

South Hayward BART / Mission Boulevard Concept Plan

Transportation Access Assessment

February 23, 2005

Prepared for the City of Hayward Redevelopment Agency

MEMORANDUM

To: Gary Calame, City of Hayward
From: Adam Millard-Ball and Krute Singa
Date: February 23, 2005
Subject: **South Hayward BART Station Area Design Plan
Transportation Access Assessment**

Introduction

This memorandum provides a summary of the key transportation issues that will need to be addressed in the South Hayward BART Station Area Plan, and compiles currently available transportation data from a variety of sources. It includes the following sections:

1. Planning Context – describing the General Plan and the Route 238 Corridor Improvement Project
2. Travel Behavior - summarizing information on transportation patterns from the US Census and a City survey of transit-oriented housing
3. Transit – including data on ridership and access from BART and AC Transit
4. Bicycle – summarizing existing conditions and facilities, and the proposed bicycle network
5. Pedestrian Conditions
6. Vehicle Traffic – including the current and planned road network, parking, current intersection level of services, and data on vehicle speeds and collisions

Key Issues

Facing current and future growth demands, the City of Hayward is taking advantage of infill and redevelopment opportunities to foster a positive quality of life through economic revitalization, housing options, multi-modal transportation and access to job and services. The study area, centered around South Hayward BART station, provides a range of excellent opportunities.

Some of the key transportation questions and issues that will need to be resolved include:

Parking. South Hayward is one of the few stations where BART commuter parking does not fill to capacity. Coupled with BART’s access policies to reduce the access mode share of single occupant vehicles, and its new replacement parking analysis methodology, this suggests that there is some flexibility in determining the optimum number of replacement spaces that will be required. Residential and commercial parking requirements are a second issue that will need careful analysis. The experience with residential developments downtown shows that without appropriate design or incentives to own fewer vehicles (e.g. pricing or City CarShare), most households will still own two vehicles, even if they commute via BART.

Transit transfers. The bus intermodal facility consumes a large amount of prime land directly in front of the faregates. BART’s station access guidelines stress that bus intermodal facilities need to be as close as possible to the station; however, efficiency gains may be possible if not all buses “pulse” at the station, and through accommodating layovers elsewhere. For several routes, particularly Mission Boulevard services that deviate into the station, it is important to reduce travel time by ensuring that bus access is as efficient as possible. While the existing AC Transit network provides good coverage, there are opportunities to provide more frequent service on some corridors.

Pedestrian and bicycle access. Dixon, Harder, Tennyson and Industrial Pkwy are the four key streets that need to accommodate bicycles, in line with the City’s Bicycle Plans. Tennyson in particular is an important east-west connection in the south of the City, and connects to Whitman (for downtown access) and Huntwood (for trips to the south). For pedestrians, Mission Blvd, the Tennyson crossing and access across the tracks are critical issues. As Mission redevelops, its importance for pedestrians will grow significantly, and will need to be addressed as a commercial street as well as an arterial.

Route 238. The Route 238 Corridor Improvement Project was proposed and seeks to balance accommodating the very large future traffic demands within the existing right-of-way. Redevelopment of some of the Route 238 parcels may provide the best opportunities for pedestrian improvements, if additional right-of-way can be secured.

Trip generation and impact mitigation. Congestion is already a significant issue on Route 238, and at select intersections. This means that new development must be carefully planned to avoid overloading the existing roadway network; demand management strategies will be not just an optional extra, but an integral part of any plan to achieve any significant level of infill development.

1. Planning Context

1.1 General Plan¹

The City of Hayward General Plan provides the overarching policy context for this study. The overall direction of the plan is extremely supportive of transit, walking, cycling and supportive land use strategies. It identifies shopping centers, transit stations, government centers and the

¹ Circulation Element. City of Hayward General Plan. October 2003.

California State - Hayward campus as potential areas for the development of a pedestrian friendly environment. The General Plan also promotes mixed-use developments at designated infill and redevelopment sites, and concentrating jobs and housing near transit stations or along major bus routes to reduce congestion.

Two of the important standards that it includes are 15-minute frequencies on the core transit network, and intersection Level of Service D. Some of the most relevant policies and strategies adopted in the Circulation Element are attached as an appendix.

Overall, the General Plan is in favor of development that integrates land use and transportation elements. It identifies the South Hayward BART station as an area where “mixed-use development (e.g. housing above commercial)...to ensure a pedestrian-friendly environment that has housing, jobs, shopping, parks and recreation in close proximity.”²

1.2 Route 238 Corridor Improvement Project

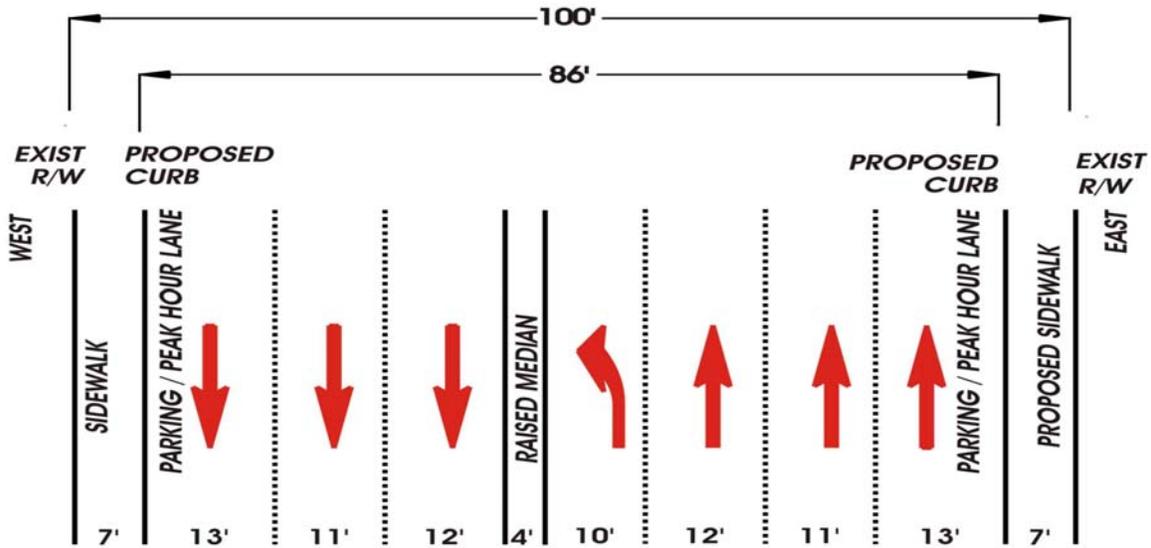
The Route 238 Corridor Improvement Project is proposed to be implemented as an alternative to the Hayward Bypass. It combines a partial grade separation at the “Five Flags” intersection of Foothill Boulevard, Mission Boulevard and Jackson Street with a downtown “mini-loop” system, minor widening of D Street in downtown, spot improvements at Mission and Carlos Bee Boulevards, and access improvements at Moreau High School. Within the study area, the sidewalk on Mission Boulevard will be reduced from 10 feet to 7 feet to provide an additional travel lane during peak hours. During off-peak hours, this lane will be available for parking.

The sections below illustrate the proposals.

