchase price of a residential or commercial unit. When parking is unbundled, parking spaces may be rented or sold separately rather than automatically included with the building space. Unbundling parking can also make housing more affordable by providing the option of paying for housing without also paying for parking (if the household chooses not to or does not have a vehicle).

Companion strategies of charging market rates for on street parking and selling limited residential parking permits are often necessary to prevent spillover effects. Unbundled parking can also complement carsharing and EcoPass programs.

Where parking provisions are not reduced with unbundling, as is expected for the proposed development, excess parking may be used as shared parking. Shared parking maximizes the use of parking facilities by making parking available for several land uses, especially those that have different time-of-day parking requirements.

Feasibility: A shared parking program would provide flexibility for the Transit Village. A potential shared parking scheme could include the following:

- Parking spaces are sold separately from units, with the total parking supply equal to one space per unit
- Surplus residential parking is then leased to BART patrons at market rates (on a monthly basis to control the population of users with access to the residential parking area); this program could be managed by a TDM Coordinator or the BART garage parking management company.
- Available spaces are provided to residents first upon turnover should their parking needs change

This strategy is considered a Tier Two strategy because of potential concerns associated with the marketability of residential units without parking, as well as security and liability concerns. While unbundled parking is a successful strategy in many urban areas such as San Francisco, the lower density areas surrounding the MacArthur Station may encourage higher rates of vehicle ownership for Village residents.

Table 10-12 summarizes the potential costs and benefits of unbundled, shared parking.

**TABLE 10-12
 UNBUNDLED, SHARED PARKING: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$110,000		Estimated Ridership Benefit: 180	
Potential Costs		Potential Benefits	
<ul style="list-style-type: none"> - Administration - Parking spillover problems if on-street companion strategies are not implemented/ enforced - Concerns regarding marketability of residential units without parking, security, and liability - Encourages auto access to BART by providing additional parking opportunities 		<ul style="list-style-type: none"> - Increases housing affordability for those who do not need or want parking spaces - Incentives to walk, bike, take transit, or use car share options - Increased profit for building owners because of market rate pricing (up to 20%)³¹ - Potential to provide surplus parking to BART patrons who do not have a non-auto access alternative 	

Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: INFORMATION BOOTH

Description: A transportation “Information Booth” could be located in the Transit Village, possibly co-located with the TDM Coordinator’s office and a bike station (as recommended in Tier Three). Paper maps should be available in addition to an Internet kiosk at the Booth. A community message board for people to locate carpool partners or safety “walking buddies” could also be provided at the Booth. During peak hours, and especially when the Transit Village first opens, someone should be stationed at the booth to answer questions and provide directions.

Feasibility: An information booth is staffed through the 511.org program at the Embarcadero BART Station and the Ferry Building in San Francisco (two primary transit hubs) with subsidies from the Metropolitan Transportation Commission (MTC). At the Embarcadero Station, plasma screens display real-time transit information, 511/BART website public access terminals are provided, FasTrak and TransLink are sold and promoted, and staff is available 12 hours a day to answer transit questions. A smaller-scale version of this kiosk would be appropriate for the MacArthur Transit Village because of the importance of the MacArthur BART Station as a transit hub in the East Bay.

Table 10-13 summarizes the potential costs and benefits of an Information Booth. Note that most of the costs associated with the booth assume the Booth is located at a TDM Coordinator’s office. Costs provided here are additional start-up costs only.

³¹ VTPI. “Parking Management: Strategies for More Efficient Use of Parking Resources.”

**TABLE 10-13
 INFORMATION BOOTH: POTENTIAL COSTS AND BENEFITS**

Estimated 10-Year Cost: \$300,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Set-up costs - Staffing and maintenance costs 	<ul style="list-style-type: none"> - Reduced VMT - Increased transit use and non-auto access to BART
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

11. TIER THREE STRATEGIES

Strategies in this Tier Three may be feasible, but are likely not appropriate for short-term implementation or without further study because of perceived barriers to implementation and/or poor cost-effectiveness. Table 11-1 summarizes the estimated ridership benefits and capital and operating costs associated with each strategy.

The following sections present a description of each strategy and potential costs and benefits associated with each. Strategies are grouped as either primary or supporting strategies. Additionally, some strategies would only be recommended/ applicable with a Transit Village development, while others could be employed to improve existing conditions.

TABLE 11-1 TIER THREE STRATEGIES			
Tier Three Strategy	Ridership Benefit (Patrons)	Capital Cost	Operating Cost (Annual)
Free Wi-Fi to enable Internet access for wayfinding information	supporting strategy	\$25,000	\$10,000
Internet Kiosks to provide wayfinding information	supporting strategy	\$10,000	\$10,000
With Transit Village Development Only:			
Bicycle Station co-located with a retail use in the Transit Village	insufficient data to support estimate	\$650,000	\$150,000
Village Resident 20% Discount BART Ticket to encourage car shedding	30	\$5,000	\$127,200
Source: Fehr & Peers, March 2008; Cost and benefit calculations and assumptions are presented in Appendix A			

INTERNET KIOSKS AND FREE WI-FI SERVICE

Description: Internet kiosks would provide access to the BART website as well as the NextBus site where real-time bus “tracking” is available for many of the bus routes that serve the MacArthur BART Station. Two other important wayfinding websites, www.511.org and the Transit Village website (if applicable), could also be accessed from these kiosks. The www.511.org website provides multimodal route and schedule information for the San Francisco Bay Area. Kiosks could be located on the BART Plaza, but preferably at a TDM Coordinator’s Information Booth for security.

Additionally, free Wi-Fi service could be provided within the station area. This service would allow anyone with a laptop or other mobile device with an Internet browser to access wayfinding information. Free Wi-Fi service may also encourage patronage of local restaurants and cafes.

Feasibility: Internet kiosks have been installed at the Ferry Station and Embarcadero information kiosks in San Francisco. With regard to free Wi-Fi, new wiretapping laws that require the provision of expensive monitoring equipment in some situations have recently posed challenges to large-scale Wi-Fi coverage.³² Legal implications of a Wi-Fi service should be explored for the station area. If legal hurdles do not prohibit Wi-Fi coverage, it is a

³² Hegstad, Maria. “Alexandria Shuts Down Free Wireless Hotspot.” *San Francisco Examiner*. August 22, 2007. Accessed from http://www.examiner.com/a-893644~Alexandria_shuts_down_free_wireless_hot_spot.html

low-cost option that may offer significant benefits. Wi-Fi service is currently provided by AC Transit on many TransBay buses and is well used.

Table 11-2 summarizes the potential costs and benefits of internet kiosks and free Wi-Fi service.

TABLE 11-2 INTERNET KIOSKS AND FREE WI-FI SERVICE: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$235,000	Estimated Ridership Benefit: Supporting Strategy
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Installation and operating costs - Capital equipment costs - Internet kiosks may be subject to theft and vandalism - Wi-Fi may face legal hurdles 	<ul style="list-style-type: none"> - Improved access to information may increase non-auto access to the Station
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: ATTENDED BICYCLE STATION

Description: Based on the policies in Oakland's 2007 *BMP* and BART's *Bicycle Access and Parking Plan*, a secure, high-capacity bicycle parking station (Class I), similar to the bike stations provided at the Downtown Berkeley BART Station and the Fruitvale Transit Village, is recommended for MacArthur BART bicycle parking. While the demand for secure Class I bicycle parking is estimated to be less than the station "warrant" threshold of 100 spaces, there is likely a latent demand for secure, long-term bicycle parking at the station.

To encourage use, the bike station should be located outside of the BART fare gates so that it can service BART riders, Village residents, and patrons of any Transit Village commercial areas. If the bike station is accessible to Transit Village patrons, it could meet the demand for long-term bicycle parking for retail shoppers and workers. A bicycle sharing program could also be hosted at the station.

Feasibility: Based on an economic feasibility study for the Downtown Berkeley Bike Station, cost savings for the MacArthur Bicycle Station could be achieved by providing only bicycle storage (no high skill, large space maintenance facilities). Additionally, co-locating the bicycle station with a coffee café would help to defray rent expenses. Electronic bicycle lockers should be located near the station to allow for after hours bicycle pick-up.

Table 11-3 summarizes the potential costs and benefits of a bicycle station. Note that the costs do not assume cost sharing with a coffee café.

TABLE 11-3 ATTENDED BICYCLE STATION: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$2,150,000	Estimated Ridership Benefit: N/A
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Staff and operating expenses - Rent if the facility is located in the Transit Village - Capital costs of establishing location (either within the station or the Transit Village) 	<ul style="list-style-type: none"> - Increased bicycle access to the Station - Improved security for bicycle patrons concerned about bicycle thefts
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

WITH TRANSIT VILLAGE DEVELOPMENT ONLY: VILLAGE RESIDENT 20-PERCENT DISCOUNT BART TICKET

Description: As an enhancement to the Tier Two EcoPass “Lite” Strategy, an option for a 20-Percent Discount BART Pass could be provided to Village residents. This pass, perhaps valid for 40 rides per month, could resemble the AC Transit Universal Pass (EcoPass), with a significant fare reduction. The pass would also require a commitment from Village residents to purchase a set number of passes each month to make the program financially viable and would perhaps be more viable for off-peak travel and/or a larger subscription base.

Feasibility: BART does not currently offer monthly passes or deep discount passes. The successful implementation of such passes for other transit agencies suggests the program should be considered for BART. A pilot program for MacArthur Transit Village residents could evaluate the feasibility of this program for other communities along the BART system.

Table 11-4 summarizes the potential costs and benefits of a Deep Discount BART Ticket for Village residents. Costs assume a 20% discount

TABLE 11-4 DEEP DISCOUNT BART TICKETS FOR VILLAGE RESIDENTS: POTENTIAL COSTS AND BENEFITS	
Estimated 10-Year Cost: \$1,277,000	Estimated Ridership Benefit: 30
Potential Costs	Potential Benefits
<ul style="list-style-type: none"> - Cost of EcoPass subsidies (lost revenue for transit operations) - Difficult to administer; requires a TDM Coordinator/Administrator 	<ul style="list-style-type: none"> - Increased transit ridership - Makes transit ridership more affordable and more convenient for Transit Village residents
Source: Fehr & Peers, August 2007; Cost and benefit calculations and assumptions are presented in Appendix A	

12. FUNDING

This chapter presents a discussion of several potential funding sources for the MacArthur BART Station Access Strategies presented in the previous chapters.

It is important to note that most transit-oriented development (TOD) projects require multiple funding sources. For example, the TOD at the Fruitvale BART Station in Oakland has 20 different funding sources (and 20 different timelines, contractual agreements, and grant requirements to satisfy).³³ It is likely that the recommended access strategies, in addition to the many other aspects of the proposed Transit Village, will also require multiple funding sources.

Additionally, most funding sources are not specifically targeted for TODs, but rather for elements that may be included in a TOD, such as air quality improvement. Because funds are not earmarked for TODs, they may require TOD projects to compete for funds, adding a further challenge to obtaining funding.

FEDERAL FUNDING SOURCES

A study commissioned by the California Department of Transportation (Caltrans) surveyed the federal funding sources that may be applicable for TOD projects in California. Based on that report, potential funding sources for the access strategies recommended in this plan likely include the following:

Congestion Mitigation and Air Quality (CMAQ) Improvement Program: funds are a potential source for projects that will contribute to the attainment or maintenance of National Ambient Air Quality Standards. (FHWA)

Surface Transportation (STP) Program: funds are a potential source for a wide variety of transit and highway projects, including carpool, parking, bicycle, and pedestrian facilities, and transit capital improvements (FHWA/FTA).

Transportation, Community and System Preservation (TCSP) Program, as part of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU): funds up to 80 TOD, traffic calming, and demand management projects per year, typically by Congressional designation (not a readily available source) (FHWA).³⁴

Most federal funds are distributed through state and regional agencies, such as Caltrans and the Metropolitan Transportation Commission (MTC).³⁵

STATE AND REGIONAL FUNDING SOURCES

State and regional funding sources most applicable to the strategies recommended in this Access Feasibility Study include:

Bicycle Transportation Account: funds are a potential source for bicycle transportation, including lanes and paths, lockers, transit vehicle racks, and safety education (Caltrans)

³³ Caltrans. *Statewide Transit-Oriented Development Study Factors for Success in California*.

³⁴ SAFETEA-LU is the current Federal Transportation Funding Act. The Caltrans study referenced TEA-21, the funding legislation that was in place at that time

³⁵ Caltrans. *Statewide Transit-Oriented Development Study Factors for Success in California*. Accessed from <http://transitorienteddevelopment.dot.ca.gov/PDFs/Statewide%20TOD%20Study%20Final%20Report%20Sept.%202002.pdf>

Interregional Improvement Program: funds are a potential source for projects that facilitate intercity movement of people and goods (Caltrans)

Regional Transportation Improvement Program (RTIP): funds are a potential source for regional capital improvement projects (Caltrans, MTC)

State Transit Assistance: funds are a potential source for cities and counties in paying for mass transit operations and capital projects (MTC, AC Transit)

Housing Incentive Program (HIP), Transportation for Livable Communities (TLC): funds are a potential source for projects such as streetscapes, pedestrian plazas, and bicycle facilities that help to create livable communities (MTC)

Safe Routes to Transit: funds are from Regional Measure 2 (March 2004, a \$1 Bay Bridge toll increase for transit). Funds are a potential source for projects that show a “bridge nexus” – the ability to reduce congestion on a state toll bridge.³⁶ (MTC)

Transportation Fund for Clean Air (TFCA): funds are a potential source for projects that seek to improve regional air quality (BAAQMD)

Transportation Development Act, Article 3 (TDA, Article 3): funds are a potential source for bicycle and pedestrian projects through formula, apportionments by request, and matching grants (MTC)

Measure B Bicycle and Pedestrian Countywide Discretionary Fund (CDF): funds are a potential source for bicycle and pedestrian projects in Alameda County through a competitive grant program (ACTIA)

Most funds are potential sources via city and county applications and/or allocated by MTC.³⁷

LOCAL FUNDING SOURCES

In addition to federal, state, and regional funding sources, several local sources from the City of Oakland and from Transit Village or Station Area revenues are potential sources to fund access improvements.

City of Oakland

Funds from the City of Oakland’s General Fund would likely support street and sidewalk replacement as well as litter and trash abatement. Additionally, redevelopment funds in the form of Tax Increment Financing are a potential source for street infrastructure projects, such as bulb-outs, lighting, and landscaping.

Parking Revenue

Many of the parking strategies recommended in this plan would result in increased parking revenue. Parking revenue would come from two sources:

- On-site BART patron parking (market priced, likely privately operated)
- Off-site, on-street metered parking along 40th Street, West MacArthur Boulevard, and Telegraph Avenue (market priced, potentially demand-based)

³⁶ Transportation and Land Use Coalition. “Safe Routes to Transit Program.” Accessed from http://www.transcoalition.org/c/bikeped/bikeped_saferoutes.htm

³⁷ Caltrans. *Statewide Transit-Oriented Development Study Factors for Success in California*.

Parking Benefit District Revenue

A Residential Parking Permit Program is anticipated for the neighborhoods surrounding the station to prevent spillover parking as on-site parking is reduced. By also creating a Parking Benefit District, parking revenue collected from surplus permit sales to BART patrons could be returned to the neighborhood for security or capital improvements, less administrative costs.

Homeowners' Association Dues (HOA)

Mandatory homeowners' association (HOA) dues could be assessed to encourage Transit Village residents to ride transit and/or shed a car. For example, homeowners' dues could include an EcoPass or carshare membership for every resident.

BART Revenue from Development

BART revenues from the disposition of the land could be used to pay for access improvements.

Developer Exactions

Required mitigations may be assessed to the developer because of transportation impacts associated with the Transit Village development. The Environmental Impact Report (EIR), which is being prepared in parallel with this document, will summarize the impacts that may be candidates for mitigation.

Advertisements

Funding opportunities may also exist with advertisement sales. For example, advertisements could be placed on wayfinding signs, paper maps, or the Transit Village website. Additional billboard space within the Transit Village could also be designated. Station advertising funds are currently allocated to the BART General Fund. However, when the advertising contract comes up for renewal, BART could negotiate to have a portion of the advertising revenue generated at each station returned to that station.

13. PROPOSED TRANSIT VILLAGE DEVELOPMENT

This chapter presents a summary of the current proposed development at the MacArthur BART Station. The role of the Access Feasibility Study with respect to this proposed development is also explained.

BACKGROUND

The majority of the development site is currently a below-grade surface parking lot with parking for approximately 600 vehicles. The site is included within the Broadway/MacArthur/San Pablo Redevelopment Project Area, which focuses on eliminating blight, retaining existing businesses, attracting new commercial enterprises, improving and creating new housing stock, and improving area infrastructure. The Citizen's Planning Committee for this site has been meeting since 1993 to create a development vision for the site and surrounding area.

After a request for proposals in 2004, the City of Oakland and the San Francisco Bay Area Rapid Transit District (BART) selected a development team to work with City of Oakland and BART staff and the surrounding community to plan, design, construct, and operate a mixed-use project with a residential focus at the MacArthur BART Station. In April 2004, the development team was selected for the MacArthur Transit Village: the MacArthur Transit Community Partners, LLC (MTCP). MTCP is comprised of two development firms: BRIDGE Urban Infill Land Development and McGrath Properties, Inc.

