

RPTC Planning Group

**Richmond Parkway
Transit Center Planning
and Conceptual Design
Study**

Final Report



February 2005

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1 Introduction

1.1 Background

Arup and its team of sub consultants were retained by the Richmond Parkway Transit Center (RPTC) Planning group to complete planning and conceptual design studies to improve the existing facility. The existing 200-space parking lot and transit center provides inadequate parking spaces, with the lot typically filling before 7:00 AM. Passenger amenities are also limited at the existing facility. A number of previous studies indicate that substantial expansion of this facility would ease current overcrowding and contribute to significant improvement of Interstate 80 traffic flow by removing peak period automobile trips.

About \$8,665,000 in State Transportation Improvement Program (STIP) funds were approved in 2001 towards engineering and construction of an upgraded facility. The approval of Regional Measure 2 (the third dollar on State-owned toll bridges) provides additional funding for an expanded parking facility, a redesigned and expanded RPTC, and potential neighborhood-serving retail space.

This project was supervised by the RPTC Planning Group, a group of public agencies including:

- AC Transit
- Caltrans
- City of Richmond
- West Contra Costa Transportation Advisory Committee (WCCTAC)
- WestCAT

The RPTC Planning Group selected a team of consultants led by Arup to conduct the study. The consultant team consisted of:

- Arup: Project Management, Circulation Analysis, Design
- Davis Langdon: Capital Cost Estimates
- Nelson/Nygaard: Demand Assessment
- Suisman Urban Design: Design
- Strategic Economics: Retail Assessment



1.2 Site Location

The RPTC is strategically located at the intersection of several major roadways, including Interstate 80, Richmond Parkway, and Blume Drive. High Occupancy Vehicle (HOV) lanes are present on Interstate 80 between the Richmond Parkway interchange and the Bay Bridge, making the RPTC an attractive location to access transit or carpools. Direct access ramps are provided from Richmond Parkway to the HOV lanes and offer time savings. The RPTC is currently served by local and express services operated by both AC Transit and WestCAT. Figure 1.1 presents the existing configuration of the facility.

Insert Figure 1.1

1.3 Project Objectives

The principal objectives of this project were to develop and evaluate opportunities for upgrading and expanding the RPTC and provide a basis for environmental assessment and eventually design and implementation.

1.4 Report Structure

This final report is a compilation of work that was completed during the course of the study. This report contains the following sections:

- Introduction
- Demand Assessment
- Retail Assessment
- Design Concepts
- Joint Development Strategies
- Circulation Assessment
- Cost Estimate
- Appendices

1.5 Key Findings

Demand for parking at the RPTC exceeds available supply by a large margin. It is estimated that potential demand at the site is in the range of 600-800 parking spaces.

The location of the RPTC is attractive for local-serving retail as a joint development opportunity. A retail component would ideally be located along the frontage with Blume Drive and would have independent parking and access.

The Planning Group is advancing three site plan options into subsequent stages of project development. These options have different parking structure footprints, bus bay configurations and joint development opportunities.

Option A is the most promising with respect to joint development. A free-standing parcel would be defined and developed through a ground lease to an independent commercial development entity. Option B would require retail to be located within the ground floor of the parking structure. Joint development with Option C would be limited to office development above parking structure and is not recommended.

Site circulation is currently constrained for all modes. The site plan concepts would significantly improve circulation conditions within the site. Congestion is projected to occur on adjacent roadways in the future. A new right-in/right-out access for buses on Richmond Parkway would be desirable to improve bus circulation, particularly for access to the Interstate 80 westbound HOV lanes. This potential access will require additional review by Caltrans, and alternative access arrangements may need to be considered.

The initial order of magnitude capital cost estimate for this project is \$19.6 Million, although additional contingencies may be appropriate for planning purposes that would raise the estimate to as high as \$24.5 Million. Initial estimates of annual operating costs are on the order of \$335,000.

2 Demand Assessment

2.1 Introduction

Demand for parking at the RPTC is strong today, and by every indication will continue to remain strong in the future. The RPTC is ideally located to meet its two main parking purposes – for transbay express bus users and casual carpoolers originating in West Contra Costa County. These patrons use the lot because these services provide substantial time and cost savings over the alternative of a drive alone auto commute to jobs in downtown San Francisco. Given conditions on the Interstate 80 corridor, these benefits will continue to make carpooling and transit use attractive in the future.

Demand outstrips supply limiting the number of transit and carpool patrons now. This condition also limits the use of these modes in the future. It is believed that demand for parking at this lot is quite elastic, and removing the existing constraints on parking supply will generate additional demand above and beyond today's level. This could be described as the "if you build it they will come" theory. The range of potential demand ranges from 600-800 spaces.

A range of total demand was estimated rather than an exact number, which would be falsely precise given the data available for this analysis. Existing demand was investigated, and the likely situation in a horizon year of 2025 was considered based on available projections. In all cases, it likely that demand is substantially higher than what is currently provided on site.

For the purposes of this assessment, it was assumed that parking at the site is perceived as safe and convenient to the patron, and that the intensified use of the site will not cause a level of congestion that interferes with the site's existing benefits. These demand projections will only be met if both transit users and casual carpoolers can easily use the new facility.

It was assumed that parking is free. The issue of parking price is discussed separately below. Given the availability of free parking elsewhere in the corridor the operator of the parking would have limited ability to charge for parking at the site, particularly if the current constrained parking supply is greatly enlarged.



2.2 Current demand for parking at the Richmond Parkway Transit Center

The main component of parking demand at the RPTC is the transbay market. There are two components to this market, those using the AC's transbay buses, and casual carpools. These components overlap because many patrons use casual carpools in the morning, but use transit on their return trip in the afternoon. Both AC Transit and carpools take advantage of the continuous carpool lanes between the site and the Bay Bridge.

There is currently only minimal demand for parking related to other functions of the RPTC. Most users of local buses (AC Transit and WestCAT) are transferring from other buses. There is modest parking demand from patrons of Greyhound and other long distance buses using the site.

2.2.1 Transbay Market

Approximately 14% of employed residents in West Contra Costa County are estimated commute to downtown San Francisco for work. This totals approximately 24,000 commuters on a daily basis. This market already has a very high transit ridership, estimated at 69% of the market. Drive alone is estimated at 17%, while carpooling is 14% of journey to work.¹

Taking the bus or riding in a carpool from the RPTC has a substantial price and times savings over driving alone over the Bay Bridge to San Francisco or even taking BART from El Cerrito del Norte.

Psychologically, people often think of driving as “free”, but even counting only out of pocket costs such as gas, parking and tolls, drive alone costs total approximately \$16 per trip.

Table 2.1 Price and Time from Richmond Parkway Transit Center to Downtown San Francisco (least to most expensive)

	Price (round trip)	Time inbound AM Peak	Parking availability	Notes
Casual Carpool	\$3.00	25-30 minutes	207 spaces, filled by 6:45	Assumes return on AC Transit
AC Transit	\$6.00	25-30 minutes	Same as above	30 minutes scheduled time.
Drive Alone to BART (El Cerrito del Norte)	\$10.40-12.50	38-45 minutes	2048 spaces, filled by 8:30 AM. Reserved available @ \$42/month	Higher price with reserved parking. Price includes mileage @ \$.36/mile.
Drive Alone	\$25.68	40min-1 hour	N/A	Congestion highly variable. Price includes mileage, tolls, parking @ \$10/day.

Sources: AC Transit, BART schedules, Mapquest.com. Does not include travel time to RPTC or transfer time.

Due to the substantial time and price savings, the RPTC attracts “choice” transit users who use a car for most of their transportation, but choose transit for convenience and savings. This is a significantly different population than the transit patrons using local AC Transit and WestCAT buses, who are more likely to be transit dependent. It is very clear, as discussed below that, given a choice, most RPTC transbay patrons would access the site by car.

The RPTC is more attractive for commuters than other nearby Park and Ride options because it offers the flexibility of a direct access to and from San Francisco on the AC Transit transbay service. Since many AM casual carpool riders use transit to return in the PM, this makes the RPTC the most attractive transbay lot in West Contra Costa County.

¹ Figures for 2000 from MTC Travel Demand model for superdistrict 20 (Richmond/El Cerrito). Actual census 2000 journey to work information has not yet been released.

Table 2.2 Park and Ride Facilities – West Contra Costa County

Facility	Size	Comments
Richmond Parkway Transit Center	207	Advantages: Ideally located for easy on/off. AC Transit provides direct service to SF
Hilltop Park and Ride	135	Disadvantages: AC Transit service adds 15 minutes to commute, security issues at lot. Only 44 spaces filled on 3/23/04.
Hercules Willow	85	Small
Hercules Transit Center	252	WestCAT service to El Cerrito del Norte – longer overall commute to SF with additional transfer, but good regional connectivity. Demand exceeds supply.
Crockett	24	Small, not well located for most of the population of WCC
TOTAL market area Park and Ride	703	

2.2.2 Current Utilization of Richmond Parkway Transit Center

Parking at the RPTC is used largely by nearby residents. In a license plate survey conducted in 2001, 75% of the cars were registered in West Contra Costa County, mostly in Pinole, Richmond, San Pablo, Hercules and El Sobrante (in that order). An additional 10% were registered in Solano County.

Parking at the 207-space RPTC is full by 6:45 AM, as documented by the consulting team on March 18, 2004 (see Appendix A). Therefore, less than an hour into the three-hour peak commute period (6-9 AM) the parking lot is unavailable for additional commuters, although the RPTC remains active through at least 8:30 AM.

Table 2.3 Transbay Ridership & Parking by time period – RPTC

	Before 6:00 AM*	6:00-7:00 AM	7:00-8:30AM	Total
AC Transit riders	unavailable	67	32	99
Casual Carpool riders	unavailable	82	103	185
Total transbay riders	50 (approximate)	149	135	339
Parking used	50	150	7	207
Parking/transbay Ridership	100%	100%	5%	61%

*The consulting team was not on-site before 6:00 AM; It was assumed that lot was empty before start of commute period and that all were transbay commuters
Source: 3/18/04 Survey (6-8:30 AM)

Between the critical hours of 6AM and 7AM, 82 patrons used casual carpools, 67 boarded the AC Transit transbay bus, and 16 boarded other buses (Twenty-two bus patrons transferred, mostly between local lines, but a few boarded the AC Transit transbay service.) Demand for parking therefore appears to be split nearly equally – 45% AC Transit and 55% Carpooling.²



Between 7 and 8:30 AM, when there was no parking available at the RPTC, casual carpooling was the dominant use of the parking lot. Thirty-two riders boarded AC Transit transbay buses, while three times as many – 103 – joined casual carpools. As only a few of these patrons parked on-site, most of these 135 individuals reached the RPTC by parking elsewhere and walking, or by being dropped off. AC Transit and WestCAT local buses did not contribute much in access to the transbay market, as patrons were seen transferring from one local bus to another rather than to the AC Transit transbay service. Based on observed drop-offs, both inside and adjoining the RPTC, it is likely that 60-70% were dropped off, and the remainder parked elsewhere nearby.

Regardless of how patrons accessed the site after 7 AM, Table 2.3 implies that given the choice most would have parked, as it appears nearly all the patrons before 7 drove and parked on site. It was assumed that being dropped off is a second best alternative for the vast majority of patrons. Some patrons, surely, are constrained by household vehicle availability, and for them drop off may still be desirable, but we think upwards of 80% would drive and park if given the opportunity. At a minimum, therefore, it was assumed that current demand for parking on-site would nearly equal the existing transbay patronage, or about 300 spaces. However, this number only counts patrons who are not dissuaded by the difficulty in finding parking at or near the RPTC.

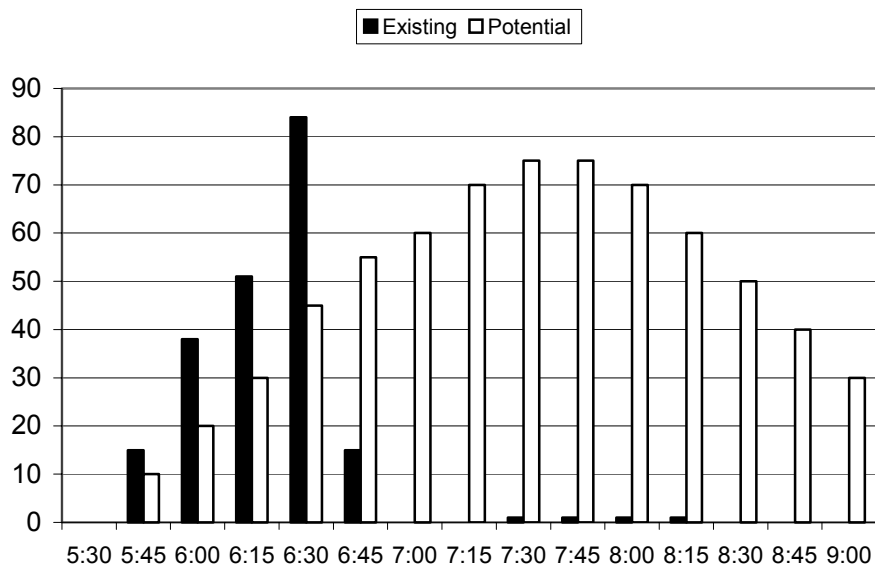
Parenthetically, the fact that AC Transit peaks and tails off after 7AM, while casual carpooling remains strong between 7 and 8 AM illustrates that there is a very strong market of carpool *drivers* between 7 and 8 who want to avoid peak congestion over the bridge. The lack of carpool riders was the constraint during the height of this period, as lines of cars were observed building up at the RPTC to pick up passengers. Riders during that time period express a three to one preference for carpools, presumably because they realize a cost savings of \$3 per trip, and also because they were instantly available at the height of the commute period.

² There were 50 vehicles already parked at the Richmond Parkway Transit Center at 6AM when the March 23 ridership survey commenced

2.2.3 Gross Current Demand

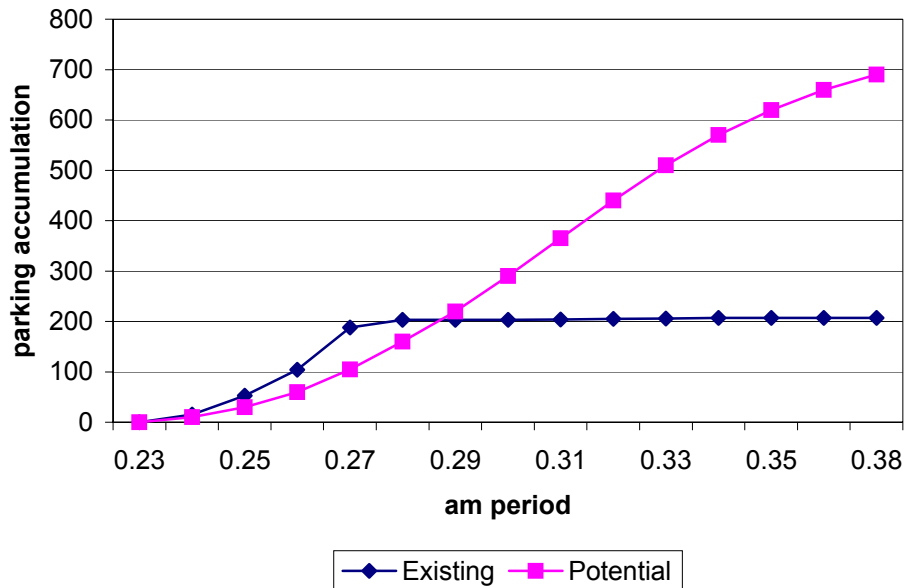
Based only on existing utilization of the RPTC, it appears that there is demand for a 300 space lot. However, there are substantial numbers of commuters who are dissuaded from using the lot because it fills so early in the commute period. A lot sized to meet total current usage would fill to capacity, though not quite as early as it does now. One method of determining the likely size of the total market is to extend the implied demand curve at the lot over the entire commute period. In the illustrative figures below, it was assumed that the current rush for space at the lot, which resulted in more than eighty vehicles parking in one fifteen minute period between 6:15 and 6:30 AM, would instead be replaced by a more measured parking accumulation peaking at around 7:30 -7:45 AM at no more than 75 entrances per 15 minute period. With this rate of accumulation assumed as the upper bound, a demand curve was applied that roughly corresponds with current pattern of AM entrances at El Cerrito del Norte BART.

Figure 2.1 Existing Accumulation vs. Typical Demand Curve



Dispersed over the entire commute period, this gradual buildup of parking would fill a 700-car parking lot during the AM commute peak period.

Figure 2.2 Potential Parking Demand – Richmond Parkway Transit Center



To put this in perspective, BART provides over 2000 spaces at El Cerrito del Norte station (not counting spaces reserved for carpools, handicapped, and mid-day parking), and they are completely filled by 8:30 AM. The station has 1500 entries during its peak hour of 7-8 AM. BART’s transbay service takes longer, and is more expensive than service from the RPTC, particularly for West Contra Costa and Solano County residents upstream from the site. If the RPTC is compared on this basis, it has plenty of “room” to grow.

2.3 Future Indicators of Demand

Most indicators suggest that demand for parking at the RPTC will remain strong for the foreseeable future.

Demographic projections present a mixed picture. While population growth in West Contra Costa County will be substantial, regional forecasts also assume an increasing percentage of residents will be able to work in West County workplaces, resulting in a stable number commuting outside the area to San Francisco (~14% of employed residents) and Berkeley/Oakland/Emeryville (~28% of employed residents).³ Solano County, on the other hand, will continue to grow faster than any other part of the Bay Area, with many employed residents commuting to the inner Bay Area. This growth will add somewhat to demand at the RPTC. Finally, San Francisco is a mature employment market, and regional projections do not forecast substantial growth in that prime market for RPTC patrons.