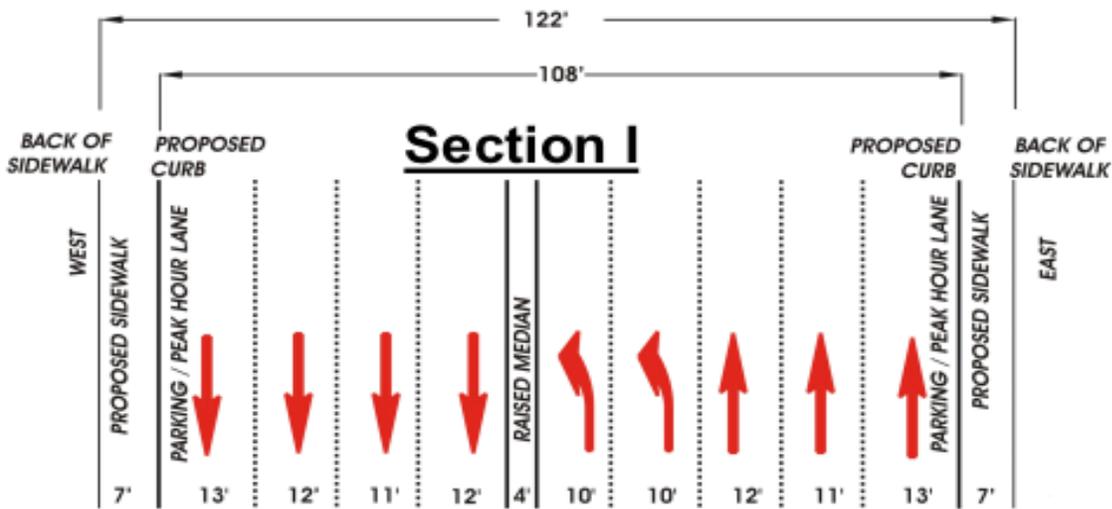
² Circulation Element. City of Hayward General Plan. October 2003. Page 3-14.

**South Hayward BART Station Area Plan
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At Cemetery Entrance; at Sorenson Rd.; at Calhoun St; and at Hancock St.

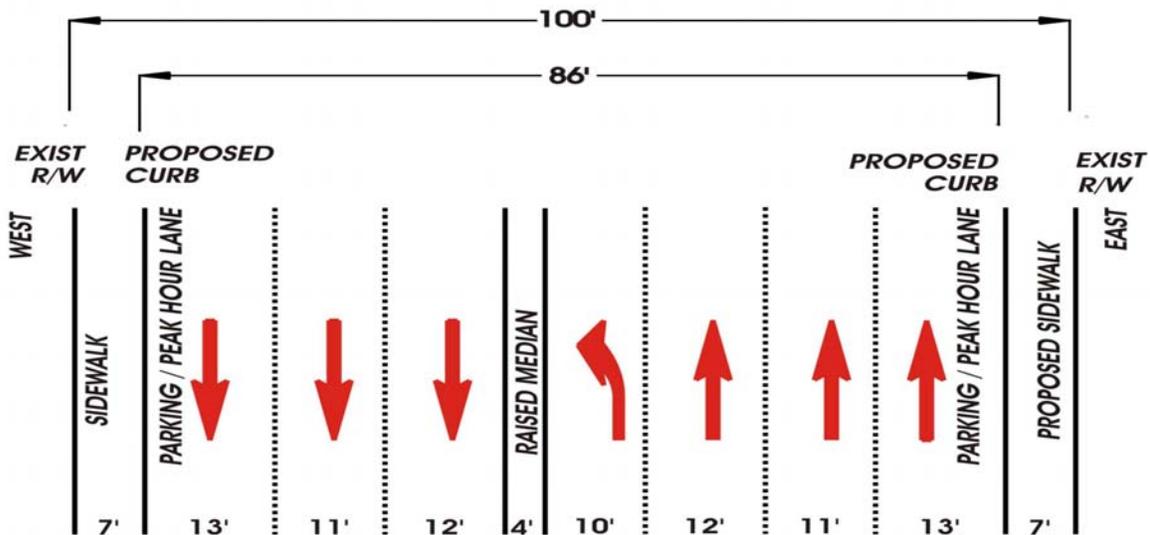


At Tennyson Rd.



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At Valle Vista Ave.



1.3 BART Policies

BART has well-established policies and guidelines regarding access to its stations. These seek to reduce the drive alone access mode share, in favor of increased use of carpools, transit, walking and cycling. The table below shows BART’s system-wide access targets; at present, there are no targets for individual stations or lines. BART’s Station Access Guidelines set out BART’s policies for achieving these goals, and the Board is expected to consider detailed issues related to parking replacement in conjunction with joint development this spring.

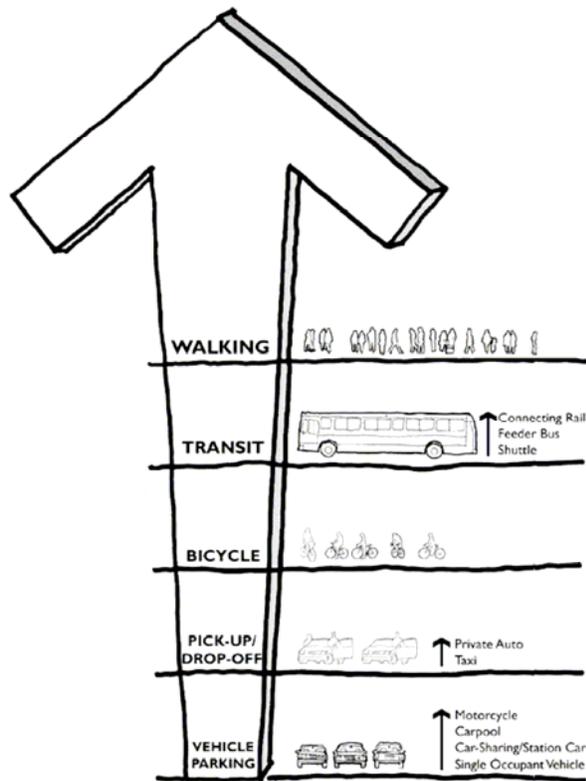
BART also has detailed access guidelines for both internal use, and for reference by local jurisdictions and other transit agencies. This includes a formal access hierarchy (illustrated), which prioritizes non-auto modes for funding and physical space.

BART Access Targets (AM Peak)

Access Mode	1998 Mode Share	2005 Target	2010 Target
Walk	23.0%	24.0%	24.5%
Bike	2.0%	2.5%	3.0%
Transit	21.0%	21.5%	22.0%
Drop Off, Carpool, Taxi	16.0%	19.0%	19.5%
Drive Alone	38.0%	33.0%	31.0%

Source: BART Station Access Guidelines.

BART Access Hierarchy



Source: BART Station Access Guidelines.

1.4 AC Transit Policies

AC Transit recently issued a new guide, *Designing with Transit*. This highlights the potential for Transit Oriented Development along AC Transit's major routes and trunk corridors, and sets out best practice for safe pedestrian access to transit. It also sets out AC Transit's design standards for streets, bus stops and off-street intermodal facilities.

AC Transit has established service deployment policies that relate service frequencies and spans to land use factors such as population density. The table below shows the population density and service objectives. The threshold of 10,000 people per square mile is important as it marks the transition between a focal point/timed transfer route structure, and a grid structure with 10-15 minute headways which enable passengers to simply show up without the need to consult a schedule.