DEVELOPMENT OBJECTIVES

The MacArthur Transit Village Project seeks to redevelop and revitalize this underutilized site in Oakland to create a vibrant Transit Village that provides pedestrian oriented, mixed-use development (housing, retail, and community services), enhances the character of the neighborhood, and improves multi-modal access to and ridership of BART. Specifically, the project seeks to:

- Create a transit-oriented community that encourages pedestrian and bicycle access and the use of public transportation.
- Increase transit ridership and enhance quality of life at and around the BART station by encouraging and supporting high quality TOD within walking distance of the BART station.
- Enhance City and local community redevelopment efforts and strengthen existing neighborhood-serving businesses.
- Improve safety on and around by activating the development's street-level experience through ground floor retail and residential stoop entries that promote more "eyes on the street."
- Provide a substantial number of affordable housing units that can be developed on the site to serve low and very low-income families.
- Develop market rate residential units at urban densities that provide housing opportunities for a range of income levels.
- Develop urban infill housing with convenient transportation access near the urban core that would serve to divert housing from outlying areas and reduce long distance commute traffic-related pollution.
- Become a model Transit Village for environmentally friendly and sustainable development.
- Construct financially feasible developments with sufficient flexibility to adjust to market needs and to provide reasonable returns on investment to secure construction and long-term financing.

- Provide transit patrons and community residents with additional opportunities to purchase goods and services.
- Provide employment opportunities from development and operation of mixed-use development around the Station.

Additionally, the following project objectives relate specifically to BART:

- Improve the existing public open space in front of the BART fare gates including the BART Plaza and the area surrounding the station to revitalize the station area and to link more effectively it to the surrounding community.
- Encourage alternatives to single-occupant vehicle access to the BART station, such as access by walking, bicycling, passenger drop-off/pick-up, and transit.
- Increase TOD projects on and off BART property through creative planning and development partnerships with the local community.
- Minimize the physical barriers created in the community by the construction of the BART station and State Route 24 through the reintegration of the BART station with the surrounding community.
- Increase BART ridership.

PROPOSED DEVELOPMENT

The current proposal for the MacArthur Transit Village includes five new buildings that will accommodate for-rent and for-sale residential units, neighborhood-serving retail and commercial uses, live/work units, and a community use, such as day care. New land uses in the project area would be consistent with the land uses prescribed in the S-15, Transit-Oriented Development Zone. The project also includes two new internal roadways, a parking garage, landscaping and other streetscape improvements (i.e., benches and street lighting), and improvements to the BART Plaza. In summary the project includes the following elements:

- Demolition of existing structures and remediation of hazardous materials
- Up to 675 dwelling units (562 market-rate units and 113 affordable rentals units)
- Up to 44,000 square feet of commercial space (includes up to 18 live/work units)
- 5,000 square feet of community use space or childcare facility
- Approximately 1,000 parking spaces, which includes 300 exclusive BART patron parking spaces and 30 to 45 on-street parking spaces which would provide parking for commercial uses
- The development of pedestrian and bicycle friendly internal streets and walkways
- A Residential Parking Permit program for the adjacent neighborhoods
- Improvements to the BART Plaza and other public access improvements
- Sustainable development that meets the objectives of the US Green Building Council LEED Neighborhood Development (ND) Pilot Program goals

Figures 13-1 through 13-3 present site plans that illustrate these aspects of the proposed development, as well as the proposed pedestrian, bicycle, and vehicular circulation within the Transit Village. Additional details on site plan access and circulation elements are included in the following sections.

Circulation and Parking

Several circulation improvements are proposed for the project site. Three internal roadways would be constructed as part of the proposed project: Frontage Road, Village Drive, and an internal north/south street off Village Drive. New sidewalks, bicycle paths, and streetscape improvements would be constructed.

Frontage Road. The existing Frontage Road would be replaced, but remain in the same location as the existing Frontage Road. Frontage Road is a two-way road for the segments between 40th Street and Village Drive and between West MacArthur Boulevard and the BART parking garage driveway. South of the Frontage Road/Village Drive intersection, and before the parking garage, vehicular access would be limited to emergency vehicle access, southbound shuttle operators, and building services. Therefore, the majority of traffic at this section of Frontage Road would be shuttles traveling southbound between 40th Street and West MacArthur Boulevard. Additionally, the intersection of Frontage Road and West MacArthur Boulevard provides access to and from the Parking Garage (Building E) and vehicles can access Frontage Road at the Village Drive intersection to exit onto 40th Street. Sidewalks would be provided along the west side of Frontage Road and bicycle lanes would be included on Frontage Road. No parking would be permitted along Frontage Road, with the exception of loading, unloading, and staging areas for shuttle providers. The Frontage Road intersections with 40th Street and West MacArthur Boulevard would be signalized. The Frontage Road will also provide two-way (Class II) bike lanes.

Village Drive. Village Drive would be a two-way, two-lane road with a 60-foot right-of-way between Telegraph Avenue and the Frontage Road. It is anticipated that Village Drive would be open to vehicular traffic and pedestrian, as well as patrons who use kiss-and-ride. On-street parking and kiss-and-ride loading and unloading areas would be provided on Village Drive. Village Drive also includes large sidewalks because it is envisioned as the main pedestrian connection through the project site. Ground floor commercial and live-work units in the development would be oriented to face Village Drive with pedestrian scale retail uses with outdoor seating areas and retail displays at the Transit Village plaza (across from the BART Plaza) and on Telegraph Avenue. The project may include (as required) the installation of a traffic signal at the Village Drive/Telegraph Avenue intersection.

Internal Street. An internal two-way street is proposed south of Village Drive. The internal street is not a through street; a turn-around area is provided at the terminus of the street. On-street parking and sidewalks are proposed for both sides of the internal street at the southern edge of the project site. The internal street is envisioned as a residential street (no commercial space would front onto the internal street). Residential unit entrances (including stoops and small porches) would face onto the internal street. The primary pedestrian access to the internal street would be from Village Drive, but a pedestrian pathway located along the east elevation of the parking garage would allow also pedestrians and bicyclists to access the internal street from West MacArthur Boulevard.

Parking. The project includes approximately 1,000 parking spaces: 700 parking spaces in below grade commercial/residential parking garages and 300 parking spaces within the BART parking garage for BART patrons. The parking areas for residential units would be provided at a ratio of one parking space per unit within each building. Additional parking within mixed-use buildings may be used by employees of commercial units within the mixed-use buildings and guests of building residents. In addition to parking within proposed structures, approximately 30-45 on-street parking spaces would be located along Village Drive and the internal street. Street parking would provide parking spaces for patrons of the mixed-use buildings. No parking would be permitted on Frontage Road.

Residential Permit Parking. The proposed project may include a Residential Parking Permit program (RPP) that would extend approximately ¼-mile radius around the project site. This component of the project is proposed to offset potential parking impacts in the surrounding neighborhood that would be associated with a reduction in BART Parking by approximately 300 spaces on the project site. The RPP would restrict on-street parking by non-residents to less than two hours during the weekdays. If approved by local residents, the RPP program would be considered for implementation prior to demolition of the existing BART surface parking lot.

Landscaping Plazas and Streetscapes

Landscaping would be incorporated along all roadways proposed within the site, and would also include installation of street trees along the project boundaries on 40th Street, Telegraph Avenue, and West MacArthur Boulevard. Streetscape improvements including informational/wayfinding signs, benches, and street lighting would also be provided along project streets and open space. Ornamental street paving is also proposed at project driveways to identify entrances into the project site. Landscaped open space would be provided by internal courtyards in the residential areas.

Plaza Improvements

The existing BART Plaza would be renovated. Though precise plans for the BART Plaza renovation are not known at this time, it is anticipated that the BART Plaza improvements will include bike lockers, artwork, pedestrian pathways, lighting, seating area improvements, and covered waiting areas for bus/shuttle transfers.

The proposed project also includes a public plaza across from the BART Plaza. This plaza is intended to provide for outdoor seating area, landscaping, and public art.

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) NEIGHBORHOOD DESIGN (ND) CERTIFICATION

The U.S. Green Building Council (USGBC), the Congress for New Urbanism (CNU), and the Natural Resource Defense Council (NRDC) have come together to develop a national set of standards for neighborhood design based on principles of smart growth, new urbanism, and green building. LEED certification provides independent, third-party verification that a development's location and design meet accepted high standards for environmentally responsible, sustainable, development. LEED for Neighborhood Development (LEED-ND) places significant emphasis on the design elements that bring buildings together into a neighborhood focusing on pedestrian experience and encouraging social interaction. LEED ND credits include four categories: 1) Smart Location & Linkage (SLL), 2) Neighborhood Pattern & Design (NPD) 3) Green Construction & Technology and 4) Innovation & Design Process. The MacArthur BART Transit Village has been chosen to participate in a pilot program to develop and test these national standards for sustainable neighborhood developments.

Projects can earn four levels of certification based on the number of points they receive from the various credits, resulting in a designation of Certified, Silver, Gold, or Platinum. Based on the LEED ND pre-certification project checklist, MacArthur Transit Village should earn at least Silver and most likely a Gold level of certification.

MTCP plans to submit for Certification Pre-Review in early February 2008 and will receive feedback from the LEED ND Core Committee by April 2008. At that point necessary revisions will be made and re-submitted by July 2008. A more hands-on, interactive review process as well as two public comment periods will then follow, culminating in formal approvals no later than June 2009.



MacArthur Transit Community Partners, LLC



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MacArthur BART Station Access Feasibility Study

PROPOSED SITE PLAN

FIGURE 13-1

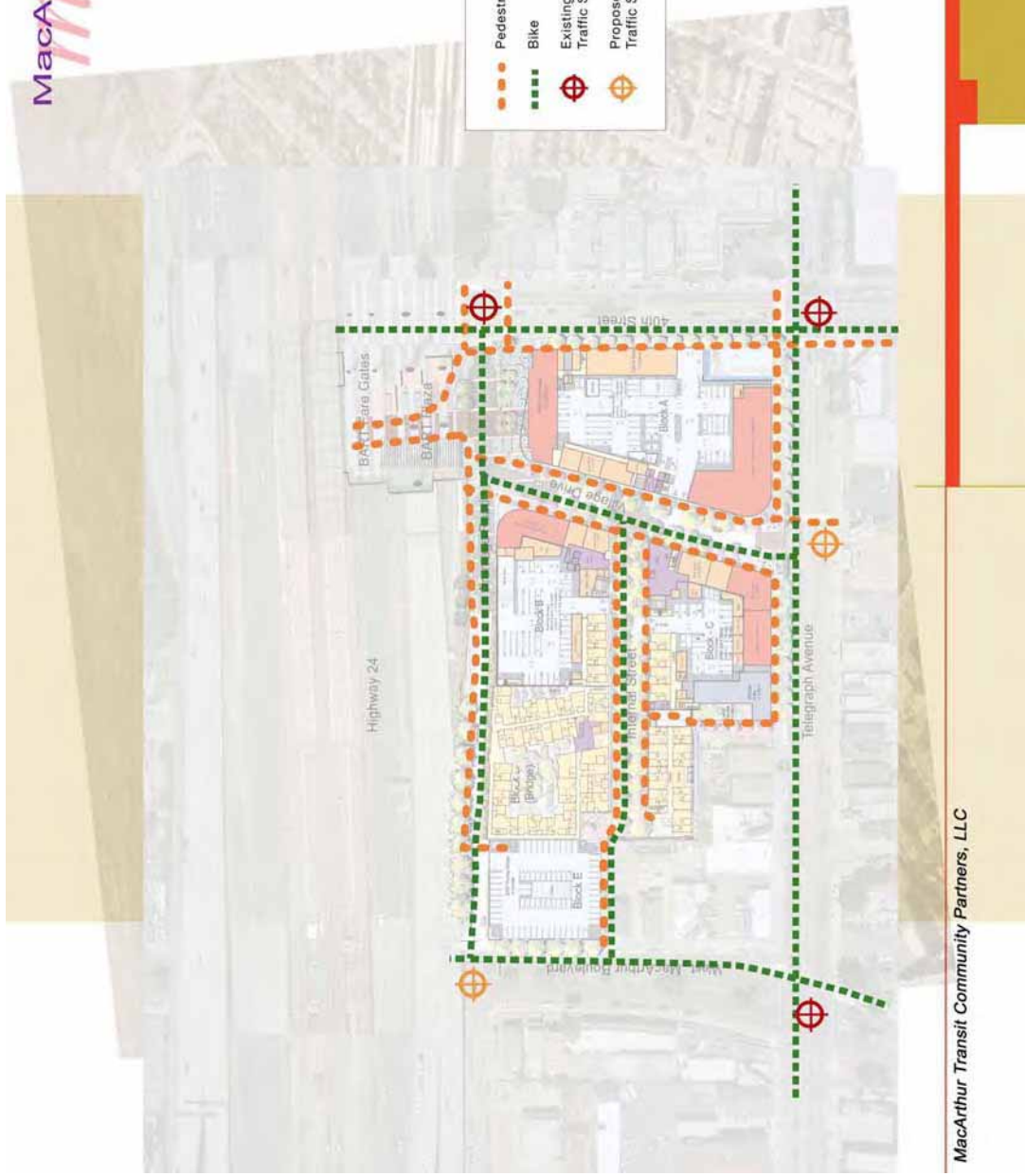
April 30, 2008

Preliminary
Development Plan/
Planning Commission
workshop

A-0.01
Pedestrian & Bike
Circulation



- Pedestrian
- Bike
- Existing Traffic Signal
- Proposed Traffic Signal

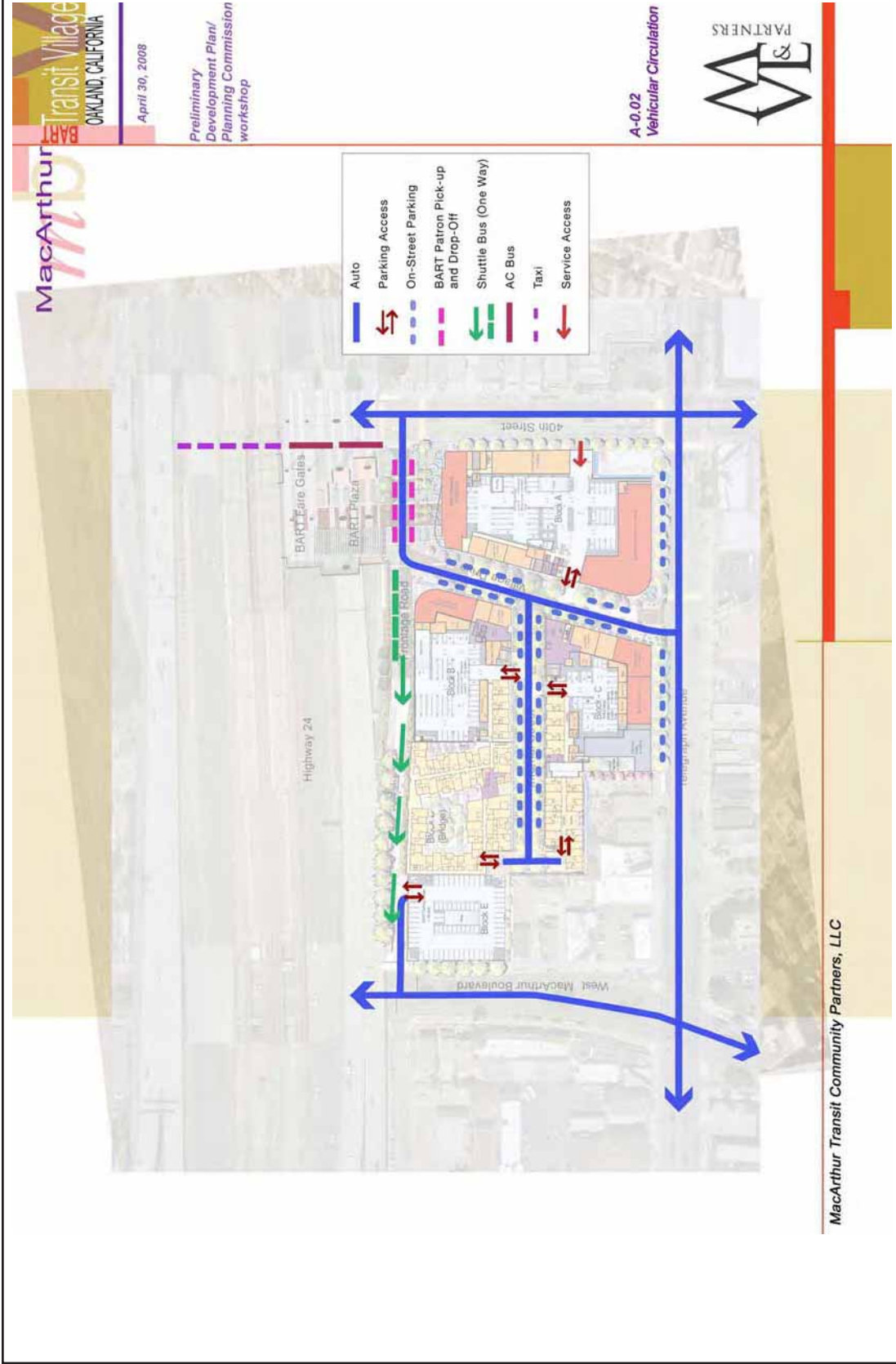


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MacArthur BART Station Access Feasibility Study

PROPOSED VEHICULAR CIRCULATION

FIGURE 13-3

THE PROPOSED DEVELOPMENT AND THIS STUDY

The following sections include a discussion of project-specific, on-site access improvements, which are not included in Chapters 8-11. Detailed physical improvements directly related to the proposed project are also described and analyzed in the MacArthur Transit Village Environmental Impact Report (EIR), which has been separately prepared for the project under the California Environmental Quality Act (CEQA).