However, congestion in the I-80 corridor is expected to continue to grow worse in the future. Even if it does not approach the 60% increase in volumes suggested by the CCTA model, any increase in congestion will push people to consider alternatives to driving single occupant vehicles, particularly in the transbay commute corridor. The fully functioning HOV network continues to place the RPTC in an ideal

³ MTC Regional Model, 2000

location to produce substantial travel time savings for residents of nearby West Contra Costa County over any other alternatives.

The bridge toll increase in July 2004 will have an immediate impact on demand for the RPTC, but one that will be relatively short lived as commuters adjust to paying the toll.

Other planned and potential projects, including decreasing headways on AC Transit's LA route and adding new regional express buses serving the East Bay will bolster the market for the RPTC, both for parking and to transfer between transit lines. Importantly, there are no factors or proposed projects that will markedly decrease the market for the RPTC.

One change will reduce demand in the short run. The project sponsors are planning to impose a small parking fee of \$1-2. This fee will bring the total fee closer to the charge for BART, and will convince some patrons to shift to BART or to other park and ride lots that do not charge fees. This issue is discussed in more detail below.

Table 2.4 Future Demand Factors – Richmond Parkway Transit Center

Factor	Future Condition	Impact on Demand for Parking at RPTC
West County Out-Commute	Projected stable at ~30,000, (despite 25% projected increase in employed residents), due to more WCC jobsites	Very modest if out-commute does not grow
Solano County Out-Commute	21,000 increase through 2025, (65% increase in employed residents)	Modest demand for RPTC from Solano residents, but additional commuters add congestion to I-80
San Francisco Employment Market	5% increase through 2025	Very modest impact on demand
Bridge Tolls	50% increase July 2004	Immediate increase in demand for transit and carpooling, tapers over time
I-80 Congestion	60% increase in volumes at SR-4 screenline by 2025 during AM peak	Substantial incentive for carpooling and transit
HOV Network	Complete from Solano County to Bay Bridge	Incentive for increased use of transit centers/park and rides throughout corridor in long term, although WCCTAC model found no substantial impact through 2010 due to modest congestion north of SR4
Decrease in headways on AC Transit LA service from 15 minutes to 10 minutes	AC Transit planned service improvements	Modest impact on total demand by increasing service in PM peak by 50% (in AM peak, simply shifts demand from carpools to transit)
Express Bus Network	Funded by RM2	Increased demand for RPTC, expanded demand for other East Bay destinations
Capitol Corridor Improvements	Track improvements to decrease trip time, added runs from 7 to 16 per day	Little impact, not competitive in price and travel time in transbay market
Parking Fee	\$1-2 dollars for all day parking	Will shift demand to BART and other lots

Sources:

ABAG and MTC Travel Model (employment projections and commute assignments),

CCTA Model (I-80 congestion)

Dowling Associates I-80 corridor analysis, 4/14/02

2.4 Pricing

The capacity to add a parking charge to a proposed structure at the RPTC needs careful consideration. Certainly, a parking structure will require an operating budget above and beyond the current surface parking lot, not only in basic operating and maintenance but, very importantly, in security personnel to ensure that patrons are, and feel, safe using the new structure.

Unfortunately, there are significant barriers to charging for parking at the RPTC, despite its ideal location. While a small surcharge would not significantly erode the advantage of the RPTC over solo driving for the transbay market, drivers nonetheless exhibit significant aversion to out of pocket travel expenses. For instance:

- Patrons express a 3 to 1 preference for carpooling over AC Transit during the peak of the commute period at RPTC. Presumably, this is largely to avoid a \$3 charge on AC Transit.
- There are several other free park and ride lots in the vicinity, which restricts the ability to charge for RPTC. Casual carpool demand could migrate to other locations that would only be marginally less convenient.
- The attempt to generate parking revenue at BART stations through reserved parking, perhaps the best comparison to a paid parking program at RPTC, has been only partly successful, even at lots that generally fill up before the end of the peak commute period.

The BART experience is particularly illustrative of the problem. While many BART parking lots fill up during the peak commute, relatively few riders choose to pay extra to reserve premium spots close to the BART stations. BART unrolled a monthly reserved parking program at all 26 stations with parking in 2002, and reserved up to 25% of each station for this purpose at \$63/month (about \$3 per day). More than a year into the process, only three stations (West Oakland, Lake Merritt and Rockridge) met initial targets and “sold out” of reserved parking. At these stations BART was able to raise the rates to \$84 per month. At fifteen stations, including El Cerrito del Norte, less than 10% of the parking was reserved and BART was forced to drop prices to \$42/month (about \$2/day). This is despite the fact that El Cerrito del Norte is, effectively, the terminal station on the Richmond line and has a large commute shed in West Contra Costa and Solano Counties. Even at this reduced rate, only 75 patrons currently reserve spaces at El Cerrito del Norte, generating \$38,000/year in gross income for the district.⁴

While the demand at the RPTC is currently so strong that it would probably be possible to impose a small charge and still fill the lot, with a large parking garage replacing the current undersized lot the scarcity effect will be much less severe. It will consequently be much more difficult to generate income from spaces, and the situation will likely be analogous to BART’s experience at El Cerrito del Norte. In any case, the project sponsors should not count on parking income to provide substantial operating support for the project.

⁴ Kevin Haggerty, BART Parking Manager, 4/04

2.5 Conclusions

Adding to the parking supply at the RPTC can significantly increase the convenience of commuting by transit or carpool to San Francisco by nearby West Contra Costa County residents. In particular, it will allow more commuters to use the RPTC, particularly during the peak of the commute when it is currently full. It will also allow commuters who currently rely on transit connections or auto drop off to instead drive to the RPTC.

The vast majority of patrons using the RPTC will continue to be commuters with work destinations in San Francisco, although additional parking and transit connections will allow service to diversify. Of those commuting to San Francisco, it is likely that most of the AM commuters (60-75%) will be casual carpoolers. This presents an important physical challenge for planning the parking structure, as the circulation of autos and buses must be planned to work harmoniously. It is possible that transit could gain a greater percentage of ridership in the RPTC. One factor that will drive this will be increased frequency of service. Another is if the design of the structure gives a time advantage to transit (for instance, a direct connection to the freeway for buses only).

Designers of the structure must also consider the fact that information has a heightened role in parking structures, particularly this one which has a mixed purpose. Indication of the number and location of vacant spots is more important in a structure than at a surface lot because visual inspection is not possible. As patrons, particularly in the AM, may be in the process of deciding commute mode as they enter and park, their decision must be easy and not confusing. The same is true for carpool drivers, who can currently quickly assess their likely waiting time based on queues of cars and/or casual carpool riders. If the structure creates confusion for any of these patrons, then ultimate demand for parking may be dampened.

Finally, the operators of this structure should not count on parking charges to pay for operational costs. It may be possible to charge for a portion of the parking, but only if demand remains substantially higher than supply. By increasing the size of the parking lot to meet perceived demand, the operators are also proportionately decreasing their ability to charge for the product. Evidence shows that commuters in this area have a substantial sensitivity to even small out of pocket charges for commuting.

3 Retail Assessment

3.1 Introduction

This section summarizes research and analysis related to existing and projected retail market conditions in the area around the RPTC site and makes preliminary recommendations regarding a feasible retail component for the RPTC. Research and analysis performed includes an inventory of surrounding retailers and retail space, definition of the trade area based on accessibility and the location of other retail nodes, analysis of the demographic characteristics of the households in the trade area, research into the number and type of housing units currently under construction or undergoing approvals in the trade area, property listing research and interviews with area brokers regarding retail market conditions and interviews with developers regarding the feasibility of joint development of a retail component and site design, circulation and parking specifications.

The purpose of this section is to provide the RPTC planning group and other members of the consultant team with critical information regarding the retail component of the project necessary to move forward with the over-all design of the site.

3.2 RPTC Site Suitability for Retail Development

The RPTC project site is a highly desirable location for either regional or local-serving retail. Located at the intersection of Interstate 80 and Richmond Parkway, off the Richmond Parkway exit, the site is visible from both the freeway and the Parkway, each of which have respective average daily traffic counts of 150,000 and 45,000. The site is immediately adjacent to Hilltop Plaza, a mixed local and regional-serving shopping center, just across I-80 from a major agglomeration of big box retailers and ancillary retail on Fitzgerald Drive, and within a mile of Hilltop Mall, a traditional in-door regional mall. The high visibility, relatively easy access, and shopping destination created by the surrounding concentration of regional-serving retail make the site ideal for retail development.



For several reasons, it is recommended that the retail component of the RPTC be local-serving:

- The small size of the total space available for the retail component of the site, approximately 20,000 to 36,000 square feet⁵, is most appropriate for small format, local-serving retail.
- Most regional-serving uses require more space than is available on the site.
- Local-serving small-format retail, which includes convenience goods and services like coffee and dry cleaning, will provide a valuable service to both local residents and transit users, creating synergy between the two uses on the site.
- A significant increment of new housing units is currently under construction or in the development pipeline within the local-serving retail trade area for the project. The local-serving retail trade area was determined based on the relative proximity of households to different existing retail nodes and the project site, given the current road network and barriers like I-80 (see Figure 3.1 below).

⁵ Based on a preliminary estimate of the amount of the site to be dedicated to the transit and parking uses.

Figure 3.1 Local-serving Retail Trade Area

According to the application list of active files at the City of Richmond, there are currently 1,769 housing units either under construction or in the process of obtaining development approvals in the area west of the I-80 between Richmond Parkway and Hilltop Drive. The many new households that will move into these units over the next two years will increase demand for local-serving retail services in the area well beyond the capacity of current supply.

These new households will also shift the demographic character of the area significantly. There were an estimated 3,781 households in the local-serving retail trade area for the site in 2003; an additional increment of 1,769 new households represents a 46.8 percent increase in total households in the area. If the new households are significantly different than existing households, the demographic character of the area will shift.

In 2003, the estimated median household income for the trade area was \$55,953,⁶ and the tenure of occupied housing units was 49.3 percent owner-occupied and 50.8 percent renter-occupied. The market orientation of the existing local and regional-serving retail stores and restaurants is in keeping with the type of households currently in the area. The new housing projects under construction or review for approval in the area include 1,119 detached single family homes, or 63.3 percent of the total units projected to be built, and 650 multifamily units, or 36.7 percent of the total projected units. Most of the detached units will be high value homes targeted at professional households moving from more expensive parts of the Bay area and priced well above what current area households can afford. For example, Country Club Vista, located at Richmond Parkway and Atlas Road, will have 645 detached housing units, ranging in size from 1,722 to 3455 square feet and in price from the low \$400,000s to the low \$700,000s. The households that purchase these homes will have much higher incomes than the current area median and will demand local-serving retail services that do not currently exist in the area.

⁶ Claritas, Inc., Demographic Quick-Facts Report, 2004.

In short, given the site's many locational advantages and the degree and type of growth occurring in the area, a local-serving retail component on the site is eminently feasible.

3.3 Appropriate Size and Design of Retail Component

3.3.1 Size

The maximum supportable size of the retail component is ultimately constrained by the size and accessibility of the site, rather than demand or developer interest. The identified range of 20,000 to 36,000 square feet can be developed and tenanted. However, developers will be *more* interested the larger the pad available; it is recommended that the site plan allow the retail component the full frontage along Blume Drive with the maximum depth that can be spared given the transit uses.

3.3.2 Orientation

The project tram spoke with several commercial brokers and developers about the desirability of the site and the optimum site plan for retail.⁷ The retail component should be located at the front of the site along Blume Drive, as visible as possible from the Richmond Parkway. However, the building does not have to be at the corner of the site; placing the building in the center of the pad could allow for more parking on either side of the building, particularly if the PG&E electrical tower cannot be relocated, but parking were allowed around it.

3.3.3 Parking

The retail component requires some amount of dedicated parking separate from the parking garage, due to the importance of convenience for customers of local-serving retail and the unlikelihood of foot traffic in this location. The City of Richmond requires two spaces per 1,000 square feet of general retail and one parking space per three seats for restaurants or cafes, as well as two spaces per 1,000 square feet of ancillary kitchen or office. Most major chain restaurants have parking specifications requiring one space per two seats. One developer, who builds typical strip commercial developments, suggested that approximately 15 to 20 percent of the pad should be developed as retail building, with the rest devoted to parking and circulation, or, approximately 15 spaces per 1,000 square feet of retail building. This should be considered the most parking intensive end of the feasible parking spectrum.

A more conservative approach to parking for the retail component is recommended. While it is important to have convenient parking for the retail to succeed, the retail component will also derive customers from the transit traffic and overflow parking will be available at Hilltop Plaza.⁸ Employee parking should be accommodated in the parking garage. An appropriate ratio for the component, exclusive of employee parking, is approximately six parking spaces per 1,000 square feet.⁹

⁷ Michelle Cause, Development Diversity Realty, owners of the Hilltop Plaza, by telephone, March 23, 2004, John Troughton, Cushman & Wakefield, March 29, 2004, Jon Schaefer, Terranomics, March 30, 2004, and Bill Stevenson, Jr., United Growth, March 30, 2004.

⁸ While Hilltop Plaza has been concerned about the overflow parking from the transit facilities, which occupies spaces all day, overflow parking from the retail component of the project will be brief in duration. A shared parking arrangement with Hilltop Plaza can be pursued if the retail developer finds 6 spaces per 1,000 SF insufficient.

⁹ If the retail component is developed by a private developer via ground lease, the managing agency may specify a maximum parking ratio for the site in the lease, based on this recommendation and negotiations.

3.3.4 Access

Access to the parking for the retail component should be separate from circulation for the transit facilities. The site is currently accessible via the Hilltop Plaza/RPTC Access Rd. off of Blume Drive. Ideally, access to the retail component from Blume Drive would be direct, however, access via Hilltop Mall Rd. is sufficient.

The site is not currently accessible from the Richmond Parkway. For prospective customers traveling east-bound on the Parkway, the site is relatively easily accessible via a right turn onto Blume Drive and a left turn onto Hilltop Plaza/RPTC Access Rd. For prospective customers traveling west-bound, however, access to the site requires two left turns from the Parkway to Blume Drive to Hilltop Plaza/RPTC Access Rd., a barrier to access for convenience retail.¹⁰ Fortunately, the freeway-bound morning commute traffic heading east on the Richmond Parkway would be the most important for a café or coffee shop, the ideal lead tenant for this site. Current access for east-bound traffic on the Richmond Parkway will be sufficient to allow development, however, direct access via a right-in, right-out from the Parkway would be more advantageous.

3.4 Tenancing Strategy

3.4.1 Anticipated Lease Rate

Area brokers gave conflicting pictures of the market for retail space in the area. The newer big box and strip retail space on the east side of I-80 is doing well and has few vacancies, especially for smaller spaces. The newest project is the Pinole Ridge Center at 1473 Fitzgerald Dr, where asking lease rates are \$2.50 to \$3.00 for triple net leases (NNN).¹¹ On the western side of I-80, however, the larger, older retail space around the Hilltop Mall have high vacancy rates. There have also been extended vacancies in the larger spaces at Hilltop Plaza, although the Plaza is currently fully tenanted. In general, there is currently less demand for the larger spaces that tend to be occupied by regional-serving retail on the western side of the I-80.

This is likely to change somewhat with the influx of new households in the area, nonetheless, it is recommended that the retail component of the RPTC focus on small, local-serving convenience retail, as described previously. Small spaces at the Hilltop Plaza are currently leasing at \$2.00 per square foot per month, NNN. Because retail space at the RPTC will be new and is a more visible location than the Plaza, it is estimated that space in the Plaza will lease for slightly more, approximately \$2.25 to \$2.50 per square foot per month, NNN.

3.4.2 Size and Number of Tenants

Small retail tenants are defined as requiring approximately 800 to 3,000 square feet of in-store space. Depending on the amount of the total site that can be given to the retail component (20,000 to 36,000 square feet) and given a parking ratio of six parking spaces per 1,000 square feet, between 8,000 and 14,000 square feet of the retail pad should be buildable space. This amount of space should accommodate between three and eight retail or restaurant tenants.

¹⁰ A retail developer interviewed regarding this site jokingly referred to the double left as the mark of retail death.

¹¹ NNN leases are net of taxes, maintenance and insurance, which must all be paid by the tenant.

3.4.3 Types of Tenants

If the portion of the site designated for the retail component is developed by a private developer via ground lease, it is unlikely that the RPTC Planning Group, or eventually the Joint Powers Authority (JPA), will have significant control over the targeting and recruitment of tenants for the project. However, in issuing an request for proposal, selecting a developer and entering into a ground lease agreement, the Planning Group or JPA can require developers to target general types of retail that are compatible with the transit uses and that will provide area neighborhoods, both new and existing, with needed goods and services. This section describes those tenants that would be most ideal and feasible for the site and those that should be avoided.