AC Transit Population Density and Service Objectives

Density Category and Examples	Route Spacing	Route Structure	Weekday Base Frequency	Weekend Frequency
High Density: 20,000 people per sq. mile and over (such as Int'l Blvd., Telegraph Ave.)	1/4 mile	Grid	Trunk: 10 mins Crosstown: 15 mins	Trunk: 15 mins Crosstown: 15 mins (Sat), 30 mins (Sun)
Medium Density: 10,000-19,999 people per sq. mile (such as Oakland, Berkeley and Richmond flatlands)	1/4 - 1/2 mile	Grid	Trunk: 10 mins Crosstown: 15 mins	Trunk: 15 mins (Sat), 30 mins (Sun) Crosstown: 30 mins (Sat), 60 mins (Sun)
Low Density: 5,000-9,999 people per sq. mile (e.g. Hayward, Castro Valley, central Fremont)	1/2 mile	Focal Point Timed Transfer	Trunk: 15 mins Crosstown: 30 mins	Trunk and Crosstown: 30 mins (Sat), 60 mins (Sun)
Very Low Density: below 5,000 people per sq. mile (such as hill areas, parts of Fremont)	1 mile	Focal Point Timed Transfer	No set standard	No set standard

Source: AC Transit (2004), *Designing With Transit. Making Transit Integral to East Bay Communities.*

2. Current Travel Behavior

One of the most useful sources of information on travel behavior is the US census. In Hayward, this can be supplemented by a survey of residents living near the Downtown Hayward BART station, which may be comparable to some of the proposals that emerge from the South Hayward Plan.³ Note that the data here encompasses a larger area than the study area, for consistency with Strategic Economics data.

2.1 Vehicle Ownership

The table below and the maps provide census data on vehicle ownership in the study area. Study area households tend to own slightly more vehicles (1.94 on average) than in the City as a whole (1.81 vehicles). However, this average masks considerable variations between different parts of the study area, and between different types of households (e.g. renters vs. owner occupiers). For example, Tract 4351.01, Block Group 5, which covers the immediate station area between Tennyson and Industrial, and between the BART tracks and Mission Blvd, has the lowest vehicle ownership of any of the block groups (1.42 vehicles per household). Renters, meanwhile, own an average of 27% fewer vehicles than owner-occupied housing units.

A similar picture is provided from the survey of downtown residents. On average, they report 1.75 vehicles per unit, with most respondents, 53 percent, owning two vehicles. Most respondents park their vehicles in the garage attached to their development. However, the

³ A survey of residents living near the Downtown Hayward BART Station was conducted in September 2004 to learn about their decision to move into the area's residential developments and their travel behavior. The survey respondents live in proximity to the Hayward BART station. The survey achieved a 35% response rate.

majority of respondents, 60 percent, do not feel that an adequate amount of parking is provided for them or their visitors and as a result, resort to parking on the street, in BART or public garages or common areas. Many respondents, 26 percent, state that they found it difficult to obtain parking within a reasonable distance from their homes.

2.2 Travel Behavior

Study area residents are slightly more likely to use rail for the commute to work (6.2% compared to 4.2% for the City as a whole), although this is slightly counteracted by lower rates of commuting by bus. Again, there is considerable variation within the study area, with the bus commute mode share differing between block groups close to the South Hayward BART station and those located further north on Mission Boulevard.

The highest rail mode share (11%) is found immediately at the BART station (Tract 4351.01, Block Group 5). Perhaps indicating the extent of the barrier posed by the BART tracks and Tennyson, some of the lowest rail mode shares are to be found close to the station but west of the tracks. Tract 4378, Block Group 2, which consists of the strip between the west of the tracks and Whitman, and between Tennyson and Harder, has a rail mode share of 2.4%. The block group to the east of the tracks, between Jefferson and Harder, has an even lower rail mode share.

Time spent commuting is generally comparable to residents in other parts of the City, apart from a lower proportion of residents with very short (less than 10 minute) commutes.

Transit usage in individual developments may be even higher, however, to judge from the results of the resident survey. Approximately 31 percent of adult respondents utilized BART on a regular basis, more often for commuting purposes and less so for non-work or school related trips. This proportion is comparable or even somewhat lower than seen at developments at other suburban BART stations. Only seven percent of respondents, however, utilized the bus on a regular basis and even fewer used services for non-work or school related trips. When asked what type of improvements would encourage more transit use, respondents listed convenience, reasonable fare prices, improved safety and cleanliness and increased service and frequency.

Proximity to transit has been an important factor in the relocation decisions of many residents in these Downtown Hayward apartments. Most respondents, 79 percent, lived outside Hayward before moving into the one of the following developments: Atherton Place, City Walk, Grand Terrace and Pinnacle City Centre. Most respondents, 56 percent of the total, have been living in the developments for over a year. Their choice to live in downtown is summarized in the table below. The main reasons for locating downtown are access to BART and public transit as well as housing value. In addition, 59 percent of respondents indicated that they access downtown Hayward for their daily shopping needs (grocery, other needs).

South Hayward - Transit Mode Share

Hayward

Legend

Transit Commute Mode Share

- < 4 %
- 4 - 6.75 %
- 6.75 % - 9.99 %
- > 10 %

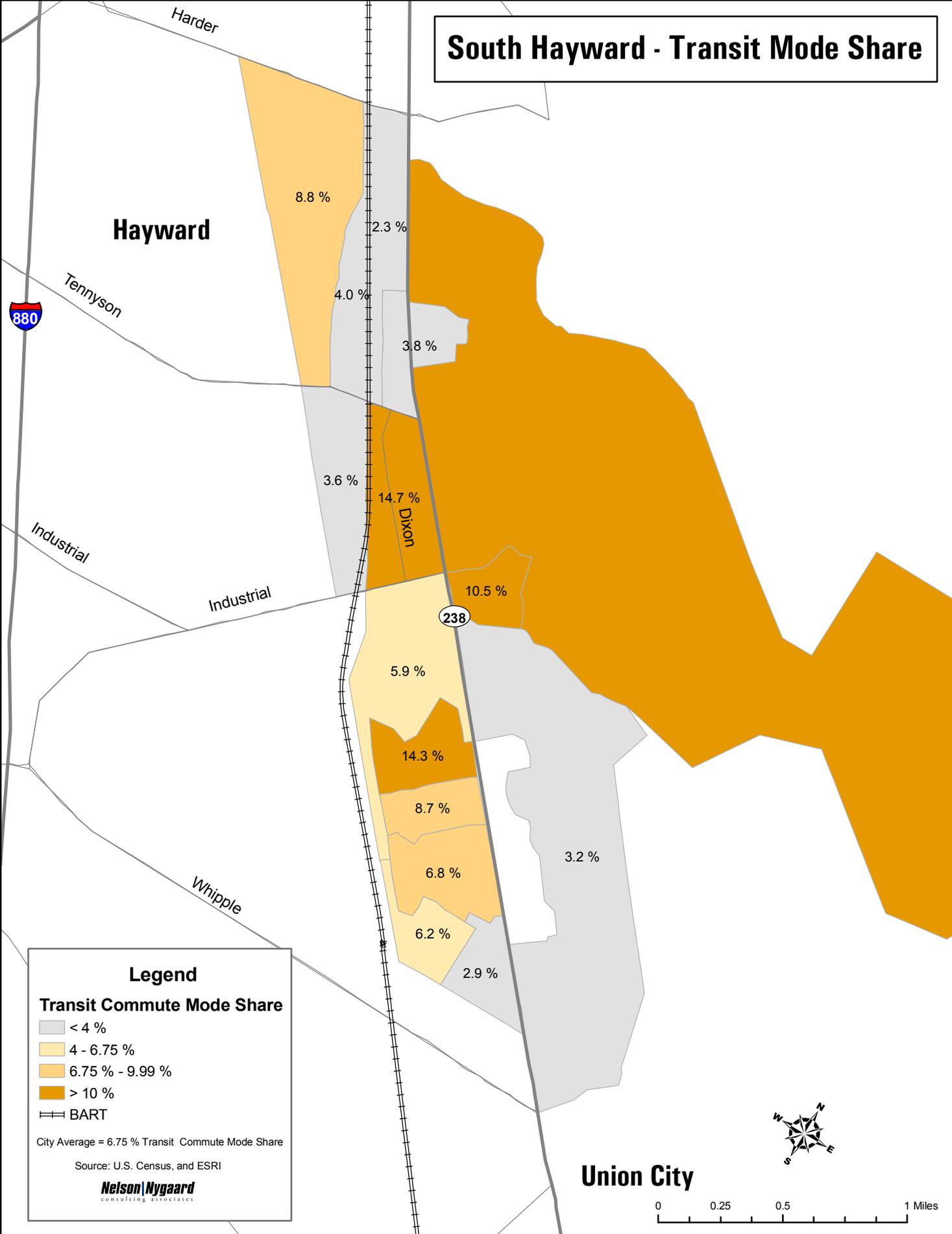
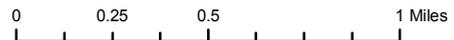
BART