Transit-Oriented Development (TOD) projects present unique opportunities for promoting and developing alternative means of travel, as well as access to transit facilities. Historically, BART has found that these opportunities have not been given equal consideration with roadway improvements during project review. Thus, BART has begun requiring Access Feasibility Studies be performed in concert with TOD projects. BART believes that conducting an Access Study in concert with the TOD project can provide the District with sufficient information to improve the various modes of access to the transit station in general and to help shape the TOD project specifically. BART-initiated Access Feasibility Studies analyze roadway impacts as well as other modes of access to BART, such as pedestrian, bicycle, pick-up/drop-off (kiss-ride), transit (both fixed route and privately operated shuttles), taxis, and high-occupancy vehicles, within a 1/4- to 1/2-mile radius of a station and the greater station catchment area. The access improvements identified as a result of the Access Feasibility Study are not static; once an Access Feasibility Study has been produced, periodic updates of the analysis will need to be performed to address changing conditions. However, the Access Feasibility Study and its periodic updates will provide a blueprint for access improvements that can be pursued over time should funds become available.

PROJECT-SPECIFIC ACCESS RECOMMENDATIONS

The proposed MacArthur BART Transit Village project would increase the number of people walking and bicycling around and through the project site. With this increase in pedestrian and bicycle activity, it is important that the on-site roadways and intersections are safe, convenient, and easily navigable, especially by foot and bicycle.

The following sections include a description and analysis of pedestrian, bicycle, transit, and personal vehicle accommodations on the Transit Village project site (internal roadways), as well as recommendations to improve access and circulation. The analysis and recommendations are based on a site plan dated October 1, 2007, as well as field observations. The physical recommendations are summarized in Figure 13-4.

PEDESTRIAN ACCESS

The project site includes several internal roadways with pedestrian facilities. These include Frontage Road along the western edge of the site that connects 40th Street to West MacArthur Boulevard, the north-south Internal Street in the center of the site, and Village Drive, which extends east-west between Telegraph Avenue and the BART station. The site plan also shows two pedestrian pathways: one between the southern end of Internal Street and West MacArthur Boulevard, and a second between Internal Street and Telegraph Avenue, along the southern edge of Block C. In addition, pedestrians would walk between the residential and retail uses and the BART station, across Frontage Road, as well as between the residential and retail uses, AC transit stops on 40th Street and Telegraph Avenue, and other destinations off-site.

Roadways

An analysis of the proposed roadway designs is provided below followed by a list of recommendations for modifications and improvements.

Frontage Road. Frontage Road would be shared between two-way bicycle traffic and southbound shuttle buses, as well as vehicles entering and exiting the BART parking garage at the southwest corner of the site (adjacent to the Frontage Road/West MacArthur Boulevard/37th Street intersection). No AC Transit buses would use Frontage Road. The site plan (sheet A-3.04) includes a section on Frontage between Village Drive and the BART parking garage. From west to east, this section includes a 12-foot sidewalk, a 10-foot shuttle drop-off/pick-up lane (this

occurs only at the northern end of this segment), an 11-foot southbound shuttle travel lane, a 4-foot bicycle lane, and a 5-foot bicycle lane. There is no sidewalk on the east side of Frontage Road. Between 40th Street and Village Drive, Frontage Road would include (from west to east) pick-up/drop-off parking, a southbound vehicle/shuttle lane (southbound cars would have to turn left onto Village Drive), a northbound vehicle lane (for cars turning onto Frontage Road from Village Drive), and additional pick-up/drop-off parking. No bike lanes are shown on this segment. Sidewalks would be provided on both sides of this segment.

Between the BART parking garage and West MacArthur Boulevard, Frontage Road would include (from west to east) a sidewalk, a southbound shuttle lane, a southbound left turn lane, and a northbound vehicle lane (for cars turning into the BART parking garage). No bike lanes are shown for this segment.

There are potential conflicts between bicycles, pedestrians, and vehicles at the northern end of Frontage Road near 40th Street. Pedestrians dropped off at the drop-off area on the east side of Frontage Road would cross the roadway, conflicting with bicyclists and vehicles traveling along Frontage Road. Bicyclists entering and exiting the BART station would also cross Frontage Road, potentially conflicting with southbound shuttles, pick-up/drop-off vehicles, and pedestrians crossing the road.

- Recommendation: Install a high-visibility crosswalk across Frontage Road connecting the BART garage to the western sidewalk. Note that currently, the City of Oakland does not install high visibility crosswalks at signalized intersections unless there are problems with sight distance.

Internal Street. Internal Street is a new road proposed as part of the project, which would extend between Village Drive and the southern edge of the residential units in the center of the site. Internal Street would be used by two-way vehicle traffic that enters and exits residential parking garages at the northern and southern ends of the street, as well as bicyclists and pedestrians (a 10-foot wide path along the eastern edge of the BART parking garage connects Internal Street to West MacArthur Boulevard). The roadway section shown on the site plan includes two travel lanes totaling 20 feet, two parking lanes of seven feet each, and seven-foot sidewalks along both sides of Internal Street.

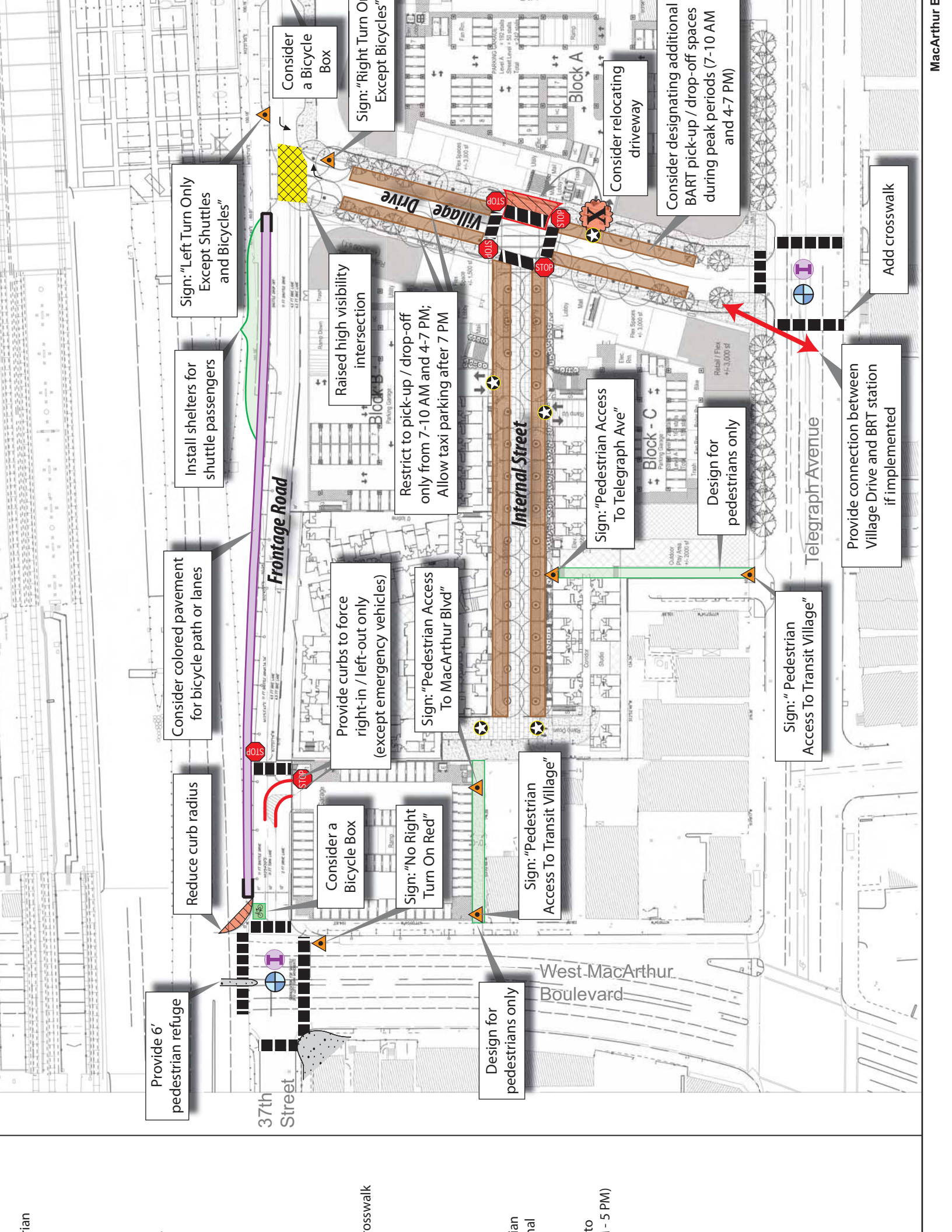
There are potential conflicts between vehicles entering and exiting the residential parking garages and pedestrians walking along the Internal Street sidewalks. The driveways should be designed to minimize these conflicts.

- Recommendation: Provide adequate sight distance at all residential garage exits. End the ramp before the sidewalk so that the sidewalk remains level and vehicles do not encroach on the sidewalk. Landscaping should be maintained so that adequate sight distance is provided. Consider installing pedestrian warning lights to alert pedestrians to exiting vehicles at driveways with high pedestrian volumes and limited sight distance. Installation of loud audible warning devices is not recommended.

The south end of Internal Street provides a T or “hammerhead” where vehicles would turn around. Two residential garages would also be accessed via the T. Fire trucks and emergency vehicles would also use the T to turn around.

- Recommendation: The design should be reviewed to ensure that it would not cause standard vehicles to encroach on the sidewalks when turning around.

Village Drive - Village Drive is a new road proposed as part of the project, which would extend between Telegraph Avenue and the BART Plaza. The section included in the site plan shows ten-foot sidewalks along both sides of the roadway, eight-foot parking lanes, and two 13-foot lanes, which would be shared between two-way vehicles and bicycles. Vehicles may turn from Village Drive into a residential parking garage just west of Telegraph Avenue, or onto Internal Street further west. In addition, 18 parking spaces are shown along Village Drive, ten east and eight west of Internal Street.



Provide 6' pedestrian refuge

Reduce curb radius

Consider colored pavement for bicycle path or lanes

Install shelters for shuttle passengers

Sign: "Left Turn Only Except Shuttles and Bicycles"

Consider a Bicycle Box

Sign: "Right Turn Only Except Bicycles"

Raised high visibility intersection

Restrict to pick-up / drop-off only from 7-10 AM and 4-7 PM; Allow taxi parking after 7 PM

Sign: "Pedestrian Access To MacArthur Blvd"

Provide curbs to force right-in / left-out only (except emergency vehicles)

Design for pedestrians only

Sign: "Pedestrian Access To Transit Village"

Sign: "Pedestrian Access To Telegraph Ave"

Design for pedestrians only

Consider relocating driveway

Consider designating additional BART pick-up / drop-off spaces during peak periods (7-10 AM and 4-7 PM)

Sign: "Pedestrian Access To Transit Village"

Provide connection between Village Drive and BRT station if implemented

Add crosswalk

- There are potential conflicts between vehicles entering and exiting the residential parking garage and pedestrians walking along the Village Drive sidewalk. The driveway should be designed to minimize these conflicts.
- Recommendation: Provide adequate sight distance at the garage exit. End the ramp before the sidewalk so that the sidewalk remains level and vehicles do not encroach on the sidewalk. Landscaping should be maintained so that adequate sight distance is provided. Consider installing pedestrian warning lights to alert pedestrians to exiting vehicles at driveways with high pedestrian volumes and limited sight distance. Installation of loud audible warning devices is not recommended.

Pedestrian/Bicycle Paths

The site plan shows a pedestrian/bicycle path between the southern end of Internal Street and West MacArthur Boulevard, and a pedestrian/bicycle path between Internal Street and Telegraph Avenue, along the southern edge of Block C. Both are shown to have street lighting. The pedestrian/bicycle path between Internal Street and West MacArthur Boulevard is shown to be 10 feet wide; according to the developer, the path between Internal Street and Telegraph Avenue is also planned to be 10 feet wide. As discussed in the Bicycle Access section below, there is no clear or safe access between these paths and the adjacent major streets (West MacArthur Boulevard and Telegraph Avenue). Bicyclists would likely ride on the sidewalk or enter/exit the paths mid-block from the adjacent streets, neither of which is advisable. For these reasons, the paths should be restricted to pedestrian use.

- Recommendation: Design both paths for pedestrian use only, and provide signage to mark the paths for pedestrian use only.

Intersections

The intersections adjacent to the project site currently have high volumes of pedestrians, bicyclists, and vehicles. These volumes are expected to increase with the project and general growth in the area. The proposed project intersections are also expected to have high pedestrian, bicycle, and vehicle volumes. In order to enhance pedestrian access and safety to and from the project site, the following measures should be considered. Feasibility studies will be needed at specific intersections.

- Recommendation: Prohibit right turns on red and provide a leading pedestrian interval for pedestrians crossing at intersections to reduce vehicle-pedestrian conflicts.
- Recommendation: Provide for an increase in the initial walk interval to allow clusters of pedestrians more time to leave the corner or sidewalk when crossing. In the future consider providing a crossing time of 3.5 feet per seconds if more than 20 percent of MacArthur area pedestrians are 60 years or older.³⁸
- Recommendation: Install high-visibility crosswalks (e.g., ladder striping³⁹ or colored pavement) at all crossings within the project. Currently, the City of Oakland does not install high visibility crosswalks at signalized intersections unless there are problems with sight distance.

³⁸ 2000 Highway Capacity Manual.

³⁹ According to the Pedestrian and Bicycle Information Center (<http://www.walkinginfo.org/engineering/crossings-crosswalks.cfm>), various crosswalk marking patterns are given in the MUTCD; however, the "international" (also known as "ladder" or "zebra") markings are strongly preferred, particularly at uncontrolled locations, because they are far more visible, which is particularly important at night or in low light conditions (e.g., rain).

- Recommendation: Install audible pedestrian countdown signals at all signalized intersections adjacent to the project, including on pedestrian refuges in the median, if feasible.
- Recommendation: Provide separate curb ramps for each crosswalk.
- Recommendation: Install bulb-outs at corners to reduce crossing distance and increase pedestrian visibility. This may require removing on-street parking at specific locations. Bulb-outs should be designed to accommodate a SU-30 (30-foot long single unit) truck.

Table 13-1 outlines at which intersections the above recommendations should be considered.

Intersection	Prohibit right turns on red and provide a leading pedestrian interval	Increase the initial walk interval	Install high-visibility crosswalks	Install audible pedestrian countdown signals	Provide separate curb ramps for each crosswalk	Install bulb-outs at corners
40 th Street/Frontage Road	X	X	X	X	X	
Telegraph Avenue/Village Drive		X	X	X	X	
Frontage Road/Village Drive			X			
West MacArthur Boulevard/Frontage Road/37 th Street	X	X	X	X	X	X

Fehr & Peers, 2008.

40th Street/Frontage Road – The 40th Street/Frontage Road intersection is a T-intersection, and is currently uncontrolled, with marked crosswalks crossing the east and south approaches of the intersection. Upgraded curb ramps with yellow tactile domes/detectable surfaces have been installed on the southeast corner of the intersection. As many as 350 pedestrians currently cross the intersection during peak hours. Collision data shows four reported vehicle-pedestrian collisions between 2000 and 2004 on 40th Street between 200 and 450 feet west of Telegraph Avenue, including one adjacent to Frontage Road that resulted in death. In three of the four cases, the primary collision factor cited was violation of pedestrian right of way. With the proposed project, pedestrian volumes are expected to increase at the intersection.

The 40th Street/MacArthur Transit Hub improvement project, which is expected to be completed before the proposed Transit Village, includes installing a traffic signal with standard pedestrian phases and a crosswalk with a median pedestrian refuge on the west side of the 40th Street/Frontage Road intersection. The signal would provide a protected westbound left turn phase (there is currently a westbound left turn pocket at the intersection). The 40th Street project will also add lighting under the Highway 24 overpass. The project site plan includes bulb-outs on the southwest and southeast corners of the intersection. These improvements are expected to improve pedestrian safety at the intersection.

- Recommendation: Consider restricting right turns on red, extending the initial walk interval, and providing a leading pedestrian interval, high visibility crosswalks, audible countdown signals, and additional curb ramps.

Telegraph Avenue/Village Drive – Telegraph Avenue/Village Drive would be a new T intersection, and is proposed to be signalized with a marked crosswalk on the northern side of the intersection and bulb-outs on the northwest and southwest corners. This intersection would be the main gateway into the retail component of the project, and would also provide access to the residential garages, residential units, and BART Plaza. With the proposed project, pedestrian volumes are expected to increase at the intersection.

- Recommendation: Consider extending the initial walk interval, and providing high visibility crosswalks, audible countdown signals, and additional curb ramps.
- Recommendation: Mark a second high-visibility crosswalk on the southern side of the Telegraph Avenue/Village Drive intersection.

Frontage Road/Village Drive – This T intersection would provide the primary connection between the project and the BART station. Private vehicles, shuttle buses, bicycles, and pedestrians would travel through the intersection. Conflicts may occur between pedestrians and vehicles, shuttle buses, and bicyclists on Frontage Road. The site plan shows a bulb-out at the northeast corner of the intersection.