Small format, local-serving retail includes the following types of retail: beverage and quick food vendors including coffee shops, delis, bakeries, ice cream parlors and quick service restaurants (fast food), video stores, laundries/drycleaners, post services, dental and optical offices, fitness centers, smaller full-service restaurants and drop-in hair salons/barbers, etc. All of these types of retail and restaurant are allowed under the current land use designation, Regional Office & Shopping, and zoning category, C-3, Regional Commercial, with the exception of a drive-through, which requires a conditional use permit.¹²

The best tenants for this site will be beverage and quick food vendors that are slightly more upscale than existing retail in the trade area. The major competition for customers will come from those local-serving food and beverage retailers in the Hilltop Plaza just adjacent to the project and the new Vista Del Mar project at Atlas Road and Richmond Parkway, both of which are oriented towards the existing market in the area. The Hilltop Plaza contains a Me N'Ed Pizza, a Subway, Taqueria Maria, a McDonald's, and a Starbucks inside the Barnes and Noble. There is also an IHOP across Blume Drive. The new Vista Del Mar project will contain a Starbuck's, KFC, A&W and Quizno's.

A coffee vendor would be most ideal given the location and synergy with the transit uses. While there is currently a surfeit of Starbucks in the area, one of the developers consulted indicated that a Starbucks might still locate at the site.¹³ Other possibilities include other national chains such as Tully's or regional chains such as Peet's. The income and education levels of the households in the area are not currently high enough to attract a Peet's; however, this is likely to change by the time the RPTC retail component is developed. Other appropriate and feasible tenants include an additional beverage retailer, such as Jamba Juice or Fantasia Tea Company, specialty food like a bakery or ice cream parlor, such as Coldstone Creamery, and newer concepts in quick service food that do not exist in the trade area or across the I-80 in the major lunch-time food concentration, such as Baja Fresh, Yan Can's and Yo Yo Sushi.

Certain types of small format, local-serving retail are inappropriate given the size of the retail pad, the complexity of circulation at the site and the adjacent transit uses. In particular, a drive-through at the site is not recommended. Given the visibility of the site, typical commercial strip developers will be interested in locating a drive-through at this location. However, the amount of space taken up by a drive-through and the potential for over-loaded drive-through lines to interfere with bus traffic makes this inappropriate. The potential for double parking and interference with the buses also makes a video store problematic; a drycleaner's loading and unloading issues are likewise potentially troublesome.

¹² The FAR allowed at the site is 1.5, which would allow two to three stories of office space to be developed above the retail component. However, given the current state of the office market in the Bay Area, an office component is not recommended.

¹³ In addition to the Starbucks in the Barnes & Noble and at the Vista Del Mar, there is a Starbucks in Pinole Vista at Appian Way and Fitzgerald Drive.

3.5 Conclusions

In summary, the location of the site at the intersection of Richmond Parkway and Interstate 80 and the large increment of new housing under construction or approval for the immediate trade makes the RPTC site an ideal location for local-serving retail. The retail component should be allowed the entire frontage along Blume Drive to whatever depth is allowed by the other uses; its maximum size depends on the amount of space needed for the transit and parking uses rather than development feasibility constraints.

4 Design Concepts

4.1 Introduction

Numerous design ideas for the site were identified and refined into three design concepts. Rather than select a single preferred alternative at this point, the Planning Group has decided to carry forward the three concepts into the subsequent stages of project development. The three concepts differ in site layout, program, height and massing, and treatment of joint development. For each concept, this section provides a text description, perspective rendering, ground level site plan, and a summary of the advantages and disadvantages.

The site itself has several constraints and issues that were considered during the design process, including:

- Limited site area with respect to desired program
- Sloping topography
- A drainage area on the southeast corner of the site
- Adjacent embankments for Interstate 80 and Richmond Parkway
- Major utility corridors within the site including a PG&E transmission tower and power lines, a Unocal oil pipeline and a joint utility easement
- Access limitations due to the adjacent major roadways
- Traffic congestion on adjacent roadways and intersections

While shown in plans and renderings, it is important to note that the designs are early concepts only. Topographic survey of the site has not been completed. The locations of physical features, property lines, and easements are approximate.

4.2 Assumptions

It was necessary to make a number of assumptions to develop these concepts.

4.2.1 Topography

Assumed site topography was based on USGS quadrangle maps, which have a relatively low level of detail and a large contour interval of 10 feet.

4.2.2 PG&E Easement

It was assumed that structures could not be built within the easement for the PG&E high voltage transmission lines. This is based on a review of the existing easement language. Relocation of the tower on the northwest corner of the site was not considered as part of this project.

4.2.3 Unocal Pipeline and Adjacent Joint Utility Easement

It was assumed that it would be possible wither build over or relocate these easements. Option A includes an alternate parking structure arrangement that would increase the parking program by building over or relocating the pipeline and utilities. Options B and C conflict with the easements and would likely require relocation of the pipeline and utilities.

4.2.4 Depression in Southeast Corner of the Site

It was assumed that the depressed area (approximately 20 feet deep) could be filled, and is not considered to wetlands or critical storm water infrastructure. This assumption is based on initial

investigation by Caltrans and WCCTAC, but would need to be confirmed as part of the environmental review process.

4.2.5 Access

It would be highly desirable to supplement the existing site access road with a right-in/right-out access for buses on Richmond Parkway. All three concepts illustrate this proposed access. The Circulation Assessment section of this report discusses this in additional detail. Caltrans has not formally agreed to this access to date, and further study and/or modification of the proposed access arrangement may be required.

4.2.6 Casual Carpool Curb

The desired program (see section 4.3) includes a pick-up/drop-off curb long enough to accommodate eight vehicles. It was assumed that this length would be sufficient to accommodate users of transit as well as casual car pools. However, none of three concepts were able to provide the full program. Option C provides the longest curb (175') which could accommodate approximately seven vehicles. In order to accommodate casual carpooling at the RPTC, it may be necessary to provide a designated area in the curb lane on northbound Blume Drive, south of the RPTC Access Road. Another alternative would be to encourage casual carpools to use the Hilltop Transit Center.

4.3 Desired Program

The RPTC Planning Group established a desired program of components to be included in the project as shown in Table 4.1. This desired program was considered to be a target during the design process.

Table 4.1 Desired Program

Transit Center Component			
Item	Number	Area Assumption	Area Required (sq ft)
Public Parking	800 spaces	350 sq ft/sp	280,000
Employee/Service Parking	5 spaces	350 sq ft/sp	1,750
Bus Loading	14 bays	12600 sq ft/bay	176,400
Bus Layover	2 buses	600 sq ft/bus	1,200
Bus Shelters/Canopies	14 shelters	No additional area requirement.	
Private Vehicle Loading	8 vehicles	800 sq ft/veh	6,400
Guard Booth	1 booth	150 sq ft/booth	150
Custodial/Storage	1 room	100 sq ft/room	100
Employee Restroom	1 rooms	250 sq ft/room	250
Public Restrooms	2 rooms	250 sq ft/room	500
Bicycle Station	1 station	1000 sq ft/station	1,000
Bicycle Racks	30 bicycles	12 sq ft/bicycle	360
Bicycle Lockers	10 lockers	24 sq ft/bicycle	240
Other Passenger Amenities (allowance)			400
Open Space/Pedestrian Plaza	To be determined, contingent on design		
Landscaping	To be determined, contingent on design		
Pedestrian, Bicycle, Vehicular Circulation	To be determined, contingent on design		
Joint Development Component			
Item	Number	Area Assumption	Area Required (sq ft)
Building Footprint	1 building	10,000 sq ft/building	10,000
Parking	40 spaces	350 sq ft/sp	14,000
Pedestrian, Bicycle, Vehicular Circulation	To be determined, contingent on design		
Landscaping	To be determined, contingent on design		

4.4 Design Concept A

4.4.1 Option A Description

This option provides a layout similar to the existing RPTC, with the additions of more bus bays and a rectangular parking structure, as shown in Figures 4.1 and 4.2. Up to 14 bus bays are accommodated in a two-way bus loop with a center pedestrian island. Pedestrians can access five of the bays directly from the parking structure or kiss and ride curb. The remaining nine bays require pedestrians to cross the bus loop road to a pedestrian island.

A four level parking structure provides approximately 710 parking spaces (880 spaces if the parking structure is extended south over the utility easement). The top floor of the parking structure would be located at an elevation of approximately 278 feet. Light towers and walls would be higher. For reference, the high point of the Richmond Parkway overpass is approximately 270 feet based on the available topographic information. Sloping floor parking ramps are assumed to provide interfloor travel for vehicles.

This option provides for a potential joint development parcel at the corner of Blume Drive and the RPTC Access Road. This parcel is approximately 27,300 sq. ft, which exceeds the minimum desired program of (24,000 sq. ft. including parking). This parcel, however is constrained in several ways. The driveway is located near the intersection of the Access Road with Blume Drive and would be regularly blocked by queuing vehicles during peak periods. The PG&E and other utility easements pass through the parcel, limiting flexibility of a potential building footprint. Finally, the parcel is relatively small, limiting the potential for dedicated parking.

While functional, this approach may yield a facility that does not have a strong sense of public space. The facility will probably be quite hidden from the outside. The overall impression of the exterior may be of a relatively unbounded area dominated by paving and vehicular movement. The main central island may be too narrow to develop as an attractive focal point for the project.

Figure 4.1 Concept Option A (site plan)

Figure 4.2 Concept Option A (perspective)

4.4.2 Option A Advantages

- Accommodates full program of 14 buses
- Five bus bays can be conveniently accessed from the parking structure without crossing roadways
- Center island design minimizes transfer distances for 9 bus bays
- Drop off area convenient to 5 bus bays
- Provides regular parking structure shape with 700+ spaces
- Accommodates potential joint development with its own access
- Can be implemented without building structures in the utility easements
- Requires limited excavation
- Parking structure highly visible from the freeway
- Relatively compact, functional arrangement
- Potential for a right-in/right-out bus connection to Richmond Parkway with Caltrans approval

4.4.3 Option A Disadvantages

- Transit users must cross two-way bus traffic to reach 9 bus bays on the center island
- Transit users must cross two-way bus traffic twice to walk between the parking structure and the joint development
- Parking structure blocks view of buses at the RPTC from freeway
- Weak relationship of joint development to RPTC - retail potentially "turns its back"
- Retail in joint development not convenient for commuters in parking structure
- Joint development would block most views of facility from Blume Drive
- Limited potential for tree canopy or greenery on transit island and sidewalks
- Relatively narrow sidewalk area between buses bays and the parking structure, potentially limiting sight and circulation lines
- Triple row of buses can create a "wall" effect
- Site lines to desired bus location from parking structure could be readily blocked by other buses
- No major public open space directly related to RPTC
- Limited parking footprint requires a four-level structure to meet program
- Drop off-area location is relatively far from Blume Drive

4.5 Option B

4.5.1 Option B Description

Option B provides a single line of buses wrapped around a major public space with the potential for extensive landscaping, as shown in Figures 4.3 and 4.4. Buses circulate one-way in a clockwise direction around the site. With this configuration 10-11 bus bays are provided with additional space for layover. All buses are accessed from the parking structure without crossing roadways.

The parking structure is located on the south side of the site and spans over the bus entrance to the facility. The location of the structure creates high visibility for the facility from all sides and provides space for joint development on the ground floor along Blume Drive. The parking structure would consist of approximately 760 spaces on 4 levels above grade. Two-way speed ramps are provided for vehicles to travel between floors. The location of the parking structure on this site would require the relocation of the Unocal pipeline and underground utilities. The top floor of the parking structure would be located at an elevation of approximately 278 feet.

Approximately 15,800 sq ft could be available for joint development on the ground floor of the parking structure along Blume Drive. This joint development would be required to share parking and access with the RPTC.

The pedestrian circulation is organized similarly to an airport terminal with satellite gates and covered walkways to protect passengers moving out to boarding areas. The design also helps create a sense of enclosure on all four sides of the open space, and provides protection from southwesterly winds.

Figure 4.3 Concept Option B (site plan)

Figure 4.4 Concept Option B (perspective)

4.5.2 Option B Advantages

- Perimeter bus location permits single large green open space
- Strong "park" image for RPTC
- Good site lines from parking structure to buses - no double or triple rows
- Amenities are in a good location for all transit users
- Transit users do not need to cross bus traffic to get to bus boarding areas
- Orientation and layout has good visibility from adjacent streets & freeway
- Regular parking structure shape with 700+ spaces
- Parking structure above joint development may be convenient for office use
- Buses exiting the facility will not be blocked by queuing vehicles on the Access Road
- Drop off area is convenient and visible for drivers

4.5.3 Option B Disadvantages

- Pedestrians from drop off and Hilltop Plaza must cross through parking garage to get to buses
- Only accommodates 10-11 buses (with layover spaces)
- Buses circulate under parking structure, creating potential ventilation and structural engineering issues
- Relatively long distances between buses and parking structure for some buses
- Longer walking distances between transfers for some connections
- No at-grade parking provided for joint development, probably precluding retail
- Longer travel distances for buses
- Requires relocation of Unocal pipeline

4.6 Option C

4.6.1 Option C Description

Option C places buses on two sides of a three level parking structure, as shown in Figures 4.5 and 4.6. Buses circulate around the parking structure in a one-way pattern on the north, east and south sides of the parking structure and two-way on the west side. The area adjacent to Blume Drive would be too small to accommodate joint development, and would instead consist of a landscaped area and boarding platforms for 4 bus bays. An additional 4 bays would be adjacent to the parking structure on the west side, and 3 on the north side for a total of 11 bays. Additional layover space would be available on the bus circulation loop. If joint development were to be considered for this option, it would need to be located on top of the parking structure.

The parking structure has a relatively large footprint and is centrally located within the site. It provides approximately 800 spaces on three levels. This option requires one less parking level than the other two designs, allowing a lower overall height of the facility (top floor at approximately elevation 267 feet). In order to maximize the number of parking spaces this, resulting parking structure is not perfectly rectangular. The footprint of the parking structure could be revisited if this option is advanced. Surrounded by circulation on all sides, the structure would be set back from the site property lines. This would potentially reduce the visibility of the RPTC from adjacent roadways. The location of the parking structure on this site would require the relocation of the Unocal pipeline and underground utilities.

This option provides the longest kiss and ride curb, about 175', parallel to the access road on the south side of the site. Seven of the 11 bus bays could be accessed from the parking structure and kiss and ride curb without crossing roadways. Pedestrians could access the other four bays directly from the sidewalk on the east side of Blume Drive, but would need to cross the bus circulation road to reach the other 7 bays or the parking structure.

Figure 4.5 Concept Option C (site plan)

Figure 4.6 Concept Option C (rendering)

4.6.2 Option C Advantages

- Seven bus bays can be conveniently accessed from the parking structure without crossing roadways
- Additional space for bus layover
- Drop off area convenient to 4 bus bays
- Available area for landscaping would create an attractive edge on Blume Drive
- Provides approximately 800 spaces on three levels (other options have four levels)
- Potential for a right-in/right-out bus connection to Richmond Parkway with Caltrans approval
- Buses could be organized into a "commuter" side and "local" side
- Buses exiting the facility from the rear access road will not be blocked by queuing vehicles on the Access Road
- Drop off area is convenient and visible for drivers

4.6.3 Option C Disadvantages

- Four bus bays located across the two-way bus circulation roadway
- Three bus bays on north side of the parking structure are not easily visible from other bays
- Parking structure blocks view of buses at the RPTC from freeway
- Site lines to desired bus location from parking structure could be readily blocked by other buses
- Very limited joint development opportunity
- Limited program with only 11 bus bays (with layover spaces)
- Buses exiting to access road (from 4 bays adjacent to Blume Drive) could be blocked by queuing vehicles on the access road
- Parking structure shape is not rectangular
- Relatively long distances between buses and kiss and ride curb for some buses
- Relatively long travel distances for some buses
- Long walking distances between transfers for some connections
- Requires relocation of Unocal pipeline

4.7 Summary Program Information

Table 4.2 summarizes the program achieved with each of the three options.

Table 4.2 Summary Program Information

	Option		
	A	B	C
Bus Bays	14, no additional layover space	10-11, with additional layover space	11, with additional layover space
Parking Spaces	710-880 on 4 levels	760 on 4 levels	800 on 3 levels
Joint Development	27,300 sq. ft.	15,800 sq. ft. on ground floor of parking structure	30,000+ sq. ft. above parking structure only
Kiss and Ride Curb	120 ft.	110 ft.	175 ft.

5 Joint Development Strategies

5.1 Introduction

This section addresses development strategies for the commercial portion of the RPTC. The three development alternatives under consideration each entail a different strategy requiring varying degrees of responsibility and risk for the Joint Powers Agency which will oversee the development and maintenance of the RPTC. This section outlines the commercial development strategy attendant to Concept Options A, B and C and describes the benefits and potential pitfalls of each strategy.

Section 3 addressed the feasibility of retail development at the RPTC site. Based on several factors, the location at Blume Avenue and Richmond Parkway is strong for either local or regional-serving retail and that the amount of retail developable on the site is limited not by market feasibility, but by the space needed by the transit and parking uses on the site.¹⁴ Both Concept Options A and B developed by the consultant team in cooperation with the Planning Group reflect the maximum retail space allowable given the needs of the parking garage and transit circulation and parking. Options A and B will both result in significant revenues to the project. It is possible that Option B would result in a greater return to the project assuming that the public funds cover development costs; however, it is impossible to say this with confidence without performing financial analysis of the various strategies. Otherwise, Option A is a smarter strategy in that it removes the managing agency from the retail developer/landlord position and the effort and risk this entails.

Option C includes an office use as the commercial component rather than retail. The market feasibility portion of the retail assessment (Section 3) did not include analysis of the office market in the area surrounding the RPTC site, therefore the joint development strategy for Option C cannot be as definitively assessed as the strategies for Options A and B. However, based on general knowledge of the office market in western Contra Costa County, a preliminary assessment of office as a joint development use is made in the section devoted to this concept. Unless the managing agency or other public agency are currently in need of office space *and* the public funds secured for the transit and parking facilities are sufficient to cover development of the office component, Option C is not feasible at this time.