City Average = 6.75 % Transit Commute Mode Share

Source: U.S. Census, and ESRI

Nelson Nygaard
consulting associates

Union City



South Hayward - Vehicle Ownership

Hayward



Tennyson

Harder

Industrial

Industrial

Whipple

Dixon

238

Legend Vehicles per Household

- < 1.80
- 1.80 - 2.00
- 2.01 - 2.25
- 2.26 +

BART

City Average = 1.80 Vehicles per Household

Source: U.S. Census, and ESRI

Nelson Nygaard
consulting associates

2.1

1.9

2.6

1.7

1.6

1.4

2.1

2.4

2.5

1.6

2.2

2.5

2.3

2.0

Union City



Household Vehicle Ownership

	Tract 4351.01 BG 2	Tract 4351.01 BG 4	Tract 4351.01 BG 5	Tract 4378 BG 1	Tract 4378 BG 2	Tract 4379 BG 1	Tract 4379 BG 2	Tract 4380 BG 1	Tract 4381 BG 1	Tract 4381 BG 2	Tract 4381 BG 3	Tract 4381 BG 4	Tract 4381 BG 5	Tract 4381 BG 5	Tract 4382.02 BG 3	Total Block Groups	City of Hayward
All Households																	
None	5%	10%	11%	3%	7%	9%	17%	4%	0%	0%	2%	2%	0%	5%	4%	5%	8%
One	36%	21%	46%	32%	9%	34%	16%	33%	14%	12%	49%	30%	16%	21%	51%	32%	33%
Two	41%	40%	35%	34%	38%	42%	40%	40%	53%	55%	37%	26%	53%	27%	33%	39%	38%
Three or More	17%	29%	7%	31%	46%	15%	26%	23%	33%	32%	12%	42%	32%	47%	11%	24%	21%
<i>Mean</i>	<i>1.80</i>	<i>2.11</i>	<i>1.42</i>	<i>2.09</i>	<i>2.61</i>	<i>1.67</i>	<i>1.88</i>	<i>1.99</i>	<i>2.43</i>	<i>2.45</i>	<i>1.59</i>	<i>2.22</i>	<i>2.33</i>	<i>2.46</i>	<i>1.62</i>	<i>1.96</i>	<i>1.83</i>
Renters																	
None	7%	13%	11%	2%	12%	12%	21%	6%	0%	0%	6%	0%	0%	21%	0%	9%	12%
One	45%	56%	47%	51%	12%	31%	26%	35%	37%	0%	40%	49%	19%	14%	79%	42%	42%
Two	36%	31%	35%	29%	38%	50%	35%	37%	37%	52%	45%	34%	69%	0%	0%	36%	34%
Three or More	12%	0%	7%	17%	38%	7%	18%	22%	27%	48%	8%	17%	12%	65%	21%	14%	12%
<i>Average</i>	<i>1.57</i>	<i>1.18</i>	<i>1.43</i>	<i>1.64</i>	<i>2.02</i>	<i>1.55</i>	<i>1.50</i>	<i>1.95</i>	<i>1.90</i>	<i>2.96</i>	<i>1.56</i>	<i>1.86</i>	<i>2.04</i>	<i>2.21</i>	<i>1.42</i>	<i>1.61</i>	<i>1.49</i>
Owners																	
None	0%	9%	18%	3%	6%	4%	13%	2%	0%	0%	0%	3%	0%	0%	5%	3%	4%
One	16%	9%	36%	24%	9%	38%	8%	32%	11%	13%	53%	26%	15%	24%	48%	24%	24%
Two	53%	43%	45%	37%	38%	33%	45%	43%	55%	56%	32%	25%	49%	35%	37%	41%	42%
Three or More	31%	39%	0%	36%	48%	25%	33%	24%	34%	31%	14%	46%	36%	41%	10%	32%	29%
<i>Average</i>	<i>2.38</i>	<i>2.43</i>	<i>1.27</i>	<i>2.26</i>	<i>2.72</i>	<i>1.81</i>	<i>2.21</i>	<i>2.04</i>	<i>2.50</i>	<i>2.41</i>	<i>1.61</i>	<i>2.29</i>	<i>2.39</i>	<i>2.53</i>	<i>1.64</i>	<i>2.22</i>	<i>2.12</i>

The three block groups that have the majority of their area in the study area are highlighted.