- Recommendation: Provide a raised intersection with high-visibility striping at the Frontage Road/Village Drive intersection to connect the BART Plaza and shuttle stops with Village Drive and the kiss-and-ride areas.
- Recommendation: Install signage (e.g., “Right Turn Only, Except Bicycles” and “Left Turn Only, Except Shuttles and Bicycles”) and striping at the Frontage Road/Village Drive intersection to prohibit southbound and westbound vehicles, except shuttle buses and bicycles, from continuing southbound to West MacArthur Boulevard.

West MacArthur Boulevard/Frontage Road/37th Street – This intersection currently has four approaches, but a median prevents through and left-turn movements to and from the northbound and southbound approaches. A marked crosswalk is provided across Frontage Road. Currently, the intersection has wide corners that encourage high vehicle speeds, faded crosswalks, and narrow sidewalks on the southbound approach. Up to 100 pedestrians cross Frontage Road during peak hours. In addition, pedestrians have been observed crossing West MacArthur Boulevard, despite the lack of crosswalks, indicating a need for a safe crossing. Between 2000 and 2006, there were no reported vehicle-pedestrian collisions.

With the project, the intersection would provide the only vehicle access to the BART parking garage. It would also be used by shuttle buses exiting Frontage Road, and bicycles and pedestrians both entering and exiting Frontage Road. Vehicle, pedestrian, and bicycle volumes at the intersection would likely increase. The intersection is proposed to be signalized and a portion of the West MacArthur Boulevard median removed so that all movements will be allowed to and from both Frontage Road and 37th Street. No marked crosswalks are shown on the site plan.

- Recommendation: Extend the existing median on the west side of the West MacArthur Boulevard/Frontage Road/37th Street intersection to provide a pedestrian refuge. The existing median is approximately 6 feet wide at the intersection; therefore, no additional right of way would be required.
- Recommendation: Reduce the curb radius on the northwest corner of the West MacArthur Boulevard/Frontage Road/37th Street intersection to reduce vehicle speeds.
- Recommendation: Consider restricting right turns on red, extending the initial walk interval, and providing a leading pedestrian interval, high visibility crosswalks, audible countdown signals, additional curb ramps, and bulb-outs. A bulb-out is specifically recommended at the southeast corner. This may require removing on-street parking along a short portion of West MacArthur Boulevard east of 37th Street.

TRANSIT ACCESS

Anticipated Transit Impacts with the Proposed Development

Appendix C provides a summary of the estimated BART ridership impacts associated with the proposed development. While the loss of BART patron parking spaces would likely result in a decrease in BART ridership and access mode shifts, the new land uses are expected to result in an increase in ridership. With the above menu of access strategies in place, the Transit Village is expected to result in a net increase in BART, AC Transit, and neighborhood shuttle ridership.

The other significant transit impact associated with the proposed development would be a reduction in shuttle route times because of the signalization of Frontage Road and West MacArthur Boulevard. This improvement is assumed regardless of the specific project details, and the resulting shuttle service recommendations are presented in the above tiered access strategies.

AC Transit

The stop locations for the AC Transit buses are proposed to remain in their existing location. Telegraph Avenue and 40th Street would serve as major bicycle and pedestrian access routes to the project. These streets are also major corridors for AC Transit buses. Potential conflicts may occur between buses and pedestrians and bicyclists, and between vehicles and pedestrians accessing or leaving bus stops and should be addressed through the pedestrian and bicycle improvements recommended in the tiered strategies and the project-specific pedestrian and bicycle recommendations presented in this chapter.

Bus Rapid Transit (BRT) is proposed on Telegraph Avenue, and could provide a connection to the project site if a stop were located at Village Drive.

- Recommendation: Provide an efficient pedestrian connection to the Telegraph Avenue BRT via the proposed Village Drive if the proposed BRT station is located at the intersection of Village Drive and Telegraph Avenue.

Shuttle Access

The hospital and Emery-Go-Round shuttles would access the site via 40th Street, turn onto Frontage Road, stop to unload and load passengers in the designated area just south of Village Drive, and exit to West MacArthur Boulevard. As described in the pedestrian and bicycle analysis section, the configuration of Frontage Road with on-street bike lanes creates potential conflicts between shuttle buses and bicyclists near the shuttle bus stops and between shuttles, private vehicles, and bicyclists at the Village Drive/Frontage Road intersection.

There are no freestanding shelters for bus or shuttle users at the MacArthur BART Station. However, shelter is provided by the Highway 24 ramps that cover the majority of the station plaza area. The ramps shelter passengers waiting for AC Transit along 40th Street. Passengers waiting for shuttles on Frontage Road may also wait under the freeway ramps, but the ramps are located 25 feet from the curb and only cover approximately half of the shuttle curb length. The designated stops for the Emery-Go-Round and the Caltrans bicycle shuttle are past the elevated ramps and have no sheltered areas to wait.

- Recommendation: Provide shelters adjacent to shuttle stops for pedestrians waiting for shuttles.

BICYCLE ACCESS

Bicycle travel is shown on all three of the internal roadways: Frontage Road along the western edge of the property, connecting 40th Street to West MacArthur Boulevard; Village Drive between Telegraph Avenue and the BART station; and Internal Street between Village Drive and West MacArthur Boulevard. In addition, bicyclists

would ride between the project site and the BART station, across the Frontage Road, as well as between the project and other destinations off-site.

Roadways

An analysis of the proposed roadway designs is provided below followed by a list of recommendations for modifications and improvements.

Frontage Road. Frontage Road would be shared between two-way bicycle traffic and southbound shuttle buses, as well as vehicles entering and exiting the BART parking garage at the southwest corner of the site (adjacent to the Frontage Road/West MacArthur Boulevard/37th Street intersection). No AC Transit buses would use Frontage Road.

The site plan (sheet A-3.04) includes a section on Frontage between Village Drive and the BART parking garage. From west to east, this section includes a 12-foot sidewalk, a 10-foot shuttle drop-off/pick-up lane (this occurs only at the northern end of this segment), an 11-foot southbound shuttle travel lane, a 4-foot bicycle lane, and a 5-foot bicycle lane. There is no sidewalk on the east side of Frontage Road. Between 40th Street and Village Drive, Frontage Road would include (from west to east) pick-up/drop-off parking, a southbound vehicle/shuttle lane (southbound cars would have to turn left onto Village Drive), a northbound vehicle lane (for cars turning onto Frontage Road from Village Drive), and additional pick-up/drop-off parking. No bike lanes are shown on this segment. Sidewalks would be provided on both sides of this segment. Between the BART parking garage and West MacArthur Boulevard, Frontage Road would include (from west to east) a sidewalk, a southbound shuttle lane, a southbound left turn lane, and a northbound vehicle lane (for cars turning into the BART parking garage). No bike lanes are shown for this segment.

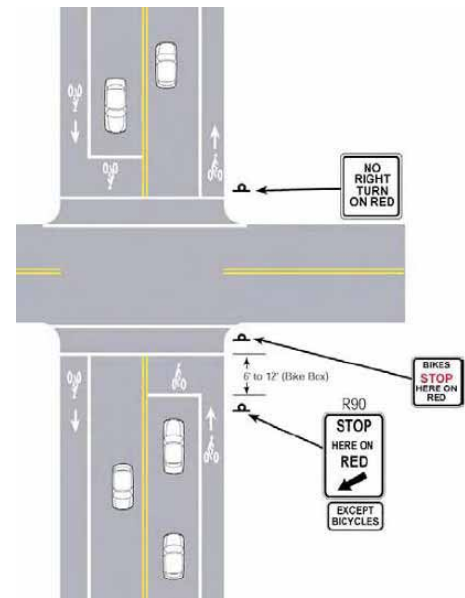
There are potential conflicts between bicycles, pedestrians, and vehicles at the northern end of Frontage Road near 40th Street. Pedestrians dropped off at the drop-off area on the east side of Frontage Road would cross the roadway, conflicting with bicyclists and vehicles traveling along Frontage Road. Bicyclists entering and exiting the BART station would also cross Frontage Road, potentially conflicting with southbound shuttles, pick-up/drop-off vehicles, and pedestrians crossing the road.

BART's *Bicycle Access and Parking Plan (2002)* includes the following recommendations for bicycle access in Transit Villages:

C-2. Provide safe and direct bicycle access through the transit village to the BART station. Wherever possible, separate bicycle routes from those for pedestrians and motor vehicles.

C-3. Provide bicycle access through all areas of the transit village. Avoid the designation of pedestrian-only zones that exclude bicycles.

C-4. Design parking garages to avoid major conflicts with bicycle and pedestrian traffic at structure entrances and exits. Where bicycle routes must cross garage entrances/exits, provide additional traffic control or calming devices to alert motorists to the bicycle crossings.



Bicycle Box diagram (*Innovative Bicycle Treatments*, ITE)

Safe and intuitive two-way access for bicycles on Frontage Road from 40th Street and West MacArthur Boulevard should be prioritized.

A “bicycle box” should be considered at the southbound approach to the West MacArthur Boulevard/Frontage Road/37th Street intersection as well as the northbound approach to the Frontage Road/40th Street intersection. This would allow bicyclists traveling southbound onto 37th Street or turning left onto West MacArthur Boulevard (which the 2007 *Bicycle Master Plan Update* proposes to have bicycle lanes) to move in front of vehicles and avoid getting cut off by right-turning or through vehicles, and reduce conflicts between northbound vehicles and bicyclists turning from Frontage Road onto 40th Street (see diagram). No additional right of way would be required. Currently, the City of Oakland does not install bicycle boxes in the public right of way. However, studies of bicycle boxes in Europe have documented a 35 percent reduction in through-bicycle/right-turning-vehicle collisions.⁴⁰

- Recommendation: Install STOP signs for vehicles exiting the BART garage and for southbound shuttles approaching the BART garage to address sight distance concerns and improve pedestrian safety.
- Recommendation: Provide adequate sight distance at the garage exit. Landscaping should be maintained so that adequate sight distance is provided.
- Recommendation: Consider providing a “bicycle box” at the southbound approach to the West MacArthur Boulevard/Frontage Road/37th Street intersection and at the northbound approach to the Frontage Road/40th Street intersection.
- Recommendation: Provide signage on the northwest corner of the West MacArthur Boulevard/Frontage Road intersection directing bicyclists to the bicycle path or lanes on Frontage Road.
- Recommendation: Consider using colored pavement or other visual treatments on the bike path or lanes to increase their visibility and use by bicyclists.
- Recommendation: If on-street bike lanes are provided, locate the northbound bike lane west of the northbound (right-turn only) vehicle lane. Southbound bicyclists could use the southbound shuttle lane.

Pedestrian/Bicycle Paths

The site plan includes two pedestrian/bicycle paths, one between the southern end of Internal Street and West MacArthur Boulevard, and one between Internal Street and Telegraph Avenue at the southern edge of Block C. Both paths are planned to be 10 feet wide. No access is shown on the site plan between West MacArthur Boulevard or Telegraph Avenue and the respective paths. This raises safety issues. For instance, bicyclists accessing the West MacArthur Boulevard-Internal Street path northbound would ride along the sidewalk on West MacArthur Boulevard, and cyclists riding on the path southbound would exit onto the West MacArthur Boulevard sidewalk. Bicycling on the sidewalk is not recommended. At the same time, direct access between West MacArthur Boulevard and the path is also not recommended, due to high vehicle volumes and speeds along West MacArthur Boulevard. Similarly, bicyclists using the Telegraph Avenue-Internal Street path would either ride along the sidewalk, which is not recommended or require direct access to and from Telegraph Avenue, which may not be safe.

- Recommendation: Design the paths between Internal Street and West MacArthur Boulevard, and Internal Street and Telegraph Avenue for pedestrian use only, and provide signage to mark the paths for pedestrian use only.

⁴⁰ Signalized Intersections: Informational Guide, FHWA, August 2004 (see <http://www.tfhr.gov/safety/pubs/04091/09.htm#921>)

Intersections

The intersections adjacent to the project site currently have high volumes of pedestrians, bicyclists, and vehicles. These volumes are expected to increase with the project and general growth in the area. The proposed project intersections are also expected to have high pedestrian, bicycle, and vehicle volumes. A description of the key intersections and recommended measures to enhance bicycle access and safety to and from the project site are listed below.

40th Street/Frontage Road – The 40th Street/Frontage Road intersection is a T-intersection, and is currently uncontrolled. Up to 45 bicyclists pass through the intersection during peak hours. Collision data shows one reported vehicle-bicycle collision near this intersection between 2000 and 2004, in which a westbound vehicle on 40th Street making a U-turn collided with a bicyclist traveling eastbound. With the proposed project, bicycle volumes are expected to increase at the intersection.

The 40th Street/MacArthur Transit Hub improvement project, which is expected to be completed before the proposed Transit Village, includes installing a traffic signal at the 40th Street/Frontage Road intersection. The signal would provide a protected westbound left turn phase (there is currently a westbound left turn pocket at the intersection). The 40th Street project also includes installing bicycle lanes on 40th Street between Telegraph Avenue and Martin Luther King, Jr. Way and adding lighting under the Highway 24 overpass. These improvements are expected to improve bicycle safety at the intersection. The site plan includes a street section that shows ten-foot sidewalks with a landscape strip and street trees, as well as a ten-foot median where there is not a left turn pocket. The only other changes to the right-of-way along 40th Street are the installation of bulb-outs at the intersections with 40th Street and Frontage Road, which would be accommodated in the parking lane. Since the project would not prevent the installation of future Class II lanes, it would not conflict with the 2007 *Bicycle Master Plan Update*.

- Recommendation: Ensure that bicycle detection is implemented for actuated through movements or left turns at the new signal at 40th Street/Frontage Road.

Telegraph Avenue/Village Drive – Telegraph Avenue/Village Drive would be a new T intersection, and is proposed to be signalized. This intersection would be the main gateway into the retail component of the project, and would also provide access to the residential garages, residential units, and BART Plaza.

Currently, up to 50 bicyclists travel past the proposed intersection during peak hours. With the proposed project, bicycle volumes are expected to increase at the intersection. The 2007 *Bicycle Master Plan Update* proposes Class II bicycle lanes along Telegraph Avenue. The site plan includes a street section with 14-foot sidewalks that include a landscape strip with street trees. The only other changes to Telegraph Avenue shown on the site plan are the installation of bulb-outs on the west side of the intersections with Village Drive and 40th Street, which would be accommodated through removal of on-street parking spaces. Since the project would not prevent the installation of future Class II lanes, it would not conflict with the 2007 *Bicycle Master Plan Update*.

- Recommendation: Ensure that bicycle detection is implemented for actuated through movements or left turns at the new signal at Telegraph Avenue/Village Drive.

Frontage Road/Village Drive – This T intersection would provide the primary connection between the project and the BART station. Private vehicles, shuttle buses, bicycles, and pedestrians would travel through the intersection. Potential conflicts may occur between bicyclists riding between the BART Plaza and Village Drive and vehicles, shuttle buses, pedestrians, and bicyclists on Frontage Road.

- Recommendation: Install signage (e.g., “Right Turn Only, Except Bicycles” and “Left Turn Only, Except Shuttles and Bicycles”) and striping at the Frontage Road/Village Drive intersection to prohibit southbound and westbound vehicles, except shuttle buses and bicycles, from continuing southbound to West MacArthur Boulevard.

West MacArthur Boulevard/Frontage Road/37th Street – This intersection currently has four approaches, but a median prevents through and left-turn movements to and from the northbound and southbound approaches. Between 2000 and 2006, there was one reported vehicle-bicycle collision near the West MacArthur Boulevard/Frontage Road/37th Street intersection.

With the project, the intersection would provide the only vehicle access to the BART parking garage. It would also be used by shuttle buses exiting Frontage Road, and bicycles and pedestrians both entering and exiting Frontage Road. Vehicle, pedestrian, and bicycle volumes at the intersection would likely increase. The intersection is proposed to be signalized and a portion of the West MacArthur Boulevard median removed so that all movements will be allowed to and from both Frontage Road and 37th Street. The site plan does not show any changes to the right of way along West MacArthur Boulevard. Since the project would not prevent the installation of future Class II lanes, it would not conflict with the proposed *Bicycle Master Plan*.

- Recommendation: Ensure that bicycle detection is implemented for actuated through movements or left turns at the new signal at West MacArthur Boulevard/Frontage Road/37th Street, particularly for southbound bicyclists.

AUTO ACCESS

Roadway Conditions with Project

The proposed project would result in near-term (2015) traffic increases, resulting in a reduced level of service (LOS) to E at the Telegraph Avenue/51st Street and Market Street/ West MacArthur Boulevard intersections. By 2030, the project would contribute to LOS F operations at these intersections as well as degraded intersection operations at:

- Telegraph Avenue and 40th Street, adjacent to the Station (LOS F)
- Telegraph Avenue and West MacArthur Boulevard, adjacent to the Station (LOS E)
- Telegraph Avenue and 52nd Street and Claremont Avenue (LOS E)
- West Street and 40th Street (LOS E)
- Broadway and West MacArthur Boulevard (LOS F)

The reduced level of service in the surrounding areas, especially at intersections adjacent to the Station area, could result in increased transit travel times for buses and shuttles serving the Station, as well as congestion within the Transit Village.

Roadway Access Recommendations

Based on the MacArthur Transit Village Project EIR, the following mitigations are recommended under 2015 conditions.