5.2 Option A: Free-standing Retail Component with Surface Parking Potential

Option A includes a free-standing 27,300 square foot development pad on the west side of the site, fronting on Blume Drive. This pad would allow for approximately 10,400 square feet of retail development and 35 surface parking spaces and, a ratio of 3.4 spaces per 1,000 square feet of retail space. As with the other two concepts, the northwest corner is not built or paved over due to the PG&E easement and power structure, but becomes a landscaped pedestrian area.¹⁵ The pad has access off of the Hilltop Plaza access road.

¹⁴ There are, however, several over-all site planning issues that could make the retail portion of the project unattractive if not handled appropriately, as described in Section 3. Site design requirements for feasible retail include frontage along Blume Drive and corner visibility from Richmond Parkway, separate surface parking dedicated to the retail uses, and separate access to the retail uses.

¹⁵ The northwest corner of the development pad overlaps the PG&E easement. This area could be developed with parking, not building, allowing access to the power structure. The southwest corner of the development pad overlaps the utility easement running through the site; again, however, this area could be developed as a pedestrian area, rather than building, so as not to interfere with access to the infrastructure.

5.2.1 Option A Development Strategy

The development strategy most suitable to the configuration of Option A is the ground lease of the underlying land to an independent commercial development entity that would pay an annual rent to the managing agency operating the transit and parking facility.¹⁶ The typical term for a ground lease is at least 30 years, depending on the productive life of the development project. For the duration of the ground lease, given fulfillment of its obligations, improvements to the land are property of the commercial developer, while the underlying land remains the property of the managing agency. Depending on any additional constraints or demands placed on the development, a ground lease is typically valued at six to twelve percent of the value of the land, annually. Alternately, a base rent may be determined, with an additional percent of the net revenues from the project due after a required threshold return to the developer.

The managing agency may issue a Request for Proposal or Request for Qualifications (RFP/RFQ) to attract potential developers and specify development requirements for the property. The RFP/RFQ should provide information regarding the physical characteristics of the property, point of access, adjoining transit and parking facilities, zoning and land use restrictions and existing easements. The RFP/RFQ should also describe the managing agency's goals for the property; for example, the contribution of pedestrian activity to the center, the reduction of vehicle trips en route to the center (i.e. coffee shop) and the maximization of built space versus surface parking on the property. The RFP/Q can also specify uses that are not desirable, such as drive-throughs, due to the complexity of circulation on the site and potential conflict with transit.

5.2.2 Option A Advantages

Listed below are the various advantages of the above described ground lease joint development strategy:

- **Minimal Responsibility for Retail Component Development and Management**

Ground leasing the portion of the site to be devoted to retail development to a private developer allows the managing agency to assign the responsibility and risk for that component of the project to another entity. Within the parameters set by the RFP and the development or leasing agreement, the private developer will be responsible for planning, financing, tenancing, building and managing the retail space. Tenant failure or poor absorption are the developer's risks, not the managing agency's or its agent's.¹⁷

- **Retail Component Independent of Parking Garage Development**

Because the development of the retail space would not be tied to the development of the parking garage, the creation of the best possible retail concept would not be hindered by the design or timeframe for development of the parking garage. The developer will be able to secure tenants before development of the project, develop a synergistic tenancing strategy and work with each tenant to ensure that the space is designed and finished to meet their needs.¹⁸

¹⁶ Option A could also be developed in its entirety by the managing agency; however, one of the major advantages offered by its configuration is the ability to decrease risk to the managing agency by assigning responsibility for development of the retail portion to a private developer. Additionally, Option A could be developed by parcelization and sale of the retail portion of the site to a private developer; this is not recommended due to potential complications issuing from Caltrans' original ownership and on-going interest in the site.

¹⁷ If the managing agency enters into a ground lease with the developer where it is guaranteed some base rent and additional rent is contingent on the level of return from the project, the managing agency would incur some risk in decreased rent if tenants do not provide a high enough level of return.

¹⁸ Option B would allow the retail spaces to be finished to tenant's specifications. However, in the case of quick-service and sit-down restaurants (which are likely tenants), this can be complicated, especially with other uses above (the parking garage).

Additionally, the separation of the retail and parking garage allows for surface parking for retail customers who do not use the transit or parking facilities on site. While the retail uses should not require surface parking at conventional levels, it will need some separate, dedicated surface parking. Retailers will not be able to survive on business strictly from transit users or carpoolers and customers who simply want a cup of coffee are unlikely to be willing to park in a garage.

- **Guaranteed Return**

Whether the annual rent to the managing agency is as straight-forward as a percent of the value of the land, or some base plus a percent of return over threshold, the managing agency can assume a known minimum level of return from the ground lease for the entirety of its term.

- **Long-term Site Control**

Because the portion of the site dedicated to the retail component will be leased rather than sold, the managing agency will retain control over the land uses and intensity of development on the site beyond the life of the retail project. Because the managing agency's major goals are to support the transit uses on the site and over an extended timeframe (i.e. 50 years) other uses or further intensification of uses may become desirable, long-term site control is a significant advantage.

- **Expertise of Commercial Developer**

The ground lease joint development strategy allows the retail component of the project to be developed by a qualified commercial developer; the RFP/Q process even enables the managing agency to potentially select a developer with previous experience integrating retail into transit facilities. However constituted, the managing agency is unlikely to have any previous experience with commercial development.

5.2.3 Option A Disadvantages

The disadvantages of the ground lease joint development strategy are as follows:

- The separation of the parking and retail uses into two separate buildings decreases the site area available for other purposes.

5.3 Option B: Integrated Ground-floor Retail Component with Garage Parking

Option B includes 15,800 square feet of retail space in the ground floor of the parking garage, fronting on Blume Dr. Parking for the retail uses is provided in the garage; no separate vehicle access is necessary. As with Option A, the northwest corner of the site is developed as pedestrian space, allowing PG&E access to its easement.¹⁹

5.3.1 Option B Development Strategy

It is highly unlikely that any private developer would partner with the managing agency to develop the retail portion of the RPTC, as conceived in Concept Option B. Rather, the managing agency would develop the entire structure, including a shell for the retail component. RM-2 funds would be allocated to this portion of the project to avoid complications regarding the use of STIP fund for non-transit purposes. The managing agency would then engage a commercial broker/operator to manage leasing and tenant improvements.

¹⁹ A small portion of the retail space overlaps the utility easement across the southern end of the site.

5.3.2 Option B Advantages

The advantages of this development strategy are described below:

- **Maximization of Funds**

The major advantage of integrating the retail into the parking garage and the managing agency developing the entire site is the maximization of the RM-2 and STIP funds (assuming the funds are sufficient to pay for the retail portion of the project as well). If the retail portion of the project is a success, the managing agency should theoretically receive greater rent for the built space than for the ground lease.²⁰ Assuming that the managing agency does not have to pay any portion of the revenue back to the funding sources, it could potentially generate more revenues in a landlord position.

- **Long-term Site Control**

The managing agency retains a landlord position and maximum site control with Concept Option B.

- **More Efficient Site Planning**

By combining the parking and retail uses into one building, more of the site is available for a pedestrian plaza and green space.

5.3.3 Option B Disadvantages

The disadvantages of Option B and its development strategy follow:

- **Lack of Dedicated Parking**

Option B provides no dedicated, easily accessible parking for the retail component. The retailers in those spaces will not derive sufficient customers from pedestrians and transit and carpool users to support their businesses and drive-by customers will not want to park in a parking garage. Unless the pedestrian and visual connection between the retail component and the surface parking available in the adjacent lot at the Hilltop Plaza can be strengthened considerably and an agreement reached with the Plaza operator to share parking, the value of the retail space will be considerably reduced.

- **Risk Position**

Should the retail space prove difficult to lease, the managing agency has no guarantee of rental revenues. Ups and downs in the retail market in the trade area will be absorbed by the managing agency, unless long-term leases can be achieved.

5.4 Option C: Office Component Over Parking Garage

Option C includes potential for a fourth floor office component above the parking garage. While the concept drawing shows an approximately 30,000 square foot office space on the top floor of the garage, the office uses and supporting parking could occupy the entire top floor, to a maximum of 96,500 square feet. Access to the office space would be through the parking garage, either by parking on the top floor and entering or via elevator from the ground floor.

As noted, market demand for office space at the RPTC site was not analyzed. However, given generally weak office market conditions in Western Contra Costa County and the Bay area generally, it is not expected that there would be significant demand for speculative office space in this location. The office

²⁰ The lack of surface parking for the integrated retail concept problematizes this assumption. Retail without accessible parking is significantly less valuable than retail with parking.

space in the Fairfield mixed transit, office, retail and parking facility that provided the basis for this concept is filled largely by the City Transportation Department and Representative Tauscher.

5.4.1 Option C Development Strategies

There are two potential strategies for the development of the office component of Concept Option C. The first assumes that there are sufficient STIP and RM2 funds to pay for development of the entire structure, including the office component, or that the managing agency incurs debt toward the office component supplementing the public funding. The managing agency then builds the office component, along with the parking garage and in keeping with the garage development schedule.

The second potential strategy for development of the office component of Concept Option C is a joint development strategy wherein the air-rights above the parking garage are sold or leased to a private developer.

5.4.2 Option C Advantages

- **Below Market Office Space for Participating Agencies (Agency Development Strategy)**

As with the Fairfield Transportation Center, the major advantage of the managing agency building office space as part of the RPTC is the potential for below-market office space for the managing agency or other associated public agencies. If the public funding already secured is sufficient to pay for the office component as well, and the managing agency would not be obligated to send revenue back to those sources and needed additional office space, the office component could provide below market rate space to the participating agencies.

5.4.3 Option C Disadvantages

- **Office Component is Speculative (Agency Development Strategy)**

Under Option A, the private developer can find and enter into lease agreements with retail tenants prior to obtaining a construction loan and beginning construction. This greatly mitigates financing risk and results in better lending terms. Under Option B, the managing agency may or may not be able to obligate retail tenants prior to development given the predominance of the garage development schedule; regardless, the strength of the retail market makes it likely that retail tenants will be found.

Under the agency development strategy for Option C, unless the various public agencies involved can themselves occupy the office space, it is unlikely that a user will be willing to commit to a lease prior to development of the garage and office component, given current market conditions. In general building office space based on speculation (without a committed tenant) is not recommended. In particular, if the managing agency needed to incur debt to build the office component, this would be unwise.²¹ Even if the public funds are sufficient to pay for the office component, there is a high risk that the types of tenants that could be attracted would be marginal.

Unless the public funds can pay for the office component of the project completely and the managing or participating agencies currently have need of office space, it is not recommended that the managing agency attempt to build the office component as part of the parking garage.

- **Infeasible Under Current Market Conditions (Joint Development Strategy)**

Given the weakness of the office market and the complexity of air-rights development, it is unlikely that a private developer would be interested in such a project at this time unless the air-rights were discounted

²¹ It is unlikely that such financing could be obtained.

significantly (i.e. free). 10 years from now, however, after the office market has recovered and the area has densified and is more desirable, air-rights development may be feasible. Even then, however, adding office or any other type of use on top of the parking garage will require significant retrofitting of the garage and the space will never be as attractive as office space with easy ground floor access.

6 Circulation Assessment

6.1 Introduction

This section examines circulation and access to the RPTC. Existing access routes to the facility are identified, and issues, constraints and opportunities are discussed. Traffic operation is evaluated under existing conditions, as well as forecast year 2025 conditions both with and without the proposed modifications to the RPTC.

6.2 Pedestrian Circulation

6.2.1 Existing Conditions

Pedestrian access to the RPTC is currently constrained, as shown in Figure 6.1. The RPTC is located adjacent to three relatively wide, high volume roadway facilities with limited crossing opportunities (Blume Drive to the west, Richmond Parkway to the North and Interstate 80 to the east). The primary pedestrian access points are located on the west side of the site along Blume Drive.

Two secondary pedestrian access points were observed at the site. The first consists of a dirt path located at the northwest corner of the site connecting to southeast corner of the intersection of Richmond Parkway and Blume Drive. The second is the access road to the Hilltop Plaza parking lot south of the site. Despite the presence of a sidewalk on the east side of this access road, pedestrians walking between the RPTC and Hilltop plaza regularly walk in the roadway, due in part to the lack of a formal crosswalk to the RPTC and the absence of a sidewalk on the west side of the access road.



On the west side of the site, there are no opportunities to cross Blume Drive between Richmond Parkway and Klose Way, located about 400 feet south of the RPTC Access Road. North of the site, no sidewalk is present on the south side of the Richmond Parkway overpass over Interstate 80. Pedestrians wishing to walk east must first cross to the north side of Richmond Parkway. West of Blume Drive, no sidewalk is present on the north side of Richmond Parkway. At the intersection of Richmond Parkway and Blume Drive, pedestrian crossing is restricted on the west and north legs. The crossings that are available are long (85 feet across Blume Drive and 150 feet across Richmond Parkway) and no median refuge islands are present. The crossing of Richmond Parkway must be completed in two parts, crossing the westbound right turn lane and the other lanes separately.

Within the RPTC, the central bus island arrangement requires all passengers to cross both the bus circulation route and adjacent automobile circulation. Pedestrian paths or sidewalks are limited within the surface parking lot. No shelters or mature shade trees are present to provide wind, rain or sun protection for pedestrians.

Figure 6.1 Peds



6.2.2 Pedestrian Constraints and Opportunities

Site constraints for pedestrian access can be summarized as follows:

- Bounded to the west, north and east by wide, high volume roadway facilities with limited crossing opportunities
- Lack of sidewalks on Richmond Parkway on north side (west of Blume Drive) and south side (east of Blume Drive)
- Crossing restrictions at the intersection of Richmond Parkway with Blume Drive
- Dirt path connection to intersection of Richmond Parkway with Blume Drive
- Overpass over Interstate 80 creates a grade separation between the RPTC site and Richmond Parkway, except at the intersection with Blume Drive
- Limited opportunities to cross Blume Drive
- Lack of formal crossing of RPTC/Hilltop Plaza Access Road, pedestrians observed to cross indiscriminately
- No sidewalk on the west side of the Hilltop Plaza parking lot access, pedestrians observed to walk in roadway

Potential opportunities to improve pedestrian access include:

- Minimize the number of required crossings of bus or automobile travel lanes to connect to the bus boarding area
- Provide shelters, canopies and landscaping for weather and sun protection within the RPTC
- Provide direct, clear and protect pedestrian routes between parking, transit boarding areas, and the passenger pick-up/drop-off
- Improve connection to intersection of Richmond Parkway and Blume Drive, pave existing dirt path, increase paved surfaces and/or create a plaza
- Potential to create a connection from the elevated segment of Richmond Parkway to a new parking structure on the RPTC site
- If warranted, a traffic signal at the intersection of Blume Drive and the RPTC/Hilltop Plaza access road would create a new location to cross Blume Drive
- Create a formal crossing to Hilltop Plaza and improve pedestrian connection (may require off-site improvements)
- New sidewalks along Richmond Parkway (requires off-site improvements)

6.3 Bicycle Circulation

6.3.1 Existing Conditions

Bicycle access to the RPTC is generally unattractive due to a lack of continuous bicycle facilities combined with hilly terrain and heavy traffic on adjacent roadways. The East Bay Bicycle Coalition does not indicate any recommended bicycle routes in the immediate vicinity of the site. Figure 6.2 illustrates bicycle access routes to the site. Bicyclists can also use the pedestrian facilities described in the previous section and illustrated on Figure 6.1.



Bicyclists using Blume Drive must share traffic lanes with vehicles. Bicycle lanes are provided on Richmond Parkway but do not have direct access to the RPTC. Further, the bicycle lanes are dropped approaching the Blume Drive intersection. Bicyclists on the Richmond Parkway wishing to access the RPTC have two options: 1) join mixed traffic and turn south on Blume Drive or 2) use the pedestrian entrance on the northwest corner of the site. Option 1 requires longer travel distances and forces bicyclists to compete with vehicles. Option 2 is more direct, but requires bicyclists to dismount and use the actuated pedestrian button. Bicyclists leaving the site have the same two options, although it is possible to connect directly from the sidewalk at the southwest corner of the Richmond Parkway/Blume Drive intersection to the eastbound bike lane on Richmond Parkway.

Figure 6.2 Bikes

6.3.2 Bicycle Constraints and Opportunities

Site constraints for bicycle access can be summarized as follows:

- Bounded to the west, north and east by wide, high volume roadway facilities with limited crossing opportunities
- Lack of continuous bicycle lanes near the Blume Drive/Richmond Parkway intersection requires bicyclists ride with mixed traffic
- Restrictions for pedestrian crossings at the intersection of Richmond Parkway with Blume Drive
- Dirt path connection to intersection of Richmond Parkway with Blume Drive and eastbound Richmond Parkway bicycle lane
- Overpass over Interstate 80 creates a grade separation between the RPTC site and Richmond Parkway, except at the intersection with Blume Drive
- Lack of bicycle parking facilities at the RPTC

Potential opportunities to improve bicycle access include:

- Consider reconfiguring lanes at the Richmond Parkway/Blume Drive intersection to improve bicycle conditions and, if possible, extend bicycle lanes
- Potential to provide bicycle lanes on Blume Drive (requires off-site improvements)
- Provide bicycle facilities at the RPTC (bicycle racks, bicycle lockers, potential bicycle station)
- Improve bicycle connection to intersection of Richmond Parkway and Blume Drive, pave existing dirt path to make it an accessible bicycle and pedestrian path
- If warranted, a traffic signal at the intersection of Blume Drive and the RPTC/Hilltop Plaza access road would improve crossing conditions for bicyclists
- Potential to create a connection from the elevated segment of Richmond Parkway to a new parking structure on the RPTC site

6.4 Bus Transit Circulation

6.4.1 Existing Conditions

Existing Transit Services

The RPTC is served by two public transit operators: AC Transit and WestCAT. A total of 10 bus lines currently serve the RPTC, summarized below in Table 6.1. Greyhound also provides limited service to the RPTC. Casino shuttle buses have been observed to use the facility, although not approved to do so. Analysis of future conditions does not consider casino shuttle operation, as they are assumed to not be permitted to use the facility.