Source: 2000 Census

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Mode of Transportation to Work (Residents)

Mode	Tract 4351.01 BG 2	Tract 4351.01 BG 4	Tract 4351.01 BG 5	Tract 4378 BG 1	Tract 4378 BG 2	Tract 4379 BG 1	Tract 4379 BG 2	Tract 4380 BG 1	Tract 4381 BG 1	Tract 4381 BG 2	Tract 4381 BG 3	Tract 4381 BG 4	Tract 4381 BG 5	Tract 4381 BG 5	Tract 4382.02 BG 3	Total Block Groups	Hayward
Drove alone	80.4%	45.3%	50.0%	67.9%	78.8%	72.0%	67.4%	83.0%	62.6%	68.2%	72.8%	74.7%	69.5%	67.5%	66.9%	68.2%	69.1%
Carpool	4.7%	41.9%	27.9%	17.3%	13.5%	19.8%	26.2%	10.3%	31.5%	12.2%	10.6%	8.7%	23.2%	24.7%	28.2%	19.2%	18.2%
Bus	1.8%	0.0%	2.6%	2.2%	1.5%	0.0%	1.0%	0.5%	0.0%	4.1%	1.9%	1.7%	2.9%	4.0%	0.0%	1.7%	2.4%
Rail*	10.0%	10.5%	12.1%	6.6%	2.4%	3.8%	1.3%	2.7%	5.9%	10.1%	6.8%	5.2%	0.0%	2.2%	3.6%	6.4%	4.3%
Bicycle	0.0%	0.0%	1.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.4%
Walked	1.8%	0.0%	3.7%	0.6%	1.5%	1.2%	0.0%	0.0%	0.0%	5.4%	1.6%	0.0%	0.0%	1.6%	0.0%	1.3%	2.1%
Other means	0.6%	0.0%	1.6%	0.5%	1.3%	2.3%	2.9%	0.0%	0.0%	0.0%	3.8%	6.3%	2.9%	0.0%	0.0%	1.3%	1.6%
Worked at home	0.6%	2.3%	1.0%	4.2%	0.9%	0.9%	1.2%	3.6%	0.0%	0.0%	2.4%	3.5%	1.5%	0.0%	1.4%	1.7%	1.9%
Total Pop.	1,247	351	1,431	1,418	452	576	596	857	837	484	368	542	410	449	444	10,462	61,627

For respondents 16 years and older. The three block groups that have the majority of their area in the study area are highlighted

*Includes subway/elevated, railroad and streetcar classifications.

Source: 2000 Census

Reasons for Moving to Downtown Hayward

Reasons for Moving to Downtown Hayward	Percent Response
Close to BART and other Public Transit	34%
Housing Value	34%
Convenient to Shops and Restaurants	11%
Close to Workplace	9%
Neighborhood Atmosphere	6%
Other	4%
Parks and Other Public Facilities	2%

Source: Downtown Hayward BART Station Housing Survey

3. Current Transit Services

3.1 BART

The South Hayward BART Station is located on Dixon Street in Hayward, off the intersection of Mission Boulevard and Tennyson Road. It is one of two BART stations in the City, and is served by both the Daly City-Fremont and Richmond-Fremont lines. Service starts at 4:00 am on weekdays, 6:00 am on Saturday and 8:00 am on Sunday and ending at midnight each day. Direct service between Daly City and Fremont is offered between 5:00 am and 7:00 pm Mondays through Saturdays only; at other times, passengers must transfer at Bay Fair.

Ridership and Capacity

Average weekday ridership in October 2004 was 2,920 boardings and 2,812 alightings, making it one of the lowest ridership stations (the 38th busiest) on the 43 station BART system. For comparison, Downtown Hayward station has 4,595 average daily boardings.

South Hayward BART station currently operates below capacity. Existing station infrastructure is listed in the table below.



Photo: CD + A

Existing Infrastructure	
Number of Platforms	2
Number of Entrances	1
Number of Paid Areas	1
Number of Stair Cases	2
Number of Escalators	2

Source: Nelson/Nygaard and BART

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To meet anticipated changes in travel patterns, system expansion and growth in transit-oriented development, BART developed a draft operating plan for 2025 to project increases in ridership at the existing stations, taking into account system expansion projects such as BART to San Jose. This provides a useful reference point to assess the capacity of stations to accommodate all types of ridership increases.

According to this assessment, there are no capacity issues at South Hayward at present, and the station is one of the best placed to accommodate new riders. By 2025, however, overall BART ridership growth and additional ridership from the San Jose extension would trigger the need for several capacity enhancements – the addition of new stairs or escalators, platform widening and new fare gates. Most of these are driven by emergency evacuation needs. Costs are estimated at approximately \$19.7 million, with \$3.5 million of this being driven by San Jose ridership.⁴ The table below details the projected 2025 capacity requirements.

South Hayward has side platforms, which make it relatively simple to add platform width to accommodate increased ridership.

2025 Projections for Additional Capacity Requirements for South Hayward BART Station

2025 Capacity Requirements		
	Side Platform 1	Side Platform 2
Additional Square Feet for Platform	1,796	1,506
Vertical Circulation	1 new escalator 1 new stair 1 new emergency stair 1 new elevator	1 new escalator 1 new stair 1 new emergency stair 1 new elevator
Number of Additional Automatic Fare Collection Gates		6

Source: Nelson/Nygaard and BART

These calculations do have limitations as they do not describe specific projects, providing instead an estimate of capacity improvements needed to accommodate projected increases in ridership and system size. Additionally, they do not take into account the physical limitations at each station, which may limit the possibility to achieve the required capacity enhancements.

Access to BART

BART’s 1998 Station Profile Survey provides detailed information on mode of access to BART. The following are some of the key findings from the data:

⁴ Nelson/Nygaard. Silicon Valley Rapid Transit Projected Impacts on BART System: BART Core System Station Modifications Study. May 2003.

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- South Hayward is primarily a home origin station – unsurprisingly, given predominantly residential land use. More than three quarters (77%) of riders boarding at the station are traveling from home, with 18% traveling from work or school.
- Drive alone and park is the primary access mode, with bus access the second most important (see table below). However, bus and bicycle access assume greater importance for trips at the non-home end, i.e. for trips between the BART station and the workplace or school site.
- In common with those at most other BART stations, South Hayward riders are frequent BART users (19% of respondents ride 6-7 days a week, and 56% 5 days a week). Most (60%) are choice riders, and have a motor vehicle available to make the trip.

Access Mode to South Hayward BART Station

Access Mode	All origins	Home	Non-Home
Drive alone	38%	48%	6%
Drop Off	5%	7%	0%
Carpool	19%	15%	31%
Bus/other transit	19%	15%	34%
Walk only	14%	13%	15%
Bicycle	4%	2%	12%
Taxi	1%	0%	1%

Source: 1998 BART Station Profile Survey.

Seven AC Transit routes serve the South Hayward BART station (see *following section*), and there is an off-street intermodal facility with nine bus bays on BART property, directly in front of the faregates. The station is equipped with bicycle racks and lockers, and 15 new racks were recently installed at the station.

Parking

South Hayward is one of the few BART stations where parking does not regularly fill up. BART provides 1,207 parking spaces in two lots, which are approximately 83 percent full on a daily basis. There are 26 reserved spaces of which 21 are regularly unused; since, in contrast to most other stations there are unused regular spaces and, therefore, there is little incentive to pay for the reserved spots.

Parking Facility Occupancy Summary for South Hayward BART Station

Occupancy Summary	South Hayward
Total Parking Spaces	1,207
Carpool Spaces	0
Midday Spaces	12
Reserved Spaces	26
Available Spaces - 9:00 am	
Regular Spaces	239
Carpool Spaces	0
Reserved Spaces	24
Available Spaces - 10:00 am	
Reserved Spaces	21
Available Spaces - 1:00 pm	
Regular, Carpool, Midday and Reserved Spaces	210
Bicycles*	
9:00 am Occupancy	6
1:00 pm Occupancy	5
Available Bike Lockers	30

*Bicycles in bicycle lockers were not included in the count

Source: BART Stations – Parking Facility Occupancy Survey. April 20 – May 6, 2004

3.2 AC Transit

Alameda – Contra Costa Transit (AC Transit) provides local and express buses in thirteen cities and adjacent unincorporated areas in Alameda and Contra Costa counties. It is the third-largest public bus system in California. On a daily basis, AC Transit carries 230,000 passengers on 105 bus lines.