- Optimize and coordinate signal timings at the following intersections:
 - Telegraph Avenue/51st Street
 - Market Street/MacArthur Boulevard

The following additional mitigations are recommended under 2030 Cumulative conditions.

- Prohibit left-turns from northbound Telegraph Avenue into westbound 52nd Street during the peak commute times.
- Optimize and coordinate signal timings at the following intersections:
 - Telegraph Avenue/52nd Street and Claremont Avenue
 - Telegraph Avenue/51st Street
 - West Street/40th Street
 - Telegraph Avenue/40th Street
 - Market Street/MacArthur Boulevard
 - Telegraph Avenue/MacArthur Boulevard
- Provide protected/permitted left-turn phasing on eastbound and westbound 40th Street approaches.
- Stripe a left-turn lane on northbound Market Street at MacArthur Boulevard. The left-turn lane can be accommodated within the existing right-of-way, but may result in loss of on-street parking and relocation of an AC Transit bus stop on northbound Market Street.

Despite the above measures, it is expected that Telegraph Avenue/51st Street and Broadway/West MacArthur Boulevard intersections will continue to operate at a LOS F. To mitigate this impact, implement a Transportation Demand Management (TDM) program to encourage more residents and employees to shift from driving alone to other modes of travel. A menu of TDM strategies is recommended in Chapters 9-11.

Additional details for these impacts and mitigation measures are provided in the MacArthur Transit Village Project EIR.

Parking Conditions with Project

The proposed project would include a total of between 730 and 745 parking spaces within the project site, in addition to the 300 spaces proposed in a BART parking garage. These include the following:

- Residential (675 units): 675 spaces in various garages
- Non-Residential (44,000 square-feet of commercial and 5,000 square-feet of community space): 50 spaces in various garages
- On-street spaces (on Village Drive and the Internal Street): 42 spaces
- BART: 300 spaces in a dedicated garage.

City Off-Street Parking Requirements. The zoning for the proposed project would be S-15. Based on the City of Oakland Zoning Code requirements (Section 17.116), the minimum number of parking spaces required for multi-family developments in an S-15 zone is one-half space per dwelling unit, and commercial developments in an S-15 zone are not required to provide off-street parking spaces. Therefore, 338 off-street parking spaces would be required for the proposed project. Since the proposed project would provide 675 off-street parking spaces (as well as 42 on-street spaces), it would comply with the City's zoning requirements.

BART Parking Access Recommendations

BART patrons who drive and want to park on-site would access the site from West MacArthur Boulevard at Frontage Road. They would enter Frontage Road and turn right into the BART parking garage, and exit the garage by turning left onto Frontage Road and exiting onto West MacArthur Boulevard. The Frontage Road/West MacArthur Boulevard/37th Street intersection is proposed to be signalized and provide full access. Private vehicles would be prohibited from using the segment of Frontage Road north of the BART garage. The garage would have space for 300 vehicles.

While most BART patrons would be familiar with the configuration of Frontage Road (which forces drivers to turn left out of the parking garage onto Frontage Road), some may attempt to turn right towards 40th Street.

- Recommendation: Construct curbs and provide striping to prohibit vehicles exiting the BART garage from turning right, and to prohibit northbound vehicles on Frontage Road from continuing northbound past the BART garage. Provisions should be made to allow through access for emergency vehicles, such as City and BART Police, Fire and Ambulance vehicles.

BART Pick-Up/Drop-Off Access Recommendations

BART patrons dropped off or picked up would use the eight designated “kiss-and-ride” drop-off/pick-up spaces on both sides of Frontage Road, between Village Drive and 40th Street. These spaces could be accessed from either Telegraph Avenue or 40th Street.

Observations of pick-up and drop-off activity were conducted at Frontage Road and the BART parking lot in May 2006. Based on these observations, the combined maximum pick-up and drop-off activity occurred between 5:45 and 6:00 PM, with 26 pick-ups and 11 drop-offs in both locations in the 15-minute period. On average, pick-ups were observed to take about four minutes each, while drop-offs were observed to take about 30 seconds. Given these assumptions, the eight designated pick-up and drop-off spaces on Frontage Road could accommodate up to 30 pick-ups in 15 minutes, or up to 240 drop-offs. Therefore, the current level of pick-up/drop-off activity could be accommodated. However, with the reduction in BART parking, pick-up and drop-off activity is expected to increase.

Based on existing kiss-and-ride patterns, drivers may disobey the designated spaces and drop off or pick up passengers where it is most convenient. It is likely that the parking spaces on Village Drive would be used for pick-up and drop-off during peak periods to supplement the spaces on Frontage Road.

- Recommendation: Consider designating additional BART pick-up/drop-off spaces on Village Drive during peak periods (e.g., 6:00 AM-9:00 AM and 4:00 PM-7:00 PM).
- Recommendation: Enforce pick-up/drop-off activity in designated zones.

Residential and Commercial Access Recommendations

There are four residential parking garages, three with driveways on Internal Street, and one with a driveway on Village Drive. Residents would access the residential garages via either Telegraph Avenue/Village Drive, or 40th Street/Frontage Road intersections.

The site plan shows 24 parking spaces on Internal Street and 18 parking spaces on Village Drive. These spaces would most likely be metered, and would be used by BART pick-up and drop-off during peak periods, retail patrons and other short-term parkers during the day and residents and residents' visitors in the evening and night. The site plan also shows a service entry off 40th Street. This would create potential conflicts between trucks turning right into the garage and bicyclists traveling in the bike lane on 40th Street and pedestrians walking on the sidewalk.

Retail shoppers who drive could access the site either from Telegraph Avenue/Village Drive, or 40th Street/Frontage Road intersections. It is likely that most retail shoppers would be local residents who would walk or bicycle to the site, or BART patrons, who would walk from the station to the site. Retail workers should have designated long-term parking spaces, but these are not shown on the site plan.

- Recommendation: Consider relocating the garage driveway on Village Drive further west to create a four-way intersection with Internal Street, and provide all-way STOP control. If the driveway re-location is not feasible, install side street STOP controls for Internal Street and the garage driveway at Village Drive. All movements would be allowed at both Internal Street and the garage driveway.
- Recommendation: Require truck deliveries to the site to occur outside of peak BART hours of operation (e.g., outside of 6:00-9:00 AM to 4:00-7:00 PM).
- Recommendation: Restrict parking on Village Drive and Internal Street to one hour from 9:00 AM to 5:00 PM. Consider restricting parking on Village Drive to pick-up/drop-off only from 7:00 AM to 9:00 AM and 5:00 PM to 7:00 PM.

APPENDIX A.
ACCESS STRATEGIES: CALCULATIONS AND ASSUMPTIONS

Category	daily ridership (boardings*2)	ridership assumptions	One-time capital cost	capital cost assumptions	operating cost (annual)	operating cost assumptions	Capital + 10-Year Costs	10-Year Cost/Rider	Notes
	N/A	supporting strategy	\$50,000	2000 flyers @ \$1/each and 2000 \$20 incentives	\$75,000	assume 6 months salary with benefits (\$50,000) + expenses	\$125,000	N/A	TDM Coordinator, r.
	N/A	supporting strategy	\$20,000	assume start up costs of \$50,000 per Embarcadero info booth, shared between TDM Coordinator and Info Booth	\$350,000	assume salary of \$50,000 (x2 for benefits) and rent of \$2000/month + expenses (note: this is about 1/2 of the cost for the Embarcadero kiosk, with 3 kiosks/clerks)	\$3,520,000	N/A	
	60	assume 5% of spaces (30 spaces) and average carpool of 2 people (one extra rider per auto). This is conservative per 15% increase in ridesharing with GRH.	\$5,000	assume capital costs would be included in the BART garage cost	N/A	assume no enforcement costs if employed with attended parking; assume carpool spaces pay same parking rate	\$5,000	\$83	
	80	assume 10 additional spaces on each side of street between Telegraph and W. MacArthur Blvd. (conservative estimate)	\$30,000	install 4 pay and display meters @ \$6000/each	(\$50,000)	assume no additional enforcement costs beyond current personnel; assume \$5/day = \$50,000/year revenue	(\$470,000)	(\$5,875)	
	N/A	no available data to predict ridership impact	\$45,000	38 new electronic lockers have already been funded for the Station; \$1,085 per locker (Santa Cruz)	\$5,000	assume minor maintenance costs; lockers have a 20-year lifespan	\$95,000	N/A	
	100	based on Case Study C in BART Access Policy Study Methodology	\$1,000,000	Based on Case Study C in BART Access Policy Study Methodology	\$180,000	based on Case Study C in BART Access Policy Study Methodology	\$2,800,000	\$28,000	
	150	assume 15% headway decrease with service elasticity = 0.6; current Kaiser ridership = 1200 daily and current Summit ridership = 500 daily; 1700*.15*.6=approx 150	\$250,000	signal installation cost; assume included in project costs if part of a Transit Village Development	\$8,000	assume maintenance and electricity costs for signal	\$330,000	\$2,200	
	24	assume 3 parking spaces provide for 15 motorcycles or scooters (with loss of 3 auto spaces)	N/A	assume capital costs would be included in the BART garage cost	N/A	assume re-striping and enforcement costs are included for BART garage maintenance and enforcement	\$1,000	\$42	
	150	assume attended parking would increase the capacity of the parking garage by 25-35% per discussions with Central Parking (300*.25 = 75); assumes garage would be designed to allow for self parking at a later date (somewhat restricting the benefits of attended parking).	\$75,000	assume minor start up costs (such as a booth and phone line) and that other capital costs would be included in the BART garage cost	\$150,000	assume half of \$25,000/month per costs at Pleasant Hill BART (operating and liability costs)	\$1,575,000	\$10,500	would benefit from
	N/A	supporting condition	\$50,000	assume start up costs (significant because no current program)	\$25,000	assume \$1/day discount on BART for 100 patrons (100*1*5*50 = 25,000)	\$300,000	N/A	would benefit from
	N/A	supporting condition	\$40,000	current wayfinding program on and off site is \$70,000 for ped/bike only; this assumes an additional \$30,000 for auto and transit, split between on and off site	\$1,000	assume 1% maintenance costs	\$50,000	N/A	would benefit from
	N/A	supporting condition	\$60,000	assume no capital costs	N/A	assume no operating costs	N/A	N/A	would benefit from
	N/A	supporting condition	\$25,000	current wayfinding program on and off site is \$70,000 for ped/bike only; this assumes an additional \$30,000 for auto and transit, split between on and off site	\$1,000	assume 1% maintenance costs	\$70,000	N/A	would benefit from
	N/A	this would ensure that those who are able to park on site are those who have the highest demand for this (however, equity implications)	N/A	assume initial production cost	\$1,600	assume \$5000 printing costs every 3 years	\$41,000	N/A	would benefit from
	N/A			assume capital costs would be included in the BART garage cost	(\$450,000)	assume \$5/day for 375 spaces on weekdays (5*375*5*50)	(\$4,500,000)	N/A	
	N/A	supporting condition	\$10,000	assume start up costs (significant because no current MacArthur program, but minimal publicity to prevent abuse)	\$8,200	assume 160 of 6000 patrons use the service per year (160*20 = \$3200) per Alameda County Program ratio + \$5,000/year administration costs if TDM Coordinator runs new program; does not assume membership cost	\$92,000	N/A	would benefit from

T	daily ridership (boardings*2)	ridership assumptions	One-time capital cost	capital cost assumptions	operating cost (annual)	operating cost assumptions	Capital + 10-Year Costs	10-Year Cost/Rider	No
	200	three churches within 1/4 mile have a total of 200 spaces per aerial; assume 1/2 of these spaces would be available as remote parking options	\$25,000	assume start up costs (signs, negotiations)	\$20,000	assume parking is available by permit only. Assume enforcement costs of \$20,000/year and that churches keep all parking revenue; assume liability costs are covered by parking revenue and brochures and maps and included in other costs	\$225,000	\$1,125	would benefit from negotiations with of taken place
	N/A	supporting condition	N/A	assume included in project costs uniform street furniture and signs for the Village	N/A	assume included in project costs	N/A	N/A	would benefit from
	N/A	supporting condition	\$150,000	assume CarShare companies lease spaces (minimal lost revenue)	\$2,000	assume 1% maintenance costs	\$170,000	N/A	would benefit from
	N/A	a necessary condition for tier 1 strategies to succeed (to incentivize residential car shedding)	N/A		\$30,000	provide car share membership for all units @ 624 * \$50 = \$30,000	N/A	N/A	
	764		\$1,765,000		(\$68,200)		\$1,083,000	\$1,418	
	400	assume approximately 200 RPPs will be available for BART patrons on a monthly basis (with 216 being the estimated number of current BART patrons that park on-street less 10-hour metered parking on 40th Street and West MacArthur Boulevard); assume without RPP buy-back these patrons may be lost	\$25,000	assume program start up costs assume \$5-10M set aside for pedestrian improvements	(\$192,000)	assume sell 200 RPPs to BART patrons at \$80/month	(\$1,895,000)	(\$4,738)	would benefit from
	N/A	no available data to predict ridership impact	\$5,000,000		\$50,000	assume 1% maintenance costs	\$5,500,000	N/A	
	N/A	no available data to predict ridership impact	\$500,000	assume \$500,000 set aside for bicycle improvements	\$25,000	assume 5% maintenance costs (higher because of signal maintenance)	\$750,000	N/A	
	N/A	no available data to predict ridership impact	\$100,000	assume \$100,000 for unattended, gated plaza parking area	\$5,000	assume 5% maintenance costs	\$150,000	N/A	
	N/A	supporting condition for Tier 2	\$100,000	assume costs to set up program, recruit volunteers	\$100,000	assume program admin costs (Oakland City Council budget: \$100,000/year)	\$1,100,000	N/A	would benefit from
	N/A	supporting condition for Tier 2	\$70,000	assume 8 phones at \$7,000/each + 20%	\$7,000	assume admin included in TDM	\$140,000	N/A	
	N/A	supporting condition for Tier 2	\$5,000	assume start-up costs	\$5,000	electricity and maintenance (10%) Coordinator's salary, annual website and rideboard maintenance	\$55,000	N/A	would benefit from
	N/A	supporting condition for Tier 2	\$10,000	assume paid through TDM Coordinator's Office	\$5,000	assume admin included in TDM	\$60,000	N/A	would benefit from
	N/A	supporting condition for Tier 2	\$35,000	2 signs at \$14,000/sign + 20%	\$3,500	Electricity and maintenance (10%)	\$70,000	N/A	
	12	price elasticity = -0.2 to -0.5; assume 6.25% reduction in BART fares (EZ rider discount), 30% work trip transit ridership per BATS 2000, and 3 daily work trips per unit; -35%-.0625(30* 3* 675 units)= 13 new daily trips; assume minimal BART ridership benefit from AC Transit pass for residents	\$5,000	assume discounts are funded as an MTC pilot program with minor administration costs	(\$5,920)	assume 6.25% discounted BART tickets (EZ rider discount, assume each ride @ \$4*(1-.0625)); 12 new riders/day * (\$0.25 lost/ride) * 5 days/week * 52 weeks/year = \$780/year lost revenue and 12 riders/day * (\$3.75 gained/ride) * 5 days/week * 52 weeks/year = \$11,700/year gained revenue ; assume minor (\$5,000) annual admin expenses and no increased operational expenses with new riders (note that AC Transit EcoPass is expected to cost \$86/yearly pass, a significant discount from \$116 TransBay; assume this price is set to make the program cost neutral)	(\$54,200)	(\$4,517)	would benefit from
	180	624 units planned with 624 parking spaces. If 15 percent of units do not elect to purchase spaces then 94 spaces are available for lease. This assumes transit-oriented residents will self-select to live in the Village. Note that under S-15 zoning only .5 spaces/unit would be required so this would allow for 312 spaces to be available. Hence, 90 spaces is assumed to be conservative.	\$10,000	assume program start up costs (potential legal fees) and that capital costs would be included in the residential garage cost	\$10,000	annual administration cost for TDM Coordinator; assume private transactions between homeowners and BART patrons (no income to BART or Oakland)	\$110,000	\$611	would benefit from
	N/A	supporting condition for Tier 2	\$50,000	assume \$50,000 start up, with some overlap with TDM Coordinator start up costs	\$25,000	Assume most operations costs are included in the TDM Coordinator's budget (\$300,000/year)	\$300,000	N/A	would benefit from

daily ridership (boardings*2)	ridership assumptions	One-time capital cost	capital cost assumptions	operating cost (annual)	operating cost assumptions	Capital + 10-Year Costs	10-Year Cost/Rider	No
N/A	supporting condition for Tier 3	\$25,000	assume 2 kiosks; paid through TDM Coordinator's Office	\$10,000	assume maintenance and electricity costs	\$125,000	N/A	
N/A	supporting condition for Tier 3	\$10,000	assume paid through TDM Coordinator's Office	\$10,000	assume maintenance and electricity costs	\$110,000	N/A	
N/A	no available data to predict ridership impact	\$650,000	based on Berkeley Bike Station Store Front estimate; cost could be lower if the station is co-located with a permanent TDM Coordinator's Office	\$150,000	assume 1 person staff (\$30,000/year + 2)* rent (\$200/month) + expenses; does not assume coffee café within bike station, although this is recommended to defray costs (this cost is equal to the Street Level cost estimate for the Berkeley Bike Station)	\$2,150,000	N/A	
30	price elasticity = -0.2 to -0.5; assume 20% reduction in fares, 30% work trip transit ridership per BATS 2000, and 3 daily work trips per unit; -.35*-2*(30* 3* 675)= 42.5 (less 12 included above)	\$5,000	assume minor start up costs if EZ Rider EcoPass is in place	\$127,200	assume 20% discounted BART tickets (@ \$4*(1-.25); (650 riders/day * (\$1 lost per ride) * 5 days/week * 52 weeks/year) = \$169,000/year lost revenue less gain of 30 new daily riders (30* \$6/day*5 days/week*52 weeks/year = \$46,800); assume minor (\$5,000) annual admin expenses and no increased operational expenses with new riders	\$1,277,000	\$42,567	would benefit from
30		\$690,000		\$297,200		\$3,662,000	\$122,067	

es: How Prices and Other Factors Affect Travel Behavior." *Online TDM Encyclopedia*. <http://www.vtpi.org/tdm/tdm11.htm>
Central Parking staff.