Table 6.1. Existing Transit Service

Operator	Route No.	Route Name	Description	Peak Frequency (Min)
AC Transit	70	Appian	Connects RPTC to El Cerrito del Norte BART. Serves El Sobrante, San Pablo, Richmond BART & Amtrak.	30
	71	Rumrill	Connects RPTC to El Cerrito del Norte BART. Serves Contra Costa College Transit Center, Richmond BART & Amtrak Station.	30
	LA	Hilltop Line	Transbay service connecting Hilltop Park & Ride and RPTC to the San Francisco Transbay Terminal. Direct service between San Francisco and RPTC with no intermediate stops. Peak period and direction only.	15
WestCAT	16	Pinole Valley	Loop service between RPTC and Doidge Avenue/Wright Avenue in Pinole. Serves Pinole Valley Shopping Center and the Pinole Valley Library.	30
	17	BayView	Loop service between RPTC and Cypress Avenue/Broadmore Avenue in Richmond. Serves Doctors Hospital.	60
	18	Tara Hills	Loop service between RPTC and San Pablo Avenue/Tara Hills Drive in Richmond. Serves Hilltop Shopping Center.	60
	19	Hilltop/Hercules	Loop service between Hercules Transit Center and Hilltop Shopping Center.	30
	30Z	Martinez Link	Connects between Martinez and El Cerrito del Norte BART. On weekdays, the 30Z combines the JPX to provide 15 minute express service on the I-80 corridor during peak periods.	30
	JPX	JPX Express	Connects between Hercules Transit Center and El Cerrito del Norte BART. Combines with 30Z to provide 15 minute express service during weekday peak periods.	30
	JR	J Express	Express connecting between Hercules Transit Center and El Cerrito del Norte BART. Alternates between the JR routing (along Richmond Parkway) that serves the RPTC and the JL routing (along Lakeside Drive) in the Hilltop area.	30

Access and Circulation

Public transit bus facilities at the RPTC consist of a single loop, center island boarding area with eight sawtooth bus bays. Buses access the site from the south on the RPTC Access Road. With this arrangement, buses must mix with private vehicles on the access road. The driveway configuration also requires entering and existing buses to cross each other. Greyhound buses use the passenger car pick-up/drop-off curb.

Figure 6.3 illustrates transit bus access to the site. All buses are currently directed to or from the north and travel through the intersection of Richmond Parkway and Blume Drive/I-80 WB Ramps. All buses entering the RPTC must therefore turn left from southbound Blume Drive to the RPTC Access Road, and left again

into the site. A large number of inbound buses must also make left turns from westbound Richmond Parkway to southbound Blume Drive and several outbound buses must turn left from northbound Blume Drive to westbound Richmond Parkway. Buses exiting eastbound I-80 on the HOV Ramp must make four successive left turns to enter the site: left on Richmond Parkway, left on Blume Drive, left on the Access Road, and left into the site.

Roadway congestion occasionally impedes bus circulation, particularly during the PM peak period. Queues on northbound Blume Drive were observed to block the Access Road intersection. Resulting queues on the Access Road occasionally block the bus driveways at the site. In the inbound direction, significant queuing was observed in the left turn lanes from westbound Richmond Parkway to southbound Blume Drive. Vehicles turning left or making U turns from southbound Blume Drive at the RPTC Access Road also periodically block bus circulation.



6.4.2 Future Conditions

AC Transit and WestCAT have produced forecasts of future transit service at the RPTC. These future service assumptions use 2025 as a design year for the facility, and are based on previously completed planning studies and long-term service strategies. Table 2 summarizes assumptions for year 2025 transit service at the RPTC.

AC Transit anticipates an increase in peak frequency for the LA transbay service to 10 minutes, and the initiation of new express bus service as identified in the Contra Costa Express Bus Study. In addition, AC Transit assumes that the 72 local and 72R express service will be extended to the RPTC. The 72R is the enhanced San Pablo Rapid service. WestCAT will continue to use RPTC as a principal hub and transfer point, with increases in frequency on both local and express routes.

Figure 6.3 Transit

Table 6.2 Year 2025 Assumed Transit Operations

Operator	Route No.	Route Name	Description	Peak Frequency (Min)
AC Transit	70	Appian	Connects RPTC to El Cerrito del Norte BART. Serves El Sobrante, San Pablo, Richmond BART & Amtrak.	30
	71	Rumrill	Connects RPTC to El Cerrito del Norte BART. Serves Contra Costa College Transit Center, Richmond BART & Amtrak Station.	30
	72R	San Pablo Rapid	Proposed extension of the enhanced arterial service connecting between RPTC, downtown Oakland and Jack London Square. Operates on San Pablo Avenue and serves Richmond, San Pablo, El Cerrito, Albany, Berkeley, Emeryville and Oakland.	12
	72	San Pablo Local	Proposed extension of the local arterial service connecting between RPTC, downtown Oakland and the Oakland Amtrak station. Operates on San Pablo Avenue and serves Richmond, San Pablo, El Cerrito, Albany, Berkeley, Emeryville and Oakland.	30
	LA	Hilltop Line	Transbay service connecting Hilltop Park & Ride and RPTC to the San Francisco Transbay Terminal. Direct service between San Francisco and RPTC with no intermediate stops. Peak period and direction only.	10
	LH	Hercules Transbay	Proposed new express service connecting between Hercules and the Transbay Terminal in San Francisco. Identified in the Contra Costa Express Bus Study.	30
WestCAT	16	Pinole Valley	Loop service between RPTC and Doidge Avenue/Wright Avenue in Pinole. Serves Pinole Valley Shopping Center and the Pinole Valley Library.	15
	17	BayView	Loop service between RPTC and Cypress Avenue/Broadmore Avenue in Richmond. Serves Doctors Hospital.	60
	18	Tara Hills	Loop service between RPTC and San Pablo Avenue/Tara Hills Drive in Richmond. Serves Hilltop Shopping Center.	60
	19	Hilltop/Hercules	Loop service between Hercules Transit Center and starting and Hilltop Shopping Center.	30
	30Z/JPX	Martinez Link	Express service to El Cerrito del Norte BART.	10
	JR	J Express	Express connecting between Hercules Transit Center and El Cerrito del Norte BART.	15

6.4.3 Transit Constraints and Opportunities

Site constraints for transit access can be summarized as follows:

- Bounded by high volume streets, with peak period congestion that can impede buses
- Inconvenient access to and from Richmond Parkway: all buses must use Blume Drive and the RPTC Access Road
- Connection from I-80 EB HOV ramp requires buses to make four left turns
- Connection to I-80 WB HOV ramp requires buses to make four right turns
- Access Road is shared with private vehicles
- Center island arrangement creates conflicts between buses and pedestrians on the Access Road and within the bus loop

Potential opportunities to improve transit access include:

- Provide more direct access between Richmond Parkway, I-80 and the RPTC
- Provide a right-in/right-out access directly to Richmond Parkway on the north side of the site
- Accommodate future growth in transit service with additional bays
- Minimize conflicts with pedestrians
- Separate buses from private vehicles where possible to reduce conflicts and minimize negative impacts of congestion
- Provide transit traffic signal priority and/or signal timing that is favorable to the major transit movements at adjacent signalized intersections
- If warranted, a traffic signal at the intersection of Blume Drive and the RPTC/Hilltop Plaza access road would improve bus access to and from the site

6.5 Traffic Circulation

6.5.1 Existing Conditions

The RPTC site is strategically located at the intersection of several major roadways, including I-80, Richmond Parkway and Blume Drive. Access to the site, however, is limited to the RPTC Access Road on the south side of the site connecting to Blume Drive. Figure 6.4 illustrates automobile access to the site. Nearly all of the automobile traffic at the site is directed to or from the north, passing through the intersection of Blume Drive with Richmond Parkway and the I-80 Westbound Ramps.

Adjacent Roadways

Interstate 80, located on the east side of the site, consists of four travel lanes in each direction with one High Occupancy Vehicle (HOV) lane and 3 general use lanes. According to Caltrans 2003 traffic counts, I-80 carries approximately 188,000 vehicles per day north of Richmond Parkway and 177,000 vehicles per day south of Richmond Parkway (Annual Average Daily Traffic-AADT). Direct ramps to the HOV lanes are provided from an intersection on the Richmond Parkway overpass. One ramp connects from Richmond Parkway to the westbound HOV lane, and one ramp connects from the eastbound HOV lane to Richmond Parkway. Interstate 80 is designated as a Route of Regional Significance by the Contra Costa Transportation Authority.

Richmond Parkway is located on the north side of the site and provides 3 travel lanes in each direction, with additional turn lanes at intersections. The intersection of Richmond Parkway with Blume Drive/I-80 WB Ramps is located at grade on the northwest corner of the site. Along the north edge of the site, Richmond Parkway rises on an embankment to cross over Interstate 80. Daily traffic volumes were not available, but turning movement counts collected in 2004 observed Richmond Parkway (north of the RPTC site) to carry approximately 1,700 vehicles in the AM peak hour and 3,800 vehicles in the PM peak hour. Richmond Parkway is designated as a Route of Regional Significance by the Contra Costa Transportation Authority.

Blume Drive is located on the west side of the site and consists of two travel lanes in each direction with additional turn lanes at intersections. Adjacent to the site, Blume Drive was observed to carry approximately 1,000 vehicles in the AM peak hour and 1,800 vehicles in the PM peak hour. A short left turn bay is provided on southbound Blume Drive at the RPTC Access Road, with storage for only two passenger vehicles or one bus. The intersection with the Access road is two-way stop controlled, with the Blume Drive being the major, or uncontrolled, street.

The RPTC Access Road is located on the south side of the site and provides a three lane section (one lane in each direction with a center left turn lanes). In addition to the RPTC, this roadway also provides service and parking access for the Hilltop Plaza shopping center located south of the site.

Site Access

Passenger vehicles enter the RPTC site from the Access Road using a driveway on the east side of the bus loop. They can exit the RPTC on either the west or east side of the bus loop. A passenger pick-up and drop-off curb is provided within the site along the west side of the bus loop. Casual carpoolers, Greyhound buses, van pools and casino shuttle buses also use this curb. Despite the provision of the curb, a considerable amount of drop-off activity occurs along the Access Road. Vehicles were observed to drop passengers on the south side of the access road, then make U-turns to return Blume Drive. Presumably drivers choose to drop off at this location because it is necessary to take a relatively long route around the bus loop to reach the designated drop-off curb.

Figure 6.4. Auto Access

Intersection Turning Movement Counts

Turning movement counts were completed at the following intersections:

- Richmond Parkway at Blume Drive/I-80 WB Ramps
- Richmond Parkway at I-80 HOV Ramps
- Blume Drive at RPTC Access Road

Counts were performed by Baymetrics Traffic Resources under the supervision of TJKM Transportation Consultants. The counts were completed in April and May, 2004 during both the AM and PM peak periods. The resulting peak hour turning movement counts are summarized in Figure 6.5. The counts are included in Appendix B, Part 1.

Lane Configuration

Figure 6.6 summarizes intersection lane configuration in the existing condition.

Intersection Level of Service

Intersection capacity analysis was completed at the three intersections identified in the previous section. Signal timing information was provided by Caltrans. Analysis of the signalized intersections on Richmond Parkway were completed using Synchro software, while the unsignalized intersection on Blume Drive was evaluated using Highway Capacity Software. The results of the existing conditions intersection capacity analysis is summarized in Table 6.3. Synchro output reports are included in Appendix B, Part 2. SimTraffic was used to generate an animated, microscopic simulation of the intersections. Sample output snap shots from the simulations are included in Appendix B, Part 3.

Figure 6.5. Existing TMC

Figure 6.6. Ex Lane Config

Table 6.3 Existing Conditions Intersection Levels of Service

Intersection/Approach	AM Peak Hour		PM Peak Hour	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Richmond Parkway at Blume Drive/I-80 WB Ramps (Signalized)				
WB Richmond Parkway	34	C	36	D
EB Richmond Parkway	27	C	45	D
NB Blume Drive	26	C	46	D
SB I-80 WB Ramps	22	C	36	D
<i>Overall Intersection</i>	<i>27</i>	<i>C</i>	<i>41</i>	<i>D</i>
Richmond Parkway at I-80 HOV Ramps (Signalized)				
WB Richmond Parkway	3	A	5	A
EB Richmond Parkway	4	A	13	B
NB I-80 HOV Ramp	27	C	29	C
<i>Overall Intersection</i>	<i>5</i>	<i>A</i>	<i>11</i>	<i>B</i>
Blume Drive at RPTC Access Road (Two-Way Stop Controlled)				
SB Blume Drive Left Turn	9	A	13	B
WB Access Road	11	B	15	C

The intersections adjacent to the RPTC generally operate with good Levels of Service (LOS) and limited congestion during most periods of the day. However, the major intersection of Richmond Parkway at Blume Drive/I-80 WB Ramps is complex and experiences heavy volumes with high turning movements. This intersection was determined to operate at LOS D in the PM peak hour. Significant queuing can occur on some approaches to this intersection. Particularly important to the RPTC is queuing on northbound Blume Drive, which was observed to occasionally block the intersection with the RPTC Access Road. In the afternoon traffic leaving the RPTC tends to be concentrated, with surges of traffic exiting after the arrival of a transbay bus. This can create short term congestion on the Access Road. Generally, significantly higher traffic volumes are observed in the PM peak period than in the AM peak.

It should be noted that these level of service calculations were made assuming typical default values for lane utilization for each movement. These results thus represent average performance for any given lane group and do not account for specific instances where imbalanced lane utilization may occur. Specifically, Caltrans has observed imbalanced lane utilization for the through movement on EB Richmond Parkway approaching Blume Drive. The analysis used a Lane Utilization Factor of 0.95 for this lane group.

6.5.2 2025 No Project Conditions

Assessment of future year traffic conditions adjacent to the RPTC site was completed as a two step process. Initially, year 2025 conditions have been evaluated without the proposed modifications to the RPTC. This assumes no growth in the number of parking spaces or activity at the RPTC. Conditions with the improved RPTC have also been evaluated and presented in Section 5.3.

Intersection Turning Movement Counts

In order to complete the future year analysis, it was necessary to estimate year 2025 intersection turning movement counts. Output from the Contra Costa Transportation Authority (CCTA) regional transportation demand model was used to generate these counts. The CCTA model anticipates heavy traffic growth in the vicinity of the RPTC, particularly on Richmond Parkway. The output includes modeled roadway link volumes for the AM and PM peak hours. The output of the model for years 2000 and 2025 were compared to determine the net growth in traffic volume on each roadway link. These growth projections were added to the existing counts for the appropriate intersection approach and distributed to the individual turning movements based on existing turning movement proportions. In some cases, manual adjustments to turning proportions were made to balance volumes on roadway links between intersections. The resulting year 2025 intersection turning movement counts are summarized in Figure 6.7.

Figure 6.7. 2025 TMC's

Intersection Signal Warrant Analysis

A traffic signal warrant analysis was completed for the intersection of Blume Drive with the RPTC Access Road. This analysis was carried out in accordance with the 2003 Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highways Administration and the MUTCD 2003 California Supplement published by Caltrans. Due to limited traffic count data, it was possible to test only Warrant 3, Peak Hour Volume. In the PM peak hour, two-way traffic volume on Blume Drive (Major Street) was observed to be 1,794 vehicles per hour. At the same time, traffic approaching the intersection on the Access Road (Minor Street) was 317 vehicles per hour. These volumes are above the minimum threshold and therefore Warrant 3 is met under existing conditions. Based on the results of this warrant analysis, all future year analysis assumed that the intersection of Blume Drive with the RPTC Access Road is signalized.

Intersection Level of Service

The intersection capacity analysis using Synchro was repeated with the year 2025 No Project traffic volumes. Initial capacity analysis results indicated highly congested conditions at all three intersections adjacent to the RPTC. An attempt was made to improve operating conditions by applying potential mitigation measures at the intersections. Generally, these included changes in signal timing and additional lanes where possible without major roadway widening. The mitigation measures applied are summarized in Table 6.4. It is important to note that these potential mitigation measures have not undergone detailed physical feasibility testing, nor have they been programmed for implementation. The lane configuration used for the Year 2025 No Project analysis is illustrated in Figure 6.8.

Table 6.4 Year 2025 Mitigation Measures

Intersection	Mitigation Measures Applied
Richmond Parkway at Blume Drive/I-80 WB Ramps	<ul style="list-style-type: none"> • Westbound through lane added • Southbound through lane added • Right turns permitted from exclusive lanes with left turn overlaps • Signal phase splits optimized
Richmond Parkway at I-80 HOV Ramps	<ul style="list-style-type: none"> • Eastbound right turn lane added • Signal phase splits optimized
Blume Drive at RPTC Access Road	<ul style="list-style-type: none"> • Traffic signal installed • Lane configuration on Access Road approach changed to one shared left/right turn lane and one exclusive right turn lane • Signal phase splits optimized

The capacity analysis results with the mitigation measures are summarized in Table 6.5. As with the existing conditions analysis, Synchro output reports are included in Appendix B, Part 2 and sample SimTraffic snap shots are included in Appendix B, Part 3.