There are seven AC Transit routes that service the South Hayward BART station. Their routes and frequency are given in the table and map below. The most frequent operate at 30-minute headways, and serve both Mission Blvd. and the neighborhoods to the west of the BART tracks, including Chabot College. However, some routes interline to give higher frequencies along Tennyson Rd. For example, routes 83 and 86 provide combined 15-minute frequencies at peak hours between South Hayward BART and Hesperian. A total of six routes serve the segment of Tennyson Rd. between the BART station and Huntwood.

Many of these routes terminate and layover at South Hayward BART. In addition, some routes are scheduled to “pulse” at the BART station, generally around the half hour. For example, Routes 83 and 91 are scheduled to leave on the hour, a few minutes after the 99 Mission.

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Two of AC Transit’s so-called Major Routes pass through Hayward – the Mission Blvd. and Hesperian Blvd. corridors. Tennyson Rd. is the key east-west link between these two trunk lines in the south of the City. While Mission Blvd. has relatively low frequencies at present (30 minutes at peak), AC Transit’s service deployment policies call for focusing resources on these major routes and so future service improvements can be reasonably expected here. AC Transit’s policies also relate service headways to density, and so any increased density as a result of study area development may also trigger service improvements.

AC Transit Routes Serving South Hayward BART

AC Transit Routes Serving South Hayward BART	Weekday Frequency	Saturday Frequency
Route 77 Soto: Neighborhood service between Tampa Ave. & Tennyson Road, Ruus Lane and Georgian Manor, South Hayward BART, Gading Road and Harder Road and terminating at the Downtown Hayward BART Station.	30 minutes (peak) 30-60 minutes (off peak)	60 minutes
Route 83 Clawiter: Operating between South Hayward and Downtown Hayward BART stations, servicing Tennyson Road and Hesperian Boulevard, Eden Landing Road and Investment Boulevard, Clawiter Road and Industrial Boulevard, Winton Avenue and Hesperian Boulevard, Hesperian Boulevard and W. A Street.	30 minutes (peak) 60 minutes (off-peak)	No Service
Route 86 Winton: Operating between South Hayward and Downtown Hayward BART stations, servicing Tennyson Road and Hesperian Boulevard, Depot Road and Industrial Boulevard, AC Transit Hayward Division, Winton Avenue and Hesperian Boulevard.	30 minutes (peak hour only to S. Hayward)	No Service to S. Hayward
Route 91 Redwood: Service from San Antonio Street and San Luis Obispo Avenue, Industrial Parkway and Huntwood Avenue, South Hayward BART, Hayward BART, A Street and Foothill Blvd, Castro Valley BART and Castro Valley Senior Center.	30 minutes	No Service
Route 92 Southland: Servicing Chabot College, Southland Shopping Center, Hayward BART, Hayward High School, South Hayward BART, Campus Drive & Second Street and Cal State Hayward.	No Service to S. Hayward	60 minutes
Route 99 Mission: Line services four BART stations. Fremont BART, down Mission Boulevard to Union City BART, South Hayward BART and Hayward BART.	30 minutes 60 minutes (after 7 pm)	30-60 minutes
Route 210 Fremont Boulevard: Service from Ohlone College, along Fremont Boulevard, to Dyer Street and Alvarado Boulevard, Union Landing Shopping Center, Huntwood Avenue and Whipple Road, Industrial Parkway and Huntwood Avenue and South Hayward BART.	30 minutes (peak) 60 minutes (off peak)	30 minutes

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AC Transit Routes Serving South Hayward BART



Passenger Loads

Most of the routes serving South Hayward BART station are low productivity, coverage-oriented routes. They have ample capacity to accommodate new riders. The route with the highest ridership at the station (but not necessarily on the entire line) is the 99 Mission Boulevard service. AC Transit’s most recent stop-level ridership data, from a survey conducted over varying time periods, is provided in the table below.

For most of the bus lines, the South Hayward BART station is one of the highest ridership stops.

**Average Weekday Passenger Boardings and Alightings
at South Hayward BART Station Bus Stop**

Route	Direction	Boarding ¹	Alighting ²	Average Load ³	Maximum Load ⁴
77	SB	48	33	3.9	8
77 ⁵	NB	37	50	4.0	9
83	SB	0	65	3.3	8
83 ⁶	NB	75	0	4.0	8
86	SB	0	52	1.0	6
86 ⁷	NB	47	1	3.6	8
91	SB	12	51	2.3	11
91 ⁸	NB	54	10	2.8	10
92	SB	N/A	N/A	N/A	N/A
92 ⁹	NB	N/A	N/A	N/A	N/A
99	SB	108	64	9.3	18
99 ¹⁰	NB	66	90	7.1	22
210	SB	139	0	5.0	10
210 ¹¹	NB	0	126	0.4	3

¹Total number of boarding passengers at the bus stop

²Total number of alighting passengers at the bus stop

³ Average number of passengers on board any given bus at the stop

⁴ Maximum number of passengers on board any given bus at the stop

⁵ 77 counts in both directions taken between December 2004 – February 2005

⁶ 83 counts in both directions taken between August – October 2003

⁷ 86 counts in both directions taken between August – October 2003

⁸ 91 counts in both directions taken between September - December 2004

⁹ 92 counts in both directions taken between September - December 2004

¹⁰ 99 counts in both directions taken between August – October 2003

¹¹ 210 counts in both directions taken between August – October 2004

Source: AC Transit

2.2.3 Planned Service Changes

AC Transit proposed the following service improvements to improve connections around Hayward and to the South Hayward BART station:⁵

- Increase frequency of the 99 route and extend service to the Union Landing Shopping Center.
- Provide direct connection to the Union Landing Shopping Center by routes 84 and 77 and limit transfers
- Improve connections to area services for low-income and transit-dependent workers
- Evaluate potential for “new markets” approach in feeder service to BART

4. Bicycle

The City adopted the updated Bicycle Master Plan in 1997 that identifies opportunities to expand the existing network of bicycle paths, lanes and routes. The goals of the Plan are as follows:⁶

1. To provide the opportunity for safe, convenient and pleasant bicycle travel throughout all areas of Hayward;
2. To provide the related facilities and services necessary to allow bicycle travel to assume a significant role as a local alternative mode of transportation and recreation; and
3. To encourage the use of bicycles as a pleasant means of travel and recreation embodying physical, environmental and social benefits.

The Bicycle Master Plan proposed adding 39.7 miles of bikeways to the 21.7 miles currently existing. In the South Hayward BART Station area, existing bikeways included:

- Tennyson, south of the BART station (Class II bike lane)
- Harder, between Santa Clara and Westview
- Industrial south of the BART tracks (Class I bike path)

The plan’s proposed bikeways in the study area included:

- Extending the Industrial Parkway Class I bike path to Dixon Street, and then cutting through the bowling alley property to Mission. At present, the attractive Class I path paralleling the creek ends rather abruptly at the BART tracks, although there is a short stretch of multi-use path outside the golf course.
- Striping five-foot bike lanes on Dixon Street between Tennyson Road and Industrial Parkway This project was completed in 1999.
- Creating a Class III bike route along Whitman Street, which although outside the study area, would provide the main link between South Hayward BART and downtown. It

⁵ Tony Divito, Transportation Planner, AC Transit. Phone Interview by Nelson/Nygaard February 2, 2005.