APPENDIX B. REVIEW OF APPLICABLE BACKGROUND DOCUMENTS AND PLANS

Background documents and regional and local plans that regulate transportation and circulation in areas surrounding the Station were reviewed to document any planned improvements, both funded and unfunded, and regulatory policies that may affect the MacArthur BART Station Area in the future.

CITY OF OAKLAND GENERAL PLAN (1998)

The City of Oakland's General Plan includes designations of Transit-Oriented Districts to take advantage of the opportunities presented by Oakland's eight BART Stations, as shown in Figure A-1. The General Plan states that these areas should be characterized by easy pedestrian and transit access to mixed developments. Given the unique location and possible development of these districts, the General Plan has a specific "Transportation and Transit-Oriented Development" section that details a policy framework for Transit-Oriented Districts and provides the following policy goals:

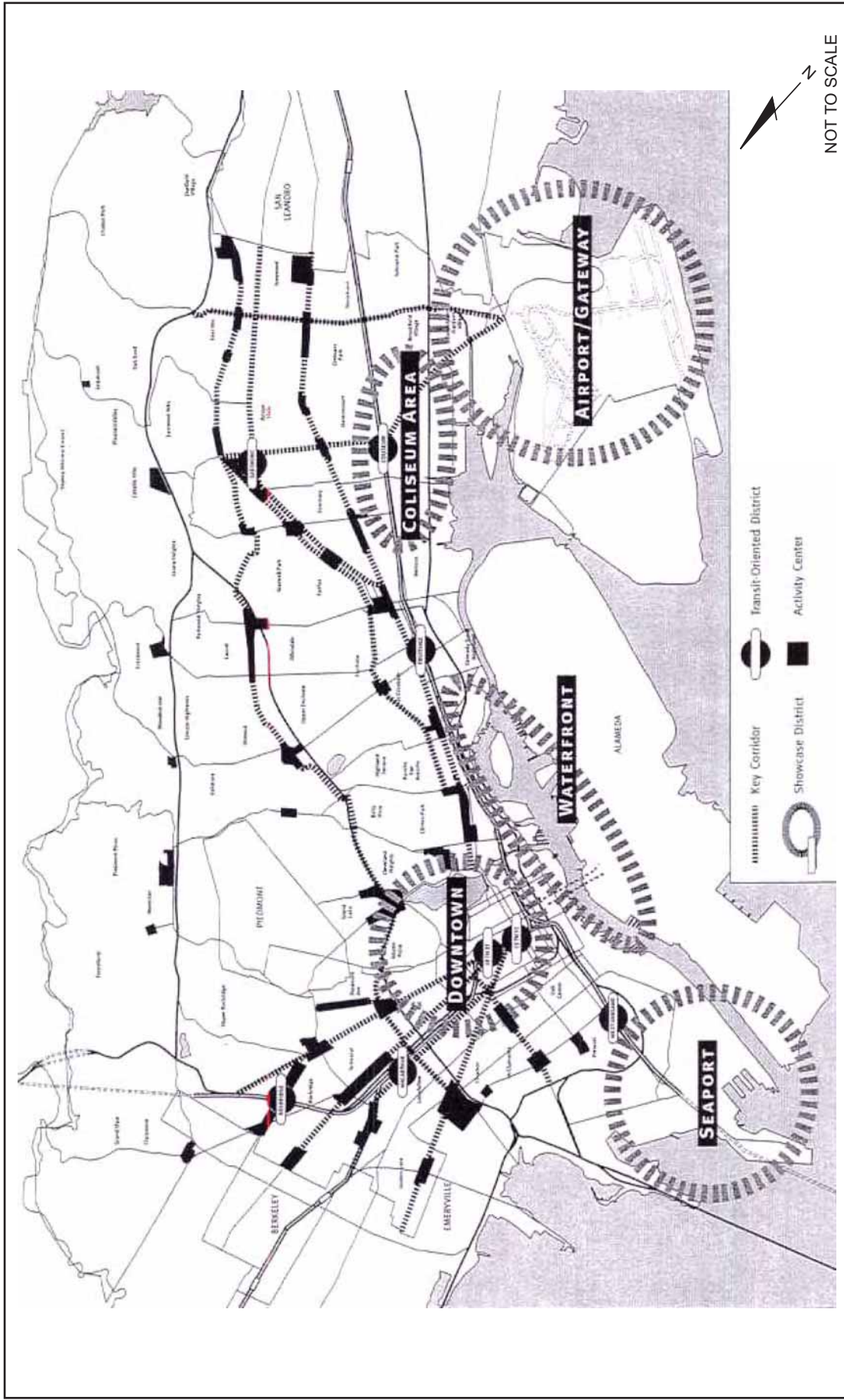
- Capitalize on Oakland's position as a major West Coast transportation hub
- Integrate land use and transportation planning at the neighborhood, city, and regional levels by developing Transit Oriented Development
- Reduce congestion and improve traffic flow
- Promote alternative transportation options
- Find funding for needed transportation facility improvements and services
- Provide safe streets
- Improve the environment by enhancing air quality and reducing traffic noise

The General Plan also provides a specific vision for the MacArthur BART Station, as described below:

"MacArthur BART is uniquely situated as the central hub and transfer point of the BART system, with trains arriving and departing to destinations around the Bay Area. Four major arterials that support local traffic and commerce are adjacent to the Station – Telegraph Avenue, W. MacArthur Boulevard, 40th Street, and Martin Luther King Jr. Boulevard. As the central hub, MacArthur BART has been proposed as a Maximum Access Station, a designation that must complement the type and density of uses in the surrounding development area, now characterized by mixed housing types and neighborhood-serving retail uses.

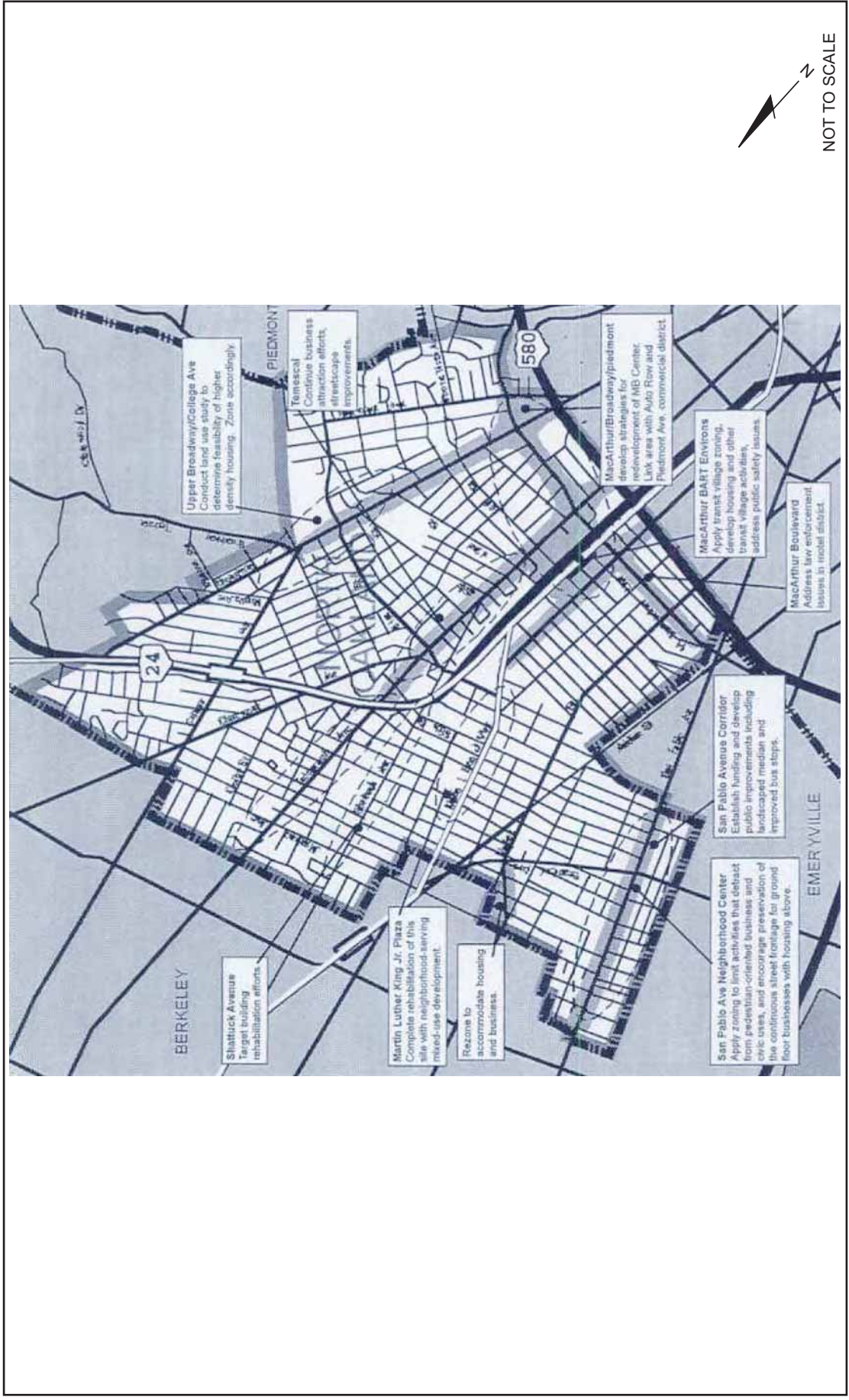
New development around the Station should capitalize on its maximum access potential to create business and residential revitalization, enhance the safety of the neighborhood, provide secure parking, improve Station access, and encourage pedestrian activity and the use of public transportation" (p. 54), as shown in Figure 41.

To support the MacArthur BART Transit-Oriented District, the General Plan designates Telegraph Avenue and W. MacArthur Boulevard as regional transit streets and 40th Street as a local transit street, where a continuing high level of transit service is to be provided, as shown in Figure A-1. These designations are in concert with the City's "Transit-First" resolution, which declared Oakland's support for public transit and other alternatives to single-occupant vehicles. As such, "the City pledges to resolve any conflicts between public transit and single occupant vehicles on City streets in favor of the transit mode that has the potential to provide the greatest mobility to people, rather than vehicles" (p. 133).



FEHR & PEERS
TRANSPORTATION CONSULTANTS

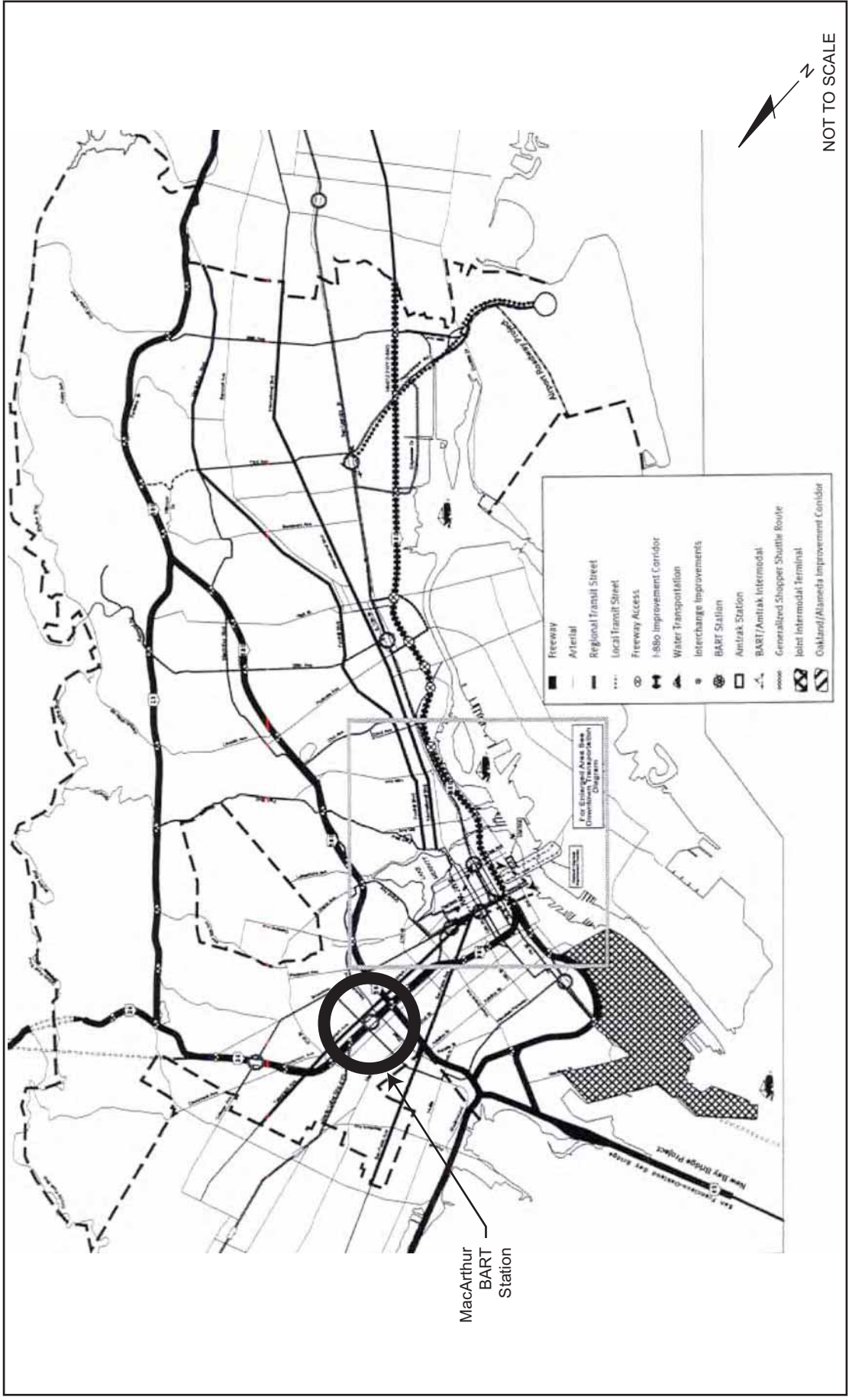
MacArthur BART Station Access Feasibility Study
**CITY OF OAKLAND GENERAL PLAN
CITY STRUCTURE DIAGRAM**



MacArthur BART Station Access Feasibility Study

CITY OF OAKLAND GENERAL PLAN IMPROVEMENT STRATEGIES FOR NORTH OAKLAND

FIGURE A-2



MacArthur BART Station Access Feasibility Study
**CITY OF OAKLAND GENERAL PLAN
 TRANSPORTATION DIAGRAM**

FIGURE A-3

CITY OF OAKLAND PEDESTRIAN MASTER PLAN (2002)

The Pedestrian Master Plan promotes pedestrian safety to ensure Oakland is a safe, convenient, and attractive place to walk by establishing a pedestrian route network that emphasizes safe routes to school and connections to transit. The main goal of the plan is to create a walkable city that promotes safety, sustainability, equity, vitality, and health. The Pedestrian Master Plan identifies a pedestrian route network, policy recommendations, design elements, and implementation plan.

Telegraph Avenue and W. MacArthur Boulevard, identified as regional transit streets, are targets for Safe Routes to Transit street improvements, which promote Station Area planning for pedestrian safety and access. Telegraph Avenue and Martin Luther King Jr. Boulevard are also identified as district routes, which provide pedestrian connections and define the character of the district, as shown in Figure A-4.

According to the Plan, “Transit oriented developments should be pedestrian oriented, encourage night and day time use, provide the neighborhood with needed goods and services, contain a mix of land uses, and be designed to be compatible with the character of surrounding neighborhoods” (p. 58). As such, the Plan calls for MacArthur BART underpass, transit village, and access improvements within the next five years. There is also a number of pedestrian improvement projects planned around the MacArthur BART Station, to better connect neighborhoods in North Oakland, as shown in Figure A-5.