Figure 6.8 2025 lane config.

**Table 6.5 Year 2025 No Project Intersection Level of Service
(with selected mitigation measures)**

Intersection/Approach	AM Peak Hour		PM Peak Hour	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Richmond Parkway at Blume Drive/ I-80 WB Ramps (Signalized)				
WB Richmond Parkway	132	F	145	F
EB Richmond Parkway	88	F	568	F
NB Blume Drive	78	E	593	F
SB I-80 WB Ramps	145	F	198	F
<i>Overall Intersection</i>	<i>124</i>	<i>F</i>	<i>417</i>	<i>F</i>
Richmond Parkway at I-80 HOV Ramps (Signalized)				
WB Richmond Parkway	7	A	4	A
EB Richmond Parkway	17	B	234	F
NB I-80 HOV Ramp	32	C	150	F
<i>Overall Intersection</i>	<i>11</i>	<i>B</i>	<i>179</i>	<i>F</i>
Blume Drive at RPTC Access Road (Signalized)				
NB Blume Drive	3	A	109	F
SB Blume Drive	5	A	12	B
WB RPTC Access Road	7	A	15	B
<i>Overall Intersection</i>	<i>5</i>	<i>A</i>	<i>57</i>	<i>E</i>

Even with the potential mitigation measures, traffic operation was poor at all three intersections (LOS F). Long average delays and high levels of congestion were projected in the area. In particular, the intersection of Richmond Parkway at Blume Drive/I-80 WB Ramps was found to have excessive delays. Queuing on the WB Interstate 80 off ramp could likely impact mainline traffic flow, independent of changes to the RPTC. This analysis indicates that the interchange of Richmond Parkway with I-80 will require additional modifications if the traffic growth projections are accurate. Additional study of this interchange and the surrounding area will be required to address these issues regardless of any expansion to the RPTC.

6.5.3 2025 With Project Conditions

Projected traffic conditions with the RPTC improvement project were evaluated by estimating the additional transit and private vehicle trips that would be generated by the project, adding these to the Year 2025 No Project traffic volumes and reassessing intersection operation.

Intersection Turning Movement Counts

Future peak hour bus trips were estimated based on assumptions for year 2025 transit operations (see Table 6.2). New trips were assigned to the roadway network based existing and proposed bus routes. Table 6.6 summarizes the assumed number of bus trips in and out of the facility.

Table 6.6 Assumed Peak Hour Bus Trip (Existing and Year 2025)

Year	Number of Bus Trips			
	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Existing (2004)	30	30	30	30
2025	51	51	51	51

It was also assumed that a right-in/right out driveway to Richmond Parkway for buses only would be constructed on the north side of the site. This would be used by buses inbound to facility that approach from the west on Richmond Parkway or from the north on the I-80 Westbound Off-Ramp. The driveway would also be used by buses outbound from the facility that head east on Richmond Parkway/Fitzgerald Drive or south on the I-80 Westbound HOV On-Ramp.

Additional private vehicle trips generated with the improvement project were estimated by increasing existing flows as appropriate to reflect changes to the facility. Key assumptions are listed below:

- The number of available parking spaces was assumed to increase from 199 to 710 (as per Option A)
- The parking structure was assumed to fill during the day in 2025
- Future vehicle trips entering the parking structure in the AM peak hour were estimated based on the potential parking demand curve identified in the Demand Assessment (Chapter 2, Figures 2.1 and 2.2).
- Future vehicle trips exiting the parking structure in the PM peak hour were estimated by determining existing parking exit flows from the parking accumulation data (Appendix A), then factoring up this existing parking exit flow based on the increase in the number of parking spaces.
- Future vehicle trips for casual carpool and kiss and ride activity at the RPTC was assumed to grow at the same rate as traffic on the I-80 Westbound HOV On-Ramp to Richmond Parkway in the AM peak hour and the I-80 Eastbound HOV Off-Ramp in the PM peak hour.
- No growth was assumed for vehicle trips accessing the Hilltop Plaza Shopping Center.
- New private vehicle trips were assigned to the roadway network based on existing traffic patterns.

Resulting Year 2025 With Project turning movement counts are presented in Figure 6.9.

Figure 6.9 Peak 2025 with Project Turning movement counts.

Intersection Level of Service with Project Conditions

The intersection capacity analysis using Synchro was repeated with the Year 2025 (With Project) traffic volumes. Lane configuration was not changed from the Year 2025 (No Project) condition, as shown on Figure 8. Traffic signal splits and offsets were optimized using Synchro.

The capacity analysis results are summarized in Table 6.7. This table includes the results of the 2025 No Project analysis for comparison.

Table 6.7 Year 2025 With Project Intersection Level of Service

Intersection/ Approach	AM Peak Hour				PM Peak Hour			
	No Project		With Project		No Project		With Project	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Richmond Parkway at Blume Drive/I-80 WB Ramps (Signalized)								
WB Richmond Parkway	132	F	128	F	145	F	150	F
EB Richmond Parkway	88	F	104	F	568	F	588	F
NB Blume Drive	78	E	76	E	593	F	592	F
SB I-80 WB Ramps	145	F	167	F	198	F	203	F
<i>Overall Intersection</i>	<i>124</i>	<i>F</i>	<i>132</i>	<i>F</i>	<i>417</i>	<i>F</i>	<i>429</i>	<i>F</i>
Richmond Parkway at I-80 HOV Ramps (Signalized)								
WB Richmond Parkway	7	A	7	A	4	A	4	A
EB Richmond Parkway	17	B	17	B	234	F	253	F
NB I-80 HOV Ramp	32	C	34	C	150	F	150	F
<i>Overall Intersection</i>	<i>11</i>	<i>B</i>	<i>12</i>	<i>B</i>	<i>179</i>	<i>F</i>	<i>194</i>	<i>F</i>
Blume Drive at RPTC Access Road (Signalized)								
NB Blume Drive	3	A	15	B	109	F	114	F
SB Blume Drive	5	A	7	A	12	B	13	B
WB RPTC Access Road	7	A	8	A	15	B	18	B
<i>Overall Intersection</i>	<i>5</i>	<i>A</i>	<i>8</i>	<i>A</i>	<i>57</i>	<i>E</i>	<i>58</i>	<i>E</i>

The proposed RPTC project will generate additional vehicle trips through intersections that are projected to operate with poor level of service. As a result, average delay at these intersections will increase modestly. Generally these increased delays do not result in changes in Level of Service.

SimTraffic simulation software was used to study the proposed right-in/right-out bus access to Richmond Parkway. Given the proximity of this driveway to other signalized intersections, micro simulation was the most appropriate tool to project queuing on Richmond Parkway and delays on the right-out driveway. Further, the Highway Capacity Manual methodology for unsignalized intersections was not applicable to

this location, as it is limited to major streets with no more than two lanes per direction. The SimTraffic output produced an average delay for exiting buses was 4 sec in the AM (LOS A) and 80 sec in the PM (LOS F). Queuing on eastbound Richmond Parkway occasionally blocked the driveway in PM Peak Hour. Table 6.8 summarizes queuing results on eastbound Richmond Parkway from the intersection with the I-80 HOV On Ramps. The driveway would be located approximately 410 west of the stop bar for eastbound traffic.

Table 6.8 Year 2025 With Project Queuing Analysis Results, Eastbound Richmond Parkway Approaching I-80 Westbound HOV On Ramps

	AM Peak Hour	PM Peak Hour
Average Queue Length/Cycle	110'	270'
95th Percentile Queue Length	220'	470'

Note: Bus Driveway would be located approximately 410' west of the stop bar.

Based on these results, it appears that buses using the new driveway in the PM would have difficulty exiting the facility in year 2025. As a result of heavy traffic on Richmond Parkway, queuing from the downstream intersection and signal timing at the upstream intersection, adequate gaps would not be available for buses to exit the facility efficiently. If traffic forecasts prove to be accurate, and assuming no major changes to the interchange, this proposed exit would need to be modified. One option would be to modify the design to include a new bus only lane providing direct access from the RPTC exit to the I-80 HOV ramp. Buses exiting facility from the new driveway would be limited to entering I-80 Westbound and would not be able to continue eastbound on Fitzgerald Drive. This would reduce the number of buses that could use the new driveway. This option would also have significant additional construction costs, as it would require the widening segments of Richmond Parkway that are on embankment and bridge. A second option to address the operational problem would be to close the bus exit to Richmond Parkway in the PM peak period. Buses would be required to use the main RPTC access road during the afternoon peak period of traffic.

Although an expanded facility will increase the number of trips in the immediate vicinity, increased use of the RPTC will result in fewer and/or shorter private vehicle trips on a larger scale. The additional trips generated by the improved RPTC will be relatively small compared to the overall traffic volumes in the area. The benefits on a regional scale will likely outweigh incremental negative impacts on intersections immediately adjacent to the site. These results also underscore the importance of optimizing access to the facility, including a potential right-in/right-out bus access on the north side of the site. This would shorten travel distances and allow some buses to avoid congested intersections. Operational issues, however, would limit the effectiveness of the exit in the PM peak period.

6.5.4 Private Vehicle Constraints and Opportunities

Site constraints for private vehicle access can be summarized as follows:

- Bounded by high volume streets with peak period congestion
- Inconvenient access to and from Richmond Parkway: all vehicles must use Blume Drive and the RPTC Access Road
- Access Road is shared with buses
- Drop-off curb inside the RPTC is inconvenient
- Heavy growth projected for traffic volumes and congestion, resulting in poor level of service in the future

Potential opportunities to improve private vehicle access include:

- A traffic signal at the intersection of Blume Drive and the RPTC/Hilltop Plaza access road would improve bus access to and from the site
- Minimize conflicts with pedestrians and buses
- Separate buses from private vehicles where possible to reduce conflicts and minimize negative impacts of congestion
- Provide a more convenient drop-off curb arrangement
- Consider locating casual carpool activity on Blume Drive south of the RPTC to remove this traffic from the site
- Any future proposals to improve the interchange Richmond Parkway and I-80 should give special consideration to improving access to the RPTC

7 Cost Estimate

7.1 Introduction

This memo summarizes the order of magnitude capital and operating cost assumptions for the RPTC. Concept Option A was used as the basis for cost estimation, with the Fairfield Transit Center as a guide for assumptions about type and quality of construction.

7.2 Capital Costs

Davis Langdon prepared a Conceptual Design Cost Plan for Option A. The Cost Plan is included as Appendix C. The assumptions and findings of the cost basis are summarized below.

The Cost Plan was prepared for construction of a new facility on the existing RPTC site consisting of a 710 parking garage, bus boarding area with canopies, a passenger vehicle kiss and ride curb, and associated site and circulation improvements. Building pad preparation and surface parking for the joint development parcel was also included, but construction of the building was not included. The Fairfield Transit Center was used as a basis for assumptions regarding type of construction, materials and architectural finishes.

It assumes the project will be competitively bid and the contractor will have full access to the site. The Cost Plan assumes that construction starts in June 2006 and continues for a period of 12 months. The results are in current (2004) dollars. In other words, unit costs are based on today's values, and the resulting total cost estimate is escalated (by 9%) to reflect a future start date.

7.2.1 Inclusions

Generally, the items included in the Cost Plan are:

- Parking structure for 710 cars on four levels (includes enclosed areas for restrooms, guard booth and potential ticket booth)
- Bus boarding areas with pedestrian canopies
- Site grading and paving
- Landscaping
- Utilities
- Drainage
- Lighting
- Site work, surface parking and build pad preparation for the building pad site
- Allowance for passenger information systems (\$250,000)

Figures 7.1 and 7.2 illustrate the proposed project and the areas included. More detail on specific items included in the estimate can be found in the attached Cost Plan (Appendix C).

7.2.2 Exclusions

A number of items were specifically excluded from the Cost Plan, such as:

- Land acquisition
- Drilled pier or pile foundation (spread footings assumed)
- Parking control equipment, security equipment, artwork
- Hazardous materials handling
- Environmental impact mitigation
- Compressed schedule, site access, phasing or working hour restrictions
- Fees for design and environmental assessment
- Fees for testing, inspection, construction management, change orders

More detail on specific items excluded from the estimate can be found in the Cost Plan.

7.2.3 Contingencies

The estimate includes a 10% contingency for 'Development of Design', i.e. minor changes in scope of the project. Further, Davis Langdon suggests that given the current bidding climate in the Bay Area, it would not be unexpected to see bids as high as 10% above the estimate. Additional contingencies are appropriate at this planning stage given uncertainty in the design and site conditions (such as topography and subsurface conditions).

7.2.4 Capital Cost Estimate

The base cost estimate is \$20,219,000. This includes the 10% 'Development of Design' contingency. Table 7.1 below summarizes cost estimates with a range of additional contingencies.

Table 7.1 Capital Cost Estimates with Contingencies

Contingencies Applied	Capital Cost Estimate
Development of Design (10%)	\$19,618,000
Development of Design (10%) Uncertain Bidding Climate (10%)	\$21,580,000
Development of Design (10%) Uncertain Bidding Climate (10%) Additional Contingency (15%)	\$24,520,000

Figure 7.1 Site Plan Used for Cost Estimate

Figure 7.2 Parking Plan Used for Cost Estimate

7.3 Operating Costs

An order of magnitude estimate of the annual operating costs was developed for the RPTC. Operating cost data was obtained from the City of Fairfield for the Fairfield Transportation Center and adjusted reflect the characteristics of the RPTC.

The Fairfield Transportation Center is a good candidate for comparison because of common characteristics with the RPTC. Both facilities would include parking structures, covered passenger boarding areas, staffed security, passenger amenities and quality landscaping. The Fairfield Transportation Center is smaller, however, with a 400-space two-story parking garage, and also includes a two-story office building. In addition, virtually all services for the facility are provided by contract. This allows for straightforward consideration and of operational costs.

7.3.1 Operating Cost Categories

The operating costs involved can generally be grouped into five major categories, which include the following:

- **Building Maintenance:** including building repairs, heating and ventilation and electrical repairs and maintenance, fire extinguishers, elevator service, alarm systems, etc.
- **Custodial/Groundskeeping Services:** custodial services and supplies, landscaping, pest control
- **Utilities:** electricity, water, natural gas
- **Security:** security guard, security vehicle maintenance, gasoline
- **Administrative Expenses:** legal fees, other minor expenses.

7.3.2 Operating Cost Estimates

Annual operating costs for Fairfield Transportation Center and estimates for RPTC are summarized below in Table 7.2. Costs are in current (2004) dollars. The Fairfield Transportation Center costs do not reflect the new surface lot (opened December 2004) or the planned future addition of a 600-space, five-story parking garage. Staff time to administer and monitor contracts is not included or estimated for Fairfield Transportation Center or RPTC.

Table 7.2 Annual Operating Cost Estimate

Operating Cost Category	Fairfield Transportation Center Cost	Adjustment Factor	Adjustment Justification	RPTC Cost
Building Maintenance	\$30,000	1.0	RPTC has a larger parking structure to maintain, offset by having less enclosed space (no office building)	\$30,000
Custodial/ Groundskeeping Services	\$65,000	1.25	RPTC is a larger site, partially offset by having less enclosed space (no office building)	\$82,000
Utilities	\$63,000	1.25	RPTC is a larger site and has a larger structure, partially offset by having less enclosed space (no office building).	\$80,000
Security Services	\$142,000	1.0	Fairfield Transportation Center pays for 24-hour, 365-day security services; RPTC is a larger site to patrol, but may have a reduced (non-24-hour) schedule. Note that this item is highly variable.	\$142,000
Other Expenses	\$1,000	1.0	Primarily an allowance for legal fees (Fairfield Transportation Center uses City legal staff) and small unforeseen expenses.	\$1,000
Total Annual Operating Cost	\$301,000			\$335,000

Note: Lifecycle costs such as repaving have not been included in these operating costs.

7.3.3 Potential for Integrating Solar Power

The RPTC project presents an opportunity to incorporate environmentally sensitive design features to provide positive environmental impacts, power generation and potentially net financial benefits to the project. An initial investigation has been completed looking at the incorporation of photovoltaic (PV) cells into the design of the parking structure (included as Appendix D to the report). This investigation has the following conclusions:

- Opportunities to include PV into the design of the RPTC include panels incorporated into the façade of the parking structure, carport canopies on the roof of the parking structure and in the bus shelter canopies.
- Installation of PV has significant upfront costs. However these costs can be partially offset if they are fully integrated into the design (thereby replacing other materials) and through PG&E rebate programs.
- PV could generate power that is used on site or supplied to the PG&E grid. The amount of power generated depends on the size of the installation. There would be value associated with the power generated on-site, either as reduced utility costs or net operating benefit if the value of the power sold back to PG&E is greater than what is consumed by the facility.
- Real environmental benefits can be quantified for PV on the site. Even a relative small installation (e.g. 4,800 sq. ft. only on the south wall of the parking structure) would be equivalent to planting 7 acres of trees each year.

- Considering a 10 year payback period, it appears that installation of PV's would have a net positive financial benefit if they are incorporated into planned façades or canopies and replace other materials that would otherwise be installed.