⁶ City of Hayward. Bicycle Master Plan. May, 1997.

would also provide bike access for students who attend Tennyson High School and Cesar Chavez Middle School. This project was completed in 1999.

5. Pedestrian Facilities

Pedestrian facilities in the study area are somewhat limited. In many cases, streets have ample sidewalks on both sides, and crossings are easy. Nuestro Parquecito provides an attractive route along the east side of the BART tracks, leading to Bowman School. Some of the key barriers to pedestrian movement, on the other hand, include:

BART tracks. Pedestrian crossings of BART are limited to the vehicular undercrossings at Tennyson, Industrial and Harder, plus two pedestrian-only crossings. These include a tunnel to the south of Bowman School (see *photo*), which can best be described as a “pipe” – it is cramped, unpleasant and not ADA accessible. It is managed by the school, and only open at limited times. However, it is an important link to the BART station with some of the neighborhoods to the west of the tracks, allowing pedestrians to continue to BART via Nuestro Parquecito. The other crossing is the pedestrian bridge at Sorensen.

Tennyson Road. Pedestrians accessing BART via Nuestro Parquecito must walk down an embankment, and climb the fence to jaywalk across Tennyson. Alternatively, they go along the embankment under the BART tracks, cross via the parallel Union Pacific rail bridge, and go under the BART tracks along the embankment on the other side. A pedestrian bridge, cantilevered from the BART overcrossing of Tennyson, may be one option to improve this important connection and take advantage of Nuestro Parquecito.

Mission Blvd. The City of Hayward, in conjunction with ACTA, has improved pedestrian facilities at the Mission and Industrial intersection. Improvements along Mission Boulevard must be coordinated with Caltrans, are constrained by the limited right-of-way and the demands of the Route 238 Corridor Improvement Project. Crossings of Mission Blvd are also an issue, with limited green time for pedestrians.

One key opportunity may be provided by the currently vacant right-of-way to the west of the Union Pacific tracks, which parallel the BART tracks.

6. Vehicle Traffic

The 2000 Census Journey to Work data shows that just over one-quarter (28%) of employed Hayward residents also work in the City. Many of the rest remain in Alameda County. The primary destinations for commuters traveling out of Hayward are Oakland, Fremont, San Leandro and Union City. There is significant commuting to San Francisco, Santa Clara, San Mateo and Contra Costa counties. Those commuting into Hayward are predominantly from Oakland, Fremont and Union City with a significant numbers coming from Santa Clara and San Mateo counties. However, what is not shown by the data is the number of trips that are external to Hayward and Alameda County; e.g., the number of trips that begin and end outside of the City of Hayward and the County. It has been estimated that about one-third of the total trips in Hayward do not begin or end within the City.

6.1 Local Street and Regional Road Network

Traffic congestion and travel delays on regional highways have contributed to increased traffic flow on Hayward’s arterials and residential neighborhoods. In Hayward, there is one north-south freeway, Interstate 880, and no east-west highways. Therefore, regional traffic is forced to utilize arterial streets, including Mission Boulevard, as well as local streets as a way to move east and west and access Interstate 580 and the San Mateo Bridge. Regional traffic creates economic and social challenges for Hayward as congestion on the local roadways restrict immediate access to shopping, jobs, and educational and cultural resources.⁷

The South Hayward BART Station Area is located near the intersection of Tennyson Road and Mission Boulevard (State Highway 238). Regional and local traffic, as well as South Hayward BART station patrons heavily utilize these roadways. The Average Daily Traffic (ADT) volumes in the study area are provided in the table below:

Average Daily Traffic (ADT) Counts in the South Hayward BART Station Area

Street	Location	ADT	Date	Source
BART Driveway (EB)	Westbound Dixon Street	2,400	9/2001	City of Hayward
Dixon Street	Northbound and Southbound BART Driveway	4,700	9/2001	City of Hayward
Industrial Parkway	At Taylor Avenue	27,400	8/2003	City of Hayward
Mission Boulevard (SR 238)	Between Harder Road and Calhoun Street	38,500	2002/2003/ 2004	Caltrans
Mission Boulevard (SR 238)	Between Calhoun Street and Tennyson Road	43,000	2003	Caltrans
Mission Boulevard (SR 238)	Between Tennyson Road and Industrial Parkway	39,500	2002/2003/ 2004	Caltrans
Tennyson Road	Between Pacific Street and Mission Boulevard	25,000	10/2004	City of Hayward
Harder Road	e/o Mission Blvd.	13,100	10/2004	City of Hayward
Harder Road	At Bishop	24,700	5/2004	City of Hayward

Source: City of Hayward

6.2 Intersection Levels of Service

This congestion is somewhat apparent on roadways within the study area, at the intersections with Mission Boulevard. However, all of the study intersections operate at LOS D or better, which is the City’s standard. The Valle Vista/Mission Boulevard intersection, which is unsignalized, operates at LOS F in both the morning and afternoon peaks, as is the case with most unsignalized intersections along Mission Boulevard. Note that the data predates the recent widening of Industrial Parkway at Mission Boulevard. The City’s adopted LOS standard is D, with allowances for E in certain circumstances.

⁷ Circulation Element. City of Hayward General Plan. October 2003.

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In this assessment, LOS was determined using the Highway Capacity Manual (HCM) methodology. LOS definitions are provided in the table below:

Level of Service Definitions

1994 Highway Capacity Manual Definitions of Signalized Intersection Level of Service

Level of Service	Stopped Delay Per Vehicle	Description
A	<= 5.0 seconds	Low delay, extremely favorable progression, most vehicles arrive on green, many do not stop at all.
B	> 5.0 and <= 15.0	Good progression, more vehicles stop.
C	> 15.0 and <= 25.0	Fair progression, individual cycle failures (some waiting vehicles cannot get through on green), number of vehicles stopping is significant.
D	>25.0 and <= 40.0	Congestion becomes noticeable, longer delays, unfavorable progression, higher volume/capacity ratios, many vehicles stop, individual cycle failures noticeable.
E	> 40.0 and <= 60.0	High delay values, poor progression, high volume/capacity ratios, frequent cycle failures.
F	> 60.0	Unacceptable to most drivers, oversaturation (more vehicles arrive in an hour than can be served in an hour), high volume/capacity ratios, many cycle failures, poor progression.

Sources: Table 9-1, 1994 Highway Capacity Manual, Transportation Research Board.

Peak Hour Intersection Conditions

Intersection Name	Control	AM Peak		PM Peak	
		Average Delay	LOS	Average Delay	LOS
Mission Boulevard/ Tennyson Road	Signalized	20.0	C	20.6	C
Mission Boulevard/ La Vista Quarry	Signalized	3.5	A	5.1	B
Mission Boulevard/ Valle Vista*	Unsignalized	3.2	F	6.1	F
Mission Boulevard/ Industrial Boulevard	Signalized	24.9	C	27.4	D

*Traffic volume at this intersection is operating over total capacity. Calculated according to the 1994 Highway Capacity Manual Operations Method. Data from November 2003.