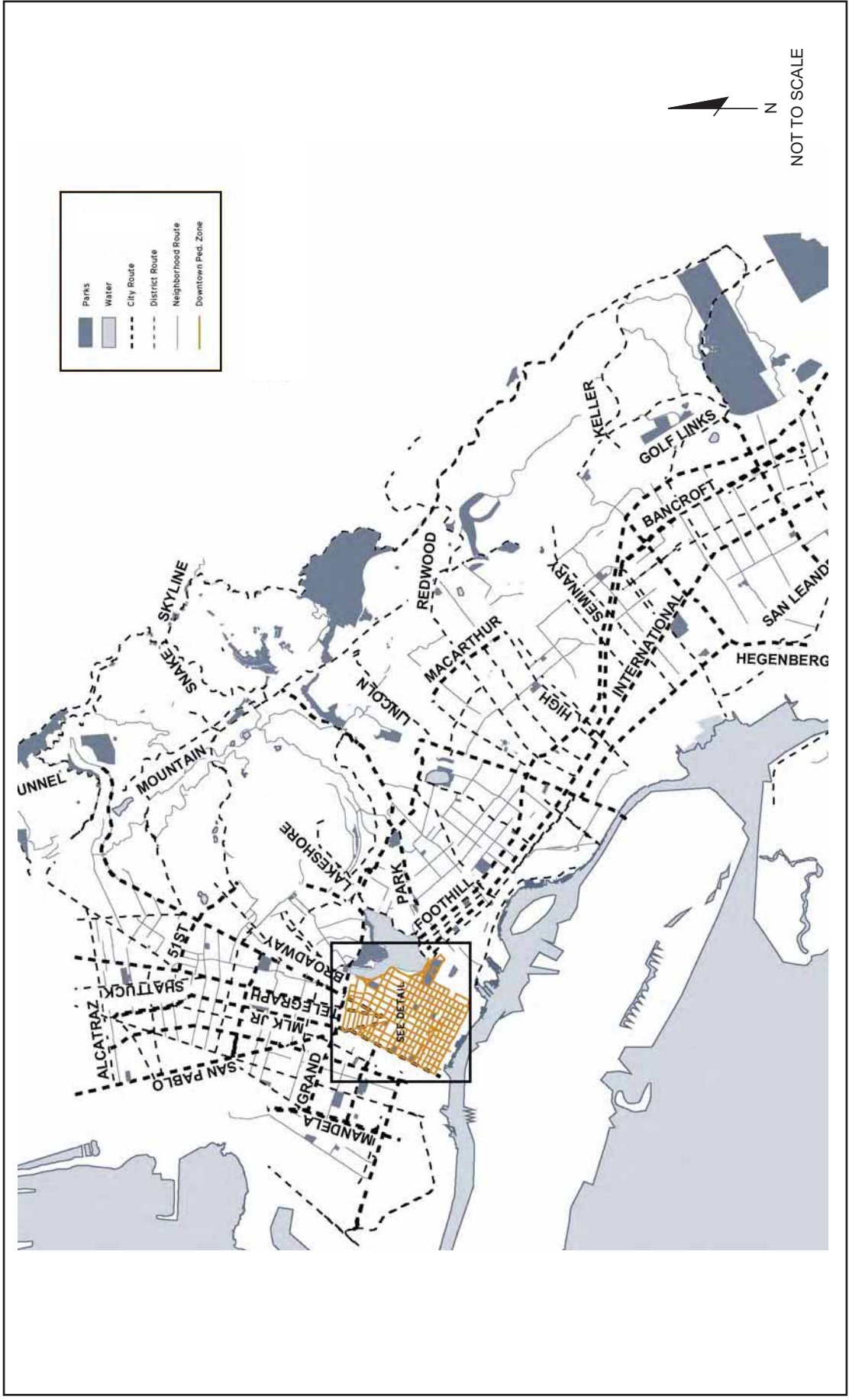
CITY OF OAKLAND BICYCLE MASTER PLAN (2007)

The City of Oakland’s *Bicycle Master Plan*, which is part of the Land Use and Transportation Element of the General Plan, provides a policy framework and action program for increasing bicycle travel options throughout the city. The Plan specifically calls for the improvement of bicycle-transit links and offers the following policies and actions:

- Provide safe and secure bicycle parking at transit Stations, specifically high security, weather protected facilities at BART Stations
- Provide direct bicycle access from all directions to regional transit stops
- Publish bicycle/transit information (route maps, bicycle storage options, etc)
- Promote the ability to bring bicycles on board transit vehicles

In the MacArthur BART Station Area, short-term future projects include the addition of bicycle lanes on 40th and Market Streets. Long-term future improvements, shown on Figure A-6, include the following:

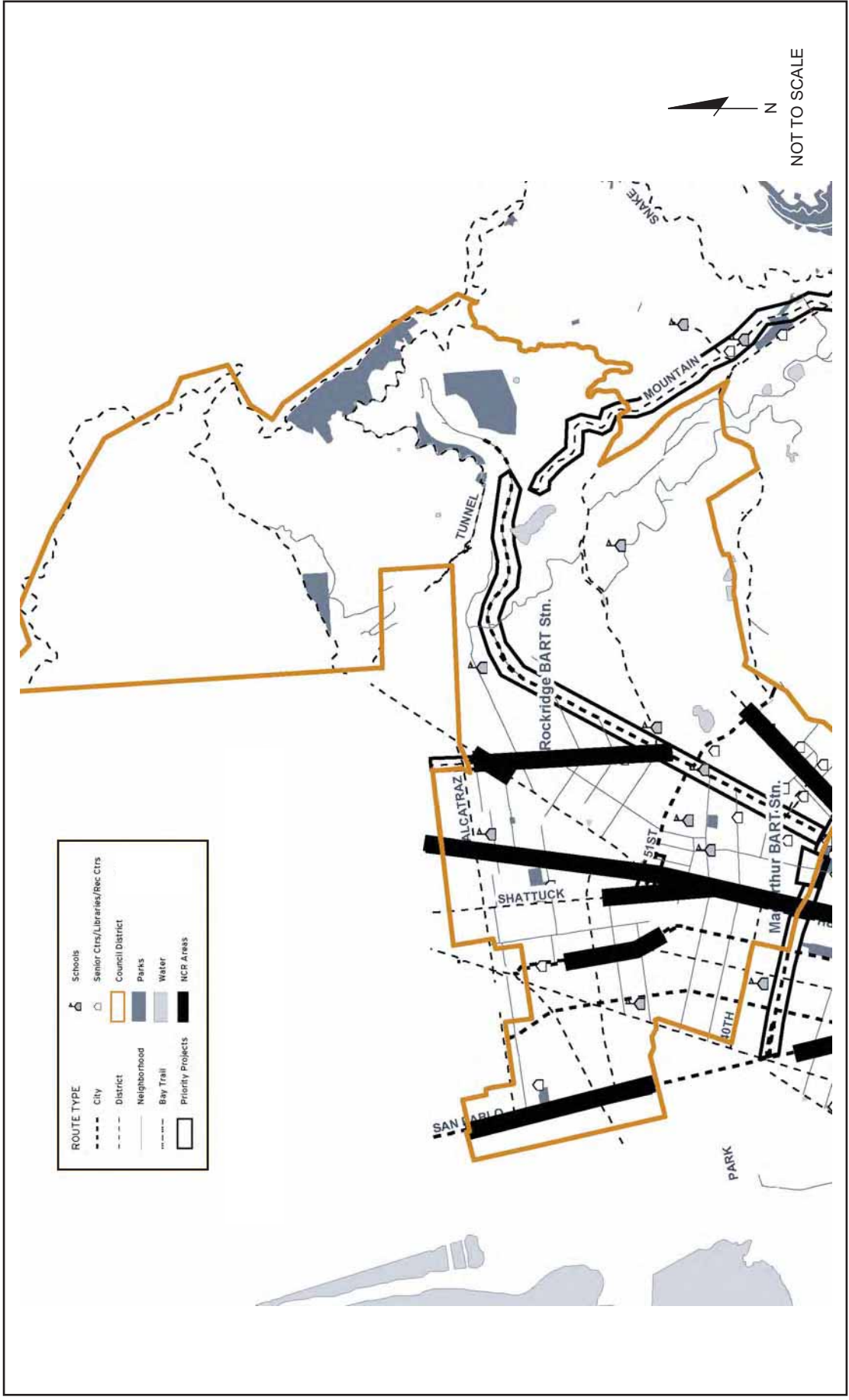
- Telegraph Avenue bicycle lanes – Currently in the planning stages, these lanes will be coordinated with roadway cross-section for the proposed Telegraph Avenue BRT line.
- Shattuck Avenue bicycle lanes – Currently in the planning stages, these lanes would extend from Telegraph Avenue to the Woolsey Street bicycle boulevard, at the border with Berkeley.
- Broadway bicycle lanes – Currently completed south of I-580, a feasibility study is underway to extend the bicycles lanes north, to Highway 24, and south, from 25th Street to 14th Street. The Kaiser Hospital redevelopment project will extend the bicycle lanes from I-580 to W. MacArthur Boulevard.



MacArthur BART Station Access Feasibility Study

**CITY OF OAKLAND PEDESTRIAN MASTER PLAN
PEDESTRIAN ROUTE NETWORK**

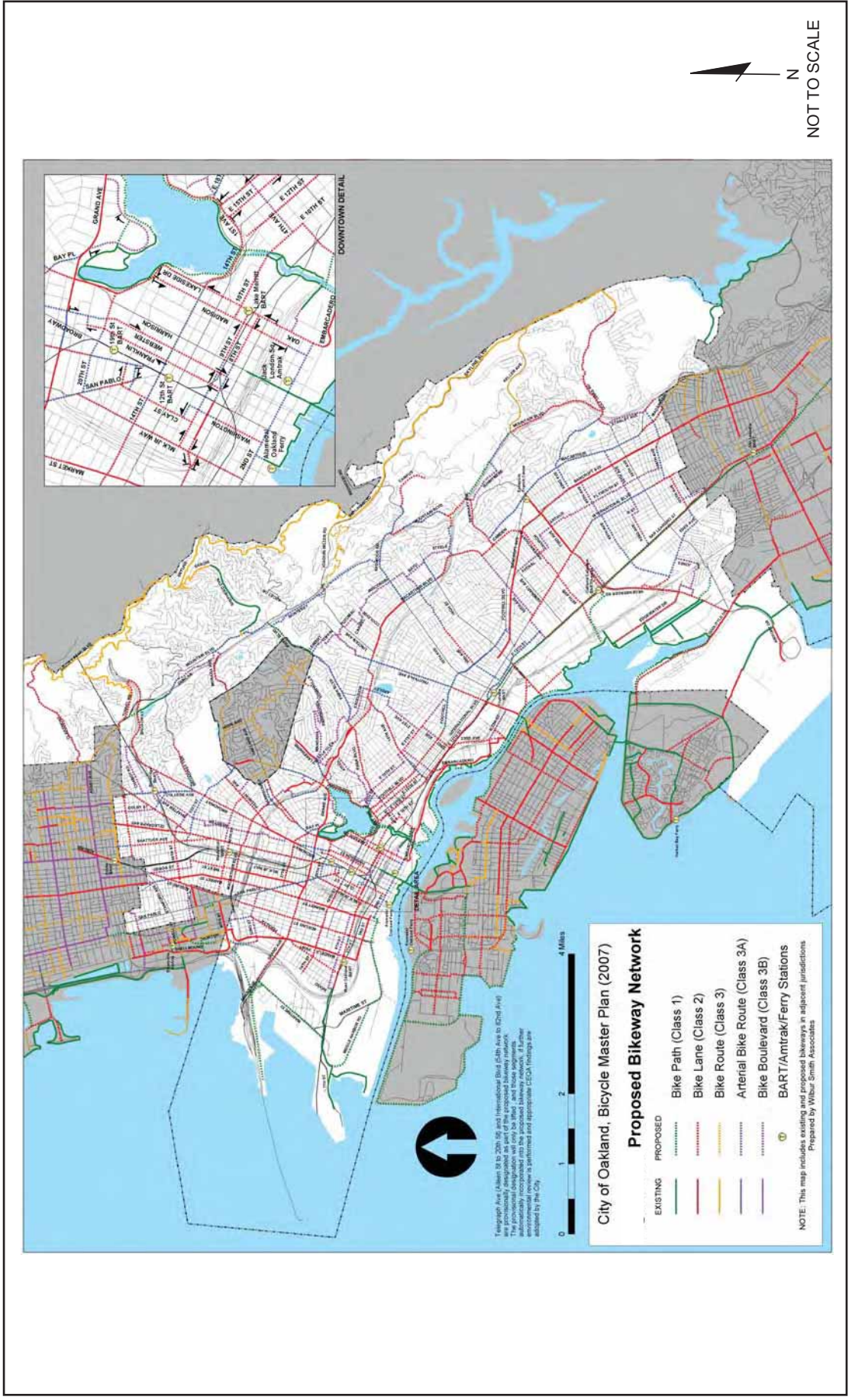
FIGURE A-4



MacArthur BART Station Access Feasibility Study

**CITY OF OAKLAND PEDESTRIAN MASTER PLAN
PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 1**

FIGURE A-5



**CITY OF OAKLAND BICYCLE MASTER PLAN
EXISTING AND RECOMMENDED BICYCLE NETWORK**

FIGURE A-6

40th Street bicycle lanes extension – The City of Oakland has identified 40th Street as a candidate for bicycle lanes, extending from the Emeryville border to the Piedmont area of Oakland. The project could be completed if a lane of traffic is removed in either direction, but AC Transit and Emery Go Round have expressed operational concerns.

- West MacArthur Boulevard bicycle lanes – The City of Oakland is currently studying bicycle lanes along West MacArthur Boulevard as an alternative to 40th Street from the Emeryville border to Broadway as part of a Safe Routes to Transit grant.
- 27th Street – Currently in the planning stages, these lanes would provide an east-west route between San Pablo Avenue to Bay Place.
- Adeline Street – Currently in the planning stages, these lanes would provide a north-south route along Adeline Street beginning at 3rd Street and ending at 61st Street, at the border with Berkeley.
- 51st Street/Pleasant Valley Road– Currently in the planning stages, these lanes would extend from Shattuck Avenue to Rose Avenue

BART STRATEGIC PLAN (2003)

The Strategic Plan documents BART's strategy and vision to provide safe, clean, reliable, and customer-friendly rapid transit service in order to increase mobility and accessibility, and strengthen community. Of the seven focus areas identified for future improvement, the focus on land use and the quality of life, with access management/improvement and Station Area planning goals and strategies, provides guidance for the development of transit-oriented developments.

The land use and the quality of life goals include:

- Pursuing partnerships with the communities BART serves, by using BART property in ways that first maximize transit ridership and then balance transit-oriented development goals with community desires.
- Promoting transit ridership and enhancing the quality of life by encouraging and supporting transit-oriented development within walking distance of BART Stations.

BART STATION ACCESS GUIDELINES (2003)

Access to BART Stations, which represents the portion of a BART trip between the origin or destination and the fare gates, involves many modes of transportation, including:

- Walking (Able and Disabled)
- Transit (Light Rail, Bus, or Shuttle)
- Bicycling
- Personal Vehicles (Pick-Up/Drop-Off, Carpool/Vanpool, Single Occupant)

The guidelines created an access hierarchy, a tool to help resolve competing demands for funding and physical space between different access modes. Improving access to and from BART is critical to meeting ridership goals and serving customer needs. The Access Guidelines are intended to provide a framework for designing transportation facilities to and from BART Stations, with a focus on physical design. Key considerations and guiding design principals are provided for each access mode. These recommendations are intended to bring clarity and cohesion to BART's existing policies on Station access, providing additional detail and guidance where appropriate.

Based on these guidelines, BART would like future Station development/enhancements to provide Access Feasibility studies that include the following information:

- Specific access routes and circulation patterns for each of the access modes, including dimensions of facilities, signage, pavement markings, traffic controls, and way finding facilities.
- Identification of access issues and items that need coordination or resolution with outside agencies.
- Identification of the amount, size, location and access to and from all parking facilities, as well as all-day commuter parking, this should include bicycle, short stay/pick-up, and carpool parking in concert with local jurisdictions.

BART TRANSIT ORIENTED DEVELOPMENT GUIDELINES (2003)

The guidelines are designed to help guide planning and development around BART Stations and address customer experience, Station Area land use, and circulation and access related to a transit-oriented development. BART hopes these guidelines will help to enhance customer safety and convenience, create attractive Station Areas, increase ridership, develop revenue-generating opportunities, and improve Station operational efficiency.

While there is not a one-size-fits all formula for planning transit-oriented developments around BART Stations, the guidelines emphasize convenient access for all modes to the Station and a mix of land use surrounding the Station that creates a livable place. Specific to the mix of land uses, the report contains a discussion about the size and type that would enhance development around a Station, including residential, commercial, office, community services, and public gathering space.

BART TRANSIT ORIENTED DEVELOPMENT POLICY (2005)

Adopted by the BART Board of Directors in 2005, the TOD development policy was developed to promote high quality, more intensive development on and near BART-owned properties that can increase ridership, support long-term system capacity, and generate new revenues for transit. Also, such development would create attractive investment opportunities for the private sector and facilitates local economic development goals. Through specific TOD-driven land use, project planning/process, and financial strategies, the Board adopted the following goals:

- Increase transit ridership and enhance quality of life at and around BART Stations by encouraging and supporting high quality transit-oriented development within walking distance of BART Stations.
- Increase transit-oriented development projects on and off BART property through creative planning and development partnerships with local communities.
- Enhance the stability of BART's financial base through the value capture strategies of transit-oriented development.
- Reduce the access mode share of the automobile by enhancing multi-modal access to and from BART Stations in partnership with communities and access providers.