Appendix A: Data Collection Summary

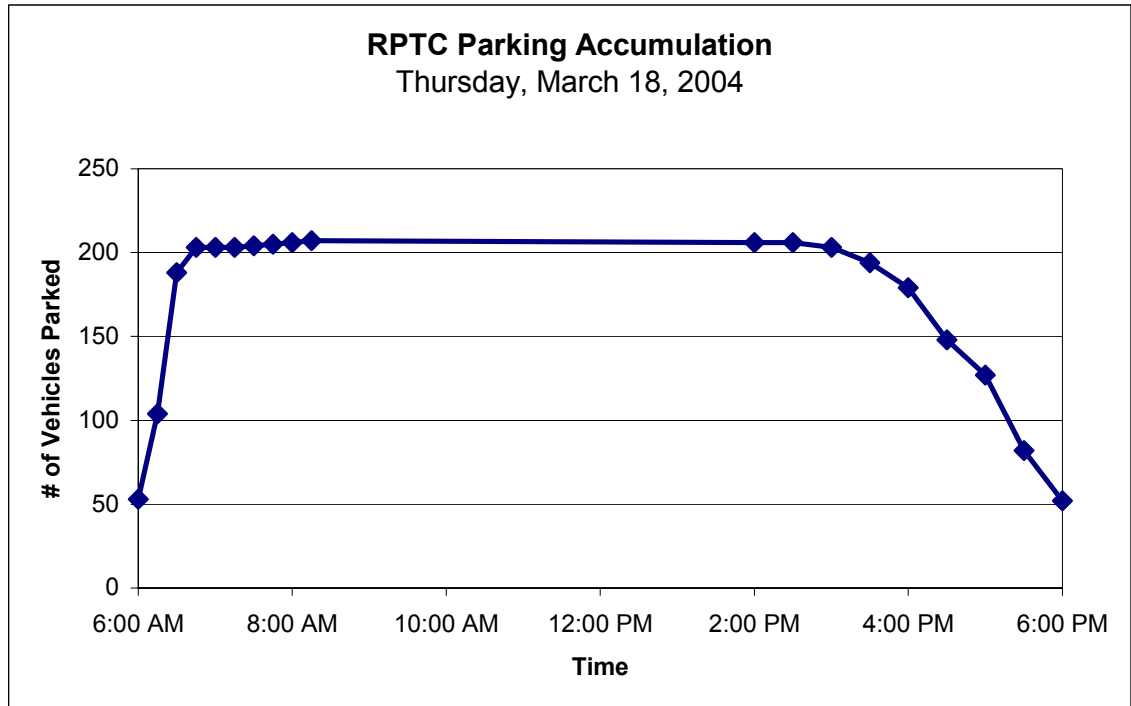
Introduction

The consultant team completed data collection at the RPTC site on Thursday, March 23, 2004. Staff were present at the site during both the AM (6:00 AM to 8:30 AM) and PM (2:00 PM to 6:00 PM) peak periods. Data collected included transit ridership, parking accumulation and driveway counts, casual carpool use, and pedestrian and bicycle counts.

Parking Accumulation

The parking lot was effectively full by 6:45 AM with only disabled spaces remaining open. The lot gradually emptied after about 3:00 PM. The chart below illustrates the observed accumulation over the course of the day.

Figure A.1 Parking Accumulation



Transit Ridership

Boarding and alighting passengers were counted during the AM and PM peak periods. The resulting counts are summarized in the following tables.

Table A.1 Transit Ridership (AM)

Time	Transit Service					
	AC Transit-Transbay (LA)		AC Transit-Other (70, 71)		WestCAT	
	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting
6:00 - 6:15 AM	16	0	0	2	0	0
6:15 - 6:30 AM	16	0	0	3	4	3
6:30 - 6:45 AM	33	0	3	6	5	6
6:45 - 7:00 AM	2	0	0	5	4	4
7:00 - 7:15 AM	3	0	7	7	9	0
7:15 - 7:30 AM	6	0	1	3	12	6
7:30 - 7:45 AM	11	4	8	5	10	6
7:45 - 8:00 AM	3	0	0	0	3	5
8:00 - 8:15 AM	8	0	8	7	5	1
8:15 - 8:30 AM	1	0	0	3	9	11
Peak 15 Minutes	33	0	8	7	9	11
	(6:30-6:45 AM)		(8:00-8:15 AM)		(8:15-8:30 AM)	
Peak Hour	67	0	16	20	34	17
	(6:00-7:00 AM)		(6:45-7:45 AM)		(7:00-8:00 AM)	

Alighting passengers who transferred to other bus routes at the RPTC were identified. Approximately 74% of alighting passengers in the AM peak period were observed to transfer.

Table A.2 Transit Ridership (PM)

Time	Transit Service					
	AC Transit-Transbay (LA)		AC Transit-Other (70, 71)		WestCAT	
	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting
2:00 - 2:15 PM	0	0	0	0	1	1
2:15 - 2:30 PM	0	0	6	4	2	2
2:30 - 2:45 PM	0	0	0	0	5	9
2:45 - 3:00 PM	0	0	16	11	3	8
3:00 - 3:15 PM	0	0	3	0	7	16
3:15 - 3:30 PM	0	0	12	15	3	4
3:30 - 3:45 PM	0	0	0	0	3	17
3:45 - 4:00 PM	0	21	21	7	0	16
4:00 - 4:15 PM	0	0	8	6	14	13
4:15 - 4:30 PM	0	27	7	11	0	2
4:30 - 4:45 PM	0	16	5	6	4	15
4:45 - 5:00 PM	0	0	10	2	5	2
5:00 - 5:15 PM	0	20	2	2	11	8
5:15 - 5:30 PM	0	38	6	2	2	0
5:30 - 5:45 PM	0	26	1	2	2	4
5:45 - 6:00 PM	0	25	7	4	4	5
6:00 - 6:15 PM	0	27	4	2	2	3
Peak 15 Minutes	0	38	21	7	14	13
	(5:15-5:30 PM)		(3:45-4:00 PM)		(4:00-4:15 PM)	
Peak Hour	0	116	41	30	13	53
	(5:15-6:15 PM)		(3:45-4:45 PM)		(3:00-4:00 PM)	

Approximately 30% of alighting passengers in the PM peak period we observed to transfer. For the AC Transit transbay service (route LA), only about 6% of alighting passengers were observed to transfer.

Comparison to September 11, 2003 Data

Additional ridership data for route LA was provided by AC Transit. This data was collected on Thursday, September 11, 2003.

Table A.3 AC Transit Route LA Ridership

Time	Route LA Boarding Passengers	
	9/11/03	3/18/04
6:00 - 6:15 AM	8	16
6:15 - 6:30 AM	12	16
6:30 - 6:45 AM	31	33
6:45 - 7:00 AM	24	2
7:00 - 7:15 AM	14	3
7:15 - 7:30 AM	12	6
7:30 - 7:45 AM	12	11
7:45 - 8:00 AM	0	3
8:00 - 8:15 AM	8	8
8:15 - 8:30 AM	4	1
Total	99	125

Driveway Counts

RPTC driveway counts were completed during the AM peak period and are presented in the table below. Significant private vehicle activity continued even after the lot filled, primarily due to casual carpool activity.

Table A.4 RPTC Driveway Counts

Time	Vehicles In	Vehicles Out
6:00 - 6:15 AM	65	5
6:15 - 6:30 AM	97	36
6:30 - 6:45 AM	93	48
6:45 - 7:00 AM	34	23
7:00 - 7:15 AM	29	25
7:15 - 7:30 AM	25	35
7:30 - 7:45 AM	10	17
7:45 - 8:00 AM	16	19
8:00 - 8:15 AM	8	21
8:15 - 8:30 AM	16	13
Peak 15 Minutes (6:30-6:45 AM)	93	48
Peak Hour (6:00-7:00 AM)	289	112

Casual Carpooling

A significant amount of casual carpooling activity was observed at the designated passenger pick-up/drop-off area west of the bus island in the AM peak period. Counts of pedestrians and vehicles using casual carpooling are summarized below.

Table A.5 Casual Carpool Activity

Time	Pedestrians	Vehicles
6:15 - 6:30 AM	23	15
6:30 - 6:45 AM	38	27
6:45 - 7:00 AM	21	16
7:00 - 7:15 AM	21	13
7:15 - 7:30 AM	14	10
7:30 - 7:45 AM	16	9
7:45 - 8:00 AM	14	11
8:00 - 8:15 AM	22	6
8:15 - 8:30 AM	16	7
Peak 15 Minutes (6:30-6:45 AM)	38	27
Peak Hour (6:15-7:15 AM)	103	71

During the AM peak period, queues of pedestrians and vehicles formed intermittently. The maximum observed pedestrian queue was 17 people. The maximum observed vehicular queue was 13 vehicles.

A limited amount of casual carpool activity was observed in the afternoon. Vehicles occasionally dropped passengers on the access road. The maximum amount of reverse casual carpooling activity was 11 passengers dropped in one hour between 3:45 and 4:45 PM.

Pedestrian Counts

Pedestrians were counted during the PM peak period. Pedestrians walking to and from the RPTC were counted, with three major directions identified:

1. Hilltop Plaza (South)
2. Blume Drive South of RPTC (Southwest)
3. Richmond Parkway/Blume Drive Intersections (North)

Many of the pedestrians leaving the RPTC to the south were observed to meet waiting vehicles in the Hilltop Plaza parking lot.

Pedestrian counts are summarized in the table below.

Table A.6 Pedestrian Counts

Time	Direction						Total		
	Hilltop Plaza		Blume Dr South		Richmond Parkway				
	inbound	outbound	inbound	outbound	inbound	outbound	inbound	outbound	
2:00-2:15 PM	1					1		1	1
2:15-2:30 PM		2		1		1		0	4
2:30-2:45 PM	1	3	1	2				2	5
2:45-3:00 PM		5		1	1	1		1	7
3:00-3:15 PM	2	1			5	3		7	4
3:15-3:30 PM	2	1		1	2			4	2
3:30-3:45 PM		3	2		3	7		5	10
3:45-4:00 PM		8		2	1	2		1	12
4:00-4:15 PM	1	7	1		7			9	7
4:15-4:30 PM	4	7	1			1		5	8
4:30-4:45 PM		6	1		1			2	6
4:45-5:00 PM	2	3	2					4	3
5:00-5:15 PM	3	5						3	5
5:15-5:30 PM	3	7	3	3	3	2		9	12
5:30-5:45 PM	1	10	3		1			5	10
5:45-6:00 PM	4	8	7					11	8
Peak 15 min (5:15 – 5:30 PM)								9	12
Peak hour (5:00 – 6:00 PM)								28	35

Bicycle Counts

A single bicyclist was observed during the AM peak period. The bicyclist rode into the RPTC, identified a pick-up truck waiting in the casual carpool queue, placed his bike in the back and got in the vehicle.

Other Specific Observations

- Bus arrivals in the AM peak periods tended to be concentrated, with several buses arrivals in a short period of time followed by periods of relatively low activity.
- It appeared that several vehicles had been parked overnight, although this cannot be confirmed.
- Greyhound buses used the casual carpool pick-up/drop-off curb.
- Considerable private vehicle pick-up/drop-off activity was observed on the access road, with drivers choosing not to circulate through the RPTC. Generally this activity was not ordered, vehicles made U-turns at several points along the access road. In some cases, parked vehicles blocked traffic. In one instance a Greyhound bus was observed dropping passengers on the access road, using the Hilltop Plaza Driveway to turnaround.
- Private vehicles were also observed to drop off passengers adjacent to the casual carpool pick-up/drop-off curb (generally double-parking).
- In the PM, private vehicles were observed to park in the Hillside Plaza parking lot while waiting to pick up passengers arriving by transit.
- The condition of the passenger island is poor: no shelters, no transit information, two of four trees are missing, trash cans were overflowing, litter was present on the island, no bike parking facilities.
- On several occasions, buses did not park at their designated bays-generally because another bus was already present.
- In some cases WestCAT buses traveled through the RPTC without stopping (when no passengers were waiting or on the bus).
- Pedestrians (with a large component of school children) regularly crossed the access road to and from the Hillside plaza. As no designated crossing point is present, pedestrians crossed at random locations.
- A large number of vehicles were parked on-street on Klose Way (100 vehicles at 8:30 AM). Some of these vehicles may be associated with the RPTC.
- Queues of existing vehicles would regularly form after the arrival of a LA bus during the PM peak. These queues would dissipate within a few minutes.
- At 9:00 AM, the Hilltop Transit Center was observed to have 44 parked vehicles (out of 136 total spaces).
- Hilltop Plaza security place notices on vehicles ('Customer Parking Only, Tow-Away Zone, Your license has been recorded', etc.) parked in the northern portion of their parking lot in the morning before the stores open.

Appendix B: Circulation Assessment Appendices

Part 1. Intersection Turning Movement Counts

Part 2. Synchro Output Reports

Part 3. SimTraffic Sample Images

Existing Conditions, AM Peak Hour

Image 1

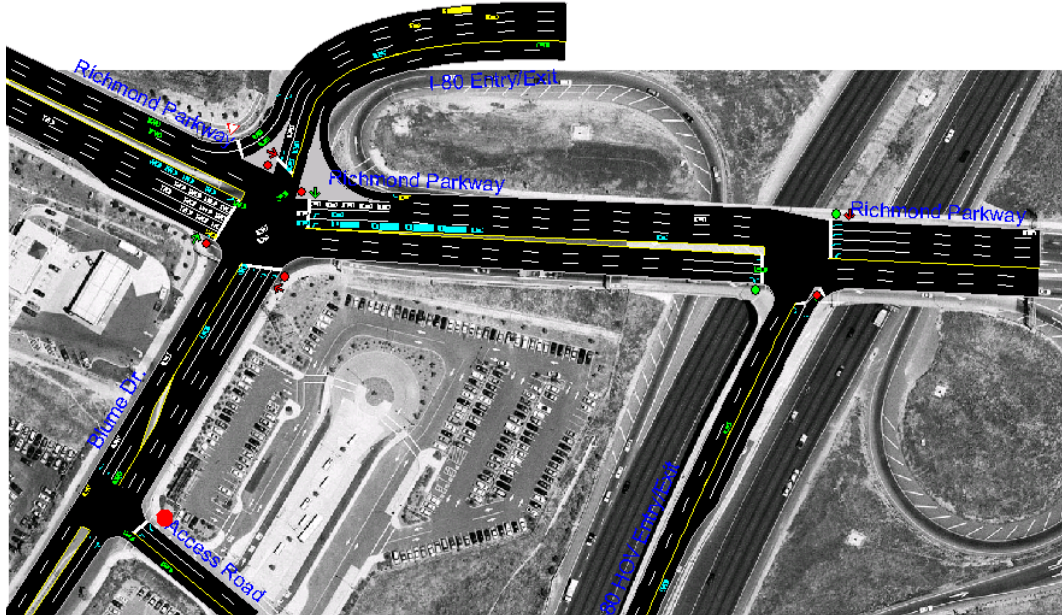
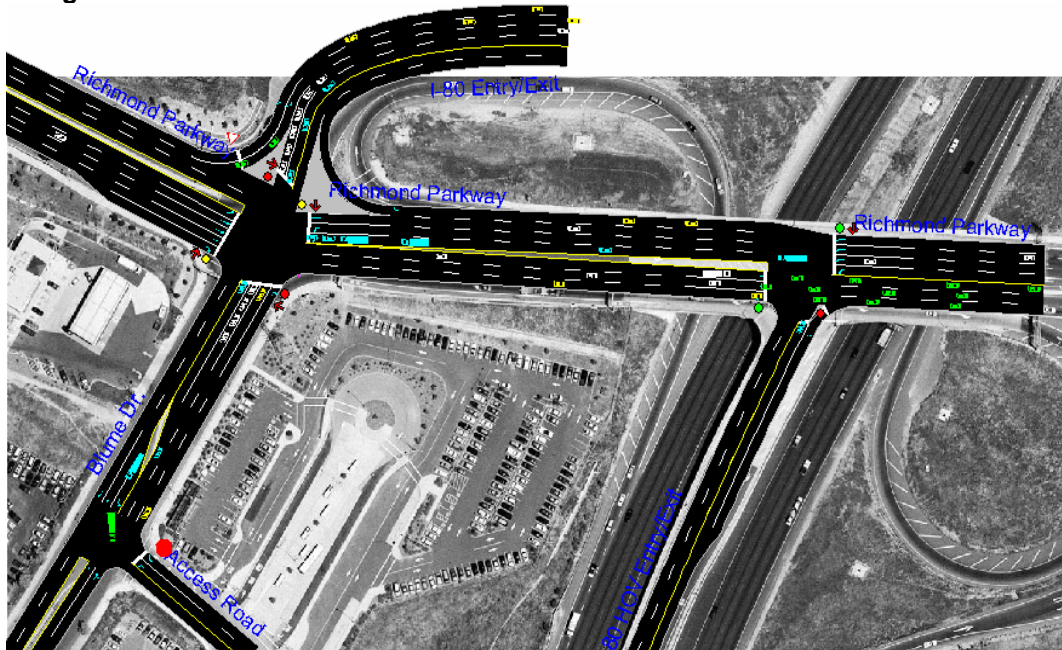