Source: City of Hayward

6.3 Speed Analysis and Collision Report

The only speed data in the study area comes from a speed analysis for Tennyson Road between Baldwin Street and Mission Boulevard, conducted by the City in April 2004. The 85th percentile speed was 37 mph, just slightly above the posted limited of 35 mph. The table below summarizes the speed analysis and collision rate:

Speed Zone Analysis and Collision Rate

Tennyson Road between Baldwin Street and Mission Boulevard	
Length of zone (miles)	0.76
Number of Lanes (each direction)	2
Zoning (residential, commercial, industrial)	Residential/Commercial
Speed Analysis	
Posted Speed in Zone	35 mph
Posted Speed Limit East of Zone	N/A
Posted Speed Limit West of Zone	25 mph
85 th Percentile Speed (critical speed)	37 mph
10 MPH Pace	25-35 mph
Percent in Pace	73
Collision Rate	
Average Daily Traffic in Zone (both directions)	26,300
Number of Accidents in Zone (year 2002)	10
Accident Rate in Zone (MVM)	1.37
State Average Accident Rate for Similar Zone (MVM)	3.60

Source: City of Hayward

6.4 Truck Routes

Trucks traveling locally, regionally and nationally utilize the main roadways in the study area, and will need to be accommodated in the South Hayward BART Station Area Plan. Truck routes in the study area are:

- Harder Road
- Industrial Parkway
- Mission Boulevard (SR 238)
- Tennyson Road

6.5 Parking

Most parking in the study area is provided in private, dedicated off-street facilities, with commuters able to utilize the BART station lot. There are no public parking facilities at present. Street parking is unregulated. While residential permit parking has been introduced in other parts of the City (e.g. around Chabot College), there is no such program in South Hayward.

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Parking requirements are established in the City of Hayward’s Zoning Ordinance.⁸ The table below summarizes the requirements. Requirements range from 1.5-2.1 spaces per residential unit, depending on size and type, and 1 space per 175-250 square feet for retail and office.

Parking Requirements

Use	Requirement
Residential	
Single-family dwellings	2.0 covered per dwelling unit
Multiple-family dwelling(s)	
Studio	1.0 covered and 0.50 open per dwelling unit
One-bedroom	1.0 covered and 0.70 open per dwelling unit
Two or more bedrooms	1.0 covered and 1.10 open per dwelling unit
<i>10% of the multiple family parking spaces required shall clearly be marked for visitor's parking</i>	
Retail	
Establishments in which a customer makes quick purchases or rentals in small quantities	1.0 per 175 sq. ft. if total gross floor area is 10,000 sq. ft. or less –or- 1.0 per 215 sq. ft. if total gross floor area is over 10,000 sq. ft.
Establishments characterized by hand-carried merchandise	1.0 per 200 sq. ft. if total gross floor area 10,000 sq. ft. or less –or- 1.0 per 225 sq. ft. if total gross floor area is over 10,000 sq. ft., but less than 40,000 sq. ft –or- 1.0 per 250 sq. ft. if total gross floor area is over 40,000 sq. ft.
Service and/or repair establishments characterized by large or heavy merchandise	1.0 for each 250 sq. ft. of gross floor area used for offices, sales and display –plus- 1.0 for each 600 sq. ft. of gross floor area used for repair or services –plus- 1.0 for each 1,000 sq. ft. of gross floor area used for indoor storage –plus- 1.0 for each 2,000 sq. ft. of gross floor area used for outdoor sales, sales display or storage.
Office	
General, including banks and similar financial institutions, and professional offices	1.0 per 250 sq. ft. of gross floor area
Restaurant	
Taverns, bars, night clubs, lunch counters, soda fountains, diners, and other eating or drinking establishments	1.0 per three seats of seating area, including outdoor seating plus 1.0 per 200 sq. ft. of gross floor area for other areas

Source: City of Hayward Zoning Ordinance

⁸ Chapter 10: Planning, Zoning and Subdivisions. Hayward Municipal Code. 2003.
http://www.bpenet.com/codes/hayward/_DATA/TITLE10/index.html (Accessed February 2005).

Appendix – Selected General Plan Policies

Policy 5. Improve Coordination among Public Agencies and Transit Providers

- Consider the needs of transit riders, pedestrians, people in wheelchairs, cyclists, and others in long-range planning and the review of development proposals.
- Promote effective intermodal connections at transit stations.

Policy 6. Support Expansion and Reconfiguration of Public Transit Service to Meet Demand, Provide Greater Mobility, and Reduce Traffic Congestion

- Promote improved transit service along higher density corridors, providing service frequencies of at least 15 minutes during peak hours in the densest corridors.

Policy 7. Address Special Needs of Transit Users

- Encourage AC Transit to consider demographic factors in establishing its basic route structure; service should be available within 1/4 mile of areas with especially high concentrations of senior citizens, persons with disabilities, low-income residents, and school-aged children.
- Give priority for sidewalk and other pedestrian improvements for pathways to key transit stops.

Policy 8. Create Improved and Safer Circulation Facilities for Pedestrians.

- Complete planned sidewalk system and maintain and repair sidewalks to ensure pedestrian safety.
- Increase consideration of pedestrian needs including appropriate improvements to crosswalks, signal timing, signage, and curb ramps.
- Enhance pedestrian linkages from neighborhoods to recreational facilities and open spaces with pedestrian paths, creekside walks, and utility greenways.
- Encourage design of development that contributes to continuous pedestrian pathways and pedestrian connectivity.

Policy 9. Provide the opportunity for safe, convenient and pleasant bicycle travel throughout all areas of Hayward.

- Implement system of bikeways throughout the City (per the Bicycle Master Plan) tying residential areas to commercial areas and to recreational open space along the shoreline and in the hills.

- Provide the related facilities and services necessary to allow bicycle travel to assume a significant role as a local alternative mode of transportation and recreation.

Policy 10. Encourage Land Use Patterns that Promote Transit Usage

- Encourage transit-oriented development; where appropriate, encourage intensive new residential and commercial development within 1/2 mile of transit stations or 1/4 mile of major bus routes.
- Encourage mixed-use residential and commercial development to reduce the need for multi-destinational trips.
- Promote high density new residential development, including residential above commercial uses, near transit facilities, activity generators, and along major arterials.
- Encourage alternatives to automobile transportation through development policies and provision of transit, bike and pedestrian amenities.
- Continue to require large developments to provide bus turnouts and shelters, and convenient pedestrian access to transit stops.
- Encourage design of development that facilitates the use of transit.

Policy 11. Enhance the Capability of the Arterial Street Network to Reduce Congestion and Improve Traffic Flow.

- Seek a minimum Level of Service D at intersections during the peak commute periods except when a LOS E may be acceptable due to costs of mitigation or when there may be other unacceptable impacts.
- Consider alternatives to street widening that balance the needs of pedestrian and bicycle movements with that of vehicles.
- Focus improvements on arterials with transit service to preserve operating speeds.

Policy 13. Provide for Future Parking Demand in Ways that Optimize Mode Choice

- Consider reduced parking for new residential developments that fulfill elderly, disabled, or other special housing needs and/or are located near public transit.
- Encourage developers/employers to offer transit passes or other transit enhancements to offset some parking requirements, pursuant to provisions of the Parking Ordinance.
- Coordinate with other public and institutional parking suppliers (e.g., BART, Chabot College, Kaiser) in the provision of parking, parking charges and preferential parking.