BART REPLACEMENT PARKING FOR JOINT DEVELOPMENT: AN ACCESS POLICY METHODOLOGY (2005)

The report presents a method for developing access and replacement parking strategies for BART's Property Development Program. Because Station context, development strategy, and BART system objectives have a bearing on access/replacement parking approaches, the method presents different options for Station-level solutions. The use of performance-based principles is a departure from the uniform nature of the current 1:1 replacement practice, as the methodology takes into account issues such as ridership, fiscal health, access mode

split, system capacity, supporting Comprehensive Station Plans, and local and regional context. The method relies on BART staff, in collaboration with local cities, transit agencies, and developers, in generating and evaluating alternative access/replacement parking scenarios for recommendation to the BART Board.

BART ACCESS BART (2006)

The objective of the *Access BART* study was to develop a strategic assessment of BART Station Areas that evaluated trade-offs between transit oriented development opportunities and access investments at a system- and corridor-level, while also considering the know capacity constraints on exiting transit infrastructure. The project was developed in response to the BART Board of Directors decision to accommodate ridership growth through Station access improvements that would increase pedestrian, bicycle, and transit mode shares. The study provided a methodology to:

- Evaluate how land use and access scenarios optimize ridership
- Understand how land use (TOD) and access strategies impact peak and off-peak ridership
- Develop Station typologies to inform access targets
- Develop an access investment approach that is based on Station typologies and access targets

The findings and recommendations of the study were applicable to all Stations in the system and will be used to guide future Station Area development and access investments, including the MacArthur BART Transit Village.

BART BICYCLE ACCESS AND PARKING PLAN (2002)

This document, which is designed to compliment the Station Access Guidelines, provides strategies to enhance the attractiveness of bicycles as a BART Station access mode. The plan focuses on how to get bicycles to BART Stations, how to store them at the Stations, and how to promote and publicize bicycling to BART.

Based on these issues, the document outlines bicycle access mode targets, access and parking needs, and recommendations for future improvement projects. The recommendations include bicycle storage facilities, way finding to BART Stations, and plans to promote bicycling to BART. Within the document, W. MacArthur Boulevard, 40th Street, and Telegraph Avenue are identified as key bikeway corridors under the recommended bikeway network chapter. The appendix also contains a checklist for the evaluation of transit village developments to ensure bicycle access is provided during and after construction.

AC TRANSIT SHORT RANGE PLAN (2003)

The AC Transit Short Range Plan documents the existing AC Transit service and budget, while also describing the district goals, future directions, and strategic vision. The District's main goal is to provide high quality, useful transit service for customers in the East Bay. The plan to accomplish this goal includes, among other things, the planning and implementation of future projects.

The Short Range Plan identifies W. MacArthur Boulevard and Telegraph Avenue as trunk routes, the backbone of the transit system and calls for 10 minute or better headways in the future. Martin Luther King Jr. Boulevard, identified as a major corridor route, would have 10-15 minute headways. AC Transit plans to achieve these service goals through the introduction of new vehicles, signal priority treatments, construction of bus-only lanes, the redesign of key transit stops, and the expansion of rapid service.

Several studies recently completed by AC Transit have provided the basis for short-term service restructuring and future investment plans. These have included studies of Bus Rapid Transit options for various corridors, including Telegraph Avenue in Berkeley and Oakland. An EIR for the proposed Telegraph BRT line is currently under review by the Federal Transit Agency and will be released to the public in the second quarter of 2007. This EIR

will document the BRT route and stop location plans along Telegraph Avenue, including the planned interaction with the MacArthur BART Station.

APPENDIX C. BART RIDERSHIP ESTIMATES

This section presents estimates of BART ridership changes due to the proposed MacArthur BART Transit Village project.

BACKGROUND

In order to develop the proposed Transit Village land uses, the development will replace the existing 618 surface parking spaces, dedicated for BART patron use, with 300 structured parking spaces. A residential parking permit (RPP) program is also planned for the neighborhoods within 1/4-mile buffer of the station. The RPP would restrict parking in the neighborhood and would affect an estimated 216 BART patrons currently parked in the surrounding neighborhoods. The estimate of BART patrons parking in the neighborhood is based on license plate survey data collected in May 2006.

While the loss of BART patron parking spaces will result in a decrease in BART ridership and access mode shifts, the new land uses will result in an increase in ridership.

RIDERSHIP ESTIMATION TECHNIQUES

In order to quantify the change in BART ridership, three methodologies were considered:

The **ITE methodology** uses project-specific, land use-based ITE trip generation rates and transit reduction information collected at similar Bay Area transit-oriented developments. Review of the project land use program, Census data, Bay Area Transportation Survey data, field-collected transit-oriented development trip generation surveys, and other transit-oriented development trip generation studies were conducted to develop trip generation rates for the transit village. These rates included an estimation of transit trips, which represent 19% of the total trips. See *MacArthur Transit Village Trip Generation* (Fehr & Peers, 2007) for more detail.

The **Willson methodology** uses BART's project-specific replacement parking for joint development methodology developed by Richard Willson, PhD (UCLA) and BART staff. Willson and BART developed this estimation technique specifically to address ridership loss at a station due to the removal of parking by accounting for the project land use program, the number of existing and proposed parking spaces, and information on non-personal vehicle-based station access modes. See *Replacement Parking for Joint Development: An Access Policy Methodology* (BART, 2005) for more detail.

The **Direct Ridership Model methodology** uses BART's station-area direct ridership models (DRM) developed by Fehr & Peers, ARUP, Nelson/Nygaard, Strategic Economics, and BART staff. The DRM are empirical-based, regression models that account for station characteristics including: surrounding population, surrounding employment, feeder transit service, parking levels, and access information by mode (walk, bicycle, transit, drive alone, carpool, and drop-off). See *Access BART* (BART, 2006) for more detail.

After reviewing the data inputs and assumptions of the three methodologies, the Willson methodology was selected for use by the City of Oakland and BART staff because it was developed by BART specifically for replacement parking and joint development applications. The total BART ridership was estimated by separating the ridership increase due to the transit village from the ridership decrease due to the on-site (and off-site) BART patron parking reduction. The following sections present the transit village and parking reduction BART ridership estimates.

TRANSIT VILLAGE BART RIDERSHIP ESTIMATES

As shown in Table A-1, the estimated change in BART ridership due to the transit village will result in an increase of 855 daily, 115 AM peak hour, and 137 PM peak hour BART trips.

**TABLE A-1
BART RIDERSHIP CHANGES DUE TO TRANSIT VILLAGE**

Type of Development	Amount	Total Trips	Trip Split	Disaggregated Trips	Percent BART Capture	Daily Trips	AM Peak Hour Trips ⁶	PM Peak Hour Trips ⁶
Residential (Dwelling Units)	675	3,254 ¹						
Work Trips			25%	814	55.5% ⁴	452	66	80
Non-Work Trips			75%	2,441	11.7% ⁴	286	42	50
Retail (ksf)	44	1,950 ²	100%	1,950	5.00% ⁵	98	6	6
Childcare (ksf)	5	396 ³	100%	396	5.00% ⁵	20	1	1
Total BART Ridership Increase						855	115	137

Notes:

- 1 - Residential trip generation from ITE 7th Edition equation for Residential Condominium/Townhouse (Land Use 230). Daily Equation: $T = 0.85 \ln(X) + 2.55$
- 2 - Retail trip generation from ITE 7th Edition equation for Specialty Retail (Land Use 814). Daily Rate: $T = 44.32 (X)$
- 3 - Child care trip generation from ITE 7th Edition equation for Child Care (Land Use 565). Daily Rate: $T = 79.26 (X)$
- 4 - Residential work and non-work BART trip shares based on average of rail shares for developments in Pleasant Hill and S. Alameda County are 40.5% and 8.55 percent respectively (Tables 5-8 on page 46 and Table 5-11 on page 51, CA TOD Report). These developments are suburban with an average of parking supply of 1.3 spaces per dwelling unit and located between 0.1 and 0.5 miles away from a BART Station. The proposed MacArthur Transit Village is in a more urban area, provides only one parking space per dwelling unit, and is immediately adjacent to a BART station. Based on data presented in Table 5-22 of the CA TOD report, the BART trip share capture is increased to account for parking provided at the site.
- 5 - Retail rail share based on rail shares for El Cerrito Plaza, Table 7-7, page 109 CA TOD Report, adjusted down to reflect MacArthur Transit Village's neighborhood serving retail versus destination retail at El Cerrito Plaza
- 6 - AM and PM peak hour transit trips based on AM/daily (Res = 14.6%, Non-Res = 6%) and PM/daily Res = 17.6%, Non-Res = 6%) ratios from EIR transit trip generation estimates.

Source: Fehr & Peers, 2007.

CHANGES IN PARKING SUPPLY BART RIDERSHIP ESTIMATES

As shown in Table A-2, the estimated change in BART ridership due to the change in parking supply on-site will result in a decrease of 524 daily, 58 AM peak hour, and 63 PM peak hour BART trips. This analysis is conservative as it assumes that the BART riders who currently park at the BART Station parking lot would not shift to parking in the surrounding neighborhoods and those riders would be lost at the MacArthur Station.

**TABLE A-2
 BART RIDERSHIP CHANGES DUE TO BART ON-SITE PARKING REDUCTION**

Analysis Step	Daily	AM Peak Hour	PM Peak Hour
Number of Spaces Reduced	318		
Space Turnover (cars parked per day)	1		
Number of people per car	1.1		
Number of daily BART trips per person	2		
Number of auto access boardings and alightings reduced	700		
Percent that find another access mode and continue to use BART	25% ¹		
BART ridership retained, change to another access mode	175		
Total BART Ridership Decrease	525	58²	63²
Notes:			
1 - Analysis assumes that 25 percent of riders switch to another BART access mode when their space is removed, and are therefore retained as BART riders. This assumption is based on BART direct ridership model data presented in the <i>Access BART</i> (BART, 2006) report for the MacArthur BART station.			
2 - AM and PM peak hour transit trips based on January 207 boarding and alighting data at the MacArthur BART Station provided by BART (AM = 11% of daily and PM = 12% of daily).			
Source: Fehr & Peers, 2007.			

As shown in Table A-3, the estimated change in BART ridership due to the change in parking supply on-site and implementation of the RPP will result in a decrease of 844 daily, 93 AM peak hour, and 101 PM peak hour BART trips.

SUMMARY OF BART RIDERSHIP ESTIMATES

As shown in Table A-4, development of the Transit Village and the accompanying change in parking supply on-site will result in an increase of 331 daily, 57 AM peak hour, and 74 PM peak hour BART trips. Development of the Transit Village, the accompanying change in parking supply on-site, and the implementation of the RPP will result in an increase of 11 daily, 22 AM peak hour, and 36 PM peak hour BART trips.

Given the scale of existing BART ridership at the MacArthur BART station, development of the Transit Village will result in a small increase in daily, AM peak hour, and PM peak hour BART ridership levels. BART service from the MacArthur station is currently constrained by the capacity of arriving trains, which are typically full, during the AM and PM peak hours. The estimated additional amount of peak hour trips would not be noticeable, as it would be distributed throughout the peak hour.

**TABLE A-3
 BART RIDERSHIP CHANGES DUE TO BART ON-SITE AND RPP PARKING REDUCTION**

Analysis Step	Daily	AM Peak Hour	PM Peak Hour
Number of Spaces Reduced	512		
Space Turnover (cars parked per day)	1		
Number of people per car	1.1		
Number of daily BART trips per person	2		
Number of auto access boardings and alightings reduced	1126		
Percent that find another access mode and continue to use BART	25% ¹		
BART boardings retained, change to another access mode	282		
Total BART Ridership Decrease	844	93²	101³

Notes:

1 - Analysis assumes that 25 percent of riders switch to another BART access mode when their space is removed, and are therefore retained as BART riders. This assumption is based on BART direct ridership model data presented in the *Access BART* (BART, 2006) report for the MacArthur BART station.

2 - AM and PM peak hour transit trips based on January 207 boarding and alighting data at the MacArthur BART Station provided by BART (AM = 11% of daily and PM = 12% of daily).

Source: Fehr & Peers, 2007.

**TABLE A-4
 SUMMARY OF BART RIDERSHIP CHANGES**

Change Due To	Daily	AM Peak Hour	PM Peak Hour
Transit Village	855	115	137
On-Site Parking Reduction	-525	-58	-63
Total	331	57	74
Transit Village	855	115	137
On-Site and RPP Parking Reduction	-844	-93	-101
Total	11	22	36

Source: Fehr & Peers, 2007.

APPENDIX D
2006 PLATFORM SURVEY

BART PASSENGER SURVEY – MacArthur STATION – May 2006

BART wants to provide service that meets your needs. Please complete both sides of this questionnaire by checking the boxes or writing in your response. Then return it to the survey taker or mail it back in the postage paid envelope. Thank you.

USAGE OF BART OF PLACE CAME FROM

1. How often do you currently use the nearest intersection or street BART?
the place you came from before

- 1 Less than once a month
- 2 1 – 3 days a month
- 3 1 – 2 days a week

4 3 – 7 days a week
Coming from: _____

LOCATION

2. What is the address of getting to

City/Town

LOCATION OF PLACE GOING TO

5. At which BART station will you exit?
5a. What is the nearest intersection or street address of the place you are going to after using BART?

BART Station Exiting:

Street/Intersection Going to:

City/Town Going to:

TRIP PURPOSE

3. What is the main purpose of this trip? (*check one only*)

- 1 Commute to/from work
- 2 Medical/Dental
- 3 Other business
- 4 Airport
- 5 Sports Event
- 6 Concert
- 7 School
- 8 Other: _____
- 9 Visit friends/family
- 10 Restaurant
- 11 Theater or Shopping

THIS BART TRIP

4. How did you get to this BART station?

- 1 Walked all the way
- 2 Bicycle
- 3 Motorcycle
- 4 Taxi
- 5 Drove Alone
- 6 Carpool with _____ others in car
- 7 Dropped off by car
- 8 Bus/Transit
- 9 Other: _____

<input type="checkbox"/> 1 parked bike at or near station <input type="checkbox"/> 2 took bike on train
<input type="checkbox"/> 1 parked in BART lot – daily fee <input type="checkbox"/> 2 parked in BART lot – monthly fee <input type="checkbox"/> 3 parked offsite lot or on street
<input type="checkbox"/> 1 AC Transit <i>If so, which Route?</i> <input type="checkbox"/> 2 Emery Go Round <input type="checkbox"/> 3 Paratransit <input type="checkbox"/> 4 Another BART train <input type="checkbox"/> 5 Shuttle <i>If so, which one?</i>

MACARTHUR STATION INTERCEPT STUDY

TOP LINE REPORT

DETAILS

PURPOSE	To collect behavioral and demographic information about passengers boarding BART at the MacArthur station
TECHNIQUE	Mostly interviewer administered intercept interviewing with a small number of mail-back questionnaires
SAMPLE SIZE ("n")	985 (total)
MARGIN OF ERROR	+/- 3.12% at 95% confidence level on total sample
FIELD DATES	Tuesday May 9, Wednesday May 10, and Thursday April 20, 2006
INTERVIEWING HOURS	6:30am – 9:30pm
QUALIFIED RESPONDENT	Passengers boarding the train at BART's MacArthur Station
NON-QUALIFIED	Passengers under 13 years of age and passengers who are transferring from another BART train
WEIGHTING	By time period to reflect actual ridership
CLIENT	Fehr & Peers/BART
RESEARCH FIRM	Corey, Canapary & Galanis, San Francisco, CA

FINDINGS

- Seven in ten (72%) currently use BART three or more days a week.
- A majority indicated that they used transit (39%) or walked (29%) in getting to the MacArthur station; one in ten (10%) drove alone to the station.

	ALL DAY %	AM PEAK %	MID DAY %	PM PEAK %
Bus/transit	39	26	37	57
Walked all the way	29	34	33	22
Dropped off by car	14	14	11	11
Drove Alone	10	16	12	5
Bicycle	7	8	7	5
Taxi	1	<1	1	-
Carpool	<1	1	<1	-
Motorcycle	<1	<1	-	1

- Over half (55%) of those who drove alone or carpooled parked in the BART lot.
- Among those who took transit to the MacArthur BART station, half (51%) used Emery Go Round, a quarter (25%) used AC Transit, and 13% used the Kaiser Hospital Shuttle.

FINDINGS (continued)

- About two in three (66%) came from Oakland before getting to BART.
- Among passengers boarding at MacArthur, 37% were going to a destination in San Francisco.
- The work commute is the major trip purpose named by passengers boarding at the MacArthur station

	%
Commuter to/from work	59
School	10
Visit friends/family	8
Personal business	6
Other business	5
Medical/dental	4
Shopping	1
Sports event	1
Airport	1
Theater or concert	1
Recreation/exercises	1
Restaurant	1
Sightseeing/vacation	<1
Refused/blank	1
	100%

DEMOGRAPHICS

- Almost two-thirds (64%) of passengers boarding at MacArthur are younger than 40.

	%
Under 20	6
20's	31
30's	27
40's	16
50's	13
60's or more	5
Refused/blank	1
	100%

- 56% of respondents classify themselves as minorities.

	%
White	45
Black/African American	30
Asian/Pacific Islander*	13
Spanish/Hispanic/Latino	10
Filipino(a)	2
Native American/Eskimo	1
Other	2
Unspecified/Refused/blank	2

classification.

* The Asian/Pacific Islander category may also include persons of Filipino(a) descent by reason of self

→ Among riders entering MacArthur, one third (33%) enter during the AM Peak period.

	%
6:31am – 9:30am	33
9:31am – 3:59pm	25
4:00pm – 7:00pm	30
After 7:00pm	12

APPENDIX E

REFERENCES

REFERENCES

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