Image 2



Existing Conditions, PM Peak Hour

Image 1



Image 2



Year 2025, No Project (Mitigated), AM Peak Hour

Image 1

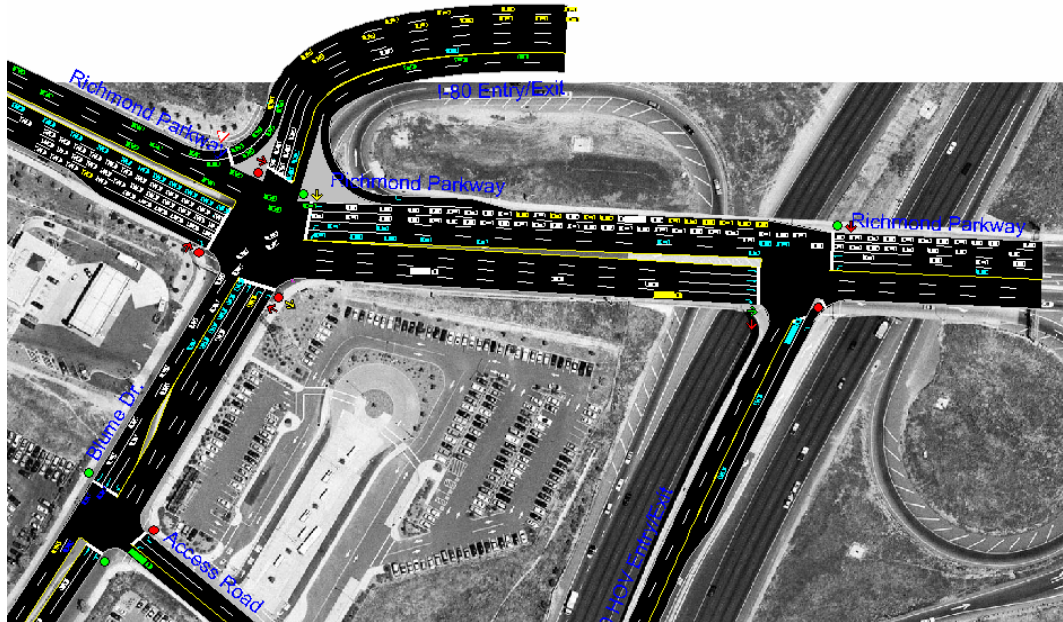
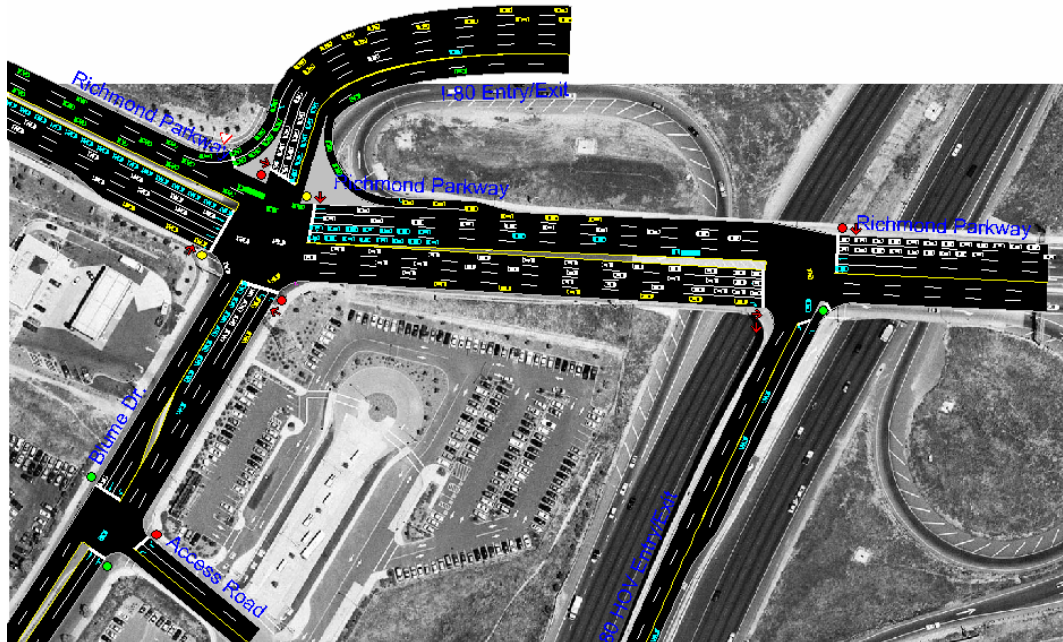


Image 2



Year 2025, No Project (Mitigated), PM Peak Hour

Image 1

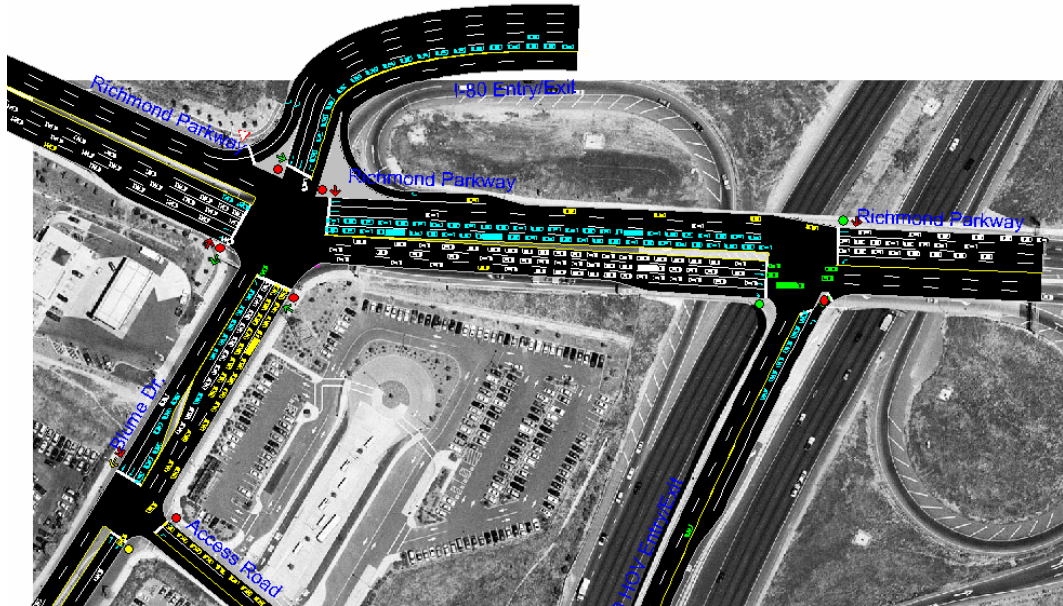
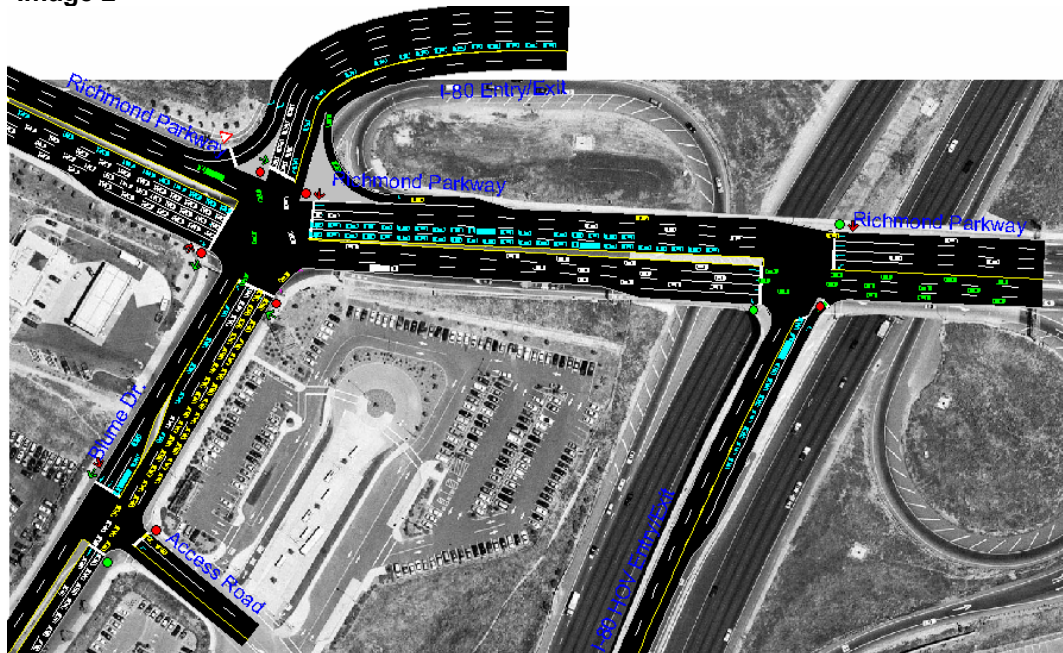


Image 2



Year 2025, With Project, AM Peak Hour

Image 1

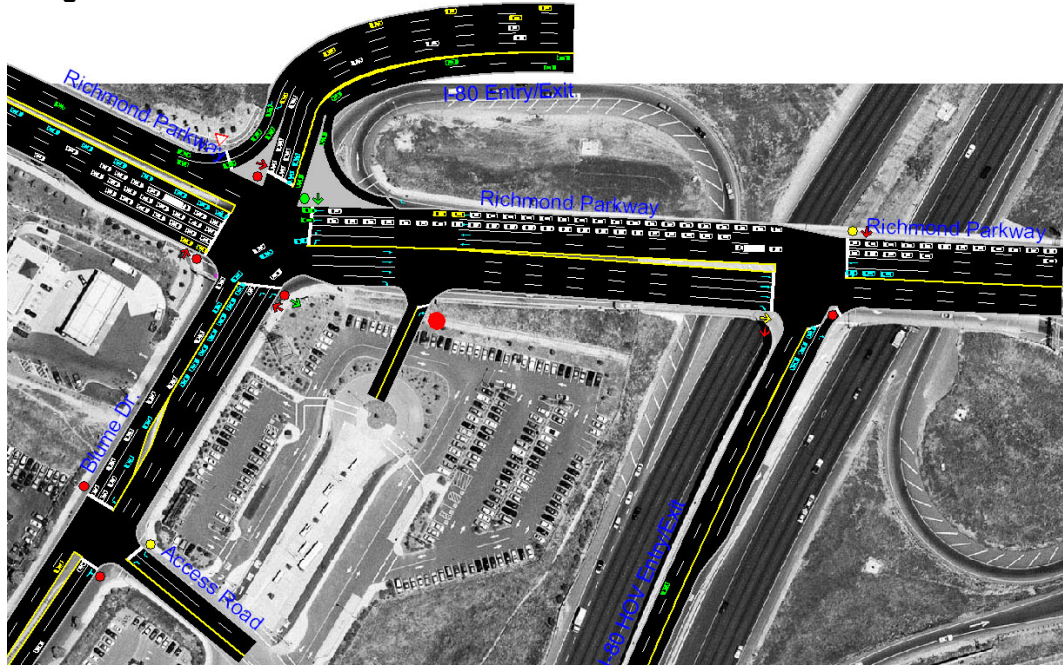
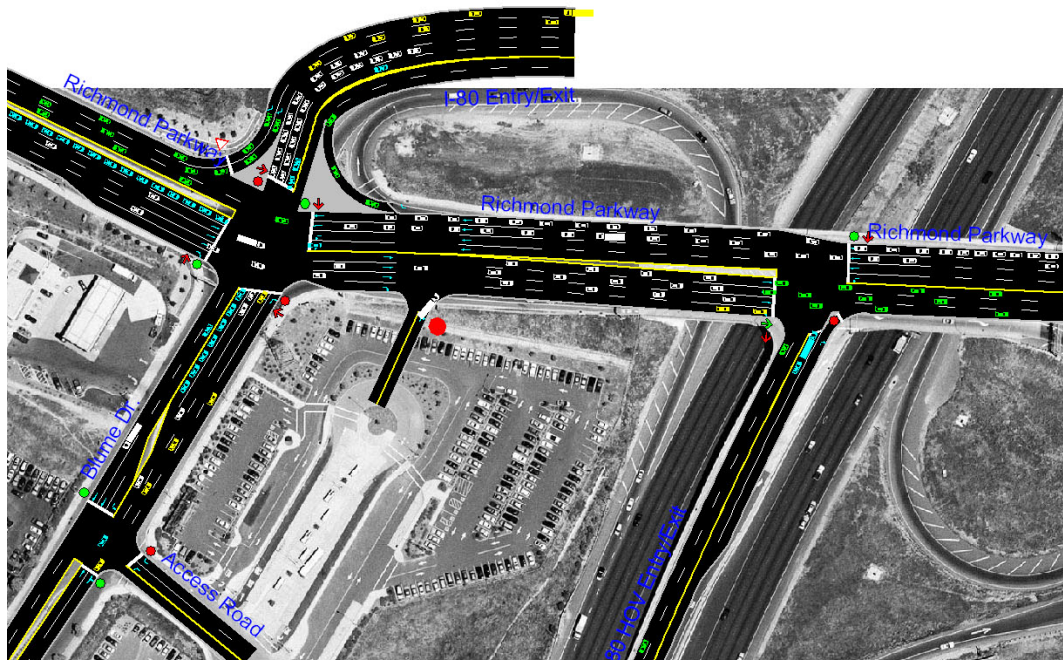


Image 2



Year 2025, With Project, PM Peak Hour

Image 1

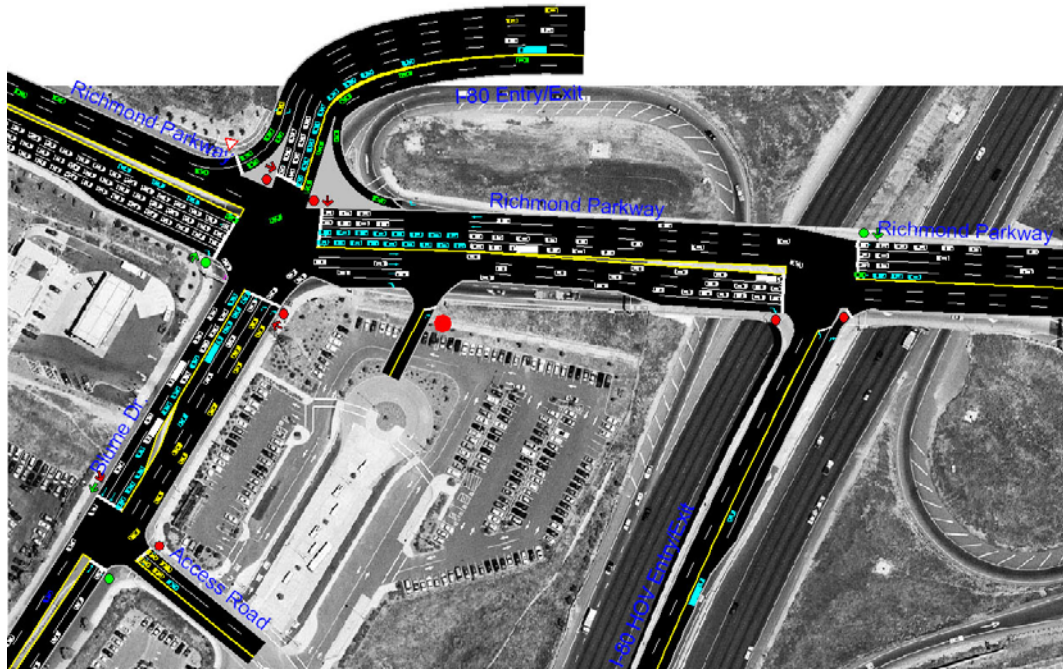
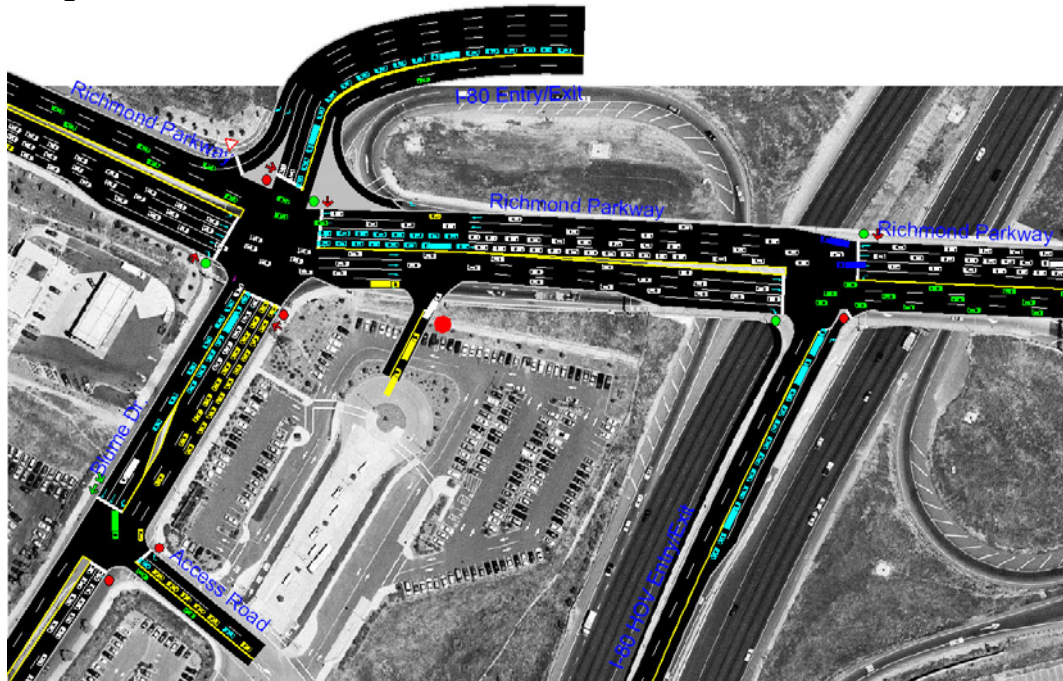


Image 2



Appendix C: Cost Plan

Appendix D: Integrating Solar Power at the Richmond Parkway Transit